



Langtree PP & Panattoni

# Six 56 Warrington

**Environmental Statement** 

# Part 2 – Agricultural Land & Soils Technical Paper 13

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## Contents

Ι.	Introduction	5
2.	Documents Consulted	6
3.	Consultations	7
4.	Methodology and Approach	B
	Receptors	8 0 2 3
5.	Baseline Information	4
6.	Alternatives Considered	6
7.	Potential Environmental Effects	7
	Construction Phase	7 9
8.	Proposed Mitigation2	I
	Construction Phase	 
9.	Potential Residual Effects	2
	Potential Residual Effects – Construction Phase	2 3
10.	Additive Impacts (Cumulative Impacts and their Effects) 2	5
н.	Conclusion	7
12.	Appendices	9

### **Tables and Figures**

Table	131	Receptors
Table	12.1	Environmental Impacts
	13.2	
l able	13.3	Confidence Levels
Table	13.4	Significance of Effect- Construction Phase
Table	13.5	Significance of Effect- Operation Phase
Table	13.6	Residual Significance of Effect- Construction Phase
Table	13.7	Residual Significance of Effect- Operational Phase





Table 13.8 Cumulative Development

### **Appendices:**

Appendix 13.1 – Agricultural Land Classification Survey

4





### I. Introduction

- 1.1. Patrick Stephenson Ltd have prepared this Technical Paper on Agricultural Land & Soils on behalf of Langtree PP and Panattoni.
- 1.2. The Technical Paper identifies how the proposed development may impact environmental receptors including the loss of the 'best and most versatile' agricultural land on site and the surrounding area.
- 1.3. A detailed Agricultural Land Classification Survey of the agricultural land quality has been undertaken on the site, including examination of soils using 366 geo-tech borings by Dunhelm Geotechnical and Environmental and supplemented with hand held Dutch Auger borings to confirm soil boundaries. Secondary research was carried out via a desk top survey covering the whole site. The findings of these reports form the basis of the environmental assessment. This report is identifies in Section 2 of this Technical Paper.
- 1.4. Impacts from and to the proposed development have been considered.
- 1.5. Reference should also be made to Technical Paper I Geology and Ground Conditions, Technical Paper 3 Flood Risk and Drainage and Technical Paper 5 Ecology and Nature Conservation, given the site currently acts as a filter to attenuate and immobilize substances falling on it, regulates rain fall movement to surface water and ground water and supports ecological habitats and biodiversity. The assessments are in accordance with NPPF and the Warrington Local Plan Core Strategy. The method used to create this report was primary research in the form of a detailed on site Agricultural Land Classification survey following the guidelines and criteria as stated in the documents listed below.
  - "The Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" DEFRA 1988
  - "Specifications for Topsoil" British Standards Institute 2007.
  - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites 2009 (CCoP) (DEFRA)





## 2. Documents Consulted

- 2.1. The following documents were consulted as part of the assessment:
  - National Planning Policy Framework (NPPF) (2018)
  - Detailed Agricultural Land Classification Survey undertaken by Patrick Stephenson Ltd December 2017
  - The Provisional ALC Survey 1968 1972 undertaken by MAFF
  - Cundall, September 2017, Phase I Geotechnical and Geoenvironmental Assessment. Report reference 1015524.RPT.GL.002.
  - Cundall, September 2017, Baseline Geotechnical and Geoenvironmental Assessment, Report reference 1015524.RPT.GL.003.
  - Dunelm Geotechnical and Environmental Ltd, June 2018, Warrington Interchange Factual Report, report reference M518
  - Cundall, July 2018, Ground Investigation Report, reference 1015524.RPT.GL.004 Rev A.
  - Agricultural Bill, September 2018
  - Construction Code of Practice for the Sustainable Use of Soils on Construction Sites 2009 (CCoP) (DEFRA)
  - Nix Farm Management Pocketbook (2018)





# 3. Consultations

- 3.1. The following section identifies any relevant consultations and engagements that have been undertaken in preparation of the Technical Paper.
- 3.2. This Technical Paper is a consequence of the feedback received from the Council's Scoping Response, which requested that the sites agricultural land value should be examined, including the environmental impact of its loss should be assessed and scoped into the final ES.



# 4. Methodology and Approach

4.1. The ES Assessment has been undertaken in accordance with the requirements of the NPPF and assesses the loss of agricultural land resulting from the proposed development.

### **Receptors**

- 4.2. The receptors identified as susceptible to potential impact from the development is the impact and loss of agricultural land and soils, in particular the loss of the land described as the "best and most versatile" agricultural land.
- 4.3. The Agricultural Land Classification (ALC) System established by Defra classifies land into I to 5 Grades, 3 further subdivided into Grade 3a and 3b. Consistent with national guidance, Grades I, 2 and 3a represents the "best and most versatile" land' (NPPF, July 2018).
- 4.4. The ALC is based on the long term physical limitations of land for agricultural use. Factors affecting the Grade are climate, site and soil characteristics. The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, we well as use of land for grazing livestock.
- 4.5. Current estimates are the Grade 1 and 2 together form about 21% of all farmland in England.Subgrade 3a contains a similar amount.
- 4.6. Under current planning policy, both local farm businesses and soil are considered to be of 'medium' sensitivity in terms of the national interest. "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. The actual sensitivity category assigned will vary regionally. In areas where "best and most versatile" land is not uncommon, grade I and 2 land can be considered to be of high sensitivity. In areas of the country with little "best and most versatile" land, sub-grade 3a might be of high sensitivity and sub-grade 3b of moderate sensitivity.





- 4.7. There is no nationally agreed scheme for classifying the effects of development on agricultural or soils and the approach used in this chapter is based on experience developed over a number of years.
- 4.8. Severance and access issues are associated primarily with the ability of the farm unit to continue, during construction and after completion. The factors that can be assessed are the increase costs incurred due to the developments. These factors are usually increased fixed costs due to additional traveling costs or the inability to continue with a specific type of farming.
- 4.9. Economic impacts are a summary of land loss, severance and access issues, which combine to provide a total economic impact on the agricultural businesses affected.
- 4.10. Soil compaction is related to the damage inflicted during the construction phase of the development. The main factors are soil loss, due to erosion on compacted land, and physical damage to the structure.
- 4.11. Land drainage is installed by farmers to remove excess rain water and increase the number of working days. This also enables a wider range of crops to be grown. The loss of drainage due to construction can have an economic impact on farm performance.
- 4.12. Developing agricultural land either for industry or residential use, increases the number of people in the immediate vicinity of the farm. This leads to an increase incidence of trespass either accidental or intentional.
- 4.13. Noise and light pollution are further consequences of development in previously rural areas and can lead to changes in farming practices.
- 4.14. Pollution issues are often associated with new developments in rural areas, with litter often the primary threat. This can lead to grassland contamination with plastic wrapping being harvested and then fed to livestock.
- 4.15. The receptors are based on the loss of agricultural land, using the ALC, Grade 1, 2, 3a ('best and most versatile') and 3b land classification. The receptor is assigned a designation based on the sensitivity level and the loss of this Grade land will have.



Designation	Receptors				
	Land Loss	Economic	Access Severance	Soil Compaction	Drainage
International	None	None	None	None	None
National	Grade I	None	None	None	None
Regional	Loss of Grade 2 land	None	None	None	None
County	Loss of Grade 3a land	None	None	None	None
Borough / District	Loss of Grade 3a land	Loss of multiple farm Viability	None	Flooding	Flooding
Local/ Neighbourhood	Loss of Grade 3b land	Loss of Farm Viability	Loss of farm Viability	Loss of soil and change in quality	Cropping restrictions

Designation	Receptors					
	Dust	Pollution	Trespass	Noise	Light	
International	None	None	None	None	None	
National	None	None	None	None	None	
Regional	None	None	None	None	None	
County	None	None	None	None	None	
Borough / District	None	Land/ water contamination	None	None	None	
Local/ Neighborhood	Reduction in quality and quantity of produce	Increase in litter	Increase in Trespass	Change in farming practice	Change in farming practice	
	produce					

Table 13.1: Receptors

### **Environmental Impacts**

4.16. The magnitude of environmental impact 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 farm and are considered to be of high impact.

4.17. On this basis the following judgement-based classifications have been adopted to assess the impact on 'best and most versatile' land.

Magnitude	Environmental Impact				
	Land loss	Economic	Access/Severance	Soil Compaction	
Substantial	Loss more than 200 ha of the 'best and most versatile' land	Loss of multiple farm viability	Farm unable to function as a viable unit	Significant soil loss and flooding due to erosion	
High	The loss of between 80 ha and 200 ha of the 'best and most versatile' land	Loss of farm viability	Substantial changes required in farm practice to remain viable	Localised soil loss and flooding	
Moderate	The loss of between 20 ha and 80 ha of the 'best and most versatile' land	Major impact on farm income	Changes in farm practice required to maintain viability	Water ponding and soil structure damage	
Minor	The loss of between 5ha and 20 ha of the 'best and most versatile' land	Impact on farm income not endangering viability	No changes required to business but some financial impact	Soil Structure damage	
Negligible	The loss of some 'best and most versatile' land not likely to exceed 5 ha	Small fall in farm income	Little financial impact on the business	Localised soil structure damage	



The loss of no 'best	Little or no impact	No changes or	Soil structure
and most versatile'	on farm income	financial implications	unaffected
land			
	The loss of no 'best and most versatile' land	The loss of no 'best Little or no impact and most versatile' on farm income land	The loss of no 'best Little or no impact No changes or and most versatile' on farm income financial implications land

Magnitude	Drainage	Pollution/Dust	Trespass	Noise/ Light
Substantial	Total loss of land for agricultural use	Major contamination of agricultural land preventing cropping	Non-approved occupation of agricultural land	Significant and long- term exceedance of safety limits/guidelines preventing farming activities
High	Some loss of land for agricultural use and cropping limitations	Localised contamination of agricultural land impacting on cropping	Off road vehicles and unofficial footpaths	Increase in levels impacting on agricultural production
Moderate	No loss of land but some limitations on cropping	Localised contamination potentially affecting cropping	Accidental farm access by delivery vehicles or pedestrians	Occasional exceedances leading to periodic impacts on agricultural production
Minor	No limitations on cropping but occasional water issues	Localised contamination not affecting cropping	Occasional use of land for access	Infrequent exceedances leading to some small impacts on production
Negligible	Little or no impact on farming practices	Localised inconvenience due to contamination	Little or no change from existing position	Little or no change anticipated
Neutral	No effect	Little or no impact	No changes	No changes

Table 13.2: Environmental Impacts





### **Significance of Effects**

4.18. The significance of effect is determined using the significance matrix in Section 6 of the Environmental Statement Part One Report. This identifies the receptor level across the top of the matrix and the magnitude of environmental impact down the side and where they meet within the matrix identifies the significance of the effect.

### **Impact Prediction Confidence**

4.19. It is also of value to attribute a level of confidence by which the predicted impact has been assessed. The criteria for these definitions are set out below:

Confidence Level	Description
High	The predicted impact is either certain i.e. a direct impact, or believed to be very likely to occur, based on reliable information or previous experience.
Low	The predicted impact and its levels are best estimates, generally derived from first principles of relevant theory and experience of the assessor. More information may be needed to improve confidence levels.

Table 13.3: Confidence Levels



## 5. Baseline Information

- 5.1. This section sets out all the baseline data collected to assess the environmental impact of the loss of the 'best and most versatile' agricultural land.
- 5.2. All baseline data used within this assessment is referenced in Section 2 of this Technical Paper.
- 5.3. The Agricultural Land Classification Survey is included in Appendix 13.1
- 5.4. The Provisional ALC survey 1968-1972 carried out by MAFF showed the whole site to be Grade 3 or non-agricultural. It is acknowledged that this survey has limitations as boundaries and soil Grades are determined by one sample every 80 ha and there is no sub-grade for Grade 3 lands. There have been post-2008 surveys carried out on the area which shows the land split into Grade 3a and 3b.
- 5.5. The proposed development affects two farms, Bradley Hall Farm, Grapenhall Lane and Cliff Lane Farm, Cartlidge Lane. Bradley Hall Farm is a mixed farm and will have all the land at the farm absorbed by the proposal. Cliff Lane would only have a relatively small land take required with the realignment of the Cliff Lane roundabout. The field survey work was carried out in accordance with the method described in the "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (DEFRA 1988).
- 5.6. The following soil grades were found within the survey area. The detailed hand-held auger survey showed that all the top soils are either sandy clay loam or clay loam, and were between 250 and 400 mm. Sub-soils ranged from coarse sands, coarse sandy loams to clay loams. Small coal fragments and stones were throughout the study area. The best soils were adjacent to Grappenhall Lane and consisted of sandy clay loam over coarse sandy loams. The main grade limiting factors was soil depth and sub soil wetness. A summary of the soils are as follows

### Grade 3 3a Sub-grade

5.7. This accounts for approximately 24.65 ha (27%) of the total area and was typically defined by 350 mm of sandy clay loam to sandy loam top soil over sandy or coarse sands and gravels. The main restrictive aspects that limited these soils to 3a, were shallowness of topsoil and subsoil wetness.





### 5.8. **3b Sub-grade**

5.9. This was the largest proportion of the area covering approximately 61.16 ha (68%) of the area and the soils were sandy clay loam to clay loam topsoil up to 250-350 mm over coarse sandy clay loams. The limiting factors for these soils were the depth of the topsoil and the wetness. Gleyed subsoil's were present through the profiles indicating historic wetness issues.

### 5.10. Non-Agricultural

- 5.11. These areas were principally woodland, or ponds and accounted for approximately 4.21 ha (5%) of the area
- 5.12. The area surveyed would require approximately 25 ha of the "best and most versatile' land'. In local terms the loss has to be compared with alternative development sites in the area. This survey, in broad terms confirms early land classification assessments carried out since 2008. Detailed surveys carried out in the area would indicate that any development in the surrounding area is likely to require some of the 'best and most versatile' land.





# 6. Alternatives Considered

6.1. Following design evolution, it has been agreed to seek to re-use existing Top Soil on strategic landscape areas and bunds within the site. Top soil can take over 100 years to form a 25 mm deep layer and retaining the removed top soil is important in preserving this asset. Where environmental landscaping is required the use of removed top soil as molding and capping will ensure this resource is retained.



## 7. Potential Environmental Effects

7.1. The following are potential environmental impacts from the construction phase that have been assessed.

### **Construction Phase**

- 7.2. All the affected land will be lost to production on the commencement of construction. Historically Bradley Hall farm has been a dairy unit with some arable cropping and Cliff Lane Farm is primarily an arable farm. This includes some of the 'best and most versatile' land as described in sections 4 and 5. There will be approximately 25 ha (27%) of the 'best and most versatile' land lost compared to the 61 ha (68%) of grade 3b. The loss of land from a farm means the potential earning capacity is foregone on the area of land taken. There is some savings in variable costs namely seed, fertilizer, and sprays etc however the fixed costs remain the same. The overall impact is that the business will suffer a fall in returns which can lead to viability issues.
- 7.3. Severance and fragmentation occur where land is separated from the main farmstead and access is no longer via traditional routes. This can incur additional costs on the farm business and may eliminate some cropping options. In this instance, using severed land for grazing animals may not be possible and a subsequent impact on farm rotation and income must be assessed in terms of viability by the grower. This is then considered with the compensation procedures. In the proposed development Bradley Hall Farm will be required in its entirety and as such there will be no severance or access issues. Cliff Lane Farm has land taken adjacent to the existing Grapenhall Lane roundabout and there is no severance or access issues.
- 7.4. Large areas of land loss as proposed in the development will impact on farm viability, structure, and land use. The loss of land equates to a reduction in the earning capacity of the farm while not reducing overheads. Changes caused to farm structure caused by severance or changed access arrangements may result in forced changes of business practice. An example of this would be a Dairy herd which need grazing pasture in close proximity to the parlour if the proposed development prevents this then the viability of the business is likely to be affected.
- 7.5. Noise and dust pollution will impact on the business affecting the production and quality aspects. Initially noise changes will impact on livestock production levels, either via reduced





live weight gain or milk production. Dust will lead to lower quality grass due to contamination from dust particles and reduced light interception.

- 7.6. Natural drainage on agricultural land is enhanced with installed land drains designed to remove surplus water and maximize the land use time. Large scale land works on the site would lead to the disruption of these established drainage systems and can lead to issues with water logging and the additional loss of agricultural land. There is also the possibility of migration of soils into Bradley Brook. Drainage impacts are dealt with separately in the Geology and Ground Conditions ES Technical Paper 1.
- 7.7. Additional land requirement for soil storage and subsequent re-instatement with issues related to handling and associated vehicle compaction.
- 7.8. In geotechnical engineering, soil compaction is the process in which a stress applied to a soil causes densification as air is displaced from the pores between the soil grains. In agriculture this stress can be by machinery or by animal feet. In the process of developing a site the compaction is caused by machinery. The majority of soil compaction is caused by the first pass of a vehicle, which immediately makes the soil tighter and less able to absorb water. The denser soils created by the passing of vehicles means that water cannot penetrate easily. With lack of penetration the water ponds and will eventually flow with gravity creating rivulets and ponded areas. As the water moves it gathers soil particles and this is then described as soil erosion. Soil can take more than 100 years to make a depth of 25 mm and the loss of this valuable commodity is regarded as a threat to the global community (Morgan 2005). The movement of water also increases the potential risk of localized flooding. 25 mm of rainwater on 1 hectare produces 250,000 litres which in uncompacted soils will filter slowly through the soil and then either drain naturally into adjoining ditches, drains, streams etc.



## 8.

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level
Soil compaction	Local	Minor Negative	Minor Adverse	High
Land loss Grade 3a	County	Moderate Negative	Moderate Adverse	High
Land loss Grade 3b	Local	Moderate Negative	Minor Adverse	High
Noise and Dust	Local	Minor Negative	Minor Adverse	High
Drainage	Local	Minor Negative	Minor Adverse	High
Access and Severance	Local	Moderate Negative	Minor Adverse	High
Economic	Local	Substantial Negative	Moderate Adverse	High

Table 13.4: Significance of Effect - Construction Phase

### **Operational Phase**

- 8.1. The following are potential environmental impacts from the operational phase that have been assessed.
- 8.2. Trespass onto surrounding agricultural land.
- 8.3. The establishment of an industrial estate will mean the potential for noise pollution to be an issue for day and night time.
- 8.4. Increased threat of litter and rubbish contamination of remaining agricultural land.
- 8.5. Light pollution affecting animal production in the locality.



Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level
Trespass	Local	Minor Negative	Minor Adverse	High
Noise	Local	Minor Negative	Minor Adverse	High
Pollution	Local	Minor Negative	Minor Adverse	High
Light	Local	Minor Negative	Minor Adverse	High

Table 13.5: Significance of Effect - Operation Phase





## 9. Proposed Mitigation

9.1. This section outlines the proposed environmental impact mitigation measures in the construction and operational phase to address the adverse impacts and their effects identified in the assessment within Section 7.

### **Construction Phase**

- 9.2. The following details the mitigation that will be put in place during the construction phase.
- 9.3. Retention of stripped top soil and re-use in structural landscaping following CCoP guidelines.Use of vegetation and planting to help restore soil functionality over time.
- 9.4. Minimising soil compaction in landscaped areas and the use of traced runways to preserve soil integrity
- 9.5. Soil Management Plan to form part of CEMP.
- 9.6. Installation of pre-construction drains where applicable.
- 9.7. Wetting of soils to minimise dust contamination measures to be detailed in CEMP.

### **Operational Phase**

- 9.8. Suitable signage and fencing to prevent trespass and fly tipping.
- 9.9. Plan to use suitable lighting to minimise light pollution issues.





## 10. Potential Residual Effects

10.1. The following tables show the residual significance of the environmental effect from the loss of agricultural land post mitigation, both the construction and operational phases.

### **Potential Residual Effects – Construction Phase**

- 10.2. The overall impact of the proposal in terms of loss of agricultural land during the construction phase is highlighted below.
- 10.3. The loss of land is a finite implication and can only be offset by the purchase of more land which is ultimately limited by availability.

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Land loss 3a 'best and most versatile'	County	Moderate Negative	Moderate Adverse	High	None	Moderate Adverse
Land loss 3b	Local	Moderate Negative	Minor Adverse	High	None	Minor Adverse
Economic	Local	Substantial Negative	Moderate Adverse	High	None (land will be purchased)	Moderate Adverse
Soil compaction	Local	Minor Negative	Minor Adverse	High	Tracks and controlled traffic on landscaped areas. Soil used in reinstatement. Soil management of CEMP	Negligible
Noise and Dust	Local	Minor Negative	Minor Adverse	High	Dust prevention Soil management through CEMP.	Negligible



Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Drainage	Local	Minor Negative	Minor Adverse	High	Pre and post construction drainage. Re- using soil in landscaping and bunding. Soil management through CEMP	
Access and Severance	Local	Moderate Negative	Minor Adverse	High	Maintain field access as required Total land purchase negates need	Negligible

Table 13.6: Residual Significance of Effect - Construction Phase

10.4. The overall residual effects of the construction phase are assessed as minor adverse at County level for land loss based on 27% of the site being classified as Grade 3a. This is because land is a finite resource and as such cannot ultimately be replaced. The economic impact is mitigated by the purchase of the land this enables the grower to purchase new land and re-invest, if he so desires providing a minor benefit.

### **Potential Residual Effects – Operational Phase**

10.5. The overall impact of the proposal in terms of agricultural land during the operational phase is highlighted in the table below:

Nature of Impact	Receptor	Environmental Impact	Significance of Effect	Confidence Level	Mitigation	Residual Significance of Effect
Trespass	Local	Minor Negative	Minor Adverse	Low	Signage and fencing	Negligible
Noise	Local	Minor Negative	Minor Adverse	High	Noise mitigation measures	Minor Adverse
Pollution	Local	Minor Negative	Minor Adverse	Low	Signage and fencing	Negligible





Light Local Minor N	gative Minor Adverse	Low	Planned light strategy	Negligible
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Table 13.7: Residual Significance of Effect - Operational Phase

10.6. The residual effects from the operational phase are minor adverse for noise and negligible for trespass and pollution. The reason for the low confidence level in trespass, pollution, and light is the unknown factor of what industries will use the facility and the number of employees that will work there. The change to an industrial estate will mean the potential impacts of noise for 24 hours a day, however this can be controlled by appropriate noise mitigation imbedded into the scheme design.





# II. Additive Impacts (Cumulative Impacts and their Effects)

11.1. For the purposes of this ES we define the additive cumulative effects as:

### 'Those that result from additive impacts (cumulative) caused by other existing and/or approved projects together with the project itself

11.2. The developments that are likely to have a cumulative impact when considered with the proposed development have been scoped with the Local Authority and Key Consultees during the preparation of this ES (a full list is included within Section 9 of the ES Part One Report). The following table includes the agreed list of cumulative developments that have been assessed in respect of the agricultural land and soils Technical Paper. These are also shown geographically on the plan included at **Appendix II** of the ES Part One Report.

No.	Cumulative Development	Details	Status	Justification for Inclusion in Cumulative Assessment
		See Project Description in	Identified in the	Identified in the
		Section 2 of the ES Part One	Council's Preferred	Council's
		Report	Options for	Preferred Options
		The Warrington Garden	Development Local	for Development
		Suburb is identified as a	Plan (2017)	Local Plan and
	Garden Suburb	Preferred Development		included at the
	referenced in cumulative	Option which proposed		request of the
	development plan	around 6000 new homes,		Council formed
		schools and local and district		through the
		centre and parkland to be		Scoping Opinion
		delivered over the full 20 year		
		plan period.		

Table 13.8: Cumulative Development

11.3. The agricultural land north of the Application site identified by the Council in their Preferred Options for Development Local Plan (2017) as part of the Garden Suburb, comprising land to be used for housing, parkland, schools and local centre uses has been considered as cumulative development.





- 11.4. The effects of the proposed development on agricultural land and soils is site specific and contained within the Site boundary and impacts can be limited within the site through best practice construction methods. In the long term the development of the Garden Suburb to the north of Grappenhall Lane will see the loss of a larger area of agricultural land than the Application Site, if this was to be allocated, approved and constructed. There has been no detailed land classification carried out on all the land to the north. The Provisional ALC survey 1968-1972 carried out by MAFF showed the agricultural land occupied by the Garden Suburb consists mainly of categories 2 and 3. Areas which have been assessed show grades 2, 3a, and 3b. It is not possible to accurately state how much of the 'best and most versatile' land would be lost however, if we assume that the split of land grades is similar to the proposed development site, then the potential combined land loss of the two proposals could see a loss of around 800 ha of agricultural land. It would be reasonable to assume that more than 200 ha could be 'best and most versatile' land. Given this emerging plan is not at and advanced stage and yet to be adopted, there is no certainty that the Garden Suburb will be delivered.
- 11.5. In summary, in combination the developments using the receptors as outlined in para 4.2 this could result in a Regional Substantial Adverse impact on the 'best and most versatile' agricultural land.





### **12.** Conclusion

- 12.1. This Technical Chapter has assessed the environmental impacts and effects of the proposed development on agricultural land and soil. In reaching these conclusions, the Agricultural Land Classification Survey has been reviewed and given certainty with respect to the agricultural land quality and soils on Site and the designation given to these as receptors, therefore providing confidence in the land quality recorded and the likely effects derived.
- 12.2. This assessment has concluded that on a County level the loss of 25 ha (Table 13.1, 13.2) of the 'best and most versatile' land is minor adverse however, if this is assessed with the potential additive effect from Garden suburb proposal this increases the potential loss to more than 225 ha and the impact rise to Regionally substantial adverse.
- 12.3. The overall impacts on access, economic and severance are mitigated by the acquisition of land and the compensatory principles. This would induce a minor benefit.
- 12.4. Suitable mitigation measures on soil handling following CCoP guidelines and replanting with mixed vegetation reduces the impact to negligible.
- 12.5. Having limited access paths and metaled roadways will greatly reduce the reduce the soil compaction reduce these adverse factors to negligible.
- 12.6. Dust issues can be reduced with periodic ground wetting also reducing this adverse issue to negligible.
- 12.7. Post construction issues can be reduced with suitable mitigation for fencing, signage, noise and planned street lighting
- 12.8. The most serious economic impacts of the proposal are mitigated by the complete acquisition of the site in the proposed development. Proposed mitigation will also minimize other environmental impacts. The most significant factor being the loss of the 'best and most versatile' agricultural land, although this is only 27% of the total area of the site. 68% of the site is Grade 3b, therefore the loss of this land is only a Minor Adverse impact.





## **I3.** Reference List

- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites 2009 (CCoP) (DEFRA)
- Nix Farm Management Pocketbook (2018)
- Published Agricultural Land Classification (ALC) Grades for the area (Map101)
- Warrington area viewed on Google Maps (Tele Atlas 2012)
- Warrington Borough Council Local Plan Core Strategy (adopted July 2014)
- Natural England MAGIC web site (<u>http://magic.defra.gov.uk/website/magic</u>)
- Natural England Land Management Technical Support Team
- The Ordnance Survey 1:50,000 Landranger Map (Sheet 118)
- The British Geological Survey Digital Mapping
- Planning Policy Statement 7 (PPS7) Sustainable Development in Rural Areas.
- The National Planning Policy Framework (NPPF March 2012)
- MAFF's Guidelines for Agricultural Land Classification of England and Wales (Revised 1988)
- Metropolitan Weather Office data
- National statistics Farming Business survey 2017 Defra
- Cheshire East Local Plan
- Cundall, September 2017, Phase I Geotechnical and Geoenvironmental Assessment. Report reference 1015524.RPT.GL.002.
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- Dunelm Geotechnical and Environmental Ltd, June 2018, Warrington Interchange Factual Report, report reference M518
- Cundall, July 2018, Ground Investigation Report, reference 1015524.RPT.GL.004 Rev A.
- Agricultural Bill, September 2018
- Detailed ALC report Patrick Stephenson Limited December 201





# I4. Appendices

ES Part 2 – Agricultural Land & Soils Technical Paper – Six 56 Warrington





# Appendix 13.1 ALC SURVEY

ES Part 2 – ES Part 2 – Agricultural Land & Soils Technical Paper 13 – Six 56 Warrington





# ALC SURVEY

### **1.0 Introduction**

Patrick Stephenson Limited was approached by Spawforths on behalf of Langtree Properties to undertake a detailed Agricultural Land Classification Survey of the agricultural land quality at Grappenhall Lane Warrington, Cheshire ('the Site'). The envelope covers approximately 92.00 ha hectares and is located to the South of Grappenhall and Cliff Lane.

### I.I Method

The method used to create this report was primary research in the form of a detailed on site Agricultural Land Classification survey following the guidelines and criteria as stated in the documents listed below.

- "The Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" DEFRA 1988
- "Specifications for Topsoil" British Standards Institute 2007.

Survey work was carried out on 92.00 ha of grass and arable fields, outlined in the plans in Appendix 1. Soils were examined using 366 geo tech borings by Dunhelm Geotechnical and Environmental and supplemented with hand held Dutch Auger borings to confirm soil boundaries. Secondary research was carried out via a desk top survey covering the whole area.

### 1.2 Secondary Research

The desk top survey used the following sources:

- Published Agricultural Land Classification (ALC) Grades for the area (Map101)
- Warrington area viewed on Google Maps (Tele Atlas 2012)
- Warrington Borough Council Local Plan Core Strategy (adopted July 2014)
- Natural England MAGIC web site (<u>http://magic.defra.gov.uk/website/magic</u>)
- Natural England Land Management Technical Support Team
- The Ordnance Survey 1:50,000 Landranger Map (Sheet 118)
- The British Geological Survey Digital Mapping
- Planning Policy Statement 7 (PPS7) Sustainable Development in Rural Areas.
- The National Planning Policy Framework (NPPF March 2012)
- MAFF's Guidelines for Agricultural Land Classification of England and Wales (Revised 1988)
- Metropolitan Weather Office data
- National statistics Farming Business survey 2013 Defra
- Cheshire East Local Plan

The research was conducted to establish if the development of the proposed site would result in the loss of the 'Best and Most Versatile' agricultural land.





### 1.3 Planning Policy

Planning policy regarding agricultural land in England has continually evolved. Most recently, from guidance contained in Planning Policy Guidance Note 7 (PPG7), The Implementation of National Planning Policy Guidance in relation to the Diversification of Farm Businesses March 2001 (The Countryside Environmental Quality and Economic and Social Development) to the Planning Policy Statement 7 (PPS7) Sustainable Development in Rural Areas.

Guidance contained in PPS7 was recently superseded by the National Planning Policy Framework (NPPF March 2012). Whilst reflecting much of the earlier advice the NPPF states that,

> "Local planning authorities should take into account the economic and other benefits of the best and most versatile agricultural land. 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".

The NPPF does not specifically classify the best and most versatile agricultural land. Clarity is provided, however, in MAFF's *Guidelines for Agricultural Land Classification of England and Wales* (Revised 1988) which refers to the 'best and most versatile land' as Grades I to 3a. The East Cheshire local plan policy supports this in NE12

### 2.0 Location

The Site is located immediately to the South of Grappenhall and Cliff lane, adjacent to junction 20 A of the M6, centred on Bradley Hall Ordnance Survey (OS) grid reference SJ 657 845. The proposed development area covers approximately 92 ha . Appendix I shows the proposed development land location.

### 2.1 Site characteristics

The British Geological Survey Digital Mapping shows the whole study area of bedrock classified as Triassic Rock made from Sandstone, siltstone and mudstone bedrock formed 200-251 million years ago when the area was a hot desert. The superficial cover is Till Diamicton dominated by glacial deposits. Soilscape is described as slowly permeable seasonally wet, acid loam and clay based soils.

### 2.2 Climate and Relief

The Metropolitan Weather Office data for the Warrington area shows an annual average annual rainfall of 726 mm, and the accumulated temperature from the period January to June as 1550 c°. Soil moisture deficit is not likely to be an issue for the surveyed area: however soil wetness is likely to be a factor in limiting soil grade.

The land is gently sloping  $(3^{\circ}-5^{\circ})$  and the Global positioning data shows the land to be between 52m Howshoots Farm and 56 meters above sea level at Bradley Hall.





### 3.0 Land Use

There are 11 fields currently down to grass and 3 arable fields currently drilled with winter oil seed rape.

### 4.0 Land Quality

The quality of land is assessed using the ALC Scheme, established by Defra, which provides a method for assessing the quality of farmland so informed choices can be made about its future use within the planning system. It also helps underpin the principles of sustainable development.

### 4.1 Definitions and Grades

The ALC system classifies land into I through to 5 Grades, with Grade 3 further subdivided into Grade 3a and 3b, see Table I. Consistent with national guidance, Grades I, 2 and 3a represents the 'best and most versatile land'.

The 'best and most versatile land' is considered to be the most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grade I and 2 together form about 21% of all farmland in England; Sub-Grade 3a contains a similar amount.

The ALC system is used by Defra and others to give advice to local planning authorities, developers and the public if development is proposed on agricultural land or other 'Greenfield' sites that could grow crops. The General Development (Procedure) Order refers to the 'best and most versatile' land policy in requiring statutory consultations with Defra.

The ALC grading system is also used by commercial consultants to advise clients on land use and planning issues.

The classification is based on the long term physical limitations of land for agricultural use. Factors affecting the Grade are climate, site and soil characteristics.

- Climate: temperature and rainfall; aspects, exposure and frost risk
- Site: gradient, micro relief and flood risk
- Soil: texture, structure, depth and stoniness; chemical properties which cannot be corrected

The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is also concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC Grade.





### 4.2 Versatility and Yield

The physical limitations of land have four main effects on the way land is farmed.

These are:

- the range of crops which can be grown
- the level of yield
- the consistency of yield
- the cost of obtaining the crop

The ALC gives a high Grade to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which require lower inputs. These higher Grades (1, 2,3a) also take into account the ability to produce consistently high yields of a narrower range of crops.

Grade	Definition
Grade I – Excellent Quality Agricultural Land	Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.
Grade 2 – Very Good Quality Agricultural Land	Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the Grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.
Grade 3 – Good to Moderate Quality Agricultural Land	Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield.

### Table I- Definitions of Land Classification Grades





	Where more demanding crops are grown yields are generally lower or more variable than on land in Grades I and 2.
Sub-Grade 3a – Good Quality Agricultural Land	Land capable of consistently producing moderate to high yields from a narrow range of arable crops, especially cereals, or moderate yields from a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.
Sub-Grade 3b – Moderate Quality Agricultural Land	Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields from a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.
Grade 4 – Poor Quality Agricultural Land	Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops, the yields of which are variable. The Grade includes very droughty arable land.
Grade 5 – Very Poor Quality Agricultural Land	Land with very severe limitations, which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

### 5.0 Published Survey Information

The Provisional ALC survey 1968-1972 carried out by MAFF showed the whole site to be Grade 3 or non-agricultural. It is acknowledged that this survey has limitations as boundaries and soil Grades are determined by one sample every 80 ha and there is no sub-grade for Grade 3 lands. There have been post 2008 surveys carried out on the area which shows the land split into Grade 3a and 3b.

### 6.0 Survey Results

The field survey work was carried out in accordance with the method described in the "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (DEFRA 1988).





The following soil grades were found within the survey area. Appendix I has a description of the sample point profiles. Appendix 2 has a map showing the respective grades and details of auger boring points. Table 2 shows a summary of the ALC grades found on the site.

### Table 2 Summary of ALC Grades

Grade/Subgrade	Approximate Area Ha	Area %
3a	24.63	27.37
3b	61.16	67.95
Environmental	4.21	4.68
Total	90	100

The detailed hand held auger survey showed that all the top soils was either sandy clay loam or clay loam and were between 250 and 400 mm. Sub-soils ranged from coarse sands, coarse sandy loams to clay loams. Small coal fragments and stones were throughout the study area. The best soils were adjacent to Grappenhall Lane and consisted of sandy clay loam over coarse sandy loams. The main grade limiting factors was soil depth and sub soil wetness.

### Grade 3

### 3a Sub-grade

This accounts for approximately 27% of the total area and was typically defined by 350 mm of sandy clay loam to sandy loam top soil over sandy or coarse sands and gravels. The main restrictive aspects that limited these soils to 3a were shallowness of topsoil and subsoil wetness.

### 3b Sub-grade

This was the largest proportion of the area covering approximately 68% of the area and the soils were sandy clay loam to clay loam topsoil up to 250-350 mm over coarse sandy clay loams. The limiting factors for these soils were the depth of the topsoil and the wetness. Gleyed subsoil's were present through the profiles indicating historic wetness issues.

### Non Agricultural

These areas were principally woodland or ponds and accounted for approximately 5% of the area

### 7.0 Conclusion

The area surveyed would require approximately 25 ha of the 'best and most versatile land'. In local terms the loss has to be compared with alternative development sites in the locality.





This survey, in broad terms confirms early land classification assessments carried out since 2008. Detailed surveys carried out in the area would indicate that any development in the surrounding area is likely to require some of the best and most versatile land.

### **Survey Results**



Key

3a
3b
Non Agricultural





### Sampling Point Descriptions SOIL PROFILE SURVEY RESULTS

Soil Type Key:

- C- CLAY
- S- SAND
- L- LOAM

Hole	Grid ref	Texture	Depth mm	Stones	Wetness
					Class
I	N5321.402	SCL	0-250	Small	III
	W00139.561	SL	250+	stones	
				coal	
2	N5321.466	SCL	0-350	Small	III
	W00230.598	Coarse	350+	stones	
		SCL		coal	
		Gleying			
3	N5321.482	SCL	0-300	Small	III
	W00230.544	Coarse	300+	stones	
		SCL		coal	
		Gleying			





Hole	Grid ref	Texture	Depth mm	Stones	Wetness
					Class
4	N5321.361	SCL	0-300	Small	111
	W00230.501	SL	300+	stones	
				coal	
5	N5321.322	CL-SCL	0-300	Small	IV
	W00230.625	Coarse	300+	stones	
		SCL		coal	
		Gleying			
6	N5321.254	SL	0-300	Small	111
	W00230.702	Coarse	300+	stones	
		SL		coal	
7	N5321.208	SCL	0-300	Small	
	W00230.798	Coarse	300+	stones	
		CL			
		Gleying			
8	N5321.189	SCL	0-300	Small	11
	W00230.563	Coarse	300+	stones	
		SCL			
9	NN5321.134	SCL	0-300	Small	111
	W00230.757	Coarse S	300+	stones	
				coal	
10	N5321.230	CL/SCL	0-280	Small	lli
	W00230.979	Coarse	280+	stones	
		SL			
11	N5321.232	SCL	0-300	Small	III
	W00231.172	CL	300-400	stones	
		Coarse	400+	coal	
		SL			
12	N5321.326	SCL/SL	0-300	Small	111
	W00231.512	Coarse	300+	stones	
		SL		coal	
13	N5321.379	CL/SCL	0-300	Small	111
	W00231.289	SCL	300-400	stones	
		Coarse	400+	coal	
		SL			
14	N5321.402	SCL/SL	0-300	Few	111
	W00231.152	Coarse	300+	stones	
		SL			





Hole	Grid ref	Texture	Depth mm	Stones	Wetness
					Class
15	N5321.351	SCL	0-300	Small	III
	W00231.033	Coarse S	300+	stones	
		L		coal	
16	N5321.549	SCL	0-280	Very few	III
	W00231.056	Coarse	280+	stones	
		SL			
17	N5321.474	SCL/SL	0-300	Very few	III
	W00231.129	Coarse	300+	stones	
		SL			
18	N5321.454	SCL	0-320	Small	III
	W00231.264	Coarse	320+	stones	
		SL		coal	
19	N5321.433	SCL	0-350	Small	111
	W00231.395	Coarse	350+	stones	
		SL		coal	
20	N5321.418	SCL	0-300	Small	III
	W00231.575	Coarse	300+	stones	
		sand		coal	
21	N5321.490	SCL/SL	0-350	Small	III
	W00231.397	Coarse	350+	stones	
		SL		coal	

### **Dunhelm Geotechnical sample points**

