

From:
Sent: 19 September 2014 10:52
To: DIO ODC-IPS SG2 (I
Cc:
Subject: RE: 20140822-1Gp_Objection_Removal_Spadeadam-OS
Understood, thanks for the info

|SO2 BM Cap Safeguarding HQ 1 C | +4
Air-1GP-BM Cap Safeguarding SO2

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Sent: 19 September 2014 10:41
Subject: RE: 20140822-1Gp_Objection_Removal_Spadeadam-OS

Just a quick update on these 2; there is no action for me to take at this time.

- Muircleugh Farm – the planning application has been withdrawn.
- Colmslie Hill – the planning application was refused on 16/09/2011. The MOD has not been notified of an appeal and the applicant is now out of time to appeal.

I have therefore added notes to the Wind System to state that 1Gp wanted to withdraw their objections. However an operational assessment will be required if either planning application is resubmitted so 1Gp will be able to make an up to date assessment at that time.

Kind regards

Senior Safeguarding Officer - Infrastructure Professional Services - Safeguarding
DIO Operations Development and Coherence

Defence
Infrastructure
Organisation

Building 49, Kingston Road, Sutton Coldfield, West Midlands, B75 7RL

MOD teleph

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Website: www.gov.uk/mod-safeguarding

24/11/2015

PLEASE NOTE MY NEW EMAIL ADDRESS. EMAILS TO MY OLD EMAIL ADDRESS SHOULD BE FORWARDED AUTOMATICALLY.

From:

Sent: 28 August 2014 12:38

Safeguarding

Subject: 20140822-1Gp_Objection_Removal_Spadeadam-OS

I have now completed my reviews of outstanding objections and planning conditions for RAF Spadeadam (both Deadwater Fell and Berry Hill radars). We have considered every proposal that we were able to find via a variety of sources, including the searches done by the geospatial team, however it is still possible that some developments may have been missed. Below is the list of objections that 1 Gp wishes to remove:

DIO No	Name	Radar affected	Planning status	Decision
15192	Muircleugh Farm	Deadwater Fell PSR	mitigated	Remove objection
14483	Colmslie Hill	Deadwater Fell PSR	Refused (date unknown)	Remove objection if this goes to appeal.

Both of these decisions are consistent with those already made as part of the Eskdalemuir review (11725, 12391 and 15357). All 5 developments are in close proximity to each other and are within 5nm of the edge of the Scottish TMA. Windfarm developments in this area is deemed operationally manageable by Spadeadam controllers. Again, some words below for you to use as you see fit; insert Colmslie Hill for Muircleugh Farm if required.

HQ 1 Gp reassessed the Muircleugh Farm windfarm on 28 Jul 14 as part of an ongoing review of all extant objections and conditions on behalf of the RAF Spadeadam ATC primary surveillance radars (PSRs).

After further careful consideration of the use of airspace within the RAF Spadeadam area of responsibility, based upon information gathered from ongoing discussions with staff at RAF Spadeadam, and during visits by the MOD ATC subject matter expert (SME) to that unit, the ATC SME has determined that although the Muircleugh Farm proposal would have an impact upon operations at RAF Spadeadam, this impact should be manageable.

The MOD has therefore decided to withdraw its objection to the Muircleugh Farm proposal on behalf of the Deadwater Fell ATC radar. The MOD must stress that this decision is based on an assessment of this particular development at this particular point in time. Further, we must stress that there will still be an operational impact on the Deadwater Fell ATC radar, but the decision has been taken that the operational workarounds required as a result of the technical impact of the Muircleugh Farm development upon the Deadwater Fell radar should be operationally manageable.

The MOD would stress again that careful consideration is given to each application, and that the decision to withdraw the objection in relation to XXXX wind farm is a decision taken in respect of this development alone at this point in time, on the basis of the information currently available. If there were to be further proliferation of wind turbine development in this area, the operational impact may become unmanageable due to cumulative effect.

As always, happy to discuss if you have concerns or need more information.

Regards

|SO2 BM Cap Safeguarding HQ 1 Gp

| Air-1GP-BM Cap Safeguarding SO2

24/11/2015

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From: DES ADATS-Task Management-Windfarms (MULTIUSER)

Sent: 23 October 2014 07:17

To:

Subject: 20141023-DIO 15192 Muircleugh Farm URG Wind Farm

Attachments: WFS_ProForma_15192.xls; 20141021-DIO15192 Concerns Muircleugh Farm-RSP1c-Official.doc

sent

e-mail: DESADATS-Task Management-Windfarms (MULTIUSER)

Tel Ext

From: DES ADATS-Task Management-RSP Assessors (MULTIUSER)

Sent: 22 October 2014 15:40

To: DES ADATS-Task Management-Windfarms (MULTIUSER)

Subject: FW: 20141009-DIO15192-Muircleugh Farm-Urg-O

DIO 15192, SEVEN turbines @ 110m ht. LOS CONCERNS

Thanks,

From

Sent: 22 October 2014 14:44

To:

subject: RE: 20141009-DIO15192-Muircleugh Farm-Urg-O

Good Afternoon,

I'm sorry to chase this one, but could I please have a response asap.

Many Thanks

Kind Regards

Assistant Safeguarding Officer - Infrastructure Professional Services – Safeguarding

DIO Operations Development and Coherence

Defence

Infrastructure

Organisation

Kingston Road, Sutton Coldfield, West Midlands, B75 7RL

MOD telepho

Teleph

Fax

Email:

Website: www.gov.uk/mod-safeguarding

24/11/2015

From:
Sent: 09 October 2014 14:43
To:

Subject: 20141009-DIO15192-Muircleugh Farm-Urg-U

Good Afternoon,

Please see attached details for the above planning consultation.

This application was previously consulted on in March 2013. Following a review, 1Gp wish to remove their objection to this proposal (which means that the previously agreed mitigation will not be required).

A response is required by 20th October 2014.

Kind Regards

Assistant Safeguarding Officer - Infrastructure Professional Services – Safeguarding
DIO Operations Development and Coherence
Defence
Infrastructure
Organisation
Kingston Road, Sutton Coldfield, West Midlands, B75 7RL

MOD telephon

Telef

Fa

Email:

Website: www.gov.uk/mod-safeguarding

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Wind Farm Name	MUIRPLEUGH FARM	
Developers Ref	14/01081/FUL	
DE Reference	15192	
Addr1	Land west of Muircleugh Farmhouse	
Addr2	Lauder	
Addr3	Scottish Borders	
County	Scottish Borders	
Postcode	Scotland	
Country	FALSE	
Offshore?	FALSE	
Related Apps		

	1	2	3	4	5	6	7											
	0 NT	0 NT	0 NT	0 NT	0 NT	0 NT	0 NT											
	50036	50124	50162	50340	50540	50526	50533											
	45509	45127	44702	44312	45212	44786	45583											
	N	N	N	N	N	N	N											
	55	55	55	55	55	55	55											
	42	41	41	41	41	41	42											
	1.69	49.36	35.63	23.08	52.26	38.48	4.26											
	W	W	W	W	W	W	W											
	2	2	2	2	2	2	2											
	47	47	47	47	47	47	47											
	42.24	36.95	34.5	24.05	13.18	13.71	13.82											



Ministry
of Defence

Official

AIR DEFENCE & AIR TRAFFIC SYSTEMS RADIO SITE PROTECTION

TECHNICAL REPORT

Issue: 1
Date: 21 Oct 2014

Title: WR80026/01
DIO 15192 – AIR TRAFFIC CONTROL (ATC)
RADARS – ASSESSMENT OF THE DEVELOPERS
PROPOSAL TO ESTABLISH A WINDFARM AT
MUIRCLEUGH FARM, NEAR LAUDER IN THE
SCOTTISH BORDERS

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Authorised by:	ADATS DT Hd RSP		

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FOI FORMAT AND SUMMARY

20141021-DIO15192 Concerns Muircleugh Farm-RSP1c-Official

Radar Field Strength and/or Radar Line-of-Sight analysis indicates that the proposed windfarm at Muircleugh Farm shows a high degree of probability that it will be detected by one or more MoD radars to a degree that will affect their function.

Issue: 1 Dated: 21 Oct 14

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ADATS Task Spt 3

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Figure 1 – Local area map for Muircleugh Farm windfarm

Figure 2 – Coverage prediction plot for Dead Water Fell Radar(zoomed)

REFERENCES

- A. E-mail from Defence Infrastructure Organisation, DIO 15192 dated 21 Oct 14
- B. JSP846 – Issue 6 dated 09 Oct 12
- C. QINETIQ/D&TS/SEA/TA0705054/1.0 – Assessment of Wind Turbine Effects for DCSA
- D. AWC/WAD/72/655/TRIALS dated 10 May 05 – The effect of wind turbine farms on ATC radar (Qixotic Zephyr trial)

Standard Assumptions and Terms

RLOS - Radio Line of Sight. This is a linear path estimation of line-of-sight at radar wavelengths that compensates for refractive effects by assuming a reduced earth curvature (4/3 earth radius).

Clutter is taken into consideration as part of the propagation model that generates coverage plots and can significantly reduce the probability of detection by the radar.

Stated accuracy for the Ordnance Survey ground height data is $\pm 3\text{m}$ to 1RMS. DES ADATS maintains mapping data at far greater accuracy for the radar positions. The radar aperture heights used in calculation reflect this increase in accuracy.

Areas of the coverage plots shaded in blue indicate where a turbine of the dimensions given is predicted to be detected by the radar.

Level 1 Assessment: Considers RLOS only and is used for radars where no parameters other than physical location are available. This method is not considered to be particularly accurate.

Level 2 Assessment: Calculated probability of detection from available radar parameters, turbine parameters and terrain data. The total RCS of the turbine is used in all instances. This report constitutes a Level 2 Assessment.

Level 3 Assessment: A more extensive Probability of Detection calculation, utilising sectioned RCS. This method is considered to give more accurate answers when RLOS is not present and diffraction is the sole method of detection.

Turbine RCS: A measure of the radar reflectivity of the complete turbine structure.

Turbine Visibility: The amount of the turbine visible over terrain, considering RLOS only. In general, a large positive value is a strong indicator that the turbine will be detected.

Max height for no visibility: A sample cut-off height below which all of the turbine would be obscured by terrain. Note that this figure will vary between turbines with different ground heights in the same proposal.

Visibility over clutter: The amount of the turbine which is un-obscured from the radar by building clutter and terrain (where this is the same as the Turbine Visibility, no clutter exists in the beam path). Where this value is zero or very small, the turbine is completely obscured by clutter and the detection probability will be greatly reduced.

1 Scope

1.1 The purpose of this report is to ascertain the likely effects of the proposed wind turbines at Muircleugh Farm on the performance of Radar Systems at MoD-related sites.

2 Introduction

2.1 Reference A is a proposal to establish a wind farm of 7 turbines at Muircleugh Farm, near Lauder. National Grid References were provided for all positions (NT 50036 45509). The highest point of the turbine blades will be 110 metres above ground level. A local map of the proposed area is shown at Figure 1.

2.2 Siting restrictions for radars are defined in Reference B. Reference C details methods of determining Radar Cross-Section (RCS) values from a generic turbine model. Reference D defines specific restrictions for siting wind turbines, which apply when there is Line of Sight (RLoS) between radar and turbine.

3 Effects of Wind Turbines on Radar Performance

3.1 It has been shown that where RLOS exists and/or Radar Field Strength detection occurs, the wind turbines will appear as genuine aircraft targets. This effect has been shown to mask aircraft responses, even when the aircraft is in a high elevation beam and the turbine is in a lower sidelobe. The radar may also be desensitised by its clutter processing within the sector containing wind turbines.

3.2 Additionally, shadowing of aircraft at similar radar to target elevation angles at the wind turbines may occur, degrading radar performance. However, this is only expected to occur over short distances from wind turbines.

3.3 In close proximity, turbines can cause spurious reflections of returns. This is particularly a problem for Secondary Surveillance Radars.

4 Assessment of the Proposed Wind Farm

4.1 Dead Water Fell ATC Radar Field Strength Coverage summary

4.1.1 Range to Windfarm: 48.7km
Angle to Windfarm: 345.5°

RLOS Visibility 106m
Turbine RCS: 200m²
Aux Beam: Outside

4.1.2 A Field Strength Coverage plot was generated for the radar using these parameters (Figures 2), indicating that all of the turbines will be detected by the radar.

4.1.3 All other radars at this site have been checked.

4.2 There are no concerns regarding the following radars, which have been checked:

4.2.1 RAF – Berry Hill, Leuchars

4.2.2 ASACS – Brizlee Wood, Staxton Wold, Buchan

4.2.3 MAA - Warton

4.2.4 NATS – Great Dunfell

4.3 The proposed wind farm is beyond the protected range and/or outside the protective arcs of all other radars.

5 Conclusion and Recommendations

It is recommended that the Operations Staff check whether the proposed wind farm at Muircleugh Farm is in an area of vital air traffic operations controlled by the radar at Dead Water Fell. If so a decision to object to the proposal should be considered on the grounds referred to in paragraph 3.1 and paragraph 3.2.



Local area map for D10 15192 Muircleugh Farm windfarm (NT 50036 45509)

Figure 1

Official



DIO 15192(A) coverage estimate plot for Spadeadam Deadwater Fell Watchman Radar (110m, 200m² RCS)

Figure 2

Official



1Gp Headquarters
WO Battlespace Management Capability
Safeguarding

Defence Infrastructure Organisation - Safeguarding
Kingston Road
Sutton Coldfield
West Midlands
B75 7RL

See Distribution

Reference: 20141023 Windfarm-Planning
Applications-DIO15192-No objections despite
LOS-O

Date: 23 Oct 2014

**MUIRCLEUGH FARM (DIO15192) WIND FARM DEVELOPMENT PROPOSAL - NO
OBJECTIONS DESPITE LOS**

1. DIO requested that we review the proposal to erect a 7 x 110m turbine wind farm at Muircleugh Farm. Following a detailed examination of the proposal, the impact of the proposed development on ATC radars and the ATC usage of Airspace in the region it was considered that, although there would be an impact on ATC Operations, the impact was manageable.

Location	Conflicting Radar	DIO Ref
Muircleugh Farm	Spadeadam DWF PSR	15192

2. At present, HQ 1 GP BM Safeguarding does not have objections with the Muircleugh Farm proposal (DIO15192) as it is assessed that the effect on ATC operations at Spadeadam are manageable. This level of objection is held on the basis that there will be no additional turbines or a change in turbine height without a separate planning request. Also considered is that this proposal would be constructed before the number of future consented proposals in the area exceeds that which the radar can manage. The cumulative impact of multiple turbines in any given area would result in the degradation of radar performance. It should therefore be noted that the propagation of turbines in this area could lead to a future objection being raised in order to protect the MoD's radar coverage.

WO
for AOC 1 Group

Distribution:

DIO Sutton Coldfield

Emailed info to: