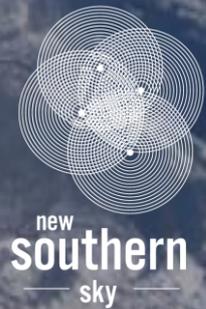


Your Guide to Performance Based Navigation Concept of Operations



Introduction

New Zealand is implementing Performance Based Navigation (PBN), with the objective of achieving a full PBN operating environment by 2023. Implementation commenced with deployment of enroute, terminal and approach procedures within controlled airspace and will conclude with uncontrolled airspace by 2023. Deployment of PBN provides safety, operator, environment and societal benefits. The NZ PBN Implementation plan was revised in 2017, a copy of the plan is available at www.nss.govt.nz, resources page.

Concept of Operations

Primary means IFR navigation in New Zealand will be based upon PBN. The navigation route and procedure infrastructure will be optimised to deliver the benefits outlined in the PBN Implementation Plan—Revised 2017.

PBN in New Zealand is predominantly based upon Global Navigation Satellite System (GNSS) (using GPS constellation), adopting the ICAO navigation specifications appropriate for a phase of flight. This enables operations to be conducted outside of Ground Based Navigation Aid (GBNA) service. In the event of loss of PBN capability (aircraft failure or loss of GNSS signal) operators will be required to extract from the PBN operation and recover the aircraft based upon conventional navigation with reference to GBNAs.

The GBNA infrastructure will be described collectively as a Minimum Operational Network (MON). Its purpose is to enable safe recovery of IFR aircraft in the event of loss of PBN capability. The recommendation for the MON is a set of strategically collocated VOR/DME stations in the North and South islands.

Noting that PBN and the surveillance system (ADS-B) is dependent on the GPS constellation, there is a risk of a common mode failure affecting navigation and surveillance. However, this is addressed by means of a non GNSS cooperative surveillance system and the rationalised GBNA navigation infrastructure. Defined as a contingency network, this allows IFR navigation to continue for transport operations. The infrastructure will support contingency operations between Auckland, Wellington and Christchurch. It is expected it will also support regional airports.

Pilot and air traffic control (ATC) training will focus on navigation based upon PBN, however training will need to be retained for conventional navigation as well as responses to loss of PBN or GNSS capability. This is to ensure pilots and ATC are adequately trained for extraction and safe recovery of aircraft and contingency operations.