

8 Agriculture and Soil Resources

8.1 Introduction

- 8.1.1 This chapter of the ES assesses the likely significant effects of the proposed development on the environment with respect to soil resources and agricultural land. The chapter identifies the quality of the agricultural land and soil resource that would be affected, and the use made of the land in terms of agricultural businesses.
- 8.1.2 The chapter should be read in conjunction with the Technical Report at Appendix 8.1, which provides details of the Agricultural Land Classification (ALC) and soil resource survey that was carried out in October 2013.

8.2 Assessment Approach

Methodology

- 8.2.1 The study is set in the context of the overall Environmental Assessment for the scheme. The framework for undertaking an Environmental Assessment is set out in the EC Directive of December 2011 on 'The Assessment of the Effects of Certain Public and Private Projects on the Environment (2011/92/EU)'. This framework is given force in the UK by the 'Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 (SI No 1824)'.
- 8.2.2 This framework does not, however, contain detailed guidance on the specific aspects of agriculture which should be included in any impact assessment, and the manner in which they should be treated. Therefore, the general approach adopted by this study has been derived from the present planning advice from central and local Government on the treatment of agricultural issues in development affecting farmland. This advice provides a guide to the factors which ought to be examined in an assessment of the impacts of development proposals upon agriculture, as well as a policy framework within which weight can be attached to the significance of particular impacts.

8.3 Policy Framework

National Planning Policies

- 8.3.1 National planning policies for development relating to agricultural land and soil are set out in the National Planning Policy Framework (NPPF). Paragraph 112 states that local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land (defined as land in Grades 1, 2 and 3a in the Agricultural Land Classification (ALC) system of England and Wales).
- 8.3.2 The guidance states that where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use poorer quality land (i.e. Grades 3b, 4 and 5) in preference to higher quality land.
- 8.3.3 Paragraph 109 of the NPPF puts the protection and enhancement of soils as a priority in the conservation and enhancement of the natural environment. In this regard, the inherent quality of soil, as distinct to its agricultural value, is recognised in the Government's 'Soil Strategy for England – Safeguarding our Soils' (2009) which seeks to encourage the more sustainable management of soil resources. There is a general imperative which seeks to ensure the proper consideration of soil implications during the planning and development process, and to reduce the effect of the construction and development sectors on the long term functioning of soils.
- 8.3.4 The Government's White Paper: 'The Natural Choice: securing the value of nature', CM 8082 (2011) repeats the aim of the Soil Strategy that by 2030 England's soils will be managed sustainably and degradation threats tackled successfully in order to improve the quality of England's soils and safeguard their ability to provide essential ecosystem services and functions for future generations. Existing action includes Environmental Stewardship and the cross-compliance conditions that claimant of direct payments have to meet under the Common Agricultural Policy.

8.4 Local Planning Policy

8.5 The proposed Core Strategy 2012 notes at paragraph 11.3 that:

“The use of land in Coventry’s Green Belt also has a positive role to play in fulfilling the following objectives, through active countryside management:

- *Retaining land in agriculture, forestry and related open uses;...”*

8.5.1 There are no policies in the Coventry Local Development Scheme (October 2012) relating directly to agricultural land.

8.6 Scoping Criteria

8.6.1 Agricultural land in England and Wales is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. 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, relief, climate or a combination of these. Grade 3 land is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). The best and most versatile agricultural land comprises Grades 1, 2 and 3a.

8.6.2 The assessment of potential effects arising as a result of the proposed development has taken into account both the construction and completed development phases. The significance level attributed to each effect has been assessed based on the magnitude of change due to the proposed development, and the sensitivity of the affected receptor/receiving environment to change.

8.6.3 The sensitivity of agricultural land is assessed according to its grade within the ALC as set out in Table 8.1. The sensitivity of agricultural soil resources is assessed as being comparable with that of land quality, given the influence soil characteristics have on the grading.

Table 8.1: Sensitivity of Agricultural Land

Importance	ALC Category
High	Grade 1
Medium	Grade 2 and Subgrade 3a
Low	Subgrade 3b
Negligible	Grades 4 and 5

8.6.4 Table 8.2 sets out the magnitude of change for agricultural land and soil resources.

Table 8.2: Magnitude of Impact on Land and Soil Resources

Magnitude	Land Resource	Soil Resource
High	The proposed development would directly lead to the loss of over 50ha of agricultural land	The proposed development would directly lead to the loss of soil so that it can no longer perform a principal social, economic or environmental service
Medium	The proposed development would directly lead to the loss of between 20 and 50ha of agricultural land	The proposed development would lead to the inappropriate re-use of a soil so that its principal social, economic or environmental service is diminished
Low	The proposed development would directly lead to the loss of less than 20ha of agricultural land	The proposed development would lead to the re-use of the soil in a way which does not affect its principal social, economic or environmental service
Negligible	The proposed development would directly lead to the loss of less than 5ha of agricultural land	No permanent effect on soil

8.6.5 The effects on farm holdings relate primarily to the loss of land and other key farm infrastructure (dwellings, buildings and other structures such as irrigation reservoirs and slurry pits) and the

fragmentation of land from the residually farmed area. Guideline criteria for determining the magnitude of change are presented in Table 8.3.

Table 8.3: Magnitude of Impact on Farm Holdings

	Loss of agricultural land	Loss of farm infrastructure
High	Loss of 20% or more of all land farmed	Direct loss of farm dwelling, building or structure
Medium	Between 10% and less than 20% of all land farmed	Loss of or damage to infrastructure affecting land use
Low	Between 5% and less than 10% of all land farmed	Infrastructure loss/damage does not affect land use
Negligible	Less than 5% of all land farmed	No impact on farm infrastructure

8.6.6 The sensitivity of farm holdings is determined by the extent to which they have the capacity to absorb or adapt to effects, which will be determined primarily by their nature and scale. In general terms, larger farm holdings will have a greater capacity to absorb effects and will be less sensitive. However, the scale of the land holding is reflected in the magnitude of change and the percentage land-take from the farm. For example, the loss of 100ha from a 400ha farm would be a high impact (25%) whereas the same land-take from a 1,000ha farm would be low (10%). The sensitivity criteria therefore concentrate on the nature of the receptor in order to avoid giving undue weight to the scale of operations. They are presented in Table 8.4.

Table 8.4: Sensitivity of Farm Holdings

High	Farm types in which the operation of the enterprise is dependent on the spatial relationship of land to key infrastructure, and where there is a requirement for frequent and regular access between the two, or dependent on the existence of the infrastructure itself, e.g.: - Dairying, in which milking cows must travel between fields and the parlour at least twice a day; - Irrigated arable cropping and field-scale horticulture, which are dependent on irrigation water supplies; - Intensive livestock or horticultural production which is undertaken primarily within buildings, often in controlled environments.
Medium	Farm types in which there is a degree of flexibility in the normal course of operations, e.g.: - Combinable arable farms; - Grazing livestock farms (other than dairying).
Low	Non-commercial farm types.
Negligible	Isolated non-commercial land uses.

8.6.7 The significance of the effect is then assessed based on the sensitivity of the resource and the magnitude of impact, as shown below in Table 8.5.

Table 8.5: Significance Matrix

Sensitivity	Magnitude			
	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate	Moderate/Minor
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor
Low	Moderate	Moderate/Minor	Minor	Negligible
Negligible	Moderate/Minor	Minor	Negligible	Negligible

8.7 Baseline Conditions

Site Description and Context

- 8.7.1 The site lies to the north of Coventry and comprises 42ha of agricultural land. At the time of survey, around half of the land (21ha) was under grass, with one field grazed by horses. The remainder was arable, either recently cropped or containing a maize crop.
- 8.7.2 The site is bounded to the north and north-east by other agricultural land, to the east and south by suburban land uses, including residential properties, a golf driving range and hotel, and to the west by Tamworth Road, across which are more residential properties.
- 8.7.3 The site has uneven topography, but a general slope downward toward Hall Brook on the northern boundary. Elevation ranges from around 120m to 155m above Ordnance Datum (AOD).

Agro-climatic Factors

- 8.7.4 Local agro-climatic factors have been interpolated from the Meteorological Office's standard 5km grid point data set at a representative altitude of 130m AOD and are given below in Table 8.6. The site has moderate rainfall and is moderately cool. Crop moisture deficits are also moderate. The number of Field Capacity Days is slightly greater than is typical for lowland England and is therefore considered to be slightly unfavourable for providing opportunities for agricultural land working.

Table 8.6: Local agro-climatic factors

Criterion	Measurement
Average Annual Rainfall (AAR)	697mm
Accumulated Temperatures >0°C (AT0)	1336 day°
Field Capacity Day Regime (FCD)	156 days
Average Moisture Deficit, wheat (MDw)	95mm
Average Moisture Deficit, potatoes (MDp)	83mm

Geology and Soil Types

- 8.7.5 The principal underlying geology of the site is that of the Keresley Member which predominantly comprises sandstone. Extending into the site from the east, the lower part of the bedrock is dominated by mudstone, with the sand components increasing toward the top.
- 8.7.6 The Soil Survey of England and Wales 1:250,000 scale map shows three soil associations present; from east to west these are the Salop, Bromsgrove and Whimple 2 associations.
- 8.7.7 Salop soils are characterised by slightly stony clay loam upper layers, overlying poorly permeable, stony clay. Where undrained, these soils are waterlogged for long periods in winter and are commonly assessed Wetness Class (WC) IV.
- 8.7.8 The Bromsgrove association consists of well drained (WC I) reddish sandy loam profiles developed over sandstone.
- 8.7.9 Whimple 2 soils are similar to Salop soils, typically having slightly stony clay loam or silty clay loam upper horizons, passing to clay at depth. They suffer less severe waterlogging than the Salop association soils and are typically of WC III.

Agricultural Land Quality

- 8.7.10 The land has been surveyed in accordance with the guidance and criteria published by MAFF in 1988.
- 8.7.11 The most widespread limiting factor at the site is droughtiness, although 11 profiles were also limited by soil wetness. Those limited by wetness are generally towards the northern boundary of the site, which is marked by Hall Brook, and to the east of the centre in the vicinity of two ponds.
- 8.7.12 Grade 2 land runs roughly through the centre of the site from east to west. In two areas, one to the north and one more central, this slight limitation is due to wetness as drainage is impeded at depth by sandy clay lower subsoils. Such profiles are of WC II which in combination with topsoil textures of sandy clay loam limits them to Grade 2.

- 8.7.13 The Grade 2 land limited by droughtiness comprises profiles with sandy loam or sandy clay loam topsoils, overlying freely draining sandy loam or loamy sand upper subsoils, and predominantly sand lower subsoils, although also in areas loamy sand or occasionally sandy clay.
- 8.7.14 Soils limited by wetness to Subgrade 3a generally have medium clay loam topsoils overlying clay or sandy loam which passes to sandy clay. Imperfect drainage in the subsoils reduces the profiles to WC III which leads to the limitation to Subgrade 3a when considered with topsoil texture.
- 8.7.15 Those profiles with a moderate droughtiness limitation have sandy loam or sandy clay loam topsoil textures which generally pass directly to sand. This sand subsoil restricts the capability of the profile to retain water which reduces the amount available for use by growing crops. There is therefore a moderate limitation by droughtiness to Subgrade 3a.
- 8.7.16 Profiles of Subgrade 3b are limited overall by droughtiness, but this is influenced by profile depth. The textures of each horizon are in keeping with the remainder of the site, comprising similar variations of sandy loam, sandy clay loam, loamy sand and sand, but the profiles average just 46cm total depth. This limited capacity for water storage creates the more severe droughtiness limitation.
- 8.7.17 The areas of different ALC grades are given in Table 8.7 and shown in Figure 8.1.

Table 8.7: ALC Grading

Grade	Description	Area (ha)	Area (% of agric. land)
2	Very good quality	11	26
3a	Good quality	20	48
3b	Moderate quality	11	26
	Best and Most Versatile	31	74
Total Agricultural		42	100

Land Use and Tenure

- 8.7.18 The Application Site is tenanted by a sole family-farming interest based at Manor Farm, which lies just outside the study area. The tenant occupies around 120ha in total, comprising grassland which is mowed once per year and arable land used for growing wheat, maize and barley. The grassland at the site is partly grazed by a few horses and occasionally grazed by sheep belonging to a third party, and is in Entry Level Stewardship.

8.8 Key Impacts and Likely Significant Effects

Agricultural Land

- 8.8.1 This assessment assumes that all of the agricultural land within the site would be rendered unproductive by the proposed development, and that the in-situ agricultural capabilities of the soil resource will be lost.
- 8.8.2 As such, the development will result in the loss to agriculture of approximately 42ha, including around 31ha of best and most versatile land of Grades 2 and 3a. Based on the criteria set out at Tables 8.1 and 8.2, the land resource is of medium sensitivity and the magnitude of impact on this resource is medium. The proposed development will have a direct, permanent adverse effect on agricultural land of **moderate** significance.

Soil

- 8.8.3 As soil is a finite resource that fulfils many important functions and services for society in addition to the production of food and fibre, it is important that soil resources are protected and used sustainably. The proposed development will require soils to be stripped from parts of the site before commencement of the construction works.
- 8.8.4 Damage to, and loss of, topsoil could occur if the resource was handled inappropriately, for example if when wet, or if dissimilar materials such as subsoil or other materials were stockpiled directly on it

without a separating layer or possibly by poor work causing mixing of topsoil, subsoil and other materials during stockpile placement or removal.

- 8.8.5 There is also a risk of long-term damage to soil structure, and the loss of potentially valuable soil, if there is uncontrolled trafficking of land and soil by heavy machinery, especially wheeled machinery.
- 8.8.6 Biodegradation of topsoil would occur if it is compacted in storage, stockpiled when wet, if stockpiled in the medium- to long-term, or covered by soil stores for significant periods.
- 8.8.7 The indirect adverse impact on the soil resource would accrue mainly from the re-use of soil off-site in a manner inappropriate to its quality.

The soil resource is assessed as being of medium sensitivity and the magnitude of impact is assessed as high. The proposed development will have a direct, permanent, adverse impact on the soil resource of major/moderate significance, prior to the implementation of any mitigation measures.

Land Use and Tenure

- 8.8.8 The main effect of the proposed development would be the permanent loss of agricultural land to the holding; there would be no loss of farm infrastructure.
- 8.9 The proposed development would lead to the loss of 42ha of agricultural land from a single farming interest. The current tenant occupies around 120ha of land in total, all of which is rented and in the vicinity of the site. Should the proposed development proceed, a decrease of 35% of the total area farmed would ensue. This would be an impact of high magnitude on a receptor of medium sensitivity, leading to an effect on the farm holding of major/moderate adverse significance.**

8.10 Mitigation Measures

Land

- 8.10.1 There are no universally applicable measures available to mitigate the direct loss of agricultural land. Mitigation of the loss of agricultural land may best be achieved by limiting the extent of the development to the smallest size possible, consistent with operational requirements, and by retaining the maximum area of land in continuing agricultural use. Surplus soils, particularly topsoils, could be used off-site to benefit and even upgrade other agricultural land. There are, however, no plans currently within the proposed development to enable such measures to be taken into account in this assessment, and therefore the impact on agricultural land remains one of **moderate** adverse significance.

Soil

- 8.1.1. The primary measures to mitigate damage to or loss of soil resources would be developed through a soil management plan, which would describe the existing soil resources on the site and outline measures to:
- Protect the soils which are to remain in-situ throughout the construction phase, for example through the designation of haulage routes;
 - Re-use as much of the soils displaced during the construction phase on-site as possible in the detailed design of gardens, landscaped areas and other green infrastructure;
 - Re-use any surplus soils thereafter in a sustainable manner (i.e. as close to the site as possible to an afteruse appropriate to the soil's quality) in accordance with the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites; and
 - Ensure that the quality of soils retained on-site and reused off-site (if required) is maintained by following best practice guidance on soil handling, as described in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
- 8.10.2 With the implementation of the above measures, the magnitude of impact on the soil resource is assessed as low, and the significance of effect will be reduced to **moderate/minor**.

Land Use and Tenure

- 8.10.3 The mitigation of impact on farm holdings is difficult to achieve other than by financial compensation or allocation of other comparable agricultural land in the vicinity of the site. This is a matter for private negotiation and is outside the scope of this assessment. The residual impact on the farming business remains one of **major/moderate** significance.

8.11 Summary

Introduction

- 8.11.1 This assessment considers the quality of the agricultural land and soil resource that would be affected, and the use made of the land in terms of agricultural businesses.

Baseline Conditions

- 8.11.2 The agricultural land within the site has been surveyed in accordance with the ALC guidance and criteria to determine the extent and distribution of land in the different agricultural land classification grades and subgrades. Approximately half of the land within the site is of higher quality, in Grade 2 and Subgrade 3a, with the remaining land being of moderate quality in Subgrade 3b.
- 8.11.3 One farming interest would be affected by the proposed development.

Likely Significant Effects

The proposed development would result in the removal of 42ha of land from agricultural use, of which 11ha is Grade 2, 20ha is Subgrade 3a and 11ha is Subgrade 3b. Such a loss is assessed as a moderate significant adverse effect. The effect on the soil resource prior to mitigation is assessed as being of major/moderate significance.

- 8.11.4 The proposed development would result in the loss of 35% of the farmable area from the current tenant farmer. This is assessed as a direct major/moderate adverse effect.

Mitigation and Enhancement

- 8.11.5 Mitigation measures applicable to the soil resource including following best practice guidance on appropriate handling, storage and reuse of soils throughout and beyond the construction phase of the proposed development. Such measures are best set out in a comprehensive soil management plan.

Conclusion

- 8.11.6 With mitigation, the effect on agricultural land will remain as **moderate**, the effect on the soil resource will be reduced to **moderate/minor**, and the effect on the farm holding will remain as **major/moderate**.