South East Strategic Reservoir Option

Preliminary Environmental Information Report

Appendix 20.2 - Cumulative soils assessment

Date: October 2025

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1 Cumulative Soils Assessment

1.1 Introduction

1.1.1 This appendix to the PEI report comprises the cumulative assessment of agricultural land which forms part of the Geology and soils aspect, and Cumulative Effects Assessment reported in Chapter 20 of the PEI Report.

1.2 Preliminary assessment of agricultural land change

1.2.1 An alternate approach is used for the assessment of cumulative effects from SESRO considering both national and local effects (as set out in PEI Report Chapter 20). For the national assessment, the effects of the Project are assessed relative to 5-year average land loss figures (2017 to 2022 data, Department for Levelling Up Housing and Communities (DLUHC), 2019 and 2023a) for undeveloped, agricultural and Best and Most Versatile (BMV) land. The local assessment compares the proposed land loss to the total undeveloped and agricultural areas (DLUHC 2020, 2022, 2023b-d) within the Local Planning Authority (LPA). The national and local agricultural land loss data differentiates between losses of varying soil classes, enabling assessment of how cumulative land losses impact the soil's biomass function.

1.2.2 The Institute of Environmental Management and Assessment (IEMA) considers undeveloped land to be "agriculture, forest, open land and water, outdoor recreation, undeveloped land, and vacant land" (IEMA, 2022). As a proxy for these categories, the following groups were collated from the Oxfordshire County Council (OCC, 2024) Historic Landscape Characterisation (HLC) GIS layers (see Figure 1: Historic Landscape Characterisation). Agriculture includes enclosure, orchards and horticulture layers, forest, open land, and water includes water and valley floor, and woodland layers, undeveloped includes ornamental, recreation and unenclosed land layers, and vacant land includes that layer only.

1.2.3 For undeveloped, agriculture and BMV land, 1% of the 5-year average land loss would be potentially significant at a national scale and 1% loss of the total area for each land type at a local scale would also be potentially significant. As land loss cannot be mitigated, it is the rate of change that is significant, however this requires the comparison of a rolling sequence of 5-year averages. Data is only currently available for 2017 to 2022, so a rolling sequence of 5-year averages cannot yet be calculated. Where available, additional data will be used to update the cumulative effects assessment at Environmental Statement (ES) stage to consider the rate of change.

1.2.4 The cumulative effects assessments are presented in Table 1.1 (national) and Table 1.2 (local).

Table 1.1 National cumulative losses of undeveloped and agricultural land (5-year average basis)

Land type	5-yr average (2017 to 2022) land loss in England (ha)	SESRO land area (ha)	SESRO average land loss (ha)†	SESRO average land loss as a proportion of land loss in England (%)
Undeveloped*	8,749	3,521	293	3.35
Agriculture#	4,516	3,689	307	6.81
BMV@	1,897	2,174	181	9.55

Data sources and assumptions

† The methodology in the IEMA guidance requires the project land loss to be split over the construction stage for comparison with the national 5-year average loss figures. The majority of land loss will occur during the main works construction period, which is 12 years. The total project land loss has been averaged across this period.

* 5-yr average for undeveloped land from DLUHC (2019 and 2023a) land use change statistics table P360 (average of land changing to developed use from non-developed use minus average of land changing to non-developed use from developed use). SESRO area from HLC data layers, as described earlier in text (OCC, 2024).

5-yr average for agriculture from DLUHC (2019 and 2023a) land use change statistics table P361 (average of land changing from agriculture to all developed uses minus average of land changing from developed uses to agriculture). SESRO area from the Natural England London and South East Region 1:250 000 series provisional ALC data.

@ 5-yr average for BMV calculated as 42% percent of agricultural land, Natural England estimate 42% of agricultural land in England to be BMV (IEMA, 2022). SESRO area BMV based on grade 3 ALC from the Natural England London and South East Region 1:250 000 series provisional ALC data. For the purpose of this assessment all provisional mapped Grade 3 agricultural land is assumed to be Grade 3a BMV agricultural land, as a worse-case scenario.

Table 1.2 Local cumulative losses of undeveloped and agricultural land

Land type	Vale of White Horse† total area, average of 2018 to 2022 data (ha)	SESRO land area (ha)	SESRO land loss as a proportion of type of land in Vale of White Horse (%)
Undeveloped*	53,350	3,521	6.60
Agriculture#	43,570	3,689	8.47
BMV@	-	2,174	-

Data sources and assumptions

† The Vale of White Horse has been used as the majority of the soils study area is within the Vale of White Horse administrative boundary.

* Vale of White Horse undeveloped land from DLUHC (2020 and 2023b-d) land use change statistics for 2018 to 2022, table P400b (sum of total non-developed and vacant land). SESRO area from HLC data layers, as described earlier in text (OCC, 2024).

Vale of White Horse agriculture from DLUHC land use change statistics for 2018 to 2022, table P400b (total agriculture). SESRO area from the Natural England London and South East Region 1:250 000 series provisional ALC data.

@ Vale of White Horse BMV calculated as a percentage of agricultural land. SESRO area BMV based on grade 3 ALC from the Natural England London and South East Region 1:250 000 series provisional ALC data. For the purpose of this assessment all provisional mapped Grade 3 agricultural land is assumed to be Grade 3a BMV agricultural land, as a worse-case scenario.

1.2.5 The cumulative effects assessment for BMV land will be updated at ES stage. A detailed site-specific survey of the soils study area is currently being undertaken and will determine the subgrade of Grade 3 ALC land, from which the BMV land area will be calculated. It is not possible to ascertain the proportion of Subgrade 3a and 3b land within the Vale of White Horse as this data is not available, options for estimating it will be explored at ES stage.

1.2.6 The SESRO land loss for each land type as a proportion of the 5-year average land loss in England and as a proportion of the total area in the Vale of White Horse is above 1% in all cases, and is considered potentially significant. In addition, for undeveloped and agricultural land, the land loss proportion is higher at the local scale than at the national scale, suggesting the project has the potential to impact a disproportionately high area of undeveloped and agricultural land within the Vale of White Horse. The 5-year average land loss data for the Vale of White Horse is currently unavailable and will be included at ES if available.

1.2.7 Soil reuse and change of land from developed to undeveloped, agriculture or BMV are accounted for in the national loss values for England. These values are removed from the total national loss values and give a lower total loss. Soil reuse is not accounted for in the loss areas calculated for SESRO in this PEI Report assessment. It is anticipated that further soil and earthworks information will be available at ES stage. The cumulative effects assessment for soils will be revised at ES stage based on available site-specific data and soil reuse information.

References

It should be noted that the Institute of Environmental Management and Assessment (IEMA) has recently rebranded as the Institute of Sustainability and Environmental Professionals (ISEP). Guidance that was historically published by IEMA is still referenced under that institute name.

Department for Levelling Up Housing and Communities (DLUHC) (2019). Land Use Change Statistics, Land use change: hectarage 2017 to 2018, live tables, tables P360 and P361. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-change-hectarage-2017-to-2018

DLUHC (2020) Land Use Statistics, England 2018 – live tables, table P400b, England. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-in-england-2018

DLUHC (2022) Land Use Statistics, England 2022 – live tables, table P400b, England. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-in-england-2022

DLUHC (2023a) Land Use Change Statistics, Land use change: hectarage 2019-20 to 2021-22, live tables, tables P360 and P361. Accessed July 2025. : https://www.gov.uk/government/statistics/land-use-change-hectarage-2019-to-2022 [Accessed 10 July 2025].

DLUHC (2023b) Land Use Statistics, England 2019 – live tables, table P400b, England. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-in-england-2019

DLUHC (2023c) Land Use Statistics, England 2020 – live tables, table P400b, England. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-in-england-2020

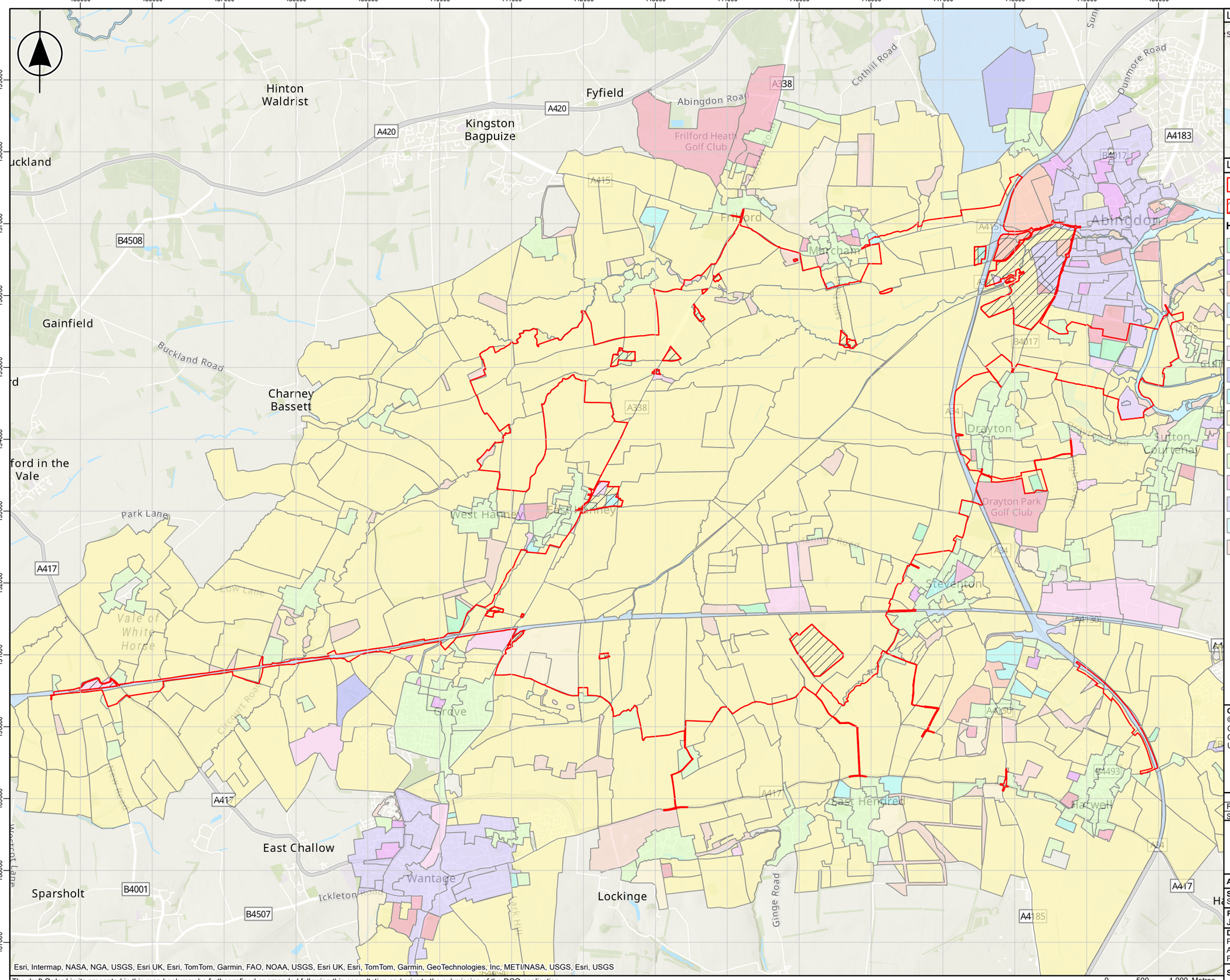
DLUHC (2023d) Land Use Statistics, England 2021 – live tables, table P400b, England. Accessed July 2025. https://www.gov.uk/government/statistics/land-use-in-england-2021

Institute of Environmental Management and Assessment (IEMA) (2022) Guide: A New Perspective on Land and Soil in Environmental Impact Assessment.

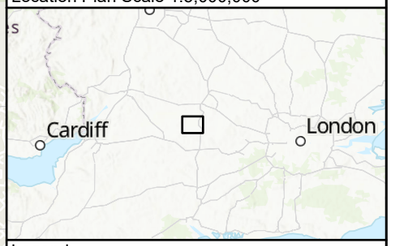
Oxfordshire County Council (2024) Historic environment record (HER) data: historic landscape characterisation (HLC) data.

Annex 1 - Figures

Figure 1: Historic Landscape Characterisation



Location Plan Scale 1:5,000,000



Legend

- draft Order limits
- Areas omitted from draft Order limits

Historic Landscape Class

- Civic Amenities
- Civil Provision
- Commercial
- Communication
- Enclosure
- Industry
- Military
- Orchards and Horticulture
- Ornamental
- Recreation
- Rural Settlement
- Unenclosed Land
- Urban Settlement
- Water and Valley Floor
- Woodland

C01	AP	CE	NR	AM	07/10/25
Revision	Authored	Checked	Reviewed	Approved	Date

Status: A AUTHORISED AND ACCEPTED FOR CONSULTATION

APFP References: N/A **Security Reference:** Public

Site Name:
South East Strategic Reservoir Option

Project Name:
J696 South East Strategic Reservoir Option (SESRO)

Drawing Title:
Preliminary Environmental Impact Report:
Appendix 20.2:
Figure 1: Historic landscape characterisation

Scale: 1:50,000 **Sheet Size:** A3 **Status:** A

Drawing Number:
J696-ARB-XXXX-XXXX-MP-EN-000200 **Rev:** C01

The draft Order Limits presented in this map book may be further refined or amended following this consultation and prior to the submission of the DCO application.

1:50,000 @A3 - DO NOT SCALE

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It's everyone's water