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14. LAND AND SOILS

14.1. INTRODUCTION

14.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon land and soils.

14.1.2. The assessment of land and soils has established that the following additional mitigation measures are required:

- To re-use as much of the surplus resources on site in the detailed design of the green infrastructure;
- To dispose of any surplus soils thereafter in a sustainable manner (i.e. as close to the application site as possible and to an after use appropriate to the soil's quality) in accordance with the Code of Construction Practice for the Sustainable Use of Soils on Construction Sites (Ref 14.1); and
- To ensure that the quality of soils retained on site and disposed off-site (if required) is maintained by following best practice guidance on soil handling.

14.1.3. The following residual effects have been identified:

- There is likely to be a direct, permanent, long-term minor to moderate adverse residual effect on best and most versatile (BMV) agricultural land (not significant);
- There is likely to be a direct, temporary, medium-term minor to moderate adverse residual effect on soil resources (not significant).

14.1.4. The condition of restored soil resources in green infrastructure on site has been identified as a monitoring requirement.

14.1.5. The remainder of this chapter describes the assessment methodology and the baseline conditions relevant to the assessment, which have been used to reach these conclusions, as well as a summary of the likely significant effects leading to the additional mitigation measures required to avoid, prevent, reduce or, if possible, offset any likely significant adverse effects, and the likely residual effects and any required monitoring after these measures have been employed. Opportunities for enhancement, where such opportunities exist, are also discussed.

14.1.6. This chapter (and its associated figures and appendices) is intended to be read as part of the wider ES.

14.2. CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION UNDERTAKEN TO DATE

14.2.1. No specific consultation has been undertaken in respect of the land and soils assessment.

SCOPE OF THE ASSESSMENT

14.2.2. The scope of this assessment has been established through an ongoing scoping process. Further information can be found in **Chapter 5: Approach to EIA**.

14.2.3. This section provides an update to the scope of the assessment and re-iterates the evidence base for scoping out elements following further iterative assessment.

14.2.4. The Scoping Report indicated that a detailed soil and Agricultural Land Classification (ALC) survey will be conducted to establish the grade of agricultural land within the application site. The Provisional ALC data shows the application site as very good quality Grade 2 land, but these maps are not suitable for use in assessing individual sites because of limitations of scale and changes to the classification system since they were prepared. A detailed survey has been undertaken as part of this study, and is reported in this chapter and in **Appendix 14**.

ELEMENTS SCOPED OUT OF THE ASSESSMENT

14.2.5. The elements shown in **Table 14-1** are not considered to give rise to likely significant effects as a result of the Proposed Development and have therefore not been considered within this assessment.

Table 14-1 - Elements scoped out of the assessment

Element scoped out	Justification
Contamination	Given that the application site has had a continuous agriculture use and that only localised pockets of Made Ground may exist where historical ponds were infilled, it is not considered that the application site has a significant potential to be contaminated with chemical compounds which would pose an unacceptable level of risk to controlled waters or human health. Therefore, contamination has been scoped out of further assessment.
Operational phase	All impacts on agricultural land and soils will occur during the construction phase, and no further impacts are considered to give rise to likely significant effects during the operation of the Proposed Development.

ELEMENTS SCOPED INTO THE ASSESSMENT

Construction Phase

14.2.6. The following elements are considered to have the potential to give rise to likely significant effects during construction of the Proposed Development and have therefore been considered within this assessment:

- Loss of or damage to the soil resource; and
- Loss of agricultural land, in particular that of BMV quality.

EXTENT OF THE STUDY AREA

14.2.7. The study area for the land and soils assessment extends to the application site boundary.

METHOD OF BASELINE DATA COLLATION

SITE VISIT AND SURVEYS

14.2.8. **Appendix 14** provides a detailed methodology for establishing the baseline conditions. A soil and ALC survey of the application site was undertaken in October 2019. In total, 72 soil profiles were examined using an Edelman (Dutch) auger and spade, mainly on a 100 m by 100 m grid.

14.2.9. At each observation point shown on **Figure 14.1** (**Appendix 14**), the following characteristics were assessed for each soil horizon up to a maximum of 120 cm or to the depth of any impenetrable layer:

- Soil texture;

- Stone content;
- Soil colour (including local gley and mottle colours);
- Consistency;
- Structural condition;
- Free carbonate; and
- Depth.

14.2.10. Four topsoil samples were submitted for laboratory determination of particle size distribution, pH, organic matter content and nutrient contents.

14.2.11. Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. There are six soil wetness classes, ranging from well drained Wetness Class ('WC') I to permanently wet WC VI. Soil WC is inferred from an interpretation of soil profile characteristics, site and climatic factors, particularly:

- The soil matrix colour;
- Presence or absence of and depth to greyish and ochreous gley mottling;
- Presence or absence of and depth to slowly permeable subsoil layers at least 15 cm thick; and
- The number of Field Capacity Days at the application site.

14.2.12. The report of the soil and ALC survey is provided in **Appendix 14**, and the ALC plan as **Figure 14.2** (**Appendix 14**).

ASSESSMENT METHODOLOGY

14.2.13. The effects on the agricultural resource are concerned with the permanent loss of agricultural land to the Proposed Development, and the temporary and permanent effects of the Proposed Development on the soil resources within the application site.

14.2.14. There is a well-established methodology for classifying the quality of agricultural land, contained in 'Agricultural Land Classification of England and Wales, Revised guidelines and criteria for grading the quality of agricultural land' (Ref 14.2), and summarised in Natural England's Technical Information Note (TIN) 049 (Ref 14.3).

14.2.15. 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. The principal physical factors influencing grading are climate, site and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

14.2.16. Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use. Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting. Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land). Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields. Grade 5 is very poor quality land, with very severe limitations which restrict use to permanent pasture or rough grazing. Land which is classified as Grades 1, 2 and 3a is defined as BMV land.

SIGNIFICANCE CRITERIA

14.2.17. The significance level attributed to each effect has been assessed based on the sensitivity / value of the affected receptor(s) and the magnitude of change arising from the Proposed Development, as

well as a number of other factors that are outlined in more detail in **Chapter 5: Approach to EIA**. The sensitivity of the affected receptor is assessed on a scale of high, medium, low and negligible, and the magnitude of change is assessed on a scale of large, medium, small, negligible and no change, as set out in **Chapter 5: Approach to EIA**.

Sensitivity of Receptor

14.2.18. The sensitivity of agricultural land is assessed according to its grade within the ALC, and is set out in **Table 14-2**. The sensitivity of the soil resource reflects its textural characteristics and its susceptibility to the effects of handling during construction and the reinstatement of land.

Table 14-2: Sensitivity criteria for land and soil resources

Sensitivity	Agricultural Land	Soil Resources
High	Grade 1	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams)
Medium	Grade 2 and Subgrade 3a	Silty loams, medium silty clay loams, medium clay loams and sandy clay loams
Low	Subgrade 3b and Grade 4	Soils with a high sand fraction (loamy sands, sandy loams and sandy silt loams)
Negligible	Grade 5	Sand

Magnitude of Change

14.2.19. The magnitude of change relates to the level at which the receptor will be impacted, using the duration of the impact, timing, scale, size and frequency to determine the magnitude of change to each receptor. Magnitude of change is evaluated in accordance with the definitions set out in **Table 14-3**. The magnitude of change on agricultural land has regard to existing statutory consultation procedures with Natural England for development involving the loss of agricultural land. The magnitude of change on the soil resource takes into account the continued ability of a soil to fulfil its primary ecosystem functions.

Table 14-3: Magnitude of Change –Land and Soil Resources

Magnitude	Agricultural Land	Soil Resources
Large	Development would directly lead to the loss of over 50 ha of agricultural land.	The soil displaced from development is unable to fulfil one or more of the primary soil functions.
Medium	Development would directly lead to the loss of between 20 ha and 50 ha of agricultural land.	The soil displaced from development mostly fulfils the primary soil functions off-site or has a reduced capacity to fulfil the primary functions on site.
Small	Development would directly lead to the loss of between 5 ha and 20 ha of agricultural land.	The soil displaced from development mostly fulfils the primary soil functions on-site.

Magnitude	Agricultural Land	Soil Resources
Negligible	Development would directly lead to the loss of less than 5 ha of agricultural land.	The soil retains its existing functions on-site.

Significance of Effect

14.2.20. The following terms have been used to define the significance of the effects identified and apply to both beneficial and adverse effects:

- **Major effect**: where the Proposed Development could be expected to have a substantial deterioration on agricultural land and soils within the application site;
- **Moderate effect**: where the Proposed Development could be expected to have a noticeable deterioration on agricultural land and soils within the application site;
- **Minor effect**: where the Proposed Development could be expected to result in a perceptible deterioration on agricultural land and soils within the application site; and
- **Negligible**: where no discernible improvement or deterioration is expected as a result of the Proposed Development on agricultural land and soils within the application site.

14.2.21. The significance of effect for each receptor is determined by combining the magnitude of change with the sensitivity of the receptor, as shown below in **Table 14-4**. As set out in **Chapter 5: Approach to EIA**, effects that are classified as **moderate or above** are considered to be **significant**. Effects classified as below **moderate** are considered to be **not significant**.

Table 14-4: Significance Matrix

Magnitude of change	Sensitivity			
	High	Medium	Low	Negligible
Large	Major	Major to Moderate	Moderate	Minor
Medium	Major to Moderate	Moderate	Moderate to Minor	Negligible
Small	Moderate	Moderate to Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

14.3. BASELINE CONDITIONS

14.3.1. The detailed soil and ALC survey has established that the main limitation to agricultural land quality at the application site is soil wetness and workability. The application site is limited mostly to Subgrade 3b with smaller areas of Subgrade 3a and Grade 4.

14.3.2. Soil profiles of Subgrade 3b quality comprise black, very dark greyish brown or dark grey medium clay loam or sandy clay loam topsoils. Most of the upper subsoil is clay, although sandy clay loam is also common. The lower subsoil is brown or reddish brown slowly permeable clay. These profiles are WC IV and are limited to Subgrade 3b by wetness and workability.

14.3.3. The areas of Subgrade 3a consist of black or very dark greyish brown medium clay loam, medium silty clay loam and sandy clay loam topsoils. The subsoils are permeable, with the upper subsoils comprising medium loamy textures (sandy clay loam or medium sandy loam). The lower subsoils

are clay. Profiles are WC III which, combined with the medium textured topsoils, results in a wetness and workability limitation to Subgrade 3a.

14.3.4. Some profiles of Grade 4 land are found to the north of the application site, adjacent to the M62. Profiles were waterlogged at the time of survey with topsoils of black or very dark greyish brown heavy clay loam and sandy clay loam. Both the upper and lower subsoil horizons consist of poorly structured and slowly permeable clay. These profiles are WC IV, which combined with heavy textured topsoils, results in a limitation to Grade 4.

14.3.5. The areas of the various ALC grades are given in **Table 14-5** and mapped on **Figure 14.2** (**Appendix 14**).

Table 14-5: Agricultural Land Classification of the Application Site

Grade/Subgrade	Area (ha)	% of the Application Site
3a	17.5	23
3b	47.2	63
4	4.8	6
Non-agricultural	5.7	8
Total	75.2	100

FUTURE BASELINE

14.3.6. The ALC is concerned with the long-term inherent physical characteristics of the application site and its soils. The current soil and baseline conditions are expected to remain unchanged for the foreseeable future. In the longer term, it is expected that climate change will affect the quality of the land and the functioning of soils on the application site, in the absence of the Proposed Development proceeding, although the potential effects on soils and ALC are complex. As such, the current conditions are considered to provide the most reasonable basis for assessment.

14.4. SENSITIVE RECEPTORS

14.4.1. The following sensitive receptors have been assessed:

- BMV agricultural land; and
- Soil resources, particularly topsoils.

14.4.2. The location of BMV Land in Subgrade 3a is shown in **Figure 14.2** (**Appendix 14**).

14.5. LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

LEGISLATIVE FRAMEWORK

14.5.1. There is no adopted legislation at European Union ('EU') or national level relating to soil protection. The EU Thematic Strategy for Soil Protection (Ref. 14.4) underlines the importance of the sustainable use of soil and the need to address the unsustainable increase of settlement areas over time ('land take'). The overarching aims are to prevent further soil degradation, preserve soil functions, and restore degraded soils to a standard appropriate to their intended use.

14.5.2. Directive 2014/52/EU (Ref 14.5), which amended Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, provides at paragraph (9) of the introductory text to the Directive that public and private projects should consider and limit their impact on the land, particularly in respect of land-take, and on soil, particularly in respect of organic matter, erosion, compaction and sealing (i.e. covering undisturbed natural soils with urban development and infrastructure construction).

14.5.3. The Town and Country Planning (Development Management Procedure) (England) Order 2010 (Ref 14.6) sets out the statutory consultation procedures whereby Natural England must consider development proposals which are not in accordance with a development plan and individually or cumulatively involve the loss of more than 20 hectares of best and most versatile agricultural land.

POLICY

14.5.4. The following national and local planning policies have been considered:

- National Planning Policy Framework: paragraphs 170 and 171 (Ref 14.7);
- St. Helens Local Plan Core Strategy (2012) (Ref 14.8);
- St. Helens Borough Local Plan 2020 – 2035 Submission Draft January 2019: Policy LPD01: Ensuring Quality Development (Ref 14.9).

14.5.5. In addition, this assessment has been prepared in accordance with the Government's National Planning Practice Guidance (Ref 14.10) which provides further guidance in respect of the quality of agricultural land.

GUIDANCE

14.5.6. The following guidance documents have been used during the preparation of this assessment:

- Soil Strategy for England – Safeguarding Our Soils (Ref 14.11) seeks to encourage the sustainable management of soil resources. The Strategy sets out Defra's vision that by 2030, all of England's soils will be managed sustainably and degradation threats will be tackled successfully in order to improve soil quality and safeguard the ability to provide essential services for future generations. The Strategy sets out priorities for the better protection of agricultural soils; enhancing stores of soil carbon; building the resilience of soils to a changing climate; preventing soil pollution; protecting soils during construction and development; and dealing with the legacy of contaminated land.
- The Natural Choice: securing the value of nature (Ref 14.12) repeats the aim of the Soil Strategy that, by 2030, England's soils will be managed sustainably and that degradation threats will be tackled successfully, in order to improve the quality of soils and to safeguard their ability to provide essential ecosystem services and functions for future generations. Existing action includes Environmental Stewardship and the cross-compliance conditions that claimants of direct payments under the Common Agricultural Policy must meet.
- Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref 14.1) is a practical guide to assist the construction industry to protect the soil resources with which it works and achieve good soil management at all stages of the construction process. It advises that the protection, use and movement of soils should be considered from the outset of a development project's planning, through its design and construction phases and on into future maintenance and operation. The sustainable use and management of soil resources during construction can help with the re-establishment of soil functions following their storage or

movement, including food production, habitat provision and support, and natural cycling of elements such as carbon and nitrogen.

14.6. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

CONSTRUCTION PHASE

Table 14-6 – Assessment of potential effects, additional mitigation, residual effects and monitoring during construction: BMV agricultural land

Sensitive receptor	BMV agricultural land
Potential effects	Permanent loss of 69.5 ha of agricultural land, of which 17.5 ha is BMV agricultural land in Subgrade 3a.
Additional mitigation	No additional mitigation available.
Residual effects and monitoring	The sensitivity of Subgrade 3a BMV agricultural land is medium, and the magnitude of change, following mitigation, is small. Therefore, there is likely to be a direct, permanent, long-term **minor to moderate adverse** residual effect on BMV agricultural land (**not significant**) following the implementation of mitigation measures.

Table 14-7 – Assessment of potential effects, additional mitigation, residual effects and monitoring during construction: Soil Resources

Sensitive receptor	Soil resources
Potential effects	Damage to, and loss of, topsoil by mixing or stockpiling with subsoil or other materials. Damage to soil structure from uncontrolled trafficking of land and soil by heavy machinery, especially wheeled machinery. Biodegradation of topsoil if compacted in storage or stockpiled when wet.
Additional mitigation	Preparation of a Soil Resources Plan to be delivered as part of the Construction Environmental Management Plan to include schedule of soil resources available on site, methods for stripping, storing and reusing soils, and uses of soil resources on site.
Residual effects and monitoring	The sensitivity of topsoil resources is medium, and the magnitude of change, following mitigation, is small. Therefore, there is likely to be a direct, temporary, medium-term **minor to moderate adverse** residual effect on soil resources (**not significant**) following the implementation of mitigation measures.

CUMULATIVE EFFECTS

14.6.1. There are no developments identified that will give rise to significant effects on land and soils.

14.7. OPPORTUNITIES FOR ENHANCEMENT

14.7.1. There are no opportunities for the enhancement of agricultural land and soil resources.

14.8. LIMITATIONS AND ASSUMPTIONS

14.8.1. No assumptions or limitations were encountered.

14.9. SUMMARY

14.9.1. **Table 14-8** provides a summary of the findings of the assessment.

Table 14-8 - Summary of land and soils effects

Receptor	Potential Effects	Additional Mitigation	Residual Effects	Monitoring
Construction Phase				
BMV agricultural land	Permanent loss of agricultural land and effect on food production	None available	**Minor to moderate adverse (not significant)** P / D / LT	None required
Soil resources, particularly topsoil	Loss or degradation of soil resources	Implementation of a Soil Resources Plan, as part of the Construction Environmental Management Plan	**Minor to moderate adverse (not significant)** T / D / MT	Condition of restored topsoils in green infrastructure

Key to table:

P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable

14.10. REFERENCES

- Ref. 14.1: Defra (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf, Accessed 29 November 19
- Ref. 14.2: Natural England (1988), Agricultural Land Classification for England and Wales: revised criteria for grading the quality of agricultural land [online]. Available at: http://publications.naturalengland.org.uk/publication/6257050620264448, Accessed 29 November 19
- Ref. 14.3: Natural England (2012), Technical Information Note (TIN) 049: Agricultural Land Classification: protecting the best and most versatile agricultural land [online]. Available at: http://publications.naturalengland.org.uk/publication/35012, Accessed 29 November 19
- Ref. 14.4: European Commission (2012), The implementation of the Soil Thematic Strategy and ongoing activities [online]. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0046&from=EN, Accessed 29 November 19
- Ref. 14.5: European Commission (2014), The assessment of the effects of certain public and private projects on the environment, Directive 2014/52/EU
- Ref. 14.6: The Town and Country Planning (Development Management Procedure) (England) Order 2010. Statutory Instrument 2010 No. 2184
- Ref. 14.7: Ministry of Housing, Communities & Local Government (2019), National Planning Policy Framework, paragraphs 170 – 171 [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf, Accessed 29 November 19
- Ref. 14.8: St. Helens Council (2012), St. Helens Local Plan Core Strategy [online]. Available at: https://www.sthelens.gov.uk/media/3385/sthelens-local-plan-core-strategy-october-2012.pdf, Accessed 29 November 19
- Ref. 14.9: St. Helens Council (2019), St. Helens Borough Local Plan 2020 – 2035 Submission Draft: Policy LPD01: Ensuring Quality Development [online]. Available at: https://www.sthelens.gov.uk/media/9525/local-plan-written-plan-web.pdf, Accessed 29 November 19
- Ref. 14.10: Ministry of Housing, Communities & Local Government (2019) Planning Policy Guidance [online]. Available at: https://www.gov.uk/government/collections/planning-practice-guidance, Accessed 29 November 19
- Ref. 14.11: Defra (2009), Safeguarding our Soils – A strategy for England [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69261/pb13297-soil-strategy-090910.pdf, Accessed 29 November 19
- Ref. 14.12: HM Government (2011), The Natural Choice: securing the value of nature [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf, Accessed 29 November 19