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Essex & Suffolk Water - Water Resources Management Plan 2024 Environmental Report

Appendix J - High Level Screening (HLS)

October 2023

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	06/09/22	S S	C S	Ja F	First draft for client comment
B	03/10/22	S S	C S	Ja F	Draft for consultation
C	20/10/23	M H	C S	Ja F	Update for final submission

Document reference: | | | 100104977-RP-ESW-SEA-002

Information class: Standard

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J. High Level Screening Assessment

J.1 Background

J.1.1 As a precursor to the SEA, high-level environmental screening (HLS) assessments for the WRMP24 options were completed in January and February 2022. These were undertaken to highlight environmental risks and constraints at an early stage in the options development process, in accordance with UK Water Industry Research (UKWIR) guidance¹. The environmental screening findings were used to inform rejection of options to avoid potentially significant environmental effects, and to identify suitable mitigation measures to be incorporated into option development. The HLS results were also taken forward into the WRMP SEA and HRA assessments.

J.2 Assessment methodology

J.2.1 The HLS assessments were completed using an online GIS tool (AStRO) which automatically generates RAG outputs by cross analysing each option’s footprint with relevant feature geospatial datasets sourced from data.gov.uk. Table J.1 contains an overview of the key environmental topics explored and the designations and receptors therein. The RAG ratings for potential option impact on each individual designation/receptor were determined using the criteria outlined in Table J.2.

Table J.1: Environmental Designations / Receptors used in the High-Level Environmental Screening

Key Topic	Designations/Receptors
Ecology	Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar site, Site of Special Scientific Interest (SSSI) including geological SSSIs, Local Nature Reserves (LNR), National Nature Reserve (NNR), Marine Protected Areas (MPA) (including Marine Conservation Zones (MCZ)), Ancient Woodlands, Priority Habitats
Historic Environment	Listed Buildings, Conservation Areas, Scheduled Monuments, Registered Battlefields, Registered Parks and Gardens
Water	Source Protection Zones (SPZ), Flood Zones 2 and 3, Nitrate Vulnerable Zones (NVZ)
Landscape	Area of Outstanding Natural Beauty (AONB), Ancient Woodland
Geology and Soils	Agricultural land, Authorised Landfill Sites, Historic Landfill Sites
Air	Air quality management areas (AQMA)

¹ UK Water Industry Research (UKWIR) (2021). Environmental Assessments for Water Resources Planning (21/WR/02/15) Available at: [Environmental Assessments for Water Resources Planning \(ukwir.org\)](https://www.ukwir.org/)

Table J.2: RAG criteria and definitions for High-Level Screening Assessments

Topic	Dataset	Features	RAG criteria		
			Red	Amber	Green
Air Quality		Air quality management areas (AQMAs)	N/A	Within or within 500m of an AQMA (potential for significant effect).	Over 500m from an AQMA (low potential for significant effect).
Biodiversity, Flora and Fauna	Statutory designated sites	Special areas of conservation (SAC), Special protection area (SPA), RAMSAR	Less 400m from designated site and/or major adverse effects on linkages to designated sites, and/or their qualifying features.	Within 400m to 5000m of a designated site and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Over 5000m from a designated site. No adverse effects on linkages to designated sites, and/or their qualifying features.
		Sites of special scientific interest (SSSI)	Direct effect/ encroachment upon SSSI and/or major adverse effects on linkages to designated sites, and/or their qualifying features.	Within 500m of a SSSI and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Over 500m from a SSSI. No adverse effects on linkages to designated sites, and/or their qualifying features.
		National Nature Reserves	N/A	Encroachment upon NNR	Within 500m from a National Nature Reserve
		Local Nature Reserves	N/A	Encroachment upon LNR	Within 500m from a Local Nature Reserve
	Non-statutory sites	Ancient Woodland	Encroaching upon Ancient Woodland	Within 500m of an Ancient Woodland	Over 500m from an Ancient Woodland
		Priority habitats and Irreplaceable undesignated habitats	Direct land take from Priority habitats and irreplaceable undesignated habitats such as chalk heath	Within 500m of undesignated priority habitats and Irreplaceable undesignated habitats.	Over 500m from undesignated priority habitats and Irreplaceable undesignated habitats.

Topic	Dataset	Features	RAG criteria		
			Red	Amber	Green
Historic Environment	Statutory designated sites	Listed buildings	Direct effect on heritage sites or assets	Within 500m of heritage site or feature	Over 500m from heritage site or feature
		Scheduled monuments			
		Conservation Area			
	Non statutory designated sites	Registered Parks and Gardens			
		Registered Battlefields			
Landscape	Statutory Designations	Areas of outstanding natural beauty (AONB)	Encroachment upon AONB	Within 500m of an AONB	Over 500m from an AONB
Geology and soils		Agriculture land classification	Within Grade 1 or 2 land classification (likely significant effect)	Within Grade 3 land classification (potential for significant effect)	Within other or unclassified land (low potential for significant effect).
		Landfill sites	Within authorised landfill site (likely significant effect).	Within 500m of an authorised landfill site and/or directly through historic landfill site (potential for significant effect).	Over 500m from an authorised or historic landfill site (low potential for significant effect).
Water	Groundwater	Groundwater source protection zones	Within Zone 1	Within Zone 2	Within Zone 3
		Nitrate Vulnerable Zone	Within a Nitrate Vulnerable Zone	N/A	Outside a Nitrate Vulnerable Zone
	Surface water	Flood risk zones	Within Flood Risk Zone 3	Within Flood Risk Zone 2	Within Flood Risk Zone 1

J.5 Summary of assessment results

RAG output options

J.5.1 Following HLS assessments, the results were fed back to the design team for review. For receptors where a red RAG rating was identified, the option would either be rejected, or, alternatively, mitigation and/or minor amendment to the option design was proposed so the option could be taken forward to the later stages of environmental screening. The full HLS RAG scoring definitions are outlined in Table J.3.

Table J.3: High-Level Screening Scoring Definitions

Score	Definition
Red	Recommend rejecting option or adjust design – major or direct effects on designated features. Option at current design would cause irreversible loss to a sensitive designated feature.
Amber	Take option forward but further assessment and mitigation required – moderate effects on designated features. Option would cause loss of designated features, but effects could be mitigated.
Green	Take option forward – minor/no effect on designated features.

J.5.2 Please note that because HLS responses were subsequently used to inform further engineering design to avoid impacts on environmental receptors, certain outputs from the original HLS assessment will now no longer apply to the current option designs, or concern options that have since been removed from the WRMP. Therefore, the original HLS results are not reported in this Appendix. Results from the later stage of integrated environmental assessments, however, do cover all the same environmental effects as the HLS, but in greater detail as well as covering additional environmental considerations.

Example of proposed mitigation and/or design changes

J.5.3 Table J.4 below shows red screening outputs from the HLS assessment of option ESW-DES-001A, providing an outline example of the typical impact description and proposed mitigation provided by the design team following an HLS assessment. The recommendation for this option, following HLS, was to proceed with mitigation.

Table J.4: Example: Red HLS screening outcomes with proposed mitigation - Option ESW-DES-001A

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
Sites of Specific Scientific Interest (SSSIs)	Option overlaps Canvey Wick SSSI (0.65%). Direct impacts likely. Footprint to be amended to avoid direct impacts to SSSI.	Transfer pipeline, clips edge of SSSI. Reinstate SSSI post construction. Rerouting required to ensure an existing SuDS scheme is avoided (pond near shopping centre).
Priority Habitats	<p>Option overlaps:</p> <ul style="list-style-type: none"> Coastal and floodplain grazing marsh (56655.13m²) Coastal saltmarsh (751.68m²) Deciduous woodland (7832.57m²) Mudflats (1114.37m²) No main habitat but additional habitats present (68.13m²) 	Transfer pipeline causing issues therefore use trenchless techniques to combat some issues caused by on site pipelines – trenchless options or reinstate post construction. Mudflats affected by pier structure – unavoidable for abstraction routine defined for option.

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
	Avoid impacts on these habitats where possible (e.g., by using trenchless techniques). If not practicable, reinstatement or compensation required post construction.	
Flood Zone 3	Within FZ3, above ground infrastructure should be avoided within Flood Zone unless there are no alternatives.	Encroachment unavoidable.
Nitrate Vulnerable Zone	Option in NVZ.	Encroachment unavoidable.

J.5.4 This process was subsequently repeated for all the options assess. If the high-level screening results lead to an option being rejected at the design stage, this was reported in the rejection register found in Appendix A of the Supply Option Development Report (100104977-RP-ESW-001). Any HLS results which didn't result in an option being rejected were subsequently superseded by more detailed environmental assessments, the results of which are reported in Appendix E. The HLS process was also carried out at a high level to support the development of Option ESW-ABS-003. Four locations; A, B, C and D were assessed, with option C being taken forward for full SEA and other discipline assessments as it is the option with the largest footprint, and the most advanced level of concept design. There it presented a "worst case scenario". The results of these assessments can be found in Section J.6.

Summary of Outcomes

J.5.5 The following section provides a summary of the high-level screening assessment outcomes for the potential WRMP24 Supply Side options. For each option, a table of features with red and amber screening outcomes is provided, alongside a comment detailing the reason for the assigned score, as well as a comment, where appropriate, on the proposed mitigation to reduce or neutralise impacts.

J.6 ESW-ABS-003 Assessment

ESW-ABS-003A

Table J.5: Option ESW-ABS-003A

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
Agricultural Land	Option located entirely within Grade 2 land classification.	Encroachment unavoidable. Reinstate land post construction.
Priority Habitats	Options intersects with: <ul style="list-style-type: none"> Deciduous woodland (1301.91m²) Avoid impacts on these habitats where possible (e.g., by using trenchless techniques for pipeline). If not practicable, reinstatement or compensation required post construction.	Use trenchless techniques for pipeline.
Scheduled Monument	Options intersects <i>Crop mark complex, Orsett</i> Pipeline route amended to avoid Scheduled Monument. Direct impacts likely. Monument.	

Source Protection Zone (SPZ)	Option within SPZ Zone 1.	Encroachment unavoidable.
Flood Zone 3 (1 in 100 year)	Within FZ3, above ground infrastructure should be avoided within Flood Zone unless there are no alternatives.	Encroachment unavoidable.
Nitrate Vulnerable Zones	Option partially located within Nitrate Vulnerable Zone (71804.73m ²).	Encroachment unavoidable.

Table J.6: Option ESW-ABS-003B

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
Agricultural Land	Option located almost entirely within Grade 2 land classification.	Encroachment unavoidable. Reinstate land post construction.
Priority Habitats	Options intersects with: <ul style="list-style-type: none"> Deciduous woodland (1578.09m²) Avoid impacts on these habitats where possible (e.g., by using trenchless techniques for pipeline). If not practicable, reinstatement or compensation required post construction.	Use trenchless techniques for pipeline. Reinstate habitat post construction.
Scheduled Monument	Options intersects <i>Crop mark complex, Orsett</i> Scheduled Monument. Direct impacts likely.	Pipeline route amended to avoid though Scheduled Monument.
Source Protection Zone (SPZ)	Option partially within SPZ Zone 1.	Encroachment unavoidable.
Flood Zone 3 (1 in 100 year)	Partially within FZ3, above ground infrastructure should be avoided within Flood Zone unless there are no alternatives.	Encroachment unavoidable.
Nitrate Vulnerable Zones	Option partially located within Nitrate Vulnerable Zone (71804.73m ²).	Encroachment unavoidable.

Table J.7: Option ESW-ABS-003C

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
Site of Special Scientific Interest (SSSIs)	Option located within <i>Mucking Flats and Marshes</i> SSSI (0.29%). Direct impacts likely.	Pipeline located directly though SSSI. Reinstate SSSI post construction.
Ramsar Sites	Option located within <i>Thames Estuary & Marshes</i> Ramsar site (0.01%). Direct impacts likely.	Pipeline located directly though Ramsar site.

Special Protection Area (SPA)	Option located within <i>Thames Estuary & Marshes</i> SPA (0.02%). Direct impacts likely.	Pipeline located directly though SPA.
Priority Habitats	Options intersects with: <ul style="list-style-type: none"> Coastal saltmarsh (3626.33m²) Deciduous woodland (578.09m²) Mudflats (5324.18m²) No main habitat but additional habitats present (88.46m²) Avoid impacts on these habitats where possible (e.g., by using trenchless techniques for pipeline). If not practicable, reinstatement or compensation required post construction.	Use trenchless techniques for pipeline.
Scheduled Monuments	Options intersects <i>Crop mark complex, Orsett</i>	Pipeline route amended to avoid Scheduled Monument. Direct impacts likely. Monument.
Authorised Landfill Sites	Option located directly adjacent to <i>The East Tilbury Quarry</i> Authorised Landfill Site (0.11%). Direct impacts likely.	
Agricultural Land	Option is predominately located within Grade 2 land classification.	Encroachment unavoidable. Reinstatement land post construction.
Source Protection Zone (SPZ)	Option intersects SPZ Zone 1 towards the eastern extent.	Encroachment unavoidable.
Flood Zone 3 (1 in 100 year)	Option partially located within Flood Zone 3. Above ground infrastructure should be avoided within Flood Zone unless there are no alternatives.	Encroachment unavoidable.
Nitrate Vulnerable Zones	Option partially located within Nitrate Vulnerable Zone (71596.3m ²).	Encroachment unavoidable.

Table J.8: Option ESW-ABS-003D

Red flagged feature(s)	HLS assessor comment	Proposed mitigation from Design Team Option Review
Priority Habitats	Options intersects with: <ul style="list-style-type: none"> Deciduous woodland (6100.84m²) No main habitat but additional habitats present (391.58m²) Avoid impacts on these habitats where possible (e.g., by using trenchless techniques for pipeline). If not practicable, reinstatement or compensation required post construction.	Use trenchless techniques for pipeline. Reinstatement habitat post construction.
Agricultural Land	Option located partially within Grade 2 land classification.	Encroachment unavoidable. Reinstatement land post construction.
Scheduled Monuments	Options intersects <i>Crop mark complex, Orsett</i>	Pipeline located directly though Scheduled Monument. Direct impacts likely. Monument.

Source Protection Zone (SPZ)	Option partially within SPZ Zone 1.	Encroachment unavoidable.
Flood Zone 3 (1 in 100 year)	Partially within FZ3, above ground infrastructure should be avoided within Flood Zone unless there are no alternatives.	Encroachment unavoidable.
Nitrate Vulnerable Zones (NVZ)	Option in NVZ (144.95m ²).	Encroachment unavoidable.

