

15 April 2009

Robyn Harrison  
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Dear Robyn

## **Proposed One Plan – Evidence for the General Hearing from the Airways Corporation of New Zealand**

Airways wishes to table the following evidence to the Hearing Panel at the Hearing for the following topics: Administration and Finance; Air; Natural Hazards; Infrastructure Energy and Waste (including Management of Production Soils); and Landscapes and Natural Character.

### **Introduction**

Airways Corporation of New Zealand Limited (Airways) is responsible for facilitating the safe movement of aircraft in New Zealand airspace. It is responsible for managing all domestic and international air traffic for one of the largest areas of airspace in the world – approximately 30 million square kilometres.

Airways' is particularly concerned about:

- (a) The effects of high velocity vertical discharges on turbulence and aircraft stability. This can be caused by:
  - Discharges to air from combustion or industrial processes with generating capacities exceeding 5 megawatts (5MW); and
  - Discharges to air with vertical velocity exceeding 4.3 metres per second at 60 metres above ground level or penetrating the aerodrome obstacle limitation surfaces.
- (b) Effects of discharges on visibility on designated commercial and military flight paths, such as discharges likely to produce significant smoke in the vicinity of airports.

### **Obstacle Limitation Surfaces**

Aircraft are required to travel at a minimum height of 300 metres above ground level except during descent to, or ascent from, an aerodrome. The airspace above an aerodrome is protected by 'obstacle limitation surfaces' which are a series of imaginary surfaces that define the limits to which objects may project into the air. These surfaces are necessary to enable aircraft to maintain a satisfactory level of safety while manoeuvring at low altitude in the vicinity of the aerodrome. While only large scale incursions into airspace will have the potential to affect aircraft flying above 300m, obstacle limitation surfaces will have a greater sensitivity to such activities and therefore require appropriate protection.

### **Velocity of Thermal Emissions**

Aircraft stability and safety can be adversely affected by high velocity vertical discharges generated by large-scale combustion and industrial processes as they can create unnatural and hazardous turbulence affecting the structural integrity of aircraft. Such discharges must therefore be avoided to ensure the safety of aircraft while in the air.

Visibility can also be adversely affected by the output of discharges from chimneys and stacks associated with large-scale industrial processes.

Within 20 km of an airport, planes will begin descending. High velocity discharges will be a problem for heights from 60 metres above the ground.

The New Zealand Civil Aviation Rules, Part 77.19, 'Standards of Determining Hazards' states that:

*"the Director shall determine the use of a structure to be a hazard in navigable airspace if the structure will or may discharge efflux velocity **in excess of 4.3 metres per second which is either higher than 60 metres above ground level** or through the obstacle limitation surface applicable to an aerodrome."*

Airways commissioned an engineer's report from Opus International Consultants<sup>1</sup> (*Velocity of Thermal Emissions from Point and Non-Point Sources, Opus International Consultants, May 2005*) in order to verify the point at which heat output (MW) exceeds 4.3 metres per second. This report was reviewed and confirmed by the National Institute of Water and Atmospheric Research<sup>2</sup>.

The findings of this report were that only an incinerator burning waste/woodwaste or the like with a heat output of 5MW or more would produce a rate of thermal efflux of greater than 4.3 metres per second at 60 metres above ground (assuming a single stack situation). All of the other fuels tested (e.g. natural gas, propane, oil) will reach the 4.3 metre per second threshold between 5MW and 9MW output but at heights below 60 metres above the ground level. Should the stack height be greater than 25m above ground level or the heat output be greater than 5MW, there is the potential for other substances to become problematic.

## **Planning Evidence and Recommendations Report - Air**

### **Chapter 14 - General Recommendations on Air Chapter**

In our submission we sought the inclusion of a reference in the Objectives and Policies of the Plan that requires Council to assess the adverse effects on aircraft safety relating to whether there is likely to be any reduced visibility of an aircraft as a result of the discharge and whether the efflux velocity is likely to constitute a hazard under the Civil Aviation Authority Rules.

In our submission (submission point 3) we sought the reinstatement of the following performance condition to Rules 14-4 (Small-scale fuel burning), 15-4 (Open burning) and 14-12 (Miscellaneous discharges into air from industrial and trade premises) that was included in Air Discharge Rules in the Draft Plan, but omitted in the Proposed One Plan:

*"The discharge shall not cause any reduction in visibility on any designated commercial or military flight path."*

We also expressed our concern that the Proposed One Plan makes no mention of the sensitivity of airports and aircraft flight paths to high velocity vertical discharges generated by large-scale combustion and industrial processes. We proposed that the following performance conditions also be added to Rules 14-4, 14-5 and 14-12 (submission point 4):

*"(x) the vertical velocity of the discharge does not exceed 4.3 metres per second, at 60 metres above ground level and/or does not penetrate the obstacle limitation surface of an aerodrome.*

*(xx) the combustion or industrial processes shall not exceed generating capacities exceeding 5 megawatts."*

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<sup>1</sup> Velocity of Thermal Emissions from Point and Non-Point Sources, Opus International Consultants, May 2005.

<sup>2</sup> Review of Thermal Plume Dispersion Study for Opus International Consultants, NIWA, May 2005.

Council's Reporting Officer (**the Officer**) recommended that our submission be accepted in part (AIR 21). Our concerns relating to the protection of visibility on flight paths have been addressed through the recommended addition of a permitted activity condition specifying that discharges "*shall not cause a reduction in visibility on any designated commercial or military flight path*" to Rules 14-4 Small-scale fuel burning (AIR 31), 14-5 Open burning (AIR 32) and 14-12 Miscellaneous discharges into air from industrial and trade premises (AIR 38), as per our request. We expand on this further below.

However, we consider that Airways concerns relating to vertical discharges, as outlined above, have not been adequately addressed in the recommended amendments to the Proposed One Plan.

Recent plan changes, such as Plan Change 45 to the Palmerston North District Plan (146 Richardsons Line Industrial Zoning) may result in increased industrial development in the vicinity of the Palmerston North Airport. Increased industrial activity is likely to increase the risk of high velocity vertical discharges being generated that have the potential to impact on obstacle limitation surfaces and reduce aircraft stability. As the Horizons Regional Council is responsible for discharges to air, we consider it is appropriate for these risks to be addressed in the Proposed One Plan.

#### **Rule 14-4 Small-scale fuel burning**

Airways **supports** the Officer's recommendation to include the permitted activity condition that specifies that discharges "*shall not cause a reduction in visibility on any designated commercial or military flight path*" to Rule 14-4 (AIR 21) and **requests** that the Officer's recommendation (AIR 21) be accepted by the Hearings Panel.

#### **Rule 14-5 Open burning**

Airways **supports** recommendation AIR 32 by the Officer that reinstates the permitted activity condition relating to visibility on designated commercial or military flight paths. Airways **requests** that the Officer's recommendation (AIR 32) be accepted by the Hearings Panel.

#### **Rule 14-12 Miscellaneous discharges into air from industrial and trade premises**

The Officer has recommended the reinstatement of the permitted activity condition relating to visibility on designated commercial and military flight paths (AIR 38). This recommendation is **supported** by Airways.

However, reduction in visibility is not the only factor associated with high velocity discharges. The impact of such a discharge has the potential to affect the stability and safety of the aircraft while in the air. The risk is increased when the discharge penetrates an obstacle limitation surface as the aircraft are obviously travelling at lower altitudes as they land and take-off.

Permitted Activity Rule 14-12 (Miscellaneous discharges into air from industrial and trade premises) fails to address potential effects on the obstacle limitation surface from high velocity vertical discharges and generating capacities in excess of 5 MW. Airways' considers that a combustion threshold of 5 megawatts is necessary for avoiding hazards under Civil Aviation Authority Rules (Part 77.19).

Airways therefore **requests** that the following permitted activity conditions be added to Rule 14-12 (Miscellaneous discharges into air from industrial and trade premises):

*"(x) the vertical velocity of the discharge does not exceed 4.3 metres per second, at 60 metres above ground level and/or does not penetrate the obstacle limitation surface of an aerodrome.*

*(xx) the combustion or industrial processes shall not exceed generating capacities exceeding 5 megawatts."*

#### **Policy 14-1 Consent decision making for agrichemicals**

Airways **supports** the recommendation to include "flight paths" in the list of sensitive areas under Policy 14-1(e).

#### **Policy 14-2 Consent decision-making for other discharges into air**

In our submission we requested that the following matter be added to Policy 14-2 as a matter Regional Council must have particular regard to when making decisions on resource consent applications and setting conditions for discharges of contaminants into air:

*"(c) adverse effects on aircraft safety from high velocity vertical discharges of air."*

The Officer recommended that this submission point be rejected, due to concerns that aerial discharges might be unnecessarily constrained. We consider that the scope of this Policy is much larger than just about aerial discharges, and would also include large industrial discharges with a significant vertical component.

Sub-clause (c) of Policy 14-2 requires that national policy statements, national regulations, or nationally accepted guidelines or codes of practice relevant to the activity be given particular regard to when making decisions on resource consent applications. Compliance with Part 77.19 of the New Zealand Civil Aviation Rules is therefore technically covered in this policy. However, not all members of the public are aware of Part 77.19 of the Civil Aviation Authority Rules, and given the importance of aircraft safety, Airways still recommends that a specific reference to vertical air emissions be added to Policy 14-2, as requested in our original submission.

The omission of a reference to vertical discharges in Policy 14-2 may result in such effects being over-looked or undervalued when consent applications are being assessed. This is of particular concern to Airways' given the Industrial Zoning around the Palmerston North and Wanganui Airports, and the potential for even further industrial development by these Airports in the future.

Accordingly Airways **requests** that "*adverse effects on aircraft safety from high velocity vertical discharges of air*" is added as a matter to consider under Policy 14-2.

#### **Rule 14-1 Small-scale application of agrichemicals**

Airways **supports** the changes recommended by the Officer (AIR 28) and no further amendments to Rule 14-1 are requested.

#### **Rule 14-2 Widespread application of agrichemicals**

Airways **supports** the changes recommended by the Officer (AIR 29) and no further amendments to Rule 14-2 are requested.

### **Planning Evidence and Recommendations Report – Landscapes and Natural Character**

#### **Section 4.3 – Living Heritage**

Airways seeks **no change** to Section 4.3, provided the recommended changes discussed at the Reconvened Land Hearing to Rule 12-1 are adopted.

## Planning Evidence and Recommendations Report – Natural Hazards

### **Glossary = Critical Infrastructure**

Airways seeks **no change** to the definition of “Critical Infrastructure.”

Should the Hearings Panel have any further questions, or seek further clarification on any of the matters raised in this letter, please feel free to contact me on (06) 350 3271, or my colleague Andrea Harris on (06) 350 2504.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Lisa Hooker', with a stylized flourish at the end.

Lisa Hooker  
Opus International Consultants Ltd  
On behalf of the Airways Corporation of New Zealand

