

13. AGRICULTURAL LAND QUALITY

13.1 INTRODUCTION

- 13.1.1 This Chapter contains an assessment of the Proposed Development, with respect to agriculture and soil resources.
- 13.1.2 The Proposed Development includes development of a new SRFI (referred to as ‘the Main Site’) with substantial works to improve Junction 15 of the M1, and other highways mitigation works at Junction 15A and elsewhere in the vicinity of the main site. The proposals include a new Road Bypass on land located further south from the Main Site around the western side of Road, and referred to as the ‘Bypass site’. The vast majority of the Main Site and Bypass site is currently in agricultural use, hence agriculture would be a receptor of potential effects arising from the proposals.
- 13.1.3 The ‘Highways Mitigation Works’ include a number of areas of land on or immediately adjacent to the existing highway network. Those with potential implications for agricultural land are primarily on the A508 corridor, with the land around Junction 15 and 15A involving less or no land in agricultural use. The potential implications on Agricultural Land resources have also been considered and judgements made about any likely effects.
- 13.1.4 The soil found within much of the Proposed Development site (that outside of the existing highway) is largely undisturbed and acts as a filter to attenuate and immobilise substances falling on it, regulates rainfall movement to surface water and groundwater and supports ecological habitats and biodiversity. The sustainable management of soil and land is a central pillar in sustainable development and, consequently, any effects on soil will also be important.

13.2 PLANNING CONTEXT

National Context

- 13.2.1 The National Policy Statement for National Networks (NPSNN) provides specific policy guidance for Nationally Significant Infrastructure Projects (NSIP), and is intended to guide applicants, and provides a basis for examination of proposals by the Planning Inspectorate. Section 5 of the NPSNN includes guidance regarding ‘*Generic Impacts*’ to be considered in assessing proposed NSIP development projects. This includes a section on ‘*Land use including open space, green infrastructure, and Green Belt*’ which contains specific content regarding assessing the impacts on agricultural land.
- 13.2.2 With regard to agricultural land the NPSNN guidance focuses on understanding the impacts on land in grades 1, 2 and 3a (sometimes referred to as ‘the best and most versatile’ land), and applicants are required to identify any effects and seek to minimise the impacts. Brownfield land, and development of land in the lowest categories of quality are encouraged over sites in the higher quality categories, with the loss of land in grades 3b, 4 and 5 is to be given “*little weight*” (NPSNN paragraph 5.176).
- 13.2.3 The NPSNN is consistent with planning policy guidance relating to agriculture and soils in the National Planning Policy Framework (NPPF, 2012) which states at paragraph 112 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 of the Agricultural Land Classification). Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality”.

13.2.4 Paragraph 109 of the NPPF states that:

“The planning system should contribute to and enhance the natural and local environment by ... protecting and enhancing valued landscapes, geological conservation interests and soils’ and ‘preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.

13.2.5 Planning Practice Guidance states that the planning system:

13.2.6 *“should protect and enhance valued soils and prevent the adverse effects of unacceptable levels of pollution. This is because soil is an essential finite resource that provides important ecosystem services, for example as a growing medium for food, timber and other crops, as a store for carbon and water, as a reservoir of biodiversity and as a buffer against pollution”.*

Local Context

13.2.7 West Northamptonshire Joint Core Strategy Local Plan (2014) Policy R2 - Rural Economy states that:

“Proposals which sustain and enhance the rural economy by creating or safeguarding jobs and businesses will be supported where they are of an appropriate scale for their location, respect the environmental quality and character of the rural area and protect the best and most versatile agricultural land.”

13.3 METHODOLOGY

13.3.1 The assessment considered the effects on two receptors - soil resources and agricultural land resources. Soil and geological issues are covered in detail in Chapter 6 of this ES.

Data sources

13.3.2 Data was obtained from the sources described below.

- Existing agricultural land quality information: Natural England’s MAGIC website.
- Information on soil types: 1:250,000 reconnaissance soil map of Midland and Western England (Soil Survey Bulletin No. 12).

Assessment approach

13.3.3 Soil resources were reviewed by means of a desk study of published and unpublished soil maps and reports, and more accurately assessed by detailed surveys on the Main Site and the Bypass site involving observations of soil and land characteristics at intersects of a 100m grid, giving a sample density of one observation per hectare, or one every two hectares in areas of low variability.

13.3.4 An area in the southern part of the Main Site amounting to 24.3 ha has not been surveyed because this land is not proposed for development and will remain in agricultural use, with some small areas of landscaping and earthworks added as part of the landscaping strategy. Therefore there is no anticipated impact of any note on the agricultural soil resource.

13.3.5 Details of the proposed Highways Mitigation Works have been assessed with regard to any likely significant effects on agricultural land. This assessment was based on the submitted highway general arrangement plans (Highway Plans, Document 2.4), and through discussion with others in the project team to understand the nature and scale of the proposed works.

13.3.6 In addition to the above, agricultural land quality was assessed using information from the soil resources survey and other desk based and site information such as climate, flooding and slope.

Significance Criteria

13.3.7 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being moderate or major positive or negative.

13.3.8 There is no nationally agreed scheme for classifying the effects of development on agriculture or soils and the approach used in this chapter has been developed over a number of years.

13.3.9 The magnitude of effect on best and most versatile land will depend on the amount to be taken by the development. Article 16, Schedule 5 of the Town and Country Planning (Development Management Procedure) (England) Order 2010 only requires Natural England to be consulted (on behalf of the Secretary of State for the Environment, Food and Rural Affairs) on development that involves the loss of not less than 20 ha of grades 1, 2 or 3a agricultural land. Consequently, the magnitude of losses smaller than this threshold is considered to have a small effect on the national stock of best and most versatile land. Losses of over 80 ha of best and most versatile land are equivalent to the size of a medium to large farm (i.e. an equivalent whole farm enterprise benefitting from the economic advantage of best and most versatile land) and consequently the magnitude of effect is considered to be large. The judgment-based classification is given in Table 13.1.

13.3.10 The magnitude of effect on topsoil resources makes the assumption that, as a valuable finite resource, the requirement should be to protect topsoils from damage. However, since built developments often generate large surpluses of topsoil, the primary requirement is considered to be that sufficient topsoil should be protected to complete all on-site landscaping/greenspace requirements (provided the baseline resource is suitable for the proposed uses). Failure to do so is regarded as a large magnitude effect. If all topsoil is protected from damage, the effect is regarded as negligible. As few built developments are likely to require more than 50% of topsoil for reuse, losses below this figure are regarded as minor.

13.3.11 Subsoil compaction under greenspace areas increases flood risk (and is not accounted for in SUDS design). Severe compaction is also likely to adversely affect the success of landscaping/ecological planting schemes. Magnitude is considered as a percentage of the development scheme. Compaction of greater than 10% of the site is considered as high magnitude as it is likely to result in tangible increases in runoff volumes, of a magnitude which could affect the efficacy of SUDS design capacity.

Table 13.1: Magnitude of effects on the three receptors

Magnitude of effect	Agricultural land	Soil resource
Large	Irreversible loss of >80 ha of best and most versatile land	Loss of >80% of topsoil resources and insufficient topsoil protected for on-site uses. Subsoil compaction of >10% of site ¹
Moderate	Irreversible loss of 20-80 ha of best and most versatile land	Loss or irreversible damage to 50-80% of topsoil resources. Compaction of 5-10% of subsoils
Small	Irreversible loss of 5-20 ha of best and most versatile land	Loss or irreversible damage to <50% of topsoil resources. Compaction of <5% of subsoils
Negligible	Irreversible loss of <5 ha of best and most versatile land	Only minor disturbance of soils within the site.

¹Refers only to areas intended as greenspace, not to soils under built surfaces (the effects of which are covered by flood risk and drainage chapter)

Sensitivity of receptors

- 13.3.12 Best and most versatile agricultural land (i.e. Grades 1, 2 & 3a on MAFF's 1988 Agricultural Land Classification system) is considered to be a finite national resource, is given special consideration in national policy, and can be considered to be of higher sensitivity than land in Grades 3b, 4 and 5. In areas of the country such as that around Northampton where best and most versatile land is widespread the best land (Grades 1 and 2) are considered of higher sensitivity than Sub-grade 3a.
- 13.3.13 All natural soils are finite resources, but where sites are to be developed, their quality as a resource for reuse varies. Although all topsoils are re-useable to some extent, medium and coarse loamy topsoils are of higher value for reuse than sandy or clayey topsoils since they are more suitable for demanding uses (such as in landscaping planting schemes).
- 13.3.14 Permeable coarse or medium-textured subsoils are reusable for planting schemes (e.g. to support tree growth) and have a greater function in mitigating the effects of flooding than heavy and slowly permeable subsoils. In some instances soils have important properties which make them able to support rare habitats (e.g. species diverse calcareous grassland or lowland heath habitats).

Table 13.2: Sensitivity of the three receptors

Sensitivity	Agricultural land in the Northampton area	Soil resource
High	Grades 1 & 2	Permeable coarse loamy ¹ and medium loamy soils, or other soils capable of supporting valuable habitats
Medium	Sub-grade 3a	Fine textured or sandy topsoils not capable of supporting valuable habitats Mixed permeable and slowly permeable subsoils.
Low	Sub-grade 3b and grades 4 & 5	Damaged or contaminated soils Slowly permeable subsoils

¹Includes coarse loamy topsoils over sandy subsoils.

Significance of effects

- 13.3.15 The significance of any beneficial or adverse effect can be assessed as either 'major' or 'moderate' (i.e. significant), 'minor' or 'negligible' according to the magnitude of the effect of the proposed development and the sensitivity of the receptor, as set out in Table 13.3 below.

Table 13.3: Significance of effects

Magnitude	Sensitivity			
	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

13.4 BASELINE CONDITIONS

Agricultural use

- 13.4.1 The Proposed Development as a whole covers a total area of approximately 290 ha, of which approximately 220ha are in agricultural use. The majority of agricultural land at the Main Site was in arable use at the time of survey, with a bean crop standing on southern and western parts and peas recently harvested from northern and eastern parts.
- 13.4.2 The Roade Bypass corridor was under a mixture of arable crops (beans and cereals) and sheep and beef pasture. The remainder of the site comprises mixed woodland and wooded field boundaries, farm buildings/hard standings, farm tracks and railway embankments.

Agricultural quality

- 13.4.3 The Agricultural Land Classification system published by the former Ministry of Agriculture, Fisheries and Food (MAFF) grades land into five grades, 1 (excellent quality) to 5 (very poor quality). In 1988 a revision of the classification divided grade 3 into two sub-grades 3a and 3b and land in grades 1 to 3a became termed the 'best and most versatile' agricultural land.
- 13.4.4 Detailed mapping conducted during this assessment found the land to be a mixture of grade 2, sub-grade 3a and sub-grade 3b. Further details are provided in the technical reports (Appendices 13.1 and 13.2).
- 13.4.5 The area of unsurveyed land in the south of the main site is likely to be of similar quality to that which has already been surveyed: dominantly subgrade 3b with patches of best and most versatile land. In any event, that land in the south of the main site is to be retained in agricultural use by the existing landowners, with some peripheral parts of the land used to include new landscaping and planting associated with the Proposed Development rather than built development. Therefore, the soil resources in this part of the site will not be materially affected.
- 13.4.6 The different qualities of land in the application area are shown below in Table 13.4, and their distribution is shown in Figures 13.1 and 13.2.¹

Soil resources

- 13.4.7 The soils of both the main site and Roade bypass corridor are dominantly heavy-textured slowly permeable types. In patches in the main site deep medium-textured permeable soils occur, while shallow permeable soils over limestone occur in southern parts of the Roade bypass corridor. In total approximately 51 ha of permeable soils with medium textured (high quality) topsoils have been mapped. The distribution and types of soils is shown by Figures 13.3 & 13.4.
- 13.4.8 The agricultural land is intensively managed and none of the soils currently support valuable habitats.
- 13.4.9 As referred to above, that land in the south of the main site is to be retained in agricultural use by the existing landowners, with some peripheral parts of the land used to include new landscaping and planting associated with the Proposed Development rather than built development. Therefore, the soil resources in this part of the site will not be materially affected. It is judged as likely to have similar soils to that across the remainder of the Main Site.

1 Note – The total area surveyed relating to the Roade Bypass covers both potential route corridors considered around the western edge of Roade – see Appendix 13.2. The survey therefore covers a larger area than that affected by the preferred route as shown on Figure 13.2.

2 Note – the areas referred to in Table 13.4 cover that required for the preferred (proposed) Bypass route. However, the survey was undertaken on the full corridor containing the two potential routes considered earlier in the process – the full survey details of this larger area are presented in Appendix 13.2. However, Figure 13.2 shows the land categories for the proposed Bypass route which accord with the figures in Table 13.4.

The projected future baseline

13.4.10 There are unlikely to be significant changes in baseline conditions into the future if the Proposed Development does not proceed.

Table 13.4: Quality of the agricultural land within the application area

Agricultural quality	Main site Area (ha)	Road bypass Area (ha) ¹	Total (ha)	Approx. Proportion of land (%)
Grade 2	12.2	0	12.2	4
Sub-grade 3a	18.8	2.4	21.2	8
Sub-grade 3b	140.9	23.4	164.3	59
Non-agricultural	48.9	5.2	54.1	20
Unsurveyed	24.3	0	24.3	9

13.4.11 Judgements have been reached regarding the relevance and any likely impacts of the highways mitigation works. Given the small amount of land required – much of which forms part of the existing highway corridor – the impacts on agricultural land and soil resources will be very small-scale and of limited (negligible) significance. Those works along the A508 corridor which are located in areas where agriculture is the predominant surrounding land-use are also of limited interest as the vast majority of the proposed works are on highway land (existing surfaced roads or verges). Any small areas of agricultural land affected through realigned junctions or road widening will be so small as to be of negligible significance.

13.5 POTENTIAL EFFECTS

Construction stage

Soil Resource

13.5.1 The Proposed Development could potentially result in the loss of all topsoils. There are sufficient high quality topsoil and subsoil resources to undertake all of the proposed landscaping at the site. In accordance with the criteria set out in section 3.0, this large magnitude effect on a mainly medium sensitivity resource is regarded as a major permanent adverse effect.

13.5.2 A high proportion of the Proposed Development Site is proposed to accommodate built development (estimated to be approximately 80%) and therefore around 20% of the area intended for greenspace, or to be returned to agricultural use post-development, could be compacted if not protected and well managed during the construction process. Most of the soils are naturally slowly permeable and have limited potential to absorb excess rainfall to mitigate flooding. In accordance with the criteria set out in section 3.0, this potentially large magnitude effect on a mainly low sensitivity receptor is regarded as a moderate adverse effect, although it is likely to be at least partially reversible following completion of construction.

Agricultural Land

13.5.3 The loss of the agricultural land resource will be progressive through phased construction.

Post-completion stage

Soil Resource

- 13.5.4 Some recovery of soil function under re-established vegetation in landscaped parts of the site will occur over time, although the adverse impacts of soil compaction during construction are likely to persist. Damage or loss of soil resources caused during construction are largely permanent adverse effects which will persist post-completion, including all impacts in developed areas of the site. Overall, this represents a major adverse effect.

Agricultural Land

- 13.5.5 There would be permanent loss of up to 12.2 ha of grade 2 land and 21.2 ha of sub-grade 3a land, grades which are categorised as best and most versatile agricultural land. This small loss of high sensitivity resource (grade 2) and small loss of medium sensitivity resource (sub-grade 3a) represents a moderate adverse effect.

13.6 Mitigation measures

During construction

- 13.6.1 Mitigation for loss or damage of soil resources requires the adoption of a Soil Management Plan, to form part of the Construction Environment Management Plan (CEMP) (ES Appendix 2.1). The Soil Management Plan will be undertaken by a suitably qualified practitioner in accordance with the principles outlined in the Construction Code of Practice for Sustainable Use of Soils on Construction Sites, which will detail:
- Depth and method of topsoil stripping and stockpiling, including separation of topsoil resources of different potential.
 - Methods of stripping and stockpiling of higher quality re-useable subsoil (if appropriate).
 - Identification of landscaping topsoil requirements and assessment of suitability and availability of on-site resources.
- 13.6.2 Means of protection of subsoil from compaction damage and remedial measures (ripping/ subsoiling) to remove damage.
- 13.6.3 Mitigation for the effect of loss of agricultural land to built development is not possible.

Post-Completion

- 13.6.4 As detailed above, subsoil compaction during construction can be partially ameliorated (by mechanical means).
- 13.6.5 No mitigation for the loss of agricultural land as a result of the Proposed Development is possible.

13.7 RESIDUAL EFFECTS

Agricultural Land

- 13.7.1 Across the Proposed Development site, 33.3 ha (12%) is categorised as best and most versatile agricultural land. The loss of approximately 21.1 ha of sub-grade 3a land, the poorest class in the best and most versatile category, is determined a moderate adverse effect due to the size of the loss. The loss of 12.2 ha of grade 2 land is also regarded as moderate adverse. The NPSNN explicitly states that the loss of the lower categories of land are given '*little weight*', and the vast majority of land which would be lost is in these lower categories.
- 13.7.2 As referred to elsewhere, the unsurveyed area within the application site is to be retained in agricultural use.

Soil Resource

- 13.7.3 Soil functions will be severely compromised over much of the application area through sealing by roads and buildings but there will be a soil protection policy in place for areas of landscaping and green-space and a re-use strategy for the topsoil resources. This will result in protection of sufficient topsoil/subsoil for landscaping uses and the prevention of any subsoil compaction. Excess topsoil and subsoil may be reused in landscaping bunds to minimise the generation of waste. The residual effect on soil resources is regarded as minor adverse.
- 13.7.4 The residual effects identified are summarised in Table 13.5.

Table 13.5 Summary of residual effect

Potential effect	Significance (pre-mitigation)	Mitigation measure	Significance of residual effect
Loss of soil resource	Major adverse	Implementation of Soil Management Plan	Minor adverse
Progressive loss of best and most versatile land	Moderate adverse	None possible.	Moderate adverse

Cumulative Effects

- 13.7.5 The effects of the Proposed Development on agricultural land and soil resources are highly site specific, and contained within the site boundary. As a result there are limited if any direct cumulative effects with other developments nearby which will by definition relate to other land which may well have very different characteristics, and where the development proposals involve different end-uses.
- 13.7.6 However, the development of the Northampton South SUE to the north of the M1 will see loss of some agricultural land, and mitigation to limit the impacts on the soil resources within the site would be expected as part of planning conditions and construction best practice. It is understood that this site includes some 4.3 hectares (10.6 acres) of Grade 2 land and some 8.8 hectares (21.7 acres) assessed as Grade 3a. The remaining 41.5 hectares (102.5 acres) of agricultural land within the Site is assessed as Grade 3b (outside of the best and most versatile category).
- 13.7.7 The other committed SUE identified as of interest to the consideration of any cumulative effects is further from the Proposed Development to the east of Northampton (South of Brackmills SUE). That SUE is understood to affect around 37.5ha of the best and most versatile Land (Grades 2 and 3a).
- 13.7.8 Cumulatively, this would be a loss of major magnitude using the assessment criteria set in this Chapter, and would be moderate to major in significance.

- 13.7.9 However, the agricultural land around Northampton is of relatively high quality with significant areas of grade 1 and 2 land, particularly to the north of the city, and in this wider context and scale, these losses are not considered strategically significant. It is also important to note that these committed sites are allocated by the planning policies of the WNJCS which was prepared and adopted having considered a range of environmental issues, including soil resources.
- 13.7.10 In addition to these committed developments, if the proposed Rail Central SRFI were approved and constructed it would see the loss of a larger area of agricultural land than the Northampton Gateway proposal. Based on consultation material data published in March 2018 by the scheme promoters the Rail Central proposals would result in the loss of 274ha of agricultural land. Although larger in scale the Rail Central site has similar soil characteristics to the Northampton Gateway site, consisting of mainly category 3b soil, with some best and most versatile land in categories 2 and 3a. Based on the March 2018 draft ES this would include in the region of 71 ha of the best and most versatile land at both the main SRFI site and the Junction 15A highways works site.
- 13.7.11 Therefore, in addition to the above commitments and the Proposed Development, if the Rail Central development were approved it would result in a cumulative major adverse impact on the agricultural land resource in the site specific and immediate local context. The Rail Central proposals would result in a larger amount of agricultural land loss than the Northampton Gateway site.
- 13.7.12 However, as referred to above the agricultural land around Northampton as a whole is of relatively high quality with significant areas of grade 1 and 2 land. The land proposed for inclusion within these two SRFI developments is therefore some of the lowest quality land in the wider Northampton area, and includes a relatively small proportion of land in the highest quality categories (1 and 2).

13.8 Summary and conclusions

- 13.8.1 This chapter considers the potential effects of the Proposed Development on soil and agricultural land resources.
- 13.8.2 The land has mainly slowly permeable heavy soils, with ancillary areas of fine loamy soils and sandy soils. Following mitigation in the form of a detailed Soil Management Plan to prevent soil damage and effective reuse of suitable resources in proposed landscaping, the effects of the Proposed Development on the soil resource are considered minor adverse.
- 13.8.3 Loss of agricultural land to development cannot be mitigated against. The Proposed Development would result in the loss of 33.3 ha of the Best and Most Versatile agricultural land, equivalent to 12% of the total Proposed Development area. This is considered a moderate adverse effect, which should be weighed against other sustainability criteria, and considered in the context of the availability of any viable alternatives of lower land quality.

13.9 Abbreviations & Definitions

ALC – Agricultural Land Classification

BGS – British Geological Society

DEFRA - Department for Environment, Food and Rural Affairs

ES – Environmental Statement

MAFF – Ministry of Agriculture, Fisheries and Food

13.10 References

1. Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land. MAFF, 1988
2. Construction Code of Practice for Sustainable Use of Soils on Construction Sites. Defra, 2009.