

Witness Reference Number SWFL7.2

Electricity Act 1989 (Sections 36, and Schedule 8)  
Town and Country Planning Act 1990 (Section 90)  
The Electricity Generating Stations and Overhead Lines (Inquiries Procedure)  
(England and Wales) Rules 2007

Public Inquiry to consider Section 36 Electricity Act 1989 Application by  
Steadings Wind Farm Ltd for consent and deemed planning permission to  
construct and operate a wind farm at Kirkwhelpington, Northumberland  
(Known as Steadings)

PROOF OF EVIDENCE OF

ROBERT MICHAEL TROTT BA (Hons)

AVIATION

MARTAIR LTD on behalf of Steadings Wind Farm Ltd

BERR Reference: GDBC/001/00278C

Tynedale Council Reference: 20060540

Northumberland Council Reference: 06/00023/CPC

10<sup>th</sup> January 2008 for Inquiry starting 15 January 2008

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## 1. Qualifications and Experience

- 1.1 I am Robert Michael Trott BA (Hons), and have been involved, either indirectly or directly in aviation for over 46 years, covering both military and civil areas. My degree is in Systems and System Failures.
- 1.2 I joined the Royal Air Force in 1962 initially as an Air Traffic Control Assistant based at the Southern Region Air Traffic Service Centre, RAF Uxbridge, before re-mustering into Aircrew from 1964, training as an Air Signaller and then spending six years in Coastal Command on Shackleton aircraft operating, amongst other things, air to surface radar on anti-submarine warfare operations.
- 1.3 On leaving the RAF in 1970, I joined the Department of Civil Aviation in Australia training as an Air Traffic Control Officer (ATCO), working in Area, Approach/Aerodrome, and Operations Control in Melbourne Vic., then later in Launceston, Tasmania.
- 1.4 I returned to the UK in 1972 to join the Civil Aviation Authority (CAA) as an ATCO, later to be transferred to National Air Traffic Services (NATS), and after an initial period at what was then Royal Aircraft Establishment Farnborough, I was posted to the London Air Traffic Control Centre at West Drayton.
- 1.5 I undertook various training courses and posts during the almost 29 years service at that unit, both operational (radar) and non-operational (operational planning) and retired in April 2002 having had a number of promotions. Peripheral tasks included Competency Examiner, On the Job Training Instructor, and being a member of the national Recruitment Team to select ab-initio trainees to attend the NATS College of ATC (CATC).
- 1.6 Eighteen months later I was approached by NATS to return as a part time Area Radar Instructor at CATC based at Hurn Airport. I accepted the position with effect from January 2004, and passed the training course to undertake these duties. I worked on training ab initio Air Traffic Control Officers until completion of the contract in June 2005 to take other employment.
- 1.7 Since that time I have accepted a number of consultancy posts, continued to train and examine students in Radio Telephony procedures (as a CAA Examiner), worked on a part time basis as a Flight Information Officer (Aerodrome) in the Visual Operations Room at Fairoaks Airport, and exercised the privileges of my Pilots Licence gained some 20 years ago.

- 1.8 Posts undertaken on behalf of the Guild of Air Traffic Control Officers (GATCO) for over 20 years have included UK representation at the annual conference of the International Federation of Air Traffic Controllers' Associations (IFATCA) in all three committees (Professional, Technical and Administrative). The latter tasks lead to an appointment on behalf of IFATCA to an International Civil Aviation Organisation (ICAO) committee on the use of English Language, and I am now employed as a consultant by the International Air Transport Association (IATA) as one of the Subject Matter Experts (SME's) developing an international programme to train and test the language competency of non-native English speakers.
- 1.9 Other posts covered over the past decade have included:-  
U K Flight Safety Committee (UKFSC)  
General Aviation Safety Council (GASCo)  
Confidential Human Factors Incident Reporting Programme (CHIRP)  
Parliamentary Advisory Council for Transport Safety (PACTS)
- 1.10 In addition, I have appeared in two sessions of the Parliamentary Select Committee for Transport Safety, spoken at two Public Inquiries on planning applications potentially affecting airports, and have been employed as consultant in a number of TV documentary programmes on Air Traffic Control (ATC) as well as other tasks related to the subject of this Inquiry.
- 1.11 I have been instructed on six Wind Farm development applications.
- 1.12 I am currently Deputy Operations Manager at Fairoaks Airport.
- 1.13 Martair Ltd, an independent consultancy on all aviation matters, was formed over 25 years ago and has two working Directors. Myself in Air Traffic Management (ATM), and covering other areas is a former British Airways A320 Training Captain (Martin Alder), with whom I confer on aircraft aspects, and who is currently Chief Instructor at a commercial flying training organisation that uses the Airbus 320.

## 2 Purpose and Scope of Evidence

I have been engaged by Steadings Wind Farm Ltd (SWFL) to assist in consideration of various aviation aspects of what is now a proposal for Wind Turbines to be erected near Kirkwhelpington in Northumberland.

- 2.1 Aviation concerns have been expressed by Newcastle International Airport (NIA) , National Air Traffic Services (en route division – NERL), and the Ministry of Defence Estates (MOD). At the time of writing, some aspects of these objections remain unclear. Additionally, some answers to various questions posed have only just been provided by the MOD and are still being considered by SWFL's aviation advisors. I must accordingly reserve my position to add to, or amend, my evidence in the light of information which is still emerging, or has been sought but not yet provided.
- 2.2 My evidence considers various aspects of potential problems associated with radar clutter originating from various structures, including Wind Turbines, in the context of operational Air Traffic Control relevant to :-
  - 2.3.1 Radar Technical
  - 2.3.2 Air Traffic Control Procedures
- 2.3 My colleagues, Mr Kenneth James deals with the technical implications in detail, along with possible solutions, in his Inquiry Evidence whilst Mr Malcolm Spaven deals with the overall Aviation aspects in his Proof. Mr Spaven has been lead author of an aviation report to which Mr James and I have also contributed. Mr Spaven appends that report to his evidence, though it necessarily remains a draft document pending receipt of further information and/or consideration of information received too late for incorporation at the time of writing. I have, for the most part, not sought to repeat the various matters contained in that draft report and my evidence should be taken as including the parts of that report relevant to my area of expertise.

### **3 Site Description and Development Proposal**

- 3.1 The Steadings development consists of 21 turbines that are proposed to be positioned on land near Kirkwhelpington and Great Bavington in Northumberland, approximately 13nm northwest of Newcastle International Airport.
- 3.2 The maximum height above ground level of a turbine blade tip is approximately 390 feet ( 125 metres - averaging approximately 1200 ft Above Mean Sea Level - AMSL in the area). The site covers approximately 560 hectares, leaving some considerable gaps between the positions of the turbines.
- 3.3 In addition to the potential impacts of Steadings alone, I also consider the effects of the addition of Steadings to a baseline which includes relevant consented and application-stage wind farm proposals.

## 4 Objections

SWFL's present understanding of, and responses to, the objections of NIA, the MOD, and NERL are set out in the draft aviation report. I also address the comments from members of the public. I summarise my understanding of comments from the latter below.

### 4.1 Third Parties

#### 4.1.1 Mr Keith Dawson (KD/1)

4.1.1.1 His evidence supports the MOD contention of Spadeadam being an essential element of the UK Defence organisation.

4.1.1.2 He also suggests an unspecified impact on civil operations

#### 4.1.2 Mrs Carol Brodie

4.1.2.1 Merely states that she and her family wish to make representations on Aviation.

4.1.2.2 In view of the lack of data available, it is not possible to comment further.

#### 4.1.3 CREDIT (CREDIT/6/1)

4.1.3.1 The organisation submits that local people and aviation authorities have legitimate concerns, that had not been recognised, on lethal combinations of massive wind turbines and low flying exercises.

4.1.3.2 I note, however, that the MOD has removed any objection from its concerns with regards to Low Flying operations.

4.1.3.3 The organisation states that there will be an inevitable increase in pressure

on the already restricted airspace due to the activities of military and civil users, but does not give any explanation of this perception.

4.1.4 Nicola Bell (NB/1)

4.1.4.1 Simply restates various aspects of the Statements of Case from MOD, NIA and NERL.

4.1.5 Peter Bennett

4.1.5.1 Repeats the general comments from NIA, MOD and NERL but goes on to make incorrect statements on what the radar is capable of providing to Air Traffic Control Officers.

4.1.6 Kenneth Carlisle

4.1.6.1 Asserts that the development will put military pilots, involved in low flying exercises, at risk – without specifying why this will occur.

4.1.7 Peter Stobie

4.1.7.1 Objects because of the public danger as a consequence of interference with low flying military aircraft – without specifying how this impact will arise.

4.1.8 Joy Lawson

4.1.8.1 Supports the MOD objection.

4.1.9 David Clipsham (DC/1/1)

4.1.9.1 Supports the MOD objection because of the effect on Defence Radars at Spadeadam, that he suggests is a matter of national security.

4.1.10 Thockrington Parochial Parish Council (TPCC/1)

4.1.10.1 Note the concerns referred to by  
MOD, NERL, and NIA

4.1.11 North East Assembly (NEA/1)

4.1.11.1 Suggests that RSS proposed  
changes ( policy 21 airport) could  
be relevant to the Inquiry, but does  
not explain why.

## 5 Air Traffic Service Unit Operations

### 5.1 General Principles of Air Traffic Control (ATC)

- 5.1.1 ATC is one of the sub-systems of Air Traffic Management (ATM), and is established for the Safe, Orderly and Expeditious Flow of Air Traffic<sup>1</sup>. This is achieved by separating aircraft in terms of vertical or longitudinal criteria using parameters set by the International Civil Aviation Organisation (ICAO)<sup>2</sup>. One of the options is to use radar as a tool to assist in the control of aircraft. Although this facility enhances the traffic capacity of the ATC system, it is not a prerequisite for operations, and many airfields operate without it as do some Area Control Units throughout the world. An Air Traffic Service Unit (ATSU) is a generic term that encompasses any of those units involved in ATM.
- 5.1.2 The specific service offered, or provided, to aircrews is dictated by the type of airspace within which flight is taking place, and is also affected by the flight rules that the crews wish to utilise. These in turn may be constrained by the meteorological conditions.
- 5.1.3 Separation is normally only provided between aircraft flying under Instrument Flight Rules, although details of conflicting Visual Flight Rules aircraft are passed. For aircraft flying under the VFR, separation from other aircraft is the responsibility of the pilot. The latter procedure is effectively to 'see and avoid', whilst the former relies on operating rules.
- 5.1.4 Airspace in itself is not dangerous in much the same way as roads are not until drivers err. ATC has the responsibility to adapt to the environment, to ensure a safe situation. The mere presence of radar clutter, where this is not eliminated or reduced is part of life. It does not make the airspace unsafe nor does it prevent Air Traffic Control Officers (ATCO's) providing an appropriate service. Indeed, those installing radar systems and providing radar services must necessarily take account of and provide for both present and future sources of potential clutter. The mere fact that a proposed development will paint on radar does not, by itself, render that development unacceptable.

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<sup>1</sup> CAP 493 Section 1 Ch 1 para 8.1 CD 295

<sup>2</sup> ICAO Doc 4444 PANS/OPS

- 5.1.5 Aircraft are routed by ATC, either tactically or strategically, so as to avoid the clutter by any required separation distance. The ATCO responsible will then ensure the workload remains manageable using a number of techniques available, thus ensuring safety.
- 5.1.6 Controlled Airspace is airspace within which an Air Traffic Control Service is provided for IFR flight, although in some circumstances VFR flight is also permitted. Traffic outside CAS, whether VFR or IFR, may seek and be given a service although compliance with instructions, unlike for a service within CAS, is not compulsory. One of the major differences between Controlled and Uncontrolled Airspace, is that when using radar in the former the requirements for avoiding unknown aircraft are less prescriptive due to the 'known environment' created by requiring all aircraft to obtain permission to enter it.

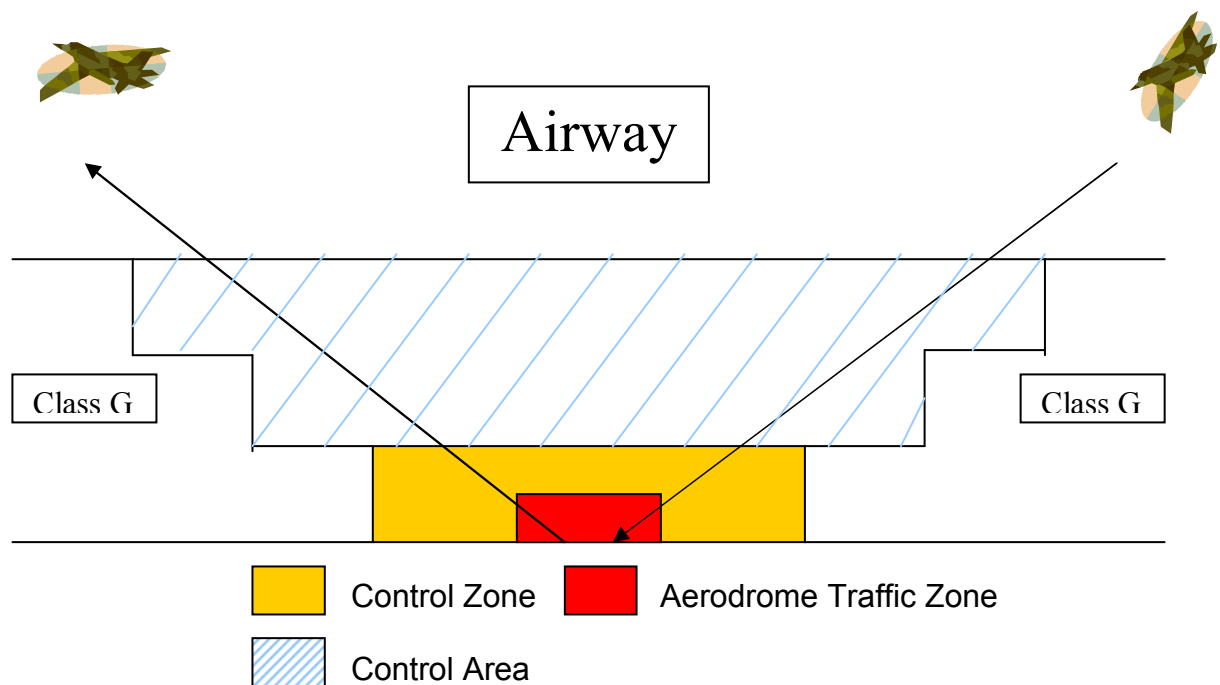


Fig 1 Typical Controlled airspace structure around an Airfield

- 5.1.7 The Control Area will be designed so as to provide the best compromise between the requirements of the airfield so as to keep aircraft in Controlled Airspace, and the demands of other local users to operate without

having to obtain a clearance and/or experience constraints on their flight.

- 5.1.8 NIA is amongst the list<sup>3</sup> of 'Officially Safeguarded Aerodromes'.
- 5.1.9 The term 'Officially Safeguarded' relates solely to those airfields where the UK Government has provided finance in the past for development. Most airfields will have arrangements for safeguarding with local government, usually in the form of a map.

## **5.2 Newcastle International Airport**

- 5.2.1 NIA is a Regional Airport located in Class 'D' Controlled Airspace (CAS) within which Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) aircraft are permitted to operate provided permission is obtained prior to entering the airspace. The unit also provides an Air Traffic Control (ATC) Service to aircraft arriving at, or departing from, the airfield although initially or ultimately outside CAS respectively. In addition, the unit provides air traffic services to aircraft transiting in the vicinity of the airfield outside controlled airspace. The former service requires mandatory compliance with instructions, and it is assumed by Controllers that it will also apply outside CAS (although this is not mandatory) unless the flight crew state otherwise. The latter service may be a sub-service of what is known as 'Lower Airspace Radar Service (LARS) for which it receives payment from the Civil Aviation Authority. It holds a Licence issued by the UK Civil Aviation Authority (CAA)<sup>4</sup> permitting it to operate in accordance with specified conditions, and this allows the movement of flight for the public transport of passengers, as well as private flying and training.
- 5.2.2 Aviation Legislation – Air Navigation: The Order and the Regulations<sup>5</sup> (ANO) - requires that aircrew obtain permission from the appropriate ATSU when wishing to fly within the Aerodrome Traffic Zone (ATZ) of an airfield where one is established. There is also a similar requirement when wishing to take off or land at an Airfield where ATC is the control authority, and to obtain clearance into CAS where this is established (as it is in the case of Newcastle).

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<sup>3</sup> ODPM Circular 1/2003 CD90

<sup>4</sup> CAP 168. CD 288

<sup>5</sup> CAP 393. CD 289

- 5.2.3 NIA has one runway for approached/departure from one of two directions, depending on the wind - with the normal operation being to take off or land into the wind. Runways are named in accordance with their magnetic alignment and at NIA these are 07/25 . The length of the runway (2329 metres), allied to the prevailing wind velocity, determines the suitability for any particular aircraft, but is long enough for most modern aircraft.
- 5.2.4 NIA is notified in the UK Aeronautical Information Publication (UK AIP)<sup>6</sup> as having an ATZ and a Radar Minimum Altitude Area (RMA) . The latter is merely a pre-determined and notified airspace of convenience for the Air Traffic Controller for the purpose of safe descent clearances with regards to terrain or obstructions
- 5.2.5 In simplistic terms, procedural operations are those without the use of radar, and require controllers to separate aircraft in terms of time or vertical separation of 1000ft. The former separation standard is only used at Newcastle when radar is not available, for example due to equipment unserviceability. Navigation and approach/landing aids are available at NIA so as to permit appropriately qualified pilots flying suitably equipped aircraft to land and take off in relatively poor weather conditions.
- 5.2.6 Using the prescribed standards given in the Manual of Air Traffic Services Part 1 (CAP493), ATC may give instructions to crews to keep aircraft separated by the appropriate vertical or lateral minima, when separation is actually required.

### **5.3 Low Flying Rules & Other Legislation**

- 5.3.1 The basic low flying regulation of the Rules of The Air<sup>7</sup> applicable to all civil aircraft (except police operations) is to remain at least 500 feet away (either vertically or laterally) from people, vessels, vehicles, or structures, unless operating under normal aviation practices for take off and landing.
- 5.3.2 There are further rules about flight over congested areas of a Town, City, or Settlement for both VFR and IFR Flight. For example a height of 1000ft must generally be maintained above any fixed obstacle

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<sup>6</sup> CAP 32. CD 307

<sup>7</sup> CAP 393. CD 289

within 600 metres of the aircraft, and an aircraft must maintain a height adequate to alight clear of the congested area in the event of a power failure.

- 5.3.3 Jet aircraft, flying below 10,000ft have a speed limitation of 250 knots or less except when in Controlled Airspace and ATC approve otherwise.
- 5.3.4 Military aircraft are generally exempt from following civil legislative aviation requirements, although they have a Military regulation of Minimum Separation Distance of 250ft in most parts of the UK, including the Steadings area.

#### **5.4 Air Traffic Control Procedures**

- 5.4.1 ATC staff direct arriving, departing and transit aircraft in accordance with the separation standards mentioned in para 5.2.6. In the case of NIA, whilst within the Class 'D' airspace surrounding the airfield, aircrews will be notified about conflicting traffic or given specific instructions to avoid other aircraft depending on the flight status (IFR or VFR). A similar service will be provided outside CAS depending on the type of radar service requested from ATC. Generally ATC does not separate VFR from IFR or other VFR aircraft, although traffic information may be passed. However IFR aircraft are separated from other IFR traffic, subject to the form of service being provided and that requested by aircrews. In the Steadings area, where currently it is Class G, were the airspace to change to that of a Controlled type, the only difference ensuing would be that a clearance would have to be obtained from ATC to enter it, and that separation would be applied in accordance with the above rationale.
- 5.4.2 Local procedures, published in the airfield's Manual of Air Traffic Services Part II (local orders) will base operations on the UK/ICAO Standards and Practices promulgated in the Manual of Air Traffic Services Part I (Generic Orders). These will dictate a method of operation to ensure safe passage for IFR operations, whilst VFR operations require aircrews to keep a good look out and stay away from other aircraft by following Rules of Flight laid down in the Rules of the Air section of the Air Navigation Order.
- 5.4.3 Primary Surveillance Radar (PSR), that provides ATC with the position of an aircraft, is often supplemented

by Secondary Surveillance Radar (SSR), a system that gives a unique identification together with other data in addition to the basic information. Full details of ATC operations using Radar Services are laid down in MATS Part 1 Chapter 5 and the 'Aviation Report' highlights much of the detail appropriate to this Inquiry.

- 5.4.4 Controllers will use the available radar and/or other data to plan a course of action and issue appropriate instructions to achieve the objectives. The normal procedure for arrivals will be for vectoring by the radar controller to intercept the extended centreline of the landing runway and then to follow the electronic guidance of the Instrument Landing System (ILS). Departures will be permitted to route as direct as possible towards either their initial entry point into the Airways System (akin to the motorway of the skies) or their destination, taking into account the position and level of possible conflicting aircraft. Some general routings are specified, including requirements for noise limitation, and are documented in the Air Pilot (UK AIP) in section AD2-EGNT<sup>8</sup>.
- 5.4.5 ATC can be simplistically sub-divided into (1) local aerodrome operations that are generally separated by visual means by the 'Tower', and (2) the 'Approach' unit where either radar or procedural separation standards will be utilised.
- 5.4.6 NIA has both radar and non-radar instrument approaches and landing procedures. These include predetermined and specified published standard local arrival and departure routes, as well as tactically implemented shorter routes for use when there are no arrival delays. Tracks and procedures for their use to/from commonly used locations or destinations on a tactical basis will be covered in the local instruction manual.
- 5.4.7 It is important to note that NIA can operate safely without the need for a serviceable radar facility, and is permitted to do so under the terms of its CAA Licence. This is achieved by applying either procedural separations, based on timing or reported distance from a radio navigation aid, or the vertical standard.

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<sup>8</sup> CD 307

- 5.4.8 Only those flights that approach/depart Newcastle from/to the north west can potentially be affected by clutter in the Steadings area. All others will be either in controlled airspace or route well away from the proposed wind farm location.

## 6 Potential effects caused by Wind Farms

### General

- 6.1 The technical aspects of potential electromagnetic interference on radar, navigation aids, and radio, are explained by my colleague Mr Kenneth James in his Proof of Evidence, and is also dealt with in 'The Aviation Report'.
- 6.2 Any effects on radar are dependent on a number of circumstances. Consideration of the position of the proposal in relation to any airfield or other facility, along with operational procedures, lead to an assessment of operational significance.
- 6.3 Secondary Surveillance Radar is used by NIA and the other units. It is very rare for SSR to give inaccurate positions of aircraft on radar displays, and due to the distance of the Steadings wind farm relative to both Newcastle and the other units, interference from that source can be ignored, so it can be concluded that the wind farm will have no impact on SSR. My evidence therefore focuses on the potential effects of the Steadings Wind Farm on primary radar.
- 6.4 Where Wind Turbines cause interference to appear on radar displays, an Air Traffic Control Officer using such a facility to expedite traffic and maximise capacity of the airfield when more than one aircraft is arriving/departing at the same time, may be presented with a number of situations. Irrespective of the exact circumstances, tactical solutions will be undertaken such that safety is ensured, although short delays may arise that could impact on overall capacity.
- 6.5 With regards to physical effects on aircraft, other than flying in accordance with normal aviation practice, to take off or land, legislation requires aircrew generally to keep an appropriate separation distance between their aircraft and any turbine.
- 6.6 Quite apart from anything else, it would be quite wrong to regard the presence of an Air Traffic Control unit as requiring development in its environs to be sterilised. It is incumbent on the providers of ATS<sup>9</sup> (whether radar or procedural) to ensure they have sufficient flexibility within their procedures and equipment to respond to the fluctuations and changes in the baseline of its surroundings.

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<sup>9</sup> CAP 670. CD 287

- 6.7 The physical presence of wind turbines located at Steadings will not need to be considered by ATCOs at NIA as the turbines will not breach any of the airports obstacle limitation surfaces. Aircraft will be legislatively obligated to remain clear of them. Any effect on radar will not impact upon aircraft safety, and the latter fact was accepted by the Inspector in the Knabs Ridge Planning Appeal APP/E2734/A/04/1161332 when it was noted that ATC will not allow new developments to lead to unsafe operations, and will therefore adapt procedures to the situation in order to maintain the safe and expeditious movement of air traffic, perhaps where terrain, buildings, or other obstacles break through the radar clutter filters.
- 6.8 As is explained in 'The Aviation Report' and by reference to the RMA chart depicted in the UK AIP AD2-EGNT-5-1<sup>10</sup>, with the proposed location of the wind farm, some 13 nm North West of the airfield, the likely effect of permanent and material clutter is assessed as being minimal, as the site can be seen to be outside the ATC RMA area. Although NIA may still vector its own traffic in the Steadings area, along with LARS traffic, there is little potential for any material impact on operations as only a small proportion of current operations arrive or depart from/to the segment between north west and west. It is highly unlikely that an aircraft would suddenly appear on the radar screen for the first time in the same location as the wind farm – unless the aircraft has taken off from a site in the immediate vicinity of the wind farm, an event that could occur prior to the development of the wind farm but unlikely once construction has taken place. Generally, an aircraft will produce a number of radar returns which would have invariably been seen by the Controller prior to reaching the site and would show the flight path of the aircraft. Specifically, the only likely effect on aircraft operations is a potential for some radar clutter from Steadings on the primary radar service used by NIA for inbound aircraft approaching either runway 25 or 07 from the North West. Departures from either runway routing to the North West could also potentially be affected. However, there are still outstanding questions posed to NIA on its operations that may affect the foregoing.
- 6.9 ATC Officers already have to deal with clutter on the radar display, especially in adverse weather conditions, or a very high pressure system when anomalous propagation may occur.

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<sup>10</sup> CAP 32 CD 307

- 6.10 The generally used approach configuration is to descend an aircraft to a level no lower than that dictated by the RMA map until established on the Instrument Landing System or one of the other approach options. The angle of descent is of the order of 3 degrees, and this equates to approximately 300ft of height per mile distant from the runway touchdown point.
- 6.11 The ICAO standard<sup>11</sup> is to intercept the final approach path no later than 5nm from touchdown, although most operators prefer a stable approach to be attained prior to this, and often the intercept point is between 8 and 12 nm. The common used descent level is therefore between 2500ft and 3000ft, both levels permissible within the NIA RVA, and there is also a requirement to intercept this nominal glide path from below. Such requirements are unaffected by any potential clutter originating from Steadings because the approach procedures are completed away from that area.
- 6.12 It can be seen that any aviation impact on NIA does not represent a substantial reason for refusing the Steadings proposal.
- 6.13 So far as concerns the NERL and MOD objections, for the reasons set out in the draft aviation report, and in the next section of this proof, I do not consider, at the time of writing, any potential effects of Steading, either cumulatively or in isolation, to be unacceptable.
- 6.14 A letter from Mr Mark Smailes of the CAA Directorate of Airspace Policy<sup>12</sup>, CAA lists a number of concerns about the development that should be investigated. I believe all these aspects are covered in the draft aviation report and the Proofs of Evidence of myself and Mssrs James and Spaven.

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<sup>11</sup> ICAO Doc 4444 Standards and Recommended Practices

<sup>12</sup> CAA DAP 27 Apr 2006 8AP/31/05/01

## 7. Assessment

For ease of understanding, the following includes elements taken from the draft aviation report and some sections apply to a number of the objecting organisations but are not repeated in each.

- 7.1 There is a good deal of guidance material now available to wind farm developers and Air Traffic Service Providers, listing the concerns as well as potential problems and methods of attending to them, such as the CAA publication Policy and Guidelines on Wind Turbines<sup>13</sup>, in conjunction with CAP 670 and CAP 493.
- 7.2 The CAA Publication, Air Traffic Services Safety Requirements<sup>14</sup> states that it is the responsibility of the Air Traffic Services provider, to mitigate against any deterioration to Air Traffic Services caused by Windfarms although it would be reasonable for a developer to co-operate in providing evidence that safety of the ATS provision will not be compromised or degraded by the development.
- 7.3 Application of the parameters set out in the CAA publication 'The Provision of Guidelines for the Installation of Wind Turbines near Aeronautical Radio Stations'<sup>15</sup> suggests that (other than primary radar) the Steadings site is sufficiently far away as not to cause potential for interference
- 7.4 The Manual of Air Traffic Services (MATS) Part 1<sup>16</sup> requires controllers to limit a radar service when an aircraft is operating outside controlled airspace, and within 10 miles of permanent echoes. It is likely that the turbine masts will be considered as a permanent echo (although invariably will not be displayed as only moving targets will be), whilst the blades, when rotating, may not be, although with the radar technology available these might also be suppressed or not actually be displayed. Furthermore, when operating inside Controlled Airspace (which might be the case at NIA in the future if this is established either to cover any increase in traffic demand to/from the NW or

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<sup>13</sup> CAP 764. CD 299

<sup>14</sup> CAP 670 Part B Section 4 GEN01 para 3.6 and 4.2. CD 287

<sup>15</sup> CAA Paper 99002

<sup>16</sup> Section 1 Ch 5 para 1.6.3 (a) CD 295

otherwise), in most circumstances controllers do not have to avoid unknown targets .

- 7.5 MATS Part 1<sup>17</sup> further provides instructions on the options available to a radar controller in assessing the effects of clutter on service provision, and what to do in the case where such a service has to be limited or withdrawn.
- 7.6 MATS Pt 1<sup>18</sup> does permit the use of SSR alone to provide separation as long as pilots are made aware of the limitations, and where it is to overcome a temporary deficiency in primary radar cover, although not permanent clutter. It is important to realise that primary radar is the only aspect here for which the possibility of clutter exists, and guidance on this situation is included in CAP 764<sup>19</sup> Chapter 4 para 2.3.
- 7.7 In the 'Wind Energy and Aviation Interests – Interim Guidelines'<sup>20</sup> it states that 'if the turbine generates a return on his radar and the controller recognises it as such, he may choose to ignore it' (as is reportedly the case of Swaffham at RAF Marham and to a certain extent at the civil airport at Norwich with regards Scroby Sands). An example of this from Prestwick Airport is shown in the Proof of Evidence from Mr James at para 9.1
- 7.8 Despite assertions to the contrary, bearing in mind that NIA is able to operate 'safely' under the terms of the UK CAA Safety Regulation Group requirements, without radar during both day and night operations, then this area of concern can objectively be viewed as a matter of commercial concern between two conflicting areas of interest. Even assuming there might be an effect on airfield capacity at periods of peak demand, there will not be an effect on safety or a specific constraint to expansion of routes serving the airport, as, whilst slight tactical delays might occur to match demand with ATC limitations, there will be ample opportunity to introduce new routes.
- 7.9 Air Traffic Control will always operate to maintain the status quo as regards aircraft safety, and has the flexibility within the Air Traffic Management system (under approvals based on Safety Management System assessment) to do so.

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<sup>17</sup> Section 1 Ch 5 para 18. CD 295

<sup>18</sup> Section 1 Ch 3 Page 14 para 10.5.1 (b). CD 295

<sup>19</sup> CD 299

<sup>20</sup> Annexe D Radar Systems and the Effect of Wind Turbines para D3.2.2 . CD 291

- 7.10 Operational limitation of a radar service outside of Controlled Airspace can be included in the possible options available to controllers in accordance with MATS Pt 1.
- 7.11 Even if currently available technical measures did not fully suppress clutter, then the procedural alternative of tactical and/or strategic radar vectoring re-routes can be instigated. Appropriate normal separation in the case of the latter would take account of any permanent or intermittent clutter as deemed relevant to the controller at the time and dependent on the precise assessment of the concern.

### **Newcastle International Airport**

- 7.12 On its own, Steadings will be of only minor consequence to NIA, even if technical measures do not eradicate any clutter. Inbound routes for runway 25 from either the north or south will be able to avoid the proposed development, whilst most arrivals for runway 07 could do so by utilising the airspace to the south of the runway extended centreline. The additional presence of the other proposals will merely alter the area of clutter. The potential effects, in any event, will not prevent normal operations from/to either runway. I refer to, without repeating, Section 4 of the draft aviation report.

### **Spadeadam**

- 7.13 So far as concerns Spadeadam operations these can be appropriately maintained. There is no relevant impact on the defence of the Realm. I refer to, without repeating, Section 6 of the draft aviation report.

### **NATS En Route**

- 7.14 I refer to, without repeating, Section 5 of the draft aviation report. Any impact of Steadings here, whether in isolation or cumulatively, does not represent a reason for refusal.

### **Third Party**

- 7.15 All the 'third party' objections either reiterate the comment from one or more of the three principle objectors (MOD, NERL, and NIA) or base their concerns on statements from the relevant Statement of Cases.
- 7.16 None offers any specific evidence, or supporting information. Many have incorrectly interpreted statements

of others, and none has produced anything either new or substantive.

7.17 All the public comment can be covered by reference to responses to the major objectors.

## **8 Conclusion**

- 8.1 Notwithstanding any potential for clutter on the radar display of any of the objecting organisations, if it does occur then it is likely to be of only minor consequence.
- 8.2 I refer to, but not repeat, the evidence of Mssrs James and Spaven, and to the draft aviation report. There can be no sustainable objection to this scheme on aviation grounds either cumulatively or in isolation.

This concludes my evidence and finally, I confirm the following:

- I understand my duty to the Inquiry and have complied, and will continue to comply, with that duty.
- I confirm that this evidence identifies all facts which I regard as being relevant to the opinion which I have expressed, and that the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- I believe the facts stated within this proof are true and that the opinions expressed are correct.

Signed..... Dated.....

## **9 Bibliography**

- 1 CAP 32 - UK AIP
- 2 CAP 393 - Air Navigation: The Order and the Regulations
- 3 CAP 493 - Manual of Air Traffic Services Part 1
- 4 CAP 764 - CAA Policy and Guidelines on Wind Turbines
- 5 ICAO DOC 4444 – Recommended Standards & Practices (PANS OPS)
- 6 CAP 168 - Licensing of Aerodromes
- 7 CAP 670 - ATS Safety Requirements
- 8 CAP 760 - Guidance of the Conduct of Hazard Identification
- 9 Wind Energy and Aviation Interest Interim Guidelines ETSU  
W/14/00626/REP
- 10 ATSIN 56
- 11 CAP 738 - Safeguarding of Aerodromes
- 12 ODPM Planning Circular 1/2003
- 13 CAA Paper 99002 - The Provision of Guidelines for the Installation of  
Wind Turbines near Aeronautical Radio Stations'

## 9 Glossary of Abbreviations and Terms

### Abbreviations

ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management
ATS	Air Traffic Services
ATSU	Air Traffic Service Unit
ATZ	Aerodrome Traffic Zone
CAA	Civil Aviation Authority
CHIRP	Confidential Human Factors Incident Reporting Programme
GASCo	General Aviation Safety Council
GATCO	Guild of Air Traffic Control Officers
GONE	Government Office for the North East
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFATCA	International Federation of Air Traffic Controllers' Associations
IFR	Instrument Flight Rules
LACC	London Area Control Centre
LTCC	London Terminal Control Centre
MACC	Manchester Area Control Centre
NATS	National Air Traffic Services
NERL	NATS En Route Ltd
NIA	Newcastle International Airport
PACTS	Parliamentary Advisory Council for Transport Safety
PSR	Primary Surveillance Radar
RADAR	Radio Detection And Ranging
RVA	Radar Vectoring Area
ScACC	Scottish Area Control Centre
SME	Subject Matter Experts
SSR	Secondary Surveillance Radar
UK AIP	United Kingdom Aeronautical Information Publication
UKFSC	United Kingdom Flight Safety Committee

VFR	Visual Flight Rules
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