

A close-up, over-the-shoulder view of a pilot in a cockpit. The pilot is wearing a blue headset with a microphone. The cockpit's instrument panel with various gauges is visible in the lower foreground. The pilot is looking out a large window at a hazy, mountainous landscape. The text "Kyoto energypark" is overlaid on the upper part of the image.

Kyoto energypark

12. Aviation



## 12.0 AVIATION

### 12.1 Introduction

Garrad Hassan completed an assessment of Aviation issues which is attached in *Appendix E Garrad Hassan Assessment of Environmental Issues Aviation*. The report examines the location and heights of the proposed wind turbines and impacts in relation to Aviation activities within the surrounding area, principally from Scone Airport. Scone airport is located on the Bunnan Road west of Scone at approximately 5.5 km from the closest turbine proposed at Mountain Station and approximately 6km from the closest turbine proposed at Middlebrook Station (see Figure 12.4).

### 12.2 Civil Aviation Authority (CASA)

The Civil Aviation Safety Authority (CASA), the NSW aviation regulatory body, requires notification:

- (a) *By an aerodrome operator, if it becomes aware of any development or proposed construction near the aerodrome that is likely to create an obstacle, or if an object will infringe the obstacle limitation surfaces (OLS) of an aerodrome; or*
- (b) *By a person who proposes to construct a building or structure the top of which will be 110 metres or more above ground level.*

The height of the proposed wind turbines are 150 metres above ground level (agl). As the proposed turbines have a total height of greater than 110m, notification to CASA was required. The Obstacle Limitation Surface (OLS) map was obtained from the Upper Hunter Council (the operator of Scone airport) and indicated that the turbines fall outside the OLS.

CASA confirmed that the proposed turbines on both sites fall outside the OLS. CASA also advised that obstacle lighting would be required under the CASA Advisory Circular AC 139-18(0) titled "Obstacle Marking and Lighting of Wind Farms". An obstacle lighting plan will be prepared in accordance with AC-139-18(0) and approved by CASA prior to installation of the wind turbine components.

In accordance with CASA Advisory Circular AC 139-08(0), "Reporting of all Tall Structures" any structures that are between 30 to 110 metres above ground level, must be reported to the RAAF Aeronautical Information Service (AIS). These structures are defined as 'Tall Structures', details of which are kept on the RAAF database.

This proposal does not include any structures which are 30 – 110 metres above ground level. Proposed new transmission poles (Either 66kV or 132kV) would have a maximum height of 19-25 metres above ground level, depending upon pole application and would therefore not require notification to RAAF.

Two existing wind masts are located on the Mountain Station site at a height of 45 metres and 65 metres above ground level respectively. These existing structures are not part of this proposal, and details have previously been logged with the RAAF.

### 12.3 Air Services Australia

Air Services Australia (the Federal aviation regulatory body) was advised of the proposed Kyoto Energy Park. The response received indicated that some of the turbines would infringe upon three flight procedures for the Scone local airport. These procedures were denoted 29RNAV (Figure 12.1) , NDB (Figure 12.2) and CAT C circling (Figure 12.3).

Each of these three procedures define three dimensional surfaces within space in various configurations. Details of the precise three dimensional boundary conditions of the flight procedures were obtained from Airservices Australia. Garrad Hassan confirmed using in-house 3D modelling software that some of the turbines in the original 47 turbine layout infringe the flight procedures identified by Airservices Australia.

The layout for the proposed Kyoto Energy Park project was revised to a 42 turbine layout. This revised layout incorporated a change to the position of turbine 15 (Mountain Station) and some of the turbines on Middlebrook Station to avoid infringing the Airservices Australia procedures.

In the revised layout (42 turbine layout) turbines 36, 37, 38, 39, 40, 41 and 42 (Middlebrook Station) infringe the Airservices Australia procedures. Pamada are currently investigating aircraft flight procedures at Scone to determine possible modifications to avoid infringement. This issue needs to be resolved for the proposed layout of the Kyoto Energy Park to comply fully with aviation considerations.

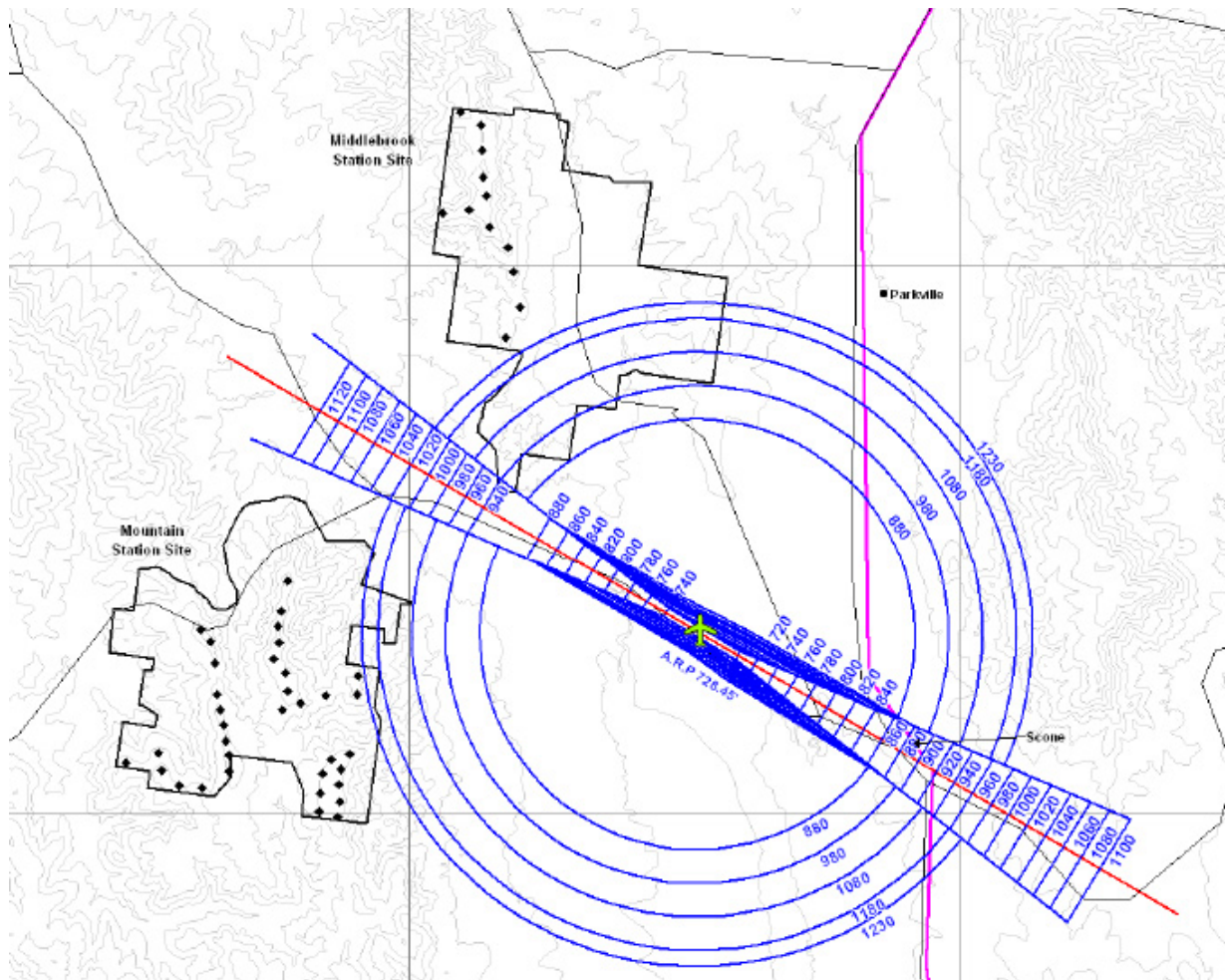


Figure 12.0 Map of Obstacle limitation surface (OLS) for Scone aerodrome.

Turbines 32,33,34 and 35 (Middlebrook Station) are outside the Airservices Australia procedure, and are therefore not encroaching any of the flight procedures.

Approval for the current turbine layout for 36, 37, 38, 39, 40, 41 and 42 (Middlebrook Station), has still to be resolved and would ultimately be subject to compliance with Air Services Australia procedures and CASA. Assuming no feasible alternative for these turbines is reached then the remaining turbines on Middlebrook Station (i.e. 32,33,34 and 35), would still be constructed.

In the revised layout (final layout) all wind turbines on Mountain Station are outside flight procedures.

Airservices Australia otherwise confirmed that the proposed Kyoto Energy Park wind farm component will not impact on Precision/Non-Precision Nav Aids, HF/VHF Communications, Cables, ASMGCS, Radar or Satellite/Links.

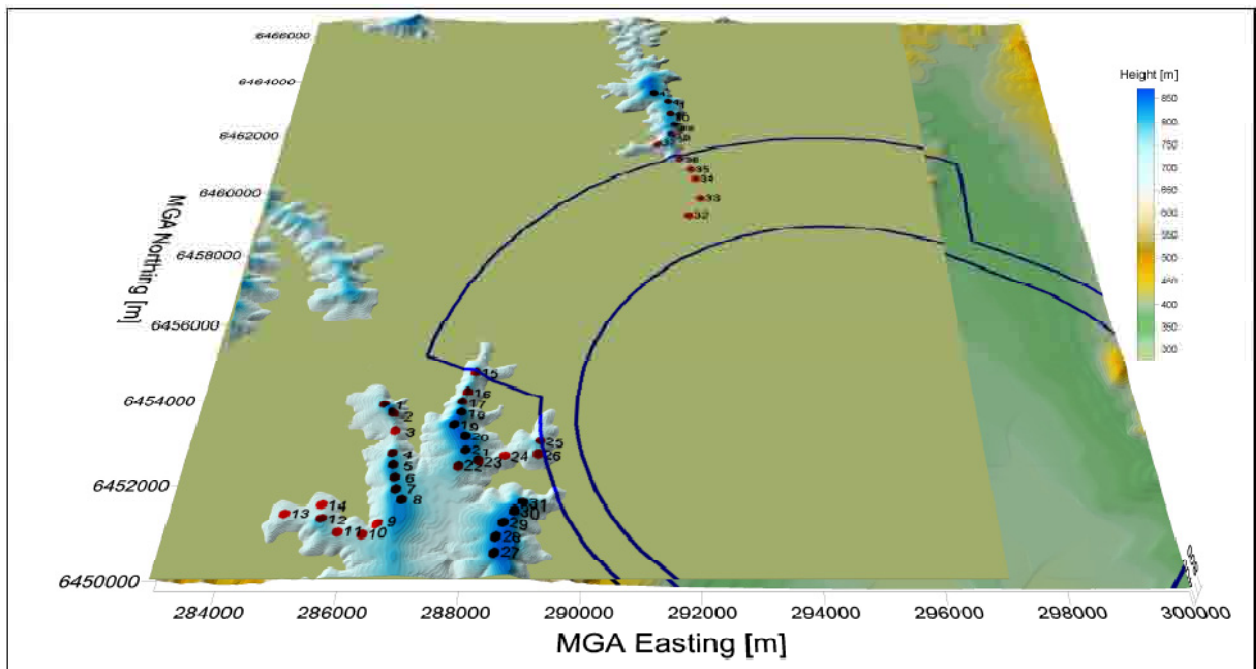


Figure 12.1 Scone aerodrome 29R NAV sloping protection surface

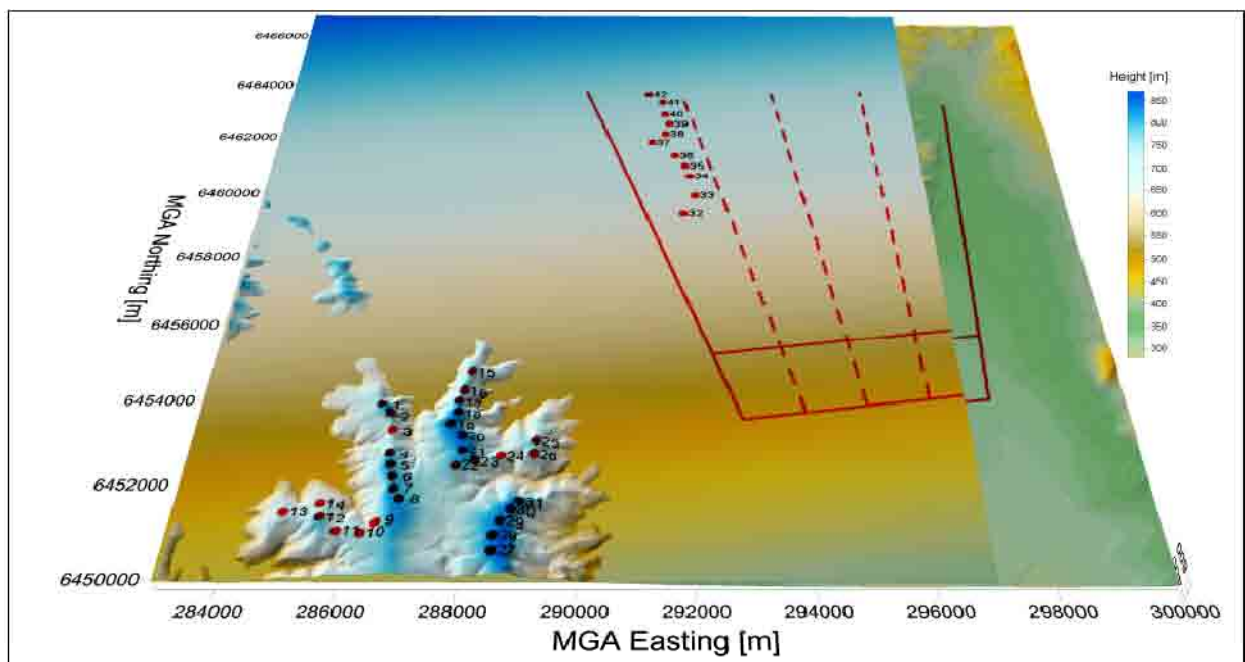


Figure 12.2 Scone aerodrome NDB sloping protection surface



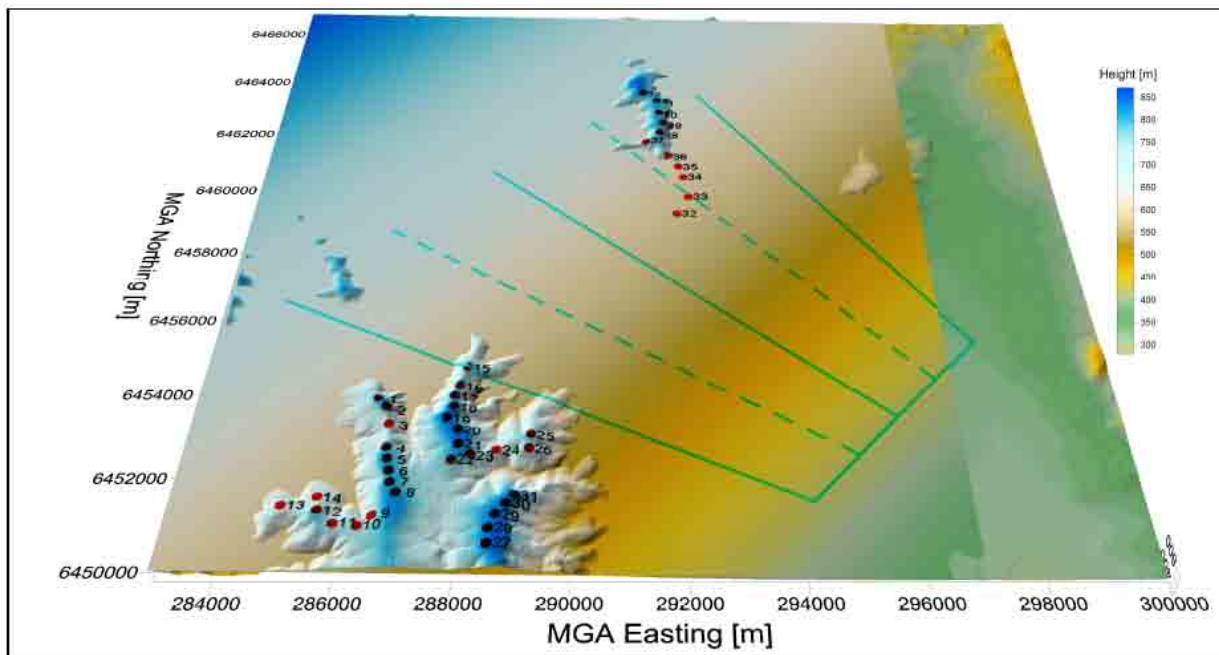


Figure 12.3 Scone aerodrome Circling protection surface

## 12.4 Department of Defence

The Department of Defence were supplied with details of the Kyoto Energy Park proposal. The Department of Defence confirmed that the closest RAAF base was at Williamtown with flight areas close to the Kyoto Energy Park proposal at Scone but would not be affected by the proposal. Furthermore the proposal would not impact upon any defence communications facilities. A copy of the letter of response from the Department of Defence is contained in *Appendix E(i) Department of Defence – Response to Aviation Issues (12 March 2008)*.

The Department of Defence requested the following be supplied to them as follows:

- Design details of the wind turbine structures prior to commencement of construction (including location and height), and progress of the construction phase.
- Details in relation to lighting for the final turbine layout in accordance with CASA Advisory Circular AC 139-18(0) titled “Obstacle Marking and Lighting of Wind Farms”.
- Details of the final positioning of all structures above 30m be supplied to the RAAF – Aeronautical Information Service (RAAF AIS) in Melbourne. Details of the two existing wind masts on Mountain Station have been provided to the RAAF AIS.

## 12.5 Commercial Operators

There are four (4) main commercial and recreational operators that are based at the Scone local airport. These include aerial spraying and topdressing operations, survey mapping, aerial training and aircraft maintenance. All operators are required to use flight procedures and emergency navigational procedures in operation at the Scone airport (i.e. protected airspace) during takeoff and landing and for emergency procedures in accordance with CASA and Airservices procedures as described in Section 12.2 and 12.3 above. As all final turbine structures will be located outside protected airspace there will be no impacts on commercial aircraft using the airport.

Information regarding aerial spraying and topdressing operations in and around the Scone Aerodrome were made with the Manager of Technical Support Services from the Upper Hunter Shire Council. The Manager of Technical Support Services confirmed that the requirements from Airservices Australia would need to be followed and reflected Councils comments.

Pamada consulted and provided details of the Kyoto Energy Park proposal to four operators to determine if any local impacts were identifiable. Two of the commercial operators (Payes Air Service and Scone Aeroclub) utilise an area for training which includes a small portion of the airspace over the Mountain Station site. The general training area for these operators are large in comparison to the area utilized by the wind turbines on Mountain Station as shown in Figure 12.4. These training areas are not within the limits of the Middlebrook Station property. The other two operators (Payes Airservices and Airpasture Pty Ltd) make predetermined flights to surrounding rural locations for spraying applications and topdressing.

All four operators verbally confirmed that they had no objections with the Kyoto Energy Park proposal for installation of wind turbine generators and did not envisage any foreseeable impacts on individual operations.

It is expected that some minor restrictions to the area of utilisation for local operations would occur as a result of the imposition of the wind turbines on Mountain Station however this impact would be manageable and not pose a safety risk for local aircraft.

Prior to construction of wind turbines a map showing physical dimensions and final co0-ordinates of all structures will be supplied to the Upper Hunter Council.

## 12.6 Local Private Airstrips

Private airfields are located on various properties throughout the region, many of which are marked on topographic mapping. Three private airstrips are located on the landowners property, one at Middlebrook Station and the other two are makeshift airstrips located at Mountain Station on Mt Moobi Plateau, and close to the entrance point of the site. These strips are used by the landowner and others for monitoring of stock and for accessing grazing areas, tourism and aerial spraying. There is not expected to be any safety risks for planes that may use these private air strips. The Mountain and Middlebrook station sites are used mainly for grazing. No cropping is undertaken on the site. Aerial spraying activities are very infrequent. The Mountain Station airstrip is currently located on Mt Moobi plateau and will be replaced by the Mt Moobi Solar PV Farm currently proposed for the location. This airstrip is used solely by the landowner who has agreed to the replacement of the makeshift airfield.

Only one other private airstrip was located within 5 km of the two sites. This airstrip is located approximately 4km west of the closest turbine on Middlebrook Station. Other private airstrips are scattered at considerable distance to the west of the two sites and the Bunnan township. Nearly all of these rural airstrips are makeshift and used rarely or on an infrequent basis for operators accessing properties from Scone airport.

The wind turbine structures are not considered to be safety hazards to aerial agriculture operations as the structures are readily visible and the pilots can easily avoid them. Also these smaller aircraft use visual rather than instrument based landings and the turbines are readily identified and highly visible.

Prior to construction of wind turbines a map showing physical dimensions and final coordinates of all structures will be supplied to the Upper Hunter Council.

## 12.7 Conclusion

The layout for the proposed Kyoto Energy Park project has been revised to a 42 turbine layout. In summary:

### Mountain Station

- A total of 31 turbines are proposed for Mountain Station site in the final layout (Turbine Nos 1 to 31)
- None of these turbines are infringing CASA regulations, Air Services Australia flight procedures, Department of Defence flight paths or communication facilities
- All operators using Scone airport are required to comply with Scone airport regulations and flight procedures. Local aerial operators at Scone airport were contacted and supplied with details of the

Kyoto Energy Park proposal. Impacts to local commercial operators were found to be insignificant as a result of limitations to training areas and restrictions imposed by the presence of the turbines. No objections were received from the operators in relation to the proposal. It is envisaged that there would be no impact or safety risk to these operators as a result of the project

- Private airfields located on surrounding rural properties are used on an infrequent basis by operators from Scone aerodrome as discussed above and would not be affected by the proposal.

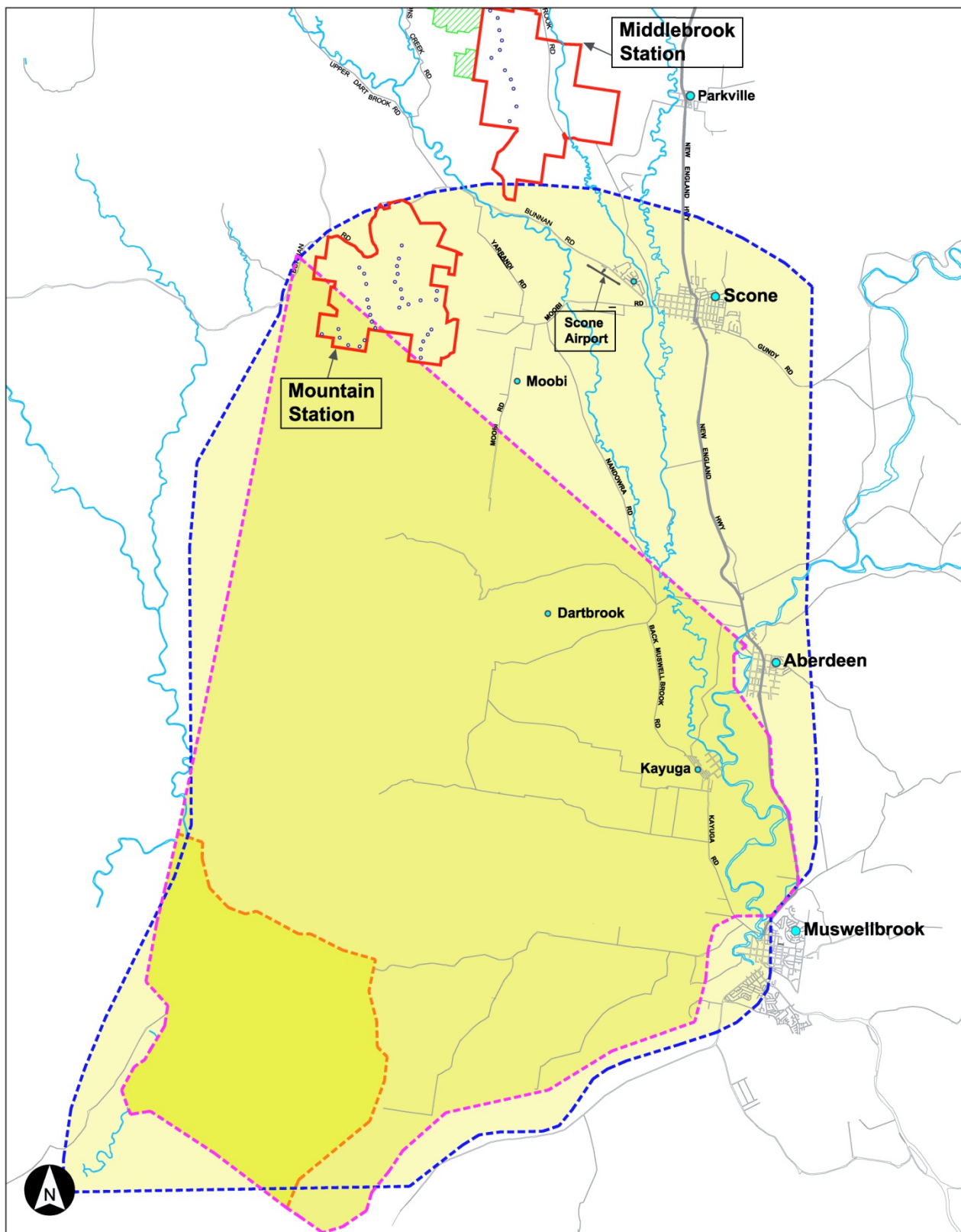
### **Middlebrook Station**

- A total of 11 turbines are proposed for Middlebrook Station site in the final layout (Turbine No's 32 to 42).
- Wind turbines Nos 32, 33, 34 and 35 do not infringe any of the flight procedures or OLS surfaces.
- Wind turbines 36, 37, 38, 39, 40, 41 and 42 are infringing the Air Services Australia flight procedures as proposed. The final layout for the project will depend on discussions between the proponent and Air Services Australia after a more detailed evaluation of the aircraft procedures for Scone airport and mitigation procedures.
- A single private airstrip was located west of the Middlebrook Station site at 4km from the closest turbine. This airstrip is used on an infrequent basis by operators from Scone airport and would not be affected by the proposal.

Airservices Australia otherwise confirmed that the proposed Kyoto Energy Park project will not impact on Precision/Non-Precision Nav Aids, HF/VHF Communications, Cables, ASMGCS, Radar or Satellite/Links.

The Department of Defence assessed the Kyoto Energy Park proposal for impacts upon the safety of military aircraft operations, defence communications and airfield surveillance radars. The Department advised that the Kyoto Energy Park proposal was outside areas used by the RAAF and that there was no impacts on communication or radar installations.

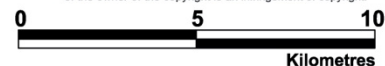




Legend:

|                                  |                              |  |
|----------------------------------|------------------------------|--|
| Major & Minor Rural Town Centres | National Park/Nature Reserve | Atlas Aviation General Training Area (76,000 Ha) |
| Proposed Wind Turbine            | Property Boundary            | Scone Aeroclub General Training Area (51,000Ha)  |
| Highway/main road                | Natural Drainage             | Scone Aeroclub Aerobatic Training Area           |
| Minor road                       |                              |  |

This drawing is protected by copyright. Reproduction or publication of the whole or part of the drawing without a license of the owner of the copyright is an infringement of copyright.



Kyoto **energypark**

**Figure 12.4 - Scone Airport (Aviation Training Area)**

**pamada A4**

File path : Z:\01 Pamada\60 Kyoto\04 Design\EA Report\Figures\Aviation

© COPYRIGHT 2008 – PAMADA PTY LTD

All rights reserved. Pamada Pty Ltd advises that this document and all information contained therein is protected by copyright under the Australian Copyright Act 1968. Reproduction of this document in part or whole and/or use without the written permission from Pamada Pty Ltd constitutes a breach of copyright. The document may only be used for the purposes for which it was commissioned and in accordance with the Terms of Engagement for the commission. Any reference to the document must include the document in its entirety and also include reference to Pamada Pty Ltd.



Kyoto Energy Park Scone is wholly an Australian Enterprise. The Management is 100% Australian.  
The funding of this proposal and report is 100% Australian.  
An Australian Project



This document has been produced on Options Recycled PC 100 paper.  
Options Recycled PC 100 paper is manufactured with non-polluting Green Power electricity generated from wind power & using 100% post consumer waste fibre.