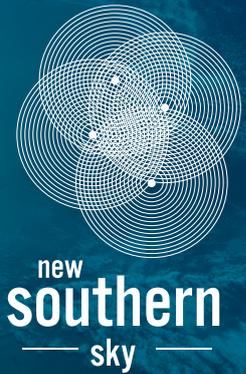


Your Guide to Performance Based Navigation



Performance Based Navigation (PBN) is an initiative aimed at improving safety and efficiency while reducing the environmental impact of aviation operations.

All NZ **PBN** navigation specifications are based on **GNSS** either as the primary navigation infrastructure or as one element of the infrastructure.

GNSS is an acronym for **G**lobal **N**avigation **S**atellite **S**ystems which include:

GPS (USA) (used by NZ aviation), **GLONASS** (Russia), **GALILEO** (Europe), **BEIDOU** (China)

Plus Japan and India with systems being implemented.

PBN comprises of Area Navigation (**RNAV**) and Required Navigation Performance (**RNP**)

RNAV enables aircraft to fly on any desired flight path within the coverage of ground or space based navigation aids, within the limits of aircraft self-contained systems, or a combination of both capabilities.

RNP is **RNAV** with the addition of **on-board monitoring and alerting** capability.

RNP enables the navigation system to monitor the navigation performance it achieves and to alert the crew if the requirement is not met during an operation.

This generally requires a TSO-C145 / C146 GNSS receiver.

For both **RNP** and **RNAV** specifications, the numerical expression '**X**' (where stated) refers to the lateral navigation accuracy, on either side of the track centre line, measured in NM.

For example **RNP 1** = 1NM either side of centre line.

Aircraft will need to be approved by the CAA for IFR **RNAV/RNP** operations.

The pilot will need to have a **GNSS** IFR rating with demonstrated competency in **RNAV/RNP** procedures.

Transitional arrangements have been outlined in AC 91-21 and AC 61-17.

RNP AR is where special approval is required from CAA for an instrument procedure to be flown and may require extra equipment on board. e.g. Queenstown

As signalled in the National Airspace and Air Navigation Plan, New Zealand is moving toward **PBN** with **GNSS** as the **primary means of navigation** within the NZ FIR.

A minimum operating network (**MON**) of **VORs** will be retained. The use of **NDBs** beyond 2021 is under review.

For controlled airspace **ADS-B** (Automatic Dependent Surveillance – Broadcast) is proposed to be the primary surveillance system in the NZ FIR from 2021.

It is **Automatic** and it is **Dependent** on information that is **Broadcast** from the aircraft.

Produced by NSS Working Group