

7.0

Airspace Protection



It is essential that planning take full account of air safety and efficiency of operations.

7.1 INTRODUCTION

Obstacles near an airport, whether they are natural or constructed, may seriously limit aviation operations into and out of the Airport. It is essential that off-airport land use planning take full account of obstacle protection implications and avoid planning decisions that may adversely affect air safety or efficiency of operations. While the Airport can control obstacles from on-airport activities, off-airport development involves external agencies and authorities and needs to be managed cooperatively.

Statutory provisions for protection of an airport's airspace are primarily in the local authority planning instruments. For Gold Coast Airport the local authorities are City of Gold Coast and Tweed Shire Council. There may also be some requirements for development in the Airports (Protection of Airspace) Regulations 1996. There are established protocols with the two authorities that inform GCAPL of any development applications that may have airspace implications. In Queensland, this is supplemented by a similar cooperative relationship between GCAPL and the Department of Transport and Main Roads, which also has a regulatory role in airspace protection.

International and Australian standards are used to define airspace reference surfaces, which delineate airspace obstacle protection areas.

7.2 OBSTACLE LIMITATION SURFACE (OLS)

An airport's Obstacle Limitation Surface (OLS) is determined in accordance with Standards and Recommended Practices (Annex 14 – Aerodromes) (ICAO 1990). These standards are published in the CASA Civil Aviation Safety Regulations Manual of Standards Part 139.

The OLS are conceptual surfaces associated with a runway. They identify the lower limits of the aerodrome airspace. Above this limit objects become obstacles to aircraft operations and must be reported to CASA.

The OLS protects aircraft conducting visual flying operations and manoeuvring near an airport. An obstacle is defined as an object that infringes the OLS. This can include buildings or structures. It also includes activities such as an exhaust plume with a vertical gust exceeding 4.3 metres/second at or above the OLS reference surface. Ideally, the OLS



should be kept free of obstacles. Since the surface relates only to visual operations, sometimes there is unavoidable penetration of the OLS by obstacles. In this case, it is necessary that the obstacle is clearly visible to pilots. This may require the obstacle to be marked or provided with obstacle lighting.

The OLS for Gold Coast Airport (Figure 7.1) is the same as depicted in the 2011 Master Plan and is a composite set of surfaces that protects:

- » Existing runway infrastructure
- » The relocation of the Runway 32 threshold (Section 6.2.2)
- » An ultimate runway length of 2,858 metres.

Figure 7.1 is based on three approach surfaces for Runway 32 and two take-off surfaces for Runway 14. The Runway 32 approach and Runway 14 take-off surfaces will initially remain in their current positions.

As detailed in Chapter 6.0, it is proposed to move the Runway 32 threshold to the south by approximately 300 metres. This will require the new approach surface to be protected. The 2047 ANEF (Chapter 5.0) adopted the new threshold location.

The threshold relocation does not affect the location of the Runway 14 take-off surface.

The third approach surface and second take-off surface is based on the Runway 32 threshold/runway end at the end of the ultimate 2,858 metre runway (Beyond the twenty-year planning period of this Master Plan). This reflects the long-standing obstacle protection provision imposed through planning instruments for the surrounding local government areas. It is proposed to continue the protection. Any proposal to relocate the threshold would be beyond the twenty-year planning period for the Master Plan.

7.3 PROCEDURES FOR AIRPORT NAVIGATION SERVICES – AIRCRAFT OPERATIONS (PANS-OPS)

Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) sets the rules for designing instrument approach and departure procedures. Such procedures are used to allow aircraft to land and take-off under instrument meteorological conditions or instrument flight rules.

The Procedures for Air Navigation Services, Aircraft Operations (8168-OPS/611) (Volumes 1 and 2) outlines the principles for airspace protection and procedure design that ICAO signatory states must adhere to. The regulatory material surrounding PANS-OPS may vary from country to country.

A PANS-OPS surface is a surface determined in accordance with the procedures in 8168-OPS/611, published by the ICAO on 11 November 1993.

Similar to an OLS, the PANS-OPS surfaces are imaginary surfaces in space that guarantee the aircraft a certain minimum obstacle clearance. These surfaces may be a tool for local governments in assessing building development. Where buildings may be permitted to penetrate the OLS, in some circumstances they cannot be permitted to penetrate any PANS-OPS surface. These surfaces guarantee pilots operating under instrument meteorological conditions an obstacle free descent path for a given approach.

During periods of poor weather, pilots rely solely on flight deck instruments and documented procedures for the safe navigation of their aircraft. Procedures of this nature are referred to as Instrument Approach Procedures. The procedures are developed by an instrument approach designer to internationally agreed criteria known as PANS-OPS. The PANS-OPS criteria defines a series of surfaces, similar to the OLS surfaces, but as a function of the obstacle environment underlying them. The actual dimensions and magnitude of protection afforded to an aircraft varies depending on its phase of flight. All surfaces are positioned at an altitude above the underlying obstacles. Since the PANS-OPS surface definition is a function of underlying obstacles, no penetration is permitted. Diligent monitoring of the environment is required to maintain appropriate safety levels for aircraft conducting instrument approaches.

Figure 7.2 and Figure 7.3 illustrate the PANS-OPS surfaces associated with the published instrument flight procedures at Gold Coast Airport. They also show indicative maximum obstacle heights above Australian height datum or mean sea level. Figure 7.4 illustrates the future PANS-OPS surfaces based on the potential and planned changes to aerodrome facilities at Gold Coast Airport. This includes an ultimate runway length of 2,858 metres and RNP and ILS approach procedures.

As worldwide air traffic levels increase and aerodrome operators are pressured to prescribe only the airspace essential for safe and efficient operations, the international aviation community continually refine and amend the criteria for developing instrument procedures. New technologies have enabled highly accurate navigation systems to be developed, including space-based global positioning systems. As testing and confidence increases in these systems, the PANS-OPS criteria has been refined. The Master Plan embraces the recent changes in space-based navigation criteria. This is reflected in a narrowing of the final approach splay associated with instrument approaches. This allows for less airspace to be prescribed than previously required.

Gold Coast Airport is conversant with the regulatory requirements placed on its operations. It maintains a conscientious and diligent process with local authorities and associated planning bodies to protect the airspace of Gold Coast Airport.

7.4 AIRPORTS (PROTECTION OF AIRSPACE) REGULATIONS 1996

The object of the Airports (Protection of Airspace) Regulations 1996 (Airspace Regulations) is to establish a system to protect airspace at and around airports in the interests of the safety, efficiency or regularity of existing or future air transport operations into and out of airports.

The Airspace Regulations provide that the Secretary of DIRD may declare specified airspace around an airport as “prescribed airspace”. In making that declaration, the Secretary must consider:

- » The OLS and PANS-OPS surfaces proposed for the Airport in the approved Master Plan
- » Advice from CASA, Airservices Australia and GCAPL
- » Other matters the Secretary considers relevant.



The Airspace Regulations define prescribed airspace for an airport, which includes the airspace above any part of either an OLS or a PANS-OPS surface. These Airspace Regulations apply to both on-airport and off-airport developments. The Airspace Regulations stipulate that for “controlled activities”, specific approval is required from the DIRD. Controlled activities include constructing or altering a building, or any other activity that causes a structure attached to or in physical contact with the ground to intrude into the prescribed airspace. This includes cranes and other temporary structures. It also includes air turbulence considerations arising from stacks and vents where the efflux velocities exceed 4.3 metres per second at the particular reference surface.

On 23 March 2001, the prescribed airspace of Gold Coast Airport was declared by the Secretary, the area affected being determined according to the OLS. In line with the Master Plan, GCAPL will seek a new declaration of prescribed airspace based on the components of the OLS and PANS-OPS surfaces shown in Figure 7.2 and Figure 7.3.

In order for GCAPL to ensure that the airspace is protected and on completion of the runway extension in 2007, GCAPL obtained an area of License and Development Approval in New South Wales Crown Land adjacent to the Runway 32 end for OLS vegetation management. Figure 3.1 shows the location of the area.

7.5 NAVIGATION AID SITING RESTRICTIONS

Airservices Australia owns and operates the VOR/ DME and NDB at the Airport. The Master Plan makes provision for installation of the ILS serving Runway 14, which would also be owned and operated by Airservices Australia. These radio navigation aids have specific siting restrictions that impose both lateral and vertical constraints to preserve the performance integrity of the equipment. This needs to be taken into account when considering on-airport development and some off-airport development, depending on its nature and location relative to the specific aid. GCAPL works cooperatively with Airservices Australia to ensure its interests are taken into account when assessing development proposals likely to impact on radio navigation aids.

7.6 RESTRICTIONS TO EXTERNAL LIGHTING

Pilots are reliant on the specific patterns of aeronautical ground lights during inclement weather and outside daylight hours. These aeronautical ground lights include runway lights and approach lights. It is important that lighting in the vicinity of airports is not configured or is of a pattern that pilots could either be distracted or mistake such lighting as being ground lighting from the airport.

Under the Civil Aviation Regulations 1988, CASA has the power to control ground lights where they have the potential to cause confusion or distraction to pilots. To assist lighting designers and installation contractors CASA has established guidelines on the location and permitted intensities of ground lights within a six kilometre radius of airports. Figure 7.5 shows the lighting intensity guidelines in relation to Runway 14/32. Runway 17/35 is not lit; therefore, it is not covered by the guidelines.

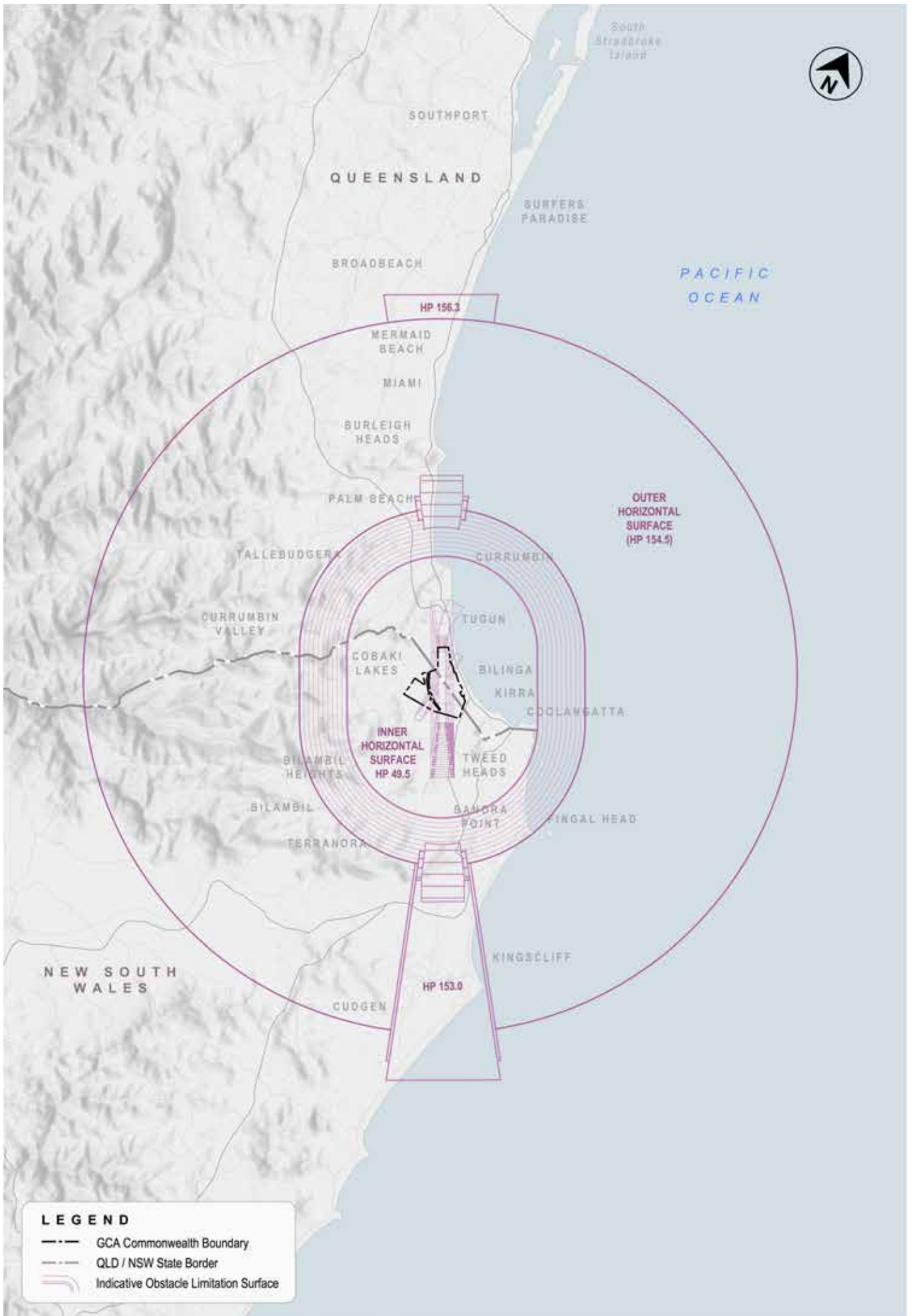


Figure 71 Obstacle Limitation Surface (OLS)

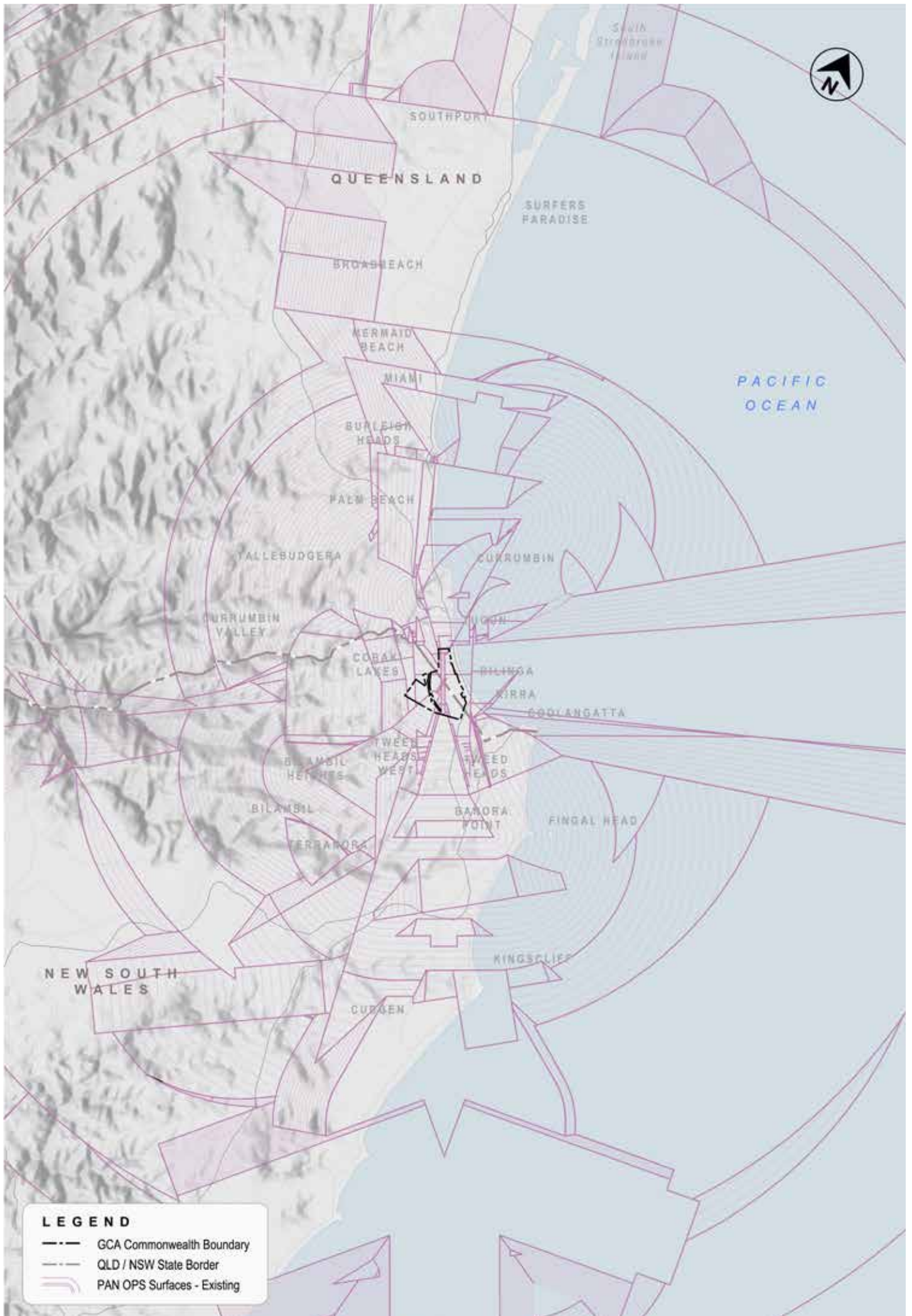


Figure 7.2 Procedures for Air Navigation Services - Aircraft Operations Surface (PANS-OPS) (10 km Radius)

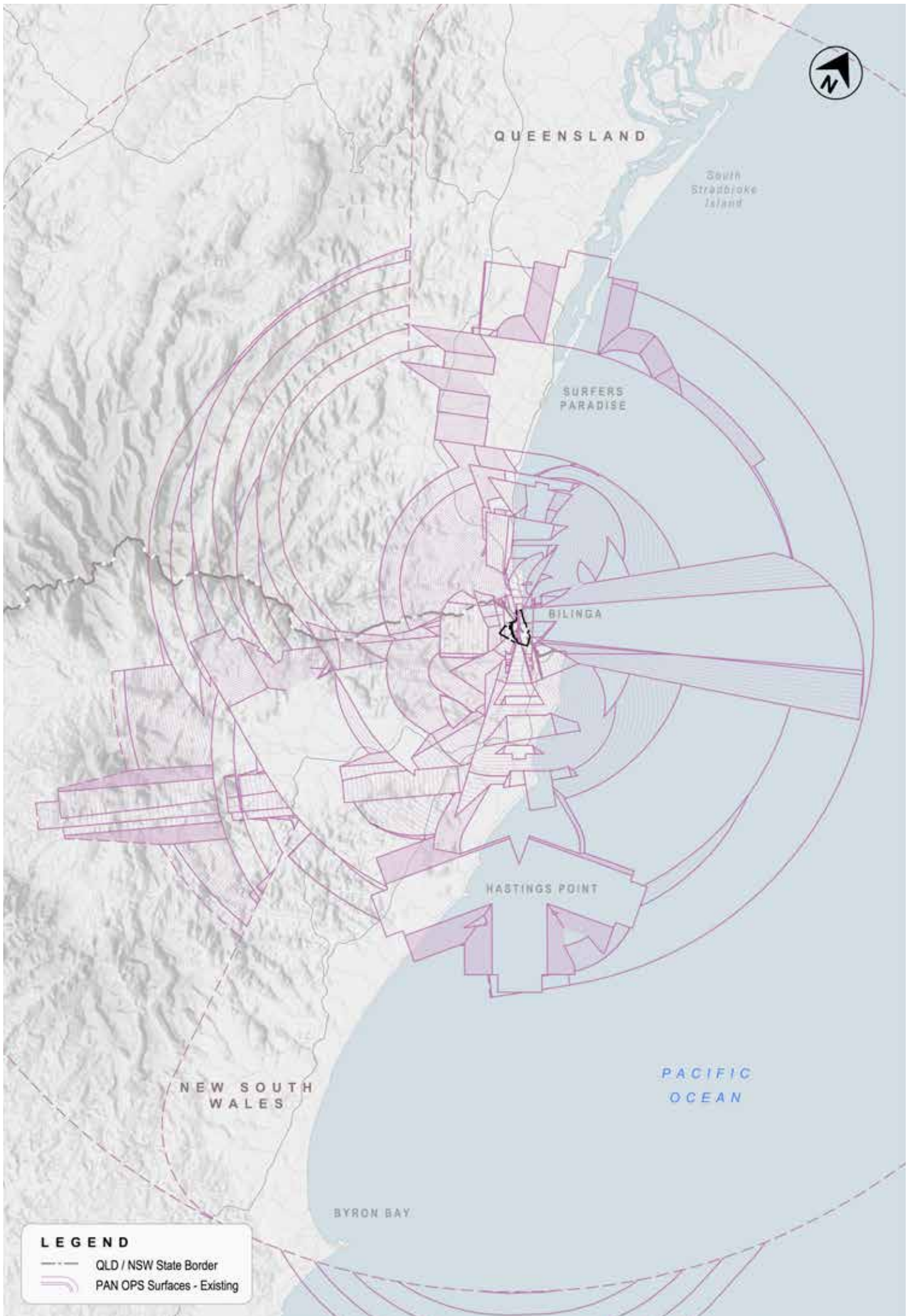


Figure 7.3 Procedures for Air Navigation Services - Aircraft Operations Surface (PANS-OPS) (30km Radius)

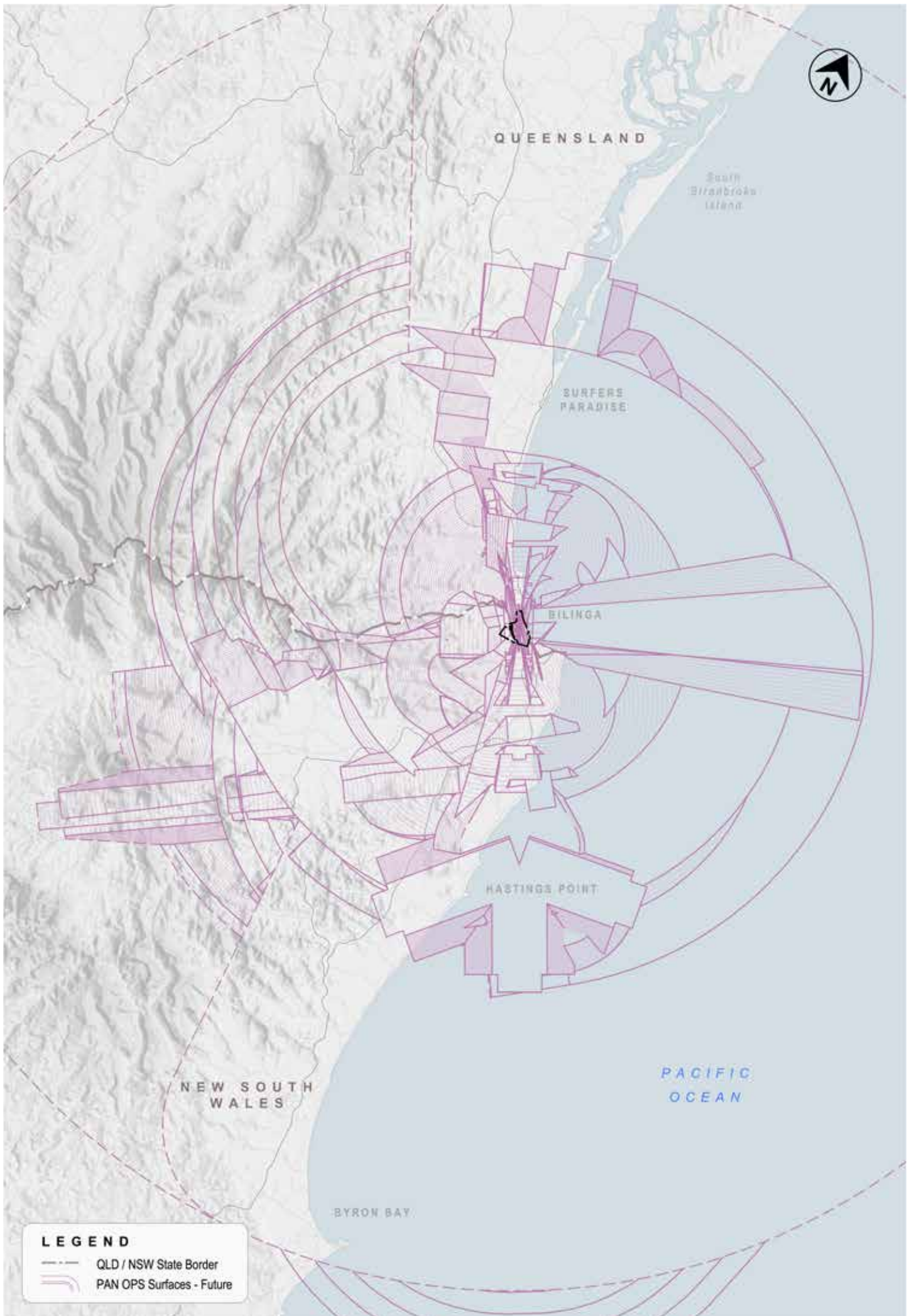


Figure 7.4 Future PANS-OPS Surfaces

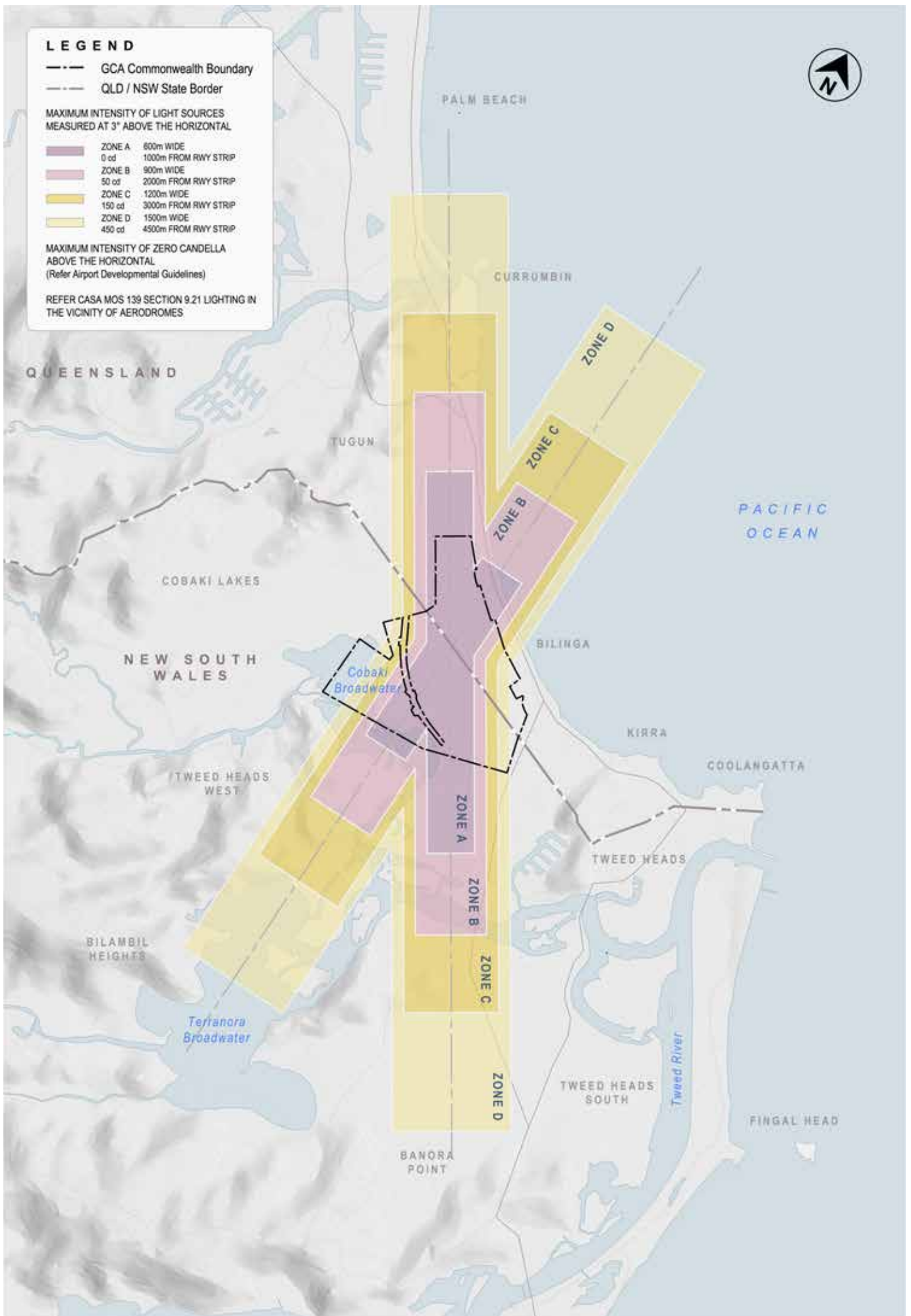


Figure 7.5 Restrictions to External Lighting

