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Site Selection Report

For a Reservoir in Lincolnshire

October 2022

Contents

Glossary and Acronyms

AONB	Area of Outstanding Natural Beauty
BMV	Best and Most Versatile land
Conservation Targets	Conservation targets were used as part of the Systemic Conservation Process to provide local and landscape scale scores which evaluate the impacts and opportunities of each Polygon on habitats, designated sites and regional biodiversity targets, as agreed with stakeholders. This included conserving, restoring and enhancing of habitats and designated sites.
Factor of Safety	The Factor of Safety used in the preliminary reservoir assessments is a comparison of the stabilising actions (weight of clay) against destabilising actions (uplift pressures) and is used to assess stability and risk of hydraulic failure due to uplift.
ha	Hectares
HRA	Habitats Regulations Assessment. Assessment of European sites protected under the Conservation of Habitats and Species Regulations 2017, as amended.
km	Kilometre
km^2	Square kilometre
$ktCO_2e$	Kilotonnes of carbon dioxide equivalent. A metric measure that is used to compare the total emissions of greenhouse gases, in this case generated during construction.
$ktCO_2e$/year	Kilotonnes of carbon dioxide equivalent per year. A metric measure that is used to compare the total emissions of greenhouse gases, in this case generated on an annual basis during operation.
kV	Kilovolt
Lincolnshire Study Area	The broad study area identified in Lincolnshire identified at Stage 1 – initial screening - in which the proposed reservoir could be delivered.
LWS	Local Wildlife Site
mAOD	Metres Above Ordnance Datum
MCDA	Multi-criteria Decision Analysis
NCN	National Cycle Network. A UK network of signed paths and routes to encourage cycling and walking.
Net Present Value	The present-day financial value of costs for construction and operation calculated over a 100-year period.
NPS	National Policy Statement. A document, produced by the government, which sets out the objectives for development of

	nationally significant infrastructure, and what needs to be considered in the planning, designing, consenting, and carrying out of such Schemes.
NRN	National Recovery Network. A national network of wildlife-rich places aimed to expand, improve and connect these places across cities, towns, countryside and the coast as committed to in the government's 25 Year Environment Plan.
Polygon	The indicative area or parcel of land within which the reservoir and its embankments could be developed.
Project Promoters	Anglian Water and Affinity Water
PRoW	Public Right of Way
RAPID	Regulators' Alliance for Progressing Infrastructure Development. RAPID is made up of three water regulators – Water Services Regulation Authority (Ofwat), the Environment Agency and the Drinking Water Inspectorate.
Regional Plan	A detailed plan developed by regional water resource groups providing a detailed picture of the future water resource needs of each region, setting out the type and scale of the challenge to public water supplies while also considering the needs of the environment.
Regional Search Area	The Regional Search Area used at Stage 1 – initial screening - to determine the broad study area for use at Stage 2 – coarse screening. It was located in the east of England, covering an area of approximately 29,000km^2 broadly aligned with the WRE regional planning boundary.
Regulation 19 Derogation	This refers to regulation 19 of The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, and specifically relates to works that result in the deterioration of a WFD waterbody being permitted provided that no suitable alternative is available (having regard to cost and technical feasibility), all practicable steps to mitigate the adverse effects have been taken and the works are being undertaken, for example, for reasons of overriding public interest.
Reservoir	The reservoir including the water footprint and embankment.
Scheme	The reservoir and related development required to operate the reservoir (including water treatment works, transfers and abstraction).
Sequential Test	A sequential, risk-based approach to development and flood risk set out in the National Planning Policy Framework. It is applied to ensure that areas at little or no risk of flooding (from all sources) are developed in preference to areas at higher risk of flooding.
Site	The potential location or area where the Scheme may be developed.
SSSI	Site of Special Scientific Interest
SSSI IRZ	Site of Special Scientific Interest Impact Risk Zone

South Lincolnshire Reservoir Working Partnership	Stakeholder engagement group established for the final stage of site selection and ongoing engagement, which includes the South Lincolnshire Water Partnership, local planning authorities and statutory stakeholders.
South Lincolnshire Water Partnership	Existing stakeholder group consisting of local stakeholders. This group informed the approach taken for site selection and contributed to the findings and outcomes of the earlier site selection stages.
WFD	Water Framework Directive. European Directive (2000/60/EC) transposed into English and Welsh law through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017, to protect from deterioration of waterbodies. Requires assessment of effects on WFD waterbodies.
WRE	Water Resources East. One of five regional water resource groups (made up of different interested organisations, including water companies for that region) responsible for development of regional plans aligned with the National Framework for Water Resources.
Water Resource Management Plan	Developed by the respective water company, this sets out what action they will take and the investment that will be needed to meet the requirements set out in the regional plan.

Executive Summary

A new storage reservoir in Lincolnshire, referred to as the South Lincolnshire Reservoir, has been identified as one of several nationally strategic resource options required to address future deficits in public water supply. Anglian Water and Affinity Water have undertaken a comprehensive site selection process to determine the most suitable location for this reservoir.

A four-stage site selection process has identified and assessed potential suitable locations for the new reservoir based upon a broad range of community, economic, environmental, and other technical criteria (constraints and opportunities). The methodology, criteria and findings have been informed by subject matter experts and local stakeholders. These stakeholders were engaged through the South Lincolnshire Reservoir Working Partnership which includes the South Lincolnshire Water Partnership, local planning authorities and statutory stakeholders.

Stage 1 – initial screening - comprised a high-level review within the Regional Search Area of underlying geology, proximity to the abstraction sources, sites designated for the protection of nature conservation, major infrastructure, and large areas of existing developments such as settlements. This was used to define the Lincolnshire Study Area, providing the boundaries for the site selection process.

Stage 2 – coarse screening - involved the delineation of areas of land (referred to as “polygons”) within the Lincolnshire Study Area that could accommodate a strategic reservoir with a minimum footprint of 5km^2, based on preliminary design requirements to accommodate a reservoir of the size determined as being required by regional water resources modelling. 108 polygons were delineated. These polygons were screened against a more detailed review of geological risks, an analysis of major existing utilities and other technical constraints. Polygons were then ranked to identify those containing the greatest level of constraint on project delivery. 24 polygons which presented the lowest level of risk to project delivery were taken forward to fine screening.

At Stage 3 – fine screening - these 24 polygons were then subjected to more detailed investigation and evaluated against key differentiators, including community, economic, environmental and planning criteria. In consultation with the Environment Agency, a strategic Sequential Test was carried out to prioritise polygons which were both affordable and carried the lowest level of flood risk. This stage identified a shortlist of four best performing alternatives taken forward to Stage 4 – preferred site selection. These were titled Polygons A, B, C and D.

At Stage 4 – preferred site selection - more detailed desk-based assessments by subject matter experts and further stakeholder engagement informed a comparative review of the four remaining polygons. These polygons were considered against nineteen criteria to identify the best performing polygon, having regard to the advantages and disadvantages of each Polygon against each criterion.

Polygon D emerged as the best performing area of land for a reservoir and the proposed site is south-east of Sleaford, about halfway between Grantham and Boston.

The Scheme will be subject to further assessment and scrutiny as it progresses through more detailed design. This will include an Environmental Impact Assessment and further stakeholder engagement to inform mitigation requirements to minimise adverse effects and maximise potential benefits. The land within Polygon D will host the proposed reservoir, and some associated infrastructure, but additional development located outside the Polygon area may also be required. As our proposals for the Scheme develop through consultation with the local community and stakeholders further design will take place to finalise the location of the reservoir within the Polygon and the location of this associated development.

1 Introduction

This report summarises the site selection process used to identify the best performing location for the proposed South Lincolnshire Reservoir. This chapter outlines the strategic need for a reservoir in Lincolnshire and introduces the four-staged site selection process undertaken to identify the most suitable location for development of a strategic reservoir.

A new storage reservoir in Lincolnshire, referred to as the South Lincolnshire Reservoir, has been identified as one of several nationally strategic resource options required to address deficits in future public water supply. The reservoir, promoted by Anglian Water and Affinity Water (the "Project Promoters"), is being progressed through the fast-tracked delivery framework overseen by the Regulators' Alliance for Progressing Infrastructure Development (RAPID) and will be a Nationally Significant Infrastructure Project seeking consent through the development consent regime.

A comprehensive site selection process has been undertaken to determine the most suitable location for this reservoir. Further details on this process are set out in this report including the criteria applied, how stakeholders have provided inputs to the process and the engineering principles used to define the extent of land required for the new reservoir. The process sought to avoid or minimise adverse environmental or social impacts and maximise the wider opportunities that the reservoir may present.

1.1 Strategic need

The South Lincolnshire Reservoir featured in the Water Resource Management Plan 2019[1] as one of the supply-side options that Anglian Water would investigate further as part of their adaptive planning activities to ensure that the Scheme would be ready to implement should it emerge as a preferred option in future plans. The option would be supplied from a new abstraction point on the River Witham, capturing surplus flow for storage in a new reservoir sited approximately 40km from the intake in Lincolnshire, subject to further modelling and site investigation.

Anglian Water and Affinity Water are experiencing significant challenges across the region. Weather is becoming more extreme, and there is an increasing population which places greater emphasis on the need for water supply resilience during extreme droughts. Water abstraction from environmentally sensitive areas also needs to be reduced to meet the stretching environmental ambitions as set out in the National Framework for Water Resources[2]. The draft Water Resource Management Plan 2024 will set out a best value plan for meeting these challenges, but the scale is such that the challenges cannot be met through demand management solutions alone. The Water Resources East (WRE) draft Regional Plan, is supported by water resources modelling which has identified the need for two new strategic raw water reservoirs in the region to address part of the supply deficit – the South Lincolnshire Reservoir and the Fens Reservoir.

Whilst these reservoirs are a fundamental component of the long-term water resource plans for the region, providing a safe, resilient supply of drinking water is not their sole purpose. The reservoirs will also provide environmental, socio-economic and wellbeing benefits for the communities they serve.

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1 https://www.anglianwater.co.uk/siteassets/household/about-us/supplyside-option-development.pdf

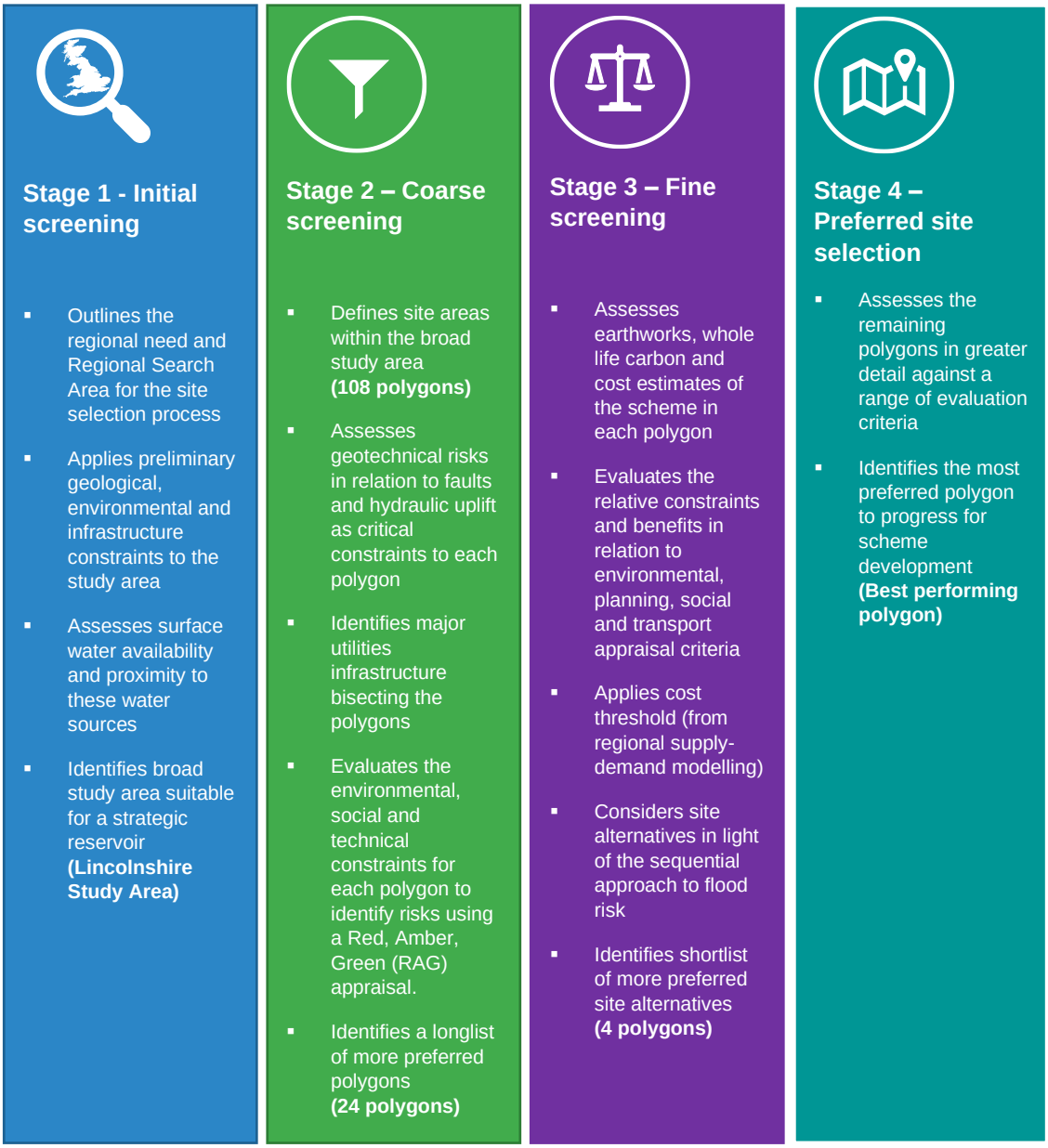
2 https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources

For the South Lincolnshire Reservoir, regional water resources modelling has confirmed that the required capacity to meet public water supply requirements should be 50 million cubic metres to provide a supply of up to 166 megalitres per day.

1.2 The site selection process

The Project Promoters have undertaken a four-stage site selection process to identify and assess potential suitable locations for the new reservoir based upon a broad range of community, environmental, economic, and other technical criteria (constraints and opportunities). This comprehensive, staged site selection process is summarised in Figure 1.

Figure 1: Staged site selection process for the South Lincolnshire Reservoir



A fundamental component of the site selection process has been the consideration of relevant legislation and emerging national policy and, in particular the draft National Policy Statement (NPS) for Water Resources Infrastructure[3]. During the development of the site selection process, stakeholders were invited through the South Lincolnshire Reservoir Working Partnership to comment on the methodology; their feedback has influenced the approach and screening process.

Stage 1 – initial screening comprised a high-level review of constraints within a Regional Search Area to identify a broad study area in Lincolnshire suitable for siting a strategic reservoir.

Stage 2 – coarse screening, involved the delineation of areas of land (referred to as "polygons") within the Lincolnshire Study Area that could accommodate a strategic reservoir. These polygons were screened against geological risks, the presence of major existing utilities and analysis of environmental, development planning, community and technical constraints. Polygons containing the fewest constraints to project delivery were recommended for the long list of polygons taken forward to the next stage.

At **Stage 3 – fine screening** the longlisted polygons were subject to more detailed investigation and evaluated against key differentiators, including community, economic, environmental and planning criteria. In consultation with the Environment Agency a strategic Sequential Test was carried out to prioritise polygons which were both affordable and carried the lowest level of flood risk. The results of this identified a short-list of the best performing polygons taken forward to Stage 4.

At **Stage 4 – preferred site selection** more detailed desk-based assessments were undertaken by subject matter experts and further stakeholder engagement informed a comparative review of the four remaining polygons. This culminated in the identification of the best performing polygon. Further detail about each stage of site selection is provided in the following chapters.

[3] https://consult.defra.gov.uk/water/draft-national-policy-statement/supporting_documents/draftnpswaterresourcesinfrastructure.pdf

2 Initial, Coarse and Fine Screening (Stages 1 to 3)

This chapter outlines the approach and results of the first three stages of the site selection process: initial screening, coarse screening and fine screening. This included identifying the study area (Stage 1), delineating areas of land ("polygons") for development of a reservoir (Stage 2) and determining the best performing polygons (Stage 3) for progression to Stage 4 – preferred site selection.

2.1 Stage 1 - Initial Screening

Initial screening was completed within the Regional Search Area to identify broad study areas which would be technically feasible for siting the strategic reservoirs. The Regional Search Area for both strategic reservoirs broadly aligned with the WRE regional planning boundary, covering an area of approximately 29,000km^2. Key considerations in the initial screening appraisal included the:

- Suitability of the underlying geology for a reservoir.
- Presence of sites designated for nature conservation and/or heritage value.
- Presence of existing strategic transport infrastructure.
- Presence of large areas of existing development, such as settlements.
- Presence of low-lying land, susceptible to sea level rise.
- Proximity to available abstraction sources and the associated carbon impacts of pumping water long distances.

Suitability of the underlying geology is the key consideration in siting a new strategic reservoir so as to ensure the integrity of the structure. The geological suitability of the bedrock geology, superficial deposit types and thicknesses were assessed to identify the areas that would be most suited for locating a strategic reservoir.

There are many sites across the East of England which are designated for nature conservation. Highly sensitive and protected areas include Ramsar sites, National Parks, Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest (SSSI), National Nature Reserves and Areas of Outstanding Natural Beauty (AONB). These sites were identified and avoided, in addition to highly sensitive heritage features comprising Scheduled Monuments and World Heritage Sites.

Preliminary hydrological assessments confirmed that the River Witham and the River Great Ouse have water available for licensed abstraction during periods of high and medium flows[4]. A carbon assessment was completed to determine areas that were considered most and least favourable in terms of total annualised operational carbon impact resulting from the transfer of water to fill a reservoir.

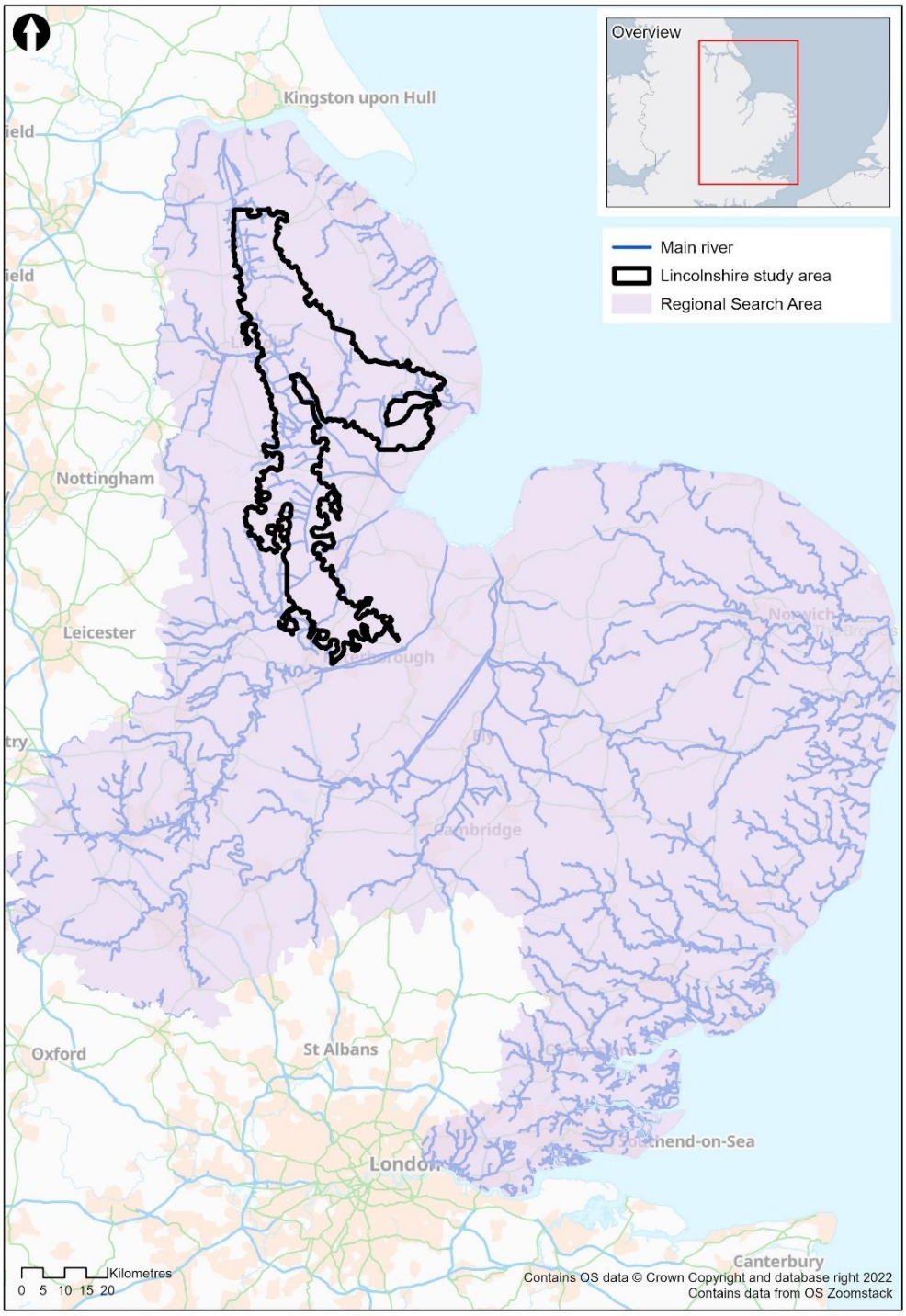
The constraints investigated through initial screening were combined and two broad study areas were delineated – one in Lincolnshire and one in Cambridgeshire. This stage identified a study area, of approximately 1,900km^2, within Lincolnshire that avoids geologically unfavourable areas, highly sensitive environmental and heritage designations, and low-lying land susceptible

[4] Abstraction will be reliant on securing permission from the Environment Agency and will be subject to ongoing studies and successful application. For the purpose of this stage of assessment, it has been assumed that an abstraction licence will be granted based on published information in relation to water availability and preliminary discussions with the Environment Agency.

to coastal inundation from sea level rise. The presence of developed land use was minimised where possible and areas considered unfavourable in terms of carbon were excluded, where the distance from water sources could give rise to the highest levels of carbon emissions from both construction and operation.

The Lincolnshire Study Area is presented in Figure 2.

Figure 2: Lincolnshire study area



2.2 Stage 2 - Coarse Screening

Within the Lincolnshire Study Area, polygons of land were identified that could accommodate the embankments and stored water forming a strategic reservoir. These polygons were required to have a minimum land area of 5km^2 based on preliminary design requirements related to the need to accommodate a reservoir that could store 50 million cubic metres of water. The polygons were delineated, using geospatial data and mapping software, to avoid the most sensitive environmental, heritage, developed land use and infrastructure constraints. Where possible, boundaries were drawn along existing features in the landscape including roads, railway lines and statutory main rivers. This process identified 108 polygons as shown in Figure 3.

These polygons were then screened using a three-step evaluation process involving:

1. A more **detailed review of geological constraints** was undertaken to determine a preliminary geological risk. This critical step considered suitability of bedrock for the proposed reservoir construction. It also considered the risk of failure from hydraulic or groundwater uplift, where water pressure in any permeable stratum lying beneath the base of the proposed reservoir could potentially exceed the vertical stress of the overlying material which could cause a failure of the reservoir foundation. This assessment was informed by published geological information from the British Geological Survey and regional groundwater levels from the Environment Agency. An initial Factor of Safety against the risk of hydraulic uplift failure was determined and only polygons with a Factor of Safety above 1 were progressed, following industry best practice. This step screened out 31 polygons, and 77 polygons predominantly in the east of the study area progressed to step 2.
2. **Analysis of major existing utilities**, which assessed the presence of high-pressure gas mains, overhead and buried transmission lines operated by National Grid, and electrical transmission cables with a voltage greater than 400kV. This strategic gas and electricity infrastructure is prominent across the Lincolnshire Study Area and would represent a substantial risk to project delivery. This was found to be present in the centre of the study area in a mainly north to south direction. This step screened out 24 polygons, and 53 polygons without any major utilities present within their boundary progressed to the third step of coarse screening.
3. **Strategic analysis of performance against environmental, development planning[5], community and technical constraints**, was completed by subject matter experts using available data. Professional judgement was used to determine whether any constraints affected the feasibility of project delivery at the remaining polygons. Consultation with stakeholders through the South Lincolnshire Water Partnership was undertaken during coarse screening to capture any important local features and sensitive receptors. Considerations included the proximity to transport infrastructure, community and property features, local plan designations, nature conservation and designated sites, potential for archaeological finds and the presence of assets designated for their historical importance, agricultural soils and the presence of peat. Polygons were assessed and the 24 polygons which presented the lowest level of risk to project delivery were taken forward for Stage 3 – fine screening.

[5] This category included Local Plan land use allocations, Neighbourhood Plans, presence of Nationally Significant Infrastructure Projects, Major development proposals and land use constraints (e.g. green belt, safeguarded land and designated common land).

2.3 Stage 3 - Fine Screening

Fine screening incorporated two processes to support and inform decision-making on the remaining 24 polygons for progression to preferred site selection. These were:

- Technical appraisals and stakeholder engagement, including Systematic Conservation Planning and Multi-criteria Decision Analysis (MCDA).
- Sequential, risk-based assessment of flood risk.

Desk-based technical appraisals were undertaken by subject matter experts using available information to characterise the attributes and performance of each Polygon in relation to:

- Community constraints (flood risk; land grade and soils; property and business; traffic and transport).
- Environmental constraints (historic environment; carbon; landscape character and visual amenity; water quality; biodiversity and nature conservation).
- Planning constraints (relationship with land designated for planning purposes).
- Potential benefits (habitat creation, reducing flood risk, socio-economic and community).

Further detail regarding the attributes considered against each criterion is provided in Appendix A.

In the case of constraints and opportunities related to biodiversity and nature conservation, Systematic Conservation Planning was used to supplement the analysis. This was a stakeholder-informed process that identified priorities for biodiversity and nature conservation both within the polygons and the regional landscape.

For each of the criteria, polygons were scored allowing them to be ranked from best performing to poorest performing for each criterion. The MCDA was completed with stakeholders (through the South Lincolnshire Water Partnership) to enable a transparent comparison of each of the technical attributes associated with each polygon. This process ensured that stakeholder inputs were considered alongside those of the Project Promoters. The MCDA helped to determine the best performing polygons.

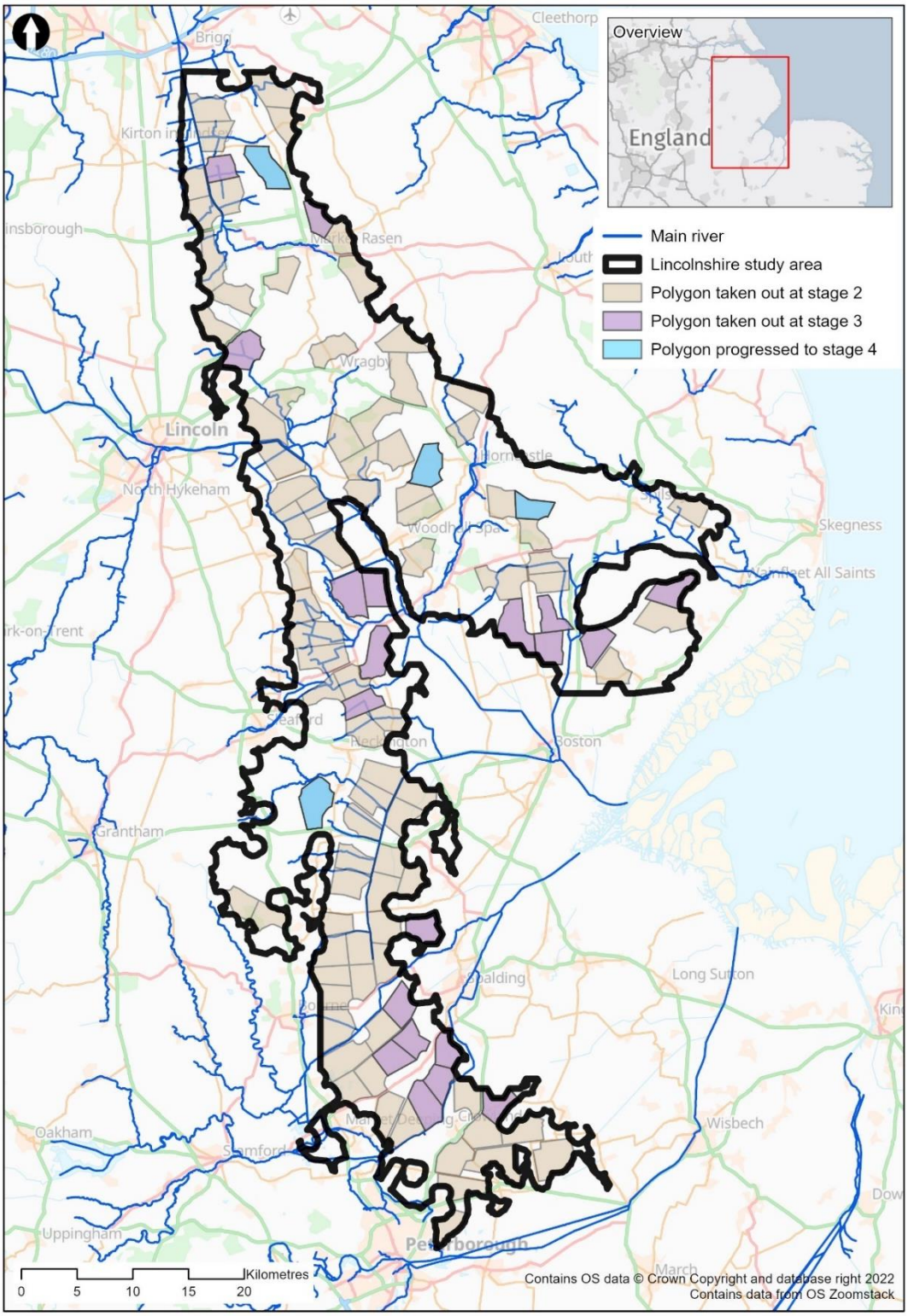
The MCDA process incorporated cost-benefit analysis with preliminary estimated costs derived from outline design assumptions. Development at many of the polygons would be likely to represent excessive cost to consumers. The project team concluded that any Polygon with a preliminary cost estimate of greater than £2bn (circa £3bn including risk and early development phase contingency) would not be economically viable or that alternative sources of water (for example from desalination) might offer better value for money at this higher cost level. Seven of the 24 polygons assessed at Stage 3 met, or were within 5% of, this cost threshold.

Subsequently, a sequential, risk-based approach to development and flood risk (as set out in the National Planning Policy Framework) was applied in consultation with the Environment Agency. The approach is designed to ensure that areas at little or no risk of flooding are developed in preference to areas at higher risk of flooding. Application of the sequential approach in the plan-making process, in particular application of the Sequential Test, steers new developments to be built within Flood Zone 1 (areas with a low probability of river or sea flooding) ahead of Flood Zone 2 (areas of medium probability of river or sea flooding) or as a last option Flood Zone 3 (areas of high probability of river or sea flooding).

Of the seven polygons that were below or within 5% of the cost threshold, only four (polygons A, B, C and D) were found to be predominantly in Flood Zone 1. The remaining three polygons were all located within Flood Zone 2 or 3 and were not considered for any more detailed investigation, on the basis that through the Sequential Test there were alternative polygons at a lower risk of flooding.

Whilst polygons A and D performed better in the MCDA than polygons B and C, it was decided that they would all be taken forward to the short-list for further assessment at preferred site selection. Figure 3 depicts the results of Stages 1 to 3 of the site selection process.

Figure 3: Map depicting the location of the polygons screened in the site selection process

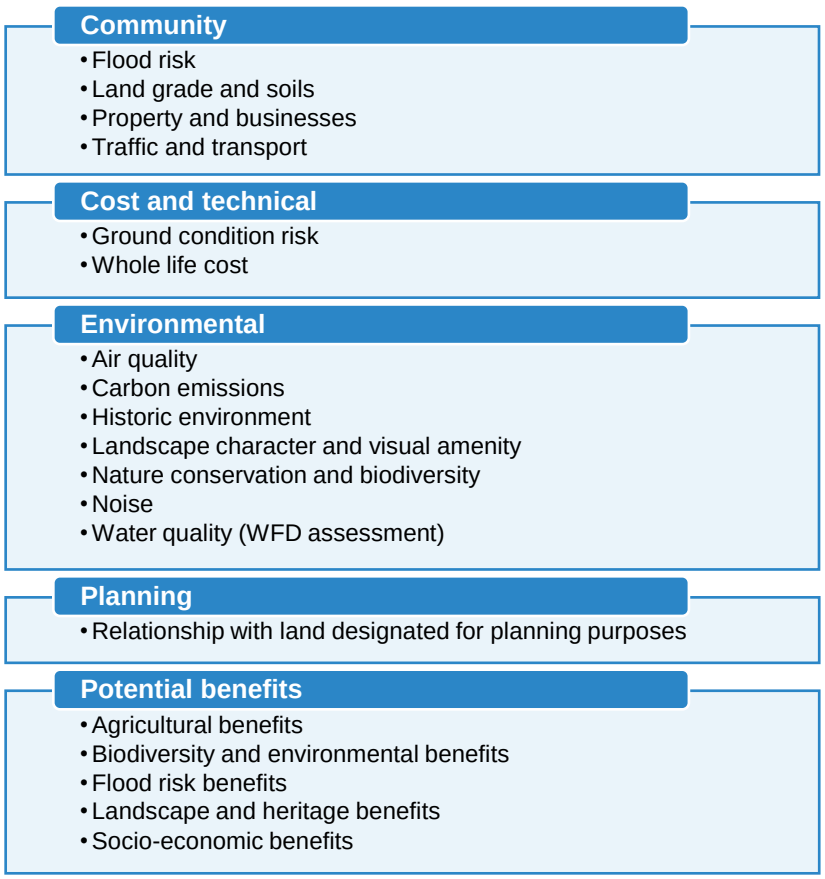


3 Stage 4 – Preferred Site Selection

The final stage of the site selection process involved a comparative review of the four short-listed polygons based on desk-based technical appraisals and stakeholder workshops to establish the most suitable area of land for development of a reservoir. This chapter summarises the approach and outcome of Stage 4 – preferred site selection.

The four polygons were appraised against the site selection criteria, as listed in Figure 4Figure 4, using desk-based quantitative and qualitative analysis, carried out by subject matter experts using professional judgement. In addition, stakeholders were engaged through the South Lincolnshire Reservoir Working Partnership to appraise potential benefits at topic-specific stakeholder workshops. This comparative review allowed for the multiple strengths and weaknesses of each Polygon to be weighed up against one another in an expert led approach aimed at identifying the best performing Polygon for development of a strategic reservoir. A full list of features considered under each of these criteria groups is presented in Appendix A.

Figure 4: Preferred site selection criteria



Location maps for the four polygons screened at Stage 4 are provided in Appendix B. A summary of distinguishing features, based on the collective professional judgement of the project team and technical experts, for each of the selection criteria categories is provided in Appendix C. Features for each of the selection criteria that did not materially differ between the four polygons have not been detailed in Appendix C on the basis they were not distinguishing factors in the site selection process.

3.1 Polygon A

Polygon A is located approximately 7.5km north of the town of Market Rasen, between the settlements of South Kelsey, Holton le Moor and North Owersby in the West Lindsey District Council area. The A46 runs parallel to the lower eastern edge, with the B1205 to the north.

It is situated within an area of gently undulating open countryside, near the Lincolnshire Wolds AONB. Both Polygon A and its surrounding area are dominated by arable farmland, with small pockets of broadleaved deciduous woodland and grassland. Land use includes a mix of residential properties, businesses and agricultural holdings.

3.2 Polygon B

Polygon B is located approximately 24km east of the city of Lincoln, between the settlements of Horsington and Thimbleby in the East Lindsey District Council area. The B1190 Horncastle Road which links Horsington and Thimbleby crosses through the polygon.

It is situated within an area of gently undulating open countryside. Both Polygon B and its surrounding area are dominated by arable farmland, with patches of plantation woodlands and tree belts. It includes fields of varying sizes defined by ditches and hedges with occasional trees. Land use includes a mix of residential properties, businesses and agricultural holdings.

3.3 Polygon C

Polygon C is located approximately 6km southeast of the town of Horncastle, south of the settlement of Hameringham in the East Lindsey District Council area.

It is situated within an area of gently undulating open countryside, near the Lincolnshire Wolds AONB. Both Polygon C and its surrounding area are dominated by arable farmland, neutral grassland and small isolated blocks of woodland, the largest of which is Home Wood. It includes fields of varying sizes defined by ditches and hedgerows. Land use includes a mix of residential properties, businesses and agricultural holdings.

3.4 Polygon D

Polygon D is located approximately 7km southeast of the town of Sleaford, between the settlements of Swaton, Scredington and Helpringham in the North Kesteven District Council area. South Kesteven District Council's administrative boundary is approximately 100m south of the polygon, south of the A52 Holland Road. The Peterborough to Lincoln railway line runs along the north-eastern boundary with the North Beck watercourse situated just north of the Polygon boundary.

It is situated within an area of gently undulating open countryside. Both Polygon D and its surrounding area are dominated by arable farmland and small isolated blocks of woodland. It includes fields of varying sizes defined by ditches and hedgerows. Land use includes a mix of residential properties, businesses and agricultural holdings.

3.5 Comparison of polygons

Analysis against the selection criteria demonstrated that Polygons A and D performed well in comparison with Polygons B and C.

Most notably polygons B and C were found to be significantly more expensive. Cost estimates undertaken in Stage 3 were updated in Stage 4 based on further analysis of ground conditions, which shifted these two polygons well above the cost threshold.

While Polygons B and C performed relatively well in respect of some of the environmental criteria and potential benefits criteria, these were not significant enough to outweigh their

materially poor performance against the community, cost, technical and planning criteria when compared to Polygons A and D. In terms of the community criteria, they would result in the loss of Grade 2 (very good) best and most versatile (BMV) agricultural land, with Polygon C having the greatest direct impact on agricultural holdings. Polygons B and C would result in the loss of the highest number of residential properties, with Polygon B also having resulted in the highest loss of non-agricultural business. Polygon C would cause significant disruption to the local road network, particularly given the high number of HGVs.

Based on this analysis, it was concluded that neither Polygon B nor Polygon C would present a viable alternative.

The differences between Polygons A and D were carefully considered. The analysis concluded that Polygon D outperformed Polygon A for most of the criteria. This included nature conservation and biodiversity, landscape character and visual amenity, historic environment, carbon emissions, traffic and transport and whole life cost. Notably, Polygon D was considered to provide the ability to deliver more significant biodiversity and environmental, flood risk and socio-economic benefits than Polygon A.

The suitability of bedrock and superficial deposits were comparatively similar at Polygons A and D, both with shallow superficial deposits offering a high percentage of reuse as embankment and landscaping material. Ground condition risks, however, were considered to be marginally lower for Polygon A as a small corner of Polygon D was found to be at potential risk of hydraulic failure due to faulting and potential for hydraulic uplift. Despite this, achieving a cut-fill balance was found to be easier at Polygon D whilst avoiding the ground risk. Consequently, Polygon D has lower whole life cost and carbon emissions. Polygon A would require a longer pipeline to transfer the source water to fill the reservoir, further contributing to higher whole life costs and carbon emissions.

Polygon A would result in the permanent loss of the Grade II ‘Yewfield Farm Cottages at Yewfield Farm’ and this could not be mitigated. Development of a reservoir at Polygon D would impact the significance of the Scheduled Monument at Thorpe Latimer through the removal of the associated ridge and furrow remains potentially giving rise to "substantial harm". However, as this is not a physical impact to that asset it can be mitigated through the design and construction of the reservoir embankment adjacent to the asset. There would also be a lesser impact on the setting of nearby listed churches, resulting in “less than substantial harm”. The permanent loss of the heritage asset at Polygon A means that in heritage terms, it was considered that it performs worse than Polygon D.

Development at Polygon A was considered to have the potential to affect the special qualities of landscape character of Lincolnshire Wolds AONB due to its proximity to that site.

Both polygons would likely require use of the WFD derogation process. Polygon A, however, would result in twice as much open watercourse being lost in comparison to Polygon D. And while Polygon D would result in the loss of around 6ha priority habitat compared to approximately 3ha at Polygon A, Polygon A would have greater indirect impact upon priority habitat in the surrounding area and result in the loss of Thornton le Moor Road Verges Local Wildlife Site (LWS).

Polygons A and D were largely similar in respect to community criteria. Both would lose Grade 3 (good) BMV agricultural land. Polygon D would need the loss of fewer residential properties compared to Polygon A but would also result in the loss of two non-agricultural businesses. Polygon A, however, had a much higher impact on agricultural holdings both in terms of total land take and impacting viability of other agricultural land.

In conclusion, the Polygon that clearly emerged through this fourth stage as the best performing was Polygon D. It was also favoured by the South Lincolnshire Reservoir Working Partnership stakeholders during opportunity workshops. Advantages of this Polygon were found to include:

- It requires the loss of the fewest number of residences and the lowest impact envisaged on agricultural holdings.
- It avoids loss of high quality (very good and excellent) agricultural land.
- The bedrock is suitable for development of a reservoir, with shallow layers of reusable superficial material providing opportunity to achieve a cut-fill balance relatively easily.
- The A52 would offer good access to the polygon, with the cut-fill balance requiring the lowest numbers of heavy goods vehicles (HGVs).
- It has the lowest capital and operational costs of the four shortlisted polygons.
- It has the lowest carbon emissions, considered important to the water industry's target for net zero.
- It would not result in loss of sites designated for nature conservation, instead providing opportunity to achieve Conservation Targets as identified through Systematic Conservation Planning.
- It would not impact on designated landscapes or protected views.

There are also many opportunities that the selection of this Polygon could unlock, such as:

- It could provide opportunities for promoting sustainable travel; active travel/lifestyles; recreation and tourism; and green infrastructure.
- It could benefit from river transport of materials during construction and could enhance navigation opportunities along the South Forty Foot Drain between Boston and Donington High Bridge.
- It could improve environmental corridors such as the Boston-Peterborough wetland corridor, North Beck River corridor, Swaton Fen and Bourne-Sleaford corridor.
- It could provide various opportunities to reduce flood risk for communities in Swaton and Helpringham, including the restoration of Swaton Eau and Helpringham Beck.

4 Preliminary Site Boundary

The four-staged site selection process has considered the economic and technical feasibility of delivering the Scheme within the Lincolnshire Study Area. Through the consideration of the site selection criteria across the four stages, the Project Promoters identified a best performing Polygon within which the reservoir, together with its embankments, could be located.

In addition, it is recognised that supporting development in relation to the operation of the reservoir will be required. The potential need for at least some of that development to be located outside of the boundary of Polygon D has been identified and is described below.

The second and third stages of site selection focussed on the suitability of identified polygons to host the reservoir and its embankments, which would be constructed within the boundaries of those polygons. It is further recognised that additional development, possibly located outside of the Polygon areas, would also be required to operate the reservoir, including water treatment works, emergency draw-down facilities, access roads, renewable energy generation and car parking. The environmental and social benefits of the project will also be dependent upon the delivery of other features that could include additional planting, visitor and educational centres, habitat creation and restoration and leisure facilities, many of which would also be situated outside of the selection polygons.

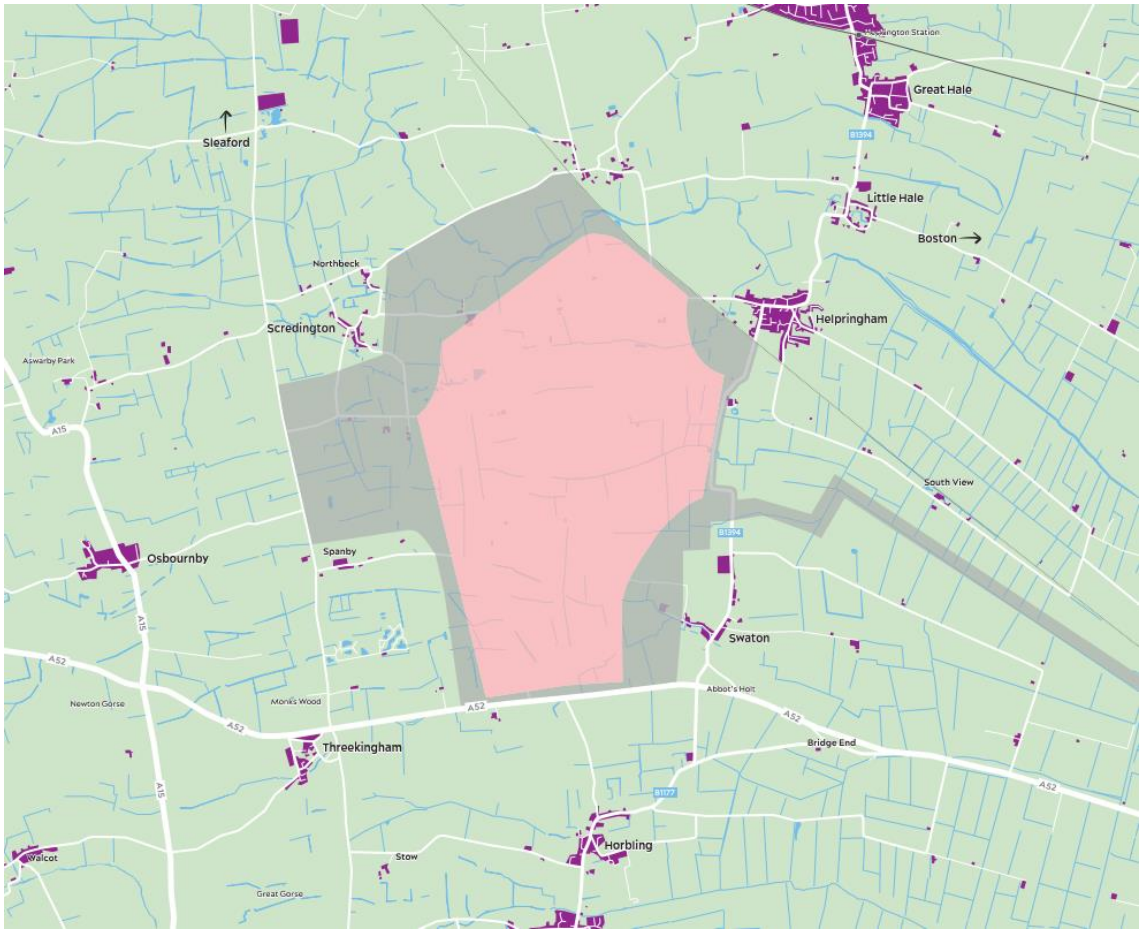
During the Stage 4 site selection process, having selected the most suitable polygons for the location of a reservoir and its embankments in the previous stages, preliminary consideration of the land requirements for this additional development took place. The project team concluded that, when compared to the size, complexity and geological sensitivity of the reservoir and its embankments, locating this supporting development in proximity to the polygons shortlisted at Stage 4 would not impact on the site selection conclusions.

It was nonetheless recognised that the minimisation of the potential impacts of the supporting features could be achieved through further engagement with local communities, homeowners, landowners and other local stakeholders. It was recognised that flexibility in the layout of the reservoir design and the associated development would be required to do this. Rather than present local communities and other stakeholders with a fixed design and land take, with minimal scope for variation, it was decided by the project team that public consultation and flexibility would be best delivered by presenting a preliminary indication of the area around the reservoir Polygon where associated development had the potential to be located.Figure 5

It should also be noted that this wider area doesn’t incorporate infrastructure associated with the transfer of raw water to the reservoir, or the transfer of water from the reservoir to public water supply network. Again, the details of these transfers will be subject to further work, the outcomes of which will be subject to consultation and engagement.

The central pink area in Figure 5 depicts Polygon D, as described in Stage 4. The surrounding grey area depicts the area proposed for associated development, discussed above.

Figure 5: Preliminary site boundary for South Lincolnshire Reservoir and associated development



Appendix A – Site Selection Criteria

The criteria applied during the site selection process have been grouped into five categories. Table 1 lists the aspects that were considered during the different stages of the site selection process explained in chapters 2 and 3 to inform the best performing polygon.

Table 1: Aspects considered against the respective criteria during site selection

Category	Criterion	Aspects considered
Community	Flood risk	• Flood zones • Tidal flood risk • Fluvial and surface water flood risk • Residual risk from flood defence breach or overtopping • Risk from other reservoirs • Breach of the reservoir embankment • Emergency drawdown
	Land grade and soils	• Agricultural land classification • Soil types, including peat • Historic and authorised landfills • Active and closed mining sites • Unexploded ordinance
	Property and businesses	• Existing land use (residential, agricultural or non-agricultural businesses) • Land and property requirements of both construction and operation in terms of land take (temporary and permanent) • Access to community receptors (private property, business, community facilities and areas of open space or recreation) • Compulsory acquisition impacts from land referencing
	Traffic and transport	• Road network, including Strategic Road Network • Public transport • Construction HGV traffic • Public Rights of Way • Rail and River Transport • Access and transport routes (potential impact on villages) • Major utilities infrastructure
Cost and Technical	Ground condition risk	• Bedrock geology and faulting • Superficial geology (type and thickness) • Hydraulic failure due to uplift
	Whole life costs	• Capital (current methods of construction) • Operational (dominated by water pumping) • Whole life costs
Environmental	Air quality	• Air Quality Management Areas • Receptors likely to be impacted during construction (domestic properties)
	Carbon emissions	• Capital carbon (earth works and haulage) • Operation carbon (water pumping) • Whole life carbon • Carbon sequestration – peat soils

Category	Criterion	Aspects considered
	Historic environment	• Conservation Areas • Registered Parks and Gardens • Registered Battlefields • World Heritage Sites • Scheduled Monuments • Listed Buildings • Non-designated heritage assets • Archaeology and geoarchaeology

	Landscape character and visual amenity	• Designated landscapes, including
		  ○ Areas of Outstanding Natural Beauty
		  ○ National Parks
		• Valued landscape features and elements
		• Designated views
		• Visual receptors

	Nature conservation and biodiversity	• Designated sites, including,
		  ○ Special Areas of Conservation and Possible Special Areas of Conservation.
		  ○ Special Protection Areas and Potential Special Protection Areas
		  ○ Ramsar
		  ○ Sites of Special Scientific Interest and their impact risk zones.
		  ○ Important Bird Areas
		  ○ Local Wildlife Sites
		  ○ County Wildlife Sites
		  ○ Local Geological Sites
		  ○ Local Nature Reserves
		  ○ National Nature Reserves
		• Priority habitats
		• Ancient Woodland
		• Other habitats
		• Protected species
		• Natural capital and ecosystem services
		• Conservation targets (conserve, restore and establish)

	Noise	• Receptors likely to be impacted during construction (domestic properties)
	Water quality (WFD assessment)	• WFD Level 2 assessment • Groundwater and surface water quality • Groundwater Source Protection Zones • Statutory main rivers
Planning	Relationship with land designated for planning purposes	• Local plan land use allocation • Neighbourhood Plans • Nationally significant infrastructure projects • Major development proposals • Green Belt • Green infrastructure plans • Safeguarded land (minerals, airfields) • Town and village greens • Designated common land
Potential benefits	Agricultural benefits	• Soil resources and Agricultural Land Classification • Farming (organic, regenerative) • Horticulture

Category	Criterion	Aspects considered
		• Water abstraction
	Biodiversity and environmental benefits	• Biodiversity net gain • Nature Recovery network • Habitat connectivity and corridors • Country/environmental stewardship schemes • Conservation targets (conserve, restore and establish) • Existing schemes and local landowner involvement • Royal Society for the Protection of Birds reserves
	Flood risk benefits	• Surface water storage • Wetland restoration/creation • Local landowner involvement • Enhancement of existing schemes • Watercourse restoration • Floodplain reconnection and storage by embankment removal
	Landscape and heritage benefits	• Enhancing landscape • Enhancing access and interpretation of landscapes and heritage • Preserving historic environment information • Connecting local communities with their heritage
	Socio-economic benefits	• Sustainable transport • Active travel • Recreation/tourism • Connecting people with nature • Local employment • Local green space • Environmental education

Appendix B – Stage 4 Location Plans

Figure B1: Polygon A Location Plan

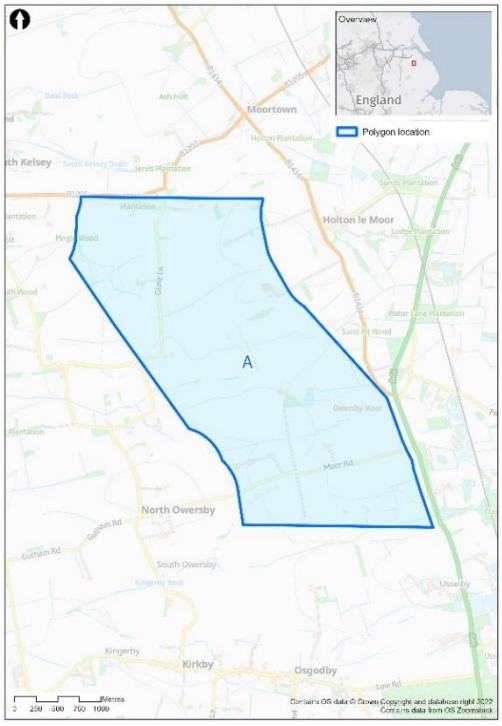


Figure B2: Polygon B Location Plan

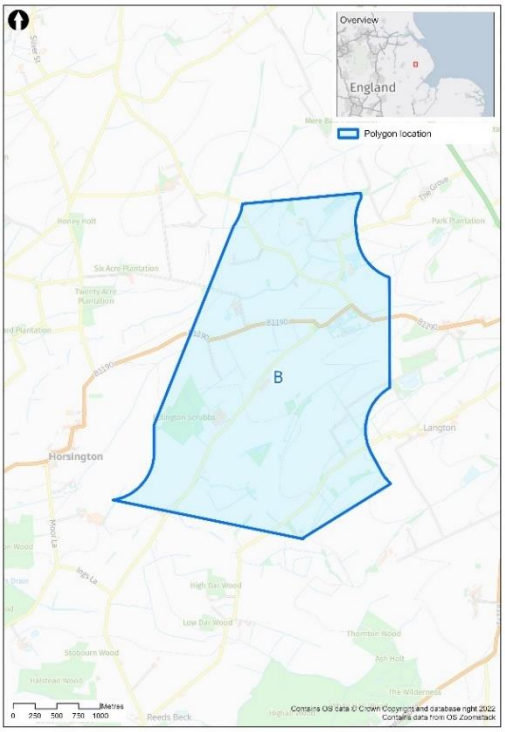


Figure B3: Polygon C Location Plan

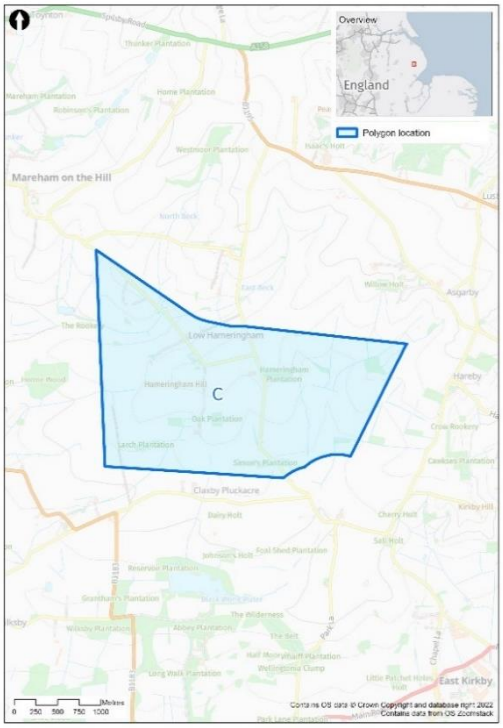
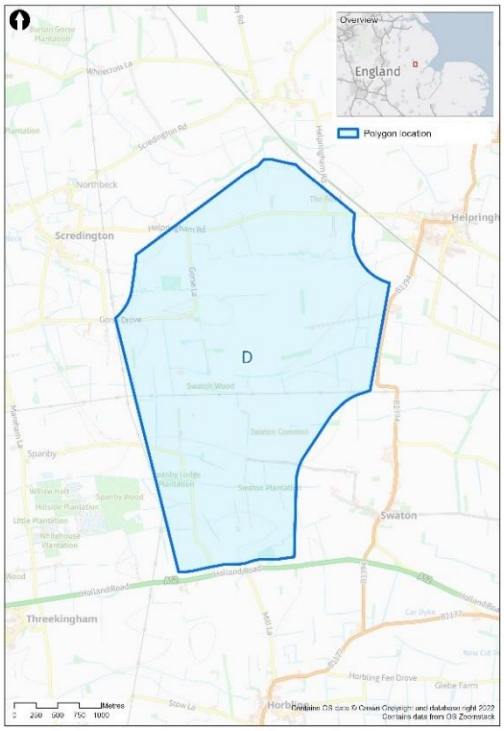


Figure B4: Polygon D Location Plan



Appendix C – Stage 4 Appraisal Summary

Table 2: Stage 4 appraisal summary of distinguishing Polygon features

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
Community	Flood risk	Requires the diversion of a single flow path to manage flood risk, which may potentially need to be provided as a tunnel below the reservoir.	Requires open channel diversion of three flow paths to manage flood risk.	Requires open channel diversion of four flow paths to manage flood risk.	Requires diversion of two flow paths to manage flood risk, which may potentially need to be provided as a tunnel below the reservoir.
	Land grade and soils	Loss of predominantly Grade 3a (good) best and most versatile (BMV) agricultural land.	Loss of both Grade 2 (very good) and Grade 3a (good) BMV agricultural land.	Loss of both Grade 2 (very good) and Grade 3a (good) BMV agricultural land. The only Polygon with generally well-drained soils, favouring crop production.	Loss of predominantly Grade 3a (good) BMV agricultural land.
	Property and businesses	Direct impact/ loss of 16 residential properties, with no impact upon non-agricultural businesses anticipated.	Loss of 28 residential properties and impact the viability of five non-agricultural businesses including kennels, catteries and storage facilities.	Loss of 17 residential properties, with no impact upon non-agricultural businesses anticipated.	Loss of 15 residential properties and impact the viability of two non-agricultural businesses including construction services.
		Total land take of around 12 agricultural holdings, impacting the viability of a further 15 agricultural holdings.	Total land take of around nine agricultural holdings, impacting the viability of a further 12 agricultural holdings.	Total land take of around 14 agricultural holdings, impacting the viability of a further 13 agricultural holdings.	Total land take of around eight agricultural holdings, impacting the viability of a further 13 agricultural holdings.
	Traffic and transport	Good road transport links from the A46, with access to the Polygon from the north by the B1205.	Good road transport links to access the polygon, likely to be from the A158.	Access to the Polygon would be either from the A158 in the north or A155 in the south. Requires the use of various local roads and could result in substantial disruption to communities during construction.	Easily accessible from the A52, which provides good road transport links during construction.
		Loss of minor local roads including Moor Road, Gipsy Lane and Cater Lane.	Loss of minor local roads, requiring realignment of the B1190 Thimbleby Hill Road linking Horsington and Thimbleby.	Loss of several rural unclassified roads.	Loss of minor local roads, requiring realignment of Station Road, Helpringham Road and Scredington Road.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
		Requires realignment of two Public Rights of Way (PRoW).	Severance of six PRoWs. One footpath is routed directly through the centre of the Polygon and would require a lengthy diversion and a short section of Bridleway would be lost.	Requires realignment of four PRoWs.	Requires realignment of seven PRoW.
		Approximately 60 to 70 heavy goods vehicles (HGV) per day could be required for construction related materials delivery, based on initial estimates.	Approximately 60 to 70 HGVs per day could be required for construction related materials delivery, based on initial estimates.	Approximately 60 to 70 HGVs per day could be required for construction related materials delivery, based on initial estimates. However, a significant number of additional HGVs would be required to remove excess spoil from site for disposal during the earthworks.	Approximately 60 to 70 HGVs per day could be required for construction related materials delivery, based on initial estimates.
Cost and technical	Ground condition risk	Underlain by Kimmeridge Clay and Ampthill Clay, suitable for founding material and embankment construction material. A cut-fill balance could be achieved relatively easily, with an average superficial layer thickness of 2.4m. Higher quality Glacial Till with a reuse potential for construction and landscaping of approximately 85%. Very low risk of hydraulic uplift.	Underlain by Kimmeridge Clay and Ampthill Clay, suitable for founding material and embankment construction material. A cut-fill balance could be achieved relatively easily, with an average superficial layer thickness of 16m. Poor quality Glacial Till with a reuse potential for construction and landscaping of approximately 50%. Very low risk of hydraulic uplift.	Underlain by Kimmeridge Clay, suitable for founding material and embankment construction material. A cut-fill balance would be difficult to achieve, with an average superficial layer thickness of 7.3m. Poor quality Glacial Till with a reuse potential for construction and landscaping of approximately 50%. Very low risk of hydraulic uplift.	Underlain by Oxford Clay, suitable for founding material and embankment construction material. A cut-fill balance could be achieved relatively easily, with an average superficial layer thickness of 2.6m. Higher quality Glacial Till with a reuse potential for construction and landscaping of approximately 90%. Low risk of hydraulic uplift towards the narrow southern end of the polygon.
	Whole life cost	Second lowest whole life cost at an estimated £1,360 million Net Present Value (NPV) (based on core scope before risk and early development phase contingency are applied). Estimate reflects the ease of achieving a cut-fill balance and costs associated with water	Second highest whole life cost at an estimated £2,480 million NPV (based on core scope before risk and early development phase contingency are applied). Estimate reflects the relative ease of achieving a cut-fill balance and costs associated with water pumping requirements during operation.	Highest whole life cost at an estimated £3,470 million NPV (based on core scope before risk and early development phase contingency are applied). Estimate reflects the difficulty of achieving a cut-fill balance and costs associated with water pumping requirements during operation.	Lowest whole life cost at an estimated £1,160 million NPV (based on core scope before risk and early development phase contingency are applied). Estimate reflects the ease of achieving a cut-fill balance and costs associated with water pumping requirements during operation.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
		pumping requirements during operation.			
Environmental	Air quality	Not a distinguishing factor.			
	Carbon emissions	Estimated 545 $ktCO_2e$ during construction and circa 40 $ktCO_2e$/year during operation, with a whole life carbon NPV cost estimated at £250 million.	Estimated 620 $ktCO_2e$ of during construction and circa. 30 ktCO2e/year during operation, with a whole life carbon NPV cost estimated at £250 million.	Estimated 610 $ktCO_2e$ of during construction and circa. 38 ktCO2e/year during operation, with a whole life carbon NPV cost estimated at £240 million.	Estimated 310 $ktCO_2e$ during construction and circa. 26 ktCO2e/year during operation, with a whole-life carbon NPV cost estimated at £170 million.
	Historic environment	21 designated assets identified within 1km and 26 non-designated historic environment assets within the polygon. Would result in 'substantial harm' to heritage assets as it would result in the loss of high value, Grade II listed 'Yewfield Farm Cottages at Yewfield Farm'. Potential to result in 'less than substantial harm' as it could impact the setting of the Grade II 'Thornton House' and other Grade II listed buildings in North and South Owersby.	19 designated assets identified within 1km and 23 non-designated historic environment assets within the polygon. Potential to result in 'substantial harm' to a heritage asset as it could have an adverse impact on the high value Scheduled Monument 'Wood Hall moated site', located directly adjacent on the southern boundary of the polygon; and would result in the loss of the Neolithic Long Barrow under consideration by Historic England for designation as a Scheduled Monument. Potential to result in 'less than substantial harm' as it could alter the setting of the Grade II listed 'Ruined chapel at Poolham Hall' and other Grade II buildings in the area.	Eight designated assets identified within 1km and 20 non-designated historic environment assets within the polygon. No 'substantial harm' anticipated. Potential to result in 'less than substantial harm' as it could impact upon the setting of the high value Registered Battlefield of 'Battle of Winceby 1643', the Grade II Registered Park and Garden of 'Scrivelsby Court', and the Grade II* Listed Church of All Saints in Mareham on the Hill.	19 designated assets identified within 1km and 17 non-designated historic environment assets within the polygon. Potential to result in 'substantial harm' to a heritage asset as it could have a moderate adverse impact on the significance of the Scheduled Monument, Thorpe Latimer, on the eastern boundary, due to the introduction of reservoir embankments. The loss of medieval ridge and furrow with which it has group value and forms a positive contribution to the significance of the asset will reduce the ability for it to be understood in its historic context. Potential to result in 'less than substantial harm' as it could result in the loss of a wide area of rural agricultural land with historic views including the spires of Grade I and II Listed churches within the surrounding settlements. The loss of this landscape would result in an impact upon the significance of these churches.
	Landscape character and visual amenity	Average embankment height would be 10.9m relative to the mean site elevation at 25.9 metres Above	Average embankment height would be 10.3m relative to the mean site elevation at 23.8mAOD with a crest	Average embankment height would be 13m relative to the mean site elevation at 69.1mAOD with a crest	Average embankment height would be 9.5m relative to the mean site elevation at 12.7mAOD with a crest

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
		Ordnance Datum (mAOD) with a crest elevation of 36.8mAOD, based on preliminary calculations.	elevation of 34.1mAOD, based on preliminary calculations.	elevation of 82.1mAOD, based on preliminary calculations.	elevation of 22.2mAOD, based on preliminary calculations.
		The maximum embankment height relative to ground level would be approximately 28m.	The maximum embankment height relative to ground level would be approximately 26m.	The maximum embankment height relative to ground level would be approximately 43m.	The maximum embankment height relative to ground level would be approximately 18m.
		Likely to have a substantial impact on the 'special qualities' of the Lincolnshire Wolds AONB, including views from the scarp, its scenic beauty and rural charm.	Potential impacts on long distance views to Lincoln Cathedral and pastoral views to church spires for settlements to the west and south of the polygon, including Horsington, Wispington and Old Woodhall.	Likely to have an impact on the 'special qualities' of the AONB as it is located 3km south of the AONB and could be visible from the Wold escarpment.	Potential impact on landscape features on the edge of the Fens, with no potential impact anticipated upon the AONB given the distance from the Wold escarpment.
	Nature conservation and biodiversity	Total loss of Thornton le Moor Road Verges Local Wildlife Site (LWS).	Total loss of Edington Scrubbs LWS.	Total or partial loss of Hameringham Hill Road Verges LWS, East Beck LWS, Scrivelsby Beck LWS and Glebe Farm Verges LWS.	The lowest number (three) of LWS within 2km.
		Loss of 3ha broadleaved deciduous woodland, a Priority Habitat, with potential to indirectly affect a further 33 pockets of broadleaved deciduous woodland within 1km.	Loss of 7ha broadleaved deciduous woodland.	Loss of 13ha broadleaved deciduous woodland. Could have an indirect effect upon Home Wood, an Ancient Woodland, located 230m east of Polygon C.	Loss of 6ha broadleaved deciduous woodland
		Not in close proximity to Ancient Woodland.	Potential indirect effect on High Dar Wood and Horsington Wood, pockets of Ancient Woodland located 550m south and 790m west respectively.	Not in close proximity to Ancient Woodland.	Not in close proximity to Ancient Woodland.
		Likely to have a major adverse impact on achieving local conservation objectives.	Potential moderate adverse impact on achieving local conservation objectives.	Likely to have the most adverse impact on achieving local conservation objectives.	Potentially the least adverse impact on achieving local conservation objectives.
	Noise	Not a distinguishing factor.			
	Water quality (WFD assessment)	Potential Regulation 19 derogation on Thornton and Owersby Catchwater and Kingerby Beck Catchment (tributary of Ancholme),	Potential Regulation 19 derogation as there could be deterioration to man-made and natural	Potential Regulation 19 derogation as there could be deterioration to both Haltham Beck and Scrivelsby Beck.	Potential Regulation 19 derogation on Swaton Drains, due to reduction in flow and loss of the open channel running through the polygon.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
		due to reduction in flow and loss of the open channel running through the polygon.	watercourses (WFD catchment – Bucknall catchwater).		
		Potential loss of approximately 101km open watercourses due to the high number of existing open drains present within the polygon.	Potential loss of approximately 22km of open watercourses due to open drains within the polygon.	Potential loss of approximately 50km open watercourses due to open drains within the polygon.	Potential loss of approximately 44km open watercourses due to the high number of open drains within the polygon.
Planning	Relationship with land designated for planning purposes	Close to important open spaces in South Kelsey and 'The Swares' in Kirby.	There are no Common Land, open or green spaces in proximity to the polygon.	Loss of a small area of Common Land (land in the parish of Hameringham).	Close proximity to important open spaces in Scredington, Helprinham and Swaton.
		Located within the 'Middle Rasen Unwood Vale' Green Infrastructure Zone.	There is no designated green infrastructure within the Polygon or nearby.	There is no designated green infrastructure within the Polygon or nearby.	Located within the 'Southeast Sleaford Fringe Fen and Marsh Maring Farmlands' Green Infrastructure Zone.
		The only Polygon within a Neighbourhood Planning Area (NPA), namely the Osgodby NPA.	Not located within a NPA.	Not located within a NPA.	Not located within a NPA.
		Located within 2km of an unlicensed airstrip, with risk of bird strike.	Although all polygons are within the bird strike hazard zone of RAF airfield or licenced airfield, this is the only Polygon located outside the bird strike hazard zone (12.87km) of an unlicensed airstrip.	Located within 4km of an unlicensed airstrip, with risk of bird strike.	Located within 6km of an unlicensed airstrip, with risk of bird strike.
		No existing planning permissions for development within the Polygon boundary that would be adversely impacted.	Likely to adversely impact the existing planning permission for development of a covered digestate storage lagoon, perimeter bunding and fencing and concrete apron for the storage of silage within the polygon, related to an existing farm northeast of the polygon.	There are no existing planning permissions for development within the Polygon boundary that would be adversely impacted.	There is planning permission for the development of an Environment Agency Natural Flood Management Attenuation Area including attenuation ponds, swales and headwalls, minor realignment of watercourse, regrading of land and alterations to access track located southwest of the polygon.
		There is major utility infrastructure within the polygon.	There is major utility infrastructure within the polygon.	There is major utility infrastructure within the polygon.	There is major utility infrastructure within the polygon, requiring diversion of existing overhead power lines.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
Potential benefits	Agricultural benefits	Not a distinguishing factor.			
	Biodiversity and environmental benefits	Extensive areas of Nature Recovery Network (NRN) to connect in to, to the east toward Claxtby and Nettleton (wolds habitat), south towards Osgodby, and west towards the Kingerby Beck and North Gulham/Thornton Le Moor area (fenland habitats). Opportunity for habitat improvement to Kingerby Beck watercourse. Good opportunity to contribute to achieving regional Conservation Targets.	Opportunity to connect to NRN areas to the south, based around Woodhall Spa, Roughton Moor and further to the south. Opportunity to connect several plantation woodlands, including Horsington Wood, Stixwould Wood, Halstead and Stobourn Wood, Low Dar Wood and Glen Lodge Meadows. Opportunity to contribute to achieving Conservation Targets at a local and regional level.	Opportunity to connect to NRN areas to the west, along the Scrivelsby Beck and Haltham Beck; and extensive NRN areas north of Asgarby to Snipes Dale and even further to River Lymn. Opportunity to increase area of the nature reserve at Upper Sow Dale to reduce edge effects and provide more habitats. Greatest opportunity to contribute to Conservation Targets at a local level.	Opportunity to connect with the NRN areas associated with Swaton Eau and North Beck watercourses and Helpringham. Opportunity to improve environmental corridors, including the Boston to Peterborough Wetland Corridor, Swaton Fen and Bourne-Seaford Corridor. Opportunity to enhance river corridors through riparian woodland along the upper reaches North Beck. Opportunity to link with country stewardship schemes (highest uptake of the scheme in the surrounding area). Good opportunity to contribute to achieving regional Conservation Targets.
	Flood risk benefits	Provides good opportunity for flood risk benefits, particularly in the Ancholme catchments. Likely to provide opportunity to avoid flood risk impacts to Owersby Catchment Drain. Flood risk benefits could include new washlands for water storage at Snitterby Carr to reduce pressure on Ancholme defences. Co-benefits to reducing flood risk through these initiatives would include biodiversity net gain at Kingerby Beck Meadows and carbon sequestration.	Limited opportunity to provide flood risk benefits, although could provide opportunity to restore the historic wetland near Martin Dales for water storage. Opportunity to connect to the Witham via Duckppol catchwater (use of wetlands in a pooling zone near Stixwould).	Location is relatively remote from the Lower Witham floodplain, implying flood risk interventions in this location would likely not have significant benefit upon downstream flood risk. Opportunity to restore the Bain navigation, by tying into the River Bain and reconnecting the floodplain to the River Bain to provide flood risk benefits to Horncastle and Lower Witham. Relatively few receptors would benefit from additional flood risk	Opportunity to provide flood risk benefits to a number of communities including Scredington, Spanby, Swaton and Helpringham. Including surface water storage Potential to reduce or avoid flood risk impacts on Swaton Eau and offer Natural Flood Management opportunities Opportunity to connect with the Environment Agency's Swaton Natural Flood Management scheme.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
				interventions owing to the low population density in the floodplain.	
	Landscape and heritage benefits	Not a distinguishing factor.			
	Socio-economic benefits	Good surrounding road links and nearby railway (Market Rasen train station) would provide a good opportunity for the reservoir to become a regional attraction, with opportunities to encourage sustainable travel to and from the reservoir.	Good surrounding road links but nearest railway (Thorpe Culvert train station) approximately 15km away, which presents less of an opportunity to promote sustainable travel to and from the reservoir.	Nearest railway station approximately 15km away, which presents the lowest opportunity to promote sustainable travel to and from the reservoir.	Good surrounding road links and nearby railway (Sleaford and Heckington train stations) would provide a good opportunity for the reservoir to become a regional attraction, with opportunities to encourage sustainable travel to and from the reservoir.
		Some opportunity for river transport within 5km of the boundary.	Opportunity for river transport within 5km of the boundary. Including opportunity to enhance the Bain navigation which could be used for transport of construction materials.	Limited opportunity for river transport.	Opportunity for river transport within 5km of the boundary. Potential to provide open channel connectivity associated with the South Forty Foot Drain, in support of water sharing, flood management and potential navigational benefits
		Opportunity to promote active travel and lifestyles through connecting with the National Cycle Network (NCN) 5km southwest of the polygon.	Some opportunity to promote active travel and lifestyles through connecting with the NCN approximately 5km west of the polygon. Opportunity for cycling and pedestrian routes from Woodland Spa.	Limited opportunity to promote active travel.	Opportunity to promote active travel and lifestyles through connecting with the NCN 7km north of the polygon.
		Potential to be a gateway to the Wolds with connectivity to Ancholme, in an area already well recognised as a destination with the Market Rasen Racecourse nearby.	Opportunity to enhance existing tourist destinations owing to its proximity to Woodland Spa.	Limited opportunity for recreation and tourism as the area offers a wide range of existing recreational and tourism facilities in the region, including Tattershall and Snipe Dales.	Potential to provide leisure opportunities owing to proximity to Sleaford, Spalding and Boston.
		Low number of educational facilities within 5km of the polygon, providing some opportunity for environmental education and field trips.	Highest number of educational facilities within 5km of the polygon, providing the best opportunity for environmental education and field trips.	Low number of educational facilities within 5km of the polygon, providing some opportunity for environmental education and field trips.	Least number of educational facilities within 5km of the polygon, providing less opportunity for environmental education and field trips.

Criteria group	Criterion	Polygon A	Polygon B	Polygon C	Polygon D
		Least number of people living within 5km of the boundary, thereby presenting the worst opportunity for the reservoir to benefit local communities in social, economic and other terms.	Highest number of people living within 5km of the boundary, thereby presenting the best opportunity for the reservoir to benefit local communities in social, economic and other terms.	Moderate number of people living within 5km of the boundary, thereby presenting some opportunity for the reservoir to benefit local communities in social, economic and other terms.	Moderate number of people living within 5km of the boundary, thereby presenting some opportunity for the reservoir to benefit local communities in social, economic and other terms.