

Park Spring Wind Farm

Environmental Statement Volume 2: Appendices

July 2013

**PARSONS
BRINCKERHOFF**



Park Spring Wind Farm Environmental Statement

Volume 2: Appendices

Prepared for

EDF Energy Renewables Limited
Endeavour House
Victory Way
Doxford Business Park
Sunderland
SR3 3XL

Prepared by

Parsons Brinckerhoff
Amber Court
William Armstrong Drive
Newcastle upon Tyne
NE4 7YQ
0191 226 2000
www.pbworld.com

CONTENTS

- 5.1 Noise - Glossary of Terms**
 - 5.2 Noise – Calibration Certificates**
 - 5.3 Noise – Time History of Measured & Filtered Noise Levels**
 - 5.4 Noise – Verification of ISO9613 Calculation**
 - 5.5 Noise – REpower MM92 Sound Power Datasheet**
 - 5.6 Noise – Contour Plots**
 - 5.7 Noise - Assessment Locations**
 - 5.8 Noise – ETSU-R-97 Graphs**
 - 7.1 Cultural Heritage – Desk-based Assessment**
 - 7.2 Cultural Heritage – Photographs**
 - 8.1 Geology, Hydrogeology, Hydrology – Envirocheck Report**
 - 8.2 Geology, Hydrogeology, Hydrology – Coal Authority Report**
 - 8.3 Geology, Hydrogeology, Hydrology – Flood Risk Assessment**
 - 9.1 Ecology – Phase 1 Habitat Survey**
 - 9.2 Ecology – Badger Surveys**
 - 9.3 Ecology – Otter and Water Vole Surveys**
 - 9.4 Ecology – Bat Surveys**
 - 10.1 Ornithology – Vantage Point Data**
 - 10.2 Ornithology – Bird Collision Risk Modelling**
 - 13.1 Traffic & Transport – Swept Path Analysis**
 - 14.1 Technical Issues – Television Study**
-

5.1 NOISE – GLOSSARY OF TERMS

GLOSSARY OF TERMS

Ambient Noise	The total sound in a given situation at a given time, usually composed of sound from many sources near and far.
A – Weighting	A-weighting has been found to give the best correlation between perceived and actual loudness. Measurements to which this weighting has been applied are described as being in dB(A).
Attenuation	The reduction in level of a sound between the source and a receiver due to any combination of effects including; distance, atmospheric absorption, barriers, etc.
Background Noise Level, $L_{A90,T}$	The dB level exceeded for 90% of a given time interval, T.
Cut-In wind speed	The wind speed at which a turbine starts to produce power. This is usually at hub height wind speeds of around 4m/s.
Decibel (dB)	A logarithmic unit for measuring the relative loudness of noise, i.e. the sound level.
Environmental Noise	Noise governed by environmental legislation, and usually enforced by local authorities.
Hertz (Hz)	Unit of frequency, equal to one cycle per second. Frequency is related to the pitch of the sound.
Hub	The centre of a turbine rotor.
Hub Height Wind Speed	The wind speed at the hub height of the turbine.
$L_{Aeq,T}$	The equivalent continuous sound level. It provides an “average” sound level over a defined period of time (T). The L_{Aeq} is the main measurement used in making assessments according to Planning Policy Guidance 24.
$L_{A90, 10mins}$	The L_{A90} is the sound level exceeded 90 per cent of the time and it is used to define background noise, and windfarm noise. In the case of windfarm noise, the L_{A90} level is usually 2 dB less than the L_{Aeq} level.
L_{WA}	Sound power is the total sound energy radiated by a source per unit time. The subscript ‘A’ refers to an A-weighted sound power level.
Rated Power	The maximum steady output power of a wind turbine.
$V_{s,10}$ Standardised wind speed at 10m agl	A notional value of wind speed, taking into account the estimated hub height wind speed and the on-site wind shear. The wind speed is corrected to a height of 10m above ground level (agl) for consistency with BS EN 61400-11 wind turbine sound power level data and to allow an assessment in accordance with ETSU-R-97
Wind Shear	A descriptor used to correlate the change in wind speeds at varying heights above ground level.

5.2 NOISE – CALIBRATION CERTIFICATES



CERTIFICATE OF CALIBRATION

Date of Issue: 19 June 2012

Certificate Number: TCRT12/1069

Issued by:

ANV Measurement Systems

Beaufort Court

17 Roebuck Way

Milton Keynes MK5 8HL

Telephone +(44) 1908 642846 Fax +(44) 1908 642814

E-Mail: info@noise-and-vibration.co.uk

Web: www.noise-and-vibration.co.uk

Page 1 of 2 Pages

Approved Signatory

M. Breslin [] I. P. Jepson []

Approved Noise and Vibration Ltd trading as ANV Measurement Systems

Customer Parsons Brinckerhoff Ltd
Amber Court, William Armstrong
Newcastle Business Park
Newcastle upon Tyne
NE4 7YQ

Order No. 79268

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

Identification	Manufacturer	Instrument	Type	Serial No. / Version
	Rion	Sound Level Meter	NA-28	00380778
	Rion	Firmware		1.8
	Rion	Pre Amplifier	NH-23	70703
	Rion	Microphone	UC-59	00940
	Rion	Calibrator	NC-74	00830766
		Calibrator adaptor type if applicable		NC-74-002

Performance Class 1

Test Procedure TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002 Yes Approval Number 21.21/07.01

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received 15 June 2012

ANV Job No. TRAC12/06048

Date Calibrated 19 June 2012

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Previous Certificate	Dated	Certificate No.	Laboratory
	07 June 2010	CAL061006	ANV Measurement Systems

This certificate provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

 CERTIFICATE OF CALIBRATION		 0237
Date of Issue: 16 March 2011		Certificate Number: 4625
Issued by: Casella CEL Regent House, Wolsley Road Kempston, Bedford Bedfordshire, MK42 7JY Telephone +44 1234 844161 Fax +44 1234 841490 E-Mail: info@casellameasurement.com Web: casellameasurement.com		Page 1 of 3 Pages Approved Signatory  M. Coleman [☒] M. Holyoake [☐]
Casella CEL is a trading name of Casella Measurement, a division of BICAL INDUSTRIES LTD		

Customer	Parsons Brinckerhoff Ltd Queen Victoria House Radland Road Bristol BS8 8US			
Order No.	PB 75442			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	Manufacturer	Instrument	Type	Serial No. / Version
	RION	Sound Level Meter	NL-32	00451284
	RION	Firmware		N/A
	RION	Pre Amplifier	NH-21	15277
	RION	Microphone	UC-53A	311836
	RION	Calibrator	NC-74	34851861
Asset No.	N/A			
Test Procedure	Procedure T1 010 SLM Verification to the requirements of BS7580			
Our Log Number	R0450897-01			
Date Received	14 March 2011			
Date Calibrated	16 March 2011			
Previous Certificate	Dated	Certificate No.	Laboratory No.	
	N/A	N/A	N/A	

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.



CERTIFICATE OF CALIBRATION

Certificate Number CAL031222
Date of Issue 14/03/2012
Customer Parsons Brinckerhoff Ltd

Description of Instrument

Calibrator Rion NC-74 [Serial No. 34851881]
With 1/2" adaptor type NC-74-002 fitted.

Date of Calibration 14/03/2012.

Test Procedure ...\\Calibration Results Sheets\\Current Approved Results
Sheets\\NC-74 Master 60942 Approved Issue 4 (BK 2590976).xls
Test procedures in accordance with BS EN 60942: 2003 (Annex B)

Test Engineer Amrat Patel

APPROVED SIGNATORY
Les Jephson ☐ / Mike Breslin ☒

BEAUFORT COURT, 17 ROEBUCK WAY, MILTON KEYNES, MK5 8HL

☎ 01908 642846 ☎ 01908 642814

✉ info@noise-and-vibration.co.uk 🌐 www.noise-and-vibration.co.uk

ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND NO. 3549028. REGISTERED OFFICE AS ABOVE.

**CERTIFICATE OF CALIBRATION**

Certificate Number CAL041205
Date of Issue 04/04/2012
Customer Parsons Brinkerhoff Ltd
Description of Instrument Including Manufacturer / Supplier
Sound Level Meter Rion NL-52 Sound Level Meter [Serial No. 00320636] with
Rion UC-59 Microphone [Serial No. 03385] and
Rion NH-25 preamplifier [Serial No. 10644]
Fitted with a WS-10 foam windshield.
The instrument conforms to Class 1 of BS EN 61672-1:2003
The instrument was running Version 1.2 Firmware
Associated Calibrator B & K 4226 S/N 2590976.
Date of Calibration 04/04/2012
Test Procedure ..\..\Calibration Results Sheets\Current Approved Results
Sheets\NL-52 Master 61672 Approved Issue 1 (BK 2590976).xlsx
Test procedures in accordance with BS EN 61672-3:2006
NOTE: Test 10.1 (Self Generated Noise with Microphone Installed)
omitted.
Test Engineer Amrat Patel

APPROVED SIGNATORY 
Les Jephson ☐ / Mike Breslin ☒

BEAUFORT COURT, 17 ROEBUCK WAY, MILTON KEYNES, MK5 8HL

☎ 01908 642846 ☎ 01908 642814

✉ info@noise-and-vibration.co.uk 🌐 www.noise-and-vibration.co.uk

ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND No. 3549028. REGISTERED OFFICE AS ABOVE.

NL-52 Certificate of Calibration

Issue: 1

PAGE 1 OF 3



CERTIFICATE OF CALIBRATION

Certificate Number CAL041206
Date of Issue 10/04/2012
Customer Parsons Brinkerhoff Ltd
Description of Instrument Including Manufacturer / Supplier
Sound Level Meter Rion NL-52 Sound Level Meter [Serial No. 00320637] with
Rion UC-59 Microphone [Serial No. 03386] and
Rion NH-25 preamplifier [Serial No. 10645]
Fitted with a WS-10 foam windshield.
The instrument conforms to Class 1 of BS EN 61672-1:2003
The instrument was running Version 1.2 Firmware
Associated Calibrator B & K 4226 S/N 2590976.
Date of Calibration 10/04/2012
Test Procedure ...\\Calibration Results Sheets\\Current Approved Results
Sheets\\NL-52 Master 61672 Approved Issue 1 (BK 2590976).xlsx
Test procedures in accordance with BS EN 61672-3:2006
NOTE: Test 10.1 (Self Generated Noise with Microphone Installed)
omitted.
Test Engineer Amrat Patel

APPROVED SIGNATORY

Les Jephson ☐ / Mike Breslin ☒

BEAUFORT COURT, 17 ROEBUCK WAY, MILTON KEYNES, MK5 8HL

☎ 01908 642846 ☎ 01908 642814

✉ info@noise-and-vibration.co.uk 🌐 www.noise-and-vibration.co.uk

ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND No. 3543026. REGISTERED OFFICE AS ABOVE.

**CERTIFICATE OF CALIBRATION**

Certificate Number CAL041207
Date of Issue 10/04/2012
Customer Parsons Brinkerhoff Ltd
Description of Instrument Including Manufacturer / Supplier
Sound Level Meter Rion NL-52 Sound Level Meter [Serial No. 00320638] with
Rion UC-59 Microphone [Serial No. 03387] and
Rion NH-25 preamplifier [Serial No. 10648]
Fitted with a WS-10 foam windshield.
The instrument conforms to Class 1 of BS EN 61672-1:2003
The instrument was running Version 1.2 Firmware
Associated Calibrator B & K 4226 S/N 2590976.
Date of Calibration 10/04/2012
Test Procedure ...\\Calibration Results Sheets\\Current Approved Results
Sheets\\NL-52 Master 61672 Approved Issue 1 (BK 2590976).xlsx
Test procedures in accordance with BS EN 61672-3:2006
NOTE: Test 10.1 (Self Generated Noise with Microphone Installed)
omitted.
Test Engineer Amrat Patel

APPROVED SIGNATORY

Les Jephson ☐ / Mike Breslin ☒

BEAUFORT COURT, 17 ROEBUCK WAY, MILTON KEYNES, MK5 8HL

☎ 01908 642846 ☎ 01908 642814

✉ info@noise-and-vibration.co.uk 🌐 www.noise-and-vibration.co.uk

ACOUSTICS NOISE AND VIBRATION LIMITED. REGISTERED IN ENGLAND NO. 3549028. REGISTERED OFFICE AS ABOVE.

NL-52 Certificate of Calibration

Issue: 1

PAGE 1 OF 3

Certificate of Conformance

Part No: 1038090-D1
Inst/Prod: 0.2 TIPPING BUCKET + RLS W/H
Serial No: 1001186
Ref Number: 380682M

Calibration Method:-

The instruments indicated values for the measurement parameters have been validated using tested traceable equipment which has been calibrated with traceability to National and International references.

Ambient Temperature: 22°C
Ambient Humidity: 26%
Ambient Air Pressure: 1024 mbar

Caseilla Measurement

Engineer: B. Gascogne

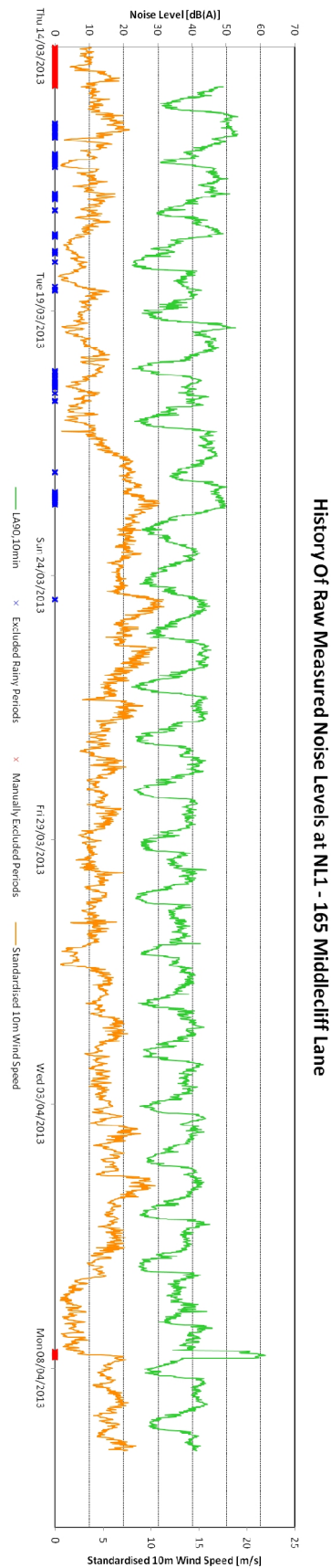
Sig



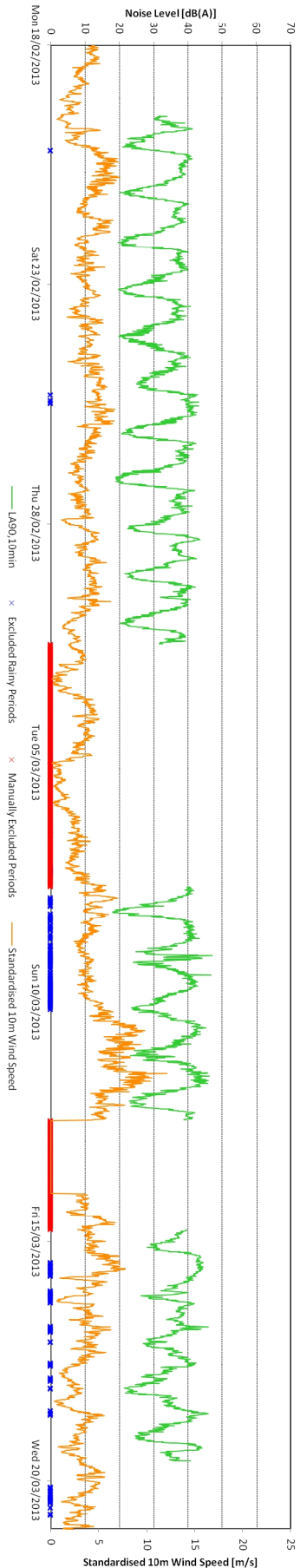
Calibration Date 11/03/10

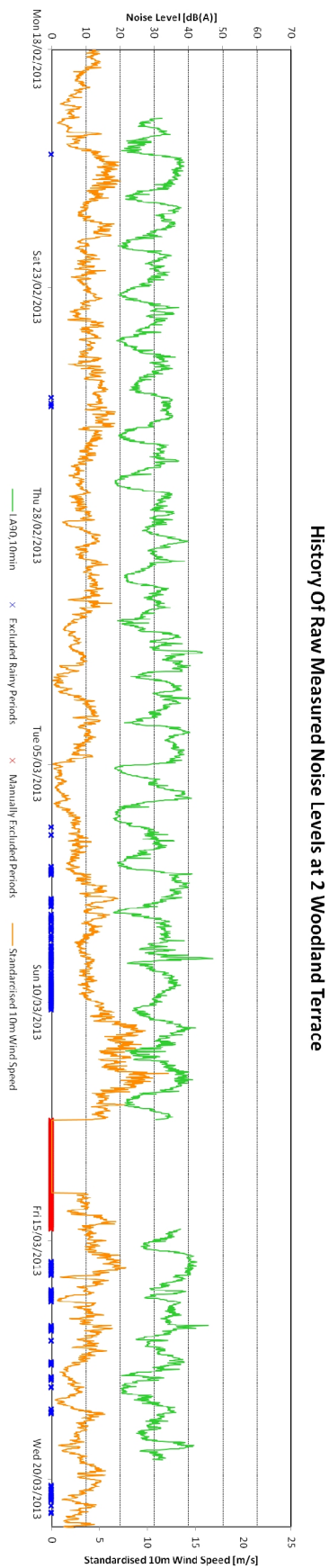
Caseilla Measurement, Regent House, Walsley Road, Kempston, Bedford, MK42 7JY
Phone: +44(0)1234 844100. FAX: +44(0) 1234 841490 E-mail: info@caseilla.co.uk
Web: www.caseilla.co.uk

5.3 NOISE – TIME HISTORY OF MEASURED & FILTERED NOISE LEVELS

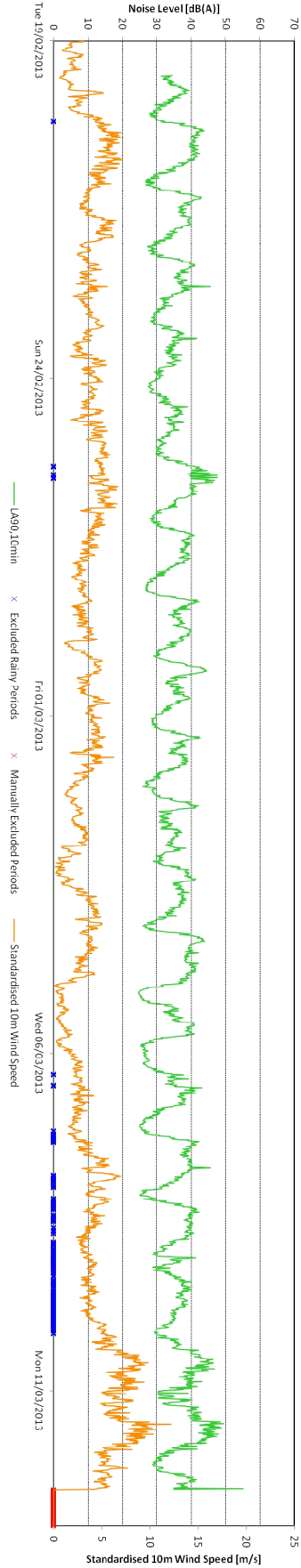


History Of Raw Measured Noise Levels at 19 Pear Tree Close





History Of Raw Measured Noise Levels at 2 Crook House Court



5.4 NOISE – VERIFICATION OF ISO9613 CALCULATION

L3 - 1 Crabtree Drive

X:	442640
Y:	407023
Z:	4
Ground:	0.5

	Turbine	X	Y	Z	Dist.	Octave Band Centre Frequency	Sound Power, dB	Adiv	Agr	Abar	Aatm	L _{Aeq}	L _{A90}	Overall L _{A90}
	1	441724	407313	80	964	63	111.8	70.68	-3	0	0.12	44	42	30.3
						125	108.8	70.68	0.45	0	0.4	37.27	35.27	
						250	106.2	70.68	-0.48	0	1.01	34.99	32.99	
						500	102.4	70.68	-1.5	0	1.86	31.36	29.36	
						1000	98.8	70.68	-1.5	0	3.53	26.09	24.09	
						2000	91.9	70.68	-1.5	0	9.32	13.4	11.4	
						4000	83.6	70.68	-1.5	0	31.6	-17.18	-19.18	
						8000	75.3	70.68	-1.5	0	112.7	-106.58	-108.58	
	2	441850	406924	80	800	63	111.8	69.06	-3	0	0.1	45.64	43.64	32.3
						125	108.8	69.06	0.39	0	0.33	39.02	37.02	
						250	106.2	69.06	-0.48	0	0.83	36.79	34.79	
						500	102.4	69.06	-1.5	0	1.54	33.3	31.3	
						1000	98.8	69.06	-1.5	0	2.93	28.31	26.31	
						2000	91.9	69.06	-1.5	0	7.73	16.61	14.61	
						4000	83.6	69.06	-1.5	0	26.21	-10.17	-12.17	
						8000	75.3	69.06	-1.5	0	93.48	-85.74	-87.74	
	3	441974	406668	80	759	63	111.8	68.61	-3	0	0.09	46.1	44.1	32.9
						125	108.8	68.61	0.37	0	0.31	39.51	37.51	
						250	106.2	68.61	-0.48	0	0.79	37.28	35.28	
						500	102.4	68.61	-1.5	0	1.46	33.83	31.83	
						1000	98.8	68.61	-1.5	0	2.78	28.91	26.91	
						2000	91.9	68.61	-1.5	0	7.34	17.45	15.45	
						4000	83.6	68.61	-1.5	0	24.88	-8.39	-10.39	
						8000	75.3	68.61	-1.5	0	88.73	-80.54	-82.54	

Overall Corrected L_{A90} **36.8**

5.5 NOISE – REPOWER MM92 SOUND POWER DATASHEET

3 Guaranteed electrical power curve und guaranteed sound power level³

The sound power level guaranteed by REpower includes a measurement uncertainty of approx. 1 dB(A). REpower warrants that there is no tonal audibility > 0 dB.

3.1 Sound power level according to IEC for wind speed at hub height

Wind speed v [m/s]	Power P [kW] ⁴	Sound Power Level L _{WA} [dB(A)] ⁵	Thrust coefficient ct [-]	Power coefficient cp [-]
3.0	20	--	0.98	0.180
4.0	94	--	0.87	0.357
5.0	205	--	0.79	0.398
6.0	391	100.4	0.79	0.440
7.0	645	101.8	0.79	0.457
8.0	979	103.3	0.79	0.465
9.0	1375	104.2	0.74	0.458
10.0	1795	104.2	0.69	0.436
11.0	2000	104.2	0.54	0.365
12.0	2040	104.2	0.39	0.287
13.0	2050	104.2	0.29	0.227
14.0	2050	104.2	0.23	0.182
15.0	2050	104.2	0.19	0.148
16.0	2050	104.2	0.15	0.122
17.0	2050	104.2	0.13	0.101
18.0	2050	104.2	0.11	0.085
19.0	2050	104.2	0.09	0.073
20.0	2050	104.2	0.08	0.062
21.0	2050	104.2	0.07	0.054
22.0	2050	104.2	0.06	0.047
23.0	2050	104.2	0.06	0.041
24.0	2050	104.2	0.05	0.036

³ Valid for unrestricted operation only. During sound reduced operation different power and sound levels are effective.

⁴ Guaranteed on 690 V (for 50 Hz) / 575 V (for 60Hz) voltage level

⁵ Sound power level at hub height

3.2 Sound power level according to IEC for wind speed at 10 m height

HH	v_{10} [m/s]	4.0	5.0	6.0	7.0	8.0	9.0	10.0
68.0 – 68.5 m	L_{WA}^5 [dB(A)]	95.7	101.2	103.1	104.2	104.2	104.2	104.2
78.0 – 80.0 m	L_{WA}^5 [dB(A)]	96.0	101.4	103.3	104.2	104.2	104.2	104.2
98.0 – 100.0 m	L_{WA}^5 [dB(A)]	96.4	101.7	103.4	104.2	104.2	104.2	104.2

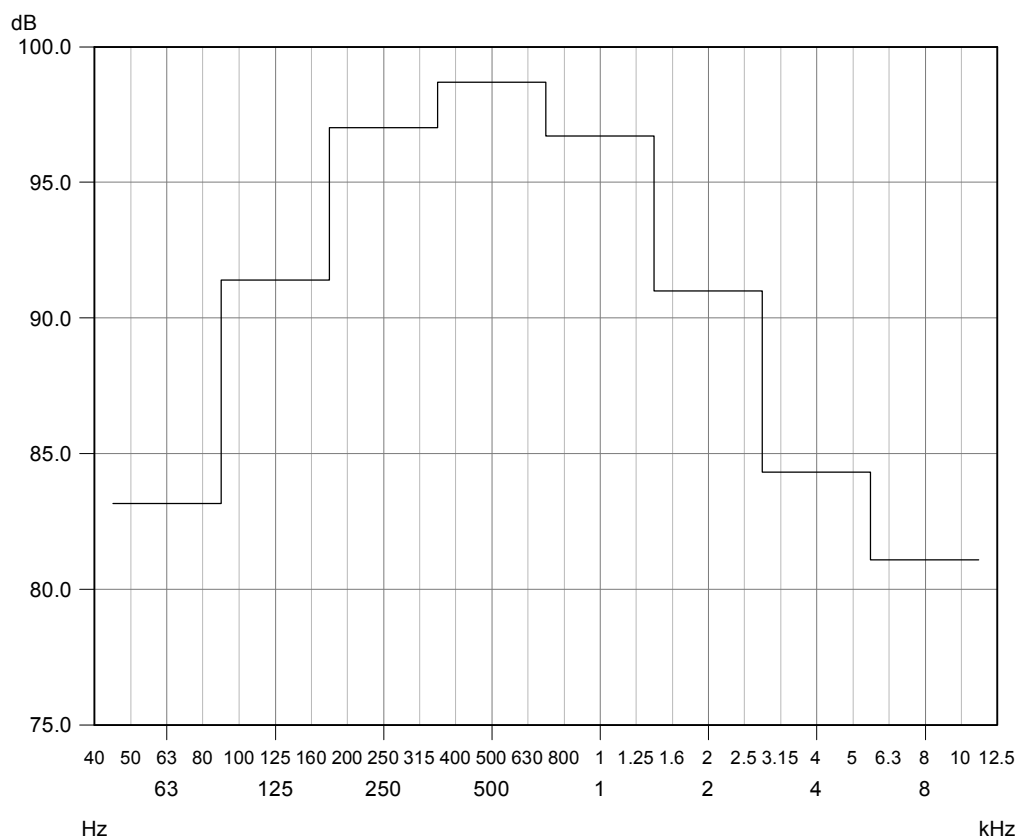
All sound power levels above are based on wind speeds of v_{10} at 10 m height. The data of the noise level are based on the requirements of the IEC 61400-11: 2002 + A1: 2006.

The calculation of the wind speed in 10 m height is based on a roughness length of 0.05m.

3.3 Sound power level according to FGW Guideline at 95% of rated power

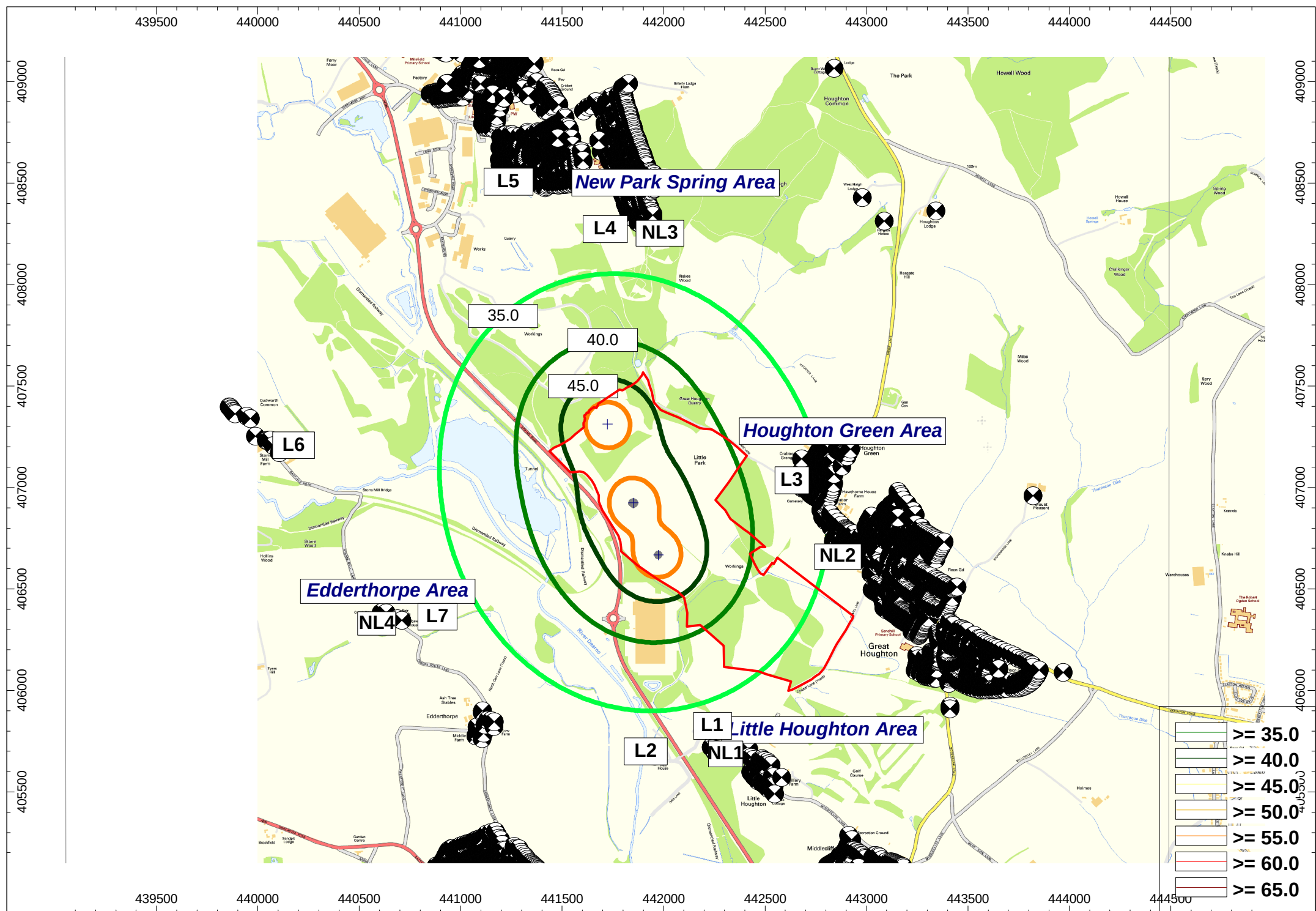
The sound power level measured according to the “Technische Richtlinie für Windenergieanlagen Teil 1: Rev. 18 der FGW” at 95 % of the rated power is independent of the hub height:

$$L_{WA, 95\%} = 104.2 \text{ dB(A)}$$



Octave sound power level at 8 m/s, sum level = 103,1 dB			
Middle frequency [Hz]	Sound power level [dB]	Middle frequency [Hz]	Sound power level [dB]
63	83,15	1000	96,73
125	91,41	2000	91,01
250	97,03	4000	84,30
500	98,70	8000	81,09

5.6 NOISE – CONTOUR PLOTS

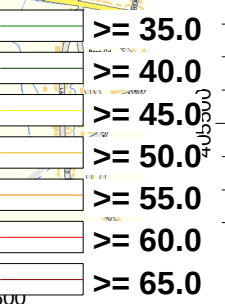
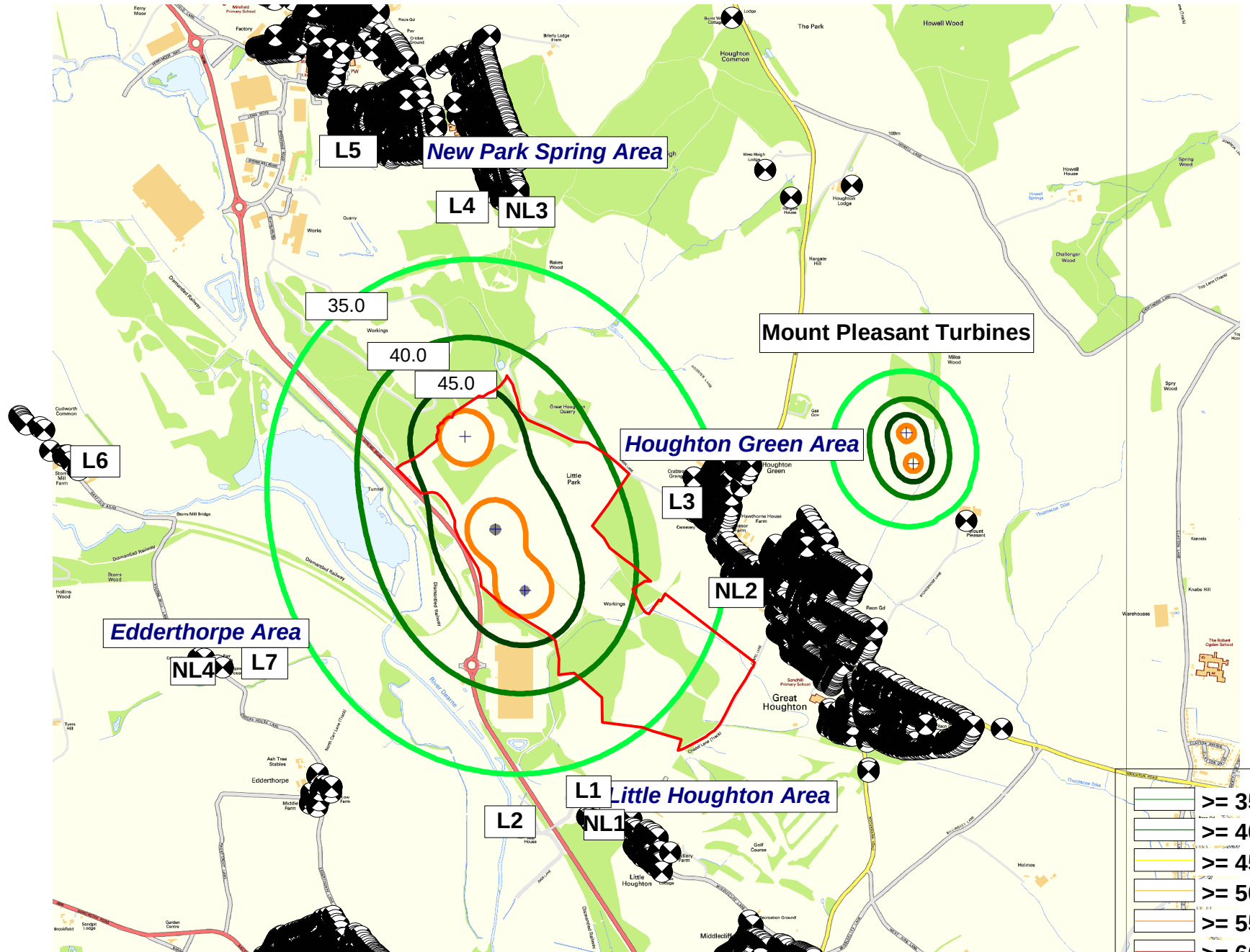


439500 440000 440500 441000 441500 442000 442500 443000 443500 444000 444500

409000
408500
408000
407500
407000
406500
406000
405500

439500 440000 440500 441000 441500 442000 442500 443000 443500 444000 444500

409000
408500
408000
407500
407000
406500
406000
405500

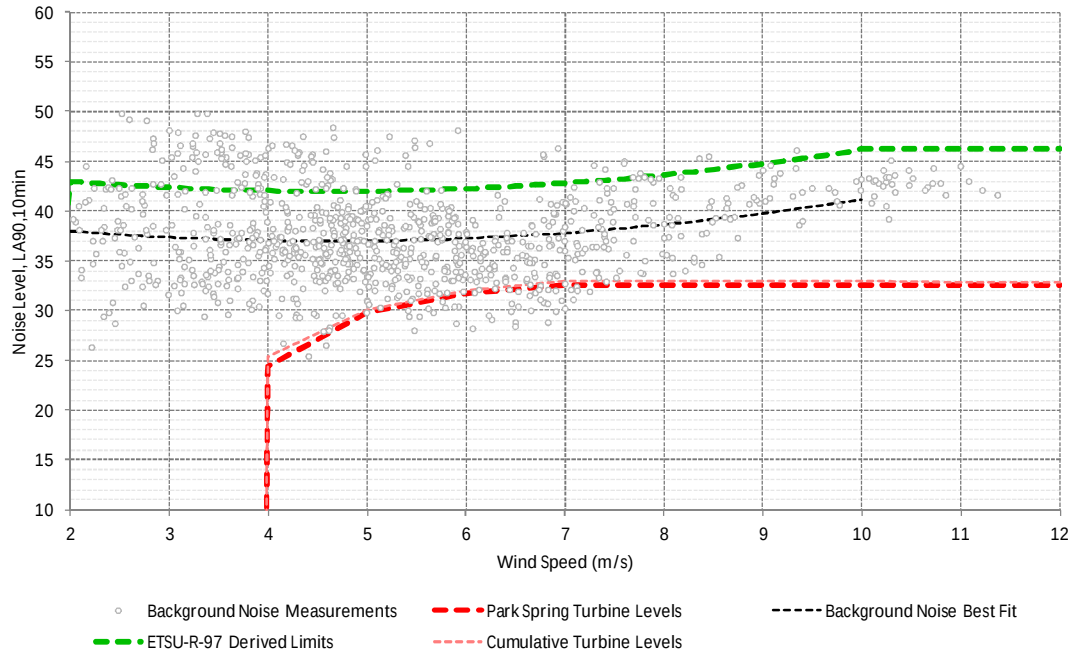


5.7 NOISE – ASSESSMENT LOCATIONS

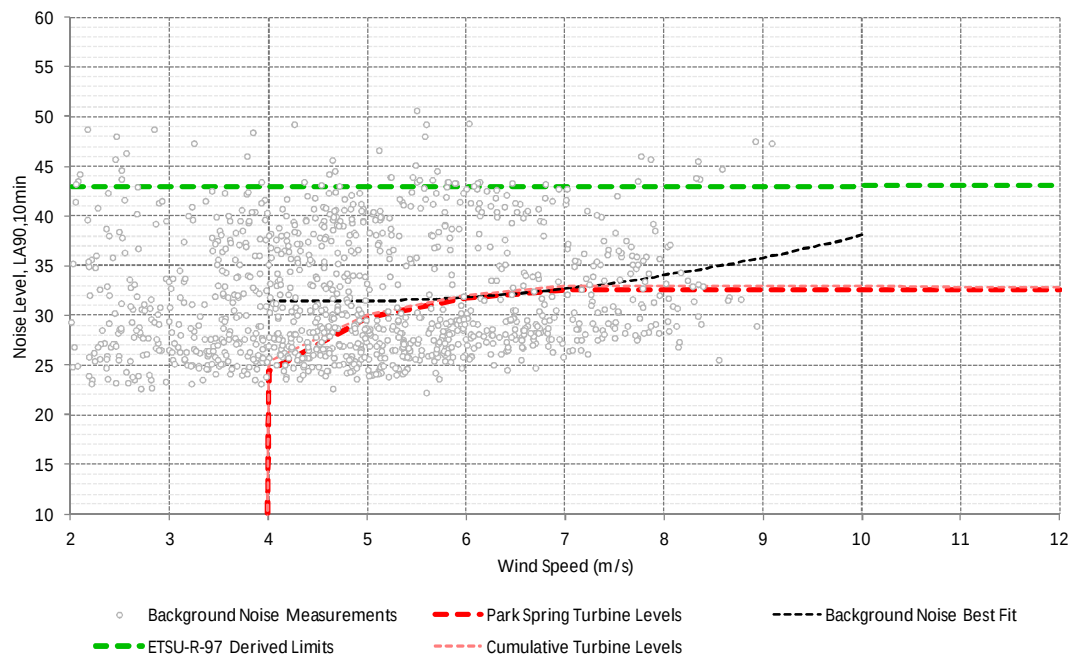


5.8 NOISE – ETSU-R-97 GRAPHS

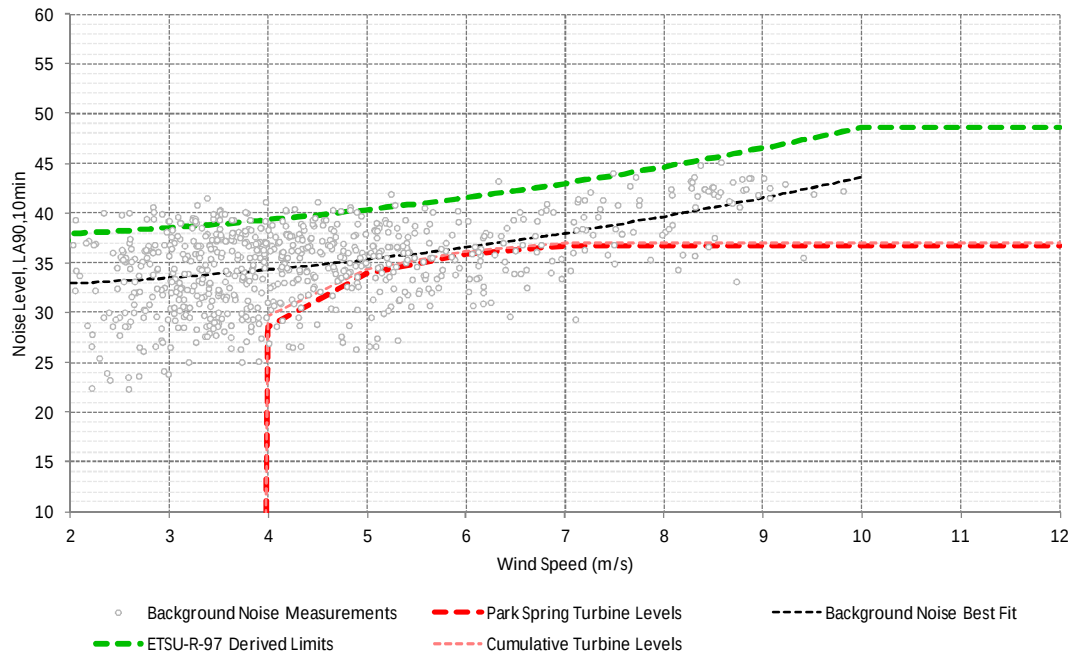
L1 - 169 Middlecliff Lane - Amenity Hours



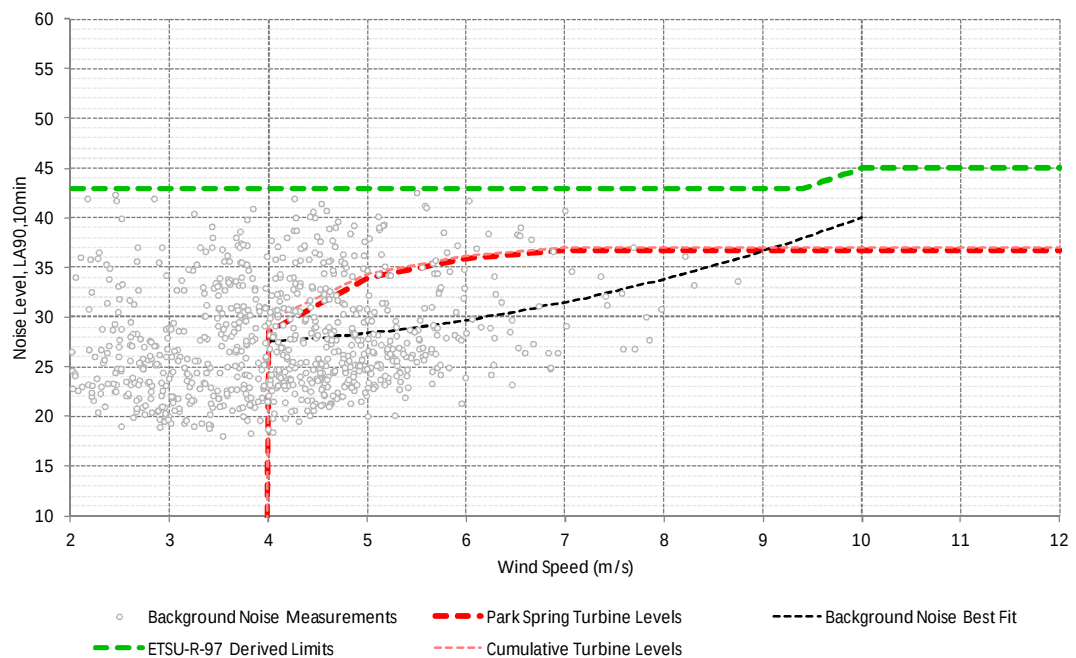
L1 - 169 Middlecliff Lane - Night Hours



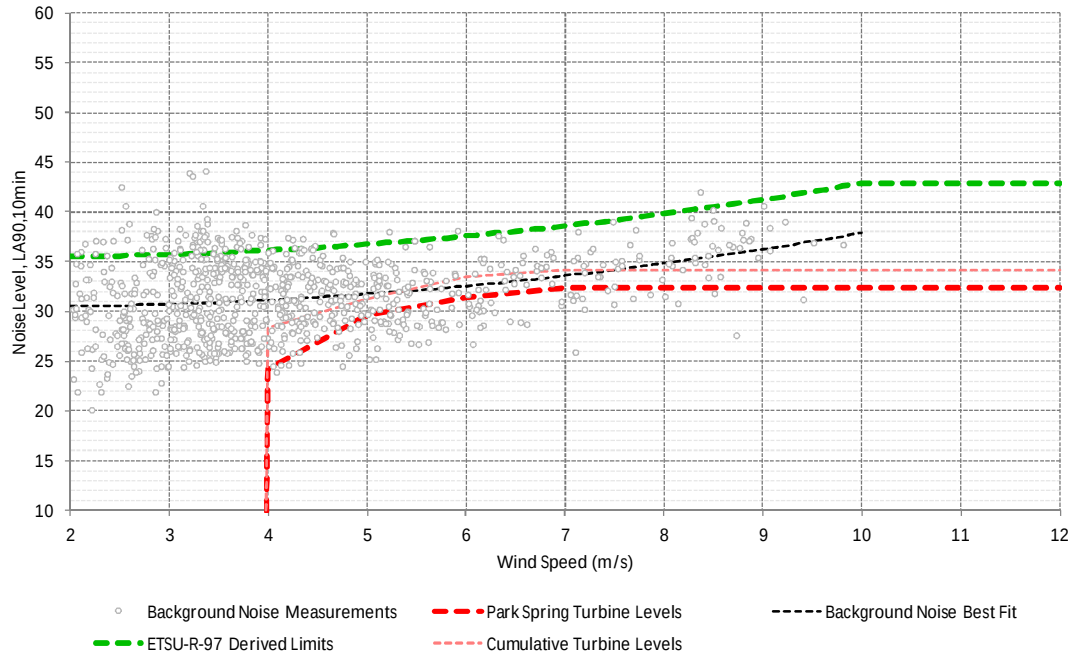
L3 -1 Crabtree Drive - Amenity Hours



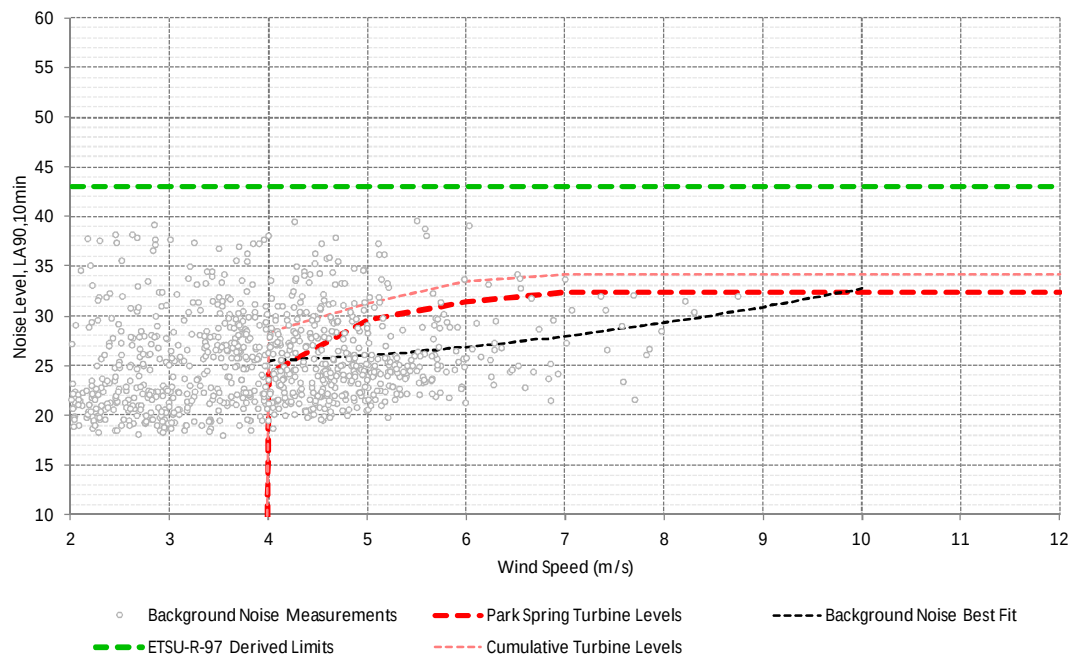
L3 -1 Crabtree Drive - Night Hours



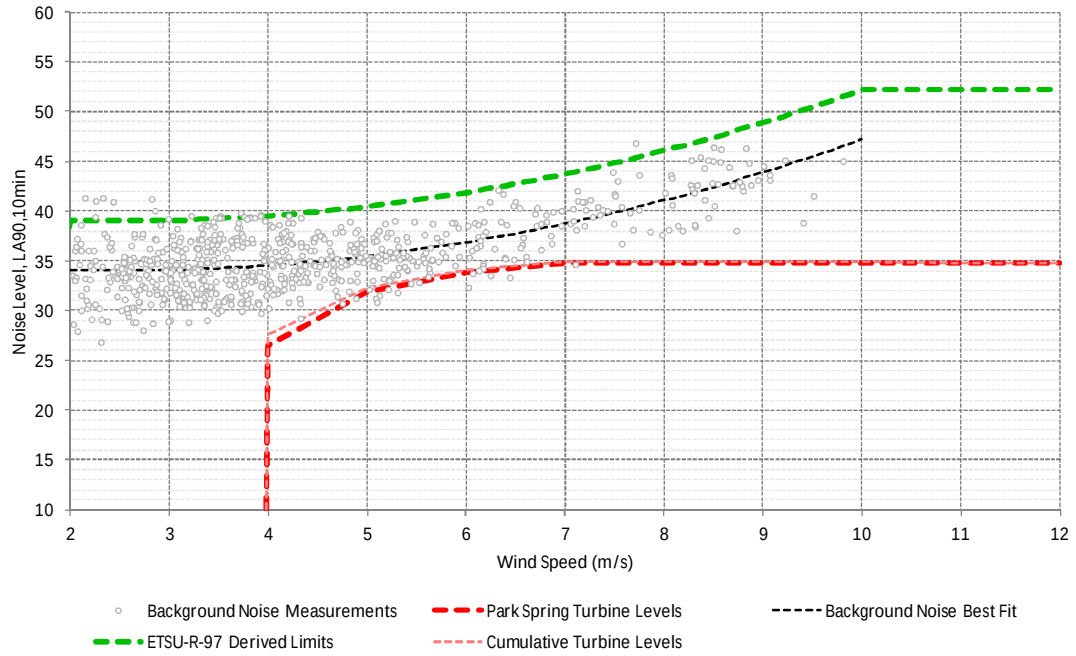
NL3 - 2 Woodland Terrace - Amenity Hours



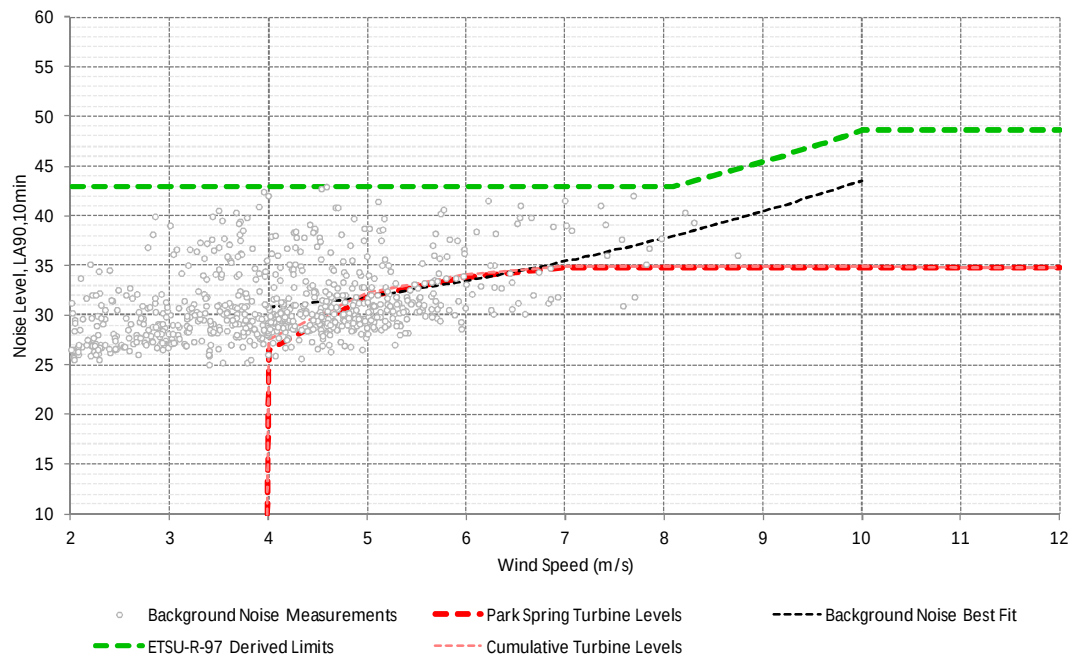
NL3 - 2 Woodland Terrace - Night Hours



L7 - Ridgway House - Amenity Hours



L7 - Ridgway House - Night Hours



7.1 CULTURAL HERITAGE – DESK-BASED ASSESSMENT

**Park Spring Wind Farm,
South Yorkshire: Cultural
Heritage Desk-based
Assessment**

EDF Energy Renewables

May 2013

Park Spring Wind Farm, South Yorkshire: Cultural Heritage Desk-based Assessment

Prepared for

EDF Energy Renewables
Endeavour House
Doxford Business Park
Sunderland
SR3 3XL

Prepared by

Parsons Brinckerhoff
Amber Court
William Armstrong Drive
Newcastle-upon-Tyne
NE4 7YQ
0191 226 2000
www.pbworld.com

Report Title	:	Park Spring Wind Farm, South Yorkshire: Cultural Heritage Desk-based Assessment
PIMS Number	:	
Report Status	:	
Job No	:	
Date	:	May 2013
Prepared by	:	Alison Plummer (technical)
Approved by	:	Simon McCudden (quality assurance)

CONTENTS

	Page
List of Abbreviations	0
Executive Summary	1
1 Acknowledgements	2
2 Introduction	3
2.1 Circumstances of the Project	3
2.2 Location, Topography and Geology	3
3 Methodology	4
3.1 Legislative Framework and Planning Background	4
3.2 Approach	5
3.3 Assessment Methodology	6
4 Baseline Condition	10
4.1 Historical and Archaeological Background	10
4.2 Development of the Scheme Area	12
4.3 Site Visit	15
5 Gazetteer of heritage assets	19
6 Significance of Heritage Assets	26
6.1 Introduction	26
6.2 Criteria	26
6.3 Statement of Significance	28
7 Likely impact of the development	29
7.1 Introduction	29
7.2 Impact	29
7.3 Impact Assessment	29
8 Mitigation strategy	31
8.1 Recommendations	31
9 Bibliography	32
9.1 Cartographic Sources	32
9.2 Documentary Sources	32
9.3 Web Sources	32
Appendix 1	33
Appendix 2	36

LIST OF ABBREVIATIONS

BMBC	Barnsley Metropolitan Borough Council
EDF-ER	EDF Energy Renewables Limited
IfA	Institute for Archaeologists
NMR	National Monuments Record
NPPF	National Planning Policy Framework
SMR	Sites and Monuments Record
SYAS	South Yorkshire Archaeology Service
YHP	Yorkshire and Humber Plan

EXECUTIVE SUMMARY

Parsons Brinckerhoff was commissioned by EDF Renewables Limited (EDF-ER) to undertake a Cultural Heritage Desk-based Assessment of the proposed site of Park Spring Wind Farm, South Yorkshire (NGR centred on SE 42144 06738). EDF-ER plans to submit a planning application for the erection of three wind turbines, and associated infrastructure including a control building and access roads within the Scheme Area

The assessment, which was undertaken between February and May 2013, identified two Heritage Assets lying within the Scheme Area (**HA01** and **HA02**) neither of which has statutory designation. A further 17 assets were identified as being within the 1km Study Area. Of these, two have statutory designation (**HA03** and **HA07**; two elements of a Grade II* listed building).

Of the Heritage Assets identified, two are of national importance (**HA03** and **HA07**). One is of regional importance (**HA01**), and with the remaining 14 being of local importance.

The archaeological significance of **HA01** relates to its period, group value and fragility. **HA09**, **HA12** to **HA17** and **HA19** share a similar significance. **HA02** is perhaps of slightly lower archaeological significance, having no group value and being slightly less fragile in nature. Heritage Assets **HA04** to **HA06** (non designated buildings) have some aesthetic value.

The proposed development has the potential to impact in a visual and adverse manner upon the setting of a number of Heritage Assets both within and outside of the Scheme Area. These include the two elements of the Grade II* listed building (**HA03** and **HA07**) on which there will be a slight impact. There will be a further slight impact on Heritage Assets **HA01** and **HA02** with the remainder of the assets affected (**HA04**, **HA05**, **HA06**, **HA08** and **HA11** to **HA19**) also subject to a slight or neutral impact.

In addition to the known Heritage Assets the results of the assessment suggest the potential for further archaeological remains to be present within the Scheme Area, and therefore a suitable programme of archaeological mitigation should be considered such as a watching brief. This would also apply to **HA02**. The archaeological mitigation strategy will be discussed with the South Yorkshire Planning Archaeologist and include consultation with the client and design team.

1 ACKNOWLEDGEMENTS

Parsons Brinckerhoff would like to thank Dinah Saich of the South Yorkshire Archaeological Service (SYAS) for her advice, and the staff SYAS for their assistance during the Sites and Monuments data capture phase of the assessment.

2 INTRODUCTION

2.1 Circumstances of the Project

- 2.1.1 EDF-ER intends to submit an application for planning permission to Barnsley Metropolitan Borough Council (BMBC) for the purposes of constructing a three turbine wind farm, located between the villages of Great Houghton and Grimethorpe, in Barnsley, South Yorkshire (NGR centred SE 41920 06997). Parsons Brinckerhoff has been commissioned to produce a Cultural Heritage Desk-based Assessment of the Scheme Area. The desk-based assessment will be submitted to the SYAS Planning Archaeologist for comments. This is to be undertaken prior to the submission of the Environmental Statement (ES), which is to be submitted to BMBC as part of the planning application.

2.2 Location, Topography and Geology

- 2.2.1 Park Spring falls within the jurisdiction of BMBC, and the parish councils of Great Houghton and Little Houghton. The Scheme Area is located approximately 1km north of Little Houghton, a little less than a kilometre south of Grimethorpe, and is similarly positioned to the east of Great Houghton. The 90.4 hectare site is privately owned and used primarily for agricultural purposes.
- 2.2.2 The bedrock geology of the area comprises the Pennine Upper Coal Measures Formation - Mudstone, Siltstone, Sandstone, Coal, Ironstone and Ferricre. Sedimentary Bedrock formed approximately 306 to 311 million years ago in the Carboniferous Period (www.bgs.ac.uk).
- 2.2.3 The Scheme Area does not lie within a statutory designated area such as a Conservation Area, Registered Parks and Gardens or Registered Battlefields.

3 METHODOLOGY

3.1 Legislative Framework and Planning Background

National Planning Policy Framework (NPPF)

3.1.2 In considering any planning application for development, local planning authorities are bound to have regard to the policy framework set by government guidance. This policy is a material consideration that must be taken into account in development management decisions, where relevant. In accordance with central and local government policy, this assessment has been prepared in order to clarify the study site's archaeological potential and, following the identification of likely impacts as a result of the development, to assess the need for any further measures to mitigate the impact of the proposed development.

3.1.3 National planning policies on the conservation of the historic environment are set out in the NPPF, which was published by the Department of Communities and Local Government (DCLG) in 2012. Sites of archaeological or cultural heritage significance that are valued components of the historic environment and merit consideration in planning decisions are grouped as 'heritage assets'. The NPPF states that *"heritage assets are an irreplaceable resource"* the conservation of which can bring *"wider social, cultural, economic and environmental benefits..."* (DCLG 2012; Section 12,126). It also states that the *"...significance of any heritage assets affected including any contribution made by their setting..."* should be understood in order to assess the potential impact (DCLG 2012; Section 12,128). In addition to standing remains, Heritage Assets of archaeological interest can comprise sub-surface remains and, therefore, assessments should be undertaken for a site that it was possible that below ground archaeological deposits may have survived below the present ground level within Sites A and B...." (DCLG 2012; Section 12,128).

3.1.4 NPPF draws a distinction between designated Heritage Assets and other remains considered to be of lesser significance; *"... great weight should be given to the asset's conservation. Substantial harm to or loss of a Grade II listed building, park or garden should be exceptional. Substantial harm to or loss of designated Heritage Assets of the highest significance, including scheduled monuments, protected wreck sites, battlefields, Grade I and II* listed buildings and Grade I and II* registered parks and gardens and World Heritage Sites, should be wholly exceptional..."* (DCLG 2012; Section 12, 32). Therefore, preservation in-situ is the preferred course in relation to such sites unless exceptional circumstances exist.

3.1.5 It is normally accepted that non-designated sites will be preserved by record, in accordance with their significance and the magnitude of the harm to or loss of the site as a result of the proposals, to *"...avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposals..."* (DCLG 2012; Section 12,129). Non-designated Heritage Assets of archaeological interest will also be subject to the policies reserved for designated Heritage Assets if they are of equivalent significance to scheduled monuments (DCLG 2012; Section 12,132).

Local Plan

3.1.6 The relevant local planning policy can be found in the Core Strategy, adopted September 2011. The policy requires *"...developers to embrace good design and protect and enhance the historic environment..."* (Section 9, 7:120). The policy suggests *"...'at risk' buildings, sites, monuments or Conservation Areas receive particular attention to ensure they have an identified path to safeguard their long term*

future...” and when implementing policy solutions “...protecting important landscapes both directly and indirectly by ensuring their settings and key views are respected and not subject to inappropriate development...”.

3.2 Approach

- 3.2.1 Standards and Guidance: The Park Springs Scoping Study (PB 2011) proposed the undertaking of a Desk-based Assessment, and consequently this document has been written to comply with the Guidance and Standards for Desk-based Assessments as issued by SYAS (Appendix 1) and in compliance with the National Planning Policy Framework (See section 2.1 above). Furthermore, the assessment was carried out in accordance with the relevant professional guidelines - Institute for Archaeologists (IfA) and English Heritage (IfA 2012, Standard and Guidance for Archaeological Desk-based Assessments; IfA 2012 Code of Conduct; English Heritage 2006, Management of Research Projects in the Historic Environment (MoRPHE)).
- 3.2.2 Study Area: This Desk-based Assessment has focused on the proposed Development Area (referred to as the Scheme Area; Figure 2), although historic information for the immediate surrounding area (hereafter known as the Study Area) has been considered in order to provide an essential contextual background, and to allow an assessment of indirect effects on Heritage Assets close to the Scheme Area. In accordance with the SYAS Guidance this extends for approximately 1km from the outer limits of the proposed scheme area.
- 3.2.3 Terminology: The technical terminology (including Tables 2 and 3 below) ,applied to the assessment process in this document is based on that contained within the Cultural Heritage Section (Volume 11, Section 3, Part 2) of the Design Manual for Road and Bridges (DMRB) issued by the Highways Agency in 2007. This has been widely adopted throughout the heritage industry as a baseline. However, the terminology has been enhanced as appropriate throughout this report.
- 3.2.4 Cultural Heritage comprises scheduled monuments, listed buildings, parks and gardens, battle fields, conservation areas, earthworks and buried archaeological remains. For the ease of presentation in this document cultural heritage features are referred to as Heritage Assets, and additionally for the purposes of clarity a minor distinction is made between standing remains and archaeological sites.
- 3.2.5 Aims: The Desk-based Assessment should study the historic environment within an agreed study area. It will consist of an analysis of data in order to identify the likely heritage assets, their significance, character of the study area and consideration of the setting of the Heritage Assets, and the nature, extent and quality of the known or potential archaeological, historic, architectural and aesthetic interest. Significance is to be judged in a local, regional, national or international context as appropriate (IfA 2012).
- 3.2.6 Objectives: the specific objectives of this Desk-based assessment are to:
- assess the potential for Heritage Assets to survive within the study area;
 - assess the significance of the known or potential Heritage Assets;
 - identify the potential impact of proposed or predicted changes on the significance of the assets and their settings;
 - strategies for further evaluation where the nature, extent or significance of the resource is not sufficiently well defined;

- suggest strategies to conserve the significance of the Assets and their settings, and;
- present proposals for archaeological mitigation.

3.3 Assessment Methodology

3.3.1 Data Collection: The principal sources of information consulted were historical and modern maps, although published and unpublished secondary sources were also reviewed. Unfortunately, at the time of compiling this report the Barnsley Archives and Local Studies were closed for refurbishment, and the South Yorkshire Archive was also reduced to very limited opening hours. However, the following repositories were consulted during the data-gathering process:

- South Yorkshire County Sites and Monuments Record (SMR);
- Catalogue of aerial photographs held by the National Monuments Record (NMR);
- Literature review of publicly available data including reports on any cultural heritage or archaeological work conducted in or near the study area;
- Historical maps including Ordnance Survey.

3.3.2 Site Visit: The proposed scheme area was visited in order to assess its character, identify visible historic features and assess possible factors which may affect the survival or condition of known or potential assets.

3.3.3 All of the Heritage Assets identified through the data collection and the site visit are described in detail in the gazetteer (Section 4). Their position is shown on Figure 2: Plan showing location of Heritage Assets.

3.3.4 Setting of the Assets: the study area was visited in order to allow a rapid assessment of the potential for indirect impact on the setting of the Heritage Assets. At this stage a drive through of the relevant landscape was undertaken, and an outline photographic archive compiled. The general topography was noted, as was the presence of any large areas of plantation, and building complexes such as housing estates, industrial plant, and so forth. However, due to the rapid nature of this assessment a worst-case scenario is presented. This outline assessment has highlighted the need for further more detailed assessment of setting at a later stage as appropriate.

3.3.5 Significance: Initially, the significance of the Heritage Assets is judged in a neighbourhood, local, regional, national and international context, which results in the cultural value or sensitivity of the asset being determined along with the appropriate form of mitigation (Table 1 below). Once the value is established then the archaeological, historic, architectural and aesthetic interests are discussed (Section 5, below).

3.3.6 In order to consider the archaeological and historic significance in particular, an additional set of criteria are employed which relate to the Secretary of State's criteria for assessing the national importance of monuments, as contained in Annex 1 of the policy statement on scheduled monuments produced by the Department of Culture, Media, and Sport (2010). These criteria relate to period, rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity, and potential and are presented in Section 5. The consideration of the significance of statutory designated assets including listed buildings is reflected in their Grade, and so it is not necessary to apply the criteria mentioned to this type of heritage asset.

Table 1: Criteria used to determine Importance of Sites

Cultural value/Sensitivity	Criteria	Mitigation (Direct Impact)
Very high (international)	World Heritage Sites; Sites of International Importance.	To be avoided
High (National)	Scheduled Monuments; All Listed Buildings; Registered Parks and Gardens.	To be avoided
Medium (Regional/County)	Conservation Areas containing buildings that contributes significantly to its historic character; Areas of Archaeological Importance; Locally listed buildings.	Avoidance recommended
Low (Local/Borough)	Archaeological sites and remains with a local or borough interest for education, cultural appreciation, locally listed buildings; Assets which contribute to local or cultural understanding of the area.	Avoidance recommended
Negligible (Neighbourhood/ Negligible)	Relatively numerous types of remains, of some local importance; Isolated findspots with no context; Areas in which investigative techniques have revealed no, or minimal, evidence of archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.	Avoidance not envisaged
Uncertain /Potential	Potential archaeological sites for which there is little information. It may not be possible to determine the importance of the site based on current knowledge. Such sites are likely isolated findspots, place names or cropmarks identified on aerial photographs.	Avoidance unnecessary

3.3.7 Table 1 is a general guide to the attributes of Cultural Heritage Assets and it should be noted that not all the qualities listed need be present in every case and professional judgement is used in balancing the different criteria.

3.3.8 Potential Impact: In order to assess the potential impact of any future development on built heritage or buried archaeological remains, consideration has been afforded to:

- assessing in detail any impact and the significance of the effects arising from any future development of the Scheme Area on the Heritage Assets within it;
- assessing in outline any indirect impact and the significance of the effects arising from any future development of the Scheme Area on any Heritage Assets within the wider Study Area (up to 1km in distance);
- reviewing the evidence for past impacts that may have affected the archaeological sites of interest identified during the desk-based assessment;
- outlining suitable mitigation measures, where possible at this stage, to avoid, reduce, or remedy adverse impacts.

3.3.9 Key impacts have been identified as those that would potentially lead to a change to the Heritage asset. Each potential impact has been determined as the predicted

deviation from the baseline conditions, in accordance with current knowledge of the site and the proposed development. The impact is assessed in terms of the sensitivity or importance of the site to the magnitude of change or potential scale of impact during the proposed development. The magnitude, or scale of an impact is often difficult to define, but will be termed as substantial, moderate, slight, or negligible, as shown in Table 2.

Table 2: Criteria used to determine Scale of Impact

Scale of Impact	Description
Substantial	Significant change in environmental factors; Complete destruction of the site or feature; Change to the site or feature resulting in a fundamental change in ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting.
Moderate	Significant change in environmental factors; Change to the site or feature resulting in an appreciable change in ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting.
Slight	Change to the site or feature resulting in a small change in our ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting.
Negligible	Negligible change or no material changes to the site or feature. No real change in our ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting.

3.3.10 The interaction of the scale of impact (Table 2) and the importance of the Heritage Asset (Table 1) produce the impact significance. This may be calculated by using the matrix shown in Table 3 below.

Table 3: Impact Significance Matrix

VALUE		Negligible	Slight	Moderate	Substantial
	Very High	Slight	Moderate /Large	Large or Very Large	Very Large
	High	Slight	Moderate/Slight	Moderate/Large	Large/Very Large
	Medium	Neutral/Slight	Slight	Moderate	Moderate/Large
	Low	Neutral/slight	Neutral/Slight	Slight	Slight/Moderate
	Negligible	No change	Negligible/Slight	Neutral/Slight	Slight
	SIGNIFICANCE OF THE IMPACT				

3.3.11 It is normal practice to state that impacts above moderate significance are regarded as significant impacts. Mitigation measures as appropriate for each Heritage Asset affected are presented in Section 8.

3.3.12

Limitations: this assessment is based on the development proposals as presented at the time of compiling this report. The assessment has been undertaken without the benefit of seeing the detailed drawings and material that will accompany the planning application, such as zone of theoretical visibility figures or wirelines. Changes to the proposed scheme and any additional technical data made available will be considered in full as part of the Environmental Impact Assessment and presented in the Cultural Heritage Chapter of the Environmental Statement. This document is not intended to replace the forthcoming EIA but rather to provide a set of baseline conditions upon which the Cultural Heritage Chapter can build, although which should be enhanced, updated and reviewed as appropriate. Any comments received on this document from the appropriate Planning Archaeologist should also be taken into consideration for future assessment or investigations.

4 BASELINE CONDITION

4.1 Historical and Archaeological Background

4.1.1 The following section presents a summary of the historical and archaeological background of the surrounding area. This is presented by historical period, and has been compiled in order to place the study area into a wider archaeological context.

Table 5: Summary of British archaeological periods and date ranges

Period	Date Range
Prehistoric Period:	
Palaeolithic	30,000 – 10,000 BC
Mesolithic	10,000 – 3,500 BC
Neolithic	3,500 – 2,200 BC
Bronze Age	2,200 – 700 BC
Iron Age	700 BC – AD 43
Romano-British	AD 43 – AD 410
Early Medieval	AD 410 – AD 1066
Late Medieval	AD 1066 – AD 1540
Post-medieval	AD 1540 – c1750
Industrial Period	cAD1750 – 1901
Modern	Post-1901

4.1.2 Prehistoric Period 30,000BC to AD43: The evidence for Mesolithic, Neolithic and Bronze Age settlement is generally sparse and derives mainly from low intensity surface finds of flint, stone tools, pottery and rare metal work finds associated with the latter period. The evidence is generally confined to the Vale of York and the Humberhead levels, where well-drained soils attracted prehistoric activity. Beyond the artefact scatters there is little evidence for semi-permanent or permanent settlement in the area (WYAS 2006).

4.1.3 With regard to prehistoric monuments, Late Neolithic ceremonial/ritual monuments can be found in the form of henges (Ferrybridge (SM 720)), situated on the river terraces. Cursus monuments are often associated with henges, these elongated, ditched enclosures have been found as cropmarks in the landscapes of the Catterick (River Swale) and Thornborough (River Ure) henges. Certainly, in South Yorkshire it has generally been held that there is a relative dearth of prehistoric monuments of all types, gained mainly from a failure to detect them in any great numbers as cropmarks on aerial photographs. Only two round barrows have been recorded, both to the south-east of Rossington, with a single example at Harworth, whilst three further potential circular barrow mounds have been inferred from parch marks at Firbeck (WYAS 2006). There are no known assets of the Prehistoric Period within the study area.

4.1.4 Romano-British Period (AD43 to 410): It is postulated that a Roman road went from Sheffield towards the hamlet of Street near Wentworth and towards Street Lane in Little Houghton, but this is based purely on place name evidence (Hey 79, 18). Generally, evidence for the occupation of this period is represented by cropmarks,

with the most common form being the brickwork pattern field system. These are formed by long, parallel linear ditches, with cross-ditches forming the brickwork pattern. Enclosures, trackways and boundaries are often associated with the field systems (SYAS 1995). Heritage Asset **HA01** (Figure 2) is one such site and is located in the central portion of the Scheme Area. It is thought to comprise a double-ditch feature with offset ditches. Other similar sites in the local area include **HA09** and **HA12** to **HA17**.

- 4.1.5 Early Medieval to Late Medieval Period (AD410 to 1540): The South Yorkshire Historic Environment Characterisation states that in the Medieval Period the west of the region was dominated by large tracts of open moorland, mirrored by large wetland landscapes in the east. Settlements were a mix of scattered farmsteads and small nucleated villages that often contained a manor house and sometimes with a church. The nucleated settlements were often surrounded by a series of open fields, although there were also small irregular fields taken in from former woodland in upland areas. Large areas of unenclosed common and enclosed deer parks were common throughout the district (www.sytimescapes.org.uk).
- 4.1.6 According to Joseph Hunter (History of South Yorkshire, 1828) both Little Houghton and Great Houghton have medieval origins. Hunter states that during the Saxon Period Little Houghton was characterised as a manor that fell under the jurisdiction of the Saxon Lord Osul. However, the first documentary reference to Little Houghton is in the Domesday Book, at which time it comprised a small cluster of farms partially surrounded by a small open field system. The Domesday Book refers to the area as waste, perhaps due to damage caused by William the Conqueror's suppression of the revolt in the north. The subsequent Norman lord of Little Houghton, Roger de Busli, was also lord in Sheffield and built the first timber castle there.
- 4.1.7 Great Houghton, also recorded in the Domesday book, was referred to as being large areas of woodland. A medieval hall was located on the site of the Old Hall Inn, and was the seat of the Rhodes family, who acquired the parish in 1578. By the nineteenth century Great Houghton was owned by the Earl of Mexborough. It is suggested that Colliery Farm barn (**HA04**) retains medieval timber-framing, and locally there is a cross-base of similar date (**HA11**), although neither of these assets are within the Scheme Area.
- 4.1.8 Post-medieval Period (1540 -1750): The early post-medieval period saw further deer parks established whilst others fell out of use and were converted to agriculture. Former commons begin to be enclosed during this period and the drainage of wetlands, such as Hatfield Chase, begins at the start of the seventeenth century. Additionally, many open field systems are being enclosed in a piecemeal fashion by the seventeenth century (www.sytimescapes.org.uk). The emparkment of gentrified estates continued into this period, sometimes displacing or rebuilding existing villages. Although there are no confirmed assets of this period within the Scheme Area, it is highly likely that locally field patterns and boundaries relate to this period.
- 4.1.9 There a number of heritage assets in the local environs of post-medieval origin including Great Houghton Hall and the Rhodes family Chapel (**HA03** and **HA10**), two farmhouses (**HA05** and **HA06**), and the suggestion of charcoal burning in West Haigh Common (**HA19**).
- 4.1.10 The Industrial Period (1750 - 1901): During the mid-eighteenth century the enclosed landscape steadily encroaches further onto common land and drainage of wetlands increases in scale. Many medieval deer parks were being broken up by this date, although some were replaced with landscaped parklands, which were becoming

popular in the eighteenth century. The steep rivers valleys in the west of the region were becoming more industrialised as water-powered industries grew in importance, and the urban growth of Sheffield begins (www.sytimescapes.org.uk).

- 4.1.11 South Yorkshire's industrial history began to the east of the Pennines, where thick woods once covered much of the coal measure sandstones. The outcrops of the Barnsley and Silkstone beds of coal and of thinner seams such as at Parkgate and Thorncliffe fuelled the industries that remained established there until the 1990's (Hey 1979, 8). The earliest reference to coal mining in South Yorkshire is contained in the records of two inquests held in 1293 when a man met his death digging coal at his home and two other men were killed in a small pit near Masbrough. Further references date to the fourteenth century and the Silkstone seam is mentioned as early as 1397 (Hey 1979, 102).
- 4.1.12 The site of Houghton Main Colliery (**HA18**) is located adjacent to the village of Little Houghton. The colliery was opened following the sinking of the first shafts in 1873, with the Dearne Valley railway being constructed around the same time. The colliery continued to work into the twentieth century. The extent of the colliery and ancillary workings is depicted on the 1893 Ordnance Survey map and includes kilns, coke ovens and a clay pit. Some of the buildings may have been housing for the miners. The surface buildings were demolished and the area cleared of most evidence of mining leaving no legibility (Hill 2001, 115-118). Immediately south was Dearne Valley Colliery, a drift mine that worked between 1901 and 1991 (Hill 2001, 118-119). Grimethorpe Colliery was situated to the north-west of the Scheme Area.
- 4.1.13 By the end of the nineteenth century the district had been transformed and between the towns the characteristic form of settlement became the pit village (Hey 1979, 8-9). During the mid to late twentieth century the shallower coal deposits were exhausted and the centre of the coalfield moved to Doncaster in the east where deeper pits were sunk to the seams as they dip towards the east (Hey 1979, 9). Generally, throughout the region coal extraction ceased by the early 1990s.
- 4.1.14 Lead and iron were also important local commodities in the west of the county, although the local ironstone was of average quality only, with much being sold to nailers or wiredrawers. Nail making had flourished since medieval times, and the Barnsley wiredrawers had the reputation of manufacturing the best wire in the kingdom during the reign of James I. Other industries in this part of the county included the manufacture of cloth, and in the west and east of the county, tanning was recorded as early as the fifteenth century (Hey 1979, 123-4).
- 4.1.15 By the 1900s Sheffield has expanded well beyond its medieval boundaries, with the growth of suburban housing away from the deteriorating living conditions of the city centre. Barnsley, Doncaster and Rotherham are also beginning to expand on a substantial scale as the industries within these towns develop. Large collieries are developing on the edge of the Doncaster district. Grid iron terraced housing dominated the continually expanding suburbs of the larger towns. Increasingly, these suburbs were linked to the industrial areas (like the Don valley) by tramways. (www.sytimescapes.org.uk).

4.2 Development of the Scheme Area

- 4.2.1 The Ordnance Survey First Edition 6" to 1 mile map was published in 1854 (Plate 1). The map shows the Scheme Area to largely comprise small enclosed fields with boundaries following a north/south alignment in the north portion and more unregimented patterns to south. A farmstead labelled as 'Park Field House' (**HA02**)

was identified in the central portion of the Scheme Area and shown as an L-shaped building with outbuildings to the east. A wooded area marked as Little Park encroaches into the Scheme Area from the east. Great Houghton Quarry is present just outside of the north-east boundary. The Midland Railway, constructed in 1844, is seen to curve east to south-east to form a connection with Houghton Main Colliery at Little Houghton.

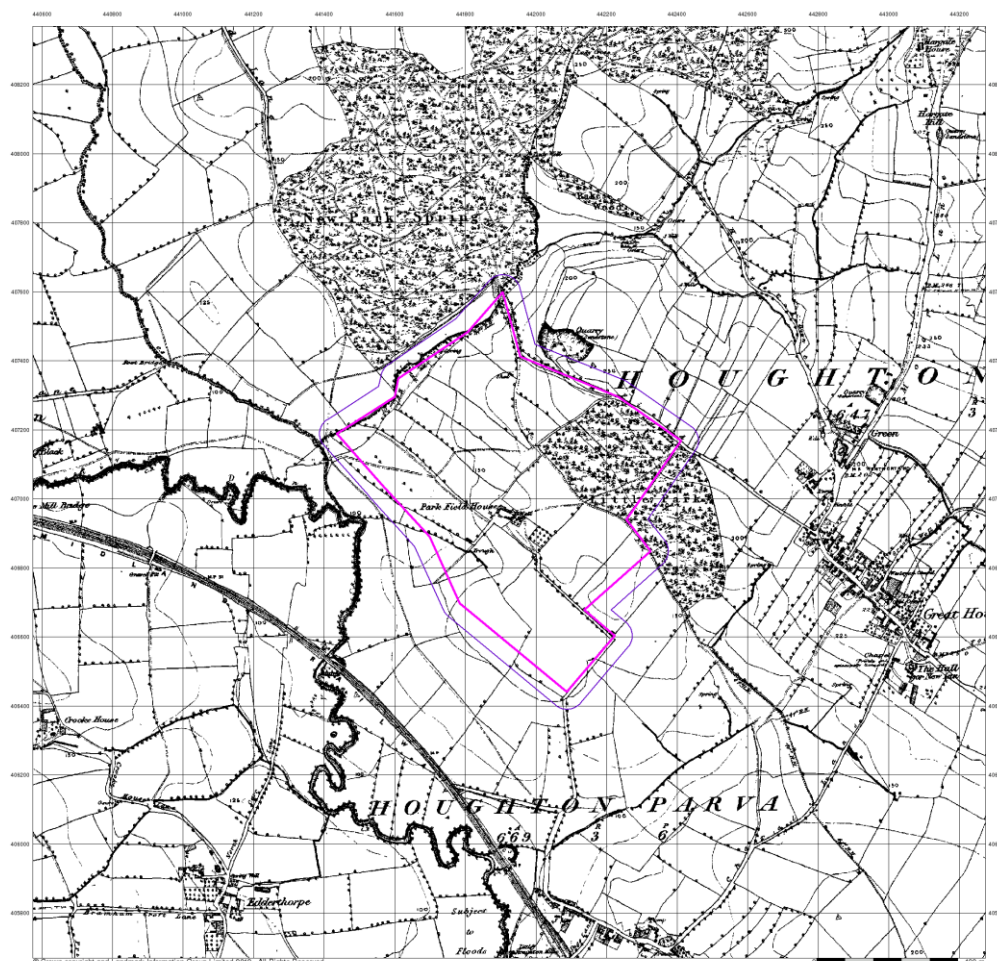


Plate 1: Extract of the Ordnance Survey 1:10, 000 map, 1854

- 4.2.2 The Ordnance Survey 1:2500 map, 1892 illustrates Park Farm in more detail and as having a farmyard arrangement of buildings to the west of the farmhouse. A tree-lined track doglegs in a south-easterly direction before eventually crossing over the railway. A further track leads from the farmyard into fields to the south-west. The general field pattern remains unchanged. The next available map is the Ordnance Survey map of 1894, and similarly, the agricultural landscape remains relatively unchanged. Park Field House is depicted as Park Farm. The major addition to this map is Houghton Main Colliery located to the immediate south of the Scheme Area. The pithead is shown in detail and sidings can be seen off the Midland Railway into the colliery.
- 4.2.3 Although the Scheme Area is relatively unchanged by the publication of the next 1:10,560 map, the surrounding area becomes increasingly industrial. The Ordnance Survey map dated 1907 depicts a new railway line - the Dearne Valley Railway, lying between the earlier line and the Scheme Area. This line was completed by 1909.

Houghton Main Colliery has expanded in size and has a connection to the Dearne Valley railway via the Houghton Junction which lies adjacent to the south-western boundary of the Scheme Area. A sewage works lies to its south-east of the colliery. Grimethorpe Colliery is shown to the north-west of the Scheme, and by 1931 additional mineral lines connect to the main line just north of the Scheme Area. The map shows Park Farm as unchanged with the exception of a possible additional outbuilding appearing to the south-east of the original farm.

- 4.2.4 The Houghton Main Colliery slag heap encroaches on Little Houghton by 1955 (Ordnance Survey 1:10,000 map), whilst to the north Grimethorpe Colliery slag heap reaches the boundary of the Scheme Area. Both slag heaps are linked by aerial cable from the respective pitheads.
- 4.2.5 By 1967 the two farm buildings in the east of Park Farm have been replaced or developed into a single rectangular structure aligned roughly east-west. The landscape within and surrounding the Scheme Area has remained relatively unchanged, although the colliery slag heaps have increased in size and now extend closer towards both north and south limits of the Scheme Area.
- 4.2.6 The Ordnance Survey map of 1983 (Plate 2) shows Park Farm as reduced in size and it is depicted as a single building with a small outhouse located to the east. This is the last depiction of the farm which has been demolished by 1989. The field boundaries to the north of the farm have been removed, and this possibly reflects the suggestion of opencast coal extraction in this part of the site. The Dearne Valley Railway that extended along the western boundary of the Scheme Area has been dismantled and Great Houghton Quarry is now marked as 'disused'. Great Houghton shows significant growth with residential development occurring in the north. Between 1983 and 1987 the Houghton Main Colliery slag heap is fed by the use of conveyors rather than aerial cable, and the slag heap extends halfway along the southern boundary of the Scheme Area.

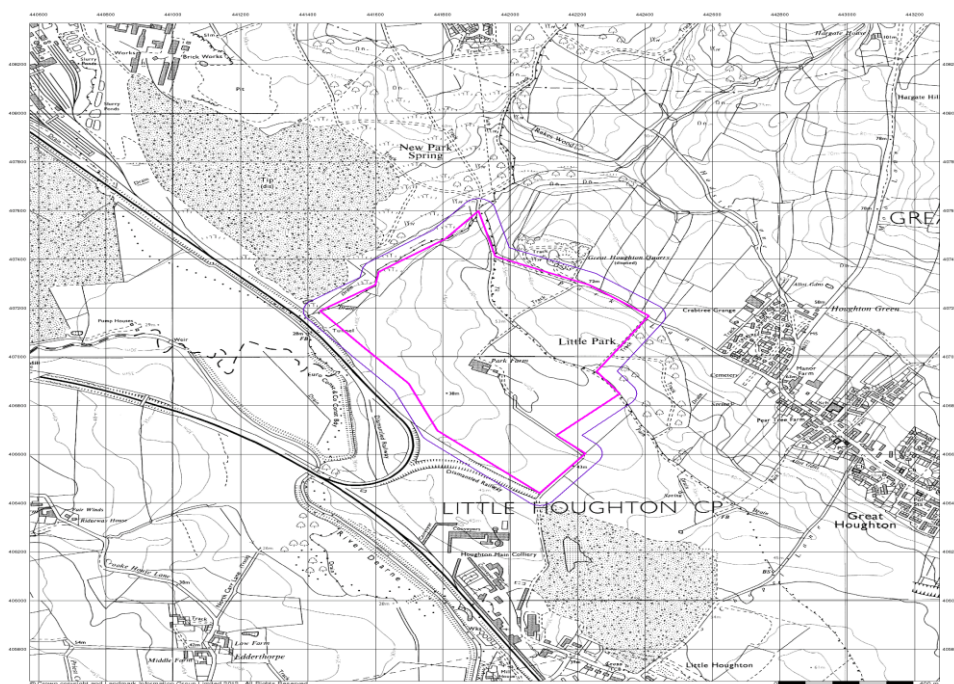


Plate 2: Ordnance Survey 1 mile: 1:10,000 Yorkshire map, 1983

4.2.7 In 2006 Houghton Main Colliery is shown as an area of disused workings and no buildings appear on the map of that date. Park Spring Road now replaces the disused Dearne Valley Railway.

4.2.8 The most recent Ordnance Survey map published in 2012 shows a large rectangular industrial building occupying the site of Houghton Main Colliery to the south of the Scheme Area. The scheme area its self remains unchanged.

4.3 Site Visit

4.3.1 The Scheme Area covers approximately 90.4 hectares and is currently privately owned land used for agricultural purposes. The site comprises fields each bordered by either thin lines of trees, hedgerows or trackways (Plate 3). The land generally slopes downwards from north to south, with the highest area located in the central portion of the northernmost field (Plates 4, 7 and 8). This highest field houses an anemometer mast (Plate 7). Views from this area to the south capture Little Houghton and Edderthorpe, the most prominent being the latter. Views of Edderthorpe are also achieved from fields in the east and south of the Scheme Area. The western limits of the Scheme Area were found to comprise levelled colliery slag heaps (Plate 9).



Plate 3: View showing the rise of land in the most southerly field within the Scheme Area. Looking north-west



Plate 4: View of the highest point in the Scheme Area. Looking west



Plate 5: View of central field in the west half of the Scheme Area showing the rise of the landscape in the field to the north. Looking north-east.



Plate 6: View of the track separating two fields in the south-east of the Scheme Area



Plate 7: Showing anemometer mast occupying the highest point in the Scheme Area. Looking south-west with views of Edderthorpe



Plate 8: View taken from the highest point in the Scheme Area looking south-west with views of Edderthorpe



Plate 9: View taken of slag heap containing coal waste and shale associated with coal extraction at Houghton Main Colliery.

5

GAZETTEER OF HERITAGE ASSETS

5.1.1

The gazetteer presented below lists and offers a brief description of all of the Heritage Assets identified within the study area (as shown on Figure 2).

<i>Heritage Asset Number</i>	<i>01</i>
Asset Name	Iron Age or Romano-British Enclosure and Field, Little Houghton
NGR	SE 4278 0519
Asset Type	Enclosure/Field Boundary
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	03033/01 - MSY5891 (Duplicated in the SMR as 03033/02 - MSY5892)
Value/Importance	Regional
Description	Iron Age or Romano-British small D-shaped enclosure and field boundaries found by D. Riley on aerial photographs in 1977 (D.Riley Air Photograph Collection:1977 flights)

<i>Heritage Asset Number</i>	<i>02</i>
Asset Name	Park Field House
NGR	SE 41920 06997
Asset Type	Farmstead
Period	Post-medieval to Industrial
Statutory Designation	None
HER No	Not recorded in the HER
Value/Importance	Local
Description	An L-shaped building with possible outbuildings to the east as shown on the Ordnance Survey First Edition map, 1854. The farmstead was demolished in the 1980's

<i>Heritage Asset Number</i>	<i>03</i>
Asset Name	Rodes Family Chapel (now St Michael and All Angels Church), Great Houghton
NGR	SE 4303 0653
Asset Type	Monument/Church
Period	Post -medieval
Statutory Designation	Grade II* Listed (EH ref 333669)
HER No	03542/02 - MSY6093
Value/Importance	National
Description	Chapel built by Edward Rodes of Great Houghton Hall in 1650. HA07 falls under the same listed building entry

<i>Heritage Asset Number</i>	<i>04</i>
Asset Name	Colliery Farm Barn, Little Houghton
NGR	SE 4248 0560
Asset Type	Monument/barn
Period	?Post- medieval
Statutory Designation	None
HER No	01172/01 - MSY4416
Value/Importance	Local
Description	Timber- framed barn with a common rafter roof with collars every ½ bay. The walls have been replaced with stone at some point during its history. The barn formerly belonged to Beech House Farm.

<i>Heritage Asset Number</i>	<i>05</i>
Asset Name	Beech House, Little Houghton
NGR	SE 4246 0560
Asset Type	Farmhouse
Period	Post-medieval
Statutory Designation	None
HER No	01173/01 - MSY4417
Value/Importance	Local
Description	Beech House Farmhouse features a reused tie-beam with a suggested late seventeenth century date. The front of the house features the arms of Tyndall and the date '1602' .

<i>Heritage Asset Number</i>	<i>06</i>
Asset Name	Farmhouse, Little Houghton
NGR	01174/01 - MSY4418
Asset Type	Farm House (extant)
Period	Post-medieval to Industrial
Statutory Designation	None
HER No	SE 4250 0558
Value/Importance	Local
Description	Farmhouse featured a raised upper cruck roof at Colliery Farm, Little Houghton

<i>Heritage Asset Number</i>	<i>07</i>
Asset Name	Rodes Family Chapel (now St Michael and All Angels Church), Great Houghton
NGR	SE 4303 0653
Asset Type	Monument/Chapel
Period	Post medieval
Statutory Designation	Grade II* Listed (EH ref 333669)
HER No	03542/01 - MSY6093
Value/Importance	National
Description	The chapel was constructed for Sir Edward Rodes of Great Houghton Hall in 1650. The interior features five seventeenth century king-post trusses, two rows similarly dated box pews, and a carved octagonal pulpit of the same date. The chapel is now known as the Church of St Michael and All Angels.

<i>Heritage Asset Number</i>	<i>08</i>
Asset Name	Ladywell Holy Well, Brierley
NGR	SE 4197 0798
Asset Type	Monument/Holy Well
Period	Unknown
Statutory Designation	None
HER No	03683/01 - MSY6244
Value/Importance	Low Local
Description	The well is located in Lady Wood.

<i>Heritage Asset Number</i>	<i>09</i>
Asset Name	Field System, Great Houghton
NGR	SE 4360 0570
Asset Type	Monument
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	00080/01 - MSY3706
Value/Importance	Regional
Description	Cropmarks shown on aerial photographs .

<i>Heritage Asset Number</i>	<i>10</i>
Asset Name	Site of, The Hall, Great Houghton
NGR	SE 4306 0652
Asset Type	Hall/House
Period	Post-medieval
Statutory Designation	None
HER No	00352/01 - MSY4015
Value/Importance	Local
Description	Great Houghton hall was built c 1588 by Francis Rhodes. Of stone construction it featured mullion windows, timber panelling and ornamental plasterwork. From 1831 it was used as a public house. It was demolished in 1960

<i>Heritage Asset Number</i>	<i>11</i>
Asset Name	Medieval Cross (base only), Little Houghton
NGR	SE 4235 0570
Asset Type	Monument/stone cross
Period	Medieval
Statutory Designation	None
HER No	00353/01 - MSY4016
Value/Importance	Low Local
Description	Remains of wayside cross, socket stone and part of shaft.

<i>Heritage Asset Number</i>	<i>12</i>
Asset Name	Little Houghton Golf Course
NGR	SE 4320 0560
Asset Type	Enclosure and Field System, Sub-surface deposit
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	02331/01 - MSY5438
Value/Importance	Regional
Description	Enclosure and field system identified from aerial photographs

<i>Heritage Asset Number</i>	<i>13</i>
Asset Name	Cropmark, Great Houghton.
NGR	SE 4310 0620
Asset Type	Monument/Cropmark
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	02499/01 - MSY5525
Value/Importance	Regional
Description	Possible Iron Age or Romano-British field system shown on aerial photographs from the Derrick Riley collection taken in 1977(D.Riley Air Photograph Collection:1977 flights)

<i>Heritage Asset Number</i>	<i>14</i>
Asset Name	Linear Cropmarks, Billingley
NGR	SE 4300 0570
Asset Type	Enclosure/Field Boundary
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	02500/01 - MSY5526
Value/Importance	Regional
Description	Possible Iron Age or Romano-British field system shown on aerial photographs from the Derrick Riley collection taken in 1977(D.Riley Air Photograph Collection:1977 flights)

<i>Heritage Asset Number</i>	<i>15</i>
Asset Name	Enclosure and Lane, Little Houghton
NGR	SE 4233 0659
Asset Type	Enclosure/Road
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	03034/01 - MSY5893
Value/Importance	Regional
Description	Sub-rectangular enclosure and lane shown on aerial photographs from the Derrick Riley collection taken in 1977

<i>Heritage Asset Number</i>	16
Asset Name	Field System, Great Houghton
NGR	SE 4360 0570
Asset Type	Field System
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	00080/01 - MSY3706
Significance	Regional
Description	Possible traces of a field system near Great Houghton shown on aerial photographs from the Derrick Riley collection taken in 1976.

<i>Heritage Asset Number</i>	17
Asset Name	Field Boundaries, Great Houghton
NGR	SE 4230 0760
Asset Type	Enclosure/Field Boundary
Period	Early Iron Age to Romano-British
Statutory Designation	None
HER No	04026/01 - MSY6642
Value/Importance	Regional
Description	Enclosure and attached field boundaries. Only the corner of enclosure can be identified as the main body of the enclosure has been quarried.

<i>Heritage Asset Number</i>	18
Asset Name	Houghton Main Colliery, Little Houghton
NGR	SE 4195 0605
Asset Type	Colliery
Period	Industrial
Statutory Designation	none
HER No	04345/01 - MSY6905
Value/Importance	Regional
Description	The colliery was first opened around 1870 and originally featured two shafts. A third shaft was completed in 1940. By the mid-1930s Houghton Main was working an area of 2,500 acres. Pithead buildings dating from the early years of the colliery including a wagon repair shop, two weighbridge houses, a small workshop/office, part of the power house, engine house and colliery offices. The pithead comprised steam-winding houses, a gas testing centre, head-gear, pithead baths, canteen, froth flotation plant, koepe winder tower, a fan drift and fan house. By 1994 the colliery had been demolished

<i>Heritage Asset Number</i>	<i>19</i>
Asset Name	West Haigh Wood and Houghton Common
NGR	SE 4233 0659
Asset Types	Boundary Bank, coppice, linear earthwork, rectangular enclosure, ridge and furrow earthwork, bank, charcoal burning platform, pit, platform, pond, saw pit, stone quarry, tree avenue and trackway.
Period	Early Iron Age to Post-medieval
Statutory Designation	None
HER No	05012 - MSY12578
Value/Importance	Local
Description	A range of earthwork remains identified during a woodland survey. The woodland is likely to be ancient in origin and was part of the common land of the township of Great Houghton. It is located on the edge of the parish boundary. A number of pits of possible post-medieval origin were identified within the wood, and there are also a number of unidentified platforms. Other features include post-medieval trackways, an avenue of trees, charcoal burning platforms, and quarrying ponds possibly associated with local collieries. The wood also contains enclosures of possible Iron Age origin and medieval ridge and furrow.

6 SIGNIFICANCE OF HERITAGE ASSETS

6.1 Introduction

6.1.1 This section presents the archaeological, historic, architectural and aesthetic significance of the Heritage Assets as appropriate. The assessment has identified two Heritage Assets of archaeological interest within the proposed Scheme Area (**HA01** and **HA02**), and an additional 17 known sites that lie within a radius of 1km (**HA03-HA19**). The sites identified as being within the Scheme Area do not have Statutory Designation. Of the Heritage Assets that lie beyond the boundary of the Scheme Area, but within the 1km study area, **HA03** and **HA07** have legal designation as elements of a Grade II* listed building under one listing. Table 6, below, highlights the cultural value of the Heritage Assets.

Table 6: Value of the Heritage Assets Identified

Value/sensitivity	Heritage Assets	Mitigation (Direct impact)
International	N/A	To be avoided
National	HA03, HA07	To be avoided
Regional/County	HA01, HA9, HA12 to HA18	Avoidance recommended
Local/Borough	HA02, HA04 to HA06, HA08, HA10, HA11, HA19	Avoidance recommended
Neighbourhood	N/A	Avoidance not envisaged
Uncertain	N/A	Avoidance unnecessary

6.2 Criteria

6.2.1 Where Assets do not possess a statutory designation (eg Scheduled Monuments and Listed Buildings) their archaeological significance has been determined with reference to the Secretary of State's criteria for assessing the national importance of monuments, as contained in Annex 1 of the policy statement on scheduled monuments produced by the Department of Culture, Media, and Sport (2010). These criteria relate to period, rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity, fragility/vulnerability and potential. The definition of these criteria is presented in Table 7, below.

Table 7: Definition of Criteria used to Determine Archaeological Significance

Criteria	Definition
Rarity	This should take account of all aspects of the distribution of a particular class of Heritage Asset, both in a national and a regional context.
Period	Heritage Assets that characterise a category of asset or period.
Survival/Condition	The survival of an assets archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features.
Documentary	The significance of a Heritage Asset may be enhanced by the existence of records of previous investigation or, in the

Evidence	case of more recent assets, by the supporting evidence of contemporary written records
Potential	On occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance. This is usually confined to buried remains rather than upstanding Heritage Assets.
Diversity	Some Heritage Assets may possess a combination of high quality features, others a single important attribute.
Group Value	The value of a single Heritage Asset (such as a field system) may be greatly enhanced by its association with related contemporary assets (such as a settlement and cemetery) or with assets of different periods.
Fragility/Vulnerability	Highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; there are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment.

6.2.2

Similarly, where Heritage Assets do not have statutory designation their historical and aesthetic significance is determined through the use of the criteria defined below (Table 8). The aesthetic criteria do not relate to buried archaeological remains as these are not visible above ground. They are generally applied to non-designated buildings and structures, and to places (which are not considered here).

Table 8: Definition of Historical and Aesthetic Significance

Criteria	Definition
Historical	This originates from the ways in which past people, events and aspects of life can be connected through a place to the present. This may include illustrative value, such as its connection to an important development, such as technology, or associative value, such as the connection to an important event or person.
Aesthetic	This is derived from the ways in which people draw sensory and intellectual stimulation from a place or building. These may be related to the design of a place, for example, through defensive reasons, or the informal development over time, such as the relationship of structures to their setting.

6.2.3

The consideration of the significance of listed buildings is reflected in their Grade and so it is not necessary to apply the criteria shown above to this type of Heritage Asset. Grade I listed buildings are those which are considered to be of exceptional national architectural or historic importance. Grade II* listed buildings are of particular national importance and special interest. Both Grade I and II* listed buildings are of great importance to the nation's built heritage and their importance will generally be beyond dispute. Grade II listed buildings are usually designated for their architectural and historic interest. They are usually of a more local or regional significance and make up around 95 per cent of all listed buildings.

6.3 Statement of Significance

- 6.3.1 Heritage Assets **HA01**, **HA02**, **HA09**, **HA12** to **HA17** and **HA19** are considered to be of higher archaeological significance than the remainder (excluding the Listed Buildings **HA03** and **HA04**). The archaeological significance of **HA01** relates to its period, group value and fragility. **HA09**, **HA12** to **HA17** and **HA19** share a similar significance. **HA02**, is perhaps of slightly lower significance, having no group value and being slightly less fragile in nature, however, this type of farmstead is relatively rare locally, and certainly during the industrial period. Heritage Assets **HA04** to **HA06** (non designated buildings) have some aesthetic value although no obvious historical connections. All of the Listed Buildings are of national significance.

7 LIKELY IMPACT OF THE DEVELOPMENT

7.1 Introduction

- 7.1.1 Current planning policy guidance for the historic environment, embodied in NPPF (DCLG 2012), advises that Heritage Assets are an irreplaceable resource. It also states that the significance of any heritage assets affected including any contribution made by their setting should be understood in order to assess the potential impact. It has been the intention of this assessment to identify the significance and potential of the study area. This section discusses the likely impact of the proposed development, thus allowing the policy stated in NPPF (DCLG 2012) to be enacted upon. An appropriate mitigation strategy follows in Section 7.

7.2 Impact

- 7.2.1 **Buried Archaeological Remains:** The extent of any previous disturbance to buried archaeological levels is an important factor in assessing the potential impact of the proposed scheme of development. It is possible that deposits of archaeological interest associated with **HA01**, which is considered to be fragile, may have been damaged by ploughing as the Scheme Area has been used predominantly for agricultural purposes. The site of **HA02** is of a less fragile nature, and so the potential for remains to survive is high. No direct impact has been identified for **HA01**, although ground disturbance will be undertaken for the purposes of constructing an access track within the historic limits of **HA02**. Generally throughout the Scheme Area, ground disturbance would have an adverse impact on any potential and previously unknown archaeological remains.
- 7.2.2 There is the potential for the development to have an impact on the setting of below-ground archaeological remains, both within and outwith the Scheme Area (**HA01**, **HA02**, **HA09**, **HA10** and **HA12** to **HA17**).
- 7.2.3 **Built Heritage:** It is envisaged that the proposed development will have an indirect adverse visual impact upon the setting of heritage assets **HA03** and **HA07** both being elements of Great Houghton Hall a Grade II* listed building (333669) and the non-statutory designated assets **HA04**, **HA05** and **HA06**. The affected non-designated assets are all located in Little Houghton from where all three turbines could potentially be seen.

7.3 Impact Assessment

- 7.3.1 Following on from the above considerations, only one of the Heritage Assets (**HA02**) will be subject to a direct impact. The significance of adverse indirect impacts, in terms of visual impact on the setting of Heritage Assets that lie outside the Scheme Area is likely to be Minimal to Intermediate. The results are summarised in Table 9 below.
- 7.3.2 Coincidentally, the impact on all of the Heritage Assets is considered to be slight (when assessed against the cultural value of the asset). This is also applicable to **HA02** as a very limited area of the site will be affected. A slight impact is change to the site or feature resulting in a small change in our ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting. Consequently, the significance of the impact for all of the assets is considered to range from neutral to slight. However, the impact on potential archaeological remains is considered to be higher and could range from moderate to substantial.

Table 9: Likely Significance of the Impact

HA Number	Importance	Impact	Significance of impact
HA01	Regional(Medium)	Slight	Neutral/slight
HA02	Local(Low)	Slight	Neutral/slight
HA03	National (High)	Slight	Neutral/slight
HA04	Local(Low)	Slight	Neutral/slight
HA05	Local (Low)	Slight	Neutral/slight
HA06	Local (Low)	Slight	Neutral/slight
HA07	National (High)	Slight	Neutral/slight
HA08	Local(Low)	Slight	Neutral/slight
HA09	Local(Low)	Slight	Neutral/slight
HA10	Local(Low)	Slight	Neutral/slight
HA11	Local(Low)	Slight	Neutral/slight
HA12	Local(Low)	Slight	Neutral/slight
HA13	Local(Low)	Slight	Neutral/slight
HA14	Local(Low)	Slight	Neutral/slight
HA15	Local(Low)	Slight	Neutral/slight
HA16	Local(Low)	Slight	Neutral/slight
HA17	Local(Low)	Slight	Neutral/slight
HA18	Local(Low)	Slight	Neutral/slight
HA19	Local(Low)	Slight	Neutral/slight

8 MITIGATION STRATEGY

8.1 Recommendations

- 8.1.1 Current legislation draws a distinction between Heritage Assets of national importance and other remains considered to be of lesser significance. Those perceived to be of national importance may require preservation in-situ, whilst those of lesser significance may undergo preservation by record, where Regional/County or Local/Borough significance can be demonstrated.
- 8.1.2 One of the buried archaeological assets (**HA02**) will be impacted upon in a direct manner by the development proposals. Additionally, the baseline condition clearly demonstrates that the landscape within which the wind farm is to be sited contains the evidence for a number of archaeological sites similar in nature to **HA01**, therefore it would not be unreasonable to consider the undertaking of an archaeological watching brief on relevant construction operations (ground disturbance) within the Scheme area, although not within the opencast coal mining area and the colliery slag heaps.
- 8.1.3 Potentially, there will be a visual impact on the setting of a number of Heritage Assets (Table 9 above), with these being both buried and above ground. However, as with most windfarm developments, and due to the scale of the turbines, it is considered unlikely that an appropriate scheme of mitigation could be devised. Furthermore, screening and unsympathetic planting can have an adverse effect in some circumstances.
- 8.1.4 The most appropriate form of mitigation will be devised in consultation with the South Yorkshire Archaeological Advisory Service.

9 BIBLIOGRAPHY

9.1 Cartographic Sources

Ordnance Survey 1mile: 1,2,500" Yorkshire sheet, published 1893
Ordnance Survey 1mile: 1,2,500" Yorkshire sheet, published 1931
Ordnance Survey 1mile: 1,2,500" Yorkshire sheet, published 1962
Ordnance Survey 1mile: 1,2,500" Yorkshire sheet, published 1985
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1854
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1894
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1907
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1932
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1948
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1955
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1967
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1983
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 1989
Ordnance Survey 1mile: 1,10,000" Yorkshire sheet, published 2006

9.2 Documentary Sources

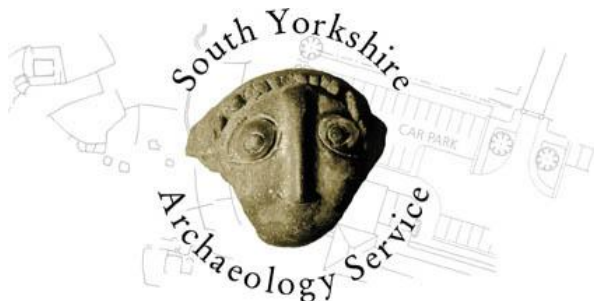
Hey, D, 1979 *The Making of South Yorkshire*
Hill, A, 2001 *The South Yorkshire Coalfield: a History and Development*, Stroud
Hunter, J 1828 *History of South Yorkshire*
SYAS, 1995 *Houghton Main Colliery Proposed Opencast Site, Archaeological Desktop Assessment*, unpbl rep
WYAS, 2006 *ALSF Magnesian Limestone Project*, unpbl rep

9.3 Web Sources

www.domesdaymap.co.uk
www.britishlistedbuildings.co.uk
www.sytimescapes.org.uk

APPENDIX 1

BRIEF FOR ARCHAEOLOGICAL DESK-BASED ASSESSMENT



1 ASSESSMENT

1.1 This work is needed to establish the nature of the site's archaeological potential, to assess how this would be affected by the proposed development.

1.2 In order for the archaeological implications of the proposal to be fully considered, an assessment of available sources of archaeological information, for an area of not less than 1km around the site, needs to be made. The information compiled will establish the likely archaeological significance of the site and the implications of the proposal. If the assessment reveals insufficient information to fully clarify these issues, the need for further work will be highlighted.

1.2 Sources to be consulted, in order to complete the assessment (constraints on source availability should be noted):

- a) Visual inspection of the site.
- b) Geotechnical data.
- c) Survey drawings of any existing/former buildings on the site, including foundations and basements.
- d) Plans and maps of the site and its environs, including historical pictorial and surveyed maps and including pre- and post-war Ordnance Surveys up to the present day.
- e) Trade and Business Directories.
- f) Place name evidence.
- g) Historical documents and photographs held in libraries, archives and museums.
- h) Relevant archaeological archives held by museums.
- i) Appropriate archaeological and historical journals and books.
- j) The Sites and Monuments Record (SMR) entries for 1km around the site.
- k) Listed Building/Conservation records.
- l) Aerial photographs, including those held by the National Library of Aerial Photographs (verticals & obliques) for 1 km around the site.

2 CONTEXT OF THE DEVELOPMENT PROPOSAL

2.1 The degree of disturbance/destruction by existing and previous buildings/structures on the site should be noted and recorded on plan. (These may include basements, foundation trenches, services, etc.)

2.2 The identification of areas of archaeological survival should similarly be recorded on plan.

2.3 If sufficient information is available, sections illustrating the likely depth and extent of areas of archaeological survival and areas of disturbance should be produced.

2.4 The impact of the development proposal on the identified archaeological resource should be assessed, with reference to architects' and engineers' drawings, as appropriate.

3 REPORT PRESENTATION

3.1 A report will be produced that assembles and summarises the known evidence.

3.2 The results will be synthesised and put in context. The character of the archaeology likely to be present will be discussed.

3.3 The report will comment on the quality and reliability of the evidence and indicate whether it might need to be supplemented by site evaluation.

3.4 The report will be suitably illustrated with clear plans and sections.

3.5 A rectified plan of crop mark evidence on & immediately adjacent to the site (for a minimum of 500m around the site) will be included; a plot of cropmarks within the remainder of the search area can be indicated by sketching only.

3.6 A representative selection of photos (of not less than laser photocopy quality) of the site will be included to illustrate key points.

3.7 All maps examined will be reproduced (if possible) with the site outline marked on them. If reproduction is not possible, the reasons for this must be given.

3.8 Borehole logs (if available) should be included.

3.9 All sources referred to should be included in the bibliography, even if the results were negative; N.B. publication references should always include relevant page numbers.

4 GENERAL POINTS

4.1 The South Yorkshire Archaeology Service will be responsible for monitoring the project.

4.2 A printed and bound copy of the report must be supplied to SYAS for incorporation into the South Yorkshire Sites and Monuments Record.

4.3 A digital copy of the report must also be supplied. Acceptable digital formats are:

- text (Word and ASCII);
- images (.JPG at no less than 300 dpi. resolution).

4.4 Copies of the report should be sent to the client and the South Yorkshire Archaeology Service.

4.5 The rectified aerial photographic information will be supplied to SYAS in digital format. Acceptable digital formats are:

- MAPINFO Interchange format (*.MIF)
- CAD (*.DXF)

4.6 The information content of the report will become publicly accessible once it has been deposited in the South Yorkshire SMR (normally 6 months after receipt by the South Yorkshire Archaeology Service).

4.7 The archaeological contractor must complete the online OASIS form at <http://ads.ahds.ac.uk/project/oasis/>.

South Yorkshire Archaeology Service

APPENDIX 2

ILLUSTRATIONS

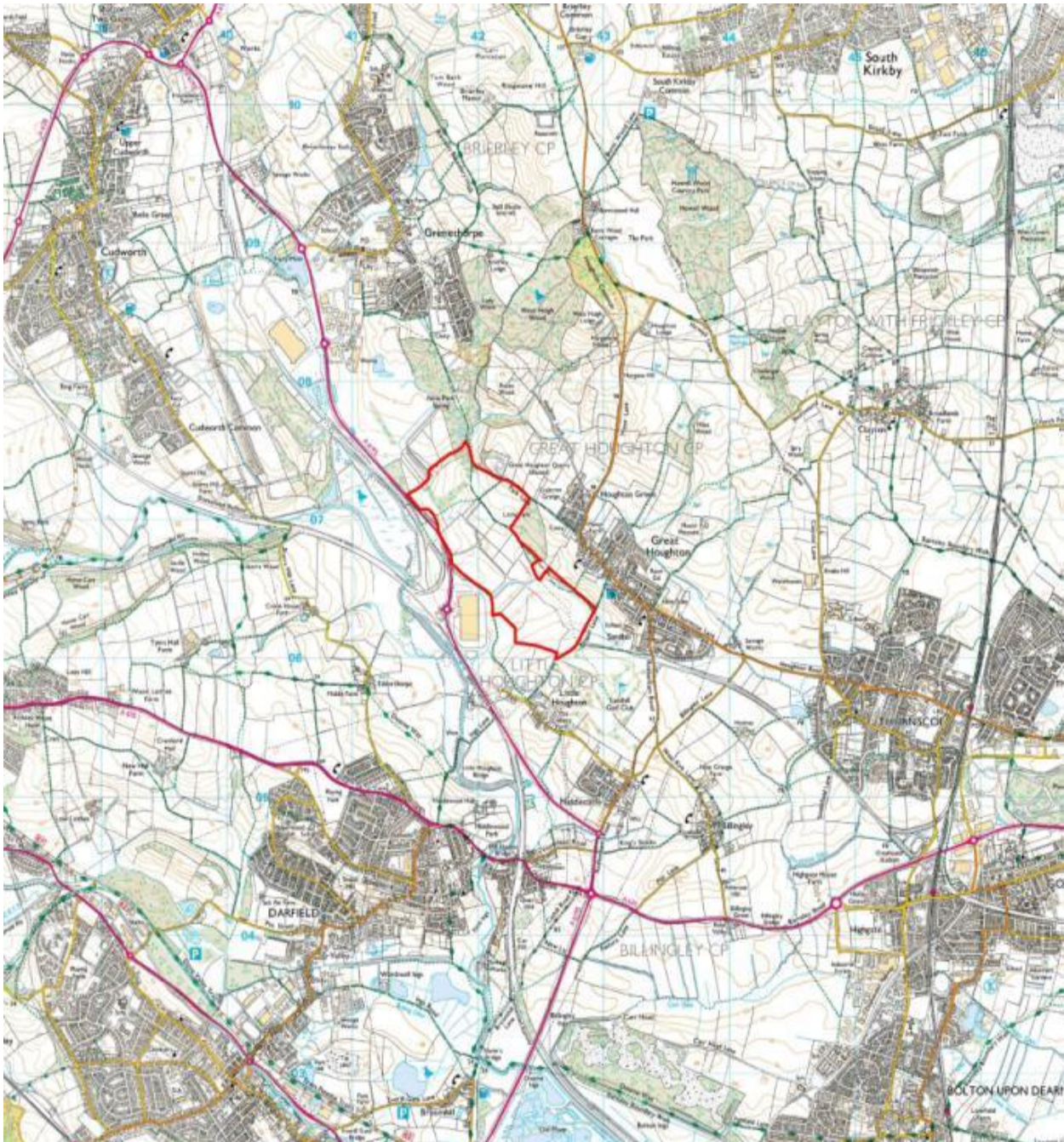


Figure 1: Site Location Plan