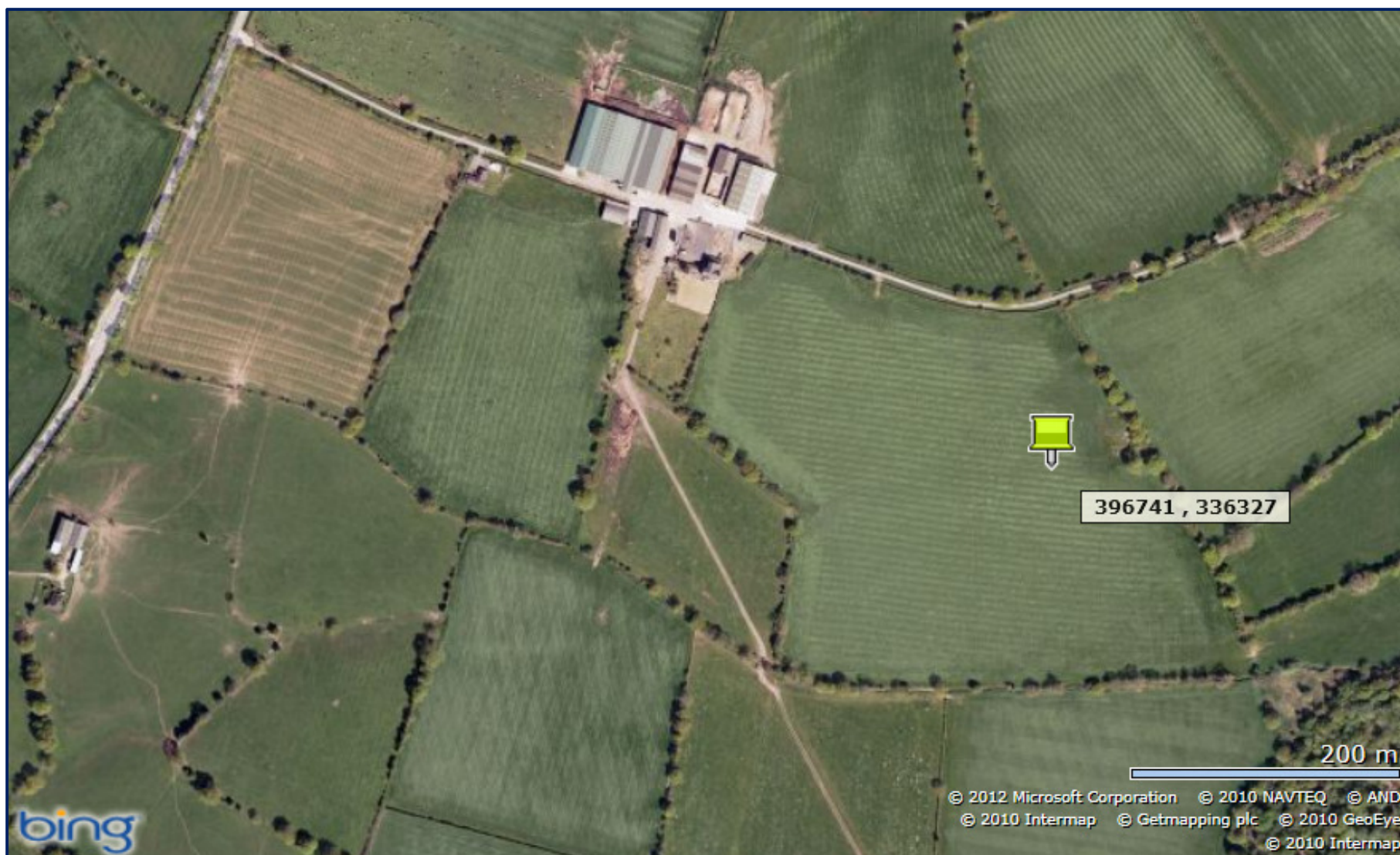


APPENDIX 1

Proposed Grid Coordinates Site Map



CLIENT NAME: Mr and Mrs Barnett
SITE ADDRESS: New Buildings Farm, Cresswell Road, Hilderstone ST15 8SL
APPENDIX 1: Proposed Grid Coordinates Site Map



APPENDIX 2

Radar Detectability Analysis

Indicative Wind Turbine Radar Detection Calculation - CAP 764 v1 Method [CAP76401]

Turbine Reference	Turbine 9
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Hallmark Power Shawbury PSR Turbine 9



A1.1 Input Parameters

Generic Wind Turbine

	Value	Units	Data Source
Height of Tower	50	m	CAP 764 v1
Tower Radar Cross Sectional Area	80	m ²	CAP 764 v1
Blade Length	30	m	CAP 764 v1
Blade Radar Cross Sectional Area	9	m ²	CAP 764 v1

Wind Turbine

	Value	Units	Data Source
Height of Tower	25.0	m	Customer
Blade Length (Rotor Radius)	15.0	m	
Number of Blades	3	N/A	Assumed
Location Easting	396729.0	m	DTM Terrain Database
Location Northing	336350.0	m	
Base Elevation	206.8	m aod	
Tip Height	40.0	m agl	
Tip Elevation	246.8	m aod	

Radar

	Value	Units	Data Source
Power Radiated	80.0	dBW	CAP 764 v1 Typical
Sensitivity	-153.0	dBW	Customer
Sensitivity	-123.0	dBm	
Down Tilt	0.0	degrees	CAP 764 v1 Typical
Frequency	2765.0	MHz	Customer
Receiver Loss	3.0	dB	CAP 764 v1 Typical
Speed Filter (0 = None 1=Operational)	1	N/A	
Location Easting	354465	m	Pager Power Online
Location Northing	321580	m	
Base Elevation	75.1	m aod	
Antenna Height	14.0	m agl	
Antenna Elevation	89.1	m aod	

Path details are in A1.4 below

Radar Antenna

Off-axis Elevation Angle	Gain (dBi)	Data Source
-3.0	16.5	Assumed Watchman Radar
-2.5	18.1	
-2.0	19.7	
-1.5	22.1	
-1.0	24.5	
-0.5	26.55	
0.0	28.6	
0.5	30.05	
1.0	31.5	
1.5	32.25	
2.0	33	
2.5	33.425	
3.0	33.85	
3.5	33.875	

A1.2 Assessment of the Radar Cross-Sectional Area of the Wind Turbine

	Value	Units
Static Element Scaling Factor	0.50	m
Static Element Radar cross-sectional area	20.00	m ²
Moving Element Scaling Factor	0.50	m
Moving Element Radar cross-sectional area	2.25	m ²

A1.3 Radar Antenna PLM Data

	Value	Units	
Off-Axis elevation angle	0.03	degrees	28.6735988
Antenna gain towards turbine	28.7	dB	28.6 30.05

A1.4 Determine Elevation Angles and Separation Distance

	Value	Units
Length	44.8	km
Slope	0.03	degrees
Wavelength	0.11	metres
Free Space Path Loss (FSPL)	134.30	dB

A1.5 Divide Wind Turbine Structure into parts

Height m	Static RCS m ²	Moving RCS m ²
10	8.0	#N/A
20	8.0	0.8
30	4.0	0.8
40	#N/A	0.8
50	#N/A	#N/A
60	#N/A	#N/A
70	#N/A	#N/A
80	#N/A	#N/A
90	#N/A	#N/A
100	#N/A	#N/A
110	#N/A	#N/A
120	#N/A	#N/A
130	#N/A	#N/A
140	#N/A	#N/A
150	#N/A	#N/A
160	#N/A	#N/A
170	#N/A	#N/A
180	#N/A	#N/A
190	#N/A	#N/A
200	#N/A	#N/A

Static	
RCS /m	0.8
Start	0
Finish	25.0

Moving	
RCS /m	0.075
Start	10.0
Finish	40.0

A1.6 Determine the radar return for each part of the turbine structure

Height m	Actual O/W Loss dB	FSPL dB	Additional Att. dB	Data Source
10	172.2	134.3	37.86	ITU-526 Pager Power Online
20	161.6	134.3	27.25	
30	157.2	134.3	22.90	
40	153.3	134.3	19.03	
50	148.9	134.3	14.61	
60	144.0	134.3	9.67	
70	138.6	134.3	4.26	
80	134.3	134.3	0.00	
90	134.3	134.3	0.00	
100	134.3	134.3	0.00	
110	134.3	134.3	0.00	
120	134.3	134.3	0.00	
130	134.3	134.3	0.00	
140	134.3	134.3	0.00	
150	134.3	134.3	0.00	
160	134.3	134.3	0.00	
170	134.3	134.3	0.00	
180	134.3	134.3	0.00	
190	134.3	134.3	0.00	
200	134.3	134.3	0.00	

i Static parts (tower, nacelle etc)

	Value	Units
EIRP	80.0	dBW
Rx System Gain	25.7	dB

Height m	RCS m ²	Lbr dB	Latt dB	Lbr (act) dB	Pr dBm	Pr abs
10	8.00	229.24	37.86	304.96	-169.29	0
20	8.00	229.24	27.25	283.74	-148.07	2E-15
30	4.00	232.25	22.90	278.05	-142.38	6E-15
40	#N/A	#N/A	19.03	#N/A	#N/A	0
50	#N/A	#N/A	14.61	#N/A	#N/A	0
60	#N/A	#N/A	9.67	#N/A	#N/A	0
70	#N/A	#N/A	4.26	#N/A	#N/A	0
80	#N/A	#N/A	0.00	#N/A	#N/A	0
90	#N/A	#N/A	0.00	#N/A	#N/A	0
100	#N/A	#N/A	0.00	#N/A	#N/A	0
110	#N/A	#N/A	0.00	#N/A	#N/A	0
120	#N/A	#N/A	0.00	#N/A	#N/A	0
130	#N/A	#N/A	0.00	#N/A	#N/A	0
140	#N/A	#N/A	0.00	#N/A	#N/A	0
150	#N/A	#N/A	0.00	#N/A	#N/A	0
160	#N/A	#N/A	0.00	#N/A	#N/A	0
170	#N/A	#N/A	0.00	#N/A	#N/A	0
180	#N/A	#N/A	0.00	#N/A	#N/A	0
190	#N/A	#N/A	0.00	#N/A	#N/A	0
200	#N/A	#N/A	0.00	#N/A	#N/A	0
Total					-141.3	7E-15

ii Moving parts

EIRP and Rx System Gain as i above

Height m	RCS m ²	Lbr dB	Latt dB	Lbr (act) dB	Pr dBm	Pr abs
10	#N/A	#N/A	37.86	#N/A	#N/A	0
20	0.75	239.52	27.25	294.02	-158.35	0
30	0.75	239.52	22.90	285.32	-149.65	1E-15
40	0.75	239.52	19.03	277.58	-141.91	6E-15
50	#N/A	#N/A	14.61	#N/A	#N/A	0
60	#N/A	#N/A	9.67	#N/A	#N/A	0
70	#N/A	#N/A	4.26	#N/A	#N/A	0
80	#N/A	#N/A	0.00	#N/A	#N/A	0
90	#N/A	#N/A	0.00	#N/A	#N/A	0
100	#N/A	#N/A	0.00	#N/A	#N/A	0
110	#N/A	#N/A	0.00	#N/A	#N/A	0
120	#N/A	#N/A	0.00	#N/A	#N/A	0
130	#N/A	#N/A	0.00	#N/A	#N/A	0
140	#N/A	#N/A	0.00	#N/A	#N/A	0
150	#N/A	#N/A	0.00	#N/A	#N/A	0
160	#N/A	#N/A	0.00	#N/A	#N/A	0
170	#N/A	#N/A	0.00	#N/A	#N/A	0
180	#N/A	#N/A	0.00	#N/A	#N/A	0
190	#N/A	#N/A	0.00	#N/A	#N/A	0
200	#N/A	#N/A	0.00	#N/A	#N/A	0
Total					-141.2	8E-15

A1.7 Interpretation of the Results

	Value	Units	Assessment
Receiver Threshold	-123.00	dBm	
Speed Filter (0 = None 1=Operational)	1	N/A	
Received Power (Static)	-141.34	dBm	Detection unlikely
Received Power (Moving)	-141.15	dBm	Detection unlikely
Received Power (Static and Moving)	-138.23	dBm	Detection unlikely

1. Numbers on left indicate corresponding paragraph number in CAP 764

Tool last updated 08/12/10

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APPENDIX 3

Telecommunication consultation response

Marie Stacey

From: Wind Farm Enquiries <Windfarms@arqiva.com>
Sent: 09 October 2012 08:57
To: Marie Stacey
Cc: Jack Fitzsimons; Tim Shergold
Subject: Proposed Windturbine - New Buildings Farm, Cresswell Road, Hilderstone ST15 8SL

F.A.O Marie Stacey

PROPOSED WINDTURBINE : New Buildings Farm, Cresswell Road, Hilderstone ST15 8SL NGR (SJ967363)

Dear Marie

Thank you for the opportunity to comment on the above proposal. Arqiva is responsible for providing the BBC and ITV's transmission network and therefore is responsible for ensuring the integrity of Re-Broadcast Links (RBLs). Based on the information that you provided, our analysis shows that the proposed wind turbine is unlikely to affect any of our RBLs.

Regarding microwave links Arqiva has no issues with this proposal.

However the proposed turbine would be located 280m to the West of Arqiva's link between Pye Green and Sutton Common

Link End Points:

Pye Green 398760 314550
Sutton Common 393370 367680

For your future reference we request a 200m wide corridor (i.e. $\pm 100\text{m}$) about the line-of-sight path be kept clear of any turbine or part thereof.

Please notify Arqiva if the planned turbine location changes so that we can re-evaluate the proposal

Regards

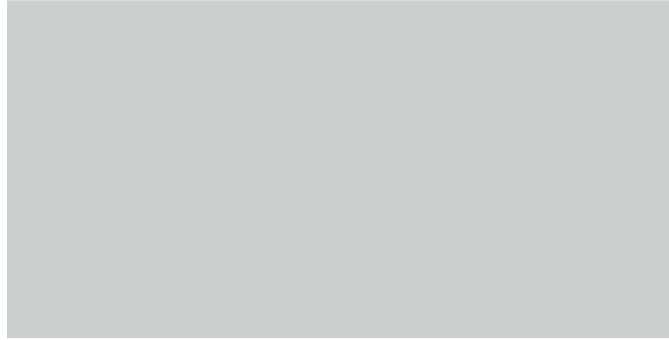
Rob

Rob Taylor
Senior Engineer
Spectrum Planning
Arqiva
Warwick
Tel 01926 - 416567

From: Marie Stacey [mailto:Marie@hallmarkwind.co.uk]
Sent: 20 September 2012 09:56
To: Wind Farm Enquiries
Subject: FW: Fixed link report for windfarm co-ordination area

APPENDIX 4

Colour sample



RAL 7035 – Light Grey