DRAFT DRAINAGE & WASTEWATER MANAGEMENT PLAN (DWMP24): ENVIRONMENTAL REPORT

STRATEGIC ENVIRONMENTAL ASSESSMENT – DRAFT ENVIRONMENTAL REPORT

June 30, 2022

Prepared for:

Yorkshire Water

Prepared by:

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Revision	Description	Author		Quality Check		Independent Review	
V01	Draft for comment	M.Miles C.O'Connor	June 2022	C.O'Connor	June 2022	S.Mustow	June 2022
V02	For consultation	M.Miles C.O'Connor	June 2022	C.O'Connor	June 2022	S.Mustow	June 2022

Table of Contents

Abbreviations

List of Abbreviations	
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
BNG	Biodiversity Net Gain
BRAVA	Baseline Risk and Vulnerability Assessment
Defra	Department for Environment, Food and Rural Affairs
DWF	Dry Weather Flow
DWMP24	Drainage and Wastewater Management Plan
GhG	Greenhouse Gas
HRA	Habitats Regulations Assessment
INNS	Invasive non-native species
L1/ L2/ L3	Level 1, 2, or 3 areas within the DWMP24
LLFA	Lead Local Flood Authority
LNR	Local Nature Reserve
MCZ	Marine Conservation Zone
NCA	National Character Area
NNR	National Nature Reserve
NRV	Non-Return Valves
ODA	Option Development and Appraisal
ODPM	Office of the Deputy Prime Minister
Ofwat	Water Services Regulation Authority

PO	Planning Objective
PR24	2024 Price Review
PRoW	Public Rights of Way
RBCS	Risk Based Catchment Screening
RBD	River Basin District
RBMP	River Basin Management Plan
RNAG	Reason for Not Achieving Good
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SO	Storm Overflow
SODRP	Storm Overflow Discharge Reduction Plan
SPA	Strategic Planning Area (please note that SPA to an environmental audience usually refers to a 'Special Protection Area' - in this report this term is not abbreviated)
SSSI	Sites of Special Scientific Interest
STW	Sewage Treatment Works
SuDS	Sustainable Drainage Systems
uFMfSW	updated Flood Map for Surface Water
UKCP	UK Climate Projections
WFD	Water Framework Directive
WHS	World Heritage Site
WRZ	Water Resource Zones
YW	Yorkshire Water

NON-TECHNICAL SUMMARY

This non-technical summary provides an overview of the Strategic Environmental Assessment (SEA) of Yorkshire Water's (YW) draft Drainage and Wastewater Management Plan (DWMP24). It summarises the key issues using non-technical language as far as possible to make the report more accessible. For the full findings, reference should be made to the SEA report.

SEA provides an opportunity to consider ways by which the plan can contribute to improvements in environmental conditions; as well as a means of identifying and mitigating any potential adverse environmental effects that the plan might otherwise have. It informs the decision-making process through the identification and assessment of significant and cumulative effects a plan or programme may have on the environment. By doing so, it helps make sure that the proposals in the plan are the most appropriate given the reasonable alternatives. The SEA process is conducted at a strategic level and enables consultation on the potential effects of a plan with a wide range of stakeholders. This assessment has been undertaken as best practice, rather than a statutory requirement.

A.1.1 Overview of the Plan

The DWMP24 takes a long-term view to set out how YW intend to extend, improve, and maintain a robust and resilient drainage and wastewater system encompassing the next 25 years and beyond to meet the requirements of YW's long-term ambitions of reducing sewer flooding and protecting and enhancing the environment; by considering the operation and impact of their wastewater treatment works and storm overflows.

The levels of service considered through the DWMP24 are:

- Modelled hydraulic flood risk (internal sewer flooding and external sewer flooding)
- Modelled storm overflow performance – spills
- WwTW compliance flow and quality

Using different targets for 2050 for these levels of service, YW have considered four scenarios when determining the best value and the least cost plans:

The approach to meet each of these scenarios, whilst providing the best value, or the least cost, is presented within the draft DWMP24. The DWMP24 is an input to the PR24 (Price Review 24) planning process and represents an overall strategic 25 year plan. As such, the outputs of the DWMP24 will be reviewed in context with all other priorities affecting water companies including affordability to customers.

The overall study area aligns with the operational boundary for YW's provision of wastewater services, as shown by the red line boundary in **Figure 1.2.1** of the Environmental Report. This 'Level 1' is split into seventeen Strategic Planning Areas (SPA) (Level 2, generally aligned with the river basins alongside four urban areas - Hull, Leeds, Sheffield, and York); and further into 617 wastewater treatment works catchments (Level 3).

The DWMP24 has been developed in line with Water UK's: 'A framework for the production of Drainage and Wastewater Management Plans'[1].

A.1.1.1 - Working in Partnership

YW recognises that to get the best outcomes for all in the region, it needs to work collaboratively with customers and all organisations who have an interest in the issues. YW has worked with various stakeholders throughout the development of the plan, including the Environment Agency, Lead Local Flood Authorities, Local Planning Authorities, Developers and Environmental Partners. In addition, YW

[1] Water UK (2021) DWMP24 Framework Guidance, available from: https://www.water.org.uk/wp-content/uploads/2021/10/DWMP24_Framework_Report_Main_Report_September_2021.pdf, accessed May 2022.

has engaged with customers through a series of interactive tasks and activities regarding the DWMP24. The results from this research have helped shape the plan.

A.1.2 Stages of the SEA and Consultation

The SEA Scoping Report was the first stage of the SEA. It established the context of the plan (the legal, policy and other requirements; the current environmental, social, and economic conditions, problems and trends) and proposed the SEA methodology, including SEA Objectives.

The consultation bodies (Natural England, the Environment Agency, and English Heritage), along with wider consultees, were consulted on the Scoping Report for a period of five weeks from 24th February 2022 to 31st March 2022. Feedback received during consultation has informed the SEA process.

This SEA Environmental Report is issued for consultation for 12 weeks along with the draft DWMP24, including to the SEA consultation bodies. The draft DWMP24 and associated documents including the SEA, are available to view and download free of charge from Yorkshire Water - Drainage and wastewater management plan. Responses should be provided via this link by **23rd September 2022**.

Feedback received during the consultation will inform the development of the final DWMP24 and associated SEA Environmental Report, which are due to be completed in Spring 2023.

A.1.3 Key Requirements, Issues and Opportunities

As part of the SEA, relevant plans, programmes, and environmental protection objectives relevant to the DWMP24 were identified, along with the baseline environment and likely future without the plan. These are summarised within the SEA Report.

A key change since the Scoping Report is the publication of Defra's Consultation on the Government's Storm Overflow Discharge Reduction Plan[2] (the 'SODRP consultation') on 31 March 2022, aiming to eliminate all harm from storm overflows in the long-term. The consultation sets out three target areas for compliance relating to SO discharge: to cause no local adverse ecological impact, reducing harm near designated bathing waters, and limiting the number of discharges.

Climate change and population growth are key factors which are increasing pressure on the wastewater system (and the wider environment), including increased flood risk, a trend which is expected to continue.

These are key issues in relation to water quality, flood risk, biodiversity, and human health, which the plan seeks to address.

[2] Defra (2022) Consultation on the government's storm overflows discharge reduction plan (defra.gov.uk), accessed May 2022.

A.1.4 How was the plan assessed?

SEA objectives were developed to state the direction and priorities of the SEA; give a structure to ensure a comprehensive and robust appraisal; and provide the basis for the identification of relevant indicators. They are:

Table NTS 1 – SEA Objectives

SEA Topic	Overarching SEA objectives
Biodiversity and Geodiversity	Protect, conserve, and enhance biodiversity and geodiversity, including soils
Human Health	Protect, conserve, and enhance human health and well-being, including resilient communities
Socio-economic	Protect, conserve, and enhance social and economic prosperity
Carbon & Material Assets	Address the causes of climate change and manage and improve efficient use of resources, including embodied carbon, carbon emissions, emissions to air and waste generation
Water Resources	Protect, conserve, and enhance water resources
Flood Risk	Reduce and manage flood risk, increasing flood resilience
Heritage	Protect, conserve, and enhance the historic environment, including archaeology
Landscape	Conserve, protect and enhance the landscape, townscape, and visual amenity
Climate Change Resilience	Adapt, and improve resilience to climate change

The SEA objectives are developed further into an SEA framework, including guiding questions, that has been used to assess if the plan, the components of the plan, and their reasonable alternatives are likely to bring positive, negative, neutral, or uncertain effects in relation to the SEA objectives. Consideration is given to the likely significance of identified effects in accordance with Schedule I to the SEA Regulations.

The SEA process is concerned with likely significant effects, including the measures envisaged to prevent, reduce, and as fully as possible offset any significant adverse effects of implementing the plan. For the purposes of this appraisal, a significant negative assessment (indicated by a 'red' score within the appraisal matrix) is considered to be a significant adverse effect; where the option is implemented by the plan, measures will be required to prevent, reduce, and offset the significant adverse effects.

It is important to note that the assessment has been undertaken at the strategic level, in line with the nature of SEA and the DWMP24. There will naturally be variation in the effects of the plan across the plan area as the receiving environment and the implementation of options vary.

A.1.5 Option development and assessment

The DWMP24 has been produced following a risk and benefits-based approach, following the guidance provided in the DWMP24 Framework. The criteria considered within this process (such as bathing waters, sewer flooding, storm overflows, population growth) provides a good coverage of the SEA topics, particularly in relation to water resources, flood risk, carbon, climate resilience and biodiversity – reflecting the nature of the plan and its objectives for the (water) environment, flood risk and wastewater compliance and the wider Six Capitals approach.

The options considered as part of the DWMP24 have been reviewed through the SEA to ensure all reasonable alternatives have been considered. The options considered range from those to observe, monitor and investigate the wastewater network, to optimize, reduce and enhancement options. The greatest focus has been on two delivery scenarios:

- Improvements to drainage infrastructure by increasing network capacity (e.g., by constructing network storage tanks or storm tanks at wastewater treatment works, for flood risk this includes pumping where appropriate) (i.e., grey infrastructure).
- A hybrid scenario, where retrofit blue-green solutions (e.g., nature-based solutions, sustainable drainage systems, SuDS) reduce runoff to the combined sewer system (to control 50% of impermeable area, IMP50 – i.e., blue/green infrastructure), with further grey solutions to meet the target if still necessary.

A.1.6 Overview of the Draft DWMP24

YW have identified 160 high priority L3 catchments where storm overflow and/or flood risk reduction measures are required; along with ten WwTWs where improvements are required to accommodate growth and climate change whilst remaining compliant with the current environmental permits.

An optimiser tool has identified both the best value and the least cost plan to meet the requirements of each scenario by selecting an option for each L3 catchment. The selected options to address each service area are:

- Storm overflows and flood risk:
    - Least cost plan: the majority of L3 catchments adopting grey infrastructure, with low uptake of the hybrid blue/ green approach.
    - Best value plan: a high proportion of the L3 catchments adopt the hybrid blue/ green approach, with the highest uptake being under scenarios 1 and 2. This reflects the consideration of value provided by the hybrid approach through the tool.
- WwTW compliance: both the least cost plan and the best value plan increase treatment capacity and provide treatment modifications to ensure the WwTWs have sufficient capacity to remain compliant with the current environmental permits.

The draft DWMP24 adopts an adaptive planning approach by providing a framework that allows for the consideration of multiple preferred programmes or activities that could be deployed depending on variable future circumstances, using triggers and pathways to evaluate progress and determine future interventions. As such the assessment of the overall plan considers the range of potential outcomes.

The draft DWMP24 considers those storm overflows within catchments triggered through the Baseline Risk and Vulnerability Assessment (BRAVA) stage, which was undertaken through extensive work in 2019. The subsequent SODRP consultation has been published and is yet to be finalised. YW recognise the need to undertake further work ahead of the final DWMP24 due in March 2023 in line with the Storm Overflow Discharge Reduction Plan which will be confirmed by 1st September 2022. This will determine the long-term delivery strategy for storm overflows in line with the DEFRA guidance, including priority overflows, designated bathing waters (including the recent inland bathing designation at Ilkley) and screening of storm overflows.

A.1.7 Assessment of the Draft DWMP24

The reasons the preferred approach was selected, and other options rejected are set out in **Table 6.2.1** of the Environmental Report.

Table NTS 2 and **Table NTS 3** draw together the total effects of the draft DWMP24 in combination with the underlying trend, to establish the cumulative effect.

The key for **Table NTS 2**:

Major positive	+ + +	Moderate positive	+ +	Minor positive	+	Neutral	0
Major negative	- - -	Moderate negative	- -	Minor negative	-	No relationship	

Table NTS 2 – SEA Assessment Matrix of the Draft DWMP24

	Protect, conserve, and enhance biodiversity & geodiversity, including soils	*Protect, conserve, and enhance Human Health and well-being, including resilient communities*	*Protect, conserve, and enhance social and economic prosperity*	*Address causes of climate change, manage and improve efficient use of resources, inc. carbon, emissions to air & waste generation*	*Protect, conserve, and enhance water resources*	*Reduce and manage flood risk, increasing flood resilience*	*Protect, conserve, and enhance the historic environment, including archaeology*	*Conserve, protect and enhance the landscape, townscape, and visual amenity*	*Adapt, and improve resilience to climate change*
	Biodiversity and Geodiversity	**Human Health**	**Socio-Economic**	**Carbon & Material Assets**	**Water**	**Flood Risk**	**Heritage**	**Landscape**	**Climate Change Resilience**
Core pathway of least cost (grey infrastructure approach)									
Overall DWMP24: during construction	- -	0	+	- -	0		-	0	
Overall DWMP24: during operation	++	0[1] / +[2]	0[1] / ++[2]	- -	++	0[1] / ++[2]	+	0	+
Best value approach (blue/ green infrastructure approach, with some grey infrastructure)									
Overall DWMP24: during construction	-	0	+	-	0		-	0	
Overall DWMP24: during operation	+++	+[1] / ++[2]	++[1] / +++[2]	+	+++	0[1] / ++[2]	+	+	+++

[1] Sewer flood risk remains at 2020 level until 2050 (i.e., accounts for climate change and population growth) (i.e., Scenarios 3 and 4)
[2] Reduces sewer flood risk (i.e., Scenarios 1 and 2)

Table NTS 3 – Summary of total plan effects and cumulative effects

SEA Objective	Total plan effects	Cumulative effects
Biodiversity & Geodiversity	The plan prioritises measures where SOs are impacting priority sites (such as SSSIs) within watercourses. This will provide a significant positive permanent benefit for aquatic biodiversity. As the implementation of the plan progresses, the benefits of the plan will extend across the plan area. WwTW upgrades to cope with additional demand from population growth will prevent damage to aquatic biodiversity from that population increase. The construction of grey infrastructure (and to some extent blue/green infrastructure) and WwTW upgrades will result in localised temporary loss of biodiversity during construction. The significance of the effect will depend on the current land use and ecological value (e.g., ranging from no value within a highway, to high value within a designated site). Careful siting, planning and construction will be required to avoid and minimise impacts. Potential exists for biodiversity net gain within reinstatement (again, this will be location specific). The blue/ green approach offers the potential for long term positive effects on terrestrial biodiversity and geodiversity. Within rural areas, catchment management provides an opportunity to slow the rate of drainage, including of important habitats, contributing to rewilding and supporting natural hydrogeological processes. Within more urban areas, blue/green corridors and SuDS provide opportunities to provide/ enhance biodiversity. The level of benefit achieved will depend on the extent of implementation of these green options, and their design. YW recognise the need to undertake further work ahead of the final DWMP24 in relation to priority overflows and screening of storm overflows.	Climate change will impact wildlife in the future by various means including, but not limited to, drought, timing of seasonal activities, higher frequency of storms, native species redistribution, invasive non-native species, and increased potential for wildfire. Changing climate could impact on the quality of soils across the region through temperature extremes and changing rainfall patterns. Development pressure is likely to increase the risk of habitat loss and fragmentation, particularly outside of the extensive designated areas. Through partnership working, measures such as blue/green infrastructure offer the potential to increase resilience to climate change by allowing the movement of species through the environment and supporting natural soil processes. Reduced spills from SOs and WwTW upgrades will support biodiversity, reducing susceptibility to the above threats.
Human Health	Human health is particularly important in this region where the health of residents is slightly lower than the average for England, with some health indicators significantly below the national average in some parts of the region.	The population of the UK is ageing, putting additional pressures on public finances and services.

SEA Objective	Total plan effects	Cumulative effects
	The plan will reduce sewer flood risk to properties, although the extent of improvements will vary depending which scenario is selected. Whist measures to address storm overflow issues are likely to aid flood risk reduction, only scenarios 1 and 2 aim to reduce the level of risk. The reductions will provide immediate permanent human health benefits in relation to health (exposure to sewage) and well-being (stress, anxiety). The draft DWMP24 does not tackle SOs discharging to designated bathing waters. However, the SODRP consultation indicates that this will be required to be reduced by 2035 and YW recognise the need to undertake further work ahead of the final DWMP24 in relation to bathing waters and screening of storm overflows. These expected measures would provide a permanent positive effect on human health and may increase the uptake of open water swimming, providing further health and well-being benefits. Blue/ green infrastructure measures provide an opportunity to provide access to green spaces with improved connectivity through them, providing a permanent positive effect on human health. The level of benefit achieved will depend on the extent of implementation of these green options, and their design. Potential exists to provide public access above below-ground grey infrastructure assets (such as storage), such as play areas, gyms, etc. (this will be location specific).	Policy is placing increasing emphasis on access to green space, green infrastructure, and improved accessibility to sustainable modes of transport. Surface Water Management measures provide an opportunity to support these measures, improving health and well-being.
Socio-economic	Given the scale of work that will need to be implemented through the plan, there is likely to be a socio-economic boost such as employment opportunities through the construction phase. Whilst this will be temporary, it is expected to continue in the long-term. The plan area experiences higher than average levels of unemployment, with a large number of neighbourhoods being the most deprived nationally. This can result in communities being more susceptible to the effects of flooding (e.g., residents are less likely to have home insurance or available funds for clean-up and replacement of goods). As such, maintaining flood risk at 2020 levels whilst accommodating climate change and growth (Scenarios 3 and 4) provides a neutral, permanent, long-term effect to a more sensitive population; these benefits increase to a moderate positive effect when sewer flood risk is reduced (Scenarios 1 and 2).	In both the short and longer term, there is uncertainty in relation to socio-economics across the country. Whilst the plan is unlikely to substantially affect this, the flood risk reduction and water quality improvement measures will reduce risks and support a good economic and social environment.

SEA Objective	Total plan effects	Cumulative effects
	Where flood risk is reduced and the best value approach is adopted, given the scale of blue/ green infrastructure required, the socio-economic effects are likely to be a major positive, permanent effect. Environmental attractiveness draws in investment and enhances the value of property, contributing to the conditions for growth and economic security, contributing to public health and civic pride. The multi-functional nature of blue/ green corridors can provide active travel routes (such as footpaths and cycle paths), increasing low-cost transport options and recreational opportunities and providing opportunities for community cohesion on a permanent basis.	
Carbon & Material Assets	Given the scale of grey infrastructure (such as below ground storage) to be implemented through the core pathway of least cost, there is expected to be a moderate adverse effect on carbon and material assets through the construction of grey infrastructure, and the subsequent on-going increased wastewater treatment requirements. In contrast, blue/ green infrastructure is typically less resource intensive to construct, operate, or maintain, providing nature-based solutions. There may be opportunities through adaptive planning to increase the uptake of this hybrid approach through the implementation of the plan, thus reducing the significance of the impact. The use of both selected approaches is likely to increase pressure on land use. Grey infrastructure such as below ground storage and WwTW upgrades require relatively small areas of land on a permanent basis. Blue/ green infrastructure must be applied over much larger areas, however, it can be integrated with other land uses.	The future trend is towards reducing carbon emissions and increased resource efficiency, which is not supported through the grey infrastructure approach and is supported through the blue/ green infrastructure approach.
Water Resources	The DWMP24 will result in major positive permanent effects on water quality through reduction in spills from SOs and WwTW improvements to accommodate population growth and the changing climate. This will have secondary benefits for biodiversity, human health, and socio-economics. The benefits increase with the adoption of blue/ green infrastructure through the support of natural hydrological processes such as increased infiltration of surface water. There is potential for short-term, localised, temporary pollution of watercourses through construction works in close proximity to watercourses. However, in line with legal requirements and best practice, these are anticipated to be prevented through good construction practices.	Climate change and growth are anticipated to increase stress on the water environment, such as through changing rainfall patterns, extreme weather events and increased demand for water and associated wastewater treatment requirements. The DWMP24 has accounted for these pressures and is designed to address them to help address these issues.

SEA Objective	Total plan effects	Cumulative effects
Flood Risk	Maintaining flood risk at 2020 levels whilst accommodating climate change and growth (Scenarios 3 and 4) provides a neutral, permanent, long-term effect to a more sensitive population; these benefits increase to a moderate positive effect when sewer flood risk is reduced (Scenarios 1 and 2) (the magnitude of the positive effect will vary based on the extent of flood risk reduction provided). Further positive permanent effects may also be achieved in terms of reduced surface water flood risk where surface water management is improved to reduce the risk of sewer flooding.	Flood risk is anticipated to increase as climate change progresses as a result of changing rainfall volumes and intensity. The draft DWMP24 has accounted for the anticipated changes whilst maintaining or reducing the risk of sewer flooding to help address this issue.
Heritage	At the plan level, there are no anticipated significant effects on heritage assets, although sewer flood risk reduction measures are likely to reduce the sewer flood risk to some heritage assets, such as Listed Buildings, providing a minor positive permanent effect. Construction works, particularly those that involve ground works are likely to have a minor negative effect on heritage assets, particularly archaeology. However, this will be location specific, with potential for significant adverse effects at the project level which will require further controls (see **Table 7.1.1** in the Environmental Report).	Historic assets may be at greater risk from the direct impacts of future climate change, through flooding, sea level change, storms, and other factors; the DWMP24 will help to address those risks associated with sewer flooding.
Landscape	Below ground grey infrastructure, once restored post construction, is not anticipated to have a landscape impact. Where blue/ green infrastructure measures are planned within urban areas, there is potential for a positive benefit in terms of townscape (design dependent); where planned within rural areas there is potential for positive landscape impact (dependent on design reflecting the local landscape charter). Given the proposed scale of implementation of this option, it is noted as a minor positive permanent impact.	Climate change has the potential to impact high value landscapes through changing patterns of rainfall or sea level rise; population growth also has the potential to erode landscape quality. Green/ blue infrastructure may help address these issues where it is implemented.
Climate Change Resilience	Grey infrastructure, such as below ground storage, will provide wastewater storage for later treatment and release, supporting climate change resilience. Blue/ green infrastructure will increase climate change resilience by slowing the flow of water, promoting natural flood risk reduction, supporting biodiversity in terms of habitats and their connectivity and in urban areas helping to counter the urban heat island effect. Given the extent of such infrastructure proposed through the best value approach, this could be a major positive effect.	The plan will support the wider move to increase resilience to climate change.

A.1.8 Measures to Prevent, Reduce & Mitigate Adverse Effects and Enhance Beneficial Effects

Measures have been suggested throughout the SEA process and plan development.

As the plan is taken forward, there are opportunities to prevent, reduce, mitigate, and compensate adverse effects and maximise the beneficial effects of the plan. These are set out in **Table 7.1.1** of the Environmental Report.

A.1.9 Recommended Further Work to Enhance the Plan

It is recommended that consideration is given to the following further work to enhance the plan as it develops and is implemented:

- Consideration should be given to including costs in the optimiser tool associated with the increased wastewater treatment requirements that will arise as a result of the grey infrastructure approach, to reflect the increased treatment capacity required and increased operational costs.
- Given the adaptive planning approach taken by the draft DWMP24, it is recommended that the framework setting out how decisions will be made as the plan is implemented, is reviewed to consider how wider environmental issues are incorporated within the triggers and pathways used to evaluate progress and determine future interventions.
- YW recognise the need to undertake further work ahead of the final DWMP24 24 due in March 2023 in line with the Storm Overflow Discharge Reduction Plan which will be confirmed by 1st September 2022. This will determine the long-term delivery strategy for storm overflows in line with the DEFRA guidance, including priority overflows, designated bathing waters (including the recent inland bathing designation at Ilkley) and screening of storm overflows.
- The modelled costs, benefits and hydraulic performance of the blue/ green infrastructure approach should be kept under review and refined as appropriate as experience of such measures grows. It may be appropriate to undertake pilot schemes in partnership with others (including universities/researchers) to inform the development and implementation of this approach within AMP8; and its assessment within subsequent DWMPs.
- As experience and knowledge of the performance of the blue/ green infrastructure approach grows, its adoption within AMP8 should be increased where feasible within drainage communities as part of the solution (thus reducing the storage volume and subsequent water treatment as well as providing wider benefits).
- YW and wider partners should continue joint working with momentum, which is essential to implement the blue/ green infrastructure approach which can achieve wider social and environmental benefits beyond those directly associated with overflows, flood risk and WwTW compliance.

- Information developed through the plan making stage should be shared where this may assist and influence other stakeholders (e.g., planning authorities, developers, LLFA), particularly where this could influence wider stakeholders.
- Within subsequent DWMP24 cycles, consideration should be given to the potential to include consideration of catchment level nutrient management.

1.0 INTRODUCTION

1.1 INTRODUCTION

This Environmental Report sets out the findings of Stages B and C of the Strategic Environmental Assessment (SEA) process, to support the development of the Yorkshire Water (YW) Drainage and Wastewater Management Plan (DWMP24). DWMPs are guided by Water UK's 'A framework for the production of Drainage and Wastewater Management Plans' (subsequently referred to as the 'Water UK framework'). DWMPs set out the long-term investment plan for drainage, wastewater and environmental water quality, defining priorities for investment.

SEA provides an opportunity to consider ways by which the plan can contribute to improvements in environmental conditions; as well as a means of identifying and mitigating any potential adverse environmental effects that the plan might otherwise have. It informs the decision-making process through the identification and assessment of significant and cumulative effects a plan or programme may have on the environment. By doing so, it helps make sure that the proposals in the plan are the most appropriate given the reasonable alternatives. The SEA process is conducted at a strategic level and enables consultation on the potential effects of a plan with a wide range of stakeholders.

The Water UK framework advises that as DWMPs are not currently a statutory requirement, they do not fall within the remit of the SEA Regulations; however, it is best practice to undertake SEA on the final optimised plan. DWMPs will become a statutory requirement under the Environment Act 2021 which introduces Drainage and Sewerage Management Plans (otherwise known as a DWMP24) however this section is not enacted until April 2023, after the DWMP24 is published. None the less, YW plan to fulfil the requirements of the SEA Regulations. In order that the SEA process is effective in influencing the plan, YW has chosen to integrate SEA into the earlier option definition and appraisal stages in addition to the final optimised plan.

YW recognises that to get the best outcomes for all in the region, it needs to work collaboratively with customers and all organisations who have an interest in the issues – including stakeholders with an interest in planning, development, risk management and the environment.

1.2 OVERVIEW OF YORKSHIRE WATER'S DWMP24

The DWMP24 takes a long-term view to set out how YW intend to extend, improve, and maintain a robust and resilient drainage and wastewater system encompassing the next 25 years and beyond to meet the requirements of YW's long-term ambitions of reducing sewer flooding and protecting and enhancing the environment; by considering the operation and impact of their wastewater treatment works and storm overflows.

Overall, YW adopt a Six Capitals approach within decision making, to represent the resources on which they rely and impact and to expand understanding of risk. The Six Capitals are:

INTRODUCTION

The DWMP24 considers all aspects of the existing wastewater networks (foul, combined and surface water), Wastewater Treatment Works (WwTW), the interconnecting drainage systems from other Risk Management Authorities, such as local authorities and the EA and how these impact the environment, including discharges to rivers, streams, and other waterbodies.

The DWMP24 identifies changes in level of risk to the core YW wastewater services across a range of time horizons, exploring the risks arising from climate change and population growth and the effects these may have on the levels of service provided. A baseline of 2020 has been used, with the plan covering 2025-2050 risks.

The first cycle of the DWMP24 for YW is primarily focused on modelled hydraulic capacity of the wastewater system and changing future risk to sewer flooding, storm overflow operation and wastewater treatment works compliance, as a result of factors such as growth and climate change.

The levels of service considered through the DWMP24 are:

- Modelled hydraulic flood risk (internal sewer flooding and external sewer flooding)
- Modelled storm overflow performance – spills
- WwTW compliance flow and quality

Using different targets for 2050 for these levels of service, YW have considered four scenarios when determining the best value and the least cost plans:

The approach to meet each of these scenarios, whilst providing the best value, or the least cost, is presented within the draft DWMP24. The DWMP24 is an input to the PR24 (Price Review 24) planning process and represents an overall strategic 25 year plan. As such, the outputs of the DWMP24 will be reviewed in context with all other priorities affecting water companies including affordability to customers.

The overall study area aligns with the operational boundary for YW's provision of wastewater services, as shown by the red line boundary in **Figure 1.2.1**. This 'Level 1' is split into seventeen Strategic Planning Areas (SPA) (Level 2) which are generally aligned with the Environment Agency's (EA) river basins alongside four urban areas (Hull, Leeds, Sheffield, and York). These are further split into 617 catchments, (Level 3) (depicted by green shading). **Figure 1.2.2** visualises these levels for the reader's assistance.

Figure 1.2.1 – DWMP24 Study Area

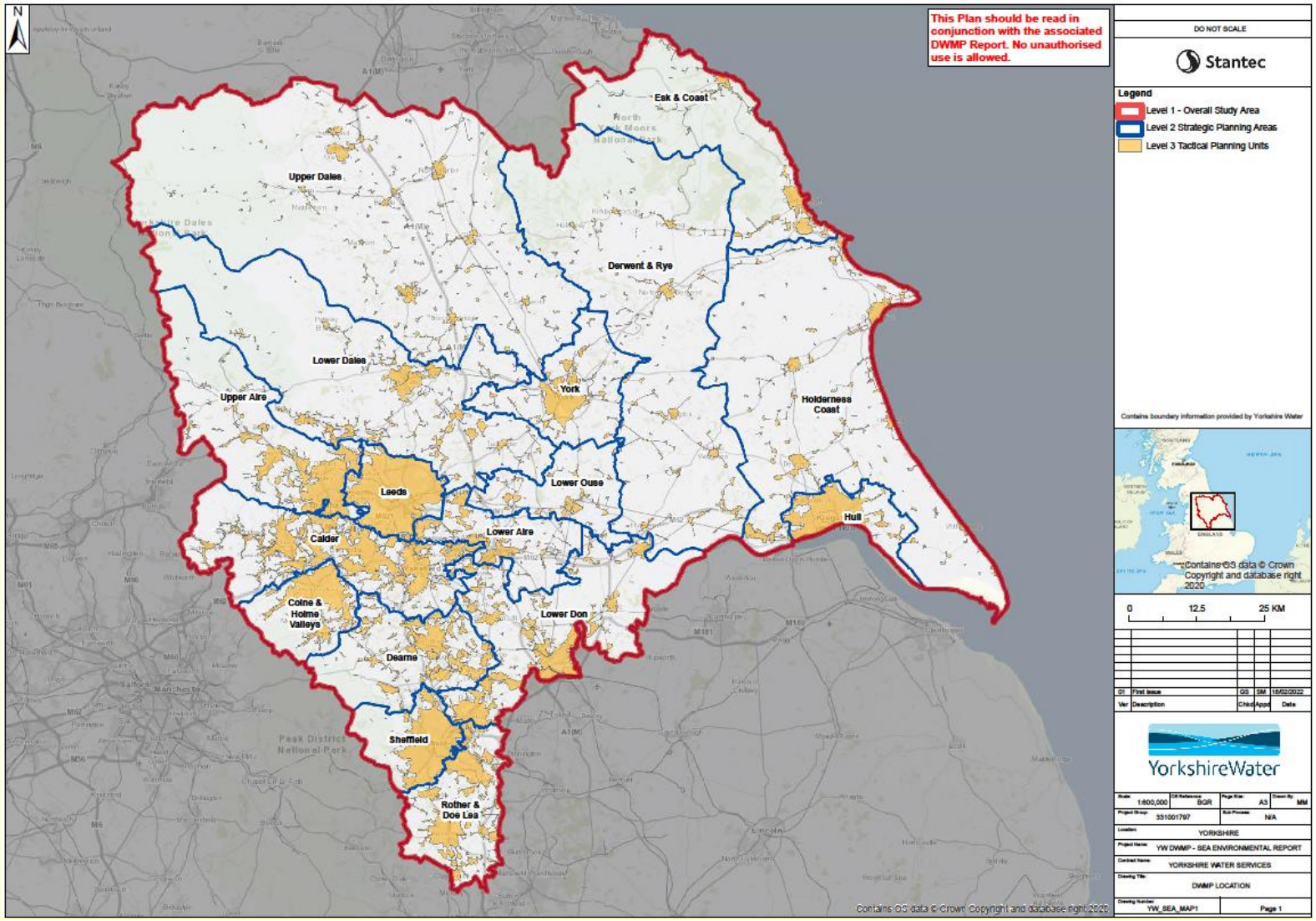
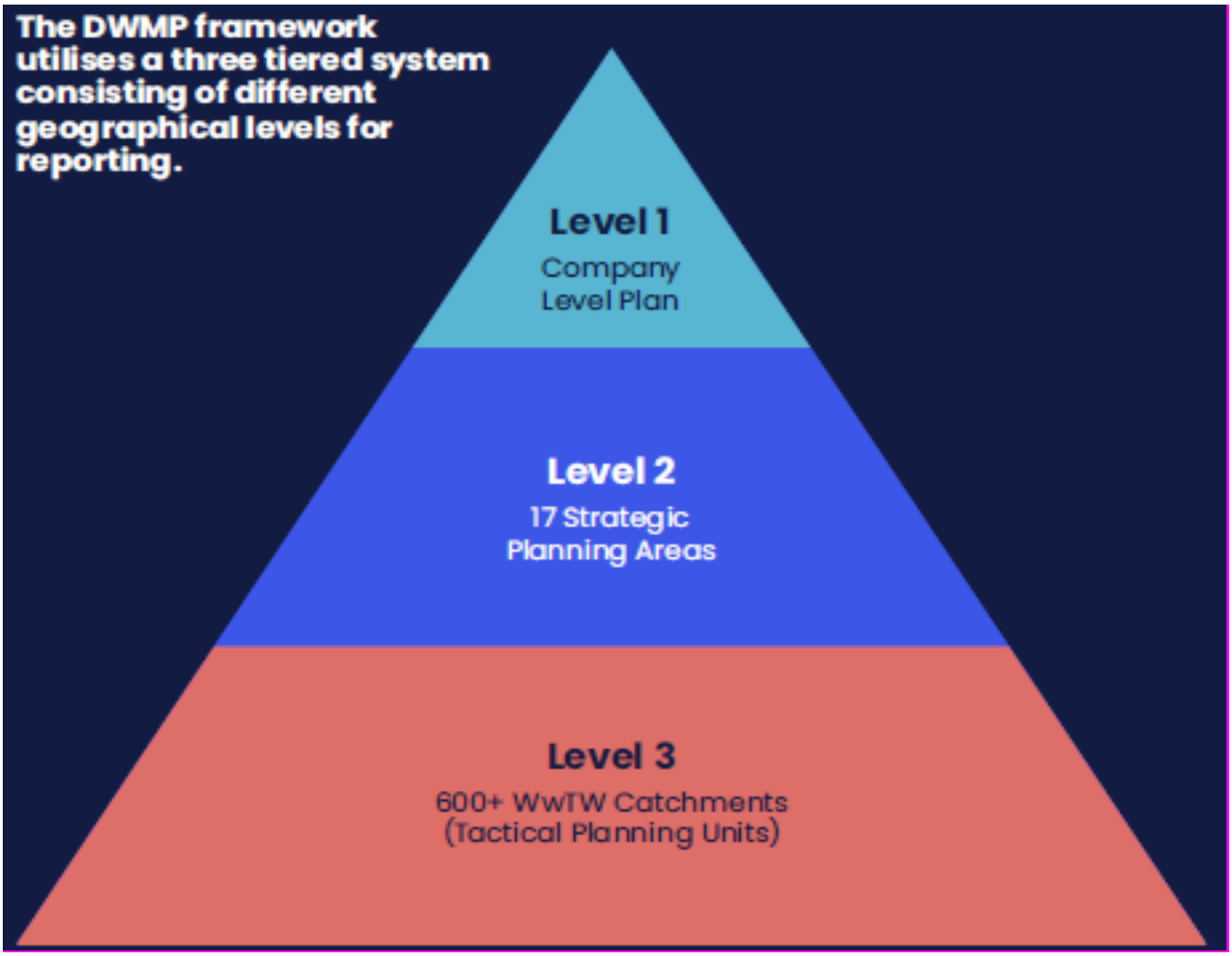


Figure 1.2.2 visualises these levels for the reader's assistance.

Figure 1.1.2 – Visualised Level System for the DWMP24



1.3 RELEVANT DWMP24 GUIDANCE

The Water UK framework sets out the following steps for developing the DWMPs, as shown in **Figure 1.3.1**[Error! Bookmark not defined.].

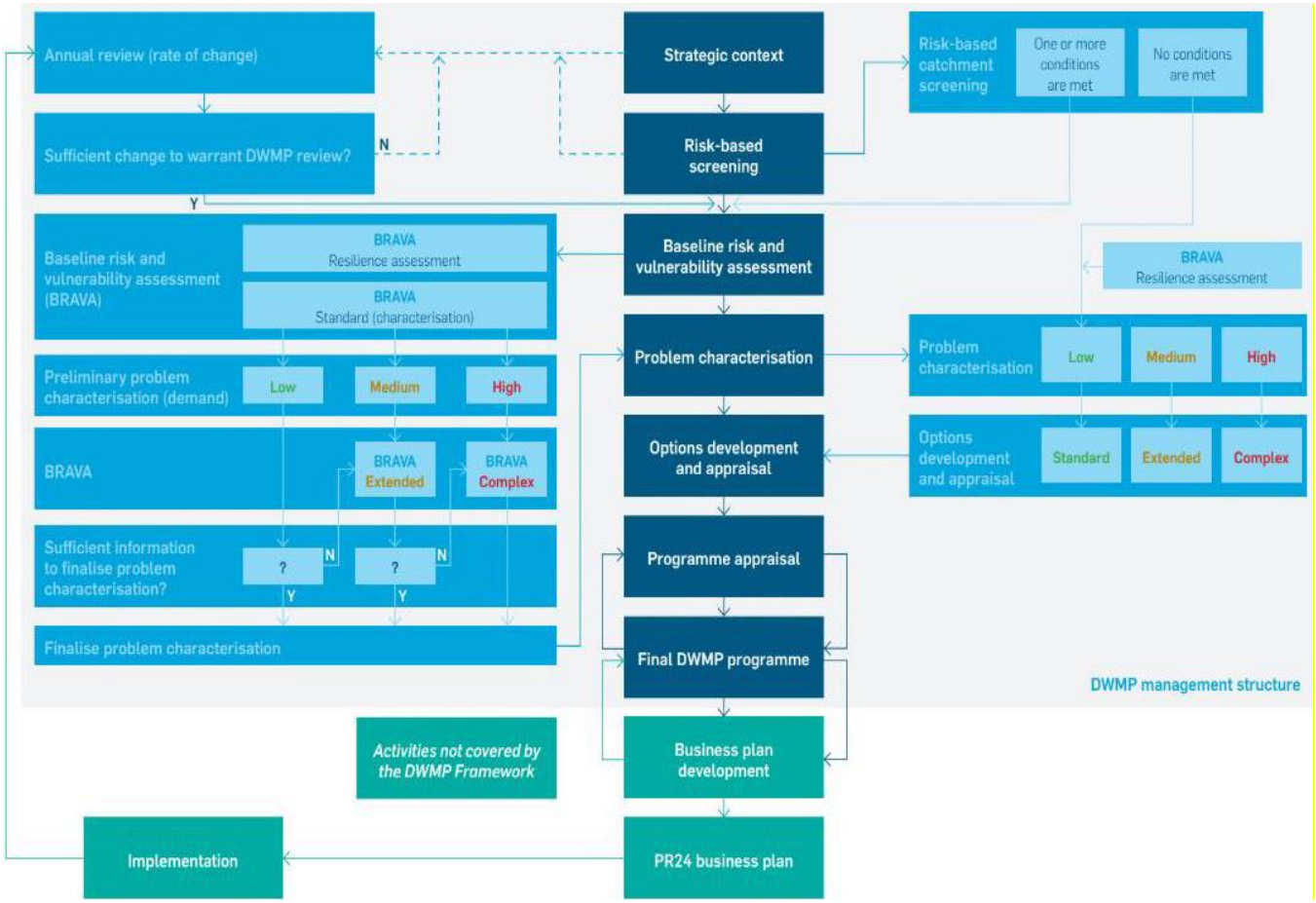


Figure 1.3.1 – DWMP24 Process Diagram from Water UK framework

English and Welsh water and wastewater companies that are subject to regulatory price controls have committed to produce DWMPs in accordance with the Water UK framework[Error! Bookmark not defined.]. The framework results from collaboration between many organisations including Blueprint for Water; Consumer Council for Water; Defra; the Environment Agency; Natural Resources Wales; Ofwat; the Association of Directors of Environment, Economy, Planning and Transport; the Welsh Government; and water companies themselves.

The SEA Process has been completed on the overall plan but has also fed into its creation as is good industry practice. That means that SEA is not a standalone activity within a stage of the DWMP24 process shown above and aligns to many of the stages shown in dark blue within **Figure 1.3.1.** Further details on the alignment of the SEA to the DWMP24 process are set out in **Section 1.4** below.

1.4 STRATEGIC ENVIRONMENTAL ASSESSMENT PROCESS

Article 2(b) of the SEA Directive (Directive 2001/42/EC) defines 'environmental assessment' as a procedure including:

- Preparation of an Environmental Report (including documenting the likely significant environmental effects of the plan, including reasonable alternatives).
- Undertaking consultation on the plan.
- Taking the Environmental Report and consultation results into account in decision-making.
- Providing information when the plan is adopted and showing how the results of the environmental assessment have been considered.

The SEA Directive was transposed into UK law via the Environmental Assessment of Plans and Programmes Regulations 2004 ('SEA Regulations'). The SEA Regulations require an assessment of the effects on the environment of "plans and programmes which are prepared for water management and sets the framework for development consents". The UK Government Practical Guide to SEA, the 'Practical Guide[3], establishes the following stages of the SEA process, summarised as:

- Stage A of the SEA process sets the context, identifies objectives, problems, and opportunities, and establishes an environmental baseline through a scoping stage.
- Stage B is the impact assessment phase when options are developed and refined through assessment.
- Stage C is the recording stage which cumulates in the preparation of this Environmental Report.
- Stage D is a consultation phase on the draft Plan and Environmental Report.
- Stage E is the subsequent monitoring of the significant effects of the implementation of the DWMP24 on the environment.

Stage A was completed through preparation and consultation on an SEA Scoping Report during early 2022.

Schedule 2 of the SEA Regulations sets out what information environmental reports should contain, and this is detailed in **Table 1.4.1**, which also identifies where the information is provided in this report.

Table 1.4.1. – Environmental Report requirement and where this information is provided

[3] Office of the Deputy PM (2005) A Practical Guide to the Strategic Environmental Assessment Directive, available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf, accessed May 2022.

INTRODUCTION

SEA Regulations, Schedule 2 Information for Environmental Reports	Where the information is provided in this SEA Environmental Report
1. An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.	**Section 1.**
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	**Section 3 and Appendix C.**
3. The environmental characteristics of areas likely to be significantly affected.	**Section 3 and Appendix C.**
4. 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 Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.	**Sections 2, 3, and Appendices B, and C.**
5. 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.	**Section 2 and Appendix B.**
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, on issues such as— (a) biodiversity; (b) population; (c) human health; (d) fauna; (e) flora; (f) soil; (g) water; (h) air; (i) climatic factors; (j) material assets; (k) cultural heritage, including architectural and archaeological heritage; (l) landscape; and (m) the inter-relationship between the issues referred to in sub-paragraphs (a) to (l).	**Section 5 and Section 6**
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	**Section 7**
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.	**Section 6**
9. A description of the measures envisaged concerning monitoring in accordance with regulation 17.	**Section 8**
10. A non-technical summary of the information provided under paragraphs 1 to 9.	**Non-Technical Summary**

A key aim of the SEA process is to ensure the appraisal is proportionate, relevant, and informative to the Plan being assessed. The Scoping Report 'scoped in' all the 'SEA topics' identified in item 6 within **Table 1.4.1**.

The relationship between the DWMP24 process and SEA process is set out in **Table 1.4.2**:

Table 1.4.2. – Relationship between DWMP24 Process and SEA

DWMP24 Stage	Overview	SEA Stage
Strategic Context	The strategic context document outlines the purpose of the DWMP24, the objectives and the needs and drivers to be considered in producing the first DWMP24.	SEA scoping phase, documented in Scoping Report.
Risk Based Catchment Screening (RBCS)	A process to assess and prioritise catchments for further investigation based on a number of screening criteria set out in the DWMP24 framework.	
Baseline Risk and Vulnerability Assessment (BRAVA)	Hydraulic modelling and desk top studies to quantify changing risks over time from climate change and population growth. The assessment considers historic performance data such as flooding incidents.	
Problem Characterisation	The risks ('problems') identified by BRAVA are characterised to assess the scale of the risk and the impact it may have to determine the level of optioneering needed.	
Options Development and Appraisal (ODA)	Exploration of the available options and solutions to mitigate the risks. Including identification of solutions which may be delivered in partnership with others.	Assessed in Section 6 of this report.
Programme Appraisal	Select options for delivery based on 'best value' and prioritise the interventions, balancing the impact of cost to customers and the natural capital approaches.	Assessed in Section 7 of this report.
Draft DWMP24	The draft DWMP24 will be issued at the end of June 2022 and will then undergo a period of consultation and customer research.	Draft SEA Environmental Report will be issued in parallel for consultation.
Final DWMP24	The final DWMP24 will be produced in March 2023 following the consultation period. The final plan will be used to inform Business Plan development as part of PR24.	Final SEA Environmental Report will be issued in parallel.

1.5 CONSULTATION

1.5.1 Consultation on the Scoping Report

The consultation bodies (Natural England, the Environment Agency, and English Heritage) were consulted on the Scoping Report for a period of five weeks from 24 February 2022 to 31 March 2022.

Feedback received during the consultation has informed the appraisal process and hence the development of the plan. A summary of the feedback received, and how comments have been addressed, is included in **Appendix A - Consultation responses**.

1.5.2 Consultation on the Environmental Report

This SEA Environmental Report is issued for consultation along with the draft DWMP24, for 12 weeks until the 23rd September.

The draft DWMP24 and associated documents including the SEA, are available to view and download free of charge from Yorkshire Water - Drainage and wastewater management plan. Responses should be provided via this link by **23rd September 2022**.

1.5.3 Partnership Working and Wider DWMP24 Consultation

YW has worked with various relevant stakeholders in the production of the DWMP24, including the Environment Agency, Lead Local Flood Authorities, Local Planning Authorities, Developers and Environmental Partners.

YW's approach to customer and stakeholder engagement has been wide ranging and a mixture of online data portals, direct engagement albeit and customer market research.

An online hub is the main interface with customers and stakeholders, allowing YW to share interacting maps and data reflecting the core issues highlighted in the DWMP24. This is available through: https://drainage-and-wastewater-management-plan-yorkshirewater.hub.arcgis.com/ .

The draft DWMP24 sets out the processes of stakeholder consultation in greater detail. To summarise, the following consultation has taken place:

- Local authorities have engaged through the Leaders Board in a series of roundtable events.
- The DWMP24 team have met regularly with the Yorkshire Forum for Water Customers to discuss the DWMP24 and share and shape progress and has also met with the Environmental sub-committee of this forum.
- There have been monthly liaison and working sessions with local Environment Agency representatives.
- YW commissioned Turquoise to undertake a series of customer market research workshops.
- A Working with Others performance commitment has progressed smaller scale partnership opportunities.

1.6 LIMITATIONS

This report relies on baseline data and information published by third parties. The datasets used have been published by third party organisations and as such neither Stantec or YW are liable for their

accuracy. Whilst the most up to date information has been considered, datasets are regularly reviewed and therefore could change during the SEA Process.

Section 4 (Baseline) has used professional judgement to review published datasets. The baseline information is provided at the strategic level, thus it does not identify some local issues, as these may not represent wider trends across the region. Post SEA, optioneering and project development will identify specific locations and schemes where additional local datasets and baseline information are likely to be required to assess and manage environmental and social impacts. The baseline environment appendix also includes an assessment of a future environmental baseline. The very nature of this predictive assessment means that there is uncertainty in the reporting; for some topics predictions are available (albeit with variability in the spatial and temporal projections (e.g., predictions over 20 years or 25 years); others are reliant on professional judgement and observed trends.

Within **Section 5**, options are assessed as stand-alone measures; **Section 6** assesses the overall approach taken in the plan based on the combination of options and wider measures within the plan. The plan's preferred approach is at the strategic level, using a grey or green/grey approach for catchments. As the plan progresses through implementation these will be developed into more specific schemes, such as below ground storage with uses of green surface water management options. There will naturally be some fluidity within the implementation of measures that arise from the plan, such as the proportion of green and grey options within a catchment based on subsequent more detailed work. Whilst this limits the certainty within the assessment, it offers the potential to increasingly adopt the green approaches as practices develop.

The draft DWMP24 prioritises investment over a 25 year horizon from 2025, PR24 will focus the investment over the next five years (AMP8). It is recognised that levels of confidence of the impacts and uncertainty increase in the longer-term planning horizon, noting that the plan is to be reviewed every five years.

As the development of DWMPs is a new evolving area, some iteration in the DWMP24 and SEA process is expected as the DWMP24 is developed, including in future DWMP24 reporting cycles. The five year review cycle provides an opportunity to review the current findings based on the experience gained within the implementation of this first DWMP24.

The recent Defra consultation on storm overflows (see **Section 2.1**) has changed the requirements for the DWMP24 at a late stage in its development. The final requirements of the document will not be available until September 2022, which is around the time that consultees will return their views on the draft Plan. Further amendments to the plan are likely before it is finalised in March 2023.

The draft DWMP24 adopts an adaptive planning approach by providing a framework that allows for the consideration of multiple preferred programmes or activities that could be deployed depending on variable future circumstances. As such there is uncertainty as to the direction of the DWMP24 and thus the environmental effects, thus the assessment of the overall plan in **Section 6.3** considers the range of potential outcomes.

2.0 POLICY CONTEXT

The SEA Regulations require the environmental report to include:

> *An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.* (SEA Regulations (2004), Schedule 2, paragraph 1).
>
> *The environmental protection objectives, established at international, 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.* (SEA Regulations (2004), Schedule 2, paragraph 5).

2.1 REVIEW OF RELEVANT PLANS, PROGRAMMES AND OBJECTIVES

A full review of the Plans, Programmes and Environmental Protection Objectives relevant to the DWMP24 can be found in **Appendix B** in tabular format. These have been reviewed to establish, where relevant, the requirements applicable to the plan, identify constraints, opportunities, and potential inconsistencies and to inform the development of the SEA Framework.

A key change since the Scoping Report is the publication of Defra's Consultation on the Government's Storm Overflow Discharge Reduction Plan[4] (the 'SODRP consultation') on 31 March 2022, aiming to eliminate all harm from SOs in the long-term. The consultation sets out three target areas for compliance. These are:

1. *Protecting the environment*

Headline target: Water Companies shall only be permitted to discharge from a storm overflow where they can demonstrate that there is no local adverse ecological impact. This must be achieved for all storm overflow sites by 2050. Sub-targets:

- *The headline target must be achieved for most (75%+) storm overflows discharging in or close to high priority sites by 2035.*
- *It must be achieved for all (100%) overflows discharging in or close to high priority sites by 2045.*
- *Water companies must plan to achieve this target for all remaining storm overflow sites by 2050.*

High priority sites include Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), eutrophic sensitive areas, chalk streams and waters currently failing our ecological standards due to storm overflows.

[4] Consultation on the government's storm overflows discharge reduction plan (defra.gov.uk)

POLICY CONTEXT

No local adverse ecological impact means achieving the Urban Pollution Management Fundamental Intermittent standards for Ammonia and Dissolved Oxygen directly downstream of the discharge point.

2. *Protecting public health in designated bathing waters*

Headline target: For storm overflows discharging into or near designated bathing waters, water companies must significantly reduce harmful pathogens by either applying disinfection, such as ultraviolet radiation, or reduce the frequency of discharges to meet the Environment Agency spill standard by 2035.

3. *Ensuring storm overflows operate only in unusually heavy rainfall events*

Headline target: Storm overflows must not discharge above an average of 10 rainfall events per year by 2050. Sub-targets:

- *Water companies must also ensure all overflows, regardless of where they discharge to, have screening controls to limit discharge of persistent inorganic material (as well as faecal and organic solids), and they must be well maintained.*

The consultation notes that 'Water companies must clearly set out how they will meet their storm overflow targets in their Drainage and Wastewater Management Plans'. The SODRP is expected to be finalised in September 2022, as such there is uncertainty as to the targets that will need to be achieved in the final DWMP24, for example, the consultation does not define high priority sites.

2.2 KEY THEMES OF PLANS, PROGRAMMES AND OBJECTIVES

The key themes and messages arising from the applicable plans, programmes, and objectives can be cumulatively summarised as follows in **Table 2.2.1**:

Table 2.2.1. – Key themes and messages of applicable Plans, Programmes and Objectives

SEA Topic	Key theme and messages
Biodiversity and Geodiversity	• Conserve and enhance biodiversity, including designated and non-designated sites, priority habitats and species. • Contribute to nature recovery networks to increase habitat connectivity, including through green infrastructure. • Prevent habitat fragmentation. • Increase resilience of biodiversity to climate change. • Support biodiversity net gain (BNG). • Support the UK Government 25 Year Plan to Improve the Environment. • Protect resources such as high-quality soils, good quality agricultural land and mineral resources. • Promote catchment-wide approach to land management by relevant stakeholders. • Reduce risk of contamination and contribute to remediation.

POLICY CONTEXT

SEA Topic	Key theme and messages
Human Health	• Recognise open spaces, water resources and access to nature are important to support human health, well-being, community cohesion and meet recreation needs. • Ensure communities are safe, prevent flood risks to human health. • Ensure communities have secure water supplies and effective wastewater services. • Promote efficient use of water • Foster social inclusion and community stakeholder participation.
Socio-economic	• Promote a sustainable economy for social and economic prosperity, such as through protection of important infrastructure. • Reduce social deprivation and inequality. • Promote a green economy
Carbon & Material Assets	• Contribute to net zero carbon targets. • Utilise resources efficiently throughout the lifecycle of a scheme. • Prevent and reduce waste generation, including hazardous wastes. • Encourage effective use of land, such as previously developed land. • Reduce harmful air pollutants, especially in sensitive areas.
Water Resources	• Improve water quality in all water bodies to meet WFD targets and designated site targets (for water quality and flow), as outlined in SSSI Definitions of Favourable Conservation Status. • Prevent or limit pollutants into water resources (groundwater, surface water, coastal water). • Develop approaches resilient to climate change (extremes of weather, flood, drought, low flow etc). • Promote efficient use of water. • Contribute to healthy seas and oceans. • Support aquatic biodiversity and ensure high quality drinking water resources. • Support improvements that will benefit bathing water quality.
Flood Risk	• Reduce and manage flood risk. • Increase resilience to flooding from all sources. • Support a catchment wide approach to water management.
Heritage	• Assess, and avoid, minimise and/or mitigate as appropriate, any impacts to heritage assets. • Avoid effects resulting from changes to water level (surface or sub-surface) on all historical and cultural assets, including undiscovered resources. • Reduce the vulnerability and improve the resilience of heritage assets to flooding where works are proposed. • Promote the conservation and enhancement of the historic environment, including historic landscapes.
Landscape	• Protection of landscape, townscape, and seascape (including designated landscapes and landscape character). • Changes in water levels in the landscape (such as through low flows in rivers or flooding) could affect landscape and visual amenity.
Climate Change Resilience	• Increase resilience to the impacts of climate change both at present and in the future (such as changes to water availability, extremes of weather and flooding).

3.0 BASELINE ENVIRONMENT

The SEA Regulations require the environmental report to include:

> *The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.*
> (SEA Regulations (2004), Schedule 2, paragraph 2).
>
> *The environmental characteristics of areas likely to be significantly affected.*
> (SEA Regulations (2004), Schedule 2, paragraph 3).
>
> *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 Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.*
> (SEA Regulations (2004), Schedule 2, paragraph 4).

3.1 BASELINE CONTEXT

An important element of SEA is to identify the current environmental baseline both to identify existing issues and opportunities, and to inform the assessment of potential impacts of the DWMP24. Data informing the baseline has been predominantly sourced from publicly available national datasets and much is associated with the plans, policies, and objectives listed within **Appendix B**, as set out in **Section 2**.

SEA also requires consideration of the likely future baseline in the absence of the DWMP24. This has been considered through review of the available information (such as climate change projections) and consideration of the underlying trends and the likely effects of other plans and projects. Often it is based on professional judgement.

The Baseline Environment Review are presented in **Appendix C** and organised into SEA topics, as set out below. The SEA topics have been selected and organised by considering SEA guidance and the context of the region and the plan being assessed. The future baseline is presented at the end of each SEA topic. The baseline review has been updated in light of feedback received through consultation. The baseline information provides an evidence base on which environmental issues or opportunities resulting from the DWMPs can be predicted and assessed.

The topics have evolved through the process of assessment and consultation, since the Scoping Report, published in early 2022 (see **Section 5.1** for the reasons for these changes).

The SEA topics are:

- Biodiversity and Geodiversity;
- Human Health;
- Socio-economic;
- Carbon & Material Assets;
- Water Resources;
- Flood Risk;
- Heritage;
- Landscape; and
- Climate Change Resilience.

Section 3.2 sets out issues and opportunities for the DWMP24 from the relevant information collected and analysed. This allows YW to analyse where the DWMP24 could prioritise, and where sensitive sites could be most affected by the proposals set out in the DWMP24.

3.2 ISSUES AND OPPORTUNITIES

The key issues and opportunities identified through the baseline environment review and of relevance to the DWMP24 are identified in **Table 3.2.1**. Crossover is inherent across some SEA topics, for example resilience to flood risk resulting from climate change. These occurrences have been outlined where applicable.

Issues and opportunities are broad and therefore not aligned to a particular option, such as installing SuDS or a flow transfer. Rather the issues and opportunities are aligned to the scope of the SEA within the context of drainage and wastewater, and ultimately the DWMP24. This allows us to consider all options, including novel solutions.

Table 3.2.1 – Issues and Opportunities Summary Table

SEA Topic	Issues	Opportunities
Biodiversity and Geo-diversity	• Loss or fragmentation of ecological habitats. • Loss or fragmentation of habitats leads to the loss or reduction in species biodiversity. • Poor drainage services and wastewater pollution could affect aquatic, marine, and terrestrial ecology. This could further impact food chains and natural capital. • Spread of Invasive Non-Native Species (INNS). • Reduced access for people to utilise or visit important habitats with human health, well-being, social education, and recreation consequences. • Loss or degradation of soils and/ or increased soil erosion. • High rates of coastal erosion, • Loss or degradation of good quality agricultural land. • Negative impacts on drinking water sources, including groundwater sources. • Poor soil quality can increase surface runoff with flood risk and erosional impacts. • Contamination risks from operation/ construction. • Intrusion into historical or current landfill sites. • Ever-evolving farming practices such as increased automation may negatively impact soil quality.	• Reduce loss of biodiversity, support recovery, and reduce fragmentation. • Support objectives for BNG. • Incorporate a natural capital approach to grow the area's natural capital. • Use soft engineering techniques for solutions where possible that can improve or create new habitats and/ or sequester carbon. • Support the removal of INNS where future planned options interact with them. • Connect people to nature by improving access to green spaces. • Catchment based land use management, including drainage, can improve soil structure and prevent/ reduce soil erosion at the landscape scale, with subsequent benefits for flood risk, carbon storage and biodiversity. • Ensure soils are protected from contamination, such as during construction and flood events. • Reduce soil erosion, particularly from construction activity when effects on soil can quickly become permanent. • Protect better quality agricultural land from disturbance. • Promote sustainable farming principles, • Commit to avoiding peat in schemes and follow recommendations in the good soils guide.
Human Health	• Increased population and associated development will generate additional demand for wastewater and drainage services. • Construction activities can impact health/ amenity for communities. • Some specific options may impact amenity in negative ways such as odour or dust. • If Public Rights of Way (PRoW) or other access routes are impacted, this could reduce access to green spaces and exercise opportunities. • Poor drainage impacts environmental receptors such as water bodies which can impact human health through consumption (e.g., shellfish consumption), or recreation (e.g., bathing waters).	• Provide a resilient plan for sustainable drainage and wastewater management for customers, one that can handle current and future demand. • Ensure construction activities mitigate/ reduce disturbance to local communities. • Enhance the natural environment for recreation purposes to improve wellbeing. • Reduce the quantity and/ or frequency of discharge events during storms with benefits to natural capital and bathing areas.
Socio-economic	• Uncertainty over inflation and the rising cost of living may impact the region for the	• Recent increased levels of working from home has stimulated certain sectors; other

SEA Topic	Issues	Opportunities
	considerable future. This may impact different sectors disproportionately. • Deprivation is high in parts of the region; within urban areas this is often accompanied by lack of access to green spaces.	opportunities exist through the nationally promoted green recovery. • Economic prosperity and employment opportunities/ stability are likely to be more secure when improving the scale, quality, and resilience of the drainage and wastewater network. • Poor drainage can impact important infrastructure such as transport, especially through flooding. A more resilient network will assist regional connectivity.
Carbon & Material Assets	• New built infrastructure is highly likely to generate GhG emissions from embodied carbon, usually contributing negatively towards carbon neutrality objectives. • During operation, some built infrastructure may be carbon/material intensive, such as through significant power and/ or transport requirements. • Siting new wastewater infrastructure can be difficult because of perceptions and local objection. • Globally, resource use is more competitive than ever with increasing prices and dwindling resources available. • Some current wastewater assets are carbon intensive in their operation. • Increased demand from growth in population or the economy is likely to increase overall energy use across the network and the overall waste generation. • Landfills are becoming more difficult to source and more expensive. • Assets can be vulnerable to extreme weather events and from excessive heat. • Air quality is poor in 65 areas across the region, suggesting high sensitivity to any increase in emission of pollutants to the atmosphere. Local plans aim to reduce air pollution, particularly from industry and transport.	• Opportunity to secure measures with lower resource intensity throughout their life cycle such as green rather than grey options. • Opportunity when modifying existing assets to reduce resource use and emissions (such as to air) through use of newer/innovative approaches. • Building, or rebuilding, assets in a more sustainable way can contribute to sustainable resource use, including supporting reduced carbon, and promoting a circular economy. • Opportunities for increased usage of renewable energy and potential for electricity generation from assets such as utilising heat or water flow. • Opportunity to apply the waste hierarchy within design to prevent, reduce, reuse, recycle, recover waste. • Opportunity to reduce emissions to the atmosphere, to aid improved air quality. • Opportunity to consider the whole life GhG emissions and aim to achieve carbon neutrality through construction, embodied carbon, and operation.
Water Resources	• Population and economic growth will add pressures on the quantity of drainage and wastewater treatment. • Pollution can affect water quality with subsequent effects to biodiversity, the food chain (such as shellfish) and human health through potable water supplies and recreation (such as swimming). • Contamination can occur, or areas previously contaminated can be subject to increased levels.	• Provide a resilient plan for sustainable drainage and wastewater management for customers, one that can handle current and future demand. • Promote lower water consumption schemes which will reduce the amount of wastewater needing to be treated. • Ensure the sustainable use of all receiving waterbodies. • Avoid and control water contamination.

SEA Topic	Issues	Opportunities
	• WFD may fail criteria on achieving Good Ecological Status/ Potential. • Drought conditions can negatively impact surface water flows and quality, as well as the treatment of wastewater by limiting water. • Increased risks for local sensitive environments, such as chalk streams and Ilkley river bathing site. • Sewer leakage can increase nitrate loading, which is especially problematic near/ at drinking water sources. • Ongoing risks from unsewered areas to public drinking water sources in source protection zones/ safeguard zones.	• Allow more water to remain in the natural environment. • Improve water quality in all waterbodies to meet WFD targets and designated site targets (for water quality and flow), as outlined in SSSI Definitions of Favourable Conservation Status. • Consider Common Standards Monitoring Guidelines for key freshwater SSSIs and their water quality targets. These can be found via the Designated Sites View System Site Search (naturalengland.org.uk) • Ensure nitrate safeguard zones are not negatively impacted. • Early integration of climate change resilience measures will have long term benefits to customers and stakeholders.
Flood Risk	• Flood risk, including internal and external sewer flooding. • Existing infrastructure may be entering the later stages of its lifetime; it may have been designed to accommodate lower capacity when population levels were lower; it may have been designed when climate change impacts were not considered; or designed when soft engineering techniques were infrequently used. • Many assets are located close to water bodies, and this ultimately places them at greater flood risk which is anticipated to be intensified by climate change.	• Reduce flood risk from all sources. • Work with partners such as the Environment Agency to reduce overall flood risk for communities. • Increase infrastructure resilience to flooding including climate change. • Encourage soft engineering techniques to sustainably manage wastewater where possible.
Heritage	• Potential impacts to heritage assets (including built heritage and its setting, archaeology, and the historic landscape character), particularly where these are related to the water environment or may be affected by drainage arrangements and flood risk. • There is potential for disturbance of known and unknown heritage assets as well as their setting, especially during construction. • Many wastewater options are intrusive into the ground in a region with strong archaeological heritage.	• Assess, and avoid, minimise and/or mitigate as appropriate, any impacts to heritage assets. • Incorporate improved access to heritage assets where possible, especially for communities where this is previously limited or those who are deprived. • Opportunities exist to discover and preserve archaeological assets which may be previously unknown.
Landscape	• The area is rich in designated landscapes which could be affected by the plan. • Some option types could affect visual amenity. • Construction can directly impact landscape character and visual amenity.	• Excellent opportunity to develop catchment based sustainable solutions that add to designated areas like National Parks. • Protect and enhance the diverse landscape character across the region.

SEA Topic	Issues	Opportunities
	• Some landowners in the region (predominantly upland areas) control large areas such as whole stream catchments which may present difficulties if they are opposed. • Townscape, heritage, and visual amenity within high value urban areas may constrain options.	• Opportunity to redevelop assets with current landscape impacts. • Promote sustainable land use. • Opportunities to work with large landowners to implement catchment driven solutions.
Climate Change Resilience	• Climate change is anticipated to increase extremes of weather and thus the frequency and severity of flood risk. • Climate change is anticipated to increase extremes of weather with implications for biodiversity, such as through low flows within watercourses and habitat fragmentation. • Those least able to adapt to climate change are likely to be more sensitive to the effects, this could increase socio-economic inequalities.	• Options that are resilient to climate change are likely to have wider ranging benefits across almost all other SEA topics from biodiversity to flood risk, and human health. • Increased resilience to extreme weather and extreme flows can have significant positive effects on human exposure to pollutants and sewer flooding; and environmental pollution/ quality. • Improve place making and resilience to climate change to reduce socio-economic inequality and level up disadvantaged areas.

3.3 SPATIAL BASELINE CONTEXT

The Yorkshire region is a diverse mixture of landscapes, topography and geography including small rural villages and large urban and industrial conurbations.

Across this large region, there are a range of climates, from wet and windy moors high in the Dales to flat lowland coastal plains. Water, wool, and coal have all played an important role in driving where and how settlements have developed, with many of Yorkshire's towns and cities built on rivers which have been straightened, diverted, or canalised to harness power for mills.

The Level 2 SPAs were first introduced in **Section 1** and **Figure 1.2.1**, the Study Area. These Level 2 areas provide a more formalised way to engage with stakeholders and customers alongside facilitating a more strategic level of planning above the more detailed catchment (Level 3) assessments. A brief, high level summary of each SPA is provided in **Table 3.3.1**.

Table 3.3.1 – Summary of each Level 2 SPA

Level 2 SPA	Key characteristics
Calder	Mix of urban and rural with more rural density westwards and more urban density in central and eastern areas. Big towns like Wakefield and Halifax with a history of industry across the catchment.

Level 2 SPA	Key characteristics
Colne & Holme Valleys	A steep Level 2 SPA with the Peak District National Park covering approximately 25% of the total area. The area to the west is rural and to the east is quite urban around Huddersfield and surrounding towns with a strong industrial history.
Dearne	The Peak District National Park covers less than 25% of the total area. The area to the west is rural and to the east in quite urban around Barnsley and surrounding towns.
Derwent & Rye	A large Level 2 SPA running north to south east of the coastal region. The area is rural in nature with good quality arable land. A mix of flat areas (within the context of Yorkshire) and undulating areas. The far north is quite steep where the North York Moors National Park intersects, covering between 10-25% of the Level 2 SPA area.
Esk & Coast	Over 75% within the North York Moors National Park and farmland (mix of pastoral and arable). Rural catchment with some small coastal towns like Scarborough.
Holderness Coast	Rural in nature, with areas to the south and east being flat with the Yorkshire Wolds being towards the west and north. Good quality arable land across most of the area with some small coastal towns like Bridlington and Hornsea
Hull	High urban density, some farmland/ rural areas surrounding Hull included. Flat topography.
Leeds	High urban density, rural areas/ greenbelt surrounding Leeds included, with an undulating topography.
Lower Aire	Mix of small towns (coal history of many) and rural areas of good farmland. The area has a flat topography.
Lower Dales	Mostly rural, towns more frequent in central, southern, and eastern areas. Steeper topography in the north west becoming gradually flatter east. Mostly pastoral farming in the uplands, and approximately 25% of the area is in the Yorkshire Dales National Park.
Lower Don	Mix of small town sized settlements (coal history of many) and rural areas of good quality farmland. The area has a flat topography and becomes more undulating towards the west and south-west.
Lower Ouse	Mostly rural and flat with areas of good quality agricultural land. Most of the Level 2 SPA has a history of flooding, with high quality farmland resulting from this.
Rother & Doe Lea	Mixture of urban and rural. Peak District National Park covers less than 10% in the west and the steeper topography is found in the west, becoming better described as undulating towards the east. Towns such as Chesterfield and Bolsover are located here.
Sheffield	Urban, particularly in the east, Peak District National Park covers about 25% in the west, steeper topography in the west, becoming better described as undulating towards the east.

Level 2 SPA	Key characteristics
Upper Aire	Mix of rural and urban with the city of Bradford in the far east, and steeper topography in the west. Topography becoming better described as undulating eastwards. Yorkshire Dales National Park covers about 25% in the west.
Upper Dales	Rural catchment with higher quality farmland in a south easterly direction. Two National Parks intersect (Yorkshire Dales and North York Moors) and make up over 25% of the Level 2 SPA area. Steeper topography in the north west, becoming more undulating in the south-easterly direction.
York	Mix of urban and rural with the city of York in the centre. York is flat and areas around are good quality agricultural land. Most of the Level 2 SPA has a history of flooding, with high quality farmland resulting from this.

4.0 SEA ASSESSMENT METHODOLOGY

The SEA Regulations require the environmental report to include:

Criteria for determining the Likely Significance of Effects on the Environment (SEA Regulations, Schedule 1)

1) The characteristics of plans and programmes, having regard, in particular, to:
a) the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources;
b) the degree to which the plan or programme influences other plans and programmes including those in a hierarchy;
c) the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development;
d) environmental problems relevant to the plan or programme; and
e) the relevance of the plan or programme for the implementation of Community legislation on the environment (for example, plans and programmes linked to waste management or water protection).

2) Characteristics of the effects and of the area likely to be affected, having regard, in particular to:
a) the probability, duration, frequency and reversibility of the effects;
b) the cumulative nature of the effects;
c) the transboundary nature of the effects;
d) the risks to human health or the environment (for example, due to accidents);
e) the magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected);
f) the value and vulnerability of the area likely to be affected due to — i) special natural characteristics or cultural heritage; ii) exceeded environmental quality standards or limit values; or iii) intensive land-use; and
g) the effects on areas or landscapes which have a recognised national, Community or international protection status.

4.1 SEA OBJECTIVES AND FRAMEWORK

This SEA adopts an objective-led approach, in line with the ODPM Practical Guide to the SEA Directive[Error! Bookmark not defined.].

The scope of the objectives has been carefully considered to reflect the SEA Regulations, Water UK framework on undertaking a DWMP24, regional information, and the context of drainage and wastewater. Following the review described in the earlier Sections of this report, the SEA framework has been developed based on:

- the key policy messages and environmental protection objectives identified in the review of policies, other plans, and programmes; and

- the environmental baseline conditions and their likely evolution.

The SEA framework includes nine SEA objectives (**Table 4.1.1**), supported by guiding questions (**Table 4.1.2**); which form the basis for the assessment of the DWMP24. The purpose of the SEA objectives is to:

- State the direction and priorities of the SEA
- Give a structure to ensure a comprehensive and robust appraisal
- Provide the basis for the identification of relevant indicators

When working through the assessment following the scoping stage, the geodiversity SEA objective was found to fit well as part of the biodiversity SEA objective, and it was not adding value to score it individually in the topic of soils and land use. The climate change objective was also edited so that resilience to climate change could be assessed separately to the causes of climate change, which are now clearly included within the material asset's objective. As such, the final SEA objectives are as follows:

Table 4.1.1 – SEA Topics and SEA Objectives

SEA Topic	Overarching SEA objectives
Biodiversity and Geodiversity	Protect, conserve, and enhance biodiversity and geodiversity, including soils
Human Health	Protect, conserve, and enhance human health and well-being, including resilient communities
Socio-economic	Protect, conserve, and enhance social and economic prosperity
Carbon & Material Assets	Address the causes of climate change and manage and improve efficient use of resources, including embodied carbon, carbon emissions, emissions to air and waste generation
Water Resources	Protect, conserve, and enhance water resources
Flood Risk	Reduce and manage flood risk, increasing flood resilience
Heritage	Protect, conserve, and enhance the historic environment, including archaeology
Landscape	Conserve, protect and enhance the landscape, townscape, and visual amenity
Climate Change Resilience	Adapt, and improve resilience to climate change

Table 4.1.2 – SEA Objectives and their guiding questions

SEA Topic	Overarching SEA objectives	Guiding Questions
Biodiversity and Geo-diversity	Protect, conserve, and enhance biodiversity and	Will it affect the conservation status of any internationally designated sites (Special Protection Areas, Special Areas of Conservation (SACs), Ramsar sites)?

SEA Assessment Methodology

SEA Topic	Overarching SEA objectives	Guiding Questions
	geodiversity, including soils	Will it affect the conservation status of any nationally designated sites (Sites of Special Scientific Interest (SSSIs)? Will it affect the conservation status of any other designated sites (local wildlife sites)? Will it contribute to biodiversity loss/ gain? Will it affect habitat connectivity/ fragmentation? Will it affect the freshwater or coastal environment, habitats, and species? Will it affect irreplaceable habitat such as ancient woodland? Will it affect the introduction or spread of INNS? Will it affect natural capital and ecosystem services? Will it avoid damage to geologically important sites (e.g., geological SSSIs)? Will it protect and enhance the quality of soils? Will it protect, conserve, and enhance resources, such as high-quality agricultural land, sterilisation of mineral resources, soil erosion and nutrient loading of waterbodies? Will it promote the sustainable use of land, such as using previously developed land? Will it create contamination or contribute to remediation?
Human Health	Protect, conserve, and enhance human health and well-being, including resilient communities	Will it affect access to nature, particularly for those living within urban or deprived areas? Will it affect the environment for other users including for recreation, tourism and navigation? Will it affect human health and well-being through access to resilient, high quality, sustainable and affordable wastewater systems? Will it affect human health and well-being through access to a resilient, high quality, sustainable and affordable supply of water? Will it address specific customer concerns?
Socio-economic	Protect, conserve, and enhance social and economic prosperity	Will it affect opportunities for recreation and tourist activities? Will it affect economic development/ prosperity? Will it affect social deprivation and inequality? Will it affect important infrastructure (such as hospitals, roads, rail)?
Carbon & Material Assets	Address the causes of climate change and manage and improve efficient use of resources, including embodied carbon, carbon emissions, emissions to air and waste generation	Will it contribute towards net zero targets? Will it use natural rather than built solutions where appropriate? Will it make efficient use of existing infrastructure? Will it minimise the demand for resources during construction (such as through the use of soft engineering solutions rather than hard engineering solutions)? Will it minimise the demand for resources during operation (such as through avoiding pumping requirements)? Will it affect emissions of pollutants to air, including in sensitive locations (e.g., in proximity to an AQMA/ an ecologically sensitive site)? Will it affect waste generation, including hazardous wastes?
Water Resources	Protect, conserve, and enhance water resources	Will it enable better management of surface water before entering sewers? Will it affect coastal water quality (including bathing waters, shellfish waters)? Will it affect surface water quality or quantity? Will it affect groundwater quality or groundwater recharge? Will it affect drinking water or water abstraction zones? Will it contribute to or conflict with the achievement of WFD objectives (e.g., Good Ecological Status)? Will it affect contaminants entering the receiving environment?

SEA Assessment Methodology

SEA Topic	Overarching SEA objectives	Guiding Questions
		Will it reduce the volume and frequency of SOs?
Flood Risk	Reduce and manage flood risk, increasing flood resilience	Will it promote catchment-based, and Sustainable Drainage Systems (SuDS) based solutions? Will it affect the resilience of water and wastewater systems? Will it affect flood risk elsewhere? Will it affect sewer flooding events? Will it be vulnerable to flood risk itself?
Heritage	Protect, conserve, and enhance the historic environment, including archaeology	Will it affect archaeology, including unknown archaeology? Will it affect an historic designation/ feature? Will it affect the setting, the buffer, or significance of a historic designation/ feature? Will it affect access to important heritage assets within the region?
Landscape	Conserve, protect and enhance the landscape, townscape, and visual amenity	Will it affect designated landscapes and features, including National Parks and Areas of Outstanding National Beauty (AONBs)? Will it affect landscape character, including tranquillity and visual impact? Will it affect the townscape? Will it affect the seascape?
Climate Change Resilience	Adapt, and improve resilience to climate change	Will it help to restore the natural ecosystem function and promote resilience to climate change? Will it affect the environmental resilience of the water environment to climate change, flood risk and drought? Will it affect vulnerability to risks associated with climate change effects (e.g., reduce the adverse effects of droughts and floods, reduce the heat island effect)? Is it vulnerable to climate change?

4.2 ASSESSMENT METHODOLGY

The DWMP24 has been assessed using the SEA framework above. The assessment indicates if the plan, the components of the plan, and their reasonable alternatives are likely to bring positive, negative, neutral, or uncertain effects in relation to the SEA objectives. Consideration is given to the likely significance of identified effects in accordance with Schedule I to the SEA Regulations, listed at the start of this Section.

The SEA process is concerned with likely significant effects, including the measures envisaged to prevent, reduce, and as fully as possible offset any significant adverse effects of implementing the plan. For the purposes of this appraisal, a significant negative assessment (indicated by a 'red' score within the appraisal matrix) is considered to be a significant adverse effect; where the option is implemented by the plan, measures will be required to prevent, reduce, and offset the significant adverse effects.

The following terms are used in the appraisal:

- **Likely future without the plan**: if the plan is not adopted, the likely future based on the effects of other expected plans, projects, and underlying trends.

- **Secondary or indirect effects**: effects that are not the direct result of the plan but occur away from the original effect or as a result of a complex pathway.
- **Cumulative effects**: for instance, where several options each have insignificant effects but together have a significant effect; or where more than one policy in the plan has a combined effect.
- **Synergistic effects**: individual effects interact to produce a total effect greater than (or less than) the sum of their total effects.
- **Total effects of the plan**: the combined effects of all the polices within the plan.
- **Cumulative effects of the plan**: the total effects of the plan together with the likely future without the plan.
- **Cross border effects**: effects outside of the area.
- **Temporary effects**: effects that are not permanent, such as occur during construction. These may be short- to longer-term temporary effects.
- **Short term** (0-5 years, i.e., the next AMP cycle), **medium term** (up to 2050), **long term** (beyond 2050).
- **Certainty**: the level of surety of an effect.

The above types of effects have been considered when conducting the assessment and where relevant they are referenced in this report.

It is important to note that the assessment has been undertaken at the strategic level, in line with the nature of SEA and the DWMP24. There will naturally be variation in the effects of the plan across the plan area as the receiving environment and the implementation of options vary.

4.3 HOW ARE LEVEL 2 SPAS TO BE ASSESSED?

The Water UK framework recommends undertaking SEA on the final Plan, which is for Level 1, the highest and most strategic level of the DWMP24. However, a requirement of the Water UK framework is also to undertake the development of options with an understanding of the environmental and social impacts, supported by SEA requirements.

Undertaking SEA of the final plan was deemed unlikely to be effective in influencing the plan, development of options, and its environmental effects, as such the SEA was carried out during the development of the plan.

SEA Assessment Methodology

To keep the assessment manageable and informative, the assessment of options has been kept relatively strategic within the SEA, and as such each Level 2 SPA was judged appropriate for assessment. As there were 17 Level 2 SPAs, this was judged to be a good number for a meaningful assessment. The alternative would be to apply options to each of 600+ Level 3 catchments that passed through risk analysis (Level 3), or to have grouped these Level 3 catchments into categories based on criteria such as urbanisation and land use. However, this would be too broad and result in an overly detailed assessment (so not appropriately 'strategic') and would be unmanageable.

5.0 ASSESSMENT OF OPTIONS

5.1 DWMP24 PROCESS AND COMPATIBILITY WITH THE SEA

The DWMP24 has been produced following a risk and benefits-based approach, following the guidance provided in the DWMP24 Framework set out in **Section 1.** This process is expanded upon in **Table 5.1.1** below, including setting out the factors considered in the development of the DWMP24.

Table 5.1.1 – DWMP24 Framework Process

DWMP24 Stage	Overview
Risk Based Catchment Screening (RBCS)	High level risk-based assessment of all Level 3 catchments within the YW region against 17 indicators to establish potential levels of risk, both now and in the future. Those catchments identified as carrying higher levels of risk proceed to the more detailed Baseline Risk and Vulnerability Assessment (BRAVA). The indicators included: • Bathing or Shellfish Waters (SOs discharging to Bathing Waters or Shellfish Waters) • Continuous or intermittent discharges to sensitive waters (Part A) • Storm Overflow Assessment Framework (SOAF) (those overflows previously triggered based on spill frequency and included in the WINEP programme for PR19) • Capacity Assessment Framework (CAF) (the overall capacity of each L3) • Internal Sewer Flooding • External Sewer Flooding • Pollution incidents • WwTW Quality Compliance • WwTW Dry Weather Flow (DWF) Compliance • Storm Overflows (breach of Environment Agency permit) • Risk from interdependencies with other sources of flooding • Planned residential development • Sewer collapse • Sewer blockages
Baseline Risk and Vulnerability Assessment (BRAVA)	Hydraulic modelling and desk top studies to quantify changing risks over time from climate change and population growth. The assessment considers historic performance data such as flooding incidents.
Problem Characterisation	The risks ('problems') identified by BRAVA are characterised to assess the scale of the risk and the impact it may have to determine the level of optioneering needed.
Option Development and Appraisal (ODA)	Exploration of the available options and solutions to mitigate the risks using YW's Decision Making Framework analytical tool (the 'optimiser tool'). The assessment identifies options to achieve the outcomes identified within Scenarios 1 to 4 (see **Section 1.2**) through consideration of: CAPEX costs, OPEX costs, length of river where water quality would improve (both in terms of ecology and bathing), area from which surface water would be intercepted or separated from combined sewer, internal flooding incidents, external flooding incidents, SO spill frequency and volume, area of green space restored or protected, overflow pump run time, operation carbon, embodied carbon, and total storage volume.

DWMP24 Stage	Overview
Programme Appraisal	Select options for delivery based on 'best value' (or least cost) and prioritise the interventions, balancing the impact of cost to customers and the natural capital approaches.

The DWMP24 process itself provides a good coverage of the SEA topics, particularly in relation to water resources, flood risk, carbon, climate resilience and biodiversity – reflecting the nature of the plan and its objectives for the (water) environment, flood risk and wastewater compliance and the wider Six Capitals approach.

The assessment shows less consideration of the historic environment and landscape than other SEA topics, again reflecting the nature of the plan. These topics are however considered through the SEA and will be subject to the usual development management controls as the plan is implemented hence this is not considered to be an issue. Overall, the SEA topics are well covered within the DWMP24 development process, demonstrating integrated consideration of the SEA themes throughout the plan production.

5.2 OPTION DEVELOPMENT AND CONSIDERATION OF REASONABLE ALTERNATIVES

The DWMP24 Option Development and Appraisal stage identified the generic options available, and their hierarchy as set out below in **Table 5.2.1**, as outlined in the Scoping Report. These options were reviewed by the SEA team to ensure all reasonable alternatives were being considered.

Following discussion, the following options were not considered to be reasonable alternatives and were not considered further at this stage:

- Disinfection (such as ultraviolet radiation) of SO discharges to reduce harmful pathogens to bathing waters, as suggested within the headline target of the SODRP consultation. The focus has instead been on removal of SOs or reducing the frequency of SO discharges. Disinfection is energy intensive, has a high capital cost and requires a large area of land. Further consideration may be given to disinfection once the SODRP requirements are confirmed, or within later DWMP24 cycles if the 2035 target cannot be met.

- Installation of screens on SOs to limit the discharge of persistent inorganic material as well as faecal and organic solids. The SODRP consultation sets out these will be required by 2050. The current focus is on removal of SOs that cause harm, thus eliminating the need for a screen. Further consideration will be given to the installation of screens once the SODRP requirements are confirmed, or within later DWMP24 cycles once it is known which SOs will remain in use.

Assessment of Options

- Catchment management in relation to nutrient load is beyond the scope for the first DWMP24 as it is typically considered by water companies in relation to drinking water quality. However, this issue has increased in profile recently in relation to the need to demonstrate 'nutrient neutrality' within plans and projects to demonstrate there is no net increase in nutrients so that they do not add to existing nutrient burdens at certain sites. Applications for land uses which might impact upon the wastewater system are affected, including applications for new homes. At this stage this is considered outside of the scope of the DWMP24, however this situation will need to be kept under review. Consideration will be given to inclusion of this issue within later DWMP24 cycles. Catchment management in relation to flows is however within the scope.

- Tankering wastewater to WwTW since it is unacceptable as a permanent solution due to carbon and impact on local residents.

- Greywater and blackwater treatment and reuse domestically will be addressed through influencing planning policy at this stage and considered further within subsequent DWMP24 cycles; further understanding is required as to its acceptability to customers.

Further options may develop over the long-term horizon of this plan as a result of advancing science and technology and societal changes. These will need to be considered within the five-year DWMP24 review cycle.

Table 5.2.1 –Hierarchy of options considered in the DWMP24

DWMP24 Options	
Observe	Observe catch and review again within future DWMP24 cycles.
Monitor	Monitor catchment performance; plan interventions for future risk of threshold breaches.
Investigate	Additional data or information required; hydraulic model development, water quality monitoring, inflow and infiltration investigations.
Optimise	Asset optimisation; SMART networks control; maximise existing capacity and headroom.
	Domestic and business customer education; incentives and behaviour change (reduce fats, oils, grease, wet wipes etc.); water efficiency measures; or trade effluent control.
	Working in partnership
Reduce	Surface water management/blue green corridors; Sustainable Drainage Systems (SuDS); or storm management.
	Property level flood resilience; network lining; network or treatment modification.
Enhance	Construct new assets using efficient construction approaches.
	Increase treatment capacity; rationalisation and decentralisation.
	Additional network capacity; storage; separate flows.

	Integrated catchment solutions.

In relation to improvements to storm overflows and flood risk, these individual options were subsequently developed into two delivery scenarios:

- Improvements to drainage infrastructure by increasing network capacity (e.g., by constructing network storage tanks or storm tanks at wastewater treatment works, for flood risk this includes pumping where appropriate) (i.e., grey infrastructure).

- A hybrid scenario, where retrofit blue-green solutions (e.g., nature-based solutions, sustainable drainage systems, SuDS) reduce runoff to the combined sewer system (to control 50% of impermeable area, IMP50 – i.e., blue/green infrastructure), with further grey solutions to meet the target if still necessary.

5.3 LEVEL 1 SEA ASSESSMENT OF OPTIONS

The options have been first assessed across the whole Level 1 plan area using the SEA framework (**Table 4.1.1 and 4.1.2**). Results are presented in **Table 5.3.1** below, with further details of the options, assumptions made, and narrative supporting the assessment provided in **Table 5.3.2**.

KEY:

Major positive	+ + +	Moderate positive	+ +	Minor positive	+	Neutral	0
Major negative	- - -	Moderate negative	- -	Minor negative	-	No relationship	

Assessment of Options

Table 5.3.1 - Assessment of options using SEA framework (generic to the whole DWMP24)

Level 1 – Whole Study Area										
Options:	***SEA Topic:***	**Biodiversity and Geodiversity**	**Human Health**	**Socio-Economic**	**Carbon & Material Assets**	**Water**	**Flood Risk**	**Heritage**	**Landscape**	**Climate Change Resilience**
Asset optimisation/ SMART networks					+	+	++			+
Maximise existing capacity and headroom		+	0	0	+	+	++	0	0	++
Customer campaigns		+	0	+	+++	++	+			++
Working in partnership		++	++	++	++	++	++	++	++	++
Surface Water management/blue green corridors		+++	++	+	++	+++	+++	0	++	++
Sustainable Drainage Systems or storm management		++	+	+	+	+	++	0	+	++
Property level flood resilience			-	+	-	-	-	0	-	-
Network lining			+		+	+	+			+
Network or treatment modification					+	+	++			+
Integrated catchment solutions		+++	++	-	+	++	+++	0	+++	+++
Additional sewer network capacity		0	0	+	- -	++	+++	0	0	0
Increase treatment capacity		-	-	-	- -	++	++	- -	- -	+
WwTW rationalisation		0	+	+	0	++	++	0	0	0
Decentralisation		-	-	-	- -	++	++	- -	- -	+
Increase storage capacity		-	0		-	++	++	-	-	+
Separate flows		-	0		-	+++	-	-	0	+
System flow transfer		-	0	0	- -	0	+++	-	-	++
SO rationalisation		-	0	0	0	0	-	0	0	0

Table 5.3.2 – Narrative supporting the assessment of options using SEA framework (generic to the whole DWMP24)

General Options	Specific options	Description and example options	Example of specific options and the assumptions made for assessment
Observe, monitor and investigate options are not included in this table as they will not be assessed through SEA given they were looked at in an earlier stage of the DWMP24 process, with only applicable Level 3 catchments moving forward in the process.			
Optimise	Asset optimisation/ SMART networks	Intelligent network operation, including monitoring and management measures. e.g., real time weather monitoring linked to sewer flow management.	The option is assessed on the basis that no, or minimal, materials and construction are required, and that it aligns more with green options than grey options. It provides the opportunity to manage flows, for example by diverting flow away from a storm overflow (SO) when a storm is imminent to available downstream capacity for storage or treatment. As such it provides benefits for water quality, flood risk, climate resilience and material assets through more effective use of existing assets, without the requirement for substantial network changes. In this way, it helps to address the causes of climate change and supports resilience to climate change.
	Maximise existing capacity and headroom	This option aims to utilise existing capacity in drainage infrastructure to maintain/reduce storm discharges to the environment. Or, discharging through another SO (abandoning one storm overflow and modifying another nearby so that there is one spill to the environment instead of two).	This option is assessed on the basis that no or minimal new infrastructure is required. It provides the opportunity to manage flows, for example by diverting flow away from a SO when a storm is imminent to available downstream capacity for storage or treatment. As such it provides benefits for water quality, flood risk, climate resilience and material assets through more effective use of existing assets, without the requirement for substantial network changes. In this way, it helps to address the causes, and resilience to, climate change.
	Customer campaigns	Continue ongoing business campaigns across surface water management, education, and more that are in place between YW, its customers, and external partners.	This option is assessed on the basis it aims to reduce flow to the sewer network (both domestic and non-domestic flows). The option is primarily driven on an optional (stakeholder buy in) type model, leading to cost-savings for those on a water meter, rather than imposition of high-cost requirements to customers. The option factors in a range of cost options, with a preference towards low-cost measures (such as water-butts), particularly for existing developments. Therefore, inclusivity is somewhat inherent in the option type, which is relevant within the assessment against the socio-economic SEA objective, providing particular benefit to those in deprivation (assuming they are metered and noting that not all customers are likely to be metered by 2030). As such, levels of deprivation across catchment types, influences the socio-economic score for this option.

Assessment of Options

			This option also includes more substantial measures such as permeable paving, rainwater harvesting systems, green roofs and grey water reuse. Such measures may be feasible both in new development, and in some instances by retrofitting. Whilst these may be outside the direct control of YW, YW will have some influence through partnership working (such as through local authority planning policy) and direct promotion of such measures with customers. The intention of this option is to reduce flows to the sewer network and WwTWs, reducing SO discharges by allowing an increased proportion of sewerage to be treated within the capacity of WwTWs, thus improving water quality. This option assesses positively in terms of addressing the causes of climate change and material assets (noting that some measures may require increased resource use to implement, however they would reduce water consumption), water and flood risk. In areas of deprivation, there is a minor positive effect from these measures for metered customers in instances where low-cost retro fit measures are implemented and where wider measures are implemented within new developments. It assesses positively in terms of resilience to climate change through reducing water consumption as pressure on resources increases.
	Working in partnership	Working in partnership with others (such as other LLFA and wider organisations), to implement programmes with multiple benefits beyond those directly relevant to Yorkshire Water. e.g., working in partnership with a highway authority to implement a SuDS scheme which reduces both highway flooding and the spill frequency at storm overflows. Or working with housing authority to separate drainage whilst housing renovations are undertaken.	Whilst this approach would effectively implement other options within the DWMP24 (which are each individually assessed), working in partnership increases the potential to implement options which are multi-functional, providing a wide range of benefits beyond just those relevant to drainage. For example, green infrastructure may be able to provide flood alleviation along with open spaces and active travel routes and biodiversity improvements, which allow efficient use of land, help to combat the urban heat island effect, enhance townscapes, provide health and well-being benefits through access to greenspace, and provide efficiency and accessibility in relation to resource use. The full suite of benefits would be unlikely to be able to be delivered within the scope of a drainage only scheme. Given the potential for wide ranging benefits, this approach appraises positively across all the SEA objectives (noting that there will be some variation depending on the nature of the options implemented in partnership). Typically, partnership working requires a longer lead in time.
Reduce	Surface water management/	An option aiming to 'hold back' storm water and then release when suitable to sewer if it	Blue/green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. In terms of drainage, they slow the flow

Assessment of Options

	blue green corridors	cannot be infiltrated. This option was assessed on the basis that it would be a multi-functional corridor providing drainage through SuDS to attenuate runoff before it enters the sewer network (and groundwater), typically also providing access routes and green spaces. e.g., ponds, swales, roof gardens, rain gardens, greening up a city centre thoroughfare with above-ground SuDS features and planting.	of, and retain surface water, before its infiltration to the ground, discharge into watercourses or if necessary, sewer; they reduce the total flow and peak flows within the sewer network and to STWs, reducing the frequency and extent of SO discharges, thus offering water quality improvements. The volume of wastewater requiring treatment also reduces. Slowing the rate of drainage promotes natural flood risk reduction and thus climate resilience. However, at the current time, blue/ green corridors provide less certainty of the level of flood risk reduction which can be achieved, when compared to the traditional grey infrastructure options. The multi-functional nature of blue/ green corridors also provides opportunities in terms of human health and well-being, amenity, and biodiversity. In urban areas they help to counter the urban heat island effect, improving resilience to climate change. Typically, they are not resource intensive to construct, operate or to maintain, providing nature-based solutions. This option requires an integrated approach with other land uses and partnership working, such as with landowners, local authorities, and developers and as such requires a longer lead in time.
	Sustainable Drainage Systems/ storm management	SuDS features mimic natural processes, holding back surface water runoff on the surface, promoting infiltration to groundwater and discharge to watercourses in preference to discharge to the sewer network. This option covers individual features (as opposed to corridors). e.g., SuDS attenuation basin which will be dry outside of high flow events, ponds/ wetlands.	This option is assessed on the basis that it is a green, SuDS based option, designed for both water quality and quantity improvement. Typically, there will be less opportunities for multi-functional provision with individual SuDS features than blue/green corridors, however they assess positively in terms of material assets (assumes low carbon construction and minimal maintenance), biodiversity (likely to provide biodiversity gains – depends on nature of implementation), provide health and social benefits through improved environment, and climate resilience. In terms of drainage, they slow the flow of, and retain surface water, before its infiltration to the ground, discharge into watercourses or if necessary, sewer; they reduce the total flow and peak flows within the sewer network and to WwTWs, reducing the frequency and extent of SO discharges, thus offering water quality improvements. The volume of wastewater requiring treatment also reduces. Slowing the rate of drainage promotes natural flood risk reduction and thus climate resilience. Whilst negative impacts to groundwater and surface water are possible with SuDS features as a result of pollutants in the drainage water, it has been assumed that SuDS would be developed in line with applicable policies/ standards. This identifies low risk (e.g. small residential developments), medium risk (e.g.

			commercial areas) and high risk areas (e.g. industrial estates), where increasing levels of pollution mitigation are required, such as use of multiple SuDS to provide a series of measures to treat runoff. This may limit the ability to apply such measures within the higher risk areas.
	Property level flood resilience	Provides property owners with practical steps to lower flood risk, through the use of adaptable products. e.g., Barriers can be fitted to openings such as doors and windows, providing a seal to limit floodwater entry; automatic flood doors can be closed and locked on receipt of a flood warning; non-return valves (NRVs) can be fitted to drains around the home to prevent floodwater or sewage backing-up into the property; airbricks can be replaced with automatically closing airbricks to create a seal against floodwater; and/or pumps can help keep floodwater at manageable levels for those at risk of rising groundwater entering through the floor.	This can help by diverting flow away from vulnerable points on roads/ houses etc. (such as those in dips) and also keep it on a road or in the pipe with an NRV, this option is more about reducing the impact of flooding. This option is assumed to manage flood risk rather than address the root cause of flooding.
	Network lining	Lining of the existing sewer network. e.g., using a “no dig” trenchless process to install sewer lining by inserting new epoxy-saturated pipe tubing into existing pipes, inflating the tubing and curing it into place with hot air, steam or bluelight LED technology.	Lining the existing sewer network has a dual purpose: to prevent groundwater ingress/infiltration to the sewer system and also to prevent pipes leaking sewage to ground. This option is assumed to use a “no dig” trenchless process to avoid excavation with the associated disruption, loss of biodiversity and resource use. It is assumed to be less resource intensive than building a new or replacement network, which has benefits for SEA topics such as heritage and carbon & material assets. This option will minimise leaks to the wider environment, benefitting both land and water quality. It also reduces the volume of wastewater requiring treatment, thus reducing SO events.

Assessment of Options

	Network or treatment modification	Modification to an existing WwTW to more efficiently balance flows without construction costs. e.g., using better controls and set points to allow more storage on site and more treatment of flows/ alterations to existing WwTW control philosophy or parameters to provide additional treatment or storm storage capacity.	This option has been assessed on the concept of maximising existing capacity and headroom and providing tweaks to already built infrastructure to ensure existing capacity is well utilised. This option is assumed to be relatively 'light' on construction requirements and improve efficiency in operation.
Enhance	Integrated catchment solutions	Changes to rural land management/drainage to reduce flows passing downstream. e.g., reducing artificial drainage in an upland area.	This option can apply at the strategic level across a catchment/s, including consideration of upstream and downstream catchments. It provides natural flood management by holding back flows in the upstream parts of a catchment through rural land management to increase infiltration and slow overland flows/ river flows impacting the downstream catchment. This option is assessed on the basis that it will be undertaken within rural areas (including those catchments categorised as rural), including upstream of the catchments being investigated. It is a green option and assessed on the basis that it is not resource intensive to implement. It aims to increase retention of water within upstream catchments, reducing runoff and therefore flood risk directly. The intention of this option is to reduce surface water and river flows to catchments and within catchments, to reduce surface water flows entering the sewer network and subsequently STWs. This reduces SO discharges by allowing an increased proportion of sewage to be treated within the capacity of STWs, thus improving water quality. See note on potential cumulative effect below*. This option potentially provides opportunity to slow the rate of drainage, including of important habitats, contributing to rewilding. It can lead to substantial habitat creation/ restoration/ improvement and is likely to benefit soils (including their carbon storage and sequestration capacity). The application of this option across large areas provides the opportunity to support a natural landscape, supporting natural ecosystem functions. More detailed consideration of the potential for this opportunity in relation to the most important habitats within Special Protection Areas and SACs is being considered within the HRA. Water quality can also be improved by reduced flows and fewer subsequent SO discharge events to watercourses. There is a potential for conflict with land uses, such as farming

Assessment of Options

			which could limit use of the option, or potentially have socio-economic effects - case by case consideration is required. It helps to address the causes of climate change (through support of natural rather than built solutions, and soil carbon storage) and promotes resilience to climate change (in terms of supporting biodiversity and managing water flows). This option requires partnership working, such as with landowners and potentially others such as Natural England.
	Additional network capacity	Increasing the capacity of sewers over a significant length to convey flows forward to the downstream network where there is capacity. This may include upsizing an existing sewer or installing a parallel adjacent sewer. e.g., replacement of existing sewers with larger diameter sewers.	The intention of this option is to increase conveyance of wastewater to the downstream network where there is treatment capacity, thus reducing sewer flood risk in the upstream parts of the network. This grey option has been assessed on the basis it will require a large amount of material within construction and that no pumping will be required, given the scale of construction works, this is assessed as negative. Through provision of increased flow capacity, it would provide some resilience to climate change. Given the replacement of existing sewers, or parallel placement of new sewers, this option would typically be constructed in previously disturbed ground and often within the highway, lowering the potential for disturbance such as to buried archaeology and biodiversity in these circumstances. However, this option is likely to involve relatively large-scale works, increasing the potential for issues. From a landscape perspective, it is assumed to be located below ground, with no long-term landscape effects.
	Increase treatment capacity	Upgrades to existing WwTW to provide additional treatment/storm storage capacity. e.g., increasing storm tank storage provision at a WwTW to maintain/reduce storm discharges to the environment in the future.	The option is based on a new WwTW, or upgrades to an existing WwTW to address population growth. It would also likely be implemented in combination with the WwTW rationalisation and flow transfer options. This option is assumed to provide greater efficiency during operation (in terms of energy, chemical use etc.) and to be designed with increased resilience to flood risk from climate change. However, it will be resource intensive during construction. Provision of increased storm tanks at the WwTW would reduce peak flows to allow an increased proportion of sewage to be treated prior to discharge. Similarly, provision of increased treatment capacity would allow an increased proportion of sewage to be treated prior to discharge. Where this option is combined with an increased flow to the works (e.g., due to rationalisation of another works and/or flow transfer), it would result in increased flows to the receiving watercourse. Given the permitting requirements relating to WwTW discharges, and the intent of this option, it is assumed that this would result in improvements to water quality. However further detailed consideration would be required. Similarly, increased flows to a works may increase the subsequent fluvial flood risk in the receiving watercourse – this requires further consideration. Whilst some

Assessment of Options

			upgrades may be able to be accommodated within the existing footprint/disturbed ground within a works, others may involve loss of greenfield land, with associated ecological, heritage and landscape impacts. There may be some increase in odour, noise, and visual impact at the works, depending on the local sensitivity and scale of changes.
	WwTW rationalisation	WwTW rationalisation, comprising: • Decommissioning a WwTW • Flow transfer • Upgrading another WwTW e.g., decommissioning a sewage treatment works and pumping flows to a nearby STW for treatment which may be larger/ more efficient.	This option is assessed on the basis that an existing WwTW site is decommissioned, rather than demolished (mothballed) and therefore that minimal remediation and demolition will be undertaken. Most WwTW sites have some negative effect in terms of odour and noise, which would see benefits locally; thus, this option assesses positively for human health and socio-economics. Whilst STWs often have some visual impact, decommissioning of works is unlikely to have a landscape effect, thus the option is neutral in terms of landscape effects. This option could provide a source of brownfield land which could subsequently provide a variety of benefits, such as biodiversity enhancements, alternative beneficial uses such as for recreation, or redevelopment for other uses such as housing. Whilst this opportunity exists, it is not typically taken forward in the region and as such has not been considered within the scoring. Operation of one STW rather than two may pose opportunities for increased efficiency. As such this option is a minor positive in terms of carbon and material assets. Removal of a WwTW may reduce the ability to respond to climate change in the future. There is no direct effect in terms of climate adaptation or resilience.
	Decentralisation	WwTW decentralisation, comprising: • Reducing volumes to a WwTW • Building small WwTW's or other option to manage drainage/ sewage closer to the source. e.g., decommissioning a large sewage treatment works and building smaller WwTW for treatment closer to the source output sites.	This option is based on a scenario where a centralised WwTW is struggling with capacity and where spills are higher than average. By reducing the volume needing treatment, the spills should reduce at the central site. To do this, small WwTW, or other options, would be required closer to the source of wastewater. This option could have benefits where drainage enters the natural water system as water is cleaned closer to the source. It is assumed that this option will benefit at least some distance of a waterbody, and lead to improvements for water quality as a result. A reduction in flow to the previous central site could allow for greater resilience to climate change as capacity would be more available.

Assessment of Options

	Storage	Retention of flows within engineered storage to hold large volumes of runoff on both combined and surface water networks. Typically located online, or in close proximity to the existing sewer network. e.g., concrete tanks (below ground); or a balancing reservoir (above ground).	This option reduces peak flows through the sewer network, thus reducing the risk of sewer flooding; and reduces peak flows to WwTWs, reducing SO discharges by allowing an increased proportion of sewage to be treated within the capacity of WwTWs, thus improving water quality. However, the increase in the treatment of wastewater, will increase resource use within WwTWs; depending on the scale of this option, this could require the provision of new or expanded WwTWs. This option is assessed on the basis that it is a grey option that will be constructed of concrete/ a similar material and require the operation of pumps during operation to empty the storage after high flow events. Through provision of flow storage, it would provide some resilience to climate change. The construction of storage will be disruptive locally on a temporary short-term basis. It will require careful siting, planning and construction to reduce effects to the environment (such as biodiversity, heritage, nuisance). Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effect on buried archaeology and biodiversity is lower, although the effect is likely to increase when locating storage locally where these issues may have higher sensitivity, such as adjacent to SOs and thus watercourses. From a landscape perspective, it is assumed to be located below ground or well-designed if above ground so that there are no major negative long-term landscape effects. However, this will depend on the reinstatement provided. This option effectively sterilises land from development, however the post-construction reinstatement may be able to provide beneficial uses, such as public access.
	Separate flows	Separation of surface water flows through engineered solutions to take runoff out of the combined sewer network. e.g., provision of a new surface water sewer network.	This green-grey option would reduce the total volume of water entering the sewer network and requiring treatment by preventing surface water flows entering the sewer. This option reduces flows through the sewer network, thus reducing the risk of sewer flooding; and reduces flows to WwTWs, substantially reducing SO discharges by allowing an increased proportion of sewage to be treated within the capacity of WwTWs, thus improving water quality. There is a risk that provision of further surface water systems will increase the conveyance rate to receiving watercourses, potentially increasing the subsequent fluvial flood risk. Where this option is prioritised for further investigation, flood risk will be considered further and a such this is noted as a minor negative. The construction of a new surface water sewer system would be disruptive and would require careful routing, planning and construction to reduce adverse effects

			to the environment (such as to biodiversity, heritage, nuisance), although it is unlikely there would be direct effect on these topics during operation. It would also require a large volume of resources for construction, although it would require few resources during operation and may reduce resource use at STWs where the volume of flow to be treated would be reduced through by the removal of flows.
	System flow transfer	Diversion of flows from one system to another through provision of a new sewer. e.g., diverting flows from one system/ catchment to another through new gravity or pumped networks.	This grey option is assessed on the basis that energy/ pumps will be required and that gravity will not be feasible. The provision of a new sewer may be located using a greenfield route. Effects associated with the subsequent operation of treatment works (or SOs) on completion of the flow transfer, are considered within the other options. This option is larger in scale than decentralisation/ rationalisation listed elsewhere. Taking flows from one catchment into another via pipelines to reduce the overall demand on a catchment which may need this. The construction of a new sewer system will be disruptive and will require careful routing, planning and construction to reduce effects to the environment (such as biodiversity, heritage, nuisance). It creates the potential for transfer of Invasive Non-Native Species (INNS) from one catchment to another. It will also require large quantities of resources within construction, with assumed pumping during operation which is energy intensive.
	SO rationalisation	SO rationalisation (involving decommissioning a SO and then discharging through another downstream SO) e.g., abandoning one storm overflow and modifying another nearby so that there is one spill to the environment instead of two.	This option has been considered a grey option. It is assessed on the basis of other measures reducing water flows through the sewer network to enable an SO to be decommissioned, providing water quality benefits to a section of the receiving watercourse. Flows would pass through the sewer network from which they may potentially discharge during high flow events to the same watercourse (albeit downstream) through an existing downstream SO. Whilst the total volume of spill to the environment would not increase (and should decrease in combination with other measures), the point loading at the retained SO could increase. As such this option assesses neutrally in terms of water quality, and potentially negatively in terms of flood risk which requires further consideration in relation to the retained SO. This option may be able to be targeted to river stretches for which the Reasons for Not Achieving Good Status (RNAGS) are the result of SO discharges. A secondary consideration is that SO removal, in some low flow circumstances, can lead to the drying up of some watercourses, mitigating the benefits of removal. It is not possible to assess where this would occur within the strategic nature of the SEA, and it thus requires further consideration before being taken forward. Use of this option in combination with catchment management/ SuDS may address the causes of low flow to some extent through slowing the flow of water through the environment, thus sustaining flows over a longer period. This option is assumed to require no / very limited construction or operational resource use.

5.4 LEVEL 2 SEA ASSESSMENT OF OPTIONS

As proposed within the SEA Scoping Report, Level 2 catchments have been used to assess options on a strategic level, whilst maintaining the purposes of meaningful assessment. **Table 5.4.1** sets out a summary of the results and some of the driving factors for difference. The accompanying assessment matrices can be found in **Appendix D – Level 2 Results**.

Table 5.4.1 – Proposed Options

Level 2 Area
Upper Dales
The Upper Dales is a mainly rural area, with a high proportion of environmental designations. There are limited opportunities for blue-green corridors within this largely rural Level 2. Communities within this area, already have access to green space, therefore, there may be limited opportunities to enhance the environment and the community (in terms of health benefits). No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Upstream rural catchment management may provide opportunities to help address the flash flood risk that results from the steep topography within this catchment. It could provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. It can lead to substantial habitat creation/ restoration/ improvement and is likely to benefit soils (including their carbon storage and sequestration capacity). The application of this option across large areas provides the opportunity to support a natural landscape, supporting natural ecosystem functions. Long term benefits to water quality as this option would likely result in few SO discharges to watercourses. However, there is the potential that this option would negatively impact farming land due to the heavily constrained area and farmland being a likely location for this option.
Esk & Coast
Esk & Coast is a mainly rural area, with a high proportion of environmental designations. There are limited opportunities for blue-green corridors within this largely rural Level 2. Communities within this area already have access to green space, therefore, there may be limited opportunities to enhance the environment and the community (in terms of health benefits), albeit there is potential for this option's benefits to be maximised in towns such as Scarborough. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Upstream rural catchment management may provide opportunities to help address the flash flood risks that result from the steep topography within this catchment. It could provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. Long term benefits to water quality as this option would likely result in few SO discharges to watercourses. However, there is the potential that this option would negatively impact farming land due to the heavily constrained area and farm land being a likely location for this option.

Assessment of Options

Level 2 Area
Lower Dales
Lower Dales is a mainly rural area, with a high proportion of environmental designations. There may be an opportunity for blue-green corridors within some of the small towns but there is limited opportunity elsewhere within this largely rural Level 2. Communities within this area already have access to green space, therefore, there may be limited opportunities to enhance the environment and the community (in terms of health benefits), albeit there is potential for this option's benefits to be maximised in towns such as Harrogate, Wetherby, or Ilkley. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health**,** and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Upstream rural catchment management may provide opportunities to help address the flash flood risks that result from the steep topography within this catchment. It could provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the Lower Dales is not heavily constrained and the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impact in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape, and heritage during construction, with a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Lower Don
The Lower Don is a mainly rural area, with a mix of small towns and a history of coal. There may be an opportunity for blue-green corridors within some of the small towns but there is limited opportunity elsewhere within this largely rural Level 2. Large scale construction would potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for the new infrastructure; however, the Lower Don is not as constrained as other L2 rural catchment areas. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environmental are lower. As the Lower Don is not heavily constrained and the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape, and heritage during construction, with a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Derwent & Rye
Derwent & Rye is a mainly rural area, with a high proportion of environmental designations (namely National Park and AONB). There are limited opportunities for blue-green corridors within this largely rural Level 2**,** but some may be possible in the south where the land becomes flatter and more urbanised. The benefits of this option could be maximised in the small towns, such as Pickering, Pocklington, Norton and Malton. No negative impacts are predicted;

Level 2 Area
however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Upstream rural catchment management may provide opportunities to provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. Derwent & Rye is heavily constrained to the north of the catchment as a National Park and AONB take up a large proportion of the land. Therefore, the construction and operation of new infrastructure will potentially have a negative impact on the environment. However, if located towards the south of the catchment with careful siting and planning, a long term neutral impact to biodiversity, landscape and heritage is possible. The construction of storage will be disruptive (especially below ground) and will require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environmental are lower. As the Level 2 area is not heavily constrained and the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape, and heritage during construction, and a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Holderness Coast
The Holderness Coast is a mainly rural area, with a mix of small towns. There is an opportunity for blue-green corridors within the urban environment. There is an opportunity for this option to be maximised in towns (such as Hornsea or Bridlington) along the Holderness Coast to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/ green corridors transform the urban landscape, especially helpful for areas of higher deprivation within the Level 2 area. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Large scale construction would potentially have short term adverse impacts to human health, biodiversity, landscape**,** and heritage during the construction phase. Siting is important for the new infrastructure; however, the Holderness Coast is not as constrained as other L2 rural catchment areas. The Holderness Coast is mainly rural, with a mix of small towns and is not as heavily constrained in terms of designations as other L2 catchment areas. The construction of storage will be disruptive (especially below ground) and will require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environmental are lower. As the Level 2 area is not heavily constrained and the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape and heritage during construction, but would result in a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Lower Ouse
Lower Ouse is a mainly rural area, with a mix of small towns.

Assessment of Options

Level 2 Area
There is an opportunity for blue-green corridors within the urban environment. There is an opportunity for this option to be maximised in towns (such as Selby) to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/ green corridors transform the urban landscape, in otherwise deprived areas (e.g., Selby). Blue/green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. This option would be well suited to the towns of Selby and Barlby due to their location close to the River Ouse. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health**,** and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Large scale construction would potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for the new infrastructure; however, the Lower Ouse is not as constrained as other L2 rural catchment areas. The Lower Ouse is mainly rural, with a mix of small towns and is not as heavily constrained in terms of designations as other L2 catchment areas. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the Lower Ouse is not heavily constrained and the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impact in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape, and heritage during construction, but would result in a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Colne & Holme Valleys
The Colne and Holme Valleys Level 2 is a mix of rural and urban areas, dominated by Special Protection Areas/ SACs/ National Park (amongst other designations) to the western boundary of the catchment and with Huddersfield located towards the north/north east part of the catchment. There is an opportunity for blue-green corridors within the urban environment, potentially to be maximised towards the east of the Level 2 area where the land is more urban. There is potential to green up city centres with above-ground SuDS features and planting. Blue/green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. Therefore, maximising the potential positive benefits of this option. Potential to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape, in otherwise deprived areas (e.g., Huddersfield). No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/towns. However, siting, and careful planning is important, as there may be a potential conflict with heritage due to the catchment being heavily constrained in terms of heritage designation. Upstream rural catchment management may provide opportunities to help address the flash flood risks that result from the steep topography within this catchment. It could provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. Large scale construction will have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure. however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the

Level 2 Area
potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Upper Aire
The Upper Aire has a large proportion of environmental designations (notably, Special Protection Areas, SACs**,** and the National Park (amongst other designations). Due to the presence of these high value areas, siting and design of blue/ green corridors would require careful consideration to avoid negative impacts and bring about enhancements. There is likely to be some opportunity for this option to be maximised within the towns and city, especially in and around Bradford. Potential to green up town/city centres with above-ground SuDS features and planting. Blue/ green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. Therefore, potential to maximise the positive benefits of this option. Potential to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape, in otherwise deprived areas (e.g., Bradford). No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/towns such as Bradford. However, siting, and careful planning is important, as there may be a potential conflict with heritage due to the catchment being heavily constrained in terms of heritage designation. Upstream rural catchment management may provide opportunities to help address the flash flood risks that result from the steep topography within this catchment. It could provide natural flood management by holding back flows in the upstream part of the catchment through rural land management. Large scale construction will potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure**;** however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Dearne
Dearne is a mix of rural and urban areas, dominated by Special Protection Areas /SAC/ National Park (amongst other designations) to the western boundary of the catchment and Barnsley located towards the centre and east part of the catchment. There is an opportunity for blue-green corridors within the urban environment, especially in towns in the centre and east of the Level 2 area where the land is more urban. This provides the potential to green up city centres with above-ground SuDS features and planting. Blue/ green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. Therefore, maximising the potential positive benefits of this option. Health benefits may be provided as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/ green corridors transform the urban landscape, in otherwise deprived areas (e.g., Barnsley). No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges.

Assessment of Options

Level 2 Area
Potential further benefits to biodiversity when implementing SuDS within cities/ towns. However, siting, and careful planning is important to avoid designations. Large scale construction will potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure**;** however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Rother & Doe Lea
Rother & Doe Lea is a mixed rural and urban area, with a mix of small towns and is not as heavily constrained as other L2 catchment areas in terms of designations. There is an opportunity for blue-green corridors within the urban environment. Particularly in towns this may provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/ green corridors transform the urban landscape, in otherwise deprived areas. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/ towns. However, siting, and careful planning is important to avoid designations. Large scale construction will potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure**;** however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term. Upgrades to existing STWs to increase storage capacity would likely have a minor adverse impact to biodiversity, landscape, and heritage during construction, but would result in a neutral impact to these receptors after construction, as there are minimal designations within the catchment.
Calder
There is an opportunity for blue-green corridors within the urban environment. Particularly in towns (such as Wakefield and Halifax) there is potential to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape, in otherwise deprived areas. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/ towns. However, siting, and careful planning is important to avoid designations.

Assessment of Options

Level 2 Area
Large scale construction will potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure**;** however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Lower Aire
The Lower Aire is a mix of urban and rural with a history of coal. There is an opportunity for blue-green corridors within the urban environment. Particularly in towns (such as Castleford or Pontefract) there is potential to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/ green corridors transform the urban landscape. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/ towns such as Castleford or Pontefract. However, siting and careful planning is important to avoid designations. Large scale construction will potentially have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. Siting is important for new infrastructure**;** however, impacts are likely to be short term and operational works will be below ground. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
York
York is mainly urban but surrounded by rural areas on the outskirts of the catchment. There is an opportunity for blue-green corridors within the urban environment. These would potentially provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Potential further benefits to biodiversity when implementing SuDS within cities/ towns such as York. However, siting, and careful planning is important to avoid designations. Heritage designations are of both high quality and high density across York. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the

Level 2 Area
potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Sheffield
Sheffield is mainly urban, dominated by Special Protection Areas /SAC/ National Park (amongst other designations) to the western boundary of the catchment and the city of Sheffield is located towards the centre and eastern part of the catchment. There is an opportunity for blue-green corridors within the urban environment. These have the potential to green up city centres with above-ground SuDS features and planting. Blue/green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. Therefore, maximising the potential positive benefits of this option. They potentially provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Siting and careful planning is important, as there may be a potential conflict with heritage due to the catchment being heavily constrained in terms of heritage designations or unknown buried archaeology, mainly within the city centre. Large scale grey construction options are more likely to have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Leeds
Leeds is predominantly urban, with limited environmental designations. There is an opportunity for blue-green corridors within the urban environment. These provide the potential to green up city centres with above-ground SuDS features and planting. Blue/ green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), potentially along the Leeds and Liverpool canal, typically within a planted setting. Therefore, maximising the potential positive benefits of this option. They have potential to provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Siting and careful planning is important, as there may be a potential conflict with heritage due to the catchment being heavily constrained in terms of heritage designation or unknown buried archaeology, mainly within the city centre. However, Leeds has less heritage designations than Sheffield (for example).

Assessment of Options

Level 2 Area
Large scale grey construction options are more likely to have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.
Hull
Hull is predominantly urban to the west of the catchment, with limited environmental designations (apart from notably, the Humber Estuary (SAC/ Special Protection Areas/ Ramsar) along the southern boundary of the catchment). There is an opportunity for blue-green corridors within the urban environment. These provide the potential to green up city centres with above-ground SuDS features and planting. Blue/green corridors provide multi-functional spaces offering management of surface water flows along with active travel routes (such as footpaths and cycle paths), typically within a planted setting. Therefore, maximising the potential positive benefits of this option. They potentially provide health benefits as access to nature is increased, as well as potential benefits to leisure and tourism as the blue/green corridors transform the urban landscape. No negative impacts are predicted; however, siting would require further detailed assessment to maximise the beneficial potential this option could provide to biodiversity, human health, and landscape. This option provides a major benefit to flood risk and water quality if implemented, by reducing the frequency and extent of SO discharges. Large scale grey construction options are more likely to have short term adverse impacts to human health, biodiversity, landscape, and heritage during the construction phase. The construction of storage will be disruptive (especially below ground) and require careful siting and would have some potential short term negative impacts to biodiversity, human health, landscape, and heritage. Where storage is located online and thus typically within previously disturbed ground, often in the highway, the potential effects on the environment are lower. As the new infrastructure will be below ground, biodiversity, human health, landscape, and heritage result in neutral impacts in the long term.

6.0 ASSESSMENT OF THE SELECTED DWMP24

6.1 OVERVIEW OF THE DRAFT DWMP24

Through application of the DWMP24 process outlined in **Figure 1.3.1** and **Table 5.1.1,** YW have identified 160 high priority L3 catchments where storm overflow and/or flood risk reduction measures are required; along with ten WwTWs where improvements are required to accommodate growth and climate change whilst remaining compliant with the current environmental permits.

The draft DWMP24 presents both the best value plans and least cost plans to meet the four scenarios introduced in Section 1.2:

Of note in relation to the scenarios:

- Under each scenario, spills from storm overflows are reduced to an annual average of no more than 10 spills per overflow under all scenarios, with ‘no environmental harm’ also achieved under scenarios 2 and 4.
- Sewer flood risk is reduced through scenarios 1 and 2 and maintained at 2020 levels by 2050 under scenarios 3 and 4 (all scenarios account for climate change and growth).
- Under each scenario, each of the ten WwTWs requiring investment are addressed.

For each scenario, in relation to improvements to storm overflows and flood risk, the optimiser considered the two options identified in **Section 5.2**:

- Grey infrastructure: improvements to drainage infrastructure by increasing network capacity (e.g., by constructing network storage tanks or storm tanks at wastewater treatment works).

- Blue/ green infrastructure, with grey infrastructure: retrofit blue-green solutions (e.g., nature-based solutions, sustainable drainage systems) reduce runoff to the combined sewer system (to control 50% of impermeable area, IMP50 – i.e., blue/green infrastructure), with further grey solutions to meet the target if still necessary.

The tool identified both the best value and the least cost plan to meet the requirements of each scenario by selecting an option for each L3 catchment. The selected options to address each service area are:

- Storm overflows and flood risk:
    - Least cost plan: the majority of L3 catchments adopting grey infrastructure, with low uptake of the hybrid blue/ green approach.
    - Best value plan: a high proportion of the L3 catchments adopt the hybrid blue/ green approach, with the highest uptake being under scenarios 1 and 2. This reflects the consideration of value provided by the hybrid approach through the tool.
- WwTW compliance: both the least cost plan and the best value plan increase treatment capacity and provide treatment modifications to ensure the WwTWs have sufficient capacity to remain compliant with the current environmental permits.

The draft DWMP24 adopts an adaptive planning approach. An adaptive plan is a framework which allows for the consideration of multiple preferred programmes or activities that could be deployed depending on variable future circumstances. This allows for optimal investment decisions to be made. An adaptive plan sets out how decisions will be made within this framework, using triggers and pathways to evaluate progress and determine future interventions.

The draft DWMP24 states:

> *Our Level 1 Best Value Plans (BVPs) illustrate a range of costs and pathways we can adopt to help us achieve the targets set out in the storm overflow reduction plan and without deteriorating our hydraulic flooding risk position to properties we can invest to hold firm on our position or invest to reduce the hydraulic flooding risk position to properties. This also includes investing at WwTW's to ensure our WwTW's have sufficient capacity to allow us to remain compliant with our current environmental permits. The costs for our Level 1 have been compiled and represent a combination of blue-green and grey only solutions as selected by our optimiser. These cost ranges are set out in Table 72.*

Table 72: Level 1 – 25-Year Best Value Plan – Cost Ranges+/-25%

Scenario 1	£28.8 billion	£47.9 billion
Scenario 2	£30.1 billion	£50.1 billion
Scenario 3	£23.1 billion	£38.5 billion
Scenario 4	£24.3 billion	£40.5 billion

Our Level 1 least cost plan considers the most cost-effective way to deliver the outcomes required. These least cost option cost ranges represent considerably more grey solutions than the BVP and deliver less overall benefit. This is seen in Table 73 below.

Table 73: Level 1 – 25-Year Least Cost – Cost Ranges +/-25%		
Scenario 1	£21.2 billion	£35.3 billion
Scenario 2	£22.8 billion	£37.9 billion
Scenario 3	£9.7 billion	£16.2 billion
Scenario 4	£11.8 billion	£19.6 billion

The nature of what our 2025-2030 (AMP8) investment programme may look like, given the requirement to deliver priority storm overflow solutions within tight deadlines and affordability and deliverability considerations will potentially mean we have to start on a core pathway of least cost investment. This will drive mainly grey solution options e.g., storage tanks but we would still look, where practicable, to invest in blue-green solutions and use adaptive planning to move away from the grey-only approach in the future. As cost certainty and the rates of climate change and population growth become clearer, then the gap between our BVP's and the least cost plans should start to converge. This will mean we can adapt and change our plan to deliver most efficient and beneficial outputs for all.

The draft DWMP24 considers those storm overflows within catchments triggered through the BRAVA stage, which was undertaken through extensive work in 2019. The subsequent SODRP consultation has been published and is yet to be finalised. YW recognise the need to undertake further work ahead of the final DWMP24 due in March 2023 in line with the Storm Overflow Discharge Reduction Plan which will be confirmed by 1st September 2022. This will determine the long-term delivery strategy for storm overflows in line with the DEFRA guidance, including priority overflows, designated bathing waters (including the recent inland bathing designation at Ilkley) and screening of storm overflows.

6.2 REASONS FOR SELECTING THE PREFERRED APPROACH IN THE DRAFT DWMP24

SEA guidance[5] notes that it is important to 'outline the reasons the alternatives were selected' and 'provide conclusions on the reasons the rejected options are not being taken forward and the reasons for selecting the preferred approach in light of the alternatives.

The inclusion/omission of the options within the draft DWMP24 is summarised in **Table 6.2.1** below, along with the headline reasons for these decisions. This table should be read in conjunction with **Tables 5.3.1** and 5**.3.2** earlier in the report which set out further the advantages/ disadvantages of each individual option.

[5] Office of the Deputy PM (2005) A Practical Guide to the Strategic Environmental Assessment Directive, available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf

Table 6.2.1 – Inclusion/ omission of options within the draft DWMP24, and key reasons

General options	Specific options	Option included/ omitted form the draft DWMP24 and key reasons
Observe	N/A	All 282 Level 3 catchments that did not trigger within the RBCS process have been assigned to Observe; they will be subject to review during future DWMP24 cycles.
Monitor & Investigate	N/A	Monitor and Investigate are assigned outcomes from the BRAVA stage and are dependent on the catchment size, risk level and data confidence. Monitor has been assigned to 38 L3 catchments due to their small size, and 31 catchments due to low risk. Investigate has been assigned to 69 L3 catchments due to low confidence, and seven L3 catchments that cross a descriptive threshold. (The remaining 160 L3 catchments are promoted to the options below).
Optimise	Asset optimisation/ SMART networks	YW are currently undertaking smart network trials to help understand the circumstances in which a given technology can be utilised most effectively and to provide evidence on the expected efficiencies. As such, these are not currently included within the DWMP24 as part of the costed plan, however pilot studies will continue to inform future DWMP24 cycles.
	Customer education	YW will continue to run education campaigns across the region and in targeted areas. Whilst included in the plan (and representing business as usual), it is not a costed measure.
	Working in partnership	Working in partnership is included within the DWMP24, it identifies the following core objectives to focus their partnership working: • Reducing overflow spills and the ecological harm, including the use of natural treatment of overflows and at wastewater treatment works. • Slowing the flow in natural catchments to reduce flood risk (where appropriate so avoiding lowering dry weather river flows). • Helping to achieve excellent bathing waters. • Working with individuals, communities, invested local stakeholders, local authorities, and the Environment Agency to manage surface water better. • Reducing the quantity and type of solids that are discharged inappropriately into the sewers. • Reducing water usage that benefits our water resources strategy and dry weather flow.
Reduce	Blue/ green infrastructure (Surface water management/ Blue green corridors, SuDS, catchment solutions)	Blue / green infrastructure is included in the draft DWMP24. Where selected, it would be used with further grey infrastructure to meet targets if necessary. The plan has selected this as the best value approach in the majority of L3 catchments, however uptake is far lower under the least cost plan. This reflects: • the higher cost of this approach, for example, within Scenario 4, the best value plan (with increased uptake of this option) is between £12.5 billion and £20.9 billion additional cost • the wider benefits of removing surface water flows from the sewer system, whilst benefitting the environment and surrounding communities • the large area from which surface water needs to be removed from catchments (modelled at 50%) • alone it may not provide the level of benefit required to achieve the objectives of the plan and as such further grey infrastructure measures are also required • is a less mature, more uncertain suite of options, providing less surety in the ability to meet the emerging SO targets;

		• it is required across large areas, making it harder to implement particularly within urban areas where it needs to be integrated within the wider land uses; • typically, it can only be achieved through partnership working and a longer-term planning approach; and • partnership working takes several years longer to deliver than traditional grey solutions and thus results are unlikely to be able to be achieved at the scale necessary to meet the shorter-term SO targets.
	Property level flood resilience	This is not included as a costed measure within the draft DWMP24 and would be considered at a more localised level after consideration of measures to reduce risk.
	Network lining	The draft DWMP24 includes a study cost for those catchments where the preliminary screening has identified a high risk of inflow and infiltration. This should allow infiltration sources to be identified and bespoke solutions identified.
Enhance	Grey infrastructure, comprising additional network capacity, network modification, including storage	The grey infrastructure option is included within the draft DWMP24. The level of adoption will depend on the scenario and value approach taken from being the predominant options within the least cost plan, or a far lower uptake within the best value plans. In addition, it would be used alongside the blue/ green infrastructure options. It is included because: • it provides reliable flow reduction to meet the objectives of the plan • it can be delivered by YW at individual locations within a catchment, enabling faster delivery to meet the emerging SO targets; and • it is significantly lower cost to implement.
	Increase treatment capacity	WwTW upgrades are included within the draft DWMP24. WwTW upgrades at 10 WwTWs within AMP8 are included to accommodate population growth and climate change. Typically, this will be through WwTW extensions. Further WwTW upgrades may be required as a result of the increased storage of wastewater through the grey infrastructure options; this is subject to further review.
	STW Rationalisation, WwTW decentralisation and flow transfers	Due to the bespoke nature of the solution required for wastewater transfer options, these solutions have been discounted from assessment in the development of the strategic plan. However, they remain in consideration for the subsequent delivery plan.

In some cases, there may be a possibility to overcome some of the reasons for limiting the uptake of options identified in **Table 6.2.1** through further work. Suggestions for further work can be found in **Section 7.2**.

6.3 SEA ASSESSMENT OF THE DRAFT DWMP24

This section assesses the overarching draft DWMP24 as a whole (the earlier **Section 5** assessed the individual options available within the plan).

The DWMP24 aims to protect and enhance the environment, support resilient communities, and contribute to economic growth. The outcomes of the DWMP24 relate to key issues for drainage and

wastewater: environmental improvements to tackle SOs, WwTW DWF discharge compliance and sewer flood risk, whilst accommodating growth and climate change. The most sensitive environments are prioritised for action first. As such the overall direction and purpose of the DWMP24 shows positive alignment with the SEA objectives.

Tables 6.3.1 and **6.3.2** below draw together the total effects of the draft DWMP24 in combination with the underlying trend, to establish the cumulative effect. The total effects and the cumulative effects of the plan can be defined as:

Draft DWMP24 (overall approach, options selected, outcome) = total plan effects

Total plan effects + 'likely future without the plan' = cumulative effects

The likely future without the plan includes the changes that are likely to happen in the background outside of the control of the plan, whilst the plan is being implemented. This is presented as part of the baseline review in **Appendix C**.

Given the variation between the uptake of the grey and blue/ green approaches within the least cost and the best value plans, and the adaptive planning approach adopted by the plan, both approaches are presented.

KEY:

Major positive	+ + +	Moderate positive	+ +	Minor positive	+	Neutral	0
Major negative	- - -	Moderate negative	- -	Minor negative	-	No relationship	

Table 6.3.1 – SEA Assessment Matrix of the Draft DWMP24

Level 1 Study Area

	Protect, conserve, and enhance biodiversity & geodiversity, including soils	*Protect, conserve, and enhance Human Health and well-being, including resilient communities*	*Protect, conserve, and enhance social and economic prosperity*	*Address causes of climate change, manage and improve efficient use of resources, inc. carbon, emissions to air & waste generation*	*Protect, conserve, and enhance water resources*	*Reduce and manage flood risk, increasing flood resilience*	*Protect, conserve, and enhance the historic environment, including archaeology*	*Conserve, protect and enhance the landscape, townscape, and visual amenity*	*Adapt, and improve resilience to climate change*
	Biodiversity and Geodiversity	**Human Health**	**Socio-Economic**	**Carbon & Material Assets**	**Water**	**Flood Risk**	**Heritage**	**Landscape**	**Climate Change Resilience**
Core pathway of least cost (grey infrastructure approach)									
Overall DWMP24: during construction	- -	0	+	- -	0		-	0	
Overall DWMP24: during operation	++	0[1] / +[2]	0[1] / ++[2]	- -	++	0[1] / ++[2]	+	0	+
Best value approach (blue/ green infrastructure approach, with some grey infrastructure)									
Overall DWMP24: during construction	-	0	+	-	0		-	0	
Overall DWMP24: during operation	+++	+[1] / ++[2]	++[1] / +++[2]	+	+++	0[1] / ++[2]	+	+	+++

[1] Sewer flood risk remains at 2020 level until 2050 (i.e., accounts for climate change and population growth) (i.e., Scenarios 3 and 4)
[2] Reduces sewer flood risk (i.e., Scenarios 1 and 2)

Table 6.3.2 – SEA Assessment Narrative of the Draft DWMP24

SEA Objective	Total plan effects	Cumulative effects
Biodiversity & Geodiversity	The plan prioritises measures where SOs are impacting priority sites (such as SSSIs) within watercourses. This will provide a significant positive permanent benefit for aquatic biodiversity. As the implementation of the plan progresses, the benefits of the plan will extend across the plan area. WwTW upgrades to cope with additional demand from population growth will prevent damage to aquatic biodiversity from that population increase. The construction of grey infrastructure (and to some extent blue/green infrastructure) and WwTW upgrades will result in localised temporary loss of biodiversity during construction. The significance of the effect will depend on the current land use and ecological value (e.g., ranging from no value within a highway, to high value within a designated site). Careful siting, planning and construction will be required to avoid and minimise impacts. Potential exists for biodiversity net gain within reinstatement (again, this will be location specific). The blue/ green approach offers the potential for long term positive effects on terrestrial biodiversity and geodiversity. Within rural areas, catchment management provides an opportunity to slow the rate of drainage, including of important habitats, contributing to rewilding and supporting natural hydrogeological processes. Within more urban areas, blue/green corridors and SuDS provide opportunities to provide/ enhance biodiversity. The level of benefit achieved will depend on the extent of implementation of these green options, and their design. YW recognise the need to undertake further work ahead of the final DWMP24 in relation to priority overflows and screening of storm overflows.	Climate change will impact wildlife in the future by various means including, but not limited to, drought, timing of seasonal activities, higher frequency of storms, native species redistribution, invasive non-native species, and increased potential for wildfire. Changing climate could impact on the quality of soils across the region through temperature extremes and changing rainfall patterns. Development pressure is likely to increase the risk of habitat loss and fragmentation, particularly outside of the extensive designated areas. Through partnership working, measures such as blue/green infrastructure offer the potential to increase resilience to climate change by allowing the movement of species through the environment and supporting natural soil processes. Reduced spills from SOs and WwTW upgrades will support biodiversity, reducing susceptibility to the above threats.
Human Health	Human health is particularly important in this region where the health of residents is slightly lower than the average for England, with some	The population of the UK is ageing, putting additional pressures on public finances and services.

SEA Objective	Total plan effects	Cumulative effects
	health indicators significantly below the national average in some parts of the region. The plan will reduce sewer flood risk to properties, although the extent of improvements will vary depending which scenario is selected. Whist measures to address storm overflow issues are likely to aid flood risk reduction, only scenarios 1 and 2 aim to reduce the level of risk. The reductions will provide immediate permanent human health benefits in relation to health (exposure to sewage) and well-being (stress, anxiety). The draft DWMP24 does not tackle SOs discharging to designated bathing waters. However, the SODRP consultation indicates that this will be required to be reduced by 2035 and YW recognise the need to undertake further work ahead of the final DWMP24 in relation to bathing waters and screening of storm overflows. These expected measures would provide a permanent positive effect on human health and may increase the uptake of open water swimming, providing further health and well-being benefits. Blue/ green infrastructure measures provide an opportunity to provide access to green spaces with improved connectivity through them, providing a permanent positive effect on human health. The level of benefit achieved will depend on the extent of implementation of these green options, and their design. Potential exists to provide public access above below-ground grey infrastructure assets (such as storage), such as play areas, gyms, etc. (this will be location specific).	Policy is placing increasing emphasis on access to green space, green infrastructure, and improved accessibility to sustainable modes of transport. Surface Water Management measures provide an opportunity to support these measures, improving health and well-being.
Socio-economic	Given the scale of work that will need to be implemented through the plan, there is likely to be a socio-economic boost such as employment opportunities through the construction phase. Whilst this will be temporary, it is expected to continue in the long-term.	In both the short and longer term, there is uncertainty in relation to socio-economics across the country. Whilst the plan is unlikely to substantially affect this, the flood risk reduction and water quality

SEA Objective	Total plan effects	Cumulative effects
	The plan area experiences higher than average levels of unemployment, with a large number of neighbourhoods being the most deprived nationally. This can result in communities being more susceptible to the effects of flooding (e.g., residents are less likely to have home insurance or available funds for clean-up and replacement of goods). As such, maintaining flood risk at 2020 levels whilst accommodating climate change and growth (Scenarios 3 and 4) provides a neutral, permanent, long-term effect to a more sensitive population; these benefits increase to a moderate positive effect when sewer flood risk is reduced (Scenarios 1 and 2). Where flood risk is reduced and the best value approach is adopted, given the scale of blue/ green infrastructure required, the socio-economic effects are likely to be a major positive, permanent effect. Environmental attractiveness draws in investment and enhances the value of property, contributing to the conditions for growth and economic security, contributing to public health and civic pride. The multi-functional nature of blue/ green corridors can provide active travel routes (such as footpaths and cycle paths), increasing low-cost transport options and recreational opportunities and providing opportunities for community cohesion on a permanent basis.	improvement measures will reduce risks and support a good economic and social environment.
Carbon & Material Assets	Given the scale of grey infrastructure (such as below ground storage) to be implemented through the core pathway of least cost, there is expected to be a moderate adverse effect on carbon and material assets through the construction of grey infrastructure, and the subsequent on-going increased wastewater treatment requirements. In contrast, blue/ green infrastructure is typically less resource intensive to construct, operate, or maintain, providing nature-based solutions. There may be opportunities through adaptive planning to increase the uptake of this hybrid approach through the implementation of the plan, thus reducing the significance of the impact. The use of both selected approaches is likely to increase pressure on land use. Grey infrastructure such as below ground storage and	The future trend is towards reducing carbon emissions and increased resource efficiency, which is not supported through the grey infrastructure approach and is supported through the blue/ green infrastructure approach.

SEA Objective	Total plan effects	Cumulative effects
	WwTW upgrades require relatively small areas of land on a permanent basis. Blue/ green infrastructure must be applied over much larger areas, however, it can be integrated with other land uses.	
Water Resources	The DWMP24 will result in major positive permanent effects on water quality through reduction in spills from SOs and WwTW improvements to accommodate population growth and the changing climate. This will have secondary benefits for biodiversity, human health, and socio-economics. The benefits increase with the adoption of blue/ green infrastructure through the support of natural hydrological processes such as increased infiltration of surface water. There is potential for short-term, localised, temporary pollution of watercourses through construction works in close proximity to watercourses. However, in line with legal requirements and best practice, these are anticipated to be prevented through good construction practices.	Climate change and growth are anticipated to increase stress on the water environment, such as through changing rainfall patterns, extreme weather events and increased demand for water and associated wastewater treatment requirements. The DWMP24 has accounted for these pressures and is designed to address them to help address these issues.
Flood Risk	Maintaining flood risk at 2020 levels whilst accommodating climate change and growth (Scenarios 3 and 4) provides a neutral, permanent, long-term effect to a more sensitive population; these benefits increase to a moderate positive effect when sewer flood risk is reduced (Scenarios 1 and 2) (the magnitude of the positive effect will vary based on the extent of flood risk reduction provided). Further positive permanent effects may also be achieved in terms of reduced surface water flood risk where surface water management is improved to reduce the risk of sewer flooding.	Flood risk is anticipated to increase as climate change progresses as a result of changing rainfall volumes and intensity. The draft DWMP24 has accounted for the anticipated changes whilst maintaining or reducing the risk of sewer flooding to help address this issue.
Heritage	At the plan level, there are no anticipated significant effects on heritage assets, although sewer flood risk reduction measures are likely to reduce the sewer flood risk to some heritage assets, such as Listed Buildings, providing a minor positive permanent effect. Construction works, particularly those that involve ground works are likely to have a minor negative effect on heritage assets, particularly	Historic assets may be at greater risk from the direct impacts of future climate change, through flooding, sea level change, storms, and other factors; the DWMP24 will help to address those risks associated with sewer flooding.

SEA Objective	Total plan effects	Cumulative effects
	archaeology. However, this will be location specific, with potential for significant adverse effects at the project level which will require further controls (see **Table 7.1.1** below).	
Landscape	Below ground grey infrastructure, once restored post construction, is not anticipated to have a landscape impact. Where blue/ green infrastructure measures are planned within urban areas, there is potential for a positive benefit in terms of townscape (design dependent); where planned within rural areas there is potential for positive landscape impact (dependent on design reflecting the local landscape charter). Given the proposed scale of implementation of this option, it is noted as a minor positive permanent impact.	Climate change has the potential to impact high value landscapes through changing patterns of rainfall or sea level rise; population growth also has the potential to erode landscape quality. Green/ blue infrastructure may help address these issues where it is implemented.
Climate Change Resilience	Grey infrastructure, such as below ground storage, will provide wastewater storage for later treatment and release, supporting climate change resilience. Blue/ green infrastructure will increase climate change resilience by slowing the flow of water, promoting natural flood risk reduction, supporting biodiversity in terms of habitats and their connectivity and in urban areas helping to counter the urban heat island effect. Given the extent of such infrastructure proposed through the best value approach, this could be a major positive effect.	The plan will support the wider move to increase resilience to climate change.

7.0 MEASURES TO PREVENT, REDUCE AND AS FULLY AS POSSIBLE OFFSET ANY SIGNIFICANT ADVERSE EFFECT

7.1 MEASURES UNDERTAKEN AND PROPOSED

This section outlines the key changes made to the plan, and measures recommended going forwards, to prevent, reduce, mitigate, and compensate for adverse effects on the environment, and to maximise beneficial effects.

These should be noted within the wider context of the plan – the purpose of the plan is for YW, in partnership with others, to ensure the sustainability of drainage infrastructure and the services it provides to customers and the environment, to support economic growth and resilient communities, and to protect and enhance the environment.

The inclusion of wider social and environmental values (such as carbon, water quality, green space) within the optimizer tool (see Section 5.1), has integrated consideration of the wider benefits of the blue/ green infrastructure option as the best value option for many catchments. However, this is not the least cost plan and particularly in the shorter term, may not be the plan which is implemented (in part, so that storm overflow targets can be met).

The SEA Regulations require the Environmental Report to include 'The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme'. Whilst the overall assessment of the plan (**Table 6.3.1**) does not identify any significant adverse effects (indicated by a 'red' score in the appraisal matrix), there is the opportunity as the plan is taken forward to prevent, reduce, mitigate, and compensate adverse effects and maximise the beneficial effects of the plan. Given the adaptive planning approach taken by the draft DWMP24, it is recommended that the framework setting out how decisions will be made as the plan is implemented, is reviewed to consider how wider environmental issues are incorporated within the triggers and pathways used to evaluate progress and determine future interventions. Further measures for each approach/option within the plan are set out in **Table 7.1.1** below.

Table 7.1.1 – Measures to prevent, reduce, mitigate, and compensate effects

Option Type	Measures to prevent, reduce, mitigate, compensate
Blue/ green infrastructure	Opportunities to increase the uptake of this option should be maximised as the plan progresses (see the comment regarding the adaptive planning approach in the paragraph below). Along with water management, blue/ green infrastructure should be designed to achieve multi-functional benefits, including active travel routes (footpaths, cycle paths), recreation, biodiversity, landscape/ townscape, and reducing the urban heat island effect. Connectivity of this infrastructure within the wider environment should also be considered, including in terms of habitat networks and access routes.

Option Type	Measures to prevent, reduce, mitigate, compensate
	Blue/ green corridors should be designed and implemented following SuDS guidance, including in relation to pollution control and discharge to watercourses and groundwater. Opportunities for partnership working should continue to be identified and implemented. Early and effective partnership working is essential for implementation of this option. As implementation of this option progresses, consideration should be given to extending its use to upstream, rural areas, particularly where this may provide opportunities to help address the flash flood risk that results from the steep topography. Whilst increased long-term climate resilience may offer habitat and socio-economic benefits in the longer-term, careful consideration is required of the impact of changes made, and case-by-case consideration of the impact of drainage changes on habitats and land uses, including: • the social and economic implications, such as to farming practices; and • habitat impacts (both positive and negative), particularly for the most important habitats such as SACs, Ramsar sites and SSSIs.
Grey infrastructure	Where possible, opportunities should be taken to reduce the extent of grey infrastructure (such as sections of new surface water sewers, or storage tanks) through the use of a hybrid solution (such as, in conjunction with, SuDS features, modification of upstream watercourses, rain gardens, etc.). Such an approach would provide the opportunity for wider enhancements, such as for biodiversity. Grey infrastructure should be designed in a manner which slows the flow of water to the receiving environment. Where water quality allows and where feasible, promote discharge from grey infrastructure to surface waters in preference to sewer. For larger schemes, undertake flood risk modelling of the proposed discharge of surface water flows to determine level of flood risk. Should fluvial flood risk reduction measures be required, they should be costed into this option and their associated environmental effects considered. Further catchment specific assessments are required to identify the most appropriate location or routing, design and construction methods for grey infrastructure. Cost and programme allowance should include for this, including issues such as ecology, heritage, consenting (e.g., discharge consents) and traffic management. The nature of constraints/ impacts will vary on a catchment-by-catchment basis. For example, a number of the catchments have high historic value and will require greater specialist heritage input; particular care is required within areas of high biodiversity value, in particular for certain ecological designations where, as a minimum, HRA screening will be required. Reducing the extent of grey infrastructure through use as part of a hybrid solution provides the greatest opportunity to minimise resource use, including carbon. Some further reduction in resource use is likely to be able to be achieved within construction through design optimisation, such as materials selection. Given storage will typically be an end-of-pipe solution, the new infrastructure will often be sited near to watercourses. Careful consideration of pollution control will be required during construction. Consenting requirements should be reviewed, such as a Flood Risk Activity Permit for works close to watercourses. Siting of storage should also consider efficient use of land (such as optimising reuse of previously developed land). Given the sterilization of land from further development, development policies and context (as established through Local Development Plans) should also be considered.

Option Type	Measures to prevent, reduce, mitigate, compensate
	Opportunities should be sought to provide wider benefits for the land during post construction reinstatement, in keeping with the landscape setting. This may include habitats, recreational access, and/ or amenity value.
WwTW upgrade	The nature and extent of WwTW upgrades are currently unknown and as such measures to prevent, reduce, mitigate and compensate effects can only be considered at the strategic level at this stage. Consideration should be given, not limited to: • The nature of the site and any sensitive receptors (e.g., terrestrial, and aquatic biodiversity, heritage, archaeology, landscape, local land uses sensitivy to odour and noise) • Effluent discharge requirements • Changes to the fluvial flood risk as a result of increased discharges • Seeking opportunities to reduce resource use during construction, increase efficiency in operation, increase effectiveness of treatment.

7.1.1 Recommended Further Work to Enhance the Plan

Following consultation, the draft DWMP24 will be developed into the final plan which will be published in March 2023 and work will commence on cycle 2 of the DWMP in April 2023. The DWMP will seek to inform planning within PR24. It is recommended that consideration is given to the following further work to enhance the plan as it develops and is implemented:

- Consideration should be given to including costs in the optimiser tool associated with the increased wastewater treatment requirements that will arise as a result of the grey infrastructure approach, to reflect the increased treatment capacity required and increased operational costs.

- Given the adaptive planning approach taken by the draft DWMP24, it is recommended that the framework setting out how decisions will be made as the plan is implemented, is reviewed to consider how wider environmental issues are incorporated within the triggers and pathways used to evaluate progress and determine future interventions.

- YW recognise the need to undertake further work ahead of the final DWMP24 due in March 2023 in line with the Storm Overflow Discharge Reduction Plan which will be confirmed by 1st September 2022. This will determine the long-term delivery strategy for storm overflows in line with the DEFRA guidance, including priority overflows, designated bathing waters (including the recent inland bathing designation at Ilkley) and screening of storm overflows.

- The modelled costs, benefits and hydraulic performance of the blue/ green infrastructure approach should be kept under review and refined as appropriate as experience of such measures grows. It may be appropriate to undertake pilot schemes in partnership with others (including universities/researchers) to inform the development and implementation of this approach within AMP8; and its assessment within subsequent DWMPs.

- As experience and knowledge of the performance of the blue/ green infrastructure approach grows, its adoption within AMP8 should be increased where feasible within drainage communities as part of the solution (thus reducing the storage volume and subsequent water treatment as well as providing wider benefits).

- YW and wider partners should continue joint working with momentum, which is essential to implement the blue/ green infrastructure approach which can achieve wider social and environmental benefits beyond those directly associated with overflows, flood risk and WwTW compliance.

- Information developed through the plan making stage should be shared where this may assist and influence other stakeholders (e.g., planning authorities, developers, LLFA), particularly where this could influence wider stakeholders.

- Within subsequent DWMP24 cycles, consideration should be given to the potential to include consideration of catchment level nutrient management.

8.0 MONITORING THE SIGNIFICANT EFFECTS OF THE PLAN

The SEA Regulations require the environmental report to include:

> *"A description of the measures envisaged concerning monitoring in accordance with regulation 17".*
> *SEA Regulations, Schedule 2 (9)*

A final stage of the SEA process is Stage E - Monitoring the significant effects of the implementation of the plan with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action. In line with regulation 17the SEA Regulations, monitoring is only required for significant environmental effects and may comprise or include monitoring undertaken for other purposes.

8.1 PROPOSED MONITORING

At this stage, it is only necessary (and appropriate) to set out the measures envisaged concerning monitoring. **Table 8.1.1** below provides a summary of the proposed monitoring parameters for the implementation of the preferred plan across the plan area and the plan period. This is based on the current understanding of the DWMP24 context within the region at present, with consideration of future baseline trends. These proposals will be kept under review and developed further as the DWMP24 progresses and in consultation with the statutory consultees, and other applicable stakeholders. This may include expansion of the proposals to agree the appropriate scale and duration of any monitoring activities proportional to the plan and the environmental risks. Once the plan develops into location/option specific projects, further monitoring requirements may arise, such as any requirements set out within any planning permissions or consents.

Given the extent of existing monitoring around the key topic areas, it is proposed that full use is made of existing monitoring arrangements, many of which are regulatory requirements. These are undertaken both by YW and other organisations such as the Environment Agency (e.g., water quality) and Natural England (e.g., SSSI condition status). Further requirements are anticipated to be included in the final SODRP.

Table 8.1.1 – Monitoring Parameters

SEA Topic	Proposed Monitoring Parameters
Biodiversity & Geodiversity	• SSSI condition status (Natural England)
Human Health	• (To be considered indirectly through other monitoring such as flood risk and water resources)

SEA Topic	Proposed Monitoring Parameters
	• Customer Satisfaction (YW)
Socio-economic	• (To be considered indirectly through other monitoring such as flood risk and water resources)
Carbon & Material Assets	• Carbon emissions (YW) • Amount of land YW conserve and enhance (YW)
Water Resources	• Treatment works compliance (YW) • Total number of pollution incidents caused by wastewater assets classified as having a minor effect (YW) • Total number of pollution incidents caused by wastewater assets classified as having a serious effect (YW) • Long term stability and reliability of wastewater networks (measures include sewer collapses, sewer blockages, properties flooded due to overloaded sewers and other causes, certain types of pollution incidents and reactive equipment failures) (YW) • Length of rivers in the YW region improved through YW investments (YW) • Long term stability and reliability for wastewater quality (measures include the number of WwTW failing to meet compliance and reactive equipment failures) (YW) • Number of bathing waters achieving 'good' or 'excellent' classification (the Environment Agency) • Changes to WFD waterbodies (the Environment Agency)
Flood Risk	• Number of incidents of internal sewer flooding of homes and businesses per year (YW) • Number of incidents of areas affected by external flooding per year (YW) • Changes to flood risk at the location and elsewhere (YW, LLFA, the Environment Agency)
Heritage	• (Scheme specific requirements to be developed as appropriate)
Landscape	• (Scheme specific requirements to be developed as appropriate)
Climate Change Resilience	• SSSI condition status (Natural England)

Assessment of monitoring results and any remedial action required should be undertaken by YW through implementation within AMP8 and collated for use within the SEA for subsequent DWMP cycles.

9.0 NEXT STEPS

9.1 CONSULTATION AND DEVELOPING THE FINAL DWMP24

This SEA Environmental Report is issued for consultation along with the draft DWMP24, for 12 weeks until 23rd September 2022, including with the SEA consultation bodies.

The draft DWMP24 and associated documents including the SEA, are available to view and download free of charge from Yorkshire Water - Drainage and wastewater management plan. Responses should be provided via this link by **23rd September 2022**.

Consultee comments will subsequently be reviewed and considered within the development of the final DWMP24 and applicable Environmental Report. These are currently proposed to be published in Spring 2023.

9.2 REVIEW OF FURTHER ASSESSMENT REQUIREMENTS

9.2.1 Invasive Non-Native Species (INNS) Risk Assessment

The SEA framework has considered the risks posed by INNS at a strategic level under the Biodiversity SEA Objective. At the strategic level, the SEA has not identified any high risk activities such as water transfers within the Draft DWMP24, however more detailed INNS assessment may be required if substantial changes are made to the final DWMP24 or during implementation if any options involve water transfers or other high-risk activities. INNS assessment determines the risk posed by INNS based on the species present, the relevant pathways and the receptors that could be impacted. Further site specific assessment will be required during implementation of the plan where INNS are present or pose a risk.

9.2.2 Water Framework Directive (WFD) Assessment

WFD assessment considers impacts of activities on WFD waterbodies, including the quality of water within rivers, their physical habitat and ecology. The purpose is to determine whether or not activities support the objectives of the relevant River Basin Management Plan. As the DWMP24 is a strategic level plan, rather than a specific activity, WFD Assessment has not been undertaken during development of the plan.

WFD Assessments could be required during implementation of the plan in relation to specific schemes that emerge from it where for example:

- a flood risk activity permit is required for certain activities on an Environment Agency Main River; or

- the activity could affect a water body that is at high status.

Further review of the need for WFD Assessments should be undertaken as the plan is implemented.

9.2.3 Biodiversity Net Gain Assessment

At this strategic level, awareness of the requirement to achieve biodiversity net gain for development projects has been considered through the SEA framework to influence options selection (including aiming to prevent the selection of options involving significant biodiversity loss). More detailed consideration of the achievement of biodiversity net gain is required during the implementation of the plan. Whilst the statutory requirements of the Environment Act will only apply to projects requiring planning permission, the NERC Act duty to 'enhance' biodiversity also applies.

9.2.4 HRA

An HRA Stage 1 screening assessment (provided in **Appendix E**) has been undertaken to check if proposals within the plan are likely to have a significant effect on the conservation objectives of sites within the national site network (previously known as 'European Sites'), i.e., Special Protection Areas and Special Areas of Conservation. The screening has identified the relevant sites within and adjacent to (within 5km) of the study area, their qualifying features, and the potential negative and positive impacts on the sites.

Through a review of the draft DWMP24 in relation to these sites, it has been possible to screen out some catchments from further consideration due to distance and a lack of hydrological connectivity resulting in no likely significant effect to the national site network. At this stage, given the strategic nature of the plan and the proposed measures (which are currently not location or scheme specific), it has not been possible to screen out the remaining catchments/measures, as such further HRA screening will be required as the plan develops.

There is potential for the DWMP24 to result in positive impacts to the national site network (such as through improved water quality), as well as negative impacts (such as through construction works).

APPENDICES

Appendix A CONSULTEE COMMENTS

SEA Consultation Body	Comment	Response
Natural England	3.1 Review of related plans, programmes, and objectives (also Appendix A) Reference should be made to the National Chalk Stream Strategy, hosted via CaBA Chalk Stream Strategy - CaBA (catchmentbasedapproach.org). The CSS makes specific reference to Water Quality – Reducing Pollution in Section 5. Reference should also be made to the CSS in Section 4.2.5 of the SEA Scoping Report – Water Resources. Appendix A should include reference to EA/NE SSSI Diffuse Water Pollution Plans (DWPPs) (e.g., River Derwent SSSI/SAC, Hornsea Mere SSSI/SPA and Malham Tarn SSSI/SAC). DWPPs can be supplied by the EA or Natural England on request. Reference should also be made to EA/NE SSSI River Restoration Plans (RRPs) – River Derwent SSSI/SAC, River Hull Headwaters SSSI and River Wharfe SSSI). RRPs and associated technical documents can be accessed via the River Restoration Centre Website. Designated Rivers | The RRC Common Standards Monitoring Guidelines for key freshwater SSSIs should also be considered and their water quality targets. CSMGs can be found via the Designated Sites View System Site Search.	Reference to the National Chalk Stream Strategy to be added in the relevant sections. Reference to be added to them. Reference to be added to the River Restoration Plans and plans to be reviewed. CSMGs to be reviewed and consideration given to their inclusion.
	4.2.7 Geodiversity This section could be renamed Soils and Geodiversity to aid navigation within the report. Cross reference should be made to SSSIs specifically designated for geological interest/ those which includes geological notified features alongside biological ones. Regionally Important Geological Sites should be mentioned.	Post Scoping it was decided to merge the biodiversity and geodiversity Topics post Scoping to reflect the inter relationship between these issues. Likewise, SSSI data was not differentiated between biologically and geologically designated sites as these two SEA Topics were merged. Reference to RIGS, and similar local geological sites, to be added into baseline.

	4.2.9 Landscape Reference should be made to the proposed designation of the Yorkshire Wolds AONB. This is a live process but is likely to be designated during the DWMP period.	Thanks for drawing our attention to this AONB, reference to be added in policy Appendix.
	5.1 Issues and Opportunities Summary Table – Table 6 *Biodiversity Opportunities* Consideration could be given to the potential to support for a project called Biomass Biodiversity which looked at the potential for the use of cut semi natural vegetation from conservation sites and projects as a feedstock for Anaerobic Digestion. Lab based trials have been undertaken with the Bio-Renewables Development Centre (University of York) in Partnership with Natural England, including testing of sewage sludge as an inoculant. The full report is available on request. (THYME-Case-Study-2-A4-2pp1.pdf (biovale.org))	Since biomass biodiversity falls outside the scope of drainage and wastewater management, this suggestion has been forwarded to the YW Innovation Team to consider if this can be considered as an innovation style project. through YW Innovation Team. Bioeconomy represents a major economic opportunity for the UK and particularly for the North of England, which has world-class bioeconomy assets. (Thyme – Teesside, Hull and York – Mobilising Bioeconomy Knowledge Exchange (biovale.org))
	5.1 Issues and Opportunities Summary Table – Table 6 *Water Resources Opportunities* Common Standards Monitoring Guidelines for key freshwater SSSIs should also be considered and their water quality targets. CSMGs can be found via the Designated Sites View System Site Search (naturalengland.org.uk) Include in 6th bullet “improve water quality in all water bodies to meet WFD targets and designated site targets (for water quality and flow), as outlined in SSSI Definitions of Favourable Conservation Status.”	CSMGs to be reviewed and consideration given to their inclusion. To be added in.
Environment Agency	Groundwater There’s no mention of safeguard zones for nitrate, although these would be at specific risk from sewer leakage increasing nitrate loading.	Reference to nitrate safeguard zones to be added to the SEA. Whilst specific scheme locations are not being considered at the current time, this will be undertaken as part of the next phase of programme prioritisation, when these will be considered as part of scheme production.

	Safeguard zones are a recognised mechanism to prevent rising trends in nitrate at drinking water sources. There is no mention of deep soakaways. These aren't constructed by YW, but could their strategy/plan be used to reduce the risk of these happening? There is an increased risk of these structures in certain zones where there is limited sewer capacity and low permeability glacial drift is present. Is there any consideration of the ongoing risks of unsewered areas in source protection zones? We are aware of some unsewered locations in source protections (and sometimes safeguard zones) e.g. Cottingham – non mains drainage here should be a priority to prevent deterioration of groundwater quality at public drinking water sources. All these things require a joined-up approach between the sewerage/drainage function and the groundwater abstraction functions of Yorkshire Water. Where there is conflict at this strategic level consideration is needed of the cross-over of these aspects of the business.	Deep soakaways are not an option being considered through the DWMP. SEA to add in a note to identify this issue. The DWMP is considering the areas with existing sewer systems. SEA to add in a note to identify this issue. YW acknowledge the need to a joined-up approach between the sewerage/drainage function and the groundwater abstraction functions and endeavour to work collaboratively on this issue. Note to be added to the SEA to refer to the interrelationship between these issues.
	<u>Section 4.1</u> This section outlines the SEA topics which have been proposed. I assume from this, it means these have been 'scoped in'. I think there needs to be some reference/clarity on what is scoped in and what is scoped out, with some rational as to why these decisions have been made. There is no reference here to air quality. It's fine if the decision has been made to scope this out, but I think this needs to noted. It states in section 1.2 that section 5 identifies whether environmental topics should be scoped in or out, but having reviewed Section 5, it doesn't make this particularly clear and instead just runs through the issues and opportunities.	Clarifications to be provided through the Environmental Report.
	<u>Section 7.2 -</u> Worth including examples of what will/could constitute a significant effect? It would be good to get a better understanding in the scoping of how significance is going to be assessed.	

	Will there be consideration of reasonable alternatives/opportunities to mitigate the negative effects, or enhance further the positive effects? How will this be done?	Significance criteria are included within the assessment methodology chapter. These will be included in the Environmental Report.
Historic England	In terms of the historic environment, on the whole, we consider that the Report has identified the plans and programmes which are of relevance to the development of the DWMP, that it has established an appropriate Baseline against which to assess the Plan's proposals and that it has put forward a suitable set of Objectives and Indicators. Overall, therefore, we believe that it provides the basis for the development of an appropriate framework for assessing the significant effects which this plan might have upon the historic environment. However, there are a few aspects of the Report where we consider that some amendments are necessary, as below.	N/A
	Page 10 - We would suggest the addition of a further key theme and message for the plan to consider/address along the following lines: • Reduce the vulnerability and improve the resilience of heritage assets to flooding.	SEA to add in this key theme as suggested. YW will consider the vulnerability of heritage assets in relation to any future scheme that may be developed and seek partnership opportunity with Historic England and any other stakeholders.
	Page 35 - We recommend that the first opportunity under the Heritage row of this table is amended to read as follows: • Assess, and avoid, minimise and/or mitigate as appropriate, any impacts to heritage assets.	Agreed, to be amended.
	Appendix On the whole the review of plans, programmes and policies set out at Appendix 1 provides comprehensive coverage of relevant documents. However, we would suggest that consideration should be given as to whether the review should also cover the World Heritage Site Management Plans for Saltaire and Studley Royal Park.	Consideration to be given to including these within the Environmental Report. Saltaire would appear more likely to be impacted with the River Aire in an urban environment running through the WHS. There are urban areas upstream within 5km such as Bingley and immediately downstream at Shipley first.

End of document.

Appendix B REVIEW OF RELEVANT PLANS, PROGRAMMES AND ENVIRONMENTAL PROTECTION OBJECTIVES

Policy or Plan	Summary of Guidance
International	
Biodiversity	
Bern Convention - Conservation of European Wildlife and Natural Habitats (1979)	Aims to conserve wild flora and fauna and natural habitats. Importance is placed on the need to protect endangered natural habitats and endangered vulnerable species.
Bonn Convention - Conservation of Migratory Species of Wild Animals (1983)	Aims to conserve terrestrial, aquatic, and avian migratory species through their range noting that species do not recognise borders.
Ramsar Convention - Wetlands of International Importance (1971)	Aims to conserve and wisely utilise wetlands through local and national actions to international cooperation. The Convention uses a broad definition for wetland: "lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fishponds, rice paddies, reservoirs, and salt pans".
United Nations (1992) Convention on Biological Diversity (1992)	The main objectives are conservation of biological diversity; sustainable use of its components; and fair and equitable sharing of benefits arising from genetic resources.
Climate Change	
UN Framework Convention on Climate Change (1992)	The stated objective is to: "achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".
UN Framework Convention on Climate Change/ Cancun Agreement (2011) Kyoto Protocol (1997)	The Cancun Agreements were a set of significant decisions by the international community to address the long-term challenge of climate change collectively and comprehensively over time, and to take concrete action immediately to speed up the global response to it. Kyoto commits its parties to limit climate change by setting internationally binding targets for emission reductions. It was adopted in 1997 and ratified in 2005.
World Summit on Sustainable Development (2002)	It commits nations to take a collective responsibility to build a human, equitable, and caring global society. The Declaration also reinforces the three pillars of sustainable development: environmental, economic, and social development at various levels.
The UNFCCC (United Nations Framework Convention on Climate Change) Glasgow/ COP26 Agreement (2021) Paris Agreement/ COP 21 (2015)	Mitigating and adapting to climate change is a critical policy consideration at an international level with multiple agreements in place to address the climate emergency. The UNFCCC is the forum for international action on climate change with the aim of stabilising GhG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The UNFCCC focuses on mitigating (reducing) GhG emissions, adapting to climate change, reporting of national emissions, and financing of climate action in developing countries. Agreed at COP 21, the Paris Agreement commits signatories to reducing global greenhouse gas emissions with the long-term goal of withholding a temperature increase by no more than 2°C. The recent COP26 gathering in Glasgow led to the Glasgow Climate Pact, reaffirming the Paris Agreement goal of limiting the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5 °C. The pact recognises that GHG emissions need to fall by 45% by 2030 if the world is to stay on track to reach net zero by 2050 and requests countries revisit their 2030 targets by the end of 2022. In addition, the Cancun Adaptation Framework recognises that adaptation is required to be given the same priority as mitigation including reducing vulnerability and increasing resilience. Any major transport infrastructure development set out in the emerging RTS should contribute to meeting the requirements and targets set out in international climate change policies and agreements.
Heritage	
Charter for the Protection and Management of Archaeological Heritage (1990)	The Charter states that policies for the protection of archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental, and educational policies. The charter should be supplemented at regional and national levels by guidelines for need.

The World Heritage Convention (1972)	The Convention defines what type of natural or cultural sites can be considered for the World Heritage List. It sets out the duties of countries in identifying potential sites and preserving them for the benefit of the world.
Overarching	
Aarhus Convention (1998)	The Aarhus Convention was created to give empowerment to citizens and civil society organisations in relation to environmental matters and is founded on the principles of participative democracy. It provides for access to environmental information; public participation in environmental decision making; and access to justice.
UN Agenda 2030	The Sustainable Development Goals (SDGs) are a collection of 17 interlinked global goals designed to be a "blueprint to achieve a better and more sustainable future for all". The SDGs were set up in 2015 by the UN General Assembly and are intended to be achieved by the year 2030. They are included in a UN Resolution called Agenda 2030. The SDGs were developed in the Post-2015 Development Agenda as the future global development framework to succeed the Millennium Development Goals which ended in 2015.
European	
Biodiversity	
Council Regulation No. 1100/2007: Establishing measures for the recovery of the stock of European eel (2007)	This EU Regulation was transposed into UK law under The Eels (England and Wales) Regulations 2009. Eleven Eel Management Plans have been prepared, one for each River Basin identified in England and Wales.
The Habitats Directive; also known as the Directive for the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC) (1992)	The Habitats Directive promotes the maintenance of biodiversity. While the Directive contributes to sustainable development; it focusses to ensure the conservation of around 450 species of fauna and 500 species of flora. The Habitats Directive also establishes the EU wide Natura 2000 ecological network of protected areas, providing a high level of safeguards against potentially negative developments. Together with the Birds Directive, the Habitats Directive forms the backbone of European nature protection legislation.
Birds Directive (2009/147/EC) (2009) (79/409/EEC - as amended) (1979)	This Directive adds to the Habitats Directive and provides a framework for the conservation and management of, and human interactions with, wild birds in Europe.
EU Biodiversity Strategy for 2030 (2020)	The strategy aims to put Europe's biodiversity on a path to recovery by 2030 and contains specific actions and commitments. It is the proposal for the EU's contribution to the upcoming international negotiations on the global post-2020 biodiversity framework. A core part of the European Green Deal, it will also support a green recovery following the Covid-19 pandemic.
Climate Change	
Promotion of the use of energy and renewable sources Directive (2009/28/EC) (2009)	Directive 2009/28/EC on the promotion of the use of energy from renewable sources set binding targets for the share of renewable energy sources in the final energy consumption for each EU country.
Air Quality	
Ambient Air Quality Directive (2008/50/EC) (2008)	Sets limits for key pollutants in the air we breathe outdoors. These legally binding limit values are for concentrations of major air pollutants that impact public health.
Heritage	
The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985) Revised European Convention on the Protection of Archaeological Heritage (Valletta Convention/ Malta Treaty) (1992)	The Valletta Convention is an international legally binding treaty within Europe. It places the revised Convention in the framework of activities concerning the cultural heritage since the European Cultural Convention came into force. It deals with the protection, preservation, and scientific research of archaeological heritage. In particular, the revised Convention focuses on the problem of conservation of archaeological heritage in the face of development projects.
Landscape	
The European Landscape Convention (Florence Convention) (2004)	Aims to promote the protection, management and planning of all European landscapes and organises co-operation on landscape issues and raises awareness

	of living landscapes. The UK Government signed the European Landscape Convention becoming binding from March 2007.
Resource Use	
Soil Thematic Strategy (2006)	The Strategy aims to protect soil and promote sustainable use. It aims to prevent further soil degradation and restore degraded soils to a level of functionality consistent at least with current and intended use.
Water Resources	
The Nitrates Directive (91/676/EEC) (1991)	It aims to protect water quality by preventing nitrates from agricultural sources polluting ground and surface waters. Also, to promote the use of good farming practices. This Directive forms integral part of the WFD and is one of the key instruments to protect waters from agricultural pressures.
Directive on Bathing Water (2006/7/EC)	The overall objective of the Directive remains the protection of public health whilst bathing. The revised Directive also offers an opportunity to improve management practices at bathing waters; to standardise the information provided to bathers; aims to set more stringent water quality standards; and also puts a stronger emphasis on beach management.
Groundwater Directive (2006/118/EC) (2006)	This directive establishes a regime which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater, including assessments on chemical status and the reversal of significant pollutant concentrations. The directive accompanies the WFD which requires pollution trend studies to be carried out and for trends to be reversed so that environmental objectives are achieved by 2015. It also requires reviews of technical provisions to be carried out from 2013 and every six years after.
The Water Framework Directive (WFD) (2000/60/EC) (2000)	The WFD introduces a planning process to manage, protect and improve the water environment. It applies to all rivers (including drains and ditches), lakes, estuaries, coastal waters, and groundwater. All surface waters (including rivers, lakes, estuaries and stretches of coastal water) and groundwaters have been divided up into discrete units called water bodies. Water bodies are the basic unit that are used to assess the quality of the water environment and to establish targets for environmental improvement.
The Floods Directive (2007/60/EC) (2007)	This Directive provides an approach to managing flood risk on a catchment-wide scale. It is used in conjunction with the WFD.
Urban Wastewater Treatment Directive (91/271/EEC) (1991)	The objective of this Directive is to protect the environment from the adverse effects of urban wastewater discharges and discharges from certain industrial sectors, and concerns the collection, treatment, and discharge of wastewater.
Revised Drinking Water Directive (2020/2184) (2020) Drinking Water Directive (98/83/EC) (1998)	In 2020, the European Parliament formally adopted the revised Drinking Water Directive. The Directive will enter in force on 12 January 2021, and Member States will have two years to transpose it into national legislation. The Drinking Water Directive (Council Directive 98/83/EC) concerns the quality of water intended for human consumption. Its objective is to protect human health from adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.
Marine Strategy Framework Directive (2008/56/EEC) (2008)	The aim is to protect the marine environment across Europe. It aims to achieve good Environmental Status of EU marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend.
Directive on the Assessment and Management of Flood Risks (2007/60/EC) (2007)	This Directive now requires an assessment of all watercourses and coastlines at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. The Directive applies to inland waters as well as all coastal waters.
Overarching	
Environmental Liability Directive (2004/35/EC) (2004)	This Directive focusses on enforcement of claims against occupational activities which damage the environment. Its objective is to create "a more uniform regime for the prevention and remediation of environmental damage".
Directive on the Assessment of the certain effects of plans and programmes on the environment (SEA) (2001/42/EC) (2001)	The SEA Directive sets out the requirements for assessment of certain plans and programmes on the environment. An SEA is mandatory for plans/programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town and country planning or land use and which set the framework for future developmental consent of certain projects found in the EIA Directive.

National	
Biodiversity	
Salmon and Freshwater Fisheries Act 1975	The Act sets out the legal framework in which salmon and freshwater fisheries are regulated. Aims include attempting to protect salmon and trout from commercial poaching, protecting migration routes, prevent wilful vandalism and neglect of fisheries, ensure correct licensing, and water authority approval.
JNCC and Defra - UK Post-2010 Biodiversity Framework (2012)	The development of the Framework reflects a revised direction for nature conservation, towards an approach which aims to consider the management of the environment, and to acknowledge and consider the value of nature in decision-making. The Framework sets out the common purpose and shared priorities of the UK and the four countries, and, as such, is a hugely important document, which is to be owned, governed, and implemented by the four countries.
Making Space for Nature - A review of England's Wildlife Sites (2010)	The report makes key points for establishing a strong and connected natural environment: 1) that we better protect and manage our designated wildlife sites; 2) that we establish new Ecological Restoration Zones; and 3) that we better protect our non-designated wildlife sites. That Society's need to maintain water-quality, manage inland flooding, deal with coastal erosion, and enhance carbon storage, if thought about creatively, could help deliver a more effective ecological network.
Biodiversity 2020: A strategy for England's wildlife and ecosystem services (2011)	The Strategy sets out how the UK is implementing its commitments. The aim is to halt the decline of wildlife and ecosystems for the benefit of this and future generations.
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019) The Conservation of Habitats and Species Regulations (2017) and (2010) (as amended)	The 2019 amendment provides changes to the Habitats and Species Regulations which would no longer work when the UK leaves the EU. The Conservation of Habitats and Species Regulations 2010 apply in the terrestrial environment and in territorial waters out to 12 nautical miles. The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. It lays down rules for the protection, management and exploitation of such habitats and species. The EU Habitats and Wild Birds Directives are transposed in UK offshore waters by separate regulations.
The Invasive Alien Species (Enforcement and Permitting) Order (2019)	Aims include to prevent and manage invasive alien fauna and flora in England and Wales only.
The Great Britain Invasive Non-Native Species Strategy, Defra (2015)	The aim of the Strategy is to address INNS issues in Great Britain by minimising the risk they pose and reducing their negative impacts.
Conservation 21: Natural England's Conservation Strategy for the 21st Century (2016)	The strategy's three guiding principles are to: create resilient landscapes and seas; put people at the heart of the environment; and grow natural capital.
Climate Change	
Energy Act (2013)	The Act focuses on setting decarbonisation targets for the UK and reforming the electricity market. It aims to maintain a stable electricity supply as coal-fired power stations are retired. This includes facilitating the building of a new set of nuclear power stations and the establishment of a new regulator, the Office for Nuclear Regulation.
Defra - UK Climate Change Risk Assessment 2017 (2017)	Highlights the key climate change risks/ opportunities for the UK. These are: flooding and coastal change; risks to health, well-being, and productivity from high temperatures; shortages in the public water supply for agriculture, energy generation and industry; risks to natural capital, soils and biodiversity; risks to domestic and international food production and trade; and pests, diseases, and invasive non-native species affecting people and the environment.
UK Climate Projections (UKCP) (2018)	The UKCP18 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. The Projections will allow planners and decision-makers to make adaptations to climate change.
Climate Change Act (2008) 2050 Target Amended Order (2019)	Sets a legal framework to commit towards tackling climate change and adaptation. The Act sets a target of net zero by 2050 based upon 1990 levels.

Heritage	
The Ancient Monuments and Archaeological Areas Act (1979)	An Act to consolidate and amend the law relating to ancient monuments; to make provision for the investigation, preservation and recording of matters of archaeological or historical interest and (in connection therewith) for the regulation of operations or activities affecting such matters.
Planning (Listed Buildings and Conservation Areas) Act (1990)	An Act of Parliament that altered the laws on granting of planning permission for building works, notably including those of the listed building system in England and Wales
Historic England - Strategic Environmental Assessment, Sustainability Appraisal, and the Historic Environment (2016)	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.
Historic England - The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, 2nd Edition (2017)	This sets out guidance, against the background of NPPF and the related guidance given in the PPG, on managing change within the settings of heritage assets, including archaeological remains and historic buildings, sites, areas, and landscapes.
Resource Use	
Our Waste, Our Resources: A Strategy for England (2018)	Sets out how to preserve the stock of material resources by moving towards a circular economy. Aims to minimise damage to the natural environment and is aligned to the Government's 25 Year Environment Plan. Includes a blueprint for eliminating avoidable plastic waste, doubling resource productivity, and eliminating avoidable waste of all types by 2050.
Soils and Geology	
Defra - Safeguarding our Soils - A strategy for England (2009)	The primary aim is that by 2030, all England's soils will be managed sustainably, and degradation threats tackled successfully.
Water Resources	
Water UK - DWMP Framework (2021)	Drainage and Wastewater Management Plans are the new way for organisations to work together to improve drainage and environmental water quality. The framework was commissioned by Water UK in collaboration with Defra, Welsh Government, Ofwat, Environment Agency, Natural Resources Wales, Consumer Council for Water, ADEPT, and Blueprint for Water.
Marine and Coastal Access Act (2009)	The Act sets out to protect marine functions, activities, and wildlife. It sets out the provisions for Marine Conservation Zones, planning decisions, and more.
National Flood and Coastal Erosion Risk Management Strategy for England (2020)	The strategy sets out a vision of a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100. It sets out the long-term goal for resilience to future flood and coastal erosion, and therefore protects people, the environment, and the economy.
Flood and Coastal Erosion Risk Management Policy Statement (2020)	The National Flood and Coastal Erosion Strategy informs this policy statement. Five key areas for action include: upgrading and expanding our national flood defences and infrastructure; managing the flow of water more effectively; harnessing the power of nature to reduce flood and coastal erosion risk and achieve multiple benefits; better preparing our communities; and enabling more resilient places through a catchment-based approach.
Flood risk assessments: climate change allowances (2016, updated 2021)	The guidance is for developers and their agents preparing flood risk assessments for planning applications, amongst others. Making allowances for climate change in Flood Risk Assessment will help minimise vulnerability and provide resilience to flooding and coastal change.
Water Resources Act (WRA) (2009) Amended from WRA (1991)	The Act sets out the functions the Environment Agency and introduced water quality classifications and objectives for the first time. An Act of the Parliament that regulates water resources, water quality and pollution, and flood defence.
Water Industry Act (1991)	This Act sets out the main powers and duties of the water and sewerage companies and defined the powers of the Water Services Regulation Authority (Ofwat). Note this was amended by Section 36 of the Flood and Water Management Act 2010.
Water Act (2003) (as amended) Water Act (1991) (amended from)	The 2003 Act amends the Water Resources Act and Regulations 1991 and the Water Industry Act 1991. The Act has the following four broad aims: the sustainable use of water resources; strengthening the voice of consumers; and a measured increase in competition; and the promotion of water conservation.
Preparing for a drier future: England's water infrastructure needs (2018)	This document sets out the National Infrastructure Commission's advice on how to address England's

	water supply challenges and deliver the appropriate level of resilience for the long term.
Draft National Policy Statement for Water Resources Infrastructure (2018)	The draft National Policy Statement for Water Resources Infrastructure sets out the need and government's policies for the development of nationally significant infrastructure projects relevant to water resources in England.
Protect groundwater and prevent groundwater pollution (2017)	This guidance helps with permit or licence applications You must not cause groundwater pollution.
The Water Environment (Water Framework Directive) Regulations (2003) WFD implementation in England and Wales: new and updated standards to protect the water environment (2014)	The Water Environment Regulations transpose the WFD into UK law. They aim to protect and enhance the quality of surface fresh water (including lakes, streams, and rivers); groundwaters; groundwater dependant ecosystems; estuaries; and coastal waters (out to one mile). The UK Technical Advisory Group (UKTAG) is responsible for developing environmental standards and conditions for achieving WFD requirements for rivers and lakes.
The Environment Agency's approach to groundwater protection (2018)	This guidance is for planners, applicants for environmental permits and abstraction licences, and landowners concerned with the quality and quantity of groundwater.
CIRIA – SuDS Manual (2015)	The SuDS manual incorporates the latest technical advice and adaptable processes to assist in the planning, design, construction, management and maintenance of good SuDS. In delivering SuDS there is a requirement to meet the framework set out by the Government's 'non statutory technical standards' and the revised SuDS Manual complements these but goes further to support.
Water UK - Net Zero 2030 Roadmap (2020)	In 2020, water companies unveiled a plan to deliver a net zero water supply for customers by 2030 in the world's first sector-wide commitment of its kind. The Net Zero 2030 Route map has been developed using over a decade's worth of detailed data and provides water companies with a framework on which to develop and cost their own net zero action plans.
The Groundwater Regulations (2009)	The Groundwater Regulations transpose the European Union Groundwater Directive (2006/118/EC) into UK law. The Regulations set out how to protect groundwater from pollution by detrimental substances.
Flood and Water Management Act (2010)	Relates to the management of flooding and coastal erosion. The Act aims to reduce the flood risk associated with extreme weather, compounded by climate change. It created the role of Lead Local Flood Authority, which is the local government authority responsible for managing flood risk in the local government area. The Flood and Water Management Act was preceded by The Pitt Review of 2007.
The Water Resources Management Plan Regulations (2007)	Sets out the statutory duty for water companies to prepare and issue a Water Resources Management Plan. The duty to prepare and maintain a WRMP is set out in sections 37A to 37D of the Water Industry Act 1991. They must be prepared at least every five years and reviewed annually.
Water UK - Water Resources long term Planning Framework 2015-2065 (2016)	The primary aim of the project is to develop a high-level strategy and framework for the long-term planning of water resources for Public Water Supply in England and Wales.
Water Supply (Water Quality) Regulations (2016) (as amended)	This statutory instrument concerns water quality supplies for human consumption.
National Policy Statement for Wastewater (2012)	A framework document for planning decisions on nationally significant wastewater infrastructure.
Environment Agency - Water Resources Planning Guideline (2021)	Water companies in England or Wales must prepare and maintain a water resources management plan (WRMP). This sets out how you intend to achieve a secure supply of water for your customers and a protected and enhanced environment. The duty to prepare and maintain a WRMP is set out in sections 37A to 37D of the Water Industry Act 1991.
Urban Waste Water Treatment (England and Wales) Regulations (1994)	The Regulations transpose the EU Urban Waste Water Treatment Directive (91/271/EEC). The aim is to set out to the regulation of sewage disposal.
The Nitrate Pollution Prevention Regulations (2015)	The Regulations transpose EU Nitrates Directive (91/676/EEC) into UK law. The aim is to reduce nitrate related pollution in the water environment.
UK Marine Policy Statement (2011)	Provides the framework for preparing marine plans and the marine planning system. Marine plans put into practice the objectives for the marine environment alongside the National Planning Policy Framework (NPPF).

Defra - Catchment Based Approach: Improving the quality of our water environment (2013)	A policy framework to encourage the wider adoption of an integrated Catchment Based Approach to improving the quality of our water environment. This is important when trying to address the significant pressures placed on the water environment by diffuse pollution from both agricultural and urban sources, and widespread, historical alterations to the natural form of channels.
National Chalk Stream Strategy, (CaBA Chalk Stream Strategy) (2021)	Chalk streams are a rare and valuable habitat, often referred to as the equivalent of England's rain forests or Great Barrier Reef. 85% of all chalk streams are found in England, mainly in the south and east of the country, as well as dozens of smaller chalk springs, rills and flushes. They stretch from Yorkshire through East Anglia, the Chilterns, Kent, Hampshire, and Dorset, and are important for biodiversity. This new chalk stream strategy is for everyone who has responsibility for, or uses, chalk streams. It sets out actions and recommendations for government, regulators and the water industry on water resources, water quality and habitat restoration and management.
Environment Agency - Drought response: our framework for England (2017)	This framework tells you how drought affects England and how the Environment Agency works with government, water companies and others to manage the effects on people, business, and the environment. It aims to ensure consistency in the way we co-ordinate drought management across England.
Government's Storm Overflow Discharge Reduction Plan (the 'SORP consultation') (2022)	This aims to eliminate all harm from storm overflows in the long-term. It proposes the introduction of overflow targets which focus on high priority sites in the short-term and notes that 'Water companies must clearly set out how they will meet their storm overflow targets in their Drainage and Wastewater Management Plans'. The SORP is expected to be finalised in September 2022, as such there is some uncertainty as to the targets that will need to be achieved through the DWMP.
Overarching	
Environment Act (2021)	The Legislation will improve air and water quality, tackle waste, increase recycling, halt the decline of species, and improve our natural environment through a series of legally binding targets and guiding policy.
National Planning Policy Framework (NPPF) (2021)	The updated NPPF sets out government's planning policies for England and how these are expected to be applied. A key aim is to achieve sustainable development.
A Green Future: Our 25 Year Plan to Improve the Environment (2018)	25 Year Environment Plan was published by the Government in January 2018. It sets out sets out government action to help the natural world regain and retain good health. It aims to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats. It calls for an approach to agriculture, forestry, land use and fishing that puts the environment first. The Plan looks forward to delivering a Green Brexit. Measures to implement the plan include consulting on setting up a new independent body to hold government to account; a new set of environmental principles to underpin policymaking; and strengthening leadership and delivery through better local planning. Policies include • 'Embedding an 'environmental net gain' principle for development, including housing and infrastructure'; • 'Supporting larger scale woodland creation'; • 'Expanding the use of natural flood management solutions'; • 'Publishing a strategy for nature'; • 'Developing a Nature Recovery Network'; • 'Increasing water supply and incentivising greater water efficiency and less personal use'; • 'Promoting health and wellbeing through the natural environment'; • 'Creating more green infrastructure'; • 'Planting more trees in and around our towns and cities'; • 'Reducing the impact of wastewater'; • 'Publishing Clean Air Strategy'; and • 'Tackling climate change'.
The Environmental Damage (Prevention and Remediation) (England) Regulations (2015)	Provides additional protection to habitats and species identified on Annexes one and two 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.

The Wildlife and Countryside Act (1981) (as amended)	The Wildlife and Countryside Act is a major driver in the protection of animals, plans and habitats in the UK. It implements the Bern Convention and the Birds Directive and contains details of designated sites/species.
Environment Protection Act (1990)	The fundamental structure and authority for waste management and control of emissions into the environment.
Countryside and Rights of Way Act (2000)	Aims to give greater freedom for people to explore open countryside. It also includes a power to extend the right to coastal land.
The Natural Environment and Communities Act (2006)	NERC is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. It is about conserving and enhancing places and nature and helping people to enjoy them.
Environmental Assessment of Plans and Programmes Regulations (2004)	This regulation transposes the SEA Directive into UK law which requires an assessment of the effects of certain plans and programmes on the environment.
National Infrastructure Strategy (2020)	The National Infrastructure Strategy sets out plans to transform UK infrastructure to level up the country, strengthen the Union and achieve net zero emissions by 2050.
Ancient Woodland and Veteran Trees: Protecting them from development (2014)	Standing advice is a 'material planning consideration'. This means you should take it into account when making decisions on planning applications. Ancient woodland is defined as an irreplaceable habitat which is important for wildlife, soils, recreational value and cultural, historical and landscape value. The advice relates to both conserving and enhancing biodiversity and reducing the level of impact of the proposed development on areas of ancient woodland and ancient/ veteran trees.
Climate change approaches in water resources planning – overview of new methods (2013)	The aim of the project was to examine how climate change has been built into water resource management plans (WRMPs) to date, and to recommend best and appropriate practice for the future, with particular reference to the use of the detailed tools and probabilistic climate data in UKCP09.
Regional and Local	
Biodiversity	
Local Nature Recovery Strategies	The Environment Act 2021 introduced Local Nature Recovery Strategies for areas in England. Public authorities will have duties in relation to these.
Biodiversity Action Plans	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. Each National Park has a Biodiversity Action Plan, and some local authorities have their own or a combined one with neighbouring authorities.
Common Standards Monitoring Guidelines (CSMGs)	Common Standards Monitoring was developed to provide an agreed approach to the assessment of condition on statutory sites designated through UK legislation and international agreements. CSMGs can be found via the Designated Sites View System Site Search.
Landscape	
Natural England, AONB Management Plans (2016 – 2022)	These plans include an assessment of the special quality of the AONB, such as a landscape character assessment that includes its condition and vulnerability to change and a monitoring plan to show how you'll measure the AONB's condition and effectiveness of management. Please note the Yorkshire Wolds AONB is likely to be designated during the DWMP Process.
Natural England National Character Area (NCA) Profiles (2012 - 2015)	The profiles summarize the characteristics which are unique to that local area and gives it a distinctive sense of place.
Water Resources	
Defra and Environment Agency (2015) River Basin Management Plans	River basin management plans (RBMPs) set out how organisations, stakeholders and communities will work together to improve the water environment.
Environment Agency - Catchment Flood Management Plans (CFMPs) (2009)	CFMPs set out the risk for each catchment in relation to flooding from rivers, tidal, surface water, groundwater, and reservoirs, but not directly from sea/coastal flooding which is under the remit of a Shoreline Management Plan. The role of the CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term.

Environment Agency - Abstraction licensing strategies (CAMS process) (2013)	These Licensing Strategies set out how water resources are managed. It provides information about where water is available for further abstraction and an indication of how reliable a new abstraction licence may be.
Local and District Flood Risk Management Strategies	These set out useful local information and identifies objectives to manage local/ district flood risk to local communities. They consider all sources of flood risk such as surface water, groundwater, and ordinary watercourses.
Water Resources North (WReN) Regional Plan – Environmental Assessment - Scoping Report (2021)	Yorkshire Water, Northumbrian Water, and Hartlepool Water make up WReN's core companies. Water Resources North (WReN) is one of five regional water resources groups working under the National Framework for Water Resources (the 'National Framework'). The draft Regional Plan in anticipated to be ready in early 2022 which will be accompanied by the associated assessment reports.
Marine Management Organisation: North East Inshore and Offshore Marine Plans (2021) East Inshore and Offshore Marine Plans (2015)	The North East Marine Plans provide a framework that will shape and inform decisions over how the areas' waters are developed, protected, and improved over the next 20 years. It covers an area of inshore and offshore waters stretching from the Scottish border to Flamborough Head, in Yorkshire. The East Inshore Marine Plan area includes the coastline stretching from Flamborough Head to Felixstowe, far south of the River Humber, extending from mean high water out to 12 nautical miles with the applicable offshore plan outside of this.
Environment Agency & Partners Humber 2100+ Strategy	Due to the enormous economic importance of the estuary and the scale of tidal flood risk, the Environment Agency and 12 Local Authorities from around the Humber, are working in partnership to develop a strategy that will address the risk and enable sustainable growth now and for the next 100 years. The Humber Flood Risk Management Strategy focuses on the area around the Humber where flooding from the sea is the main source of flood risk. Other strategies identify ways of managing different sources of flooding such as from overtopping of rivers and heavy rainfall.
Local LLFA Sustainable Drainage Standards	These set out guidance/ best practice on sustainable drainage matters and are commonly used by developers with the aim to meet/ exceed the requirements for submission of planning applications such as flood risk assessments, drainage strategies, and SuDS design, amongst others.
Shoreline Management Plans	Shoreline management plans are developed by Coastal Groups with members mainly from local councils and the Environment Agency. They identify the most sustainable approach to managing the flood and coastal erosion risks to the coastline in the short-term (0 to 20 years); medium term (20 to 50 years); and long term (50 to 100 years).
Local and Regional River Restoration Plans	These set out a plan for restoring rivers, predominantly in a 'natural' context through rewilding, improving natural flood management, wetlands, de-channelising, and more. Some may focus on water quality and others may focus more on flood risk depending on their needs and public interests. Across the region there are many plans predominantly authored by Local authorities, local river trusts, National Parks, and wildlife organisations.
Local and Regional Diffuse Water Pollution Strategies	These set out a plan for investigating/ reducing sources of diffuse pollution into waterbodies. Many in urban areas are heavily modified water bodies that have suspected/known urban pollution sources negatively impacting water quality, including waterbodies under WFD. In more rural areas, especially National Parks, there are catchment sensitive farming strategies/ schemes such as those in the Yorkshire Dales Catchment Partnership.
Heritage	
Heritage Coast Management Plans	Heritage coasts are 'defined' rather than designated, so there isn't a statutory designation process like that associated with national parks and areas of outstanding natural beauty (AONB). They were established to conserve the best stretches of undeveloped coast in England. A heritage coast is defined by agreement between the relevant maritime local authorities and Natural England.
World Heritage Site Management Plans for Saltaire and Studley Royal Park	According to the "Operational Guidelines for the Implementation of the World Heritage Convention" every site inscribed on the World Heritage List must have a management plan explaining how the outstanding universal value of the site can be preserved. Management plans are the central planning instrument for the protection, use, conservation, and the successful development of World Heritage sites.

Overarching	
Local Development Plans and Green Infrastructure Plans /Strategies.	Local Development Plans are the main framework for planning in local authorities and set out the long-term spatial concept. They include policies for sustainable development including environmental, social, and economic. In some instances, LDP are supported by green infrastructure plans/strategies which set out the details on the provision and access to quality multifunctional green spaces. The following local authorities are located within the Study Area and therefore their Local Plans are relevant: Ashfield; Barnsley; Bolsover; Bradford; Burnley; Calderdale; Chesterfield; County Durham; Craven; Derbyshire Dales; Doncaster; East Riding of Yorkshire; Eden; Hambleton; Harrogate; High Peak; Kingston upon Hull; Kirklees; Leeds; North East Derbyshire; North Lincolnshire; Oldham; Pendle; Redcar & Cleveland; Ribble Valley; Richmondshire; Rochdale; Rossendale; Rotherham; Ryedale; Scarborough; Selby; Sheffield; South Lakeland; Wakefield; and York.
Defra, Public Rights of Way Improvement Plans (ROWIPs)	ROWIPs outline how local authorities aim to enhance public rights of way to ensure improved accessibility, connectivity, and quality of the network.
National Park Management Plans: Peak District 2018- 2023 (2018) Yorkshire Dales 2019 – 2024 (2019) North York Moors 2017 – 2022 (2017)	Every National Park has a National Park Management Plan. It's the most important document for the National Park, setting out how the National Park and partners will work together to achieve shared objectives for the future management of the National Park. The Plans aim to achieve the long-standing vision for the respective parks.
Water/ Wastewater Company specific - Yorkshire Water	
Water Resources	
Yorkshire Water's Business Plan for 2020-2025 (2019)	The plan will outline how water and waste water services are delivered in a resilient and sustainable way. Future planning is a big part of the company's thoughts and over 30,000 customers and stakeholders have been involved in creating the plan.
Drought Plan – Drought Plan (2021)	The Drought Plan identifies management of future droughts. It identifies what measures are available to reduce demand and support supplies and what triggers can be used to identify when actions are required. The Plan also outlines how a company will communicate with customers during a drought and utilise links to external water companies if required.
Yorkshire Water Resource Management Plan (WRMP) (2019)	The current plan is the Water Resources Management Plan 2019, and it is supported by a Strategic Environment Assessment. It shows the plan to maintain a secure supply of water to customers over the next 25 years. The plan is developed following guidance from the Environment Agency and is reviewed and revised every 5 years.
Yorkshire Water SuDS Design Guidance (2021)	This document provides design guidance to develop the Scope of retrofit capital projects up to Gate 3 of the AMP 7 Engineering Design Approach (EDA) as well as for external developers designing and constructing SuDS devices for the adoption by Yorkshire Water. The scope of this design guidance is Sustainable Drainage Systems (SuDS) that are designed to be owned and/or maintained by YW in accordance with clauses A6.11 and A6.19 of the Codes for Adoption (2020).

Appendix C ENVIRONMENTAL BASELINE REVIEW AND FUTURE TRENDS

ENVIRONMENTAL BASELINE

1.1 BIODIVERSITY AND GEODIVERSITY

Biodiversity is the variety of plants (flora) and animal life (fauna) within an area/ habitat. The importance of maintaining and improving biodiversity is recognised from a local scale up to the international scale, and the UK is one of the world's most nature-depleted countries[1].

Data for this SEA topic at this strategic level mostly relates to internationally and nationally designated sites which have the highest level of protection within the UK and are home to some of the highest value biodiversity, more local datasets will be identified in later stages of the SEA process. It is recognised that biodiversity value extends beyond designated sites, not only to other designated sites, but also to the connectivity between habitats. This is considered through the Habitat Network. Please note, all sites listed in this baseline are intersecting sites, i.e., the boundary of the site overlaps the boundary of the Level 1 area. The HRA Report will set out what study area has been used for that specific assessment.

Ramsar Sites are wetlands of international importance designated under the Ramsar Convention. Three Ramsar Sites intersect the Level 1 Region and are listed in **Table 1**.

Special Areas of Conservation (SAC) are protected areas under the Conservation of Habitats and Species Regulations 2017 (as amended) which require establishment of a network of important high-quality conservation sites that will make a significant contribution to conserving the habitats and species. Twenty SACs are located within the Level 1 Region and are listed in **Table 1.** SACs can include marine components to protect habitat and/ or species associated with the marine environment.

Special Protection Areas are protected areas for birds under the Conservation (Natural Habitats) Regulations 2010 (as amended). Ten Special Protection Areas, made up of 63 individual areas, are located within the Level 1 Region and are listed in **Table 1.** These can include marine components to protect bird species that are dependent on the marine environment for all or part of their lifecycle.

A Site of Special Scientific Interest (SSSI) describes an area that is of particular interest to science due to the rare species of fauna or flora it contains or important geological or physiological features that may lie within its boundaries. Within the Level 1 Region there are 327 SSSIs, made up of 563 individual areas, listed in **Table 1.**

National Nature Reserves (NNRs) were established to protect some of the most important habitats, species, and geology, and to provide 'outdoor laboratories' for research. Nine NNRs intersect the Level 1 Region and are listed in **Table 1**.

Marine Conservation Zones (MCZs) are areas designated by Ministerial Orders to protect a range of nationally important, rare, or threatened marine habitats and species. Two MCZs intersect the Level 1 Region and are listed in **Table 1.** One further MCZ is located over 10km east from the Holderness Coast. No biosphere reserves are present in the region.

Due to the strategic nature of SEA, local sites are not directly referred to in this report, including Sites of Importance for Nature Conservation; Local Wildlife Sites; and Local Nature Reserves.

[1] BBC News (2021) Biodiversity: UK is one of the world's most nature-depleted countries, available from: https://www.bbc.co.uk/newsround/58863097, accessed April 2022.

There are specific national and trans-national policies that apply to certain species such as shellfish or eel which should be followed where these are applicable to specific options at the plan implementation stage.

Regionally (and to an extent nationally), there is public and political focus on wastewater discharge and the socio-economic/ environmental impact for shellfish and other species[2] as well as wider environmental and social uses.

Table 1 – Biodiversity datasets intersecting the Level 1 Region

Biodiversity Dataset	List of intersecting sites within the Level 1 Region	
Ramsar	• Humber Estuary • Malham Tarn	• Lower Derwent Valley
SAC	• Humber Estuary • Craven Limestone Complex • Beast Cliff Whitby (Robin Hood's Bay) • Kirk Deighton • Denby Grange Colliery Ponds • Ox Close • Strensall Common • Ellers Wood & Sand Dale • Skipwith Common • Hatfield Moor	• Arnecliff & Park Hole Woods • North Pennine Dales Meadows • South Pennine Moors • Thorne Moor • Fen Bog • Flamborough Head • North York Moors • Lower Derwent Valley • River Derwent • North Pennine Moors
Special Protection Area	• Greater Wash • Hornsea Mere • Humber Estuary • South Pennine Moors Phase 2 • Peak District Moors (South Pennines Moors Phase 1)	• Thorne & Hatfield Moors • Flamborough and Filey Coast • North York Moors • Lower Derwent Valley • North Pennine Moors
SSSI	• Acaster South Ings • Allerthorpe Common • Angram Bottoms • Arkengarthdale, Gunnerside and Reeth Moors • Arkle Beck Meadows, Whaw • Arnecliff and Park Hole Woods • Ashberry and Reins Wood • Ashfield Brick Pits • Askham Bog • Askrigg Bottoms • Aubert Ings • Aysgarth • Barn Hill Meadows • Bastow Wood • Beck Dale Meadow • Beck Hole • Beckhead Plantation • Bellerby Fields • Betton Farm Quarries • Bilham Sand Pits • Biller Howe Dale • Bingley South Bog • Birkham Wood • Birks Fell Caves • Bishop Monkton Ings • Bishop Wilton Deep Dale • Bishop Wilton Poor Land • Black Keld Catchment • Black Scar Quarry • Blaiskey Bank Springs • Bolton Percy Ings • Boreham Cave • Boulby Quarries	• Kisdon Force Woods • Ladyhills • Lambwath Meadows • Langcliffe Scars and Jubilee, Albert, and Victoria Caves • Leeds - Liverpool Canal • Len Pastures, Crackpot • Leven Canal • Leyburn Glebe • Linton Common • Little Don Stream Section • Littlebeck Wood • Lovely Seat - Stainton Moor • Low Gill Moor Wetlands • Low Pasture • Lower Swaledale Woods And Grasslands • Madbanks and Ledsham Banks • Malham-Arncliffe • Malham-Arncliffe (Cool Pasture) • Mallerstang-Swaledale Head • Mar Field Fen • Marsett Rigg • Meadow Croft, Skythorns • Melbourne and Thornton Ings • Melton Bottom Chalk Pit • Micklefield Quarry • Mickletown Ings • Mill Holme Meadow, Thwaite • Millington Wood and Pastures • Moss Valley • Moss Valley Meadows • Moss Valley Woods • Mount Pleasant Quarry

[2] ITV News (2022) Fishermen scared for livelihoods as sea creatures disappear from Yorkshire coast, available from: https://www.itv.com/news/calendar/2022-01-15/mass-crab-deaths-could-spell-disaster-for-yorkshire-coast-tourism, accessed April 2022.

	• Bowes Moor • Boynton Willow Garth • Bradgate Brickworks • Brantingham Dale • Brants Gill Catchment • Breary Marsh • Breighton Meadows • Bride Stones • Brimham Rocks • Broadhead Clough • Brockadale • Bryan Mills Field • Bull Ings • Burr Closes, Selby • Burton Bushes • Burton Leonard Lime Quarry • Cadeby Quarry • Canyards Hills • Carlton Main Brickworks • Castle Hill Deer Park and Windy Pits • Castlebeck and Scar Woods • Cawthorn Moor • Caydale • Cayton, Cornelian and South Bays • Chris's Pasture • Church Ings • Cinquefoil Brow and Wood Dale • Cliff Beck Meadow, Buttertubs • Cliff Force Cave • Clifton Ings And Rawcliffe Meadows • Clints Quarry • Cockerham Meadows, Thorpe • Cockrah Wood • Conistone Old Pasture • Cottam Well Dale • Cow Cliff Pasture and Quarry • Cow Myers • Cracoe Reef Knolls • Crimsworth Dean • Cropton Banks and Howlgate Head Woods • Dalby Bush Fen • Dark Peak • Dearne Valley Wetlands • Deepdale Meadows, Langstrothdale • Denaby Ings • Denby Grange Colliery Ponds • Derwent Ings • Dimlington Cliff • Doe Lea Stream Section • Dovedale Wood • Dow Cave System • Drewton Lane Pits • Duckmanton Railway Cutting • Duncombe Park • East Heslerton Brow • East Keswick Fitts • East Nidderdale Moors (Flamstone Pin - High Ruckles) • Eastern Peak District Moors • Eccup Reservoir • Elland Bypass Cutting • Ellerburn Bank • Ellers Wood and Sand Dale • Enthorpe Railway Cutting • Eskamhorn Meadows • Everthorpe Quarry • Fairburn and Newton Ings • Fairy Call Beck • Far Mains and Far Limekiln Close Meadows • Farndale • Farnham Mires	• Muker Meadows • Nabgate • Naburn Marsh • Neepsend Brickworks • Neepsend Railway Cutting • New Close, Calvert Houses • New House Meadows, Malham • Newbald Becksies • Newbridge Quarry • Newsome Bridge Quarry • Newton Mask • Newtondale • Newton-le-Willows Meadows • Nine Spring Dale • Noddle End • North Bay to South Toll House Cliff • North York Moors • Norwood Bottoms • Nostell Brickyard Quarry • Nunnington Cutting and Quarries • Oughtershaw and Beckermonds • Owston Hay Meadows • Ox Close • Park Clough • Park Hall Meadows, Healaugh • Pen y ghent Gill • Pen-y-ghent • Pikedaw Calamine Caverns • Pilmoor • Pocklington Canal • Potteric Carr • Pry and Bottom Meadows, Mid Mossdale • Pulfin Bog • Pye Flatts Meadows • Quarry Moor • Raincliffe & Forge Valley Woods • Rake Dike • Richmond Meadows • Rievaulx Woods • Rifle Butts Quarry • Ripon Parks • River Derwent • River Hull Headwaters • River Ure Bank, Ripon Parks • River Ure Grasslands • River Wharfe • Roach Lime Hills • Robin Hood's Bay: Maw Wyke to Beast Cliff • Roos Bog • Runswick Bay • Ruston Cottage Pasture • Sandall Beat • Scar Closes, Kisdon Side • Scar End Wood • Scoska Wood • Seckar Wood • Seive Dale Fen • Semerwater • Shaw Beck Gill • Shaw's Gate Quarry • Sherburn Willows • Shirley Pool • Sked Dale • Skipsea Bail Mere • Skipwith Common • Sleightholme Dale • Snape Hill Quarry • Snaper Farm Meadows • South Cliffe Common • South Elmsall Quarry • South Pennine Moors

	• Feetham Holme • Filey Brigg • Flamborough Head • Flamborough Railway Cutting • Fordon Chalk Grasslands • Forlorn Hope Meadow • Fothering Holme • Freeholders Wood • Fulford Ings • Gingerfields • Golden Hill Pit • Gormire • Gouthwaite Reservoir • Gowerdale Windy Pits/Peak Scar • Grass Wood • Grassington Hospital Grounds • Great Almscliff Crag • Great Dib Wood • Green Lane Pit • Greenfield Meadow • Greenhow Pasture • Greenhow Quarry • Gristhorpe Bay and Red Cliff • Hack Fall Wood • Hackness Head Quarry • Hackness Rock Pit • Hambleton Quarry • Harewood Grange Stream Section • Harker's House Meadows • Harwood Dale Moor • Hatfield Chase Ditches • Hatfield Moors • Haugh and Gundale Slacks • Haw Crag Quarry • Hawkswick Wood • Hay-a-Park • Hayburn Wyke • Hell Gill • Heslington Tillmire • Hetchell Wood • Hill House Nab • Hoddy Cows Spring • Hole of Horcum • Holy Well Bridge • Honley Station Cutting • Hook Moor • Hornsea Mere • Horse Dale and Holm Dale • Horse Field, Gilling • Hotham Meadow • Humber Estuary • Iron Scar and Hundale Point to Scalby Ness • Jeffry Bog • Keasey Dale • Kelsey Hill Gravel Pits • Kettlewell Meadows • Kilnsey Flush • Kiplingcotes Chalk Pit • Kirk Deighton • Kirkby Wharfe • Kirkdale Cave • Kirkham Park & Riverside	• Spell Howe Plantation • Spiker's Hill Quarry • Spring Meadows, Alderman's Head & Cow Croft Meadows • Spring Wood,Hawnby • Sprotbrough Gorge • Stairfoot Brickworks • Staithes - Port Mulgrave • Standedge Road Cutting • Stannington Ruffs • Stephen Ings, Crackpot • Stonehead Beck ('Gill Beck') • Stonepit and Nova Slacks • Stran's Gill • Strensall Common • Strid Wood • Stump Cross Caves • Stutton Ings • Swale Lakes • Swinden Quarry • Swineley Meadow, Widdale • Tadcaster Mere • The Ings, Amotherby • The Lagoons • Thixen Dale and Long Dale • Thorne, Crowle and Goole Moors • Thowker Corner • Three Dykes • Thwaite Stones • Tophill Low • Totley Wood • Townclose Hills • Tranmire • Trench Meadows • Troutsdale and Rosekirk Dale Fens • Upper Dunsforth Carrs • Upper Nidderdale • Upper Wharfedale • Vessey Pasture Dale and Back Dale • Wadsley Fossil Forest • Walden Meadows • Wanlass Grasslands • Waterdale • Wath Quarry • Went Ings Meadows • Wentbridge Ings • West End Meadow, Lunds • West Nidderdale, Barden and Blubberhouses Moors • Wharncliffe Crags • Wharram Quarry • Whitby-Saltwick • Whitcliffe Section, Quarry Moor • White Carr Meadow • Whitfield Gill and Mill Gill • Wintringham Marsh • Withens Clough • Withow Gap, Skipsea • Wyedale • Yeadon Brickworks & Railway Cutting • Yockenthwaite Meadows
NNR	• Scoska Wood • Duncombe Park • Spurn • Malham Tarn • New House Farm, Malham	• Lower Derwent Valley • Humberhead Peatlands • Skipwith Common • Forge Valley Woods
MCZ	• Holderness Inshore	• Runswick Bay

Priority Habitats were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan. These habitats are now listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act and called 'Habitats of Principal Importance'. They are important habitats for wildlife and protection from harmful development is supported by the NERC Act and the National Planning Policy Framework (NPPF). The Environment Act (Part 6, Section 102) has strengthened the NERC Act duty to include 'Enhance' biodiversity. There are a range of designated NERC Act Section 41 habitats within the Level 1 Region which are listed below. YW has a duty to have regard to the conservation of biodiversity in exercising its function relating to habitats and species of principal importance.

- Blanket bog
- Calaminarian grassland
- Coastal and floodplain grazing marsh
- Coastal saltmarsh
- Coastal sand dunes
- Deciduous woodland
- Fragmented heath
- Good quality semi-improved grassland
- Grass moorland
- Limestone pavement
- Lowland calcareous grassland
- Lowland dry acid grassland
- Lowland fens
- Lowland heathland
- Lowland meadows
- Lowland raised bog
- Maritime cliff and slope
- Mudflats
- No main habitat but additional habitats present
- Purple moor grass and rush pastures
- Reedbeds
- Saline lagoons
- Traditional orchard
- Upland calcareous grassland
- Upland flushes, fens and swamps
- Upland hay meadow
- Upland heathland

In recognition of the importance of connectivity between habitats (which increases resilience to climate change), Habitat Networks have been mapped by Natural England at the national scale[3]. This network covers approximately 50% of the total study area with upland areas to the north and west having greatest coverage, largely correlating to the Yorkshire Dales and North York Moors National Parks. The Environment Act states that 'a local nature recovery strategy for an area is to be prepared and published by the responsible authority' – this might be a local authority or national park as examples.

Soil is a limited resource under pressure from climate change, population growth, urban development, waste, pollution, and the demand for more (and cheaper) food. Soil also stores more carbon than the atmosphere, is an important habitat, and can help reduce flood risk and prevent drought through holding water.

[3] Natural England (2021) Habitat Networks (Combined Habitats) (England) | Habitat Networks (Combined Habitats) (England) | Natural England Open Data Geoportal (arcgis.com), accessed March 2022.

Provisional Agricultural Land Classification groups land within the region into five grades. Grade one is the best quality and grade five is poorest. Several criteria are used for assessment and include climate, site (gradient, micro-relief, flood risk) and soil. Outside of urban areas, western parts of the Level 1 Region generally have a lower grade owing largely to higher elevation along the Pennines. Generally, areas to the east, outside of the North York Moors National Park, are higher quality grade (mostly Grade 2 or 3). Northern areas generally have a lower quality grading, owing largely to the higher elevated areas within the two National Parks, and possibly some marginal latitude variation. Some small sections of the Level 1 Region are ranked as Grade 1 land, which is the highest quality agricultural land within the UK, and relatively rare in northern England. The Grade 1 land is located within the Level 2 SPAs of Derwent & Rye, Lower Ouse, and the Lower Don.

Yorkshire has a diverse landscape which allows for a variety of farming uses. Defra data for the Yorkshire & Humber region for 2019 shows that grazing livestock farms accounted for 32% of farmed area, and that cereal farms covered 30% of farmed area. Although pig farms accounted for a smaller proportion, the region accounted for 37% of the total English pig population[4].

Regionally important geological and geomorphological sites (RIGS) are locally designated sites of local, regional, or sometimes national importance for geodiversity (geology and geomorphology). In some local areas locally designated sites including RIGS with substantive geological interest may now be called local geological sites.

Coastal erosion rates along the Holderness Coast are high owing to soft glacial till (mostly made up of clay, pebbles, and sand), making it vulnerable to coastal erosion. "Recent records suggest that parts of the East Riding coastline are eroding at an average rate of up to 4 metres per year; however, certain locations which are not defended can experience individual cliff losses of 20 metres or more due to natural processes"[5].

The geology across the region, including bedrock and superficial, is greatly varied. Using mapping provided by the British Geological Survey[6], a summary is that:

- The oldest rocks are generally found in the west of Yorkshire, with the youngest in the east. Large parts of the region have been influenced by historical glacial activity, particularly upland areas in the north and west.
- Carboniferous Limestone and overlying Upper Carboniferous Millstone Grit dominate upland countryside of the Yorkshire Dales and the North Pennines.
- The South Yorkshire area is underlain by rocks of Carboniferous age.
- Moorland along the Pennines feature shales and sandstone beds of Millstone Grit.
- The geology of the East Riding of Yorkshire includes clays, limestone, and sandstones of Jurassic age. The Chalk Wolds are a series of hills ranging from the area around Flamborough Head to the River Humber with coastal areas between these locations experiencing high erosion rates.
- Historic coal mining took place across many parts of the Level 1 region, with many urban locations built in proximity.

[4] GOV.UK (2019) Agriculture Regional Profiles, available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/972098/regionalstatistics_yorkshumber_23mar21.pdf, accessed February 2022.
[5] East Riding Council (2022) Coastal change in the East Riding, available from: https://www.eastriding.gov.uk/environment/sustainable-environment/looking-after-our-coastline/coastal-change-in-the-east-riding/, accessed February 2022.
[6] BGS (2022) Geology of Britain Viewer, available from: Geology of Britain viewer | British Geological Survey (BGS), accessed February 2022.

LIKELY FUTURE WITHOUT THE PLAN
Development is likely to increase the risk of habitat loss and fragmentation, particularly outside of the extensive designated areas. The recent Environment Act requires a biodiversity net gain from developments where planning permission is required. The Defra 25 Year Environment Plan includes a commitment to restore 75% of terrestrial and freshwater protected sites to favourable condition and to create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits. Climate change will impact wildlife in the future by various means including, but not limited to, drought, timing of seasonal activities, higher frequency of storms, native species redistribution, invasive non-native species, and increased potential for wildfire. Changing climate could impact on the quality of soils across the region through temperature changes and shifting rainfall patterns. The Holderness Coastline erosion rate could be increased by climate change and localised rates could be impacted by coastal management techniques used to protect urban areas. Policy on soil improvement should lead to an improvement in reducing degradation/ erosion despite developmental pressures. This is important on a regional, and national scale, to ensure soil sustainability with potential negative impacts for food production and water quality.

1.2 HUMAN HEALTH

According to regional data published by the Office for National Statistics, Yorkshire and the Humber had a 2018 population of approximately 5,480,000. The projected population growth is expected to be 3.6% to a 2028 population of 5,674,000. This is below the English national projected growth of 5% between 2018 and 2028[7] and is the second lowest for all English regions. It should be noted that the planned growth through Local Development Plans amounts to a 7.2% increase in population from 2020 to 2030, this higher growth rate has been applied within the DWMP modelling to ensure a robust assessment.

Yorkshire and the Humber has lower life expectancy compared to the whole of England. Data released in September 2020 showed that regional life expectancy for males was 78.8 and for females was 82.5 in 2017 to 2019 compared to England national averages of 79.8 for males and 83.4 for females. Only the North East and the North West had lower regional averages for males and females in England.

Health profiles are published by Public Health England and record multiple indicators which collectively provide a summary for human health on a local authority scale. Data such as mortality rates, rates of cardiovascular diseases, suicide rates, and more can all be reviewed. Many local authorities were significantly below both regional and national averages for several indicators[8], with links to some of the socio-economic data in **Section 1.3**. There are numerous Public Rights of Way (PRoW) and cycle network routes across the region and access is an important part of policy for many designated sites. Any temporary or permanent closures or diversions to PRoW will need to be considered by the respective Local Planning Authority at a later phase.

[7] Office for National Statistics (2020) Subnational population projections for England: 2018-based, available from: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/2018based, accessed June 2022.
[8] Public health England (2022) Health Profiles, available at: Local Authority Health Profiles - PHE, accessed June 2022.

LIKELY FUTURE WITHOUT THE PLAN
An expected growth in population will bring opportunities and challenges to the region. The age profile across the whole UK is ageing and this also puts additional pressures on public finance and services. Much long-standing legislation and policy such as the National Planning Policy Framework (NPPF) have promoted green areas and improved access, with a recent increased emphasis of this across other policies and plans. There is also greater emphasis on future development being more focused towards brownfield sites and urban areas providing greater access to green spaces.

1.3 SOCIO-ECONOMIC

At the time of publishing the Scoping Report, the Yorkshire and the Humber Region had an unemployment rate (aged 16 and over) of 3.8% in the data published from September to November 2021. This was 0.3% below the UK average of 4.1%. At the time of publishing the Draft Environmental Report, the Yorkshire and the Humber Region had an unemployment rate (aged 16 and over) of 4.6%, in the data published from February to April 2022, this is 0.8% higher than the UK average of 3.8%[9]. Although the data is small, this does suggest a negative trend for the region against a slight improvement nationally. Please note unemployment is only one indicator of economic health and inactivity rates are considered separate to unemployment figures.

The English Indices of Multiple Deprivation (IMD) measures relative levels of deprivation in over 30,000 small areas or neighbourhoods, formally called Lower-layer Super Output Areas, in England. The 2019 IMD collects data from seven domains including income, employment, education, health, crime, barriers to housing/ services and living environment, which collectively give each neighbourhood a ranked score. Yorkshire and the Humber has a number of areas within the most deprived 10% of this national rank system, predominantly urban areas within the Calder (Halifax and Wakefield); Colne & Holme Valleys (Huddersfield); Dearne (Barnsley); Hull; Lower Don (Doncaster and Rotherham); Leeds; Sheffield; and Upper Aire (Bradford) SPA's. There are also deprived areas within smaller population centres, especially some of the coastal communities and legacy coal mining communities.

Overnight tourism has been estimated for each region in the UK by Visit Britain with a breakdown of tourism trips by region of residence and region visited (millions). Yorkshire and the Humber had over 9.6 million overnight trips in 2019[10]. This figure is higher than North East England, the East Midlands, the West Midlands. It is approximately the same as East England, and lower than London, North West England, the South East, and the South West. When considering overnight tourism, 26% of trips were from residents of the region. Only London and Wales had lower percentages of residents from their respective regions. This perhaps reflects the pull factor of the region with its abundance of beautiful landscapes and protected areas alongside major cities and coastal communities.

There is one major international airport in the region, Leeds & Bradford Airport. There are further major international airports near the Level 1 Region, including Teesside International (formerly called Durham Tees Valley) and Doncaster Sheffield Airport (formerly called Robin Hood Airport). There are numerous major A Roads and motorways within the region as well as an important rail network.

[9] ONS (2022) Labour market in the regions of the UK: June 2022, Available from: Labour market in the regions of the UK - Office for National Statistics, accessed June 2022.
[10] Visit Britain (2019) Available from: Great British Tourist Report 2019 (visitbritain.org) , accessed May 2022.

The Yorkshire Region includes some major ports including the Ports of Goole and Hull which are part of the Humber Estuary and is the "UK's busiest port complex which combined handles around 17% of the nation's trade"[11]. "The port of Hull handles approximately 10 million tonnes of cargo, amounting to around £12 billion in trade each year"[12]. "The port is connected by dual carriageway road links to the M62 and then M18 and M1, to service the whole of the British Isles. It is also connected to the inland waterways system"[12].

LIKELY FUTURE WITHOUT THE PLAN
Uncertainty over inflation, the cost-of living crisis, recent inflationary pressures, and government debt incurred during Covid-19 may impact the economy for years to come. The impact of Brexit may especially affect communities reliant on the economic presence resulting from ports, although the Humber was announced as a freeport in March 2021 which is anticipated to bring benefits[13]. Employment and wider economic inactivity rates in the future are uncertain owing to the circumstances listed above, as is the regional variation within the UK. Government focus on levelling up has been prominent but so far this is not directly reflected within many plans or policies. Investment in infrastructure is likely to remain moderate to high in the medium-term with optioneering currently underway for upgraded and new infrastructure.

1.4 CARBON & MATERIAL ASSETS

Population growth in the region is lower than the English national average; however, development will be required to meet the anticipated growth. This is likely to increase pressure on land use. Nationally there is a preference within policy for sustainable use of land through reuse and intensification of previously developed land, i.e., brownfield development; as well as sustainably locating development close to services, facilities, and sustainable transport. Green Belt plays an important role in planning and primarily aims to reduce urban sprawl. Large areas of Green Belt surround towns and cities such as Bradford, Leeds, Sheffield, and York. The complete list of local authorities with Green Belt that intersects the Level 1 Region includes: *Barnsley; Bolsover; Bradford; Calderdale; Chesterfield; Doncaster; Hambleton; Harrogate; Kirklees; Leeds; North East Derbyshire; Oldham; Pendle; Rochdale; Rossendale; Rotherham; Ryedale; Selby; Sheffield; Wakefield;* and *York*.

Waste is a serious issue for all regions of the UK both in the short and long term. Use of waste hierarchy principles, such as reuse and recycle, has improved greatly in recent decades with still much work to be done. Resource use refers to what assets will be built from, considering raw material scarcity, recycling, and embodied carbon. It also refers to where assets will be built factoring in promotion of site reuse where practicable.

Average recycling/ composted rates for local authority collected waste in Yorkshire and the Humber for 2019/20 was 43.6% which was marginally higher than the average for England of 42.8%, with landfill at 4.3%, under the English average of 8.5%[14]. There were 236 permitted waste sites on the Environment Agency records for authorised landfill[15] within the Level 1 Region, although some of

[11] Humber Freeport (2022) Britain's Global Gateway, available from: https://humberfreeport.org/about/, accessed May 2022.
[12] Associated British Ports (No Date, *post 2017*) Locations: Hull, available from: https://web.archive.org/web/20200622180834/https://www.abports.co.uk/locations/hull/, accessed May 2022.
[13] GOV.UK (2022) Freeports Guidance. Available from: Freeports - GOV.UK (www.gov.uk), accessed May 2022.
[14] Defra (2021) Statistics on waste managed by local authorities in England in 2019/2020, available from: Statistics on waste managed by local authorities 2019 (publishing.service.gov.uk), accessed April 2022.
[15] Environment Agency (2022) Defra Data Services Platform, accessed April 2022.

these are likely to have expired. Landfill Sites are becoming more difficult to source nationally, and historically the Northern England has used many former quarries.

Yorkshire is an important economic region within the UK and the desire to grow the economy adds pressure to energy and resource demand, although the growth in renewables could offset some pressures.

The Yorkshire & Humber Climate Commission states that as a region, "we have a target of reaching net zero carbon emissions by 2038, with significant progress being achieved by 2030"[16]. The South Yorkshire Combined Authority "are working towards being net zero carbon emissions by 2040"[17]. The West Yorkshire Combined Authority and the Leeds City Region Enterprise Partnership "are working towards being a net zero carbon economy by 2038, and to have made significant progress by 2030"[18]. North Yorkshire County Council has committed to "an aspiration to achieve net carbon neutrality by 2030" for all council services from lighting to schools and waste disposal[19].

YW have made a carbon net zero commitment: "Yorkshire Water is on its way to reach carbon net zero by 2030. It is one of three water companies driving a world leading industry group in setting out its route map to reaching the net zero milestone in the next ten years"[20].

Air quality is varied across the Level 1 Region with higher concentrations of air pollutants found in more urban areas, usually resulting from transport or industrial production. Domestic energy use predominantly releases air pollution at the generating source, such as power stations which are usually located outside of urban areas.

Air Quality Management Areas (AQMAs) are declared where the national air quality objectives are not being met. AQMAs are predominately designated for Nitrogen dioxide (NO_2) and Particulate Matter (PM10). There are 65 AQMAs that intersect the Level 1 Region. The following lists the AQMAs of relevance by number per local authority.

- Barnsley – 6
- Bolsover – 2
- Calderdale – 8
- Chesterfield – 1
- City of Bradford – 4
- Doncaster – 7
- Hambleton – 1
- Harrogate – 4
- Kingston upon Hull – 1
- Kirklees – 9
- Leeds – 1
- Rochdale – 1
- Rotherham – 7

[16] Yorkshire & Humber Climate Commission (2021) Climate Action Plan, available from: http://yorksandhumberclimate.org.uk/climate-action-plan, accessed June 2022.
[17] The South Yorkshire Combined Authority (2022) Energy and Greener Future Strategy https://southyorkshire-https://southyorkshire-ca.gov.uk/explore/energy-greener-future , accessed June 2022.
[18] West Yorkshire Combined Authority (2020) Emission Reduction Pathways report, available from: https://www.westyorks-ca.gov.uk/media/4268/emission-reduction-pathways-report.pdf, accessed June 2022.
[19] North Yorkshire County Council (2022) Beyond Carbon, available from: https://www.northyorks.gov.uk/beyond-carbon, accessed May 2022.
[20] Yorkshire Water (2020) Yorkshire Water makes headway on route map to carbon net zero, available from: https://www.yorkshirewater.com/news-media/news-articles/2020/route-map-to-carbon-net-zero/#:~:text=Yorkshire%20Water%20is%20on%20its%20way%20to%20reach,net%20zero%20milestone%20in%20the%20next%20ten%20years, accessed May 2022.

- Ryedale – 1
- Scarborough – 1
- Selby – 1
- Sheffield – 1
- Wakefield – 8
- York – 1

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The Government's National Infrastructure Strategy (2020) outlines a legal commitment to decarbonise the economy by 2050, strategies to rebuild the economy following the COVID-19 pandemic and plans to 'level-up' UK cities and regional powerhouses. Many local, regional, and national polices and plans have ambitious targets to improve air quality, particularly in urban areas. Some urban areas are proposing clean air emission zones such as Bradford in 2022, with further areas anticipated to follow in the near future. Regeneration and investment are likely to increase the number and quality of material assets including transport infrastructure, recycling facilities, and building efficiency.

1.5 WATER RESOURCES

In general, annual rainfall is lower in the east of England compared to the west of England. Supply demand status for Water Resource Zones (WRZs) across the region shows that as of 2021, Yorkshire Grid SWZ (Surface Water Zone), and Yorkshire East SWZ are areas of surplus[21], although Yorkshire Grid SWZ was revised to deteriorating surplus/ risk of deficit, with the dual impacts of increased demand and climate change driving this. Further WRZ marginally intersect the Level 1 Region including Kielder (Northumbrian Water); Nottinghamshire (Severn Trent Water); Strategic Grid (Severn Trent Water); and UU-Strategic (United Utilities)[22]. If water usage increases this is likely to place additional pressures on wastewater treatment which can also be energy intensive.

The Humber River Basin District (RBD) is designated under the Water Framework Directive and covers an area of 26,100km^2, extending from North Yorkshire in the north to Birmingham in the south, and Staffordshire in the west to the North Sea, and parts of Lincolnshire and East Riding of Yorkshire in the east[23]. There are 15 management catchments that make up this RBD, which include interconnected rivers, lakes, groundwater, estuaries, and coastal waters. In total more than 10.8 million people live and work in towns and cities within the district. Each RBD features numerous water bodies with assessed status for ecological, biological, and chemical indicators. The RBD had 32 water bodies that failed for chemical status and 168 water bodies with either a bad or poor ecological status/ potential, from a total of 987. Small sections of the Level 1 Region intersect the North West RBD, Northumbria RBD, and Solway Tweed RBD.

There are only approximately 200 rivers globally recognised as chalk streams, and over 80% of them are in the UK, including some within East Yorkshire (within the counties of North Yorkshire and the

[21] Water Resources North (2021) Revised Water Resources Position Statement, available from: wren-report-feb21-final.pdf (waterresourcesnorth.org), accessed April 2022.
[22] Defra (2021) Spatial Download for WRZ. Available from: Defra Spatial Data Download, accessed April 2022.
[23] Environment Agency (2015) RBMP, available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718328/Humber_RBD_Part_1_river_basin_management_plan.pdf, accessed April 2022.

East Riding of Yorkshire). Chalk streams rise from springs found in chalk bedrock and owing to this do have low levels of sediment making them mostly clear. Due to the specialist conditions, "a range of aquatic plants associated with winterbourne and perennial chalk streams can be found including pond water crowfoot (*Ranunculus peltatus*), water cress (*Rorippa nasturtium-aquaticum*), fools water cress (*Apium nodiflorum*), water speedwell (*Veronica anagallis-aquatica*) and water mint (*Mentha aquatic*)"[24].

To demonstrate the use of the river beach at Ilkley by swimmers and thus promote good water quality, part of the River Wharfe became the first river bathing site in England in 2021. Further sites along coastal areas are also designated as bathing sites (their locations are updated on the Defra website each bathing season, for example the 2022 list was released in May 2022[25]).

LIKELY FUTURE WITHOUT THE PLAN
The anticipated population growth alongside the desires for economic growth will likely increase stress on water availability and the natural environment. The effects are likely to be amplified by climate change such as through changing rain patterns, higher temperatures creating and increased drought. Increased population in the region is likely to increase wastewater treatment requirements. The continued issue of plastics entering watercourses, and ultimately the global ocean system, is likely to grow in prominence given plastic properties of slow decomposition.

1.6 FLOOD RISK

Flood risk across the Level 1 Region differs and can occur from a wide range of sources including fluvial, coastal, groundwater, reservoir, sewer, and surface water. Climate change is expected to result in more extreme weather events; increased sea levels; and changes to rainfall and temperature which could all impact on the future flood risk which makes assessing flood risk against historical data more difficult.

Research to inform the UK's third national climate change risk assessment found that the risk of flooding from all sources is increasing[26]. Key findings from the report are set out in the bullets below:

- Yorkshire is especially vulnerable to the significant increase in coastal flood risk caused by sea level rise, owing largely to the Holderness geology which was outlined in the Biodiversity & Geodiversity section.
- Many (but not all) rivers in the region will see an increase in peak flows of between 5-15%, with several larger rivers seeing increases of 15-25% under a 4ºC rise in global temperature. A 20% increase in peak river flow decreases a 1 in 200-year flood defence to approximately a 1 in 72-year protection.
- Out of the top 20 national local authorities with the highest future expected economic damages from all sources of flooding, five are in Yorkshire; namely, Hull, Sheffield, Kirklees, Leeds, and Calderdale. Hull is nationally the local authority with the highest future risk, and costs, and is the

[24] Hull and East Riding Catchment Partnership (2021) 'Chalkshire' Britain's Most Northerly Chalk Outcrop Yorkshire's Hidden Landscape, available from: 210701-Chalkshire-Report-FINAL-JT.pdf (catchmentbasedapproach.org), accessed April 2022.
[25] Defra (2022) List of current bathing waters (2021 bathing season), available from: https://www.gov.uk/government/publications/bathing-waters-list-of-designated-waters-in-england/list-of-current-bathing-waters-2019-bathing-season,accessed June 2022.
[26] Sayers and Partners (2020) Third UK Climate Change Risk Assessment (CCRA3) Future flood risk, available from: https://www.ukclimaterisk.org/wp-content/uploads/2020/07/Future-Flooding-Main-Report-Sayers-1.pdf ,accessed April 2022.

second highest for deprivation, meaning its residents are less able to adapt to events, recover from them, or have flood insurance.

- Yorkshire Water has the highest future flood risk (assuming no additional action) out of all the water companies.
- Yorkshire also has the highest hectarage of Best and Most Valuable Land at risk from flooding, around 60,000ha at risk from frequent flooding (more frequent than 1 in 30) under a 2^{o}C increase, and more than 80,000ha at risk under a 4^{o}C increase.
- The region has the highest number of Category A infrastructure sites at flood risk.

The YW area of operation predominantly intersects the Humber RBD. Almost 300,000 properties in the RBD receive direct flood warnings[27]. The characteristics of the Level 1 Region mean that different catchments present varied issues, with upland catchments predominantly in the west often designated as rapid response areas owing to steep topography, and urban areas accentuating the risk of flash flooding. In the east, and along the Humber Estuary, there are lowlands which are only a few metres above sea level and the Holderness Coastline has one of the highest erosion risks in the UK. Thousands of residential and non-residential properties in the RBD benefit from river flood risk management schemes. Coastal and tidal defences also protect many thousands of properties, including in Hull and towns along the Humber Estuary. "The total length of coastal and tidal defences across the river basin district is approximately 2,100km"[27].

The Environment Agency and local authorities also manage and seek to reduce flood risk through the planning system. There are multiple Environment Agency Main Rivers and ordinary watercourses within the Level 1 Region which have flood zones with planning guidance on development and the requirements for further study such as Flood Risk Assessments. Where appropriate for the DWMP, Flood Zones and updated Flood Map for Surface Water (uFMfSW) outlines will be investigated in greater detail post the SEA where assessment is undertaken on Level 3 catchments.

YW manages flooding from the sewer network and there is an ongoing programme to renew and replace sewers to reduce the risk of sewer flooding through the current AMP period, and into the future. YW works with partners such as local authorities and the Environment Agency to investigate how to manage and reduce flood risk in a coordinated way. Planning guidance promotes sustainable drainage to decrease volume and velocity of water entering the sewer network.

LIKELY FUTURE WITHOUT THE PLAN
Climate change is likely to result in changing rainfall patterns in terms of volume and intensity. Flood risk can be affected by either factor, or in-combination. Climate change could also make it more difficult to accurately predict flood events as historical data becomes less relevant, although modelling technique improvements will mitigate this to some extent. The Government's 25-year Environment Plan looks to strengthen policy including National Planning Policy Framework (NPPF) guidance regarding development in relation to flood risk. Sustainable solutions and those with wider green benefits are promoted, and these also fit with the strategic direction of YW policy.

[27] Environment Agency (2016) FRMP: Humber River Basin Summary. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/507114/LIT_10204_HUMBER_FRMP_SUMMARY_DOCUMENT.pdf, accessed May 2022.

1.7 HERITAGE

The DWMP options have the potential to impact heritage assets, including built heritage and its setting, archaeology, and the historic landscape character, particularly where these are related to the water environment or may be affected by drainage measures. Archaeological remains are sensitive to changes relating to land use, water quality and water levels.

A World Heritage Site (WHS) is a natural or man-made site, area, or structure recognized as being of outstanding international importance. Two WHS are within the Level 1 Region, and these are Saltaire; and Studley Royal Park including the ruins of Fountains Abbey, both have associated buffer zones. Saltaire is an "exceptionally complete and well-preserved industrial village of the 19th century", located on the river Aire in West Yorkshire with influence on both urban planning and social welfare in the UK and abroad[28]. Studley Royal Park, including the ruins of Fountains Abbey is situated in North Yorkshire. It is an "18th century designed landscape which features buildings, gardens, and landscapes representing over 800 years of human ambition, design, and achievement" and "is one of the few great 18th century gardens to survive substantially in its original form"[29].

A Scheduled Monument is a nationally important archaeological site or historic building, given protection against unauthorised change. There are 2,478 Scheduled Monuments in the Level 1 Region, and they are distributed across the region.

The Protection of Wrecks Act (1973) allows the Government to designate a wreck to prevent uncontrolled interference. Two protected wrecks are located along the coastline, namely, SM UC-70 (1446103), and Filey Bay Wreck (1000080).

There are seven Registered Battlefields within the Level 1 Region. These are:

- Battle of Adwalton Moor 1643
- Battle of Boroughbridge 1322
- Battle of Marston Moor 1644
- Battle of Myton 1319
- Battle of Northallerton 1138
- Battle of Stamford Bridge 1066
- Battle of Towton 1461

There are 29,469 listed buildings within the Level 1 Region. Of these, 626 are Grade I listed which is for a building or structure of exceptional interest. The remaining 28,843 are Grade II or II* listed. Nationally, only 2.5% of listed buildings are Grade I. Listing is not a preservation order, preventing change; however, it means that listed building consent must be applied for to make any changes to that building which might affect its special interest or setting.

There are 129 Registered Parks & Gardens within the Level 1 Region, 11 of which are Grade I listed with the remainder either Grade II or II*. These sites are a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the landscapes' special character.

[28] UNESCO (No Date) Saltaire, available from: https://whc.unesco.org/en/list/1028, accessed April 2022.
[29] UNESCO (No Date) Studley Royal Park including the Ruins of Fountains Abbey, available from: https://whc.unesco.org/en/list/372, accessed April 2022.

Other historical sites may be designated under categories not set out above and heritage advise should be sought (local authorities, county archaeologists, etc.) for future specific optioneering and any subsequent planning requirements.

LIKELY FUTURE WITHOUT THE PLAN
Some heritage assets have faced and survived significant climatic changes from the past and are likely to demonstrate resilience to climate change impacts. However, other historic assets may be at greater risk from the direct impacts of future climate change, through flooding, sea level change, storms, and other factors[30].

1.8 LANDSCAPE

Three National Parks are located within the Level 1 Region. National parks are areas of relatively undeveloped and scenic landscapes designated by national government. Water companies have a statutory duty to have regard to the protection of national parks in carrying out their functions as water undertaker. The Peak District National Park intersects four Level 2 SPAs; namely, Colne & Holme Valleys, Dearne, Rother & Doe Lea, and Sheffield. The North York Moors National Park intersects three Level 2 SPAs; namely, Derwent & Rye, Esk & Coast, and the Upper Dales. The Yorkshire Dales National Park intersects three Level 2s: Lower Dales; Upper Aire; and Upper Dales. Note, buffers for development/ consultation in National Parks can extend beyond the boundary.

An Area of Outstanding Natural Beauty (AONB) is a designated exceptional landscape whose distinctive character and natural beauty are precious enough to be safeguarded in the national interest. AONB are protected and enhanced for nature, people, business, and culture. Three AONB are located within Level 1 Region, and these are North Pennines, Nidderdale, and Howardian Hills. Each national AONB has a Management Plan, or plan of a similar name, which describes the area and identifies future trends and opportunities with actions.

The North Pennines AONB is “one of England’s most special places – a peaceful, unspoilt landscape with a rich history and vibrant natural beauty featuring tumbling waterfalls, sweeping moorland views, dramatic dales, stone-built villages, and snaking stonewalls” [31]. The North Pennines includes parts of the Pennine Dales Environmentally Sensitive Area.

The Howardian Hills AONB form a distinctive, roughly rectangular area of well-wooded undulating countryside that rise, sometimes sharply, between the flat agricultural Vales of Pickering and York. The area is famous as the setting for a remarkable concentration of fine country houses, whose parklands are an intrinsic part of the landscape[32]. The Nidderdale AONB is located on the eastern flanks of the Yorkshire Pennines stretching from the high moorland of Great Whernside south and east towards the edge of the Vale of York. The landscape is dominated by millstone grit geology giving it a typically dark, sometimes sombre appearance which is reflected in the stone of buildings and walls, in the heather moorland and in the characteristic grasslands. Glaciation and the differential resistance to weathering has produced some of the most dramatic features such as cut off crags on

[30] English Heritage, [now Historic England] (2010) Climate Change and the Historic Environment, accessed May 2022.
[31] Landscapes for Life (2022) Available from: North Pennines Area of Outstanding Natural Beauty (landscapesforlife.org.uk), accessed May 2022.
[32] Landscapes for Life (2022) Available from: https://landscapesforlife.org.uk/about-aonbs/aonbs/howardian-hills, accessed May 2022.

valley sides and wide U-shaped valleys. This is in contrast with the pastoral landscapes of the dales and upland fringes[33].

Natural England has defined a series of Natural Character Areas (NCA) to conserve nature in England. They are areas of countryside identified by the unique combination of physical attributes, wildlife, land use and culture; 21 intersect the Level 1 area, and a description of each is presented below in **Table 3**.

Table 3 – Applicable NCA

Name	Description
Tees Lowlands[34]	The mosaic of intertidal and wetland habitats within the Tees Estuary are internationally designated as Teesmouth and Cleveland Coast Special Protection Area and Ramsar site, due to their importance for waterfowl.
North Pennines[35]	Expansive moorlands, grasslands and meadows are important features and upland bogs and acid grassland cover much of the area. The area attracts large numbers of insects, waders, and birds of prey.
Pennine Dales Fringe[36]	Rolling landscapes where the Pennines and Yorkshire Dales transition. Broadleaved woodlands (many of them of ancient origin), coniferous and mixed plantations, and numerous small woods and hedgerow trees all contribute to the well-wooded character of the area.
Yorkshire Dales[37]	An undulating upland landscape with peatland and moorland common. Geologically important landforms are present with many from glacial periods. There are numerous habitats of importance and over two thirds are within National Park land.
North York Moors and Cleveland Hills[38]	Large open heather moorlands which support many protected species. Some 85 per cent of the area falls within the North York Moors National Park.
Vale of Mowbray[39]	Drained by the River Swale and its tributaries the River Wiske and the Cod Beck, meandering through flood plains with remnant rough-grazed riverine meadows of high ecological value in the north of the vale. Woodland and tree cover is sparse: small game coverts and parkland landscapes contribute locally to the tree cover.
Bowland Fringe and Pendle Hill[40]	A landscape that wraps around the dramatic upland core of the Bowland Fells including the Forest of Bowland AONB (Area of Outstanding Natural Beauty). It is a diverse landscape of herb-rich hay meadows – several of which are nationally and internationally designated – lush pastures, broadleaved woodland, parkland and waterbodies.
Dark Peak[41]	A landscape of large-scale sweeping moorlands, in-bye pastures enclosed by drystone walls, and gritstone settlements, within the Pennines. It falls almost entirely within, and forms a large part of, the Peak District National Park and approximately 46% of the area has been designated as a Special Protection Area/ Special Area of Conservation.
Derbyshire Peak Fringe and Lower Derwent[42]	A picturesque transitional area between the Peak District National Park to the west and the largely urban, historic mining communities to the east. The rivers are of major importance as they drain large volumes of water from the Peak District and the River Derwent has been significant to the area's economic and industrial heritage.
Holderness[43]	A largely rural, low-lying, undulating plain with coastal communities. To the east, lies a coastline made up of soft boulder clay cliffs. Rapid erosion of these cliffs' forms a part of important coastal processes of sediment transfer within, and to areas south of the River Humber.

[33] Landscapes for Life (2022) Available from: https://landscapesforlife.org.uk/about-aonbs/aonbs/nidderdale, accessed January 2022.
[34] Natural England (2013), Tees Lowlands, available from: NCA Profile: 23 Tees Lowlands - NE439 (naturalengland.org.uk), accessed February 2022.
[35] Natural England (2013), North Pennines, available from: http://publications.naturalengland.org.uk/publication/5682293?category=587130, accessed February 2022.
[36] Natural England (2013), Pennine Dales Fringe, available from: NCA Profile: 22 Pennine Dales Fringe - NE474 (naturalengland.org.uk), accessed February 2022.
[37] Natural England (2013), Yorkshire Dales, available from: NCA Profile: 21. Yorkshire Dales - NE399 (naturalengland.org.uk), accessed February 2022.
[38] Natural England (2012), North York Moors and Cleveland Hills, available from: NCA Profile: 25 North York Moors and Cleveland Hills - NE352 (naturalengland.org.uk), accessed February 2022.
[39] Natural England (2013), Vale of Mowbray, available from: http://publications.naturalengland.org.uk/publication/9856012, accessed February 2022.
[40] Natural England (2013), Bowland Fringe and Pendle Hill, available from: http://www.naturalengland.org.uk/publications/nca/bowland_fringe_and_pendle_hill.aspx, accessed February 2022.
[41] Natural England (2012), Dark Peak, available from: http://www.naturalengland.org.uk/publications/nca/dark_peak.aspx, accessed February 2022.
[42] Natural England (2014), Derbyshire Peak Fringe and Lower Derwent, available from: http://www.naturalengland.org.uk/publications/nca/derbyshire_peak_fringe_and_lower_derwent.aspx, accessed February 2022.
[43] Natural England (2013), Holderness, available from: http://www.naturalengland.org.uk/publications/nca/holderness.aspx, accessed February 2022.

Howardian Hills[44]	A clearly defined belt of irregular, rounded ridges with intervening sheltered valleys, diverse woodlands, historic buildings, parklands, and arable land. Three-quarters is within the Howardian Hills AONB, which lies to the south-west of the North York Moors National Park.
Humber Estuary[45]	Covers the open and expansive waters of the River Humber where it meets the North Sea. Several major rivers flow into the Humber, collectively draining one-fifth of England. A low-lying estuarine landscape, with extensive stretches of intertidal habitats including mudflats, salt marsh and reedbeds, coastal dunes and wetlands.
Humberhead Levels[46]	A flat, low-lying, and agricultural landscape bounded to the west by Southern Magnesian Limestone and to the east by the Yorkshire Wolds (north of the Humber). To the north it merges into the slightly undulating landscape of the Vale of York.
Lancashire Valleys[47]	The Lancashire Valleys broadly consist of the rivers Ribble and Calder and their tributaries, running north-east to south-west between the natural backdrops of Pendle Hill and the Southern Pennines. This landscape has a strong urban character.
Nottinghamshire, Derbyshire, and Yorkshire Coalfield[48]	Widespread industrialisation and human development on the landscape pattern is clear, influencing both the visual and ecological landscape. Over half of the NCA (64%) is currently designated as greenbelt; this maintains some distinction between settlements.
Southern Magnesian Limestone[49]	The geology has influenced landscape, from use of its limestone resource as a local building material, to the specialised limestone grasslands. The presence of the limestone ridge, and the drift deposits covering much of it, has produced fertile soils that have attracted settlement for more than 13,000 years.
Southern Pennines[50]	Part of the Pennines, lying between the Peak District and Yorkshire Dales National Parks. This landscape features moorlands, pastures enclosed by drystone walls, and gritstone settlements contained within narrow valleys. The area contains internationally important moorland habitats which support rare birds.
Vale of York[51]	An area of flat, low-lying land, surrounded by higher land to the north, east and west. Good quality soils mean farming is the predominant land use. A key feature is the rivers that drain surrounding high land and run southwards towards the Humber, with legacy flooding.
Vale of Pickering[52]	A low-lying basin of gently undulating topography, lying between North Yorkshire's uplands, and the Scarborough coast to the east. It has physical links with many surrounding areas, particularly through river catchments and has a large presence of ecological protected sites.
Pennine Fringe[53]	A transitional landscape from upland areas of the Pennines through to the low-lying land of the Nottinghamshire, Derbyshire and Yorkshire Coalfield NCA to the east. The most striking aspect of the landscape is the mingling of predominantly 'gritstone' industrial towns and villages with the strong valley forms and pastoral agriculture of the Pennines foothills.
Yorkshire Wolds[54]	An arc of high, gently rolling ground extending from the Humber Estuary west of Hull, to the North Sea coast at Flamborough Head. It is a prominent chalk escarpment with foothills rising from the Vale of York and the Vale of Pickering, which fall to the low-lying plain of the Holderness in the east. A small proportion of the area is urban and woodland, with the vast majority of the land being agricultural.

Townscape refers to the characteristics of urban areas and this can include the layout, density, and mix of buildings, architecture, and cultural spaces. There is significant diversity across the region, from major industrial heritage cities such as Leeds or Sheffield, market towns such as Skipton or Malton, to popular tourism locations such as Scarborough or Whitby. York City Centre is one example of a location where the townscape (and heritage) will constrain options, particularly where architecture and narrow, cobbled streets would present significant townscape constraint.

[44] Natural England (2013), Howardian Hills, available from: http://www.naturalengland.org.uk/publications/nca/howardian_hills.aspx, accessed February 2022.
[45] Natural England (2012), Humber Estuary, available from: http://www.naturalengland.org.uk/publications/nca/humber_estuary.aspx, accessed February 2022.
[46] Natural England (2012), Humberhead Levels, available from: http://www.naturalengland.org.uk/publications/nca/humberhead_levels.aspx, accessed February 2022.
[47] Natural England (2013), Lancashire Valleys, available from: http://www.naturalengland.org.uk/publications/nca/lancashire_valleys.aspx, accessed February 2022.
[48] Natural England (2013), Nottinghamshire, Derbyshire and Yorkshire Coalfield, available from: http://www.naturalengland.org.uk/publications/nca/nottinghamshire_derbyshire_and_yorkshire_coalfield.aspx, accessed February 2022.
[49] Natural England (2013), Southern Magnesian Limestone, available from: http://www.naturalengland.org.uk/publications/nca/southern_magnesian_limestone.aspx, accessed February 2022.
[50] Natural England (2012), Southern Pennines, available from: http://www.naturalengland.org.uk/publications/nca/southern_pennines.aspx, accessed February 2022.
[51] Natural England (2012), Vale of York, available from: http://www.naturalengland.org.uk/publications/nca/vale_of_york.aspx, accessed February 2022.
[52] Natural England (2012), Vale of Pickering, available from: http://www.naturalengland.org.uk/publications/nca/vale_of_pickering.aspx, accessed February 2022.
[53] Natural England (2013), Yorkshire Southern Pennine Fringe, available from: http://www.naturalengland.org.uk/publications/nca/yorkshire_southern_pennine_fringe.aspx, accessed February 2022.
[54] Natural England (2012), Yorkshire Wolds, available from: http://www.naturalengland.org.uk/publications/nca/yorkshire_wolds.aspx, accessed February 2022.

Areas of important townscape are often located within conservation areas. Conservation areas exist to manage and protect the special architectural and historic interest of a place that make it unique. Every local authority in England has at least one conservation area, and there are 732 within the Level 1 Region.

LIKELY FUTURE WITHOUT THE PLAN
Planning policy recognises diversity of landscape character and promotes the protection of high value areas and reducing urban sprawl through Green Belts. The NPPF gives protection to the landscapes of greatest value such as National Parks and AONB. Climate change has the potential to impact high value landscapes through changing patterns of rainfall or sea level rise. Climate change can also impact species and habitats that can often play vital roles in helping shape, or bring value, to the highest value, protected landscapes. Population is expected to increase in the region, this alongside trends observed in Covid-19, such as increased home working, could put increased demand on greenfield development, which in turn will lead to loss of agricultural land.

1.9 CLIMATE CHANGE RESILIENCE

Current scientific data indicates that the UK is continuing to warm because of anthropogenic causes. "The last 30-year period (1991-2020) has been 0.9°C warmer than the preceding 30 years (1961-1990) and the warming trend is evident across all months and all countries in the UK". "As well as increased temperatures, the UK has been on average 6% wetter over the last 30 years (1991-2020) than the preceding 30 years (1961-1990)"[55].

The Met Office UK Climate Projections (UKCP) were updated in December 2018 (UKCP18)[56]. The Met Office climate projections cover different levels of global warming and when, or if, these levels are reached will depend on the concentration of greenhouse gases entering the global atmosphere. Data is measured in 7.5-mile-square grids across the UK and results can be searched via a postcode to find the grid closest[57]. York Cathedral was selected at random, as a visibly central point for a regional representation of results with the postcode YO1 7HH used. Selected results included:

- The hottest day in the last 30 years was 33.9ºC which could rise to 35.6ºC if global temperatures rise by 2ºC, and 39.4ºC if global temperatures rise by 4ºC.
- In the past 30 summers, there were three days above 25ºC per month on average. With a 2ºC rise, there could be six days rising to 14 days for a 4ºC rise.
- In the past 30 years, there were ten rainy days on average per month in summer. If global average temperatures rise by 2ºC, this could be nine days per month and with a 4ºC rise it could be about seven days.
- On the wettest summer day of the past 30 years, 50mm of rain fell. At a 2ºC rise, this could be about 62mm, and at a 4ºC rise this could be about 63mm.

[55] Met Office (2021) Climate change continues to be evident across UK. Available from: Climate change continues to be evident across UK - Met Office, accessed May 2022.
[56] Met Office (2018) UKCP18. Available from: UK Climate Projections (UKCP) - Met Office, accessed May 2022.
[57] BBC News (2021) What will climate change look like near me? Available from: https://www.bbc.co.uk/news/resources/idt-d6338d9f-8789-4bc2-b6d7-3691c0e7d138, accessed May 2022.

LIKELY FUTURE WITHOUT THE PLAN
Government policy and international goals indicate significant cuts in greenhouse gas emissions will start to take place throughout the 2020s as progress is made towards net zero targets in 2040/2050. It is anticipated that there will be a lag between the cut in emissions and a slowdown in the rate of temperature increase; for example, if the world became carbon neutral tomorrow, the climate would continue to change for a period, anticipated to be years/ decades.

1.10 LOCAL AUTHORITIES INTERSECTED

The following, **Table 4**, sets out the 36 local authorities for which the Level 1 Region intersects. Please note, some were identified as intersecting the Level 1 Region but are located at the boundary edge and more realistically are adjacent. All are included for completion purposes.

Table 4 – Local Authorities within the Level 1 Region

Local Authorities which intersect the L1 Region Boundary		
Ashfield	**Eden**	**Ribble Valley**
Barnsley	**Hambleton**	**Richmondshire**
Bolsover	**Harrogate**	**Rochdale**
Bradford	**High Peak**	**Rossendale**
Burnley	**Kingston upon Hull**	**Rotherham**
Calderdale	**Kirklees**	**Ryedale**
Chesterfield	**Leeds**	**Scarborough**
Craven	**North East Derbyshire**	**Selby**
County Durham	**North Lincolnshire**	**Sheffield**
Derbyshire Dales	**Oldham**	**South Lakeland**
Doncaster	**Pendle**	**Wakefield**
East Riding of Yorkshire	**Redcar & Cleveland**	**York**

N

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DO NOT SCALE

Stantec

Legend

- Level 1 Region
- Sites of Special Scientific Interest (SSSI)
- Special Areas of Conservation (SAC)
- Ramsar
- National Nature Reserve (NNR)
- Special Protection Areas (SPA)

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	

Location: YORKSHIRE

Project Name: YW DWMP - SEA ENV REPORT

Contract Name: YORKSHIRE WATER SERVICES

Drawing Title: BIODIVERSITY

Drawing Number: YW_SEA_ENVREP_MAP1

N

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DO NOT SCALE

Stantec

Legend

- Level 1 Region
- National Trail
- UK International Airports
- National Cycle Network

Indices of Multiple Deprivation (IMD)

Lowest Ranked 20% of IMD

- 1-10%
- 11-20%

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	

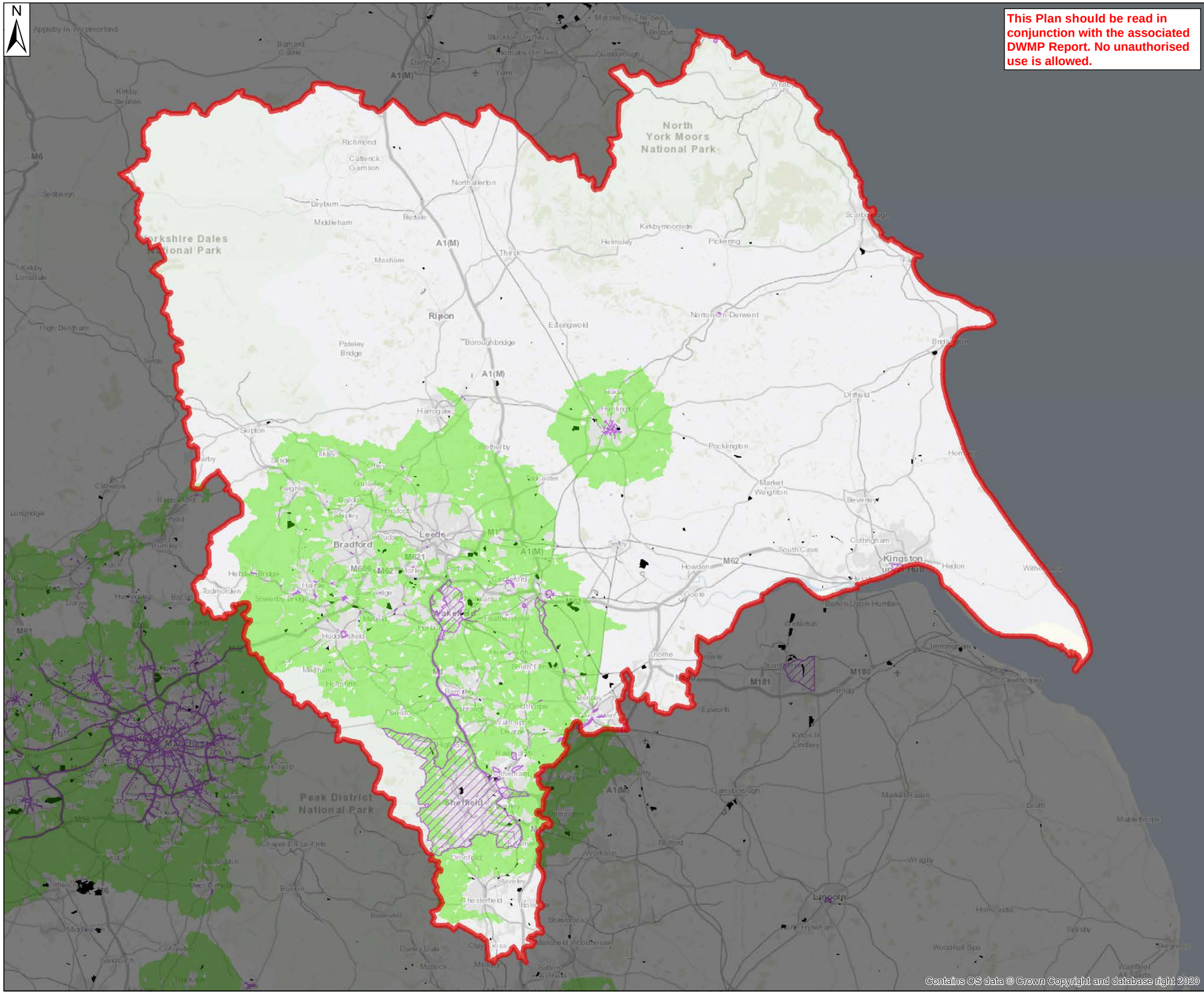
Location: YORKSHIRE

Project Name: YW DWMP - SEA ENV REPORT

Contract Name: YORKSHIRE WATER SERVICES

Drawing Title: SOCIO-ECONOMIC

Drawing Number: YW_SEA_ENVREP_MAP2



DO NOT SCALE

Stantec

Legend

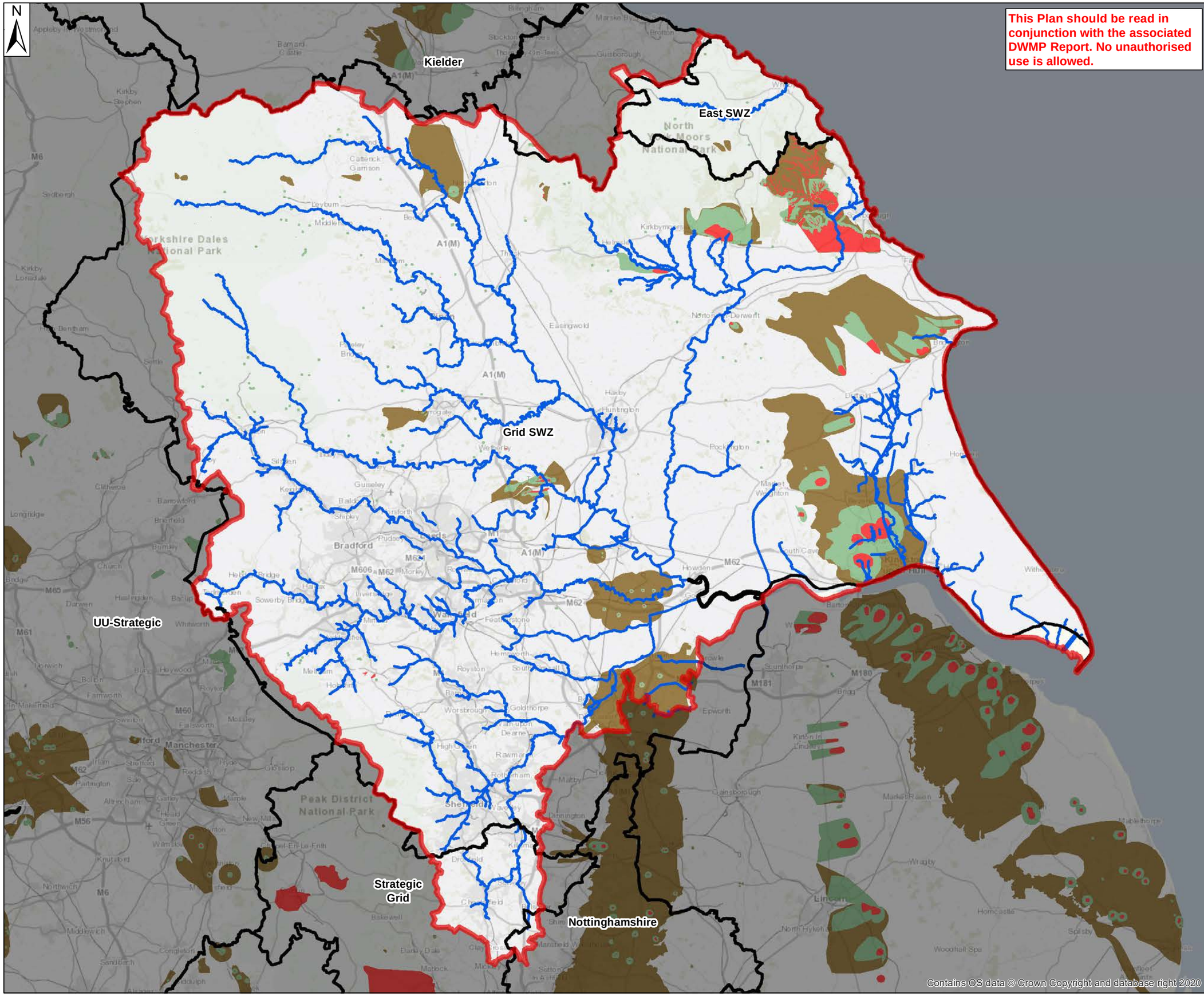
- Level 1 Region
- Air Quality Management Areas (AQMA)
- Greenbelt (2019-20)
- Permitted Waste Sites

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	
Location: YORKSHIRE			
Project Name: YW DWMP - SEA ENV REPORT			
Contract Name: YORKSHIRE WATER SERVICES			
Drawing Title: MATERIAL ASSETS			
Drawing Number: YW_SEA_ENVREP_MAP3			



This Plan should be read in conjunction with the associated DWMP Report. No unauthorised use is allowed.

DO NOT SCALE

Stantec

Legend

- Level 1 Region
- Water Resource Zone (WRZ)
- EA Statutory Main River

Source Protection Zones (England)

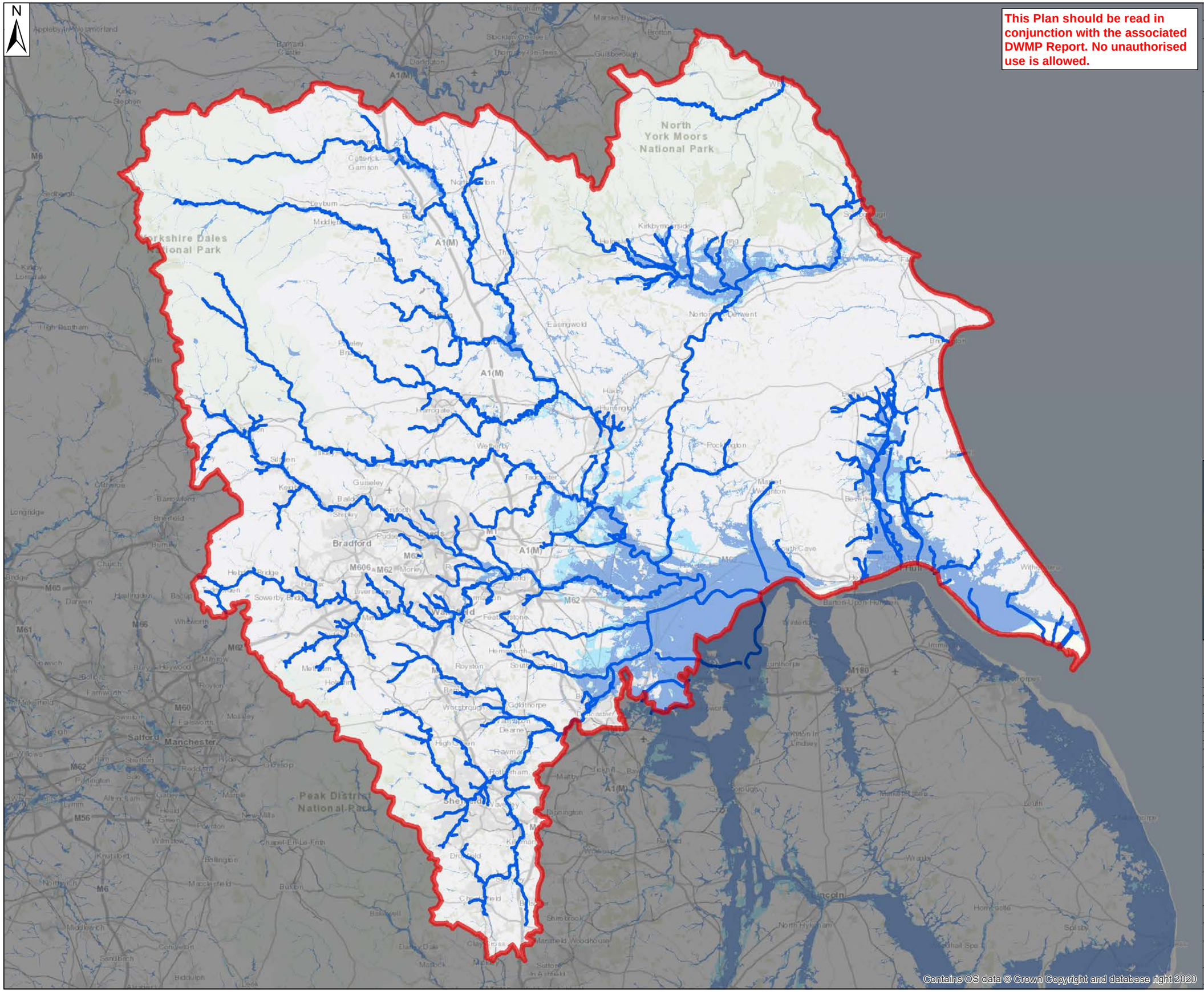
- Zone I - Inner Protection Zone (1)
- Zone I - Inner Protection Zone (1c)
- Zone II - Outer Protection Zone (2)
- Zone II - Outer Protection Zone (2c)
- Zone III - Total Catchment (3)
- Zone III - Total Catchment (3c)
- Zone of Special Interest (4)
- Zone of Special Interest (4c)

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	
Location: YORKSHIRE			
Project Name: YW DWMP - SEA ENV REPORT			
Contract Name: YORKSHIRE WATER SERVICES			
Drawing Title: WATER RESOURCES			
Drawing Number: YW_SEA_ENVREP_MAP4			



DO NOT SCALE

Stantec

Legend

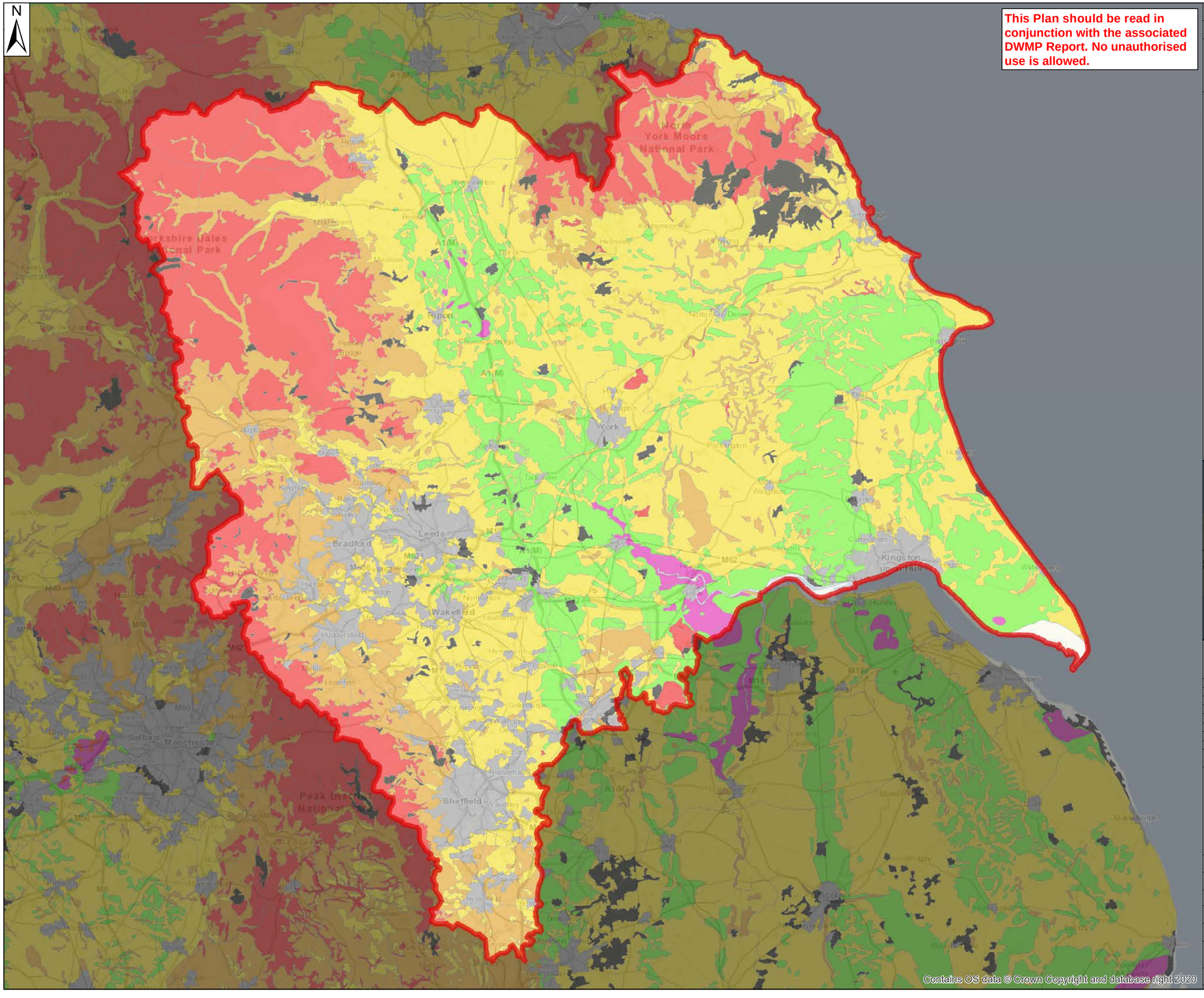
- Level 1 Region
- EA Statutory Main River
- Flood Zone 3 - High Risk
- Flood Zone 2 - Medium Risk

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	
Location: YORKSHIRE			
Project Name: YW DWMP - SEA ENV REPORT			
Contract Name: YORKSHIRE WATER SERVICES			
Drawing Title: FLOOD RISK			
Drawing Number: YW_SEA_ENVREP_MAP5			



DO NOT SCALE

Stantec

Legend

- Level 1 Region

Agricultural Land Classification

- Grade 1
- Grade 2
- Grade 3
- Grade 4
- Grade 5
- Non Agricultural
- Urban

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	

Location: YORKSHIRE

Project Name: YW DWMP - SEA ENV REPORT

Contract Name: YORKSHIRE WATER SERVICES

Drawing Title: GEODIVERSITY

Drawing Number: YW_SEA_ENVREP_MAP6

N

This Plan should be read in conjunction with the associated DWMP Report. No unauthorised use is allowed.

DO NOT SCALE

Stantec

Legend

- Level 1 Region
- World Heritage Site (WHS)
- Scheduled Monument
- Registered Parks and Gardens
- Registered Battlefields
- Listed Building

0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	

Location: YORKSHIRE

Project Name: YW DWMP - SEA ENV REPORT

Contract Name: YORKSHIRE WATER SERVICES

Drawing Title: HERITAGE

Drawing Number: YW_SEA_ENVREP_MAP7

N

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North Pennines

North Pennine AONB

Tees Lowlands

North York Moors and Cleveland Hills

Pennine Dales Fringe

Vale of Mowbray

Yorkshire Dales

Nidderdale AONB

Howardian Hills AONB

Howardian Hills

Vale of Pickering

Yorkshire Wolds

Vale of York

Southern Magnesian Limestone

Holderness

Bowland Fringe and Pendle Hill

Lancashire Valleys

Southern Pennines

Yorkshire Southern Pennine Fringe

Humber Estuary

Humberhead Levels

Nottinghamshire, Derbyshire and Yorkshire Coalfield

Dark Peak

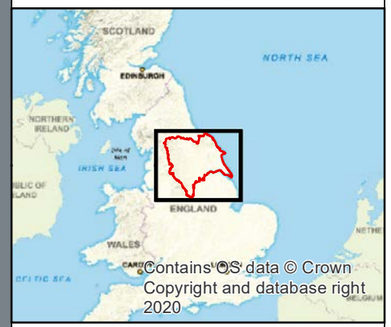
Derbyshire Peak Fringe and Lower Derwent

DO NOT SCALE

Stantec

Legend

- Level 1 Region
- National Character Areas
- Conservation Area
- National Parks
- Areas of Outstanding Natural Beauty (AONB)



0 12.5 25 KM

Ver	Description	Chkd	Appd	Date
01	First issue	GS	SM	18/02/2022

YorkshireWater

Scale: 1:600,000	OS Reference: BGR	Page Size: A3	Drawn By: MM
Project Group: 331001797		Sub Process: N/A	
Location: YORKSHIRE			
Project Name: YW DWMP - SEA ENV REPORT			
Contract Name: YORKSHIRE WATER SERVICES			
Drawing Title: LANDSCAPE			
Drawing Number: YW_SEA_ENVREP_MAP8			

Appendix D SEA LEVEL 2 RESULTS

KEY:

Major positive	+ + +	Moderate positive	+ +	Minor positive	+	Neutral	0
Major negative	- - -	Moderate negative	- -	Minor negative	-	No relationship	

Upper Dales

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Esk & Coast

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Lower Dales

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Lower Don

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Derwent & Rye

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Holderness Coast

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
Additional sewer network capacity										
Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Lower Ouse

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
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Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Colne and Holme Valleys

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Upper Aire

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Dearne

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
Maximise existing capacity STA/Storage tanks and headroom										
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Network lining										
Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Rother & Doe Lea

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
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Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Calder

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Lower Aire

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
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Sustainable Drainage Systems or storm management										
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System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

York

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Carbon & Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Sheffield

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
WwTW rationalisation										
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Network or treatment modification										
Asset optimisation/ SMART networks										
System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Leeds

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Hull

options	Biodiversity/ Geodiversity	Human Health	Socio-Economic	Material Assets	Water	Flood Risk	Geodiversity	Heritage	Landscape	Climate Change
Working in partnership										
Surface water management/blue green corridors										
Integrated catchment solutions										
Sustainable Drainage Systems or storm management										
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System flow transfer										
Increase storage capacity										
Separate flows										
Decentralisation										
Increase treatment capacity										
SO rationalisation										
Property level flood resilience										

Appendix E HRA LEVEL 1 SCREENING

Stantec

HRA STAGE 1 SCREENING
This report details the HRA screening process carried out for the development of Yorkshire Water's DWMP.

30 June 2022

Prepared for:
Yorkshire Water

Prepared by:
Zak Mitchell

Project Number:
331001729

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
First Draft	HRA Screening for YW	ZM	28/06/ 2022	NE	30/06/ 2022	RO	29/06/ 2022

The conclusions in the Report titled HRA Screening are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

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Prepared by: Zak Mitchell

Zak Mitchell

Reviewed by:

Ryan Oakley

Approved by:

Signature

Cathy O'Connor

Printed Name

Table of Contents

Executive Summary

This report details the screening process of a Habitats Regulations Assessment for 617 catchments that are part of Yorkshire Water's Drainage and Waste Management Plan (DWMP). The screening has been carried out for two planned options as part of the DWMP, grey infrastructure (such as below ground concrete storage tanks and concrete sewers) and blue/ green infrastructure (nature based solutions such as Sustainable Drainage Systems and/or blue/green corridors) combined with further grey solutions where necessary to meet requirements. The location of these options has not been provided so it has been assumed that they cover the entire area of the catchment. The screening shows 253 of the catchments require the HRA progressing to the appropriate assessment stage, 45 or 51 (dependent on option) may require mitigation during construction and ongoing maintenance/operation and the remaining 319 or 313 require no further assessment. It is expected that the number requiring appropriate assessment will be reduced considerably when the location and/or more details regarding the options is available.

Acronyms / Abbreviations

HRA	Habitats Regulations Assessment
YW	Yorkshire Water
DWMP	Drainage and Wastewater Management Plan
SEA	Strategic Environmental Assessment
L3	Level 3 (tactical planning unit from YW's DWMP)
SuDS	Sustainable drainage system
SAC	Special Area of Conservation
SPA	Special Protection Area
cSAC	Candidate Special Area of Conservation
pSPA	Potential Special Protection Area
AA	Appropriate Assessment
GIS	Geographic Information System

1 Introduction

1.1 Background and purpose

This document comprises the Stage 1 Screening of a Habitats Regulations Assessment (HRA), carried out to assess potential impacts of Yorkshire Water's (YW) Drainage and Wastewater Management Plan (DWMP). This plan is being developed concurrently with the Strategic Environmental Assessment (SEA) process.

1.2 The Drainage Water Management Plan

DWMPs are long-term plans to set out efforts to provide robust and resilient drainage and wastewater systems and assess risks to drainage systems and stakeholders. Water UK have set out a framework for creating DWMPs[1], which sets out three levels of management structure, Level 1, Level 2 and Level 3. Level 1 has a company level scope, bringing together Level 2 and 3 in a high-level plan. Level 2 covers large strategic planning areas, made up of multiple catchments and wastewater treatment works. Finally, Level 3 (L3) is wastewater treatment catchments.

YW's DWMP is currently undergoing an assessment process, in which a wide range of options have been considered. This list of options has now been preliminarily narrowed to grey infrastructure grey infrastructure (such as below ground concrete storage tanks and concrete sewers) and blue/ green infrastructure (nature based solutions such as Sustainable Drainage Systems and/or blue/green corridors) combined with further grey solutions where necessary to meet requirements. More detail is provided in Section 2.2.

1.3 Habitats Regulations Assessment Process

This document has been prepared based on the methodology for HRA set out in the national guidance contained in 'Habitats regulations assessments: protecting a European site. Published 24 Feb 2021' (GOV.UK 2021). The guidance sets out a three-stage approach to HRA (as illustrated in Plate 1-1 Process of HRA below) and emphasises the iterative nature of the process.

[1] Water UK DWMP Framework Report

Plate 1-1 Process of HRA

Stage 1: Screening

The Screening Stage involves the determination of the European Sites which could potentially be affected by the plan or project and their determining interests; and whether the implementation of the Plan could result in a 'Likely Significant Effect', either alone or in-combination with other plans and projects.

HRA case law (the 'Dilly Lane' case, 2008) determined that mitigation measures that were 'incorporated into the project' or which 'formed part of the project' could be taken into account at the Screening 'Likely Significant Effect' test stage of HRA (as long as they were effective). The ruling judge accepted that certain facets of a project, which are intended to avoid or reduce negative impacts on a European Site (i.e. mitigation), can still be regarded as 'incorporated into the project' if they are promoted that way by the developer.

However, a more recent ruling (Court of Justice of the European Union ('CJEU') People Over Wind and Sweetman v Coillte Teoranta (C-323/17)) concluded that mitigation measures intended to avoid or reduce impacts on a European Site could not be regarded as part of 'the project' and thus should not be taken into account at the Screening Stage of HRA when judging whether Likely Significant Effects on the integrity of a European Site could occur.

Whilst the above case law relates specifically to projects (rather than plans), it is now generally accepted that any measures inherently part of the scheme design (described as 'embedded mitigation' in this report) which are not specifically incorporated into the scheme for ecological reasons, but nonetheless reduce ecological effects, can be considered at the HRA Screening Stage. Measures which have been specifically added to the project to achieve the purpose of avoiding or reducing its harmful effects on a European Site (described as 'additional mitigation' in this report) should not be considered at the Screening Stage and an Appropriate Assessment is required. This distinction is yet to be tested by further case law but in the absence of any clear guidance or explanation of the ruling from the statutory authorities, appears to be the most practical and pragmatic approach in the light of the recent ruling. This approach is supported by articles in a recent Habitats Regulations Assessment Journal (DTA Publications, 2018).

In the event that Likely Significant Effects are identified at the Screening Stage, on the basis of objective information and in the absence of mitigation / avoidance measures, the Competent Authority should proceed to the next stage of assessment (Stage 2: Appropriate Assessment).

Stage 2: Appropriate Assessment

During Stage 2 (Appropriate Assessment, AA), an assessment of whether there would be an adverse effect on the integrity of the European Site concerned, and the consideration of measures to address this effect, is required. The precautionary principle should be applied, with the focus being on objectively demonstrating, with supporting evidence and in light of appropriate mitigation, that there will be no adverse effects on the integrity of the European Site. Where this is not possible, or uncertainty remains, adverse effects must be assumed and consideration of Stage 3.

Stage 3: Derogation

Stage 3 determines whether a plan or project proposal, that would have an adverse effect on a European site, qualify for an exemption. There are three legal tests that need to be applied in order: there are no feasible alternative solutions that avoid damage or are less damaging to the site; the proposal needs to be carried out for imperative reasons of overriding public interest; and finally, the necessary compensation measures can be secured.

This report details the screening process and primarily involves assessing two criteria:

- Whether the proposal is directly connected with or necessary for the conservation management of a national site
- Whether the proposal risks having a significant effect on a national site on its own or in combination with other proposals

2 Methods

2.1 Information gathering and European site assessment

A total of 617 Level 3 catchments[2] (see Appendix B) from YW's DWMP were provided by YW and for the HRA process all selected options are being applied to each catchment. Given the strategic nature of the DWMP, the exact site location and details of the measures to be implemented within each catchment are not yet available, so for the purposes of this screening options cover the entire catchment. More details on selected options are provided in section 2.2. Many of these details are still subject to change, so the assessment here has been as conservative and accurate as possible with the information provided.

The European sites within and in proximity to the operating region for Yorkshire Water's wastewater services (North, East Riding, South and West Yorkshire and small regions of Durham, Lancashire, Derbyshire and Lincolnshire. Some areas of Cumbria, Greater Manchester and Nottinghamshire are included in the buffer) were identified, using GIS and a spatial join of the YW Level 1 area (plus a 5km buffer) and SAC, SPA and Ramsar boundaries sourced from Natural England[3]. Each European site

[2] Water UK DWMP Framework Report
[3] SACs, SPAs, Ramsars https://naturalengland-defra.opendata.arcgis.com/

was assessed for its conservation objectives through both its selection features and relevant positive and negative impacts, for example a site may be highly impacted by marine pollution (impact code H03), and mildly impacted by grazing pressure (impact code A04). This information was obtained from each sites' standard data form[4] (see Appendix A). Initially a 5km buffer, defined by professional judgement based on an initial evaluation of European sites and their qualifying feature ecological needs was used to determine which catchments could be screened out and which might need elevating to the AA stage. Each L3 catchment was assigned all associated pressures of European sites they were within, or partially within 5km of.

2.2 Options

YW have selected a combination of both the grey infrastructure and the blue/ green infrastructure options. Potential pressures to European sites associated with these options are outlined in Table 2.2.

Table 2.2 – Selected options and associated potential impacts

Option	Description	Potential pressures
Grey infrastructure	Excavation of ground to install concrete storage tanks and associated infrastructure (connecting pipework etc.)	• Habitat loss both temporary and ongoing • Temporary disturbances both indirect (light, noise, vibration etc.) and direct (collision, erosion etc.) • Spread of non-native invasive species during construction • Contamination/pollution (only likely in the event of damage or insufficient planning)
Blue/ green infrastructure	Creation of SuDS and/or blue/green corridors and grey infrastructure such as short sections of new concrete sewers. Could involve excavation, and planting.	• Modification of water quality • Habitat loss (through replacement of existing habitat for new habitats) • Modifications to species interactions • Spread of non-native invasive species during construction • Contamination/pollution

2.3 Limitations

Details of European sites are provided and curated by third parties. Whilst the most up to date information on the location and relevant sites has been collected at the time of publication of this report, this data may change over time, and Stantec cannot be held responsible for any error in data collected.

At this stage of YW's DWMP, details are still relatively high level and subject to change. Most importantly detailed information on where and how options will be implemented is not yet available. Without this information, this report has been prepared under the assumption that options are applied to the entirety of any L3 catchment, and that construction is not necessarily carried out in the most

[4] List of SACs https://sac.jncc.gov.uk/site/, List of SPAs https://jncc.gov.uk/our-work/list-of-spas/

considerate fashion. When this information is available it is likely that considerably fewer L3 catchments will need progressing to appropriate assessment.

3 Screening

There is no evidence currently available to suggest any options within the L3 catchments are required to maintain or able to improve the conservation status of any European sites considered in this assessment. Until such evidence is available no L3 catchments can be safely screened out for this reason.

There are 302 L3 catchments a significant distance (over 5km) from all European sites and can be safely screened out from further assessment. The remaining 315 L3 sites will be further examined in Section 4 using a high-level assessment of nearby European sites and their potential for impact. The results screening results for each individual catchment are provided in Appendix B.

4 High Level Assessment

A total of 37 L3 catchments are within or partially within a European site. Without more specific option details, it must be recommended that options within these L3 catchments are progressed to the appropriate assessment stage. If the location of the options is provided, and it is shown that the entirety of the planned works is outside of any European sites, the screening process conducted for those L3 catchments within 5km of a European site but not overlapping, will need repeating for those sites.

The remaining 278 catchments have been assessed against their associated European site pressures (see Appendix B). Affected European sites (see Appendix A) and pressures associated with the impacts identified in Table 2.2 are listed in Table 4.1.

Of these 278 L3 catchments:

- 11 L3 catchments require no further assessment,
- 51 require mitigation (until plan location details show otherwise) and
- 216 require appropriate assessment (until location details show otherwise).

Table 4.1 – L3 catchments by European site

European site	No. of L3 catchments within 5km	Relevant European site pressures
Arnecliff & Park Hole Woods (SAC)	5	• I01 - Invasive non-native species
Beast Cliff-Whitby (Robin Hood's Bay) (SAC)	6	• A04 – Grazing • J02 - Human induced changes in hydraulic conditions
Craven Limestone Complex (SAC)	10	• A04 - Grazing • H02 - Pollution to groundwater (point sources and diffuse sources) • J02 - Human induced changes in hydraulic conditions • M02 - Changes in biotic conditions
Denby Grange Colliery Ponds (SAC)	15	• H02 - Pollution to groundwater (point sources and diffuse sources) • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • J03 - Other ecosystem modifications
Ellers Wood & Sand Dale (SAC)	2	• M02 - Changes in biotic conditions
Fen Bog (SAC)	1	• A04 - Grazing • I01 - Invasive non-native species • K02 - Biocenotic evolution, succession
Flamborough Head (SAC)	5	• I01 - Invasive non-native species • M02 - Changes in biotic conditions
Hatfield Moor (SAC)	4	• G05 - Other human intrusions and disturbances • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • K02 - Biocenotic evolution, succession
Humber Estuary (SAC, SPA and Ramsar)	21	• E02 - Industrial or commercial areas • H02 - Pollution to groundwater (point sources and diffuse sources) • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • K01 - Abiotic (slow) natural processes • M01 - Changes in abiotic conditions • M02 - Changes in biotic conditions
Kirk Deighton (SAC)	6	Primary threat pressure is cultivation practice change. It is unlikely that the options considered here would have a significant impact, unless carried out within the SAC.
Lower Derwent Valley (SAC, SPA and Ramsar)	21	• A04 - Grazing • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • K02 - Biocenotic evolution, succession
North Pennine Dales Meadows (SAC)	35	• A03 - Mowing / cutting of grassland • A08 - Fertilisation
North Pennine Moors (SAC and SPA)	74	• A04 - Grazing • J02 - Human induced changes in hydraulic conditions • K04 - Interspecific floral relations

North York Moors (SAC and SPA)	48	• I01 - Invasive non-native species • K04 - Interspecific floral relations • M01 - Changes in abiotic conditions
Ox Close (SAC)	10	• A04 - Grazing • I02 - Problematic native species • J02 - Human induced changes in hydraulic conditions • K01 - Abiotic (slow) natural processes
River Derwent (SAC)	49	• H02 - Pollution to groundwater (point sources and diffuse sources) • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions
River Eden (SAC)	1	• H02 - Pollution to groundwater (point sources and diffuse sources) • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • M02 - Changes in biotic conditions
Rochdale Canal (SAC)	1	• J02 - Human induced changes in hydraulic conditions
Skipwith Common (SAC)	10	• J02 - Human induced changes in hydraulic conditions • K01 - Abiotic (slow) natural processes
South Pennine Moors (SAC)	64	• J02 - Human induced changes in hydraulic conditions
Strensall Common (SAC)	13	• K02 - Biocenotic evolution, succession
Thorne Moor (SAC)	4	• G05 - Other human intrusions and disturbances • I01 - Invasive non-native species • J02 - Human induced changes in hydraulic conditions • K02 - Biocenotic evolution, succession
Flamborough and Filey Coast (SPA)	8	• D05 - Improved access to site • E03 - Discharges • E04 - Structures, buildings in the landscape • G05 - Other human intrusions and disturbances • I01 - Invasive non-native species • L05 - Collapse of terrain, landslide
Greater Wash (SPA)	19	Primary threat pressures for this site are all marine based, so the options here are unlikely to have any impact, unless carried out within the SPA.
Hornsea Mere (SPA)	6	• H02 - Pollution to groundwater (point sources and diffuse sources) • J02 - Human induced changes in hydraulic conditions
Peak District Moors (South Pennine Moors Phase 1) (SPA)	37	• J02 - Human induced changes in hydraulic conditions
South Pennine Moors Phase 2 (SPA)	30	• J02 - Human induced changes in hydraulic conditions
Thorne & Hatfield Moors (SPA)	7	• E06 - Other urbanisation, industrial and similar activities
Malham Tarn (Ramsar)	2	Ramsar sites are not assigned threat pressures. In this case pressures have been assigned as H02 - Pollution to groundwater (point sources and diffuse sources), J02 - Human induced changes in hydraulic conditions, and M01 - Changes in abiotic conditions, as general wetland pressures.

The two chosen options have been assessed against relevant pressures, showing which associated pressures require mitigation or further assessment. Each pressure has been rated as either negligible, low, medium, or high, where:

- Negligible requires no further action
- Low may require some minor mitigation depending on option location or specifics
- Medium is likely to require mitigation, or must be significantly distanced from the nearby European site
- High is likely to require appropriate assessment unless the location is further than 5km from the European site

Mitigations are suggested in Table 4.3 that will reduce the threat posed by pressures marked as medium.

It should be noted that A03 and A04 are primarily positive pressures but can also be negative (meaning that the European site requires a specific level of regularity and/or type of mowing/cutting or grazing). For this report it is assumed that any site with A03 or A04 listed as a pressure is negatively affected. This should be re-assessed when further information is available about the options and option locations.

Table 4.2 – Assessment of pressures against options. Cells are highlighted in white for negligible, green for low, yellow for medium and red for high threat to European sites.

Pressure	Option 1 assessment	Option 2 assessment
A03 - Mowing / cutting of grassland	Some mowing/cutting may be required during construction of storage tank location and may be continued with replacement plant community after construction.	Some mowing/cutting may be required during construction, and this may continue through maintenance.
A04 - Grazing	Temporary removal of grazing pressure may occur for a small area during construction. Grazing may be used more long term to maintain the area.	Changes in grazing may occur during construction and changes in plant assemblages may disrupt or encourage further grazing.
A08 - Fertilisation	Level of fertilisation is unlikely to change.	Level of fertilisation is unlikely to change, unless used to encourage vegetation growth within blue/green corridors.
D05 - Improved access to site	Increased traffic or personnel during construction and maintenance of the option may disturb designated features.	Increased traffic or personnel during construction and maintenance of the option may disturb designated features.
E02 - Industrial or commercial areas	Installing and maintaining the underground tank falls into this category, so risks disturbing the European site.	The concrete sewers fall into this category, so risks disturbing the European site.

E03 - Discharges	Connecting the storage tank raises the risk that a leak or overflow may occur in the area as the tank will be connected to the network.	Connecting the SuDS and concrete sewers raises the risk that a leak or overflow may occur in the area as the infrastructure will be connected to the network.
E04 - Structures, buildings in the landscape	Installing and maintaining the underground tank falls into this category, so risks disturbing the European site.	The concrete sewers fall into this category, so risks disturbing the European site.
E06 - Other urbanisation, industrial and similar activities	Installing and maintaining the underground tank falls into this category, so risks disturbing the European site.	The concrete sewers fall into this category, so risks disturbing the European site.
G05 - Other human intrusions and disturbances	Disturbances may be high during construction but should be temporary. Potential for ongoing disturbance through maintenance.	Disturbances likely to be high during construction. Ongoing disturbance may be increased with better access to area provided during construction. Potential for ongoing disturbance through maintenance.
H02 - Pollution to groundwater (point sources and diffuse sources)	Storage tank whilst connected to the sewer network has the potential to leak pollutants to the surroundings.	Potential for pollution to be released into blue/green corridors. Where these corridors are still being established there is a risk of pollution spread.
I01 - Invasive non-native species	Risk of spreading non-native invasive species during construction.	Risk of spreading non-native invasive species during construction. Risk of corridors becoming pathways for further non-native invasive species spread.
I02 - Problematic native species	This refers primarily to rabbit pressure at Ox Close, with possible additional pressure from deer grazing. Option 1 will unlikely increase this pressure.	This refers primarily to rabbit pressure at Ox Close, with possible additional pressure from deer grazing. Option 1 will unlikely increase this pressure.
J02 - Human induced changes in hydraulic conditions	This option is likely to change hydraulic conditions particularly during storm events, by changing downstream flowrates.	This option is highly likely to change hydraulic conditions, reducing downstream flowrates.
K01 - Abiotic (slow) natural processes	There are two sites that are susceptible to this pressure. At Humber Estuary, the estuary and sand dune habitat would make the option impractical in the locations they occur. At Ox Close, Option 1 is unlikely to change the level (or rate of change) of soil metals unless constructed directly on the site.	There are two sites that are susceptible to this pressure. At Humber Estuary, the estuary and sand dune habitat would make the option impractical in the locations they occur. At Ox Close, Option 1 is unlikely to change the level (or rate of change) of soil metals unless constructed directly on the site.
K02 - Biocenotic evolution, succession	Risk of disruption to succession pattern through removal of species or spread of species during construction.	Risk to changes in succession through the establishment of differing plant communities in the blue/green corridors.
K04 - Interspecific floral relations	Risk of unbalancing floral relations through higher removal or damage of any one species, or introduction of new species.	Risk to unbalancing floral relations through the establishment of differing plant communities in the blue/green corridors.

L05 - Collapse of terrain, landslide	Installing a concrete tank increases the risk of disturbing fragile ground.	The construction of option 2 may destabilise fragile terrain, but option 2 may in the long term stabilise terrain.
M01 - Changes in abiotic conditions	Risk of temporary changes during construction, particularly if these are irreversible.	Risk of modifying ongoing abiotic conditions with the establishment of blue/green corridors.
M02 - Changes in biotic conditions	Risk of changing biotic conditions through removal or damage of any one species, or introduction of new species.	Risk of changing biotic conditions through removal or damage of any one species, or introduction of new species.

Table 4.3 – Suggested mitigations for medium level threats

Pressure	Option 1 assessment	Option 2 assessment
A03 - Mowing / cutting of grassland	Replace vegetation communities after construction and ensure that level of mowing/cutting is appropriate for nearby national site features. This is likely a localised threat, so mitigation is only required if location is within 500m.	Replace vegetation communities after construction and ensure blue/green corridor plant communities do not require mowing or cutting. This is likely a localised threat, so mitigation is only required if location is within 500m.
A04 - Grazing	Ensure replacement plant communities do not require grazing. This is likely a localised threat, so mitigation is only required if location is within 500m.	Ensure blue/green corridor plant communities do not require grazing. This is likely a localised threat, so mitigation is only required if location is within 500m.
D05 - Improved access to site	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at European site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur, or appropriate assessment will be required.	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at European site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur, or appropriate assessment will be required. Ensure that if location is within visual range of European site that access to site is not improved to public.
E03 - Discharges	With appropriate construction of underground storage, the risk of leaks should be negligible. Ensure that any connecting structures/pipes will not leak, and they are regularly monitored. Ensure that discharges will occur elsewhere in the network.	Ensure location is downstream from European site or ensure blue/green corridors are fully established before any overflow is allowed. Ensure that discharges will occur elsewhere in the network.

G05 - Other human intrusions and disturbances	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at European site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur, or appropriate assessment will be required.	Minimise construction footprint (including number of staff on site and access) and keep maintenance required as low as possible if general visual disturbance is detectable at European site. For other disturbances such as light pollution or vibration, ensure location is distant enough for disturbance not to occur or appropriate assessment will be required. Ensure that if location is within visual range of European site that access to site is not improved to public.
H01 - Pollution to surface waters (limnic & terrestrial, marine & brackish)	With appropriate construction of underground storage, the risk of leaks should be negligible. Ensure that any connecting structures/pipes will not leak, and they are regularly monitored.	Ensure location is downstream from European site or ensure blue/green corridors are fully established before any overflow is allowed.
H02 - Pollution to groundwater (point sources and diffuse sources)	With appropriate construction of underground storage, the risk of leaks should be negligible. Ensure that leak risk is minimised for any connecting structures/pipes, and they are regularly monitored.	Ensure location is downstream from European site or ensure blue/green corridors are fully established before any overflow is allowed.
I01 - Invasive non-native species	A comprehensive biosecurity plan should be in place for any construction or maintenance access. Ensure personnel and equipment is cleaned and/or disinfected before entering and leaving the site.	A comprehensive biosecurity plan should be in place for any construction or maintenance access. Ensure personnel and equipment is cleaned and/or disinfected before entering and leaving the site. Survey for nearby non-native invasive species to ensure corridors will not provide an immediate non-native spread along them. Monitor corridors for the presence of non-native invasive species going forward.
I02 - Problematic native species	N/A	NA
J02 - Human induced changes in hydraulic conditions	If the location of this option is downstream of all relevant European sites within 5km, or outside a 5km radius from all relevant sites, then no further action is required. Otherwise, appropriate assessment is required.	If the location of this option is downstream of all relevant European sites within 5km, or outside a 5km radius from all relevant sites, then no further action is required. Otherwise, appropriate assessment is required.
K02 - Biocenotic evolution, succession	Ensure plant community is returned/replanted accurately after disturbance of construction.	Ensure plant community is returned/replanted accurately after disturbance of construction. For blue/green corridors, ensure plant community will not disrupt succession on the relevant European sites (check successional stages of species planted and dispersal distances).

K04 - Interspecific floral relations	Ensure plant community is returned/replanted accurately after disturbance of construction, and that construction is carried out in winter when interspecific floral relations are likely dormant.	Ensure plant community is returned/replanted accurately after disturbance of construction, and that construction is carried out in winter when interspecific floral relations are likely dormant. For blue/green corridors ensure plant community will not disrupt existing flora on the relevant European sites (check successional stages of species planted and dispersal distances).
L05 - Collapse of terrain, landslide	NA – appropriate assessment required to ensure no terrain disturbance	With careful engineering and construction, terrain damage might be avoided. Alternatively, the location of the option should be significantly distanced from the European site.
M01 - Changes in abiotic conditions	Ensure abiotic conditions are not significantly modified during or after construction.	Ensure abiotic conditions are not significantly modified during or after construction.
M01 - Changes in biotic conditions	Ensure plant community is returned/replanted accurately after disturbance of construction.	Ensure plant community is returned/replanted accurately after disturbance of construction. For blue/green corridors ensure plant community will not disrupt existing flora on the relevant European sites (check successional stages of species planted and dispersal distances).

5 Conclusions

HRA screening has been carried out on a total of 617 L3 catchments as part of YW DWMP, the screening outcome for each individual catchment is available in Appendix B, including recommendations for further screening and appropriate assessment. Two options have been assessed, for each catchment and recommendations are provided for each option in Table 4.3. In total, 253 L3 catchments may require further progressing to an appropriate assessment stage of the HRA. This recommendation is currently based on assuming that the options are placed in the worst possible locations (for example within a European site, or adjacent etc for those that do not intersect a European site). It is likely that with further details that many of these requiring appropriate assessment can be reduced to only requiring mitigation during construction and ongoing maintenance. Before completion of the final DWMP, the following needs to be completed:

1. Using Appendix B and the DWMP, identify individual L3 catchments where no measures are proposed through the final DWMP, to screen out those requiring no further work.

2. Appropriate assessment of the L3 catchments that have been identified as requiring stage 2 appropriate assessment (currently 253 catchments, subject to step 1).

3. The 51 L3 catchments requiring mitigation (dependent on option) must have the recommended mitigations included in the plan, or a detailed enough location provided to ensure significant distance from the nearby national site (currently 46 catchments, subject to step 1).

Appendix A European Sites

SAC	Qualifying Features	
Arnecliff & Park Hole Woods	**Annex I habitats that are a primary reason for selection** NA	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles	
	Annex II species that are a primary reason for selection • 1421 Killarney fern *Trichomanes speciosum* This site contains a greater number of sporophytes than found elsewhere in the UK. However the plants are small, and in many cases not fully developed, with mature spore-producing plants extremely rare. The great significance of this site lies in that the sporophytes appear to be recently developed from gametophytes, a phenomenon that has only been rarely recorded elsewhere in the United Kingdom.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	I01 - Invasive non-native species (both, high)	
	B02 - Forest and Plantation management & use (inside, high)	
	H04 - Air pollution, air-borne pollutants (both, high)	
Beast Cliff-Whitby (Robin Hood's Bay)	**Annex I habitats that are a primary reason for selection** • 1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts Beast Cliff – Whitby is an east coast complex of hard and soft cliffs. The combination of geology, topography and plant communities found on the site are unique and it is one of the best examples of vegetated sea cliffs on the north-east coast of England. The underlying geology varies from base-rich to base-poor, and this variation is reflected in a characteristic and diverse flora across the site. Vertical hard cliffs support maritime crevice and ledge vegetation, and the more gently sloping parts of Beast Cliff itself are covered by scrub and woodland. Sandstone boulders support a luxuriant growth of mosses and ferns and pools on the cliff shelf support wetland plants and scrub. Due to the frequent land slippage occurring on the site, the woodland is constantly changing and being rejuvenated with mainly young trees forming secondary woodland. North of Beast Cliff to Ravenscar the vegetation is more open and reflects alternating strata of rich and poor base-status. Areas of calcareous clays support typical calcareous grassland and wet flush plant communities, whereas heathland species occur on more acidic sandstone outcrops. From Ravenscar north to Robin Hood's Bay the cliffs are composed either partly or entirely of soft boulder clay. This clay is continually being eroded by wave action and slippage, and supports pioneer plant communities typical of this changing habitat.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	

<table>
<tr><th>SAC</th><th>Qualifying Features</th></tr>
<tr><td></td><td>Annex II species present as a qualifying feature, but not a primary reason for site selection
NA
<table><tr><th>Negative impacts</th><th>Positive impacts</th></tr><tr><td>J02 - Human induced changes in hydraulic conditions (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr><tr><td>A04 - Grazing (inside, high)</td><td></td></tr><tr><td></td><td></td></tr></table></td></tr>
<tr><td>Craven Limestone Complex</td><td>Annex I habitats that are a primary reason for selection
• 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.
Malham Tarn in northern England is considered the best example of an upland stonewort Chara-dominated lake in England. It is an example of a lake on limestone and is the highest marl lake in the UK. The water drains from surrounding Carboniferous limestone and is calcareous and low in plant nutrients, although the Tarn has a large catchment and some nutrient enrichment to the system has occurred in the past, slightly reducing the floristic richness.

• 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
The Craven Limestone Complex in northern England is the second most extensive area of calcareous grassland in the UK, and represents the NVC type CG9 Sesleria albicans – Galium sterneri grassland. The site exhibits an exceptional diversity of structural types, ranging from hard-grazed open grasslands, through to tall herb-rich grasslands on ungrazed cliff ledges, such as at Malham Cove, in woodland margins and around 8240 Limestone pavements and screes. It is thus an important example of grassland-scrub transitions.

• 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)
Craven is one of three sites representing Molinia meadows in the northern England centre of distribution. This site contains what are believed to be the largest expanses of M26 Molinia caerulea – Crepis paludosa mire in the UK, amidst 7230 Alkaline fens and 7110 active raised bog communities of the Malham Tarn area; smaller fragments are associated with meadows, wood edges and river banks elsewhere on the site.

• 7110 Active raised bogs * Priority feature
Malham Tarn Moss represents Active raised bogs in central northern England, in an area overlying limestone where wetlands are more typically base-rich fens. It displays a classic raised dome with transition from raised bog (base-poor) to base-rich conditions at the bog margin where it interfaces with land influenced by water from the limestone. It has an unusual mixture of bog-moss Sphagnum-rich and hair-grass Deschampsia-dominated vegetation.

• 7220 Petrifying springs with tufa formation (Cratoneurion) * Priority feature
Craven is one of three Carboniferous limestone sites in northern England selected for petrifying springs with tufa formation. The site contains extensive complexes of tufa-forming springs associated with a wide range of other habitats, including 7230 Alkaline fens, calcareous grasslands,</td></tr>
</table>

SAC	Qualifying Features
	8240 Limestone pavements, cliffs and screes. Locally calcareous springs emerge within areas of acid drift supporting heath and acid grassland. The flora of these habitat mosaics is outstandingly species-rich and includes many rare northern species, such as alpine bartsia *Bartsia alpina* and bird's-eye primrose *Primula farinosa*. • 7230 Alkaline fens There are large fen systems at Great Close and Ha Mire, principally of the NVC type M10b *Carex dioica – Pinguicula vulgaris* mire, *Briza media – Primula farinosa* sub-community. They are exceptionally species-rich types with frequent bird's-eye primrose *Primula farinosa* and grass-of-Parnassus *Parnassia palustris* alongside rarities such as broad-leaved cottongrass *Eriophorum latifolium*, hair sedge *Carex capillaris*, alpine bartsia *Bartsia alpina* and dwarf milkwort *Polygala amarella*. Where irrigation is more extensive there are transitions to M9a *Carex rostrata – Calliergon cuspidatum/ giganteum* mire, *Campylium stellatum – Scorpidium scorpioides* sub-community. This community is also developed extensively around the lagg of Tarn Moss, where there are transitions with M26b Molinia caerulea – *Crepis paludosa* mire, *Festuca rubra* sub-community and W3 *Salix pentandra – Carex rostrata* fen carr woodland. There are also extensive M10 *Carex dioica – Pinguicula vulgaris* spring-fed flush fens throughout the site, typically associated with calcareous grassland and limestone scars. • 8240 Limestone pavements * Priority feature Craven is one of four sites representing Limestone pavements in northern England. It is selected on the basis of its size and as an example of mid-altitude pavement. There is a wide range of transitions to other habitats, including 6210 semi-natural dry grasslands, 7230 Alkaline fens and 9180 *Tilio-Acerion* forests. Despite being accessible to grazing sheep, these pavements provide a refuge for downy currant *Ribes spicatum* and, occasionally, alpine cinquefoil *Potentilla crantzii* and baneberry *Actaea spicata*.
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 6130 Calaminarian grasslands of the *Violetalia calaminariae* • 9180 *Tilio-Acerion* forests of slopes, screes and ravines * Priority feature
	Annex II species that are a primary reason for selection • 1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes* Craven in northern England supports strong populations of white-clawed crayfish *Austropotamobius pallipes* in the limestone streams feeding Malham Tarn, and in Malham Tarn itself. This site is well-isolated and is therefore an important refuge, unlikely to be invaded by non-native crayfish species. • 1163 Bullhead *Cottus gobio* Craven represents bullhead *Cottus gobio* in calcareous, upland becks and streams in the northern part of its range in England. The clean calcareous waters with their stony bottoms support good numbers of bullhead. • 1902 Lady's-slipper orchid *Cypripedium calceolus*

SAC	Qualifying Features	
	Craven Limestone Complex is the single remaining native site for Lady's-slipper orchid *Cypripedium calceolus*. Formerly reduced to a single plant, careful habitat management, together with hand-pollination of the few flowers that appear, and more recently re-establishment of plants from ex-situ propagation, has led to a steady increase in the size of the colony.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	J02 - Human induced changes in hydraulic conditions (both, high)	A04 - Grazing (inside, high)
	H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)	B02 - Forest and Plantation management & use (inside, high)
	M02 - Changes in biotic conditions (both, high)	B06 - Grazing in forests/ woodland (inside, high)
	A04 - Grazing (inside, high)	A02 - Modification of cultivation practices (inside, high)
		A03 - Mowing / cutting of grassland (inside, high)
Denby Grange Colliery Ponds	**Annex I habitats that are a primary reason for selection** NA	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection • 1166 Great crested newt *Triturus cristatus* This waterbody in north-east England, created by coal-mining activity, has consistently yielded high counts of great crested newt *Triturus cristatus* in recent years. The pond is surrounded by wooded slopes, with adjacent anthropogenic habitat associated with the previous mining activities. A large new pond was created recently to help support the population, which was previously reliant on a single breeding site.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)	
	J03 - Other ecosystem modifications (both, high)	
	B02 - Forest and Plantation management & use (inside, high)	
	J02 - Human induced changes in hydraulic conditions (both, high)	
	I01 - Invasive non-native species (both, high)	

SAC	Qualifying Features	
Ellers Wood & Sand Dale	**Annex I habitats that are a primary reason for selection** NA	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 7220 Petrifying springs with tufa formation (*Cratoneurion*) * Priority feature	
	Annex II species that are a primary reason for selection • 1013 Geyer's whorl snail *Vertigo geyeri* This site provides a lowland representation of Geyer's whorl snail *Vertigo geyeri* in north-east England; the population exists at this site in a tufa-rich flush.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	M02 - Changes in biotic conditions (both, high)	
	H04 - Air pollution, air-borne pollutants (both, high)	
Fen Bogs	**Annex I habitats that are a primary reason for selection** • 7140 Transition mires and quaking bogs This valley mire lies in Newtondale, a deep glacial spillway in the North Yorkshire Moors. The peat deposit is up to 18 metres deep, and is now mostly covered with acidophilous mire vegetation. The following plants are abundant: the bog-mosses *Sphagnum papillosum* and *S. capillifolium*, common cottongrass *Eriophorum angustifolium*, deergrass *Trichophorum cespitosum*, purple moor-grass *Molinia caerulea*, cross-leaved heath *Erica tetralix*, bog-myrtle *Myrica gale*, round-leaved sundew *Drosera rotundifolia*, tormentil *Potentilla erecta* and heath milkwort *Polygala serpyllifolia*. White beak-sedge *Rhynchospora alba* is locally abundant. One of the important features of this site is the development of lateral water tracks containing a plant association more usually characteristic of mires in oceanic regions. A number of species occurring in these communities at Fen Bog do not occur elsewhere in north-east England and are very locally distributed outside western districts. These soligenous mire associations, some of which show the influence of base-rich water, include the bog-mosses *Sphagnum* [*auriculatum*] and *S. recurvum*, the sedges *Carex rostrata*, *C. limosa*, *C. echinata* and *C. dioica*, bog pondweed *Potamogeton polygonifolius*, many-stalked spike-rush *Eleocharis multicaulis* and bogbean *Menyanthes trifoliata*.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection	

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="7"></td><td colspan="2">NA</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>G01 - Outdoor sports and leisure activities, recreational activities (inside, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td>K02 - Biocenotic evolution, succession (inside, high)</td><td>B02 - Forest and Plantation management & use (inside, high)</td></tr>
<tr><td>A04 - Grazing (inside, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td>I01 - Invasive non-native species (both, high)</td><td></td></tr>
<tr><td>H04 - Air pollution, air-borne pollutants (both, high)</td><td></td></tr>
<tr><td>Flamborough Head</td><td colspan="2">Annex I habitats that are a primary reason for selection
1170 Reefs
Flamborough Head has been selected for the presence of species associated with the chalk and for the site’s location at the southern limit of distribution of several northern species. It lies close to the biogeographic boundary between two North Sea waterbodies and encompasses a large area of hard and soft chalk on the east coast of England. The site covers around 14% of UK and 9% of European coastal chalk exposure, represents the most northern outcrop of chalk in the UK, and includes bedrock and boulder reefs which extend further into deeper water than at other subtidal chalk sites in the UK, giving one of the most extensive areas of sublittoral chalk in Europe. The reefs and cliffs on the north side of the headland are very hard, resulting in, for example, the presence of many overhangs and vertical faces, a feature uncommon in sublittoral chalk. The clarity of the relatively unpolluted sea water and the hard nature of the chalk have enabled kelp Laminaria hyperborea forests to become established in the shallow sublittoral. The reefs to the north support a different range of species from those on the slightly softer and more sheltered south side of the headland. The site supports an unusual range of marine species and includes rich animal communities and some species that are at the southern limit of their North Sea distribution, e.g. the northern alga Ptilota plumosa. For these reasons, the sublittoral and littoral reef habitats at Flamborough are considered to be the most diverse in the UK.
1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts
Flamborough is an east coast representative of hard chalk cliffs, which occur more frequently on the south coast of England. The vegetation of east coast cliff sites is typically less influenced by salt deposition and there are few such areas with predominantly limestone vegetation. Flamborough Head is an exception and is therefore important for the conservation of calcareous cliff vegetation. Maritime vegetation is local and occurs where topography increases salt spray deposition. Elsewhere the chalk substrate supports calcareous grassland communities. Towards the eastern end of the site the chalk is masked by drift deposits, which support mesotrophic and acidic grassland communities.
8330 Submerged or partially submerged sea caves
There are larger numbers and a wider range of cave habitats at Flamborough than at any other chalk site in Britain. This site, on the east coast of England, represents caves of the North Sea coast cut into soft rock exposures and is important for its specialised cave algal communities, which contain abundant Hildenbrandia rubra, Pseudendoclonium submarinum, Sphacelaria nana and Waerniella lucifuga. There are more than 200 caves within the site, particularly around the headland and on the north-facing cliffs. Some of these caves are partially submerged at all stages of the tide, others dry out at low tide, and some lie above the high water mark but are heavily influenced by wave splash and salt spray from the sea. The largest caves are known to extend for more than 50 m from their entrance on the coast.</td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="8"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>I01 - Invasive non-native species (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td>F02 - Fishing and harvesting aquatic resources (inside, high)</td><td>G03 - Interpretative centres (inside, high)</td></tr>
<tr><td>G01 - Outdoor sports and leisure activities, recreational activities (inside, high)</td><td>D05 - Improved access to site (inside, high)</td></tr>
<tr><td>M02 - Changes in biotic conditions (both, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td rowspan="4">Hatfield Moor</td><td colspan="2">Annex I habitats that are a primary reason for selection
• 7120 Degraded raised bogs still capable of natural regeneration
Like Thorne Moors, Hatfield Moors is a remnant of the once-extensive bog and fen peatlands within the Humberhead Levels, and is still the second-largest area of extant lowland raised bog peat in England. Moraines of sand occur beneath the peat, the largest of which forms Lindholme Island, in the centre of the bog. Little, if any, original bog surface has survived the massive extraction of peat over the last few decades. Peat-cutting has now ceased, and the bog is being restored over its remaining minimum average depth of 0.5 m of peat.
Refugia of vegetation have survived as rather dry heathland and as birch Betula woodland. Plants include the dwarf shrubs Calluna vulgaris, Erica tetralix, Eriophorum angustifolium, E. vaginatum, Vaccinium oxycoccos, bog-rosemary Andromeda polifolia, bog-myrtle Myrica gale, and the bog-mosses Sphagnum cuspidatum, S. recurvum, S. papillosum, S. subnitens and S. tenellum. The bog is also notable for its invertebrate fauna, which includes the mire pill beetle Curimopsis nigrita.</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
</table>

<table>
<tr><td>SAC</td><td colspan="2">Qualifying Features</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>I01 - Invasive non-native species (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td></td><td>G05 - Other human intrusions and disturbances (inside, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td></td><td>H04 - Air pollution, air-borne pollutants (both, high)</td><td>D05 - Improved access to site (inside, high)</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions (both, high)</td><td>B02 - Forest and Plantation management & use (inside, high)</td></tr>
<tr><td></td><td>K02 - Biocenotic evolution, succession (inside, high)</td><td></td></tr>
<tr><td>Humber Estuary</td><td colspan="2">Annex I habitats that are a primary reason for selection
1130 Estuaries
The Humber is the second-largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. It is a muddy, macro-tidal estuary, fed by the Rivers Ouse, Trent and Hull, Ancholme and Graveney. Suspended sediment concentrations are high, and are derived from a variety of sources, including marine sediments and eroding boulder clay along the Holderness coast. This is the northernmost of the English east coast estuaries whose structure and function is intimately linked with soft eroding shorelines. Habitats within the Humber Estuary include 1330 Atlantic salt meadows and a range of sand dune types in the outer estuary, together with subtidal sandbanks (H1110 Sandbanks which are slightly covered by sea water all the time), extensive intertidal mudflats (H1140 Mudflats and sandflats not covered by seawater at low tide), glasswort beds (H1310 Salicornia and other annuals colonising mud and sand), and 1150 coastal lagoons. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary. These are best-represented at the confluence of the Rivers Ouse and Trent at Blacktoft Sands. Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks, for reasons that have yet to be fully explained. This section of the estuary is also noteworthy for extensive mud and sand bars, which in places form semi-permanent islands. Significant fish species include 1099 river lamprey Lampetra fluviatilis and 1095 sea lamprey Petromyzon marinus which breed in the River Derwent, a tributary of the River Ouse.
1140 Mudflats and sandflats not covered by seawater at low tide
the Humber Estuary includes extensive intertidal mudflats and sandflats not covered by seawater at low tide. Upstream from the Humber Bridge, extensive mud and sand bars in places form semi-permanent islands.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
1110 Sandbanks which are slightly covered by sea water all the time
1150 Coastal lagoons * Priority feature
1310 Salicornia and other annuals colonizing mud and sand
1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
2110 Embryonic shifting dunes
2120 "Shifting dunes along the shoreline with Ammophila arenaria (""white dunes"")"
2130 "Fixed coastal dunes with herbaceous vegetation (""grey dunes"")" * Priority feature</td></tr>
</table>

SAC	Qualifying Features	
	• 2160 Dunes with Hippopha• rhamnoides	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection • 1095 Sea lamprey *Petromyzon marinus* • 1099 River lamprey *Lampetra fluviatilis* • 1364 Grey seal *Halichoerus grypus*	
	Negative impacts	**Positive impacts**
	M01 - Changes in abiotic conditions (both, high)	D05 - Improved access to site (inside, high)
	E02 - Industrial or commercial areas (outside, high)	A02 - Modification of cultivation practices (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	B02 - Forest and Plantation management & use (inside, high)
	H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)	A04 - Grazing (inside, high)
	K01 - Abiotic (slow) natural processes (inside, high)	
Kirk Deighton	**Annex I habitats that are a primary reason for selection** NA	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection • 1166 Great crested newt *Triturus cristatus* Great crested newts *Triturus cristatus* breed in a large pond set in a depression in grazed pasture. This main breeding pond has a water level that fluctuates widely, sometimes leading to pond desiccation. As a result, there is relatively little aquatic vegetation but egg-laying occurs and recruitment is successful intermittently; however, a large population is present, demonstrating this species' ability to thrive in temporary pond sites. Newts range across an area comprising pasture with old hedgerows.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	A02 - Modification of cultivation practices (inside, high)	A02 - Modification of cultivation practices (inside, high)
	J03 - Other ecosystem modifications (both, high)	

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="11">Lower Derwent Valley</td><td colspan="2">Annex I habitats that are a primary reason for selection
• 6510 Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)
The Lower Derwent Valley in north-east England contains a greater area of high-quality examples of lowland hay meadows than any other UK site and encompasses the majority of this habitat type occurring in the Vale of York. The abundance of the rare narrow-leaved water-dropwort Oenanthe silaifolia is a notable feature. Traditional management has ensured that ecological variation is well-developed, particularly in the transitions between this grassland type and other types of wet and dry grassland, swamp and fen vegetation.</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
• 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) * Priority feature</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
• 1355 Otter Lutra lutra</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>H04 - Air pollution, air-borne pollutants (both, high)</td><td>A06 - Annual and perennial non-timber crops (inside, high)</td></tr>
<tr><td>K02 - Biocenotic evolution, succession (inside, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td>A04 - Grazing (inside, high)</td><td>A03 - Mowing / cutting of grassland (inside, high)</td></tr>
<tr><td>I01 - Invasive non-native species (both, high)</td><td>B02 - Forest and Plantation management & use (inside, high)</td></tr>
<tr><td>G01 - Outdoor sports and leisure activities, recreational activities (inside, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td></td><td>D05 - Improved access to site (inside, high)</td></tr>
<tr><td rowspan="2">North Pennine Dales Meadows</td><td colspan="2">Annex I habitats that are a primary reason for selection
• 6520 Mountain hay meadows
The North Pennine Dales contain a series of isolated fields within several north Pennine and Cumbrian valleys. The site encompasses the range of variation exhibited by Mountain hay meadows in the UK and contains the major part of the remaining UK resource of this habitat type. The grasslands included within the site exhibit very limited effects of agricultural improvement and show good conservation of structure and function. A wide range of rare and local meadow species are contained within the meadows, including globeflower Trollius europaeus, the lady's-mantles Alchemilla acutiloba, A. monticola and A. subcrenata, and spignel Meum athamanticum.</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
• 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)</td></tr>
</table>

SAC	Qualifying Features	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	A03 - Mowing / cutting of grassland (inside, high)	A03 - Mowing / cutting of grassland (inside, high)
	A08 - Fertilisation (both, high)	D05 - Improved access to site (inside, high)
	H04 - Air pollution, air-borne pollutants (both, high)	A04 - Grazing (inside, high)
	A02 - Modification of cultivation practices (inside, high)	A02 - Modification of cultivation practices (inside, high)
		B06 - Grazing in forests/ woodland (inside, high)
		D05 - Improved access to site (inside, high)
		B02 - Forest and Plantation management & use (inside, high)
North Pennine Moors	**Annex I habitats that are a primary reason for selection** • 4030 European dry heaths The North Pennine Moors (along with the North York Moors) hold much of the upland heathland of northern England. At higher altitudes and to the wetter west and north of the site complex, the heaths grade into extensive areas of 7130 blanket bogs. The most abundant heath communities are H9 *Calluna vulgaris – Deschampsia flexuosa* heath and H12 *Calluna vulgaris – Vaccinium myrtillus* heath. There are also examples of H18 *Vaccinium myrtillus – Deschampsia flexuosa*, H10 *Calluna vulgaris – Erica cinerea* and H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heaths. • 5130 *Juniperus* communis formations on heaths or calcareous grasslands The North Pennine Moors includes one major stand of juniper scrub in Swaledale as well as a number of small and isolated localities. The Swaledale site grades into heathland and bracken *Pteridium aquilinum* but the core area of juniper is of W19 *Juniperus communis – Oxalis acetosella* woodland with scattered rowan *Sorbus aucuparia* and birch *Betula* spp. • 7130 Blanket bogs (* if active bog) * Priority feature The North Pennine Moors hold the major area of blanket bog in England. A significant proportion remains active with accumulating peat, although these areas are often bounded by sizeable zones of currently non-active bog, albeit on deep peat. The main NVC type is M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire, but there is also representation of M18 *Erica tetralix – Sphagnum papillosum* blanket mire and some western localities support M17 *Scirpus cespitosus – Eriophorum vaginatum* blanket mire. Forms of M20 *Eriophorum vaginatum* blanket mire predominate on many areas of non-active bog. • 7220 Petrifying springs with tufa formation (*Cratoneurion*) * Priority feature	

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="6"></td><td colspan="2">The petrifying springs habitat is very localised in occurrence within the North Pennine Moors, but where it does occur it is species-rich with abundant bryophytes, sedges and herbs including bird’s-eye primrose Primula farinosa and marsh valerian Valeriana dioica.
• 8220 Siliceous rocky slopes with chasmophytic vegetation
Acidic rock outcrops and screes are well-scattered across the North Pennine Moors and support vegetation typical of Siliceous rocky slopes with chasmophytic vegetation in England, including a range of lichens and bryophytes, such as Racomitrium lanuginosum, and species like stiff sedge Carex bigelowii and fir clubmoss Huperzia selago.
• 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles
Birk Gill Wood is an example of old sessile oak woods well to the east of the habitat’s main distribution in the UK. However, this sheltered river valley shows the characteristic rich bryophyte and lichen communities of the type under a canopy of oak, birch Betula sp. and rowan Sorbus aucuparia. The slopes are boulder-strewn, with mixtures of heather Calluna vulgaris, bilberry Vaccinium myrtillus and moss carpets in the ground flora.</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
• 4010 Northern Atlantic wet heaths with Erica tetralix
• 6130 Calaminarian grasslands of the Violetalia calaminariae
• 6150 Siliceous alpine and boreal grasslands
• 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
• 7230 Alkaline fens
• 8110 Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)
• 8210 Calcareous rocky slopes with chasmophytic vegetation</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
• 1528 Marsh saxifrage Saxifraga hirculus</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>K04 - Interspecific floral relations (inside, high)
J01 - Fire and fire suppression (inside, high)
J02 - Human induced changes in hydraulic conditions (both, high)
A04 - Grazing (inside, high)
A02 - Modification of cultivation practices (inside, high)</td><td>B02 - Forest and Plantation management & use (inside, high)
D05 - Improved access to site (inside, high)
A02 - Modification of cultivation practices (inside, high)
A03 - Mowing / cutting of grassland (inside, high)
G03 - Interpretative centres (inside, high)
B06 - Grazing in forests/ woodland (inside, high)</td></tr>
</table>

SAC	Qualifying Features	
		A06 - Annual and perennial non-timber crops (inside, high)
		A04 - Grazing (inside, high)
North York Moors	**Annex I habitats that are a primary reason for selection** • 4010 Northern Atlantic wet heaths with *Erica tetralix* This site in north-east Yorkshire within the North York Moors National Park contains the largest continuous tract of upland heather moorland in England. M16 *Erica tetralix – Sphagnum compactum* wet heath is the second most extensive vegetation type on the site and is predominantly found on the eastern and northern moors where the soil is less free-draining. Purple moor-grass *Molinia caerulea* and heath rush *Juncus squarrosus* are also common within this community. In the wettest stands bog-mosses, including *Sphagnum tenellum*, occur, and the nationally scarce creeping forget-me-not *Myosotis stolonifera* can be found in acid moorland streams and shallow pools. • 4030 European dry heaths This site in north-east Yorkshire within the North York Moors National Park contains the largest continuous tract of upland heather moorland in England. Dry heath covers over half the site and forms the main vegetation type on the western, southern and central moors where the soil is free-draining and has only a thin peat layer. The principal NVC type present is H9 *Calluna vulgaris – Deschampsia flexuosa*, with some H10 *Calluna vulgaris – Erica cinerea* heath on well-drained areas throughout the site, and large areas of H12 *Calluna vulgaris – Vaccinium myrtillus* heath on steeper slopes.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 7130 Blanket bogs (* if active bog) * Priority feature	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	K04 - Interspecific floral relations (inside, high)	B02 - Forest and Plantation management & use (inside, high)
	I01 - Invasive non-native species (both, high)	A02 - Modification of cultivation practices (inside, high)
	H04 - Air pollution, air-borne pollutants (both, high)	A04 - Grazing (inside, high)
	J01 - Fire and fire suppression (inside, high)	B06 - Grazing in forests/ woodland (inside, high)
	M01 - Changes in abiotic conditions (both, high)	A03 - Mowing / cutting of grassland (inside, high)
Ox Close	**Annex I habitats that are a primary reason for selection** • 6130 Calaminarian grasslands of the *Violetalia calaminariae* Ox Close is a large site representing Calaminarian grassland in the central Pennines. The site is unusual in that it encompasses the three main situations in which this habitat occurs in the UK, including near-natural forms on cliffs and scars, old spoil-heaps from past lead-mining, and	

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td></td><td colspan="2">metal-enriched river alluvium. This site supports a rich metallophyte flora with substantial populations of five species of higher plant metallophytes: thrift Armeria maritima, moonwort Botrychium lunaria, Pyrenean scurvygrass Cochlearia pyrenaica, spring sandwort Minuartia verna and alpine penny-cress Thlaspi caerulescens. The site shows the full succession from open sparsely-vegetated spoil to closed turf. Transitions from Calaminarian grassland to 6210 semi-natural dry grassland and flushes also occur.</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)
9180 Tilio-Acerion forests of slopes, screes and ravines * Priority feature</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td></td><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td></td><td>B02 - Forest and Plantation management & use (inside, high)</td><td>B02 - Forest and Plantation management & use (inside, high)</td></tr>
<tr><td></td><td>I02 - Problematic native species (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td></td><td>A04 - Grazing (inside, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td></td><td>J02 - Human induced changes in hydraulic conditions (both, high)</td><td></td></tr>
<tr><td></td><td>K01 - Abiotic (slow) natural processes (inside, high)</td><td></td></tr>
<tr><td>River Derwent</td><td colspan="2">Annex I habitats that are a primary reason for selection
NA</td></tr>
<tr><td></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation</td></tr>
<tr><td></td><td colspan="2">Annex II species that are a primary reason for selection
1099 River lamprey Lampetra fluviatilis
The Derwent is one example of river lamprey Lampetra fluviatilis populations which inhabit the many rivers flowing into the Humber estuary in eastern England. Only the lower reaches of the Derwent are designated, reflecting the spawning distribution of the species in the Derwent system.</td></tr>
<tr><td></td><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
1095 Sea lamprey Petromyzon marinus
1163 Bullhead Cottus gobio</td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="5"></td><td colspan="2">• 1355 Otter Lutra lutra</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>I01 - Invasive non-native species (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td>J02 - Human induced changes in hydraulic conditions (both, high)</td><td>A06 - Annual and perennial non-timber crops (inside, high)</td></tr>
<tr><td>H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)</td><td>B02 - Forest and Plantation management & use (inside, high)</td></tr>
<tr><td>A02 - Modification of cultivation practices (inside, high)</td><td>A03 - Mowing / cutting of grassland (inside, high)</td></tr>
<tr><td rowspan="3">River Eden</td><td colspan="2">Annex I habitats that are a primary reason for selection
• 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea
Ullswater, in the catchment of the River Eden, is the second-largest of the Cumbrian lakes. It is chosen as an example of a relatively deep lake with both oligotrophic and mesotrophic elements in its fauna and flora. The south-western part of the lake is surrounded by high fells of the Borrowdale Volcanics with enclosed farmland confined to the valley bottoms. The north-eastern arm is in gentler terrain with deeper soils and a greater extent of enclosed farmland. The lake flows into the River Eamont, one of the major tributaries of the River Eden. The lake has an extremely rich aquatic flora, including eight species of Potamogeton. These include various-leaved pondweed P. gramineus, red pondweed P. alpinus and long-stalked pondweed P. praelongus. The nationally scarce six-stamened waterwort Elatine hexandra is also found in some of the bays. Ullswater supports one of the few populations of powan Coregonus lavaretus in the UK. Arctic charr Salvelinus alpinus was formerly present but is believed to have become extinct in the 1940s, possibly because of mining pollution in spawning areas.
• 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
The Eden is a north-western representative of sub-type 2. The river flows over both calcareous limestone and sandstone, giving a diversity of ecological conditions, ranging from oligotrophic to mesotrophic. This river has 184 recorded plant species, more than any other river in the UK. The Ranunculus species of the river system include stream water-crowfoot Ranunculus penicillatus ssp. penicillatus occurring here at the edge of its range, and others, such as R. penicillatus ssp. pseudofluitans and river water-crowfoot R. fluitans.
• 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) * Priority feature
Throughout the length of the River Eden stands of alder Alnus glutinosa and willow Salix spp. occur associated with backwaters and seasonally-flooded channels. The least-disturbed stands are on the tributary River Irthing, where they occur on the shingle and gravels of actively-moving channels. The ground flora includes patches of common nettle Urtica dioica, butterbur Petasites hybridus and hogweed Heracleum sphondylium that grade into hollows with greater tussock-sedge Carex paniculata.</td></tr>
<tr><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
• 1092 White-clawed (or Atlantic stream) crayfish Austropotamobius pallipes</td></tr>
</table>

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="5"></td><td colspan="2">The Eden is a river with high water quality that supports a large population of white-clawed crayfish Austropotamobius pallipes in the northern part of its range in England. As with the River Wye, the tributaries of the Eden, especially those flowing off limestone, are of particular importance.
• 1095 Sea lamprey Petromyzon marinus
The Eden represents a sea lamprey Petromyzon marinus population associated with an extensive river system on a varied and base-rich geology in northern England. The highly erodible nature of the rock results in extensive areas of gravel and finer silts being deposited throughout the system, providing conditions for spawning and nursery areas. A large and healthy population of sea lamprey is supported in the middle to lower regions of the river.
• 1096 Brook lamprey Lampetra planeri
The Eden is an example of a brook lamprey Lampetra planeri population associated with an extensive river system on a varied and base-rich geology in northern England. The highly erodible nature of the rock results in extensive areas of gravel and finer silt being deposited throughout the system, providing conditions for spawning and nursery areas. Brook lamprey is supported widely within the catchment.
• 1099 River lamprey Lampetra fluviatilis
The Eden is an example of a river lamprey Lampetra fluviatilis population associated with an extensive river system on a very varied and base-rich geology in northern England. The highly erodible nature of the rock results in extensive areas of gravel and finer silt being deposited throughout the system, providing conditions for spawning and nursery areas. The high quality of these habitats and their accessibility, even in the upper reaches, means that a large, healthy population of river lampreys occurs widely within the catchment.
• 1106 Atlantic salmon Salmo salar
The Eden represents one of the largest populations of Atlantic salmon Salmo salar in northern England. It is an excellent example of a large river system that flows over varied, base-rich geology. This coupled with its large range in altitude, results in the development of distinct habitat types, supporting diverse plant and invertebrate communities. The high ecological value of the river system and the fact that the salmon are able to use most of the catchment (even above Ullswater, a large natural lake on the main river), mean that the Eden is able to maintain a large population of salmon.
• 1163 Bullhead Cottus gobio
The Eden represents bullhead Cottus gobio in a high-quality, relatively unmodified river in the northern part of its range in England. The presence of extensive areas of gravel and generally good quality water provides good habitat for bullheads, which are widely distributed throughout the system. The tributaries, in particular those flowing over limestone, hold abundant numbers of bullhead.
• 1355 Otter Lutra lutra
The River Eden provides an example of lowland otter Lutra lutra habitats in north-west England and complements the selection of the River Derwent and Bassenthwaite Lake.</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>M02 - Changes in biotic conditions (both, high)</td><td>A06 - Annual and perennial non-timber crops (inside, high)</td></tr>
</table>

SAC	Qualifying Features	
	H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)	D05 - Improved access to site (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	B02 - Forest and Plantation management & use (inside, high)
	A01 - Cultivation (inside, high)	A02 - Modification of cultivation practices (inside, high)
	I01 - Invasive non-native species (both, high)	A04 - Grazing (inside, high)
		B06 - Grazing in forests/ woodland (inside, high)
Rochdale Canal	**Annex I habitats that are a primary reason for selection** NA	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection • 1831 Floating water-plantain *Luronium natans* Rochdale Canal supports a significant population of floating water-plantain *Luronium natans* in a botanically diverse waterplant community which also holds a wide range of pondweeds *Potamogeton* spp. The canal has predominantly mesotrophic water. This population of *Luronium* is representative of the formerly more widespread canal populations of north-west England.	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	H04 - Air pollution, air-borne pollutants (both, high)	
	J02 - Human induced changes in hydraulic conditions (both, high)	
Skipwith Common	**Annex I habitats that are a primary reason for selection** • 4010 Northern Atlantic wet heaths with *Erica tetralix* The northern Atlantic wet heath at Skipwith Common is the most extensive of its type in the north of England. The M16 *Erica tetralix – Sphagnum compactum* wet heath is dominated by cross-leaved heath *Erica tetralix* and purple moor-grass *Molinia caerulea*. There is a small population of marsh gentian *Gentiana pneumonanthe*. The wet heath is part of transitions from open water, fen, reed and swap to 4030 European dry heaths and other habitats. The site has great ornithological and entomological importance. • 4030 European dry heaths Skipwith Common is one of the only two extensive areas of open heathland remaining in the Vale of York, the other being Strensall Common. The dry heath element is an example of H9 *Calluna vulgaris – Deschampsia flexuosa* heath dominated by heather *Calluna vulgaris*. The area has entomological and ornithological importance, with nearly 80 species of birds recorded, including European nightjar *Caprimulgus europaeus*.	

<table>
<tr><th>SAC</th><th colspan="2">Qualifying Features</th></tr>
<tr><td rowspan="6"></td><td colspan="2">Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site
NA</td></tr>
<tr><td colspan="2">Annex II species that are a primary reason for selection
NA</td></tr>
<tr><td colspan="2">Annex II species present as a qualifying feature, but not a primary reason for site selection
NA</td></tr>
<tr><td>Negative impacts</td><td>Positive impacts</td></tr>
<tr><td>H04 - Air pollution, air-borne pollutants (both, high)</td><td>A02 - Modification of cultivation practices (inside, high)</td></tr>
<tr><td>J02 - Human induced changes in hydraulic conditions (both, high)</td><td>D05 - Improved access to site (inside, high)</td></tr>
<tr><td>G01 - Outdoor sports and leisure activities, recreational activities (inside, high)</td><td>A04 - Grazing (inside, high)</td></tr>
<tr><td></td><td>K02 - Biocenotic evolution, succession (inside, high)</td><td></td></tr>
<tr><td>South Pennine Moors</td><td colspan="2">Annex I habitats that are a primary reason for selection
• 4030 European dry heaths
The site is representative of upland dry heath at the southern end of the Pennine range, the habitat's most south-easterly upland location in the UK. Dry heath covers extensive areas, occupies the lower slopes of the moors on mineral soils or where peat is thin, and occurs in transitions to acid grassland, wet heath and 7130 blanket bogs. The upland heath of the South Pennines is strongly dominated by heather Calluna vulgaris. Its main NVC types are H9 Calluna vulgaris – Deschampsia flexuosa heath and H12 Calluna vulgaris – Vaccinium myrtillus heath. More rarely H8 Calluna vulgaris – Ulex gallii heath and H10 Calluna vulgaris – Erica cinerea heath are found. On the higher, more exposed ground H18 Vaccinium myrtillus – Deschampsia flexuosa heath becomes more prominent. In the cloughs, or valleys, which extend into the heather moorlands, a greater mix of dwarf shrubs can be found together with more lichens and mosses. The moors support a rich invertebrate fauna, especially moths, and important bird assemblages.
• 7130 Blanket bogs (* if active bog) * Priority feature
This site represents blanket bog in the south Pennines, the most south-easterly occurrence of the habitat in Europe. The bog vegetation communities are botanically poor. Hare's-tail cottongrass Eriophorum vaginatum is often overwhelmingly dominant and the usual bog-building Sphagnum mosses are scarce. Where the blanket peats are slightly drier, heather Calluna vulgaris, crowberry Empetrum nigrum and bilberry Vaccinium myrtillus become more prominent. The uncommon cloudberry Rubus chamaemorus is locally abundant in bog vegetation. Bog pools provide diversity and are often characterised by common cottongrass E. angustifolium. Substantial areas of the bog surface are eroding, and there are extensive areas of bare peat. In some areas erosion may be a natural process reflecting the great age (9000 years) of the south Pennine peats.
• 91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles
Around the fringes of the upland heath and bog of the south Pennines are blocks of old sessile oak woods, usually on slopes. These tend to be dryer than those further north and west, such that the bryophyte communities are less developed (although this lowered diversity may in some</td></tr>
</table>

SAC	Qualifying Features	
	instances have been exaggerated by the effects of 19th century air pollution). Other components of the ground flora such as grasses, dwarf shrubs and ferns are common. Small areas of alder woodland along stream-sides add to the overall richness of the woods.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site • 4010 Northern Atlantic wet heaths with *Erica tetralix* • 7140 Transition mires and quaking bogs	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	H04 - Air pollution, air-borne pollutants (both, high)	A06 - Annual and perennial non-timber crops (inside, high)
	A11 - Agriculture activities not referred to above (both, high)	A02 - Modification of cultivation practices (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	B06 - Grazing in forests/ woodland (inside, high)
	J01 - Fire and fire suppression (inside, high)	A03 - Mowing / cutting of grassland (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	B02 - Forest and Plantation management & use (inside, high)
		D05 - Improved access to site (inside, high)
		A04 - Grazing (inside, high)
Strensall Common	**Annex I habitats that are a primary reason for selection** • 4010 Northern Atlantic wet heaths with *Erica tetralix* Strensall Common, together with Skipwith Common, is an example of acidic lowland heath in northern England. The wet element is well-represented by M16 *Erica tetralix – Sphagnum compactum* wet heath, although its extent has been reduced by drainage. It is a noted locality for marsh gentian *Gentiana pneumonanthe*, narrow buckler-fern *Dryopteris carthusiana* and long-leaved sundew *Drosera intermedia*. • 4030 European dry heaths Strensall Common, with Skipwith Common, is one of only two extensive areas of open heathland remaining in the Vale of York. There is a complex mosaic of 4010 Northern Atlantic wet heaths with *Erica tetralix* and dry heath elements. The H9 *Calluna vulgaris – Deschampsia flexuosa* dry heath is noted for petty whin *Genista anglica* and bird's-foot *Ornithopus perpusillus*.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection	

SAC	Qualifying Features	
	NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	A04 - Grazing (inside, high)
	H04 - Air pollution, air-borne pollutants (both, high)	A02 - Modification of cultivation practices (inside, high)
	K02 - Biocenotic evolution, succession (inside, high)	
Thorne Moor	**Annex I habitats that are a primary reason for selection** • 7120 Degraded raised bogs still capable of natural regeneration Thorne Moor is England's largest area of raised bog, lying a few kilometres from the smaller Hatfield Moors, both within the former floodplain of the rivers feeding the Humber estuary (Humberhead Levels), and includes the sub-components Goole Moors and Crowle Moors. Although recent management has increased the proportion of 7110 active raised bog at Thorne Moors, the inclusion of Goole Moors, where peat-extraction has now ceased, means that the site is still predominantly degraded raised bog. The restored secondary surface is rich in species of 7110 Active raised bogs with bog-mosses *Sphagnum* spp., cottongrasses *Eriophorum angustifolium* and *E. vaginatum*, heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, round-leaved sundew *Drosera rotundifolia*, cranberry *Vaccinium oxycoccos* and bog-rosemary *Andromeda polifolia*.	
	Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site NA	
	Annex II species that are a primary reason for selection NA	
	Annex II species present as a qualifying feature, but not a primary reason for site selection NA	
	Negative impacts	**Positive impacts**
	I01 - Invasive non-native species (both, high)	A06 - Annual and perennial non-timber crops (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	A02 - Modification of cultivation practices (inside, high)
	G05 - Other human intrusions and disturbances (inside, high)	A04 - Grazing (inside, high)
	H04 - Air pollution, air-borne pollutants (both, high)	
	K02 - Biocenotic evolution, succession (inside, high)	

SPA/Ramsar	SPA	Ramsar
Flamborough and Filey Coast	**Species referred to in Article 4.2 of Directive 2009/147/EC** The site regularly supports more than 1% of the biogeographical population of four regularly occurring migratory species; • black-legged kittiwake *Rissa tridactyla* (89,040 breeding adults, 2008-2011, 2% North Atlantic) • northern gannet *Morus bassanus* (16,938 breeding adults, 2008-2012, 2.6% North Atlantic) • common guillemot *Uria aalge albionis* (83,214 breeding adults 2008-2011, 15.6%) • razorbill *Alca torda islandica* (21,140 breeding adults, 2008-2011, 2.3%). The site regularly supports an assemblage of more than 20,000 individual breeding seabirds (average number of individuals: 216,730, 2008-2012), including over 2,000 individual northern fulmar *Fulmarus glacialis*.	NA
	Negative impacts	**Positive impacts**
	K05 - Reduced fecundity/ genetic depression (inside, high)	G03 - Interpretative centres (both, low)
	F02 - Fishing and harvesting aquatic resources (both, medium)	D05 - Improved access to site (both, low)
	D05 - Improved access to site (both, medium)	A04 - Grazing (inside, low)
	A02 - Modification of cultivation practices (inside, low)	
	G01 - Outdoor sports and leisure activities, recreational activities (both, high)	
	D03 - Shipping lanes, ports, marine constructions (both, low)	
	A01 - Cultivation (inside, low)	
	I01 - Invasive non-native species (both, low)	
	E03 - Discharges (both, low)	
	E04 - Structures, buildings in the landscape (inside, low)	
	C03 - Renewable abiotic energy use (outside, high)	

SPA/Ramsar	SPA	Ramsar
	G05 - Other human intrusions and disturbances (both, low)	
	L05 - Collapse of terrain, landslide (inside, medium)	
Greater Wash	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area supports Annex I populations of: • little tern (*Sternula albifrons*) (798 pairs, 5-year peak mean 2009-2013, 42% of GB breeding population) • common tern (*Sterna hirundo*) (510 pairs, 5-year peak mean 2010-2014, 5.1% of GB breeding population) • Sandwich tern (*Sterna sandvicensis*) (3,852 pairs, 5-year peak mean 2010-2014, 35% of GB breeding population) (stage 1.1) During the winter, the site also supports populations of overwintering Annex I species: • little gull (*Hydrocoloeus minutus*) (1,255 peak mean 2004/05-2005/06, no current GB population estimate) (stage 1.4) • red-throated diver (*Gavia stellata*) (1,407 individuals, 5-year peak mean 2002/03-2005/06, 8.3% of GB non-breeding population) (stage 1.1). **Species referred to in Article 4.2 of Directive 2009/147/EC** Site regularly supports 3,449 Common scoter (*Melanitta nigra*) (5-year peak mean 2002/03-2007/08, 0.6% of biogeographic population), a regularly occurring migratory species not listed in Annex I of the EC Birds Directive is also supported within the site (stage 1.4).	NA
	Negative impacts	**Positive impacts**
	G01 - Outdoor sports and leisure activities, recreational activities (both, medium)	

SPA/Ramsar	SPA	Ramsar
	D03 - Shipping lanes, ports, marine constructions (both, medium)	
	C03 - Renewable abiotic energy use (both, high)	
	H03 - Marine water pollution (both, low)	
	F02 - Fishing and harvesting aquatic resources (inside, low)	
Hornsea Mere	**Species referred to in Article 4.2 of Directive 2009/147/EC** During the breeding season the area regularly supports: • *Cygnus olor* (Britain) 0.7% of the population in Great Britain 5 year mean, 1988-1992 Over winter the area regularly supports: • *Anas strepera* (North-western Europe) 1% of the population 5 year peak mean 1991/92-1995/96	NA
	Negative impacts	**Positive impacts**
	H02 - Pollution to groundwater (point sources and diffuse sources) (both, high)	A03 - Mowing / cutting of grassland (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	A02 - Modification of cultivation practices (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	
Humber Estuary	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Botaurus stellaris* (Europe - breeding) 10.5% of the population in Great Britain 2000-2002 • *Circus aeruginosus* 6.3% of the population in Great Britain 1998-2002 • *Recurvirostra avosetta* (Western Europe/Western Mediterranean - breeding) 8.6% of the population in Great Britain 1998-2002 • *Sterna albifrons* (Eastern Atlantic - breeding) 2.1% of the population in Great Britain 1998-2002	**Reason for designation** An estuary with a max.7.4 m. tidal range exposing vast mud and sand flats at low tide. Vegetation includes extensive reedbeds, areas of mature and developing saltmarsh, backed by grazing marsh or low sand dunes with marshy slacks and brackish pools. The area regularly supports internationally important numbers of various species of breeding and wintering waterbirds. Many passage birds, notably internationally important populations of ringed plover, *Charadriu hiaticula*, and sanderling *Caldris alba* stage in the area. The site supports Britain's most southeasterly breeding colony of gray seal *Halichoerus grypus*. Human activities include tourism, recreation, commercial and recreational fishing, livestock grazing, and hunting. Renamed and area significantly increased in 2007.

SPA/Ramsar	SPA	Ramsar
	Over winter the area regularly supports: • *Botaurus stellaris* (Europe - breeding) 4% of the population in Great Britain 1998/9 to 2002/3 • *Circus cyaneus* 1.1% of the population in Great Britain 1997/8 to 2001/2 • *Limosa lapponica* (Western Palearctic - wintering) 4.4% of the population in Great Britain 1996/7 to 2000/1 • *Pluvialis apricaria* [North-western Europe - breeding] 12.3% of the population in Great Britain 1996/7 to 2000/1 • *Recurvirostra avosetta* (Western Europe/Western Mediterranean - breeding) 1.7% of the population in Great Britain 1996/7 to 2000/1 On passage the area regularly supports: • *Philomachus pugnax* (Western Africa - wintering) 1.4% of the population in Great Britain 1996-2000 **Species referred to in Article 4.2 of Directive 79/409/EEC** Over winter the area regularly supports: • *Calidris alpina alpina* (Northern Siberia/Europe/Western Africa) 1.7% of the population 1996/7 to 2000/1 • *Calidris canutus* (North-eastern Canada/Greenland/Iceland/North-western Europe) 6.3% of the population 1996/7 to 2000/1 • *Limosa limosa islandica* (Iceland - breeding) 3.2% of the population 1996/7 to 2000/1 • *Tadorna tadorna* (North-western Europe) 1.5% of the population 1996/7 to 2000/1 • *Tringa totanus* (Eastern Atlantic - wintering) 3.6% of the population 1996/7 to 2000/1 On passage the area regularly supports:	

SPA/Ramsar	SPA	Ramsar
	• *Calidris alpina alpina* (Northern Siberia/Europe/Western Africa) 1.5% of the population 1996-2000 • *Calidris canutus* (North-eastern Canada/Greenland/Iceland/North-western Europe) 4.1% of the population 1996-2000 • *Limosa limosa islandica* (Iceland - breeding) 2.6% of the population 1996-2000 • *Tringa totanus* (Eastern Atlantic - wintering) 5.7% of the population 1996-2000 **Species referred to in Article 4.2 of Directive 79/409/EEC: AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS** Over winter the area regularly supports: 153934 waterfowl (5 year peak mean 1991/92-1995/96) Including: *Botaurus stellaris, Branta bernicla bernicla, Tadorna tadorna, Anas penelope, Anas crecca, Anas platyrhynchos, Aythya ferina, Aythya marila, Bucephala clangula, Haematopus ostralegus, Recurvirostra avosetta, Charadrius hiaticula, Pluvialis apricaria* [North-western Europe - breeding]*, Pluvialis squatarola, Vanellus vanellus, Calidris canutus, Calidris alba, Calidris alpina alpina, Philomachus pugnax, Limosa limosa islandica, Limosa lapponica, Numenius phaeopus, Numenius arquata, Tringa totanus, Tringa nebularia, Arenaria interpres*	
	Negative impacts	**Positive impacts**
	K01 - Abiotic (slow) natural processes (inside, high)	A02 - Modification of cultivation practices (inside, high)
	I01 - Invasive non-native species (both, high)	D05 - Improved access to site (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	B02 - Forest and Plantation management & use (inside, low)
	M02 - Changes in biotic conditions (both, high)	A04 - Grazing (inside, high)
	M01 - Changes in abiotic conditions (both, high)	A03 - Mowing / cutting of grassland (inside, high)
Lower Derwent Valley	**Species referred to in Article 4.1 of Directive 79/409/EEC** Over winter the area regularly supports:	**Reason for designation**

SPA/Ramsar	SPA	Ramsar
	• *Cygnus columbianus bewickii* (Western Siberia/North-eastern & North-western Europe) 0.7% of the GB population 5 year peak mean 1991/92-1995/96 • *Philomachus pugnax* (Western Africa - wintering) 19% of the GB population 5 year peak mean 1991/92-1995/96 • *Pluvialis apricaria* [North-western Europe - breeding] 2.4% of the GB population 5 year peak mean 1991/92-1995/96 **Species referred to in Article 4.2 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Anas clypeata* (North-western/Central Europe) 5% of the population in Great Britain 5 year mean 1986/7-1990/1 Over winter the area regularly supports: • *Anas crecca* (North-western Europe) 1.5% of the population 5 year peak mean 1991/92-1995/96 • *Anas penelope* (Western Siberia/North-western/North-eastern Europe) 0.7% of the population 5 year peak mean 1991/92-1995/96 **Species referred to in Article 4.2 of Directive 79/409/EEC: AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS** Over winter the area regularly supports: 40616 waterfowl (5 year peak mean 1991/92-1995/96) Including: *Cygnus columbianus bewickii, Anas penelope, Anas crecca, Pluvialis apricaria* [North-western Europe - breeding]*, Philomachus pugnax*	A seasonally inundated river floodplain between two villages. Dominant vegetation is grassland that is determined by the extent of winter flooding. The site includes one of the most important examples of traditionally managed species-rich alluvial flood meadow habitat remaining in the UK. The site is of particular importance for several species of breeding waders, and nationally important numbers of ducks and swans breed or winter at the site. Human activities have included flood control measures, as well as recreation, fishing, grazing, and hunting, and deep coal mining is occurring under the site. Extended on 08/06/93 from the former Ramsar site known as Derwent Ings.
	Negative impacts	**Positive impacts**
	J02 - Human induced changes in hydraulic conditions (both, high)	D05 - Improved access to site (inside, high)
	A04 - Grazing (inside, high)	A04 - Grazing (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	A03 - Mowing / cutting of grassland (inside, high)
	K02 - Biocenotic evolution, succession (inside, high)	A02 - Modification of cultivation practices (inside, high)

SPA/Ramsar	SPA	Ramsar
	I01 - Invasive non-native species (both, high)	B02 - Forest and Plantation management & use (inside, high)
North Pennine Moors	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Circus cyaneus* 2.2% of the GB breeding population Count as at 1993 and 1994 • *Falco columbarius* 10.5% of the GB breeding population Estimated population • *Falco peregrinus* 1.3% of the GB breeding population Count as at 1991 • *Pluvialis apricaria* [North-western Europe - breeding] at least 6.2% of the GB breeding population Estimated population	NA
	Negative impacts	**Positive impacts**
	K05 - Reduced fecundity/ genetic depression (inside, high)	A04 - Grazing (inside, high)
	A04 - Grazing (inside, high)	D05 - Improved access to site (inside, high)
	J01 - Fire and fire suppression (inside, high)	A03 - Mowing / cutting of grassland (inside, high)
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.) (inside, high)	G03 - Interpretative centres (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	A02 - Modification of cultivation practices (inside, high)
		B02 - Forest and Plantation management & use (inside, high)
North York Moors	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Falco columbarius* at least 2.7% of the GB breeding population 1996 • *Pluvialis apricaria* [North-western Europe - breeding] at least 2.3% of the GB breeding population 1996	NA

SPA/Ramsar	SPA	Ramsar
	Negative impacts	**Positive impacts**
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.) (inside, high)	A04 - Grazing (inside, high)
	H04 - Air pollution, air-borne pollutants (both, high)	B06 - Grazing in forests/ woodland (inside, high)
	I01 - Invasive non-native species (both, high)	A02 - Modification of cultivation practices (inside, high)
	J01 - Fire and fire suppression (inside, high)	A03 - Mowing / cutting of grassland (inside, high)
	M01 - Changes in abiotic conditions (both, high)	B02 - Forest and Plantation management & use (inside, high)
Peak District Moors (South Pennine Moors Phase 1)	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Asio flammeus* at least 2.2% of the GB breeding population Count, as at 1990 and 1998 • *Falco columbarius* at least 2.3% of the GB breeding population Count as at 1990 and 1998 • *Pluvialis apricaria* [North-western Europe - breeding] at least 1.9% of the GB breeding population Count, as at 1990 and 1998	NA
	Negative impacts	**Positive impacts**
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	D05 - Improved access to site (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	A04 - Grazing (inside, high)
	J01 - Fire and fire suppression (inside, high)	B02 - Forest and Plantation management & use (inside, high)
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.) (inside, high)	A03 - Mowing / cutting of grassland (inside, high)

SPA/Ramsar	SPA	Ramsar
	K05 - Reduced fecundity/ genetic depression (inside, high)	A02 - Modification of cultivation practices (inside, high)
South Pennine Moors Phase 2	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Asio flammeus* 0.3% of the GB breeding population Count as at 1990 • *Falco columbarius* 2.2% of the GB breeding population Count as at 1995 • *Pluvialis apricaria* [North-western Europe - breeding] 1.3% of the GB breeding population No count period specified.	NA
	Negative impacts	**Positive impacts**
	F03 - Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.) (inside, high)	B02 - Forest and Plantation management & use (inside, high)
	K05 - Reduced fecundity/ genetic depression (inside, high)	A06 - Annual and perennial non-timber crops (inside, high)
	J01 - Fire and fire suppression (inside, high)	A04 - Grazing (inside, high)
	J02 - Human induced changes in hydraulic conditions (both, high)	A02 - Modification of cultivation practices (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	B06 - Grazing in forests/ woodland (inside, high)
Thorne & Hatfield Moors	**Species referred to in Article 4.1 of Directive 79/409/EEC** During the breeding season the area regularly supports: • *Caprimulgus europaeus* 1.9% of the GB breeding population 5 count peak mean 1993, 1995-1998	NA
	Negative impacts	**Positive impacts**
	E06 - Other urbanisation, industrial and similar activities (both, high)	A02 - Modification of cultivation practices (inside, high)
	G01 - Outdoor sports and leisure activities, recreational activities (inside, high)	B02 - Forest and Plantation management & use (inside, high)
		D05 - Improved access to site (inside, high)

SPA/Ramsar	SPA	Ramsar
		A06 - Annual and perennial non-timber crops (inside, high)
		A04 - Grazing (inside, high)
Malham Tarn	NA	**Reason for designation** The site comprises areas of open water, calcareous fen, soligenous mire, and raised bog. It supports the nationally rare *Bartsia alpina* and *Calamagrostis stricta*. It also provides habitat for five listed British Red Data Book invertebrates, including *Agrypnia crassicornis*. Human activities include tourism, recreation, grazing and permanent pastoral agriculture.

Appendix B L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Lower Dales	Aberford			>5000	No further assessment required	No further assessment required
Lower Aire	Airedale			>5000	No further assessment required	No further assessment required
Lower Don	Airmyn	Humber Estuary	SAC	586.79	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Appletreewick	North Pennine Moors	SPA	991.09	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Barlby	Skipwith Common	SAC	1165.66	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Barwick in Elmet			>5000	No further assessment required	No further assessment required
Lower Dales	Beamsley	North Pennine Moors	SPA	702.87	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Bell Busk			>5000	No further assessment required	No further assessment required
Lower Ouse	Brayton Junction			>5000	No further assessment required	No further assessment required
Lower Aire	Lemonroyd			>5000	No further assessment required	No further assessment required
Lower Don	Stapleton Park			>5000	No further assessment required	No further assessment required
Lower Aire	Sutton			>5000	No further assessment required	No further assessment required
Upper Aire	Broughton			>5000	No further assessment required	No further assessment required
Lower Dales	Buckden	North Pennine Dales Meadows	SAC	2894.26	No further assessment required	Mitigation necessary pending further details
Lower Dales	Burley in Wharfedale	South Pennine Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Aire	Burn			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Lower Dales	Burnsall	North Pennine Moors	SAC	325.73	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Coniston Cold			>5000	No further assessment required	No further assessment required
Lower Dales	Conistone	Craven Limestone Complex	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Aire	Cridling Stubbs			>5000	No further assessment required	No further assessment required
Upper Aire	Dowley Gap	South Pennine Moors	SAC	389.70	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Draughton	North Pennine Moors	SAC	1058.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Drax	River Derwent	SAC	825.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Dunkeswick			>5000	No further assessment required	No further assessment required
Upper Aire	Earby			>5000	No further assessment required	No further assessment required
Upper Aire	East Carlton			>5000	No further assessment required	No further assessment required
Upper Aire	East Marton			>5000	No further assessment required	No further assessment required
Lower Aire	Eggborough STW			>5000	No further assessment required	No further assessment required
Upper Aire	Flappit Spring	South Pennine Moors	SAC	3276.89	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Foulridge			>5000	No further assessment required	No further assessment required
Lower Dales	Grimwith	North Pennine Moors	SPA	361.93	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Hallas Bridge	South Pennine Moors	SAC	4306.96	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Harecroft	South Pennine Moors	SAC	3881.21	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Aire	Hillam			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Aire	Hollingwell Hill	South Pennine Moors	SAC	3633.14	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Hook	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Dales	Ilkley	South Pennine Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Dales	Kearby			>5000	No further assessment required	No further assessment required
Lower Dales	Kettlewell	Craven Limestone Complex	SAC	2360.25	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Lothersdale	South Pennine Moors	SAC	3515.43	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Aire	Low Common			>5000	No further assessment required	No further assessment required
Upper Aire	Marley	South Pennine Moors Phase 2	SPA	362.11	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Nesfield	North Pennine Moors	SPA	1903.82	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Otley	North Pennine Moors	SAC	2002.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Oughtershaw	North Pennine Dales Meadows	SAC	299.51	No further assessment required	Mitigation necessary pending further details
Lower Aire	Owlwood			>5000	No further assessment required	No further assessment required
Lower Dales	Pool			>5000	No further assessment required	No further assessment required
Lower Don	Goole Rawcliffe	Thorne Moor	SAC	2705.73	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Sherburn in Elmet			>5000	No further assessment required	No further assessment required
Lower Aire	Kirk Smeaton			>5000	No further assessment required	No further assessment required
Lower Don	Snaith	River Derwent	SAC	3492.42	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Aire	Snaygill	North Pennine Moors	SAC	1768.05	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Starbotton	Craven Limestone Complex	SAC	3653.34	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Tadcaster Domestic			>5000	No further assessment required	No further assessment required
Lower Dales	Towton			>5000	No further assessment required	No further assessment required
Lower Dales	Weeton			>5000	No further assessment required	No further assessment required
Calder	Wheldale			>5000	No further assessment required	No further assessment required
Upper Aire	Kirkby Malham	Craven Limestone Complex	SAC	1477.40	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Eccup STW			>5000	No further assessment required	No further assessment required
Lower Dales	Eccup WTW			>5000	No further assessment required	No further assessment required
Lower Ouse	Hambleton			>5000	No further assessment required	No further assessment required
Lower Dales	Ben Rhydding	South Pennine Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Aire	Embsay	North Pennine Moors	SPA	616.28	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Gargrave	North Pennine Moors	SPA	4503.69	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Grassington	North Pennine Dales Meadows	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Dales	Healaugh (Tadcaster)			>5000	No further assessment required	No further assessment required
Lower Dales	Hebden	North Pennine Dales Meadows	SAC	640.41	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Hetton	North Pennine Moors	SPA	895.16	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Aire	Lane Head			>5000	No further assessment required	No further assessment required
Lower Dales	Thorp Arch	Kirk Deighton	SAC	4492.67	No further assessment required	No further assessment required
Lower Dales	Weardley			>5000	No further assessment required	No further assessment required
Lower Dales	Wetherby	Kirk Deighton	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Dales	Aldfield	North Pennine Moors	SPA	4502.86	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Aldwark Boat Club			>5000	No further assessment required	No further assessment required
Derwent & Rye	Ampleforth Village			>5000	No further assessment required	No further assessment required
Upper Dales	Appersett	North Pennine Moors	SPA	1762.14	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Appleton Wiske			>5000	No further assessment required	No further assessment required
Upper Dales	Arrathorne			>5000	No further assessment required	No further assessment required
Upper Dales	Asenby			>5000	No further assessment required	No further assessment required
York	Askham Bryan			>5000	No further assessment required	No further assessment required
Upper Dales	Askrigg	North Pennine Dales Meadows	SAC	349.08	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Aysgarth	Ox Close	SAC	1084.35	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Bagby			>5000	No further assessment required	No further assessment required
Upper Dales	Bainbridge	North Pennine Dales Meadows	SAC	1020.32	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Baldersby			>5000	No further assessment required	No further assessment required
Lower Dales	Beckwithshaw			>5000	No further assessment required	No further assessment required
Upper Dales	Bedale			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Bellerby	North Pennine Moors	SAC	566.84	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Bland Hill	North Pennine Moors	SPA	3111.10	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Blubberhouses Hall	North Pennine Moors	SAC	504.55	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Blubberhouses	North Pennine Moors	SAC	922.91	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Borrowby	North York Moors	SAC	3255.78	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Brandsby			>5000	No further assessment required	No further assessment required
Upper Dales	Burtersett	North Pennine Moors	SAC	2241.20	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Carlton Husthwaite			>5000	No further assessment required	No further assessment required
Upper Dales	Carperby	North Pennine Moors	SAC	845.37	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Carthorpe			>5000	No further assessment required	No further assessment required
Upper Dales	Catterick Village			>5000	No further assessment required	No further assessment required
Upper Dales	Catton			>5000	No further assessment required	No further assessment required
Upper Dales	CB Terrace	North Pennine Moors	SAC	8.43	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Claxton	Strensall Common	SAC	2471.37	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Colburn	North Pennine Dales Meadows	SAC	1474.26	No further assessment required	Mitigation necessary pending further details
Upper Dales	Constable Burton			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Countersett	North Pennine Dales Meadows	SAC	3521.58	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Coxwold			>5000	No further assessment required	No further assessment required
Upper Dales	Crakehall			>5000	No further assessment required	No further assessment required
Upper Dales	Crayke			>5000	No further assessment required	No further assessment required
Upper Dales	Cundall			>5000	No further assessment required	No further assessment required
Upper Dales	Danby Wiske			>5000	No further assessment required	No further assessment required
Lower Dales	Darley	North Pennine Moors	SAC	787.98	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Dishforth			>5000	No further assessment required	No further assessment required
Upper Dales	Downholme	North Pennine Moors	SAC	2266.91	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Easingwold			>5000	No further assessment required	No further assessment required
Upper Dales	East Cowton			>5000	No further assessment required	No further assessment required
Upper Dales	Dalton Eldmire			>5000	No further assessment required	No further assessment required
Upper Dales	Ellerbeck	North York Moors	SPA	3091.71	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Ellingstring	North Pennine Moors	SAC	355.10	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Elvington	Lower Derwent Valley	SPA	124.87	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Elvington WTW STW	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Ouse	Escrick	Skipwith Common	SAC	4476.12	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Farlington			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Fearby	North Pennine Moors	SAC	2333.49	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Finghall			>5000	No further assessment required	No further assessment required
York	Flaxton	Strensall Common	SAC	1615.24	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Gayles			>5000	No further assessment required	No further assessment required
Upper Dales	Gilling West	North Pennine Dales Meadows	SAC	2837.84	No further assessment required	Mitigation necessary pending further details
Upper Dales	Grantley	North Pennine Moors	SPA	1524.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Great Langton			>5000	No further assessment required	No further assessment required
Upper Dales	Great Smeaton No. 1			>5000	No further assessment required	No further assessment required
Upper Dales	Grinton No. 1 East	North Pennine Moors	SPA	1.26	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Grinton No. 2 West	North Pennine Moors	SAC	349.77	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Hardraw	North Pennine Moors	SAC	862.18	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Harrogate North			>5000	No further assessment required	No further assessment required
Lower Dales	Harrogate South	Kirk Deighton	SAC	3023.96	No further assessment required	No further assessment required
Derwent & Rye	Harton	River Derwent	SAC	1684.97	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	East Hauxwell			>5000	No further assessment required	No further assessment required
Upper Dales	Hawes	North Pennine Moors	SPA	1437.19	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Healaugh (Reeth)	North Pennine Moors	SPA	137.62	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Helperby			>5000	No further assessment required	No further assessment required
York	Holtby	River Derwent	SAC	2500.17	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Hornby Castle			>5000	No further assessment required	No further assessment required
Upper Dales	Horsehouse	North Pennine Moors	SPA	2621.57	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Howe			>5000	No further assessment required	No further assessment required
Upper Dales	Hudswell	North Pennine Dales Meadows	SAC	2269.68	No further assessment required	Mitigation necessary pending further details
Lower Dales	Hunsingore	Kirk Deighton	SAC	3403.37	No further assessment required	No further assessment required
Upper Dales	Hunton			>5000	No further assessment required	No further assessment required
Upper Dales	Husthwaite			>5000	No further assessment required	No further assessment required
Upper Dales	Ingleby Arncliffe	North York Moors	SPA	1210.16	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Keld	North Pennine Moors	SAC	397.08	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Kilburn			>5000	No further assessment required	No further assessment required
Lower Dales	Killinghall			>5000	No further assessment required	No further assessment required
Upper Dales	Kirby Knowle	North York Moors	SPA	402.68	Mitigation necessary pending further details	Mitigation necessary pending further details
Lower Dales	Kirk Hammerton			>5000	No further assessment required	No further assessment required
Upper Dales	Kirkby Fleetham			>5000	No further assessment required	No further assessment required
Upper Dales	Kirkby Malzeard	North Pennine Moors	SAC	2535.54	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Kirby Sigston	North York Moors	SAC	3661.39	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Kirklington			>5000	No further assessment required	No further assessment required
Lower Dales	Knaresborough			>5000	No further assessment required	No further assessment required
Upper Dales	Langthwaite	North Pennine Moors	SAC	222.62	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Leeming Bar			>5000	No further assessment required	No further assessment required
Upper Dales	Leighton Cottages	North Pennine Moors	SPA	602.27	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Leyburn	North Pennine Moors	SAC	1328.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Lindley Lodge	North Pennine Moors	SPA	4071.93	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Lofthouse	North Pennine Moors	SAC	838.62	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Long Marston			>5000	No further assessment required	No further assessment required
Upper Dales	Markington			>5000	No further assessment required	No further assessment required
Upper Dales	Marton-le-Moor			>5000	No further assessment required	No further assessment required
Upper Dales	Masham	North Pennine Moors	SAC	4593.73	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Maunby			>5000	No further assessment required	No further assessment required
Upper Dales	Carlton Melmerby	North Pennine Moors	SAC	1746.03	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Middlesmoor	North Pennine Moors	SAC	1128.60	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Middleton Quernhow			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Lower Dales	Moor Monkton			>5000	No further assessment required	No further assessment required
Upper Dales	Moorcock Inn	North Pennine Dales Meadows	SAC	3885.60	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Morton-on-Swale			>5000	No further assessment required	No further assessment required
Upper Dales	Moulton			>5000	No further assessment required	No further assessment required
York	York Naburn	Strensall Common	SAC	1787.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Nether Silton	North York Moors	SAC	1509.25	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Newsham			>5000	No further assessment required	No further assessment required
Upper Dales	Newton le Willows			>5000	No further assessment required	No further assessment required
Upper Dales	North Cowton			>5000	No further assessment required	No further assessment required
Lower Dales	North Deighton	Kirk Deighton	SAC	1012.54	No further assessment required	No further assessment required
Lower Ouse	North Duffield	Skipwith Common	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Dales	North Stainley			>5000	No further assessment required	No further assessment required
Upper Dales	Northallerton			>5000	No further assessment required	No further assessment required
Lower Dales	Nun Monkton			>5000	No further assessment required	No further assessment required
Upper Dales	Ornhams			>5000	No further assessment required	No further assessment required
Upper Dales	Osmotherley	North York Moors	SPA	881.80	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Osmotherley WTW	North York Moors	SPA	764.51	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Over Silton	North York Moors	SAC	1732.80	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Preston-under-Scar	North Pennine Moors	SPA	1031.89	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Rainton			>5000	No further assessment required	No further assessment required
Upper Dales	Raskelf			>5000	No further assessment required	No further assessment required
Upper Dales	Ravensworth			>5000	No further assessment required	No further assessment required
York	Rawcliffe	Strensall Common	SAC	2103.51	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Castle Bolton	North Pennine Moors	SPA	1216.26	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Reeth	North Pennine Moors	SAC	607.41	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Richmond	North Pennine Dales Meadows	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Dales	Ripon			>5000	No further assessment required	No further assessment required
Upper Dales	Romanby			>5000	No further assessment required	No further assessment required
York	Rufforth			>5000	No further assessment required	No further assessment required
York	Sand Hutton	River Derwent	SAC	2671.43	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Sawley	North Pennine Moors	SAC	3489.15	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Scruton			>5000	No further assessment required	No further assessment required
Upper Dales	Sedbusk	North Pennine Moors	SAC	667.27	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Shaw Mills			>5000	No further assessment required	No further assessment required
York	Sheriff Hutton	Strensall Common	SAC	2813.95	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Sinderby			>5000	No further assessment required	No further assessment required
Upper Dales	Skelton			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Snape			>5000	No further assessment required	No further assessment required
Upper Dales	Spennithorne	North Pennine Moors	SPA	3487.67	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Stillington			>5000	No further assessment required	No further assessment required
Upper Dales	Studley Roger			>5000	No further assessment required	No further assessment required
Upper Dales	Sutton on Forest	Strensall Common	SAC	4849.94	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Sutton under WSC	North York Moors	SAC	2918.52	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Swinithwaite	North Pennine Moors	SPA	3112.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Swinsty Car Park	North Pennine Moors	SPA	2371.54	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Thimbleby	North York Moors	SAC	1073.10	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Thirkleby			>5000	No further assessment required	No further assessment required
Upper Dales	Thirn			>5000	No further assessment required	No further assessment required
Upper Dales	Thirsk			>5000	No further assessment required	No further assessment required
Upper Dales	Tholthorpe			>5000	No further assessment required	No further assessment required
Upper Dales	Thoralby	Ox Close	SAC	2499.94	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Thorganby	Lower Derwent Valley	SAC	11.13	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Thornton-le-Beans			>5000	No further assessment required	No further assessment required
Upper Dales	Thornton-le-Street			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Thornton Steward	North Pennine Moors	SPA	3040.25	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Thornton Watlass			>5000	No further assessment required	No further assessment required
Upper Dales	Thwaite	North Pennine Dales Meadows	SAC	185.43	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Timble	North Pennine Moors	SAC	1240.95	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Tockwith	Kirk Deighton	SAC	4983.31	No further assessment required	No further assessment required
Upper Dales	Tollerton			>5000	No further assessment required	No further assessment required
Upper Dales	Tunstall			>5000	No further assessment required	No further assessment required
Upper Dales	Upsall	North York Moors	SAC	2016.54	Mitigation necessary pending further details	Mitigation necessary pending further details
York	Haxby Walbutts	Strensall Common	SAC	0.00	Appropriate assessment required	Appropriate assessment required
York	Warthill	River Derwent	SAC	2813.76	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Wath Bridge	North Pennine Moors	SAC	657.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Wath Ripon			>5000	No further assessment required	No further assessment required
Upper Dales	Wensley	North Pennine Moors	SAC	2830.17	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	West Burton	Ox Close	SAC	2857.64	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	West Rounton	North York Moors	SAC	3213.13	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	West Tanfield			>5000	No further assessment required	No further assessment required
Upper Dales	West Witton	North Pennine Moors	SAC	3709.96	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Dales	Whashton	North Pennine Dales Meadows	SAC	3378.21	No further assessment required	Mitigation necessary pending further details
York	Wheldrake	Lower Derwent Valley	SAC	43.88	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Worton	North Pennine Dales Meadows	SAC	415.87	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Yearsley			>5000	No further assessment required	No further assessment required
Lower Dales	Pateley Bridge	North Pennine Moors	SAC	252.71	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Deighton Grove			>5000	No further assessment required	No further assessment required
Upper Dales	Stearsby			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Aldborough	Greater Wash	SPA	11.55	No further assessment required	No further assessment required
Derwent & Rye	Appleton le Moors	North York Moors	SPA	2431.55	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Asselby	Humber Estuary	SPA	2030.83	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Barton le Willows	River Derwent	SAC	1351.46	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Beeford	Greater Wash	SPA	4440.48	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Beverley			>5000	No further assessment required	No further assessment required
Derwent & Rye	Bishop Wilton			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Esk & Coast	Botton	North York Moors	SPA	34.37	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Brandesburton	Hornsea Mere	SPA	614.56	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Brawby			>5000	No further assessment required	No further assessment required
Esk & Coast	Bryherstones Inn	Beast Cliff-Whitby (Robin Hood's Bay)	SAC	2794.67	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Bubwith	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Burton Agnes			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Burton Pidsea			>5000	No further assessment required	No further assessment required
Derwent & Rye	Burythorpe	River Derwent	SAC	3316.35	Appropriate assessment required pending further details	Appropriate assessment required pending further details
York	Buttercrambe	River Derwent	SAC	109.41	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Catfoss	Hornsea Mere	SPA	3342.09	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Cherry Burton			>5000	No further assessment required	No further assessment required
Esk & Coast	Commondale	North York Moors	SPA	6.60	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Coneysthorpe	River Derwent	SAC	3460.39	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Esk & Coast	Danby	North York Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Driffield			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Duggleby			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Easington	Greater Wash	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Esk & Coast	East Barnby	North York Moors	SAC	3393.42	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	East Heslerton			>5000	No further assessment required	No further assessment required
Esk & Coast	Egton Bridge	Arnecliff & Park Hole Woods	SAC	562.01	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Ellerton	Lower Derwent Valley	SPA	354.58	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Esk & Coast	Flask Inn	North York Moors	SPA	723.86	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Foggathorpe	River Derwent	SAC	4176.35	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Folkton	Flamborough and Filey Coast	SPA	1232.64	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Foston	River Derwent	SAC	689.19	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Foxholes			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Fridaythorpe			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Ganton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Garton On The Wolds			>5000	No further assessment required	No further assessment required
Derwent & Rye	Gillamoor	North York Moors	SPA	750.07	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Gilling East			>5000	No further assessment required	No further assessment required
Esk & Coast	Glaisdale	Arnecliff & Park Hole Woods	SAC	63.31	Mitigation necessary pending further details	Mitigation necessary pending further details
Esk & Coast	Goathland	North York Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Great Edstone			>5000	No further assessment required	No further assessment required
Derwent & Rye	Great Habton			>5000	No further assessment required	No further assessment required
Esk & Coast	Grosmont	North York Moors	SPA	954.22	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Haisthorpe			>5000	No further assessment required	No further assessment required
Esk & Coast	Hardstruggle Cottages	North York Moors	SPA	710.05	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Harome			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Esk & Coast	Hayburn Wyke Hotel	Beast Cliff-Whitby (Robin Hood's Bay)	SAC	1612.10	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Hull	Hedon	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Helmsley	North York Moors	SAC	4991.30	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Holme on Spalding Moor			>5000	No further assessment required	No further assessment required
Derwent & Rye	Hovingham			>5000	No further assessment required	No further assessment required
Derwent & Rye	Howden	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Huggate			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Humbleton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Hunmanby	Flamborough and Filey Coast	SPA	2043.67	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Hutton Le Hole	North York Moors	SAC	97.23	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Keyingham	Humber Estuary	SAC	3421.06	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Kilham			>5000	No further assessment required	No further assessment required
Derwent & Rye	Kirkbymoorside	North York Moors	SAC	2947.31	Mitigation necessary pending further details	Mitigation necessary pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Langtoft			>5000	No further assessment required	No further assessment required
Derwent & Rye	Lastingham	North York Moors	SAC	69.71	Mitigation necessary pending further details	Mitigation necessary pending further details
Esk & Coast	Lealhom	North York Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Leavening	River Derwent	SAC	3629.40	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Leconfield			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Leven			>5000	No further assessment required	No further assessment required
Upper Dales	Linton on Ouse			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Lockington			>5000	No further assessment required	No further assessment required
Derwent & Rye	Huttons Ambo	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Malton	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Melbourne	Lower Derwent Valley	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Esk & Coast	Mickleby	North York Moors	SPA	1413.08	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Middleton Wolds			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Nafferton			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Esk & Coast	Newholm	North York Moors	SAC	4262.23	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Newton-on-Rawcliffe	North York Moors	SPA	747.60	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	North Dalton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	North Ferriby	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Patrington	Humber Estuary	Ramsar	2137.85	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Pickering	Ellers Wood & Sand Dale	SAC	4719.84	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Pocklington	Lower Derwent Valley	SAC	3053.75	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Reighton	Flamborough and Filey Coast	SPA	381.50	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Rillington	River Derwent	SAC	1827.34	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Rosedale	North York Moors	SPA	271.53	Mitigation necessary pending further details	Mitigation necessary pending further details
Esk & Coast	Seamer	Flamborough and Filey Coast	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Derwent & Rye	Settrington	River Derwent	SAC	1580.98	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Sherburn			>5000	No further assessment required	No further assessment required
Derwent & Rye	Sinnington	North York Moors	SAC	4497.73	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Skidby			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Skipsea	Greater Wash	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Sledmere			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	South Dalton			>5000	No further assessment required	No further assessment required
Derwent & Rye	Sproxton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Swine			>5000	No further assessment required	No further assessment required
Derwent & Rye	Terrington			>5000	No further assessment required	No further assessment required
Derwent & Rye	Thornton Dale	Ellers Wood & Sand Dale	SAC	1738.75	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Tibthorpe			>5000	No further assessment required	No further assessment required
Esk & Coast	Ugthorpe	North York Moors	SPA	955.43	Mitigation necessary pending further details	Mitigation necessary pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Watton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Weaverthorpe			>5000	No further assessment required	No further assessment required
Derwent & Rye	Welburn	River Derwent	SAC	1241.10	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Welwick No. 1	Humber Estuary	Ramsar	1940.41	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	West Lutton			>5000	No further assessment required	No further assessment required
Esk & Coast	Westerdale	North York Moors	SPA	234.50	Mitigation necessary pending further details	Mitigation necessary pending further details
Holderness Coast (Gypsey Race)	Wetwang			>5000	No further assessment required	No further assessment required
Derwent & Rye	Wilberfoss	Lower Derwent Valley	Ramsar	966.77	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Withernwick	Greater Wash	SPA	4305.74	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Holme on the Wolds			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Welwick No. 2	Humber Estuary	Ramsar	1759.07	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Derwent & Rye	Westow	River Derwent	SAC	791.17	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Oswaldkirk			>5000	No further assessment required	No further assessment required
Lower Don	Ackworth			>5000	No further assessment required	No further assessment required
Lower Don	Aldwarke			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Astwith			>5000	No further assessment required	No further assessment required
Lower Don	Balby			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Barlow	South Pennine Moors	SAC	1664.60	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Barr Lane	Denby Grange Colliery Ponds	SAC	1014.38	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Bearswood Grove	Hatfield Moor	SAC	1988.04	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Bentley			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Bolsover			>5000	No further assessment required	No further assessment required
Lower Don	Cadeby			>5000	No further assessment required	No further assessment required
Dearne	Carlecotes	South Pennine Moors	SAC	2181.80	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Cawthorne			>5000	No further assessment required	No further assessment required
Lower Don	Chapel Lane			>5000	No further assessment required	No further assessment required
Dearne	Cheesebottom	South Pennine Moors	SAC	2774.25	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Chesterfield Road			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Calder	Claphouse Fold	Denby Grange Colliery Ponds	SAC	3512.33	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Clayton			>5000	No further assessment required	No further assessment required
Dearne	Clayton West	Denby Grange Colliery Ponds	SAC	1000.06	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Clifton			>5000	No further assessment required	No further assessment required
Dearne	Crane Moor			>5000	No further assessment required	No further assessment required
Dearne	Crow Edge	South Pennine Moors	SAC	2951.13	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Danesmoor			>5000	No further assessment required	No further assessment required
Dearne	Darton			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Dronfield	South Pennine Moors	SAC	3047.68	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Dunford Bridge	South Pennine Moors	SAC	325.66	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Dungworth	South Pennine Moors	SAC	1670.41	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Ewden Village	South Pennine Moors	SAC	2817.17	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Grimethorpe			>5000	No further assessment required	No further assessment required
Calder	Haigh Lane	Denby Grange Colliery Ponds	SAC	4042.69	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Haigh	Denby Grange Colliery Ponds	SAC	3817.78	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Harden	Peak District Moors (South Pennine Moors Phase 1)	SPA	74.00	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Dearne	Harley			>5000	No further assessment required	No further assessment required
Lower Don	Harlington			>5000	No further assessment required	No further assessment required
Lower Don	Hatfield Woodhouse	Hatfield Moor	SAC	749.22	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	High Hoyland	Denby Grange Colliery Ponds	SAC	4570.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	High Melton			>5000	No further assessment required	No further assessment required
Dearne	Holme House	Peak District Moors (South Pennine Moors Phase 1)	SPA	1315.90	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Hood Green			>5000	No further assessment required	No further assessment required
Lower Don	Hooton Pagnell			>5000	No further assessment required	No further assessment required
Lower Don	Hooton Roberts			>5000	No further assessment required	No further assessment required
Dearne	Hoylandswaine			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Hundall			>5000	No further assessment required	No further assessment required
Dearne	Ingbirchworth Biodisc			>5000	No further assessment required	No further assessment required
Dearne	Knabbs Lane			>5000	No further assessment required	No further assessment required
Dearne	Langsett	Peak District Moors (South Pennine Moors Phase 1)	SPA	908.30	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Lea Brook			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Long Lane			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Staveley Low Common			>5000	No further assessment required	No further assessment required
Dearne	Lundwood			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Lower Don	Melton College			>5000	No further assessment required	No further assessment required
Dearne	Midhopestones	Peak District Moors (South Pennine Moors Phase 1)	SPA	1349.47	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Morehall	South Pennine Moors	SAC	4558.93	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Norcroft			>5000	No further assessment required	No further assessment required
Lower Don	Norton			>5000	No further assessment required	No further assessment required
Dearne	Old Cottages	Peak District Moors (South Pennine Moors Phase 1)	SPA	1252.19	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Old Whittington	South Pennine Moors	SAC	1848.16	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Upper Denby			>5000	No further assessment required	No further assessment required
Dearne	Quaker Bottom			>5000	No further assessment required	No further assessment required
Lower Don	Ravenfield			>5000	No further assessment required	No further assessment required
Sheffield	Redmires No. 1	Peak District Moors (South Pennine Moors Phase 1)	SPA	185.39	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Renishaw			>5000	No further assessment required	No further assessment required
Sheffield	Rivelin	Peak District Moors (South Pennine Moors Phase 1)	SPA	1245.81	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Sandall			>5000	No further assessment required	No further assessment required
Dearne	Scout Dike			>5000	No further assessment required	No further assessment required
Dearne	Silkstone			>5000	No further assessment required	No further assessment required
Lower Don	South Elmsall			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Stainsby			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Rother & Doe Lea	Staveley			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Stockley			>5000	No further assessment required	No further assessment required
Dearne	Stocksbridge	Peak District Moors (South Pennine Moors Phase 1)	SPA	1602.14	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Swinton			>5000	No further assessment required	No further assessment required
Dearne	Tankersley			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Temple Normanton			>5000	No further assessment required	No further assessment required
Lower Don	Thorne	Thorne Moor	SAC	606.00	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Troway			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Tupton			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Wadshelf	South Pennine Moors	SAC	1277.60	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Wath-on-Dearne			>5000	No further assessment required	No further assessment required
Dearne	Wentworth Castle			>5000	No further assessment required	No further assessment required
Dearne	Wentworth			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	West Handley			>5000	No further assessment required	No further assessment required
Dearne	Wharncliffe Side	South Pennine Moors	SAC	4857.45	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Whitley			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Rother & Doe Lea	Williamthorpe			>5000	No further assessment required	No further assessment required
Dearne	Wombwell			>5000	No further assessment required	No further assessment required
Rother & Doe Lea	Woodall			>5000	No further assessment required	No further assessment required
Dearne	Worsbrough			>5000	No further assessment required	No further assessment required
Dearne	Wortley East			>5000	No further assessment required	No further assessment required
Dearne	Wortley West			>5000	No further assessment required	No further assessment required
Calder	Wragby			>5000	No further assessment required	No further assessment required
Lower Don	Upton Wrangbrook			>5000	No further assessment required	No further assessment required
Dearne	Bolton-on-Dearne			>5000	No further assessment required	No further assessment required
Dearne	Unsliven Bridge Farm	Peak District Moors (South Pennine Moors Phase 1)	SPA	2083.73	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Underbank	South Pennine Moors	SAC	2119.99	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Thornseat	South Pennine Moors	SAC	194.40	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Hollins	Peak District Moors (South Pennine Moors Phase 1)	SPA	2971.59	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Agden Reservoir	South Pennine Moors	SAC	1495.71	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Broggin House	Peak District Moors (South Pennine Moors Phase 1)	SPA	433.28	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Broom Cottage	South Pennine Moors	SAC	2901.39	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Dearne	Midhope	South Pennine Moors	SAC	710.36	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Barsey Green	South Pennine Moors Phase 2	SPA	4816.13	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Beggarington			>5000	No further assessment required	No further assessment required
Calder	Caldervale	Denby Grange Colliery Ponds	SAC	2797.90	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Cold Hiendley			>5000	No further assessment required	No further assessment required
Calder	Coxley Lane	Denby Grange Colliery Ponds	SAC	1697.27	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Crofton			>5000	No further assessment required	No further assessment required
Calder	Daw Lane	Denby Grange Colliery Ponds	SAC	3299.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Huddersfield	South Pennine Moors	SAC	97.23	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Eastwood	South Pennine Moors Phase 2	SPA	196.64	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Gibb Lane	South Pennine Moors Phase 2	SPA	2052.82	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Grange Lane	Denby Grange Colliery Ponds	SAC	1688.71	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	North Dean	South Pennine Moors	SAC	1002.81	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Horbury	Denby Grange Colliery Ponds	SAC	572.91	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Horse & Groom			>5000	No further assessment required	No further assessment required
Calder	Kings Arms			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Calder	Lee Lane	South Pennine Moors	SAC	4902.28	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Little Lepton			>5000	No further assessment required	No further assessment required
Colne & Holme Valleys	Meltham	South Pennine Moors	SAC	522.46	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Mill Lane			>5000	No further assessment required	No further assessment required
Calder	Dewsbury (Mitchell Laithes)	Denby Grange Colliery Ponds	SAC	2186.70	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Notton Railway			>5000	No further assessment required	No further assessment required
Calder	Notton Village			>5000	No further assessment required	No further assessment required
Calder	Pickwood Scar			>5000	No further assessment required	No further assessment required
Calder	Ripponden Wood	South Pennine Moors Phase 2	SPA	533.39	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Sandy Lane	South Pennine Moors	SAC	3876.91	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Scammonden	South Pennine Moors	SAC	819.11	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Stanley			>5000	No further assessment required	No further assessment required
Calder	Stoodley Glen	South Pennine Moors Phase 2	SPA	754.71	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Watersgate	South Pennine Moors Phase 2	SPA	305.38	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Colne & Holme Valleys	Wellhouse	South Pennine Moors	SAC	1859.59	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Woolley Village	Denby Grange Colliery Ponds	SAC	4937.86	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Tophill Low WTW			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Flamborough Village	Flamborough Head	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Rother & Doe Lea	Holmesfield	South Pennine Moors	SAC	2215.93	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Great Smeaton No. 2			>5000	No further assessment required	No further assessment required
Sheffield	High Bradfield	South Pennine Moors	SAC	2212.95	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Rosedale Abbey	North York Moors	SAC	136.62	Mitigation necessary pending further details	Mitigation necessary pending further details
Derwent & Rye	Barmby Bankfield	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Long Riston			>5000	No further assessment required	No further assessment required
Lower Don	Rawcliffe Cottages	Thorne Moor	SAC	2674.74	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Market Weighton			>5000	No further assessment required	No further assessment required
Derwent & Rye	Crambeck	River Derwent	SAC	96.48	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	Brighouse			>5000	No further assessment required	No further assessment required
Upper Dales	Muker	North Pennine Dales Meadows	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Don	Goole	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Bridlington	Flamborough Head	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Lower Don	Adwick			>5000	No further assessment required	No further assessment required
Lower Ouse	Selby	Skipwith Common	SAC	4756.06	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Hull	Hull	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Esk & Coast	Whitby	Beast Cliff-Whitby (Robin Hood's Bay)	SAC	204.96	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Esk & Coast	Scarborough	Flamborough and Filey Coast	SPA	2066.53	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Felixkirk	North York Moors	SPA	2260.69	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Aldwark Bay Horse			>5000	No further assessment required	No further assessment required
Upper Dales	Gunnerside	North Pennine Moors	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Filey	Flamborough and Filey Coast	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Esk & Coast	Hinderwell	North York Moors	SPA	1265.35	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Thormanby			>5000	No further assessment required	No further assessment required
Lower Aire	West Haddlesey			>5000	No further assessment required	No further assessment required
Lower Don	Carleton			>5000	No further assessment required	No further assessment required
Lower Ouse	Micklefield			>5000	No further assessment required	No further assessment required
Derwent & Rye	Firby	River Derwent	SAC	454.20	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Derwent & Rye	Scrayingham	River Derwent	SAC	100.50	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Great Barugh			>5000	No further assessment required	No further assessment required
Derwent & Rye	Kirby Misperton			>5000	No further assessment required	No further assessment required
Derwent & Rye	Marton			>5000	No further assessment required	No further assessment required
Derwent & Rye	Bugthorpe	River Derwent	SAC	3108.80	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Weel			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Skeffling	Humber Estuary	SPA	805.18	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Esk & Coast	Ravenscar	Beast Cliff-Whitby (Robin Hood's Bay)	SAC	25.52	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Nunburnholme No. 3			>5000	No further assessment required	No further assessment required
Lower Aire	Chapel Haddlesey			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Ottringham			>5000	No further assessment required	No further assessment required
Upper Dales	Marske	North Pennine Moors	SPA	3628.13	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Cowesby	North York Moors	SPA	965.96	Mitigation necessary pending further details	Mitigation necessary pending further details
Upper Dales	Skipton on Swale			>5000	No further assessment required	No further assessment required
Lower Ouse	Kelfield	Skipwith Common	SAC	4444.18	Appropriate assessment required pending further details	Appropriate assessment required pending further details

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Hornsea	Hornsea Mere	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Holderness Coast (Gypsey Race)	Rudston			>5000	No further assessment required	No further assessment required
Lower Ouse	Wistow	Skipwith Common	SAC	4835.96	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Dearne	Cudworth			>5000	No further assessment required	No further assessment required
Upper Dales	Shipton			>5000	No further assessment required	No further assessment required
Upper Dales	Middleton Tyas			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Melton	Humber Estuary	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Dales	Whenby			>5000	No further assessment required	No further assessment required
Calder	Redacre	South Pennine Moors	SAC	61.88	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Malham	Craven Limestone Complex	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Dearne	Darfield			>5000	No further assessment required	No further assessment required
Upper Dales	Baldersby St. James			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Atwick	Greater Wash	SPA	157.01	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Hollym	Greater Wash	SPA	915.12	No further assessment required	No further assessment required
Upper Dales	Bishop Monkton			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Upper Aire	Oxenhope	South Pennine Moors Phase 2	SPA	56.20	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Airton	Craven Limestone Complex	SAC	2916.93	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Stamford Bridge	River Derwent	SAC	0.00	Appropriate assessment required	Appropriate assessment required
Upper Aire	Shay Grange			>5000	No further assessment required	No further assessment required
Derwent & Rye	Slingsby			>5000	No further assessment required	No further assessment required
Derwent & Rye	Gilberdyke	Humber Estuary	Ramsar	2047.45	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Crambe	River Derwent	SAC	700.33	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Oldstead			>5000	No further assessment required	No further assessment required
Derwent & Rye	Little Barugh			>5000	No further assessment required	No further assessment required
Derwent & Rye	Howsham	River Derwent	SAC	226.46	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Oulston			>5000	No further assessment required	No further assessment required
Derwent & Rye	Ellerker No. 2	Humber Estuary	Ramsar	856.51	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Boroughbridge			>5000	No further assessment required	No further assessment required
Dearne	Barnburgh			>5000	No further assessment required	No further assessment required
Upper Dales	Flawith			>5000	No further assessment required	No further assessment required
Calder	Chevet Terrace			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Bewholme	Greater Wash	SPA	2876.02	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Norton Le Clay			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
York	Cattal			>5000	No further assessment required	No further assessment required
York	Kexby	River Derwent	SAC	168.98	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Ruston Parva			>5000	No further assessment required	No further assessment required
Derwent & Rye	Hayton			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Wansford			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Grimston	Greater Wash	SPA	582.77	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Burton Agnes South			>5000	No further assessment required	No further assessment required
Upper Dales	HACKFORTH			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Roos	Greater Wash	SPA	2053.55	No further assessment required	No further assessment required
Upper Dales	Myton-on-Swale No. 2			>5000	No further assessment required	No further assessment required
Upper Dales	Langthorne			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Holmpton	Greater Wash	SPA	387.88	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Lelley			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Old Ellerby			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Foston On The Wolds			>5000	No further assessment required	No further assessment required
Derwent & Rye	Acklam	River Derwent	SAC	4262.17	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Lockton	North York Moors	SPA	1701.61	Mitigation necessary pending further details	Mitigation necessary pending further details
Lower Ouse	Selby Barlow	River Derwent	SAC	2563.81	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Dales	Ryther			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	Withernsea No. 2	Greater Wash	SPA	0.00	Appropriate assessment required	Appropriate assessment required
Upper Dales	Burrill No. 2			>5000	No further assessment required	No further assessment required
Upper Dales	Swinton Masham No. 2	North Pennine Moors	SAC	3496.10	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Denholme No. 2	South Pennine Moors	SAC	1275.30	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Wass			>5000	No further assessment required	No further assessment required
Lower Don	Rawcliffe Bankside			>5000	No further assessment required	No further assessment required
Holderness Coast (Gypsey Race)	New Ellerby			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Holderness Coast (Gypsey Race)	Great Hatfield	Hornsea Mere	SPA	2990.14	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Thorpe Willoughby			>5000	No further assessment required	No further assessment required
Calder	West Bretton	Denby Grange Colliery Ponds	SAC	1672.05	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Beverley Road Norton	River Derwent	SAC	1035.02	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Holderness Coast (Gypsey Race)	Burton Fleming			>5000	No further assessment required	No further assessment required
Calder	Stocksmoor Road	Denby Grange Colliery Ponds	SAC	77.51	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Dales	Aysgarth Falls	Ox Close	SAC	1791.03	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Stirton	North Pennine Moors	SAC	2041.38	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Upper Aire	Bradford Esholt	South Pennine Moors	SAC	375.83	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Calder	High Royd	South Pennine Moors	SAC	128.33	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Don	Denaby			>5000	No further assessment required	No further assessment required
Leeds	Knostrop Merge High + Low			>5000	No further assessment required	No further assessment required
Calder	Monkton Colliery			>5000	No further assessment required	No further assessment required
Calder	Liversedge Cemetery			>5000	No further assessment required	No further assessment required

HRA STAGE 1 Screening
L3 catchments and associated screening results

L2	L3	Closest European site	Closest European site type	Distance to closest European site (m)	Option 1 Recommendation	Option 2 Recommendation
Colne & Holme Valleys	Neiley	Peak District Moors (South Pennine Moors Phase 1)	SPA	549.84	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Lower Ouse	Hemingbrough	River Derwent	SAC	1371.32	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Derwent & Rye	Cold Kirby	North York Moors	SAC	4771.32	Mitigation necessary pending further details	Mitigation necessary pending further details
Calder	Seckar			>5000	No further assessment required	No further assessment required
Dearne	Ingbirchworth No. 2			>5000	No further assessment required	No further assessment required
Lower Don	Lindholme	Thorne & Hatfield Moors	SPA	4.67	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Sheffield	Blackburn Meadows	South Pennine Moors	SAC	206.82	Appropriate assessment required pending further details	Appropriate assessment required pending further details
Rother & Doe Lea	Woodhouse Mill			>5000	No further assessment required	No further assessment required