# APPENDIX M - FLIGHT PROTECTION AREAS

## Introduction

The following descriptions identify the flight protection areas referred to in Section 7 Rural Zone Rules, Clause 3.1.1 m and shown on Planning Maps 54 and 55. The descriptions are for the Tekapo Airfield, the Glentanner Airfield, the existing Pukaki-Twizel Airfield and the proposed new Pukaki-Twizel Airfield and refer to Take-Off Climb and Approach Surfaces, Transitional Surfaces, Inner Horizontal Surfaces and Conical Surfaces.

## Tekapo

**A 1 RUNWAYS**

1.1 **Main Runway**

The main runway which is 840m long x 11m wide is orientated on a bearing of 315°41'30"T (11-29 Runway).

Provision is made for runway extension in both directions up to a maximum length of 1,200m, and for an increase in width to 30m.

1.2 **Main Strip**

The existing main strip which is 900m long x 60m wide contains the main runway within it.

The ultimate strip will be approximately 1,320 long x 300m wide and will contain the 1,200m long main runway within it. This runway strip will extend 60m beyond each end of the main runway.

**B 2 HEIGHT RESTRICTION**

2.1 **Take-Off Climb and Approach Surfaces**

a There is a take-off climb and approach surface at each end of the main runway strip. The take-off and approach surfaces differ in detail, but both are protected by a slope extending upward and outward from each end of the strip.

Each take-off climb and approach protection surface extends over a horizontal distance specified below and is symmetrically disposed about the centreline of the flight protection surface, with its sides diverging uniformly outwards from each end of the length of inner edge at each strip end.

*Take-Off Surface:*
For the main runway length of inner edge is 90m either side of the extend runway centreline and the rate of lateral divergence is 12.5% (7°7'30") to a horizontal distance of 4,080m. The take-off climb surface at the ends of the ultimate main strip rise at a gradient of 1.5% (1 in

62.5) for a horizontal distance of 15,000m.

*Approach Surface:*
For the main runway the length of inner edge is 150m either side of the extend runway centreline and the rate of lateral divergence is 15% ($8^{o}31'15"$). The approach surface at the ends of the ultimate main strip rise at a gradient of 2% (1 in 50) for a horizontal distance of 15,000m.

2.2 **Transitional Surfaces**

The transitional surface provides for a situation where an approaching aircraft is either off centreline or where it has executed a missed approach and allows for an area free of obstacles to protect aircraft in the final phase of the approach-to-land manoeuvre.

(a) These extend upwards and outwards from the sides of each runway strip at a gradient of 14/3% (1 in 7) for the main strip to intercept the approach protection surfaces.

(b) Transition slopes extend at the same heights beyond each end of the runway strip to intercept the approach protection surfaces.

2.3 **Inner Horizontal Surface**

The inner horizontal surface is a plane surface at a height of 45m above the airport datum level of 760m enclosed within a 4,000m radius drawn from the periphery of the main runway strip, and a 4,000m distance either side of the main runway strip.

2.4 **Conical Surface**

The conical surface extends from the periphery of the inner horizontal surface upwards and outwards at a slope of 5.0% (1 in 20) to a height of 150m above the aerodrome datum level.

Note: Where ground rises so that it penetrates or becomes close to the inner horizontal surface, then this surface may be adjusted in conformity with the ground to provide a vertical clearance of 10.7m above ground level.

## Glentanner Airport

**C 1 RUNWAYS**

1.1 **Main Runway**

The main runway which is 965m long x 30m wide is orientated on a bearing of $350^{o}40'T$ (15-33 Runway).

Provision is made for a runway extension in both directions up to a maximum length of 1,200m.

1.2 **Main Strip**

The existing main strip which is 1,085m long x 90m wide contains the main

runway within it.

The ultimate strip will be approximately 1,320 long x 300m wide and will contain the 1,200m long main runway within it. This runway strip will extend 60m beyond each end of the main runway.

## D 2 HEIGHT RESTRICTION

### 2.1 Take-Off Climb and Approach Surfaces

(a) There is a take-off climb and approach protection surface at each end of the main runway strip. The take-off and approach surfaces differ in detail, but both are protected by a slope extending upward and outward from each end of the strip.

Each take-off climb and approach protection surface extends over a horizontal distances specified below and is symmetrically disposed about the centreline of the flight protection surface, with its sides diverging uniformly outwards from each end of the length of inner edge at each strip end.

*Take-Off Surface:*
For the main runway the length of inner edge is 90m either side of the extend runway centreline and the rate of lateral divergence is 12.5% ($7^{o}7'30"$) to a horizontal distance of 4,080m where it then continues parallel to the centreline. The centreline of the southern take-off surface commences at the strip end and continues along the extended runway centreline. The centreline of the northern take-off surface commences at the end of the strip where it turns 10 degrees right. The take-off climb surface at both ends of the ultimate main strip rise at a gradient of 1.5% (1 in 62.5) for a horizontal distance of 15,000m.

*Approach Surface:*
For the main runway the length of inner edge is 150m either side of the extend runway centreline and the rate of lateral divergence is 15% ($8^{o}31'15"$). The approach surface at the ends of the ultimate main strip rise at a gradient of 2% (1 in 50) for a horizontal distance of 15,000m.

### 2.2 Transitional Surfaces

The transitional surface provides for a situation where an approaching aircraft is either off centreline or where it has executed a missed approach and allows for an area free of obstacles to protect aircraft in the final phase of the approach-to-land manoeuvre.

(a) These extend upwards and outwards from the sides of each runway strip at a gradient of 14.3% (1 in 7) for the main strip to intercept the approach protection surfaces.

(b) Transition slopes extend at the same heights beyond each end of the runway strip to intercept the approach protection surfaces.

### 2.3 Inner Horizontal Surface

The inner horizontal surface is a plane surface at a height of 45m above the

airport datum level of 556m enclosed within a 4,000m radius drawn from the periphery of the main runway strip, and a 4,000m distance either side of the main runway strip.

2.4 **Conical Surface**

The conical surface extends from the periphery of the inner horizontal surface upwards and outwards at a slope of 5.0% (1 in 20) to a height of 150m above the aerodrome datum level.

Note: Where ground rises so that it penetrates or becomes close to the inner horizontal surface, then this surface may be adjusted in conformity with the ground to provide a vertical clearance of 10.7m above ground level.

## Pukaki-Twizel Airport - Existing And Proposed Airfields

**E 1 RUNWAYS**

1.1 **Main Runway**

The main runway which is 1,082m long x 15.5m wide and is orientated as 15-33 Runway. A grass runway extension which is 448m long and 90m wide is located at the northern end of the sealed runway.

Provision is made for a new runway development to a maximum length of 2,000m, and a width of 45m. The runway centreline for this runway would be realigned from the existing bearing to the east by 17$^{o}$ to an orientation 17-35 Runway.

**F 1.2 Main Strip**

The existing main strip which is 1,500m long x 90m wide contains the main sealed runway and grass runway extension within it. The ultimate strip width of the existing runway will be 220m.

The ultimate strip for the new runway development will be approximately 2,120 long x 300m wide and will contain the 2,000m long main runway within it. This runway strip will extend 60m beyond each end of the main runway.

**G 2 Height Restriction**

2.1 **Take-Off Climb and Approach Surfaces**

(a) There is a take-off climb and approach protection surface at each end of the main runway strip. The take-off and approach surfaces differ in detail, but both are protected by a slope extending upward and outward from each end of the strip.

Each take-off climb and approach protection surface extends over a horizontal distance specified below and is symmetrically disposed about the centreline of the flight protection surface, with its sides diverging uniformly outwards from each end of the length of inner edge at each strip end.

*Take-Off Surface:*
For the main runway (both existing and proposed) the length of the inner edge for the take-off is 90m either wide of the extended runway centreline and the rate of lateral divergence is 12.5% ($7^{o}7'30"$), to a horizontal distance of 4,080m for the northern take-off surface and 6,480m for the southern take-off surface, where it then continues parallel to the centreline. The take-off climb surface at the northern end of the ultimate strip rises at a gradient of 1.6% (1 in 62.5) for a horizontal distance of 15,000m. The take-off climb surface at the southern end rises at a gradient of 1.6% for a horizontal distance of 3,300m where it drops vertically by 4.6m and then continues to rise at a gradient of 1.6% to a horizontal distance of 15,000m.

The centreline of the northern take-off surface commences at the strip end and continues along the extended runway centreline.

The centreline of the southern take-off surface continues along the extended runway centreline to a distance 3,300m where it turns left through 180 degrees at a radius of 2,523m.

*Approach Surface:*
For the existing main runway the length of inner edge is 110m, either side of the extend runway centreline (and 150m for the proposed runway) and the rate of lateral divergence is 15% ($8^{o}31'15"$). The approach surface at the ends of the main strip rise at a gradient of 2% (1 in 50) for a horizontal distance of 15,000m.

The centreline of the approach surfaces continues along the extended runway centreline.

(b) Transitional Surfaces

The transitional surface provides for a situation where an approaching aircraft is either off centreline or where it has executed a missed approach and allows for an area free of obstacles to protect aircraft in the final phase of the approach-to-land manoeuvre.

(i) These extend upwards and outwards from the sides of each runway strip at a gradient of 14.3% (1 in 7) for the main strip to intercept the approach protection surfaces.

(ii) Transition slopes extend at the same heights beyond each end of the runway strip to intercept the approach protection surfaces.

(c) Inner Horizontal Surface

The inner horizontal surface is a plane surface at a height of 45m above the airport datum level of 480m enclosed within a 4,000m radius drawn from the periphery of the main runway strip, and a 4,000m distance either side of the main runway strip.

(d) Conical Surface

The conical surface extends from the periphery of the inner horizontal surface upwards and outwards at a slope of 5.0% (1 in 20) to a height of

150m above the aerodrome datum level.

Note: Where ground rises so that it penetrates or becomes close to the inner horizontal surface, then this surface may be adjusted in conformity with the ground to provide a vertical clearance of 10.7m above ground level.