

Cotswolds VIP Winchcombe CSEC

Agricultural Land Classification and Landholding Assessment Report

Document Ref: 30167905-ARC-NC-260-RP-S-00002

JUNE 2024



Version Control

Version	Date	Author	Reviewer	Approver	Changes
V01	03/06/2024	J. Ryan	L. Zhigang	B. Lascelles, N. Hartley	-

This report dated 03 June 2024 has been prepared for National Grid (the “Client”) in accordance with the terms and conditions of the “Appointment” between the Client and **Arcadis Consulting (UK) Limited** (“Arcadis”) for the purposes specified in the Appointment. For avoidance of doubt, no other person(s) may use or rely upon this report or its contents, and Arcadis accepts no responsibility for any such use or reliance thereon by any other third party.

Contents

1 Introduction.....1

2 Agricultural Land Planning Policy and Context2

3 Survey Methodology3

4 Baseline Information4

5 Agricultural Land Classification6

6 Assessment of Impacts.....7

7 Conclusions and Recommendations7

Appendices

Appendix A

 ALC Grade Distribution, Auger Bore and Site Locations

Appendix B

 Auger Bore Logs

Appendix C

 Farm Holding Information

Appendix D

 Laboratory Results

1 Introduction

- 1.1.1 Arcadis was instructed by National Grid to undertake an Agricultural Land Classification (ALC) survey of the wider proposed Cotswolds VIP Project; this reports the survey of the proposed Winchcombe Cable Sealing End Compound (CSEC). The Proposed Project site (as shown on Figure 1 in Appendix A and hereafter referred to as the 'site') is located to the east of Cleeve Hill and south-west of Winchcombe.
- 1.1.2 The Proposed Project site forms part of the wider Cotswolds Visual Impact Provision (VIP) Project (hereafter referred to as the 'wider project'), the purpose of which is to underground a section of 400kV overhead electricity transmission lines, to mitigate the visual impact of existing electricity infrastructure through part of the Cotswolds National Landscape (previously known as Area of Outstanding Natural Beauty). The wider project is located immediately south of the B4632 and, from Breakheart Plantation, runs in a south-westerly direction to the east of Cleeve Common Site of Special Scientific Interest (SSSI), past Wontley, Drypool and Wood Farms, towards Dowdeswell Wood.
- 1.1.3 The wider project will comprise:
- The removal of a section of overhead lines (OHL), including the permanent removal of 16 pylons (18 pylons will be removed in total, however, two will be replaced under Permitted Development).
 - Underground cabling of approximately 7km in length.
 - Two new CSECs at each end Whittington and Winchcombe and associated replacement terminal pylons (as mentioned above), to connect the new underground cables to the remaining existing overhead line.
 - Associated temporary works to facilitate construction, including temporary/permanent access junctions and roads, a temporary haul road, construction compounds, material storage and welfare facilities.
 - Ancillary off-site infrastructure (including installation of arcing horns and shunt reactor installation/connection).
- 1.1.4 The majority of the works will be undertaken using Permitted Development rights under Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended), however, the CSECs require planning permission. The scope of this report is for the Winchcombe CSEC only (hereafter referred to as the 'Proposed Project site').
- 1.1.5 The Proposed Project comprises the construction of a CSEC at Winchcombe to facilitate the connection between new underground cables and the existing OHL and the associated permanent access road (and bell-mouth) to the CSEC, in addition to temporary bell-mouths created to support the cable construction along classified roads. The site is located within Tewkesbury Borough.
- 1.1.6 The proposed works within the Winchcombe CSEC redline comprise:
- Installation of a terminal pylon to connect the new underground cables to the remaining existing overhead line (note: the pylon is Permitted Development);
 - CSEC infrastructure;
 - Underground cabling from the Winchcombe CSEC towards the Whittington CSEC (note: this is Permitted Development);

- A permanent access road to the CSEC, including a bell-mouth and turning area;
- A hardstanding area where the overhead line meets with the new underground cables;
- A retaining wall;
- New screening comprising native trees, woodland and scrub planting; and
- Temporary bell-mouths with the B4632 and a classified road to facilitate construction.

1.1.7 The scope of this report is to provide details of the soil types, ALC grades of agricultural land and nature of landholdings within the Proposed Project application boundary and assess the potential impacts on these receptors.

2 Agricultural Land Planning Policy and Context

2.1.1 This ALC assessment is consistent with the direction given by paragraph 180 of the National Planning Policy Framework¹ (NPPF) as follows:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:(b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.”

2.1.2 The Ministry of Agriculture, Fisheries and Food (MAFF) ALC² system of grading the quality of land for planning divides farmland into five grades and two subgrades, according to the degree of limitation imposed upon land use by the inherent characteristics of climate, site and soils.

2.1.3 Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use, and Grade 5 is very poor-quality land, with severe limitations due to adverse soil characteristics, relief, climate or a combination of these. Grade 3 land is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grades 1, 2, and 3a are defined as the best and most versatile (BMV) land by the NPPF.

2.1.4 Protecting BMV agricultural land based on a detailed ALC survey is supported by Natural England Guidance to assessing development proposals on agricultural land³ published in February 2021.

¹ National Planning Policy Framework. Department for Communities and Local Government, December 2023
<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

² Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land. Ministry of Agriculture Fisheries and Food, October 1988.
<http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines1988.pdf>

³ Agricultural Land Classification: Guide to assessing development proposals on agricultural land. Natural England, February 2021. <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development/guide-to-assessing-development-proposals-on-agricultural-land>

3 Survey Methodology

- 3.1.1 A desk study to collate baseline information for the site, to include geology, available ALC and soil data and climatic information, was undertaken prior to the survey.
- 3.1.2 The ALC survey of the wider project was undertaken on the 6-8th November 2023, with the site being surveyed on the 6th November and a soil pit dug to confirm the subsoil structure on the 8th November. The survey was undertaken with reference to the MAFF revised guidelines and criteria⁴ and the Soil Survey Field Handbook: Describing and Sampling Soil Profiles⁵. The maximum soil profile depth was restricted to 100cm following instructions by the client, therefore the required depth of 120cm could not be achieved. Professional judgement was used to conclude this did not pose a limitation on the outcome of the grade assessment; as there was no gleying, slowly permeable layer, sandy subsoil or high stone content recorded in these profiles the ALC grade is possible to confirm within the exposed profile and the characteristics below 100cm would not change the assessed ALC grade. Auger bores were mapped using Google Earth prior to entering the field and then geolocated during the survey.
- 3.1.3 The soil profile at each auger bore was described using the Soil Survey Field Handbook: Describing and Sampling Soil Profiles. Each soil profile was ascribed an ALC grade based on the key criteria listed below (which follows the MAFF ALC Guidelines):
- Climate: Average Annual Rainfall (AAR) and Accumulated Temperature above 0°C between January and June (AT0);
 - Site: Gradient, Micro Relief and Flooding; and
 - Interactive Factors: Soil Wetness and Soil Droughtiness.
- 3.1.4 For each soil profile the following were recorded:
- Soil texture;
 - Horizon;
 - Stoniness;
 - Calcareousness;
 - Matrix colour;
 - Mottles and mottle colour;
 - Structure; and
 - Slope.
- 3.1.5 Within the Proposed Project boundary four auger boring locations (augers 123 – 125, 108 and 136) were examined and the soil physical properties described. The auger profile descriptions were used to classify the ALC grade within site boundary as shown in Appendix B. A soil pit was dug at auger 136 using an insulated spade to confirm the topsoil and subsoil characteristics identified, particularly to assess the subsoil structure and identify gleying, presence of a slowly permeable layer and stone content. No auger borings were located within 15m either side of known existing utilities.

⁴ MAFF (1988). Agricultural Land Classification of England and Wales.

⁵ Hodgson, J.M. (2022). Soil Survey Field Handbook: Describing and Sampling Soil Profiles. Cranfield: Cranfield University.

- 3.1.6 The mapping of land within the site has also taken account of survey points which lie outside the site boundary where available from the wider project survey extent.

4 Baseline Information

4.1 Land Use

- 4.1.1 The agricultural land use at the time of the survey was arable cropping (at auger locations 123-125) and grassland (auger locations 108 and 136).

4.2 Topography

- 4.2.1 The topography across within the site is very gently sloping to the northeast raising from an altitude of 128m around augers 123-125 to an altitude of 138m at auger 138.

4.3 Geology

- 4.3.1 The British Geological Survey Geology of Britain Viewer⁶ shows majority of the site to be underlain by Dyrham Formation which is a pale to dark grey and greenish grey, silty and sandy mudstone with interbeds of silt or very-fine sand formed within the Pliensbachian Age 184.2 - 192.9 million years ago. In the northeast corner of the site, the underlying bedrock is Whitby Mudstone Formation, a sedimentary mudstone bedrock formed within the Jurassic period between 180 and 205 million years ago.
- 4.3.2 There are also alluvial superficial deposits found within the site boundary associated with the River Isbourne.

4.4 Soils

- 4.4.1 Available national soil survey⁷ information indicates that the soils across the site comprise Evesham 2 and Elmton 1 Associations. Soils of the Evesham 2 Association are described as comprising slowly permeable calcareous clayey soils with some slowly permeable seasonally waterlogged non-calcareous clayey and fine loamy or fine silty over clayey soils. Soils of the Elmton 1 Association are described as comprising shallow, well drained brashy calcareous fine loamy soils over limestone, with some similar deeper soils and some non-calcareous and calcareous clayey soils

⁶ The British Geological Survey of Britain Viewer: <https://www.bgs.ac.uk/geology-projects/engineering-geology-maps/engineering-geological-studies-of-bedrock-formations/lias-group/> [accessed 23 April 2024]

⁷ Landis soil association description <https://www.landis.org.uk/> [accessed 23 April 2024]

4.5 ALC

- 4.5.1 MAGIC mapping⁸ indicates that the site is entirely mapped as Provisional Grade 3. There are no available detailed ALC survey data within the site.

4.6 Flood Risk

- 4.6.1 The Government flood risk service⁹ mapping shows that the site lies almost entirely within Flood Zone 1, with an annual chance of flooding from rivers and the sea less than 1 in 1,000 (0.1%). As such, it is considered that the site has a rare chance of flooding for only a short period of time, resulting in no limitation to ALC grade. A very small, localised area, where a crossing of the River Isbourne is proposed to facilitate access, is located in Flood Zones 2 and 3. However, as this area is so small and majority of the site is within Flood Zone 1, it is considered there is no overall limitation on ALC grade within the site.

4.7 Climatic Data

- 4.7.1 The Climate data required for the ALC assessment are provided for 5km intersections of the National Grid by the Meteorological Office. Interpolated data at Grid Reference SP0098226952 for the site is below.

Table 4-1 ALC Climate Data

Altitude	Average Annual Rainfall AAR (mm)	Accumulated Temperature ATO (day degrees)	Moisture Deficit for Wheat (mm)	Moisture Deficit for Potatoes (mm)	Field Capacity Days (FCD)
128	730	1366	96	85	165

4.8 Agricultural Landholdings

- 4.8.1 To ensure data use compliance, farm holding names have been anonymised and assigned to alphanumeric codes (CV01, CV02 and CV03). Three farm holdings, all used for grazing or cropping, were identified within the site as set out in Appendix C. The location and details of each farm holding are presented in Appendices A and C.

⁸ Defra MAGIC maps Magic Map Application (defra.gov.uk) [accessed: 05 January 2024]

⁹ Flood Risk: <https://check-long-term-flood-risk.service.gov.uk/risk> [accessed: 05 January 2024]

5 Agricultural Land Classification

5.1 Climate

- 5.1.1 The main parameters used in the assessment of whether there is an overall climatic limitation are AAR as a measure of overall wetness, and AT0 as a measure of the warmth in the growing season. According to the values of AAR and AT0 presented in Table 4-1, there is a slight overall climate limitation at the site, with the site having both relatively moderate rainfall and a moderate growing season. As such, climate limits the ALC grade across the site to Grade 1.

5.2 Site Limitations

- 5.2.1 As the site is level with no complex microrelief, gradient and microrelief are not limiting factors.
- 5.2.2 Flood risk across the site is low and as such flooding is not a limiting factor on ALC grade.

5.3 Soil Limitations

- 5.3.1 Topsoil textures recorded included medium clay loam, heavy clay loam, heavy silty clay loam and silty clay, which are not considered to be a direct limiting factor. Subsoil texture and structure affects soil wetness and droughtiness, and the assessments and calculation of wetness and moisture balance of droughtiness are presented in Appendix B.
- 5.3.2 Soil depth ranged from 72cm to 100cm for augers 123-136, therefore soil depth was not a limiting factor at these augers. At auger 108 soil depth was only 31cm which limits the agricultural grade to 3a. The soil depths observed at each auger point, and corresponding grade, are shown in Appendix B.
- 5.3.3 No chemical limitation was found or observed.

5.4 Interactive Factors

- 5.4.1 The wetness class and grade at each auger location were assessed and are presented in Appendix B. The calculated Wetness Class is generally I except for at auger 125 which was III. The associated ALC Grade was either Grade 3a or Grade 3b. Wetness Class III was observed at auger location 125 due to the presence of gleying and a slowly permeable layer which was not observed at the survey points.
- 5.4.2 Soil droughtiness and moisture balance calculations are presented in Appendix B and indicate that droughtiness is the second most limited factor at auger 123 and equally limiting factor at auger 108 where the Grade as a result of droughtiness would be Grade 3a. At augers locations 124 and 136 droughtiness limited the grade to Grade 2 whilst at auger location 125 droughtiness would not be considered a limitation.

- 5.4.3 No significant erosion was observed during the survey; as such soil erosion does not comprise a limiting factor.

6 Assessment of Impacts

6.1 Effects on Agricultural Land

- 6.1.1 The sensitivity of agricultural land is high as the site comprises both BMV (Grade 3a) and non-BMV land. As the total loss of BMV land is less than 5ha the magnitude of impact on agricultural land is minor.
- 6.1.2 The overall impact on agricultural land is slight and is considered to be Not Significant.

6.2 Effects on Landholdings

- 6.2.1 The agricultural landholdings are used for arable production and grazing with minimal associated infrastructure. The requirements for access to landholdings CV02 and CV03 for farming activities is infrequent and as such the sensitivity is considered to be low. Land holding CV01 requires reasonably frequent access to the land therefore the resulting sensitivity is considered to be moderate.
- 6.2.2 The construction of the Winchcombe CSEC would result in a permanent land take of 1.8ha from CV02. The rest of the land within the redline boundaries is only required temporarily as such the magnitude of impact is considered to be minor based on the area required and that there would not be any severance impacts.
- 6.2.3 This would result in an overall slight impact for CV01 and neutral or slight impact for CV02 and CV03 which are all considered Not Significant.

7 Conclusions and Recommendations

- 7.1.1 The ALC grade of land within the site comprised predominantly Grade 3b land. Grade 3a land was identified in the areas used to support access for the CSEC and do not comprise a permanent loss of land. The total area of Grade 3a (BMV) land required temporarily is 0.7 ha and the total area of Grade 3b land which would be permanently lost due to the construction of the CSEC is 3.1 ha.
- 7.1.2 The significance of the impacts on agricultural land and agricultural landholdings are considered to be Not Significant.
- 7.1.3 It is recommended that a Soil Management Plan is prepared post-planning consent and implemented during construction to protect agricultural land quality and soil resource, ensuring that good practice measures are implemented for soil stripping, stockpiling and reinstatement. The implementation of good practice construction measures, along with compensation payments, will limit the construction effects.

Appendix A

ALC Grade Distribution, Auger Bore and Site Locations



N

Legend

CSEC Boundary

3a

3b

Non- Agricultural

Notes:

World Imagery: Maxar, Microsoft
World Topographic Map: Esri UK, Esri, TomTom, Garmin, Foursquare, FAO, METU/
NASA, USGS

A435

Winchcombe

Cheltenham

01	30/05/24	INITIAL ISSUE	SS	JR	NL
Rev	Date	Description	Drawn	Check	Approv

Client:

PROJECT:

COTSWOLD VIP

Site

Winchcombe

Client

1-3 Strand,
London
WC2H 9EF

Registered office:
80 Fen
80 Fenchurch Street
London
EC3M 4BY
www.arcadis.com

Coordinating Office:
1st Floor
2 Glass Wharf
Bristol
BS2 0FR

Title:

ALC Grade

Designed	J. Ryan	Date	30 MAY 24	Signed	
Drawn	S. Sarkar	Date	30 MAY 24	Signed	
Checked	J. Ryan	Date	30 MAY 24	Signed	
Approved	A. Macdonald	Date	30 MAY 24	Signed	
Scale:	1:5,000	Datum:	AOD		
Original Size:	A3	Grid:	OS		
Suitability Code:	S2	Project Number:	30167905		

Suitability Description:

For Planning

Drawing Number:

30167905-ARC-EGN-ZZ-DR-ZZ-00050

Revision:

P01

Print Date: 06-03-24 15:35:34

C:\Users\sarkars729\OneDrive - ARCADIS\30167905 - NG Cotswold VIP - 01 GDV Team\01 Apr\30167905-ARC-EGN-ZZ-DR-ZZ-00050-S2-P01-ALC Grade_Winchcombe.aprx

© Copyright reserved

Appendix B

Auger Bore Logs

Appendix C

Farm Holding Information

Farm Name	Soil Auger bores within farm	Farm Type/Land Use	Infrastructure	Severance	Sensitivity	Magnitude	Significance
CV01	SA136	Grazing	Farm access tracks will be included within the RLB	Not applicable	M	MINOR	Slight
CV02	SA123, SA124, SA125	Arable	Hollingsworth & Vose Company Limited warehouse and factory are located within close proximity of the proposed work and NSE Compound.	Not applicable	L	MINOR	Neutral or slight
CV03	SA108	Grazing	Not applicable	Not applicable	L	Negligible	Neutral or slight

Appendix D

Laboratory Results

ANALYTICAL REPORT

Report Number	16254-24	B106	ARCADIS HUMAN RESOURCES LTD	Client	ARCADIS HUMAN RESOURCES LTD
Date Received	03-JAN-2024				
Date Reported	18-JAN-2024		80 FENCHURCH STREET		
Project	SOIL		LONDON		
Reference	ARCADIS HUMAN RESOUR		EC3M 4BY		
Order Number	UK2505592				

Laboratory Reference		SOIL672584	SOIL672585							
Sample Reference		TS 136	USS 136							
Determinand	Unit	SOIL	SOIL							
Sand 2.00-0.063mm	% w/w	26	15							
Silt 0.063-0.002mm	% w/w	42	55							
Clay <0.002mm	% w/w	32	30							
Textural Class **		HCL	HZCL							

Notes	
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

Reported by	** Please see the attached document for the definition of textural classes. Teresa Clyne Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com
-------------	--

Arcadis Consulting (UK) Limited

80 Fenchurch Street
London EC3M 4BY
United Kingdom

T: +44 (0)20 7812 2000

[arcadis.com](https://www.arcadis.com)

