

# **High Speed Rail (Crewe to Manchester)**

## **Background information and data**

### **Agriculture, forestry and soils**

BID AG-002-0MA06

MA06: Hulseheath to Manchester Airport

Agriculture, forestry and soils baseline data

## **High Speed Rail (Crewe to Manchester)**

### **Background information and data**

#### **Agriculture, forestry and soils**

BID AG-002-0MA06

MA06: Hulseheath to Manchester Airport

Agriculture, forestry and soils baseline data



Department  
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

High Speed Two (HS2) Limited  
Two Snowhill  
Snow Hill Queensway  
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

Website: [www.hs2.org.uk](http://www.hs2.org.uk)

A report prepared for High Speed Two (HS2) Limited:

**ARUP+** ERM | FOSTER + PARTNERS | JACOBS  
RAMBOLL | TYPESA | COSTAIN

**MWJV**

Mott MacDonald | WSP

High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard, please contact High Speed Two (HS2) Limited.

© High Speed Two (HS2) Limited, 2022, except where otherwise stated.

Copyright in the typographical arrangement rests with High Speed Two (HS2) Limited.

This information is licensed under the Open Government Licence v3.0. To view this licence, visit [www.nationalarchives.gov.uk/doc/open-government-licence/version/3](http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3) **OGL** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk). Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.



Printed in Great Britain on paper containing 100% recycled fibre.

# Contents

<b>1</b>	<b>Introduction</b>	<b>2</b>
1.2	Soil data	2
<b>2</b>	<b>References</b>	<b>7</b>
<b>Tables</b>		
	Table 1: Baseline borehole survey records	3

# 1 Introduction

- 1.1.1 This report presents agriculture, forestry and soils baseline data for the Hulseheath to Manchester Airport area (MA06).
- 1.1.2 The following content comprises the individual soil data logs for the soil profiles observed as part of the survey undertaken of those parts of the study area for which published Agricultural Land Classification information was unavailable as referenced in the Environmental Statement (see Volume 5: Appendix AG-001-0MA06)<sup>1</sup>.

## 1.2 Soil data

- 1.2.1 The observed soil profile data are shown below in Table 1 on baseline borehole survey sheets. The location of each survey point is identified by a grid reference.

---

<sup>1</sup> High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, MA06 Hulseheath to Manchester Airport, Agriculture, forestry and soils assessment*. Volume 5: Appendix AG-001-0MA06. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement>.







**Background Information and Data**  
 BID AG-002-0MA06  
 Agriculture, forestry and soils  
 MA06: Hulsehealth to Manchester Airport  
 Agriculture, forestry and soils baseline data

Company	Date of soil survey	Land parcel reference	CFA farm ID	Unique borehole ID		Borehole ID (Auto generated on save)	Survey site name	Borehole location		Soil							Structure ped		Soil nutrients							Gley	Stone content % total	Stone content %>2cm	Stone content %>6cm	Stone lithology	Slowly permeable layer	Wetness class	Limiting factor (1)	Limiting factor (2)	Limiting factor (3)	ALC grade	Soil survey category
				Soil type (T, U, L)	Borehole no			Easting (X) coordinate	Northing (Y) coordinate	Lower depth of horizon (cm)	Texture	Colour (Munsell soil colour chart)	Consistency	Subsoil structure	Calcareous	Average annual rainfall	Soil handling class	Size	Shape	OM %	pH value	P mg/l	K mg/l	Mg mg/l	total N mg/l												
RAC	08/05/2019	L5417	MA06	T	6024	L5417_T_6024	MA06 L5417	372800	384800	28	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular	2.3	5.9	67.6	165	53.1		No	1	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6024	L5417_U_6024	MA06 L5417	372800	384800	78	LMS - Loamy medium sand	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular	1.1	5.9	69.6	161	44.7		No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6024	L5417_L1_6024	MA06 L5417	372800	384800	120	MS - Medium Sand	7.5YR6/6	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6025	L5417_T_6025	MA06 L5417	372900	384700	28	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	1	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6025	L5417_U_6025	MA06 L5417	372900	384700	60	MSL - Medium sandy loam	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6025	L5417_L1_6025	MA06 L5417	372900	384700	78	LMS - Loamy medium sand	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L2	6025	L5417_L2_6025	MA06 L5417	372900	384700	120	MS - Medium Sand	7.5YR6/6	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6026	L5417_T_6026	MA06 L5417	372950	384650	30	MSL - Medium sandy loam	7.5YR4/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular	4.2	5.9	44.2	136	44.4		No	1	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6026	L5417_U_6026	MA06 L5417	372950	384650	58	LMS - Loamy medium sand	7.5YR5/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular	1.3	6.1	25.6	104	32.5		No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6026	L5417_L1_6026	MA06 L5417	372950	384650	120	MS - Medium Sand	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6027	L5417_T_6027	MA06 L5417	372900	384800	30	MSL - Medium sandy loam	7.5YR4/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	1	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6027	L5417_U_6027	MA06 L5417	372900	384800	62	LMS - Loamy medium sand	7.5YR5/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6027	L5417_L1_6027	MA06 L5417	372900	384800	120	MS - Medium Sand	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6028	L5417_T_6028	MA06 L5417	373000	384600	30	MSL - Medium sandy loam	7.5YR4/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	1	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6028	L5417_U_6028	MA06 L5417	373000	384600	60	LMS - Loamy medium sand	7.5YR5/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6028	L5417_L1_6028	MA06 L5417	373000	384600	120	MS - Medium Sand	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	2	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6029	L5417_T_6029	MA06 L5417	373000	384800	28	MSL - Medium sandy loam	7.5YR4/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular	2.6	5.9	35.2	135	44.2		No	1	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6029	L5417_U_6029	MA06 L5417	373000	384800	55	LMS - Loamy medium sand	7.5YR5/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular	2	5.9	29.4	136	40.2		No	0	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6029	L5417_L1_6029	MA06 L5417	373000	384800	70	MS - Medium Sand	7.5YR5/3	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L2	6029	L5417_L2_6029	MA06 L5417	373000	384800	120	MS - Medium Sand	7.5Y6/3	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6030	L5417_T_6030	MA06 L5417	373100	384800	30	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6030	L5417_U_6030	MA06 L5417	373100	384800	60	MSL - Medium sandy loam	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6030	L5417_L1_6030	MA06 L5417	373100	384800	70	LFS - Loamy fine sand	7.5YR5/2	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L2	6030	L5417_L2_6030	MA06 L5417	373100	384800	120	FS - Fine Sand	7.5Y6/6	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6031	L5417_T_6031	MA06 L5417	373100	384900	32	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6031	L5417_U_6031	MA06 L5417	373100	384900	60	MSL - Medium sandy loam	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6031	L5417_L1_6031	MA06 L5417	373100	384900	70	SCL - Sandy clay loam	7.5YR5/2	Firm	Poor	No	700-1000mm	Medium resilience	Coarse	Subangular Blocky							Yes	0	0	0	Hard	Yes	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L2	6031	L5417_L2_6031	MA06 L5417	373100	384900	120	C - Clay	7.5Y6/2	Firm	Poor	No	700-1000mm	Low resilience	Coarse	Subangular Blocky							Yes	0	0	0	Hard	Yes	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6032	L5417_T_6032	MA06 L5417	373200	384900	32	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular	3.3	6.1	34.6	118	40.1		No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6032	L5417_U_6032	MA06 L5417	373200	384900	60	MSL - Medium sandy loam	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular	2.2	6.5	28.8	135	41.5		No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6032	L5417_L1_6032	MA06 L5417	373200	384900	120	SCL - Sandy clay loam	7.5YR5/2	Firm	Poor	No	700-1000mm	Medium resilience	Coarse	Subangular Blocky							Yes	0	0	0	Hard	Yes	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6033	L5417_T_6033	MA06 L5417	373300	384900	32	MSL - Medium sandy loam	7.5YR3/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	U	6033	L5417_U_6033	MA06 L5417	373300	384900	60	LMS - Loamy medium sand	7.5YR4/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L1	6033	L5417_L1_6033	MA06 L5417	373300	384900	80	MS - Medium Sand	7.5YR5/2	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class II	Droughtiness	Wetness	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	L2	6033	L5417_L2_6033	MA06 L5417	373300	384900	120	MS - Medium Sand	7.5Y5/6	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular																		



**Background Information and Data**  
 BID AG-002-0MA06  
 Agriculture, forestry and soils  
 MA06: Hulse Heath to Manchester Airport  
 Agriculture, forestry and soils baseline data

Company	Date of soil survey	Land parcel reference	CFA farm ID	Unique borehole ID		Borehole ID (Auto generated on save)	Survey site name	Borehole location			Soil						Structure ped		Soil nutrients						Gley	Stone content % total	Stone content %>2cm	Stone content %>6cm	Stone lithology	Slowly permeable layer	Wetness class	Limiting factor (1)	Limiting factor (2)	Limiting factor (3)	ALC grade	Soil survey category		
				Soil type (T, U, L)	Borehole no			Easting (X) coordinate	Northing (Y) coordinate	Lower depth of horizon (cm)	Texture	Colour (Munsell soil colour chart)	Consistency	Subsoil structure	Calcareous	Average annual rainfall	Soil handling class	Size	Shape	OM %	pH value	P mg/l	K mg/l	Mg mg/l													total N mg/l	
RAC	08/05/2019	L5417	MA06	L1	6046	L5417_L1_6046	MA06 L5417	373900	385200	120	C - Clay	7.5YR5/6	Firm	Poor	No	700-1000mm	Low resilience	Coarse	Subangular Blocky								Yes	0	0	0	Hard	Yes	Class III	Wetness	N/A	N/A	3a	Survey type 3
RAC	08/05/2019	L5417	MA06	T	6214	L5417_T_6214	MA06 L5417	373200	385000	30	MSL - Medium sandy loam	7.5YR4/3	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3	
RAC	08/05/2019	L5417	MA06	U	6214	L5417_U_6214	MA06 L5417	373200	385000	58	MSL - Medium sandy loam	7.5YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class III	Wetness	N/A	N/A	3a	Survey type 3	
RAC	08/05/2019	L5417	MA06	L1	6214	L5417_L1_6214	MA06 L5417	373200	385000	120	SCL - Sandy clay loam	7.5YR5/2	Firm	Poor	No	700-1000mm	Medium resilience	Coarse	Subangular Blocky							Yes	0	0	0	Hard	Yes	Class III	Wetness	N/A	N/A	3a	Survey type 3	
RAC	08/05/2019	L5417	MA06	T	6215	L5417_T_6215	MA06 L5417	373700	385100	30	MSL - Medium sandy loam	7.5YR3/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class III	Droughtiness	N/A	N/A	2	Survey type 3	
RAC	08/05/2019	L5417	MA06	U	6215	L5417_U_6215	MA06 L5417	373700	385100	40	MSL - Medium sandy loam	7.5YR5/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3	
RAC	08/05/2019	L5417	MA06	L1	6215	L5417_L1_6215	MA06 L5417	373700	385100	80	MS - Medium Sand	7.5YR6/2	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	0	0	0	Hard	No	Class I	Droughtiness	N/A	N/A	2	Survey type 3	
RAC	08/05/2019	L5417	MA06	L2	6215	L5417_L2_6215	MA06 L5417	373700	385100	120	MS - Medium Sand	7.5YR6/2	Friable	Poor	No	700-1000mm	High resilience	Fine	Granular							Yes	0	0	0	Hard	Yes	Class I	Droughtiness	N/A	N/A	2	Survey type 3	
RAC	08/05/2019	L5417	MA06	T	6216	L5417_T_6216	MA06 L5417	373700	385200	32	MSL - Medium sandy loam	10YR4/2	Friable	N/A	No	700-1000mm	High resilience	Fine	Granular							No	1	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	1	Survey type 3	
RAC	08/05/2019	L5417	MA06	U	6216	L5417_U_6216	MA06 L5417	373700	385200	72	LMS - Loamy medium sand	10YR5/3	Friable	Moderate	No	700-1000mm	High resilience	Fine	Granular							No	6	0	0	Hard	No	Class I	Droughtiness	Wetness	N/A	1	Survey type 3	
RAC	08/05/2019	L5417	MA06	L1	6216	L5417_L1_6216	MA06 L5417	373700	385200	120	SCL - Sandy clay loam	10YR6/2	Firm	Poor	No	700-1000mm	Medium resilience	Coarse	Subangular Blocky							Yes	6	0	0	Hard	Yes	Class I	Droughtiness	Wetness	N/A	1	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	T	6171	L43411_T_6171	MA06 L43411	380500	385700	23	HCL - Clay loam (Heavy)	10YR4/2	Firm	N/A	No	700-1000mm	Low resilience	Coarse	Subangular Blocky	6.2	7.9	45.2	99.9	71.4		No	0	0	0	Hard	No	Class IV	Wetness	N/A	N/A	4	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	U	6171	L43411_U_6171	MA06 L43411	380500	385700	48	C - Clay	10YR5/3	Firm	Poor	No	700-1000mm	Low resilience	Coarse	Subangular Blocky	2.8	7.9	20.6	73.7	54.1		Yes	0	0	0	Hard	Yes	Class IV	Wetness	N/A	N/A	4	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	L1	6171	L43411_L1_6171	MA06 L43411	380500	385700	120	C - Clay	10YR6/3	Very firm	Poor	No	700-1000mm	Low resilience	Very coarse	Angular Blocky							Yes	0	0	0	Hard	Yes	Class IV	Wetness	N/A	N/A	4	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	T	6173	L43411_T_6173	MA06 L43411	380400	385800	27	HCL - Clay loam (Heavy)	10YR4/2	Firm	N/A	No	700-1000mm	Low resilience	Coarse	Subangular Blocky							No	0	0	0	Hard	No	Class IV	Wetness	N/A	N/A	4	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	U	6173	L43411_U_6173	MA06 L43411	380400	385800	40	C - Clay	10YR5/3	Firm	Poor	No	700-1000mm	Low resilience	Coarse	Subangular Blocky							Yes	0	0	0	Hard	Yes	Class IV	Wetness	N/A	N/A	4	Survey type 3	
RAC	21/08/2019	L43411	07/11/2018	L1	6173	L43411_L1_6173	MA06 L43411	380400	385800	120	C - Clay	7.3YR5/6	Very firm	Poor	No	700-1000mm	Low resilience	Very coarse	Angular Blocky							Yes	0	0	0	Hard	Yes	Class IV	Wetness	N/A	N/A	4	Survey type 3	

## Background Information and Data

Agriculture, forestry and soils

BID AG-002-0MA06

MA06: Hulseheath to Manchester Airport

Agriculture, forestry and soils baseline data

## 2 References

High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, MA06 Hulseheath to Manchester Airport, Agriculture, forestry and soils assessment*.

Volume 5: Appendix AG-001-0MA06. Available online at:

<https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement>.