Before an Independent Hearings Panel of Wellington City Council

In the matter	of the Resource Management Act 1991 (the **Act**)
And	
In the matter	of hearing of submissions and further submisssions on the Wellington City Proposed District Plan (**PDP**)

Statement of Evidence of
Lachlan Thurston for Wellington International Airport Limited

Dated: 18 July 2023

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1. INTRODUCTION

Qualifications and Experience

1.1 My full name is Lachlan Richard Thurston. I have been employed by Wellington International Airport Limited (**WIAL**) since 2011, having previously been employed by WIAL from its inception in 1989 to 1999.

1.2 My current role is Head of Operational Readiness, responsible for overseeing our airport operational regulatory requirements, operational policies and procedures, operational project management for the introduction of new systems and equipment, and training of airport operational staff. I am also responsible for business continuity planning for WIAL.

1.3 I am a member of the Aviation Community Advisory Group (**ACAG**) representing New Zealand Airports. ACAG provides industry technical advice to the Director of Civil Aviation. ACAG is a representative sector body which has been formed to provide technical and strategic advice to the CAA. ACAG members represent the views of the aviation community or sectors that they are representing. The role, function and scope of ACAG, supports the CAA as an active regulatory steward.

1.4 I have 38 years' experience in the aviation industry in roles encompassing commercial pilot, airport management, airport consultancy as well as airport and airspace regulatory roles. I have worked in South Korea, Philippines, China and the United Arab Emirates, the latter as Chief of Air Navigation Service Regulations for the General Civil Aviation Authority being the Federal Regulatory body overseeing aviation activity in the UAE. I am presently also an adjunct lecturer for Massey University School of Aviation, teaching Airport Master Planning.

2. SCOPE OF EVIDENCE

2.1 The purpose of my evidence is to provide a short guide to Obstacle Limitation Surfaces (**OLS**) ahead of the Designation hearing to:

(a) assist the Panel's understanding of OLS;

(b) explain why they are a required and important safety feature of an airport operation.

2.2 Ms Lester explains how OLS relate to the various underlying zones in the District Plan and how a property owner and Council staff will be able to find out to what extent the OLS affects a property.

2.3 Additional and more technical detail about the various OLS at Wellington Airport and the proposed modifications to the existing Designation will be provided at the Designation hearing stream.

3. REGULATORY CONTEXT

3.1 Civil Aviation activity globally, is governed by the International Civil Aviation Organisation (**ICAO**), a sub organisation of the United Nations. ICAO set standards and recommended practices (**SARPs**) as well as provides guidance material for various aspects of global aviation activity in the interests of promoting aviation safety and consistency of standards across the international aviation community. These SARPs are published in the form of Annex documents. Annex 14 Volume I & II outlines the standards and recommended practices required of Aerodrome design and operations as well as Heliports.

3.2 New Zealand is a member state and signatory to the ICAO Convention. Civil Aviation activity in New Zealand is governed by the Civil Aviation Act and Civil Aviation Rules which is administered by the Ministry of Transport and the Civil Aviation Authority respectively.

3.3 New Zealand's Civil Aviation Rules (**CAR**), take into consideration the SARPs published by ICAO amongst other matters that contribute to the safe and secure aviation environment within New Zealand. CAR Part 139 is the primary Rule Part that governs the design and operation of Airports serving scheduled aircraft traffic[1] whether they be international or domestic scheduled services.

1 Air NZ, Qantas, Sounds Air etc

3.4 Every airport with scheduled aircraft traffic in New Zealand has an OLS Designation.

3.5 Wellington Airport has had an Airspace OLS Designation since 1999.

4. WHAT IS AN OBSTACLE LIMITATION SURFACE?

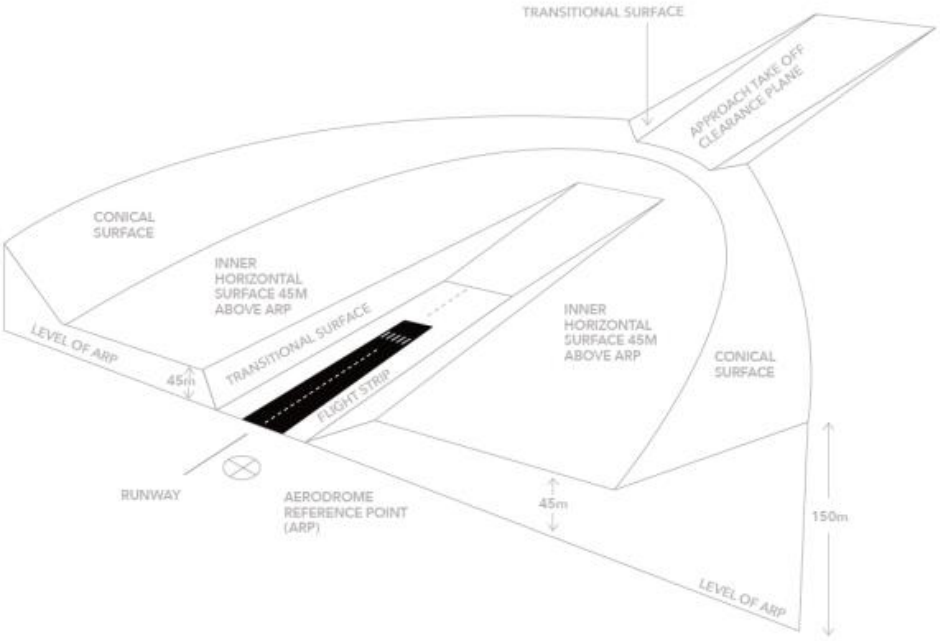
4.1 OLS are defined conceptual three-dimensional surfaces that exist in the airspace above and adjacent to an airport. They are necessary to enable aircraft to maintain a satisfactory level of safety while manoeuvring at a low altitude in the vicinity of an airport and to protect against collision.

4.2 These surfaces should technically be free of obstacles, and subject to controls to prevent objects such as buildings, structures and trees from penetrating them. OLS are therefore used as a tool to impose height limits on objects around the airport.

4.3 The term OLS is used to describe each of the surfaces which together essentially define the lower boundary of airspace above and in the vicinity of the airport.

4.4 While each of the OLS surfaces has a technical description in terms of its geometric shape, the paragraphs below describe these surfaces in a way that is more easily understood.

4.5 The easiest way of describing the concept is that the OLS surfaces create what could be thought of as a bowl shape with the runway being at the bottom of the bowl. The **figures** below depict cross sections of the OLS "bowl' shape.



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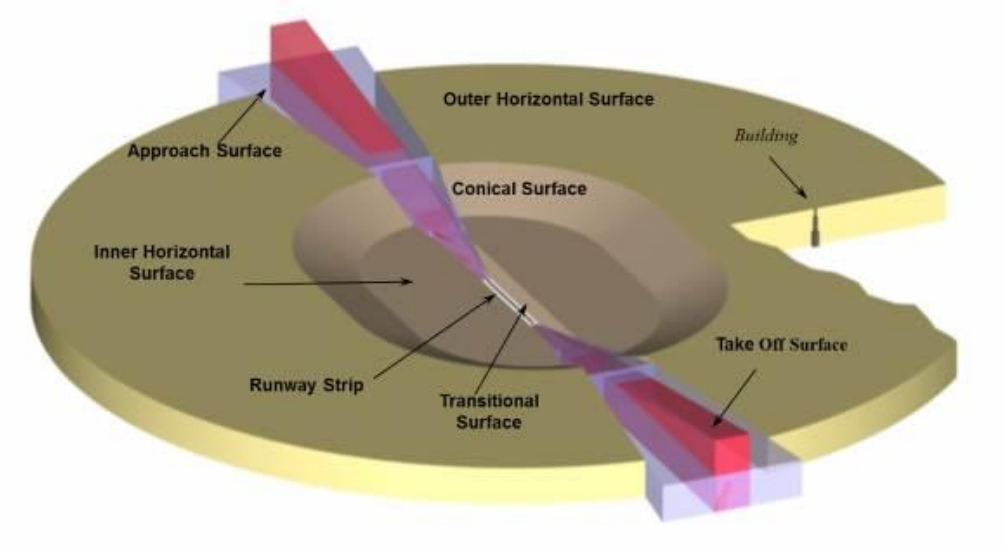

5. MAIN TYPES OF OLS

Takeoff surface

5.1 The take-off surface, also commonly referred to as the takeoff fan, starts essentially from the end of the runway that is the declared takeoff distance, and fans out directly in the line of the runway to a point where it is 1200m in width and then continues at this width to a distance 15000m from the end of the runway. The slope is quite shallow and creates a space for the aircraft to climb to a safe altitude, taking

into account a variety of circumstances such as aircraft performance capability or ambient atmospheric conditions that can impact climb performance.

5.2 In addition, international guidance dictates that airports should also monitor an area immediately below this slope to ensure features such as tree growth will not cause this area to be impeded in the future and/ or to notify flight procedure designers and aircraft performance engineers of any other structure that might need to be taken into consideration should the aircraft climb performance become compromised for any reason.

Approach surface

5.3 Commonly referred to as the approach fan, this surface extends out from the end of the runway strip and is wider than the takeoff fan. The slope is also quite shallow and encapsulates a special area to allow aircraft to descend safely on a 3 degree glide slope to a minimum altitude where pilots must then be able to continue their approach visually to the runway.

Transitional Surface

5.4 The purpose of this surface is to protect an area immediately around the runway strip and the final stages of the approach fan and to the sides of the runway in case an aircraft deviates from its takeoff or approach flight path for any reason. Its purpose is also to ensure that fixed and mobile objects do not protrude into a navigable airspace nearest the runway (ie buildings/structures/trees/cranes). This surface rises up from the edge of the runway strip at a rate of 1:7 until it reaches a height of 45m above the level of the runway nearest portion of the runway strip. The outer edge of the transitional surface intersects with the Inner Horizontal Surface.

Inner Horizontal Surface

5.5 The purpose of this surface is to create an area in which to protect the aerodrome traffic circuit, mainly used by aircraft flying Visual Flight Rules. It extends 4000m from the edges of the runway strip and is a flat surface 45m above the level of the runway strip. The aerodrome traffic circuit or commonly just known as the "circuit" is a race track type pattern, associated with every runway, and is used to provide an orderly flow of aircraft positioning for landing while avoiding other aircraft. At

Wellington the circuit is positioned so that aircraft essentially fly around the harbour entrance.

Conical surface

5.6 This surface commences at the outer periphery of the inner horizontal surface and extends upwards at a slope of 1:20 to a height 150m above the airport. This essentially forms the "sides of the bowl" as mentioned earlier. Its purpose is to create an area of safe airspace further out from the runway so that aircraft may safely descend as they get closer to the airport...

Outer Horizontal Surface

5.7 This surface is essentially another flat surface, similar in design to the inner horizontal surface but at a height of 150m. It extends from its inner edge being the outer edge of the conical surface to a point 15000m measured from the mid point of the runway. This area creates a space for aircraft to navigate safely at low level as they prepare to intercept the final approaches to the runway.

6. THE IMPORTANCE OF OLS

6.1 OLS are a required feature of an airport with scheduled aircraft traffic under the requirements of the New Zealand Civil Aviation Authority CAR Part 139 Aerodrome Certification, Operation and Use.

6.2 As outlined above OLS are necessary to ensure that aircraft can maintain a satisfactory level of safety while manoeuvring at a low altitude in the vicinity of an airport through the avoidance of obstacles.

6.3 The effective utilization of an airport can be considerably influenced by terrain and man-made construction both inside and outside of its property boundary. Such objects can result in collisions and aircraft operational limitations in using the runway.

6.4 For these reasons certain areas of the local airspace must be regarded as integral parts of the airport environment. The degree of freedom from obstacles in these

areas is as important to the safe and efficient use of the airport as is the physical attributes like the runway.

These surfaces are intended by civil aviation regulations to be more permanent in nature and hence seek to be incorporated in local zoning provisions.

6.5 It is important to understand that many accidents happen at low altitudes during a departure from or approach to an airport so there is a need for sufficient air space in order for an aircraft to safely manoeuvre especially if it has lost some of its performance capabilities or has to return to the runway.

6.6 OLS are particularly important at Wellington given its hilly terrain where parts of the OLS surfaces are already infringed which increases the importance of the remaining OLS space.

Dated 18 July 2023

Lachlan Thurston
Head of Operational Readiness.