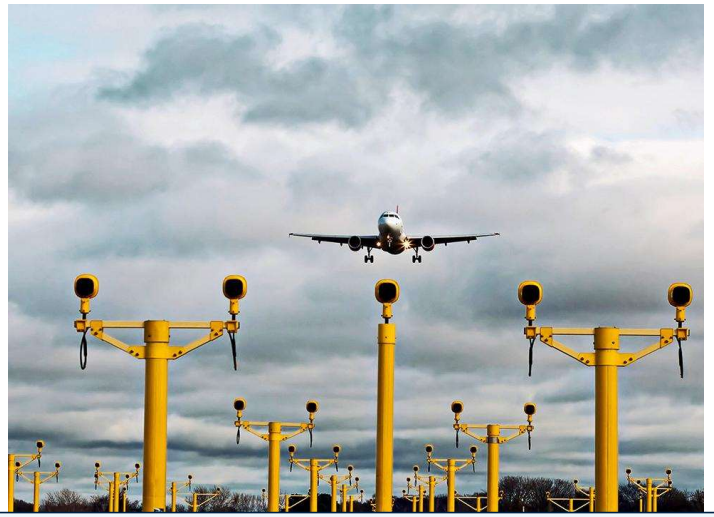
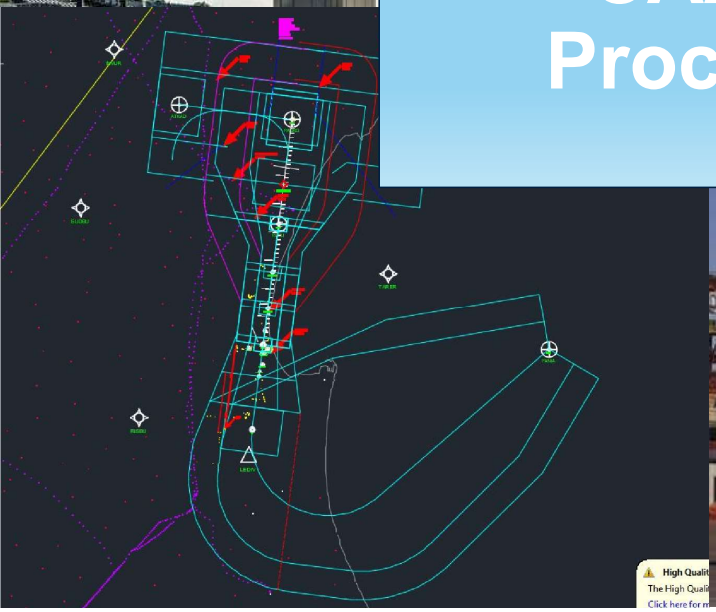
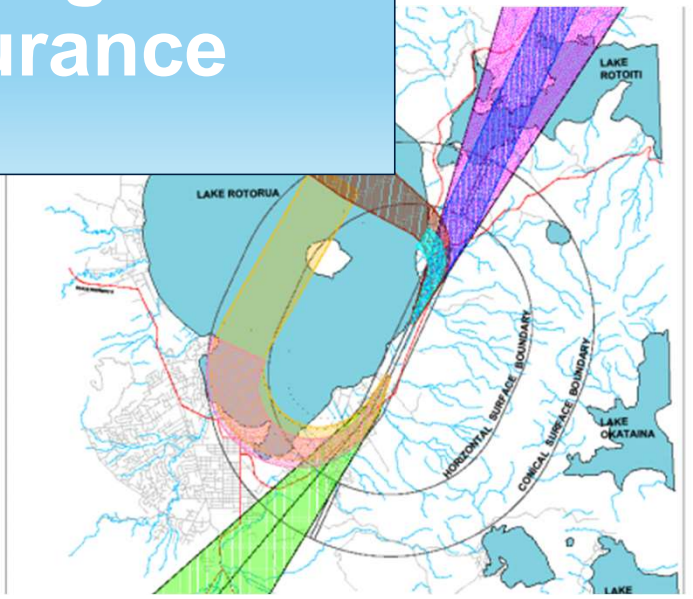


CAA NZ - Instrument Flight Procedure Design Assurance Presentation





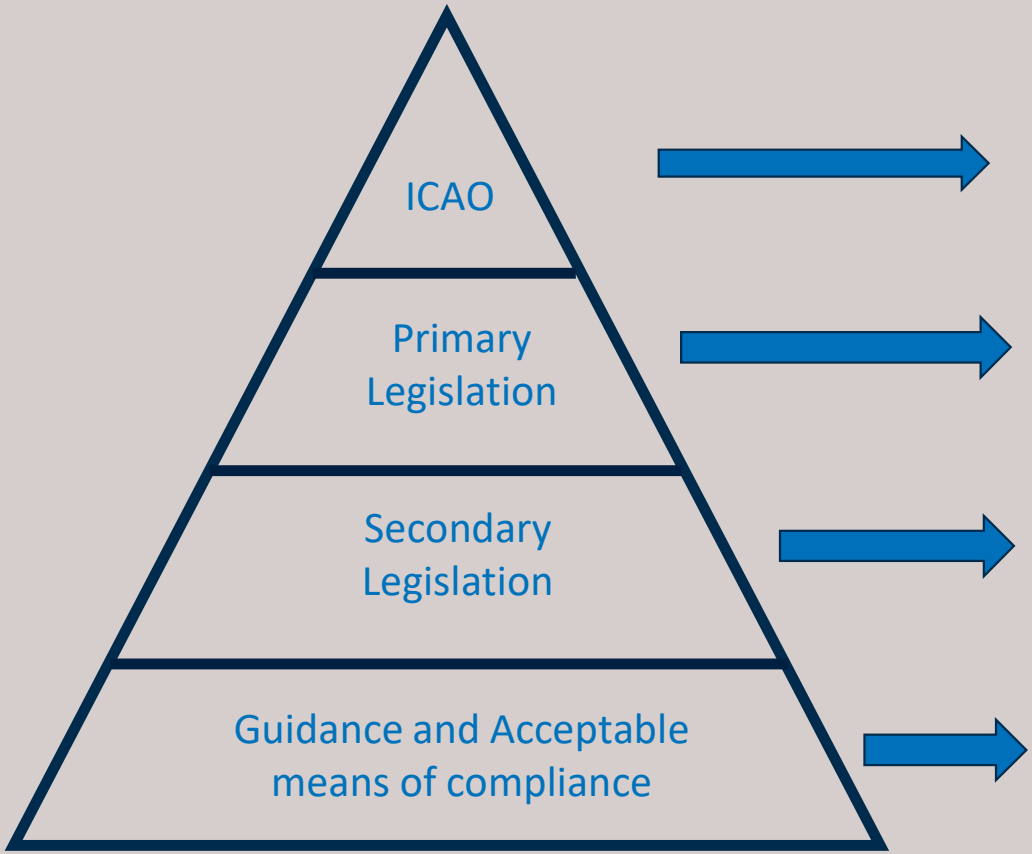
Civil Aviation Authority of New Zealand

- Sean Rogers - Manager Aeronautical Services
- Hamish Mckoy - Team Leader Air Navigation

Scope

- Legislation Framework in New Zealand
- Regulation of Instrument Flight Procedures
- Putting it all in practice
- The Future IFP environment

New Zealand Legislation framework



Relevant Annex's and SARPs

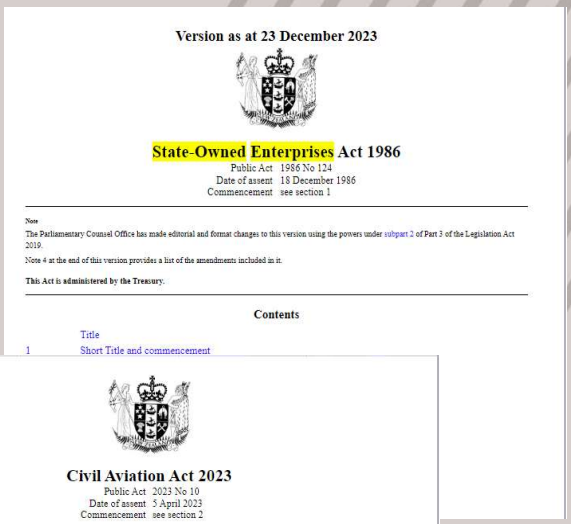
New Zealand 'Civil Aviation Act'

Civil Aviation Rules

Advisory Circulars

Primary Legislation

- The provision of Air Navigation Services is enabled through primary legislation
  - Civil Aviation Act 2023
    - Section 35 for Air Traffic Services
    - Section 53 for activities requiring an Aviation Certificate



Version as at 23 December 2023

State-Owned Enterprises Act 1986

Public Act 1986 No 124
Date of assent 18 December 1986
Commencement see section 1

Note

The Parliamentary Counsel Office has made editorial and format changes to this version using the powers under subpart 2 of Part 3 of the Legislation Act 2019.

Note 4 at the end of this version provides a list of the amendments included in it.

This Act is administered by the Treasury.

Contents

Title
1 Short Title and commencement

Civil Aviation Act 2023

Public Act 2023 No 10
Date of assent 5 April 2023
Commencement see section 2

Contents

1 Title
2 Commencement

Part 1
Preliminary provisions

Purposes

3 Main purpose
4 Additional purposes

Interpretation provisions

5 Interpretation
6 Meaning of accident
7 Meaning of aviation place
8 Meaning of officer

Application of civil aviation legislation

9 Application of civil aviation legislation

Transitional, savings, and related provisions

10 Transitional, savings, and related provisions

Act binds the Crown

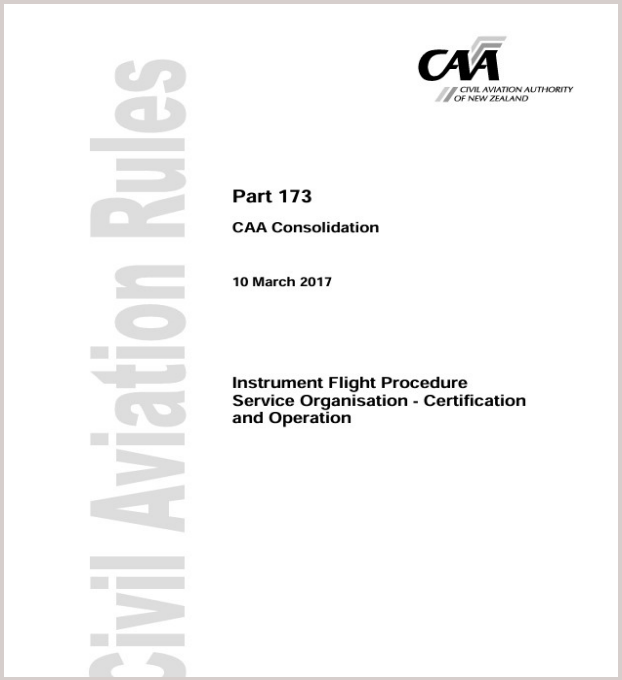
11 Act binds the Crown

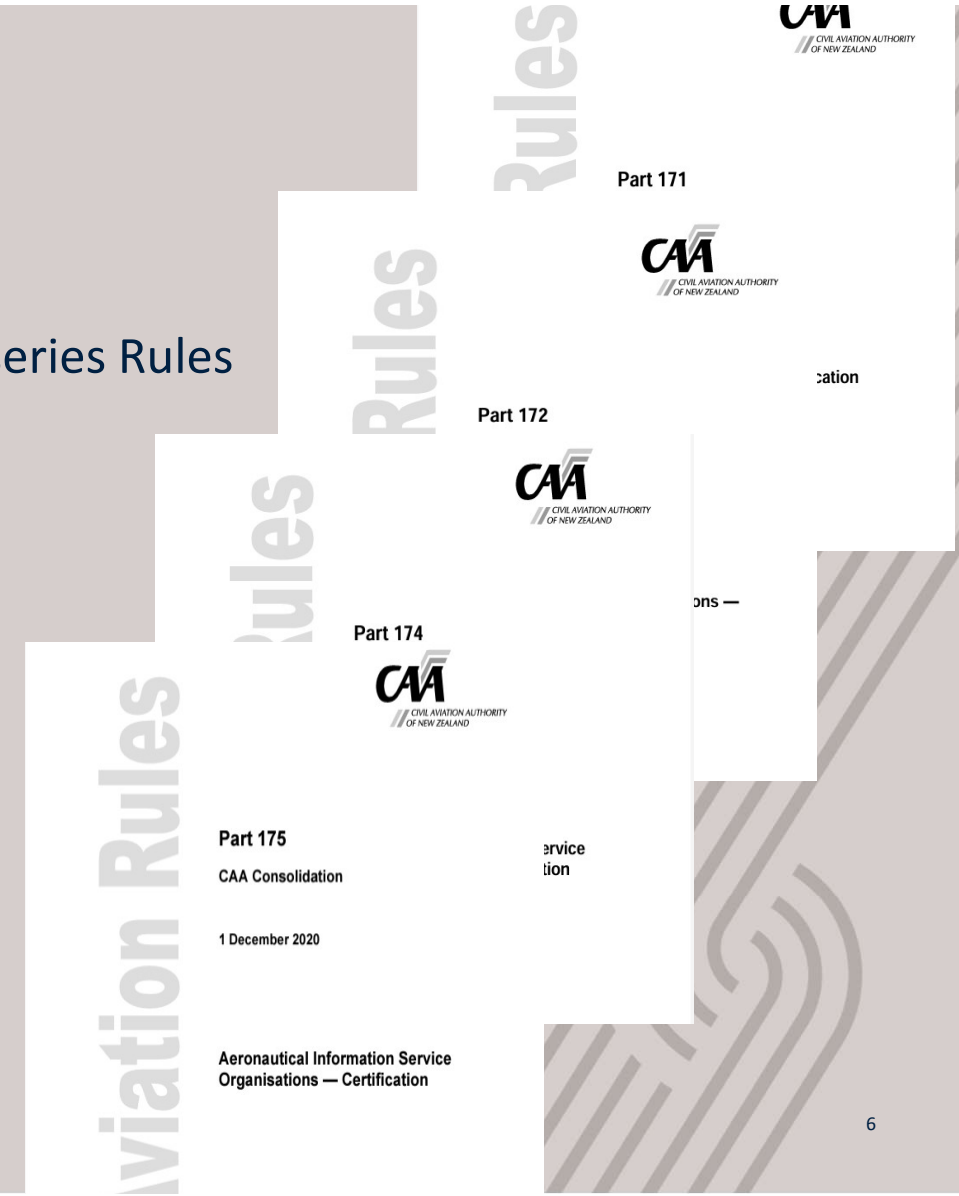
Overview

12 Overview

Secondary Legislation

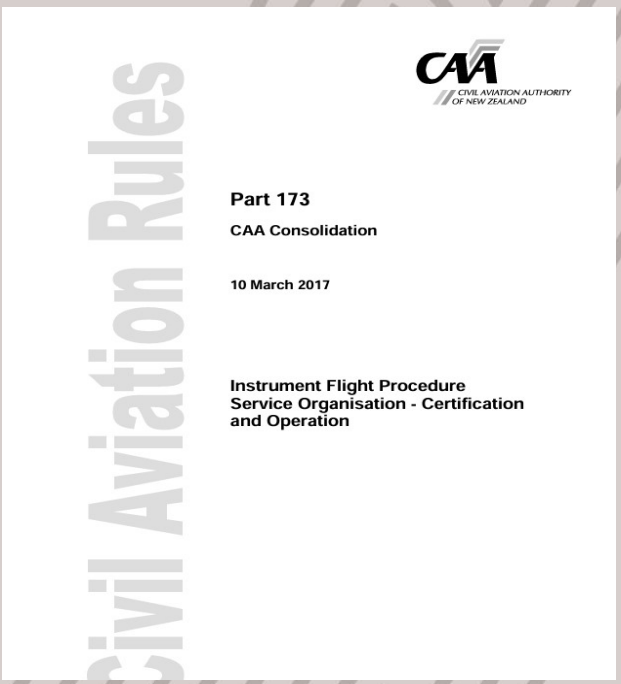
- Secondary Legislation is Civil Aviation 170 series Rules





Secondary Legislation

- Secondary Legislation is Civil Aviation 173 IFP Service Organisation Certification and Operation
- IFP Design Organisation is authorised to
  - Design and certify IFP
- CAA NZ is obligated to
  - Promulgate IFP
  - Ensure Design Organisation complies with applicable Rules
- CAA does not design individual IFP



Guidance and Acceptable means of compliance

- Advisory circular C 173 -1


CIVIL AVIATION AUTHORITY
OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

Advisory Circular
AC173-1

Revision 0

Instrument Flight Procedure Design

31 August 2012

Regulation of Instrument Flight Procedures

- 2 holders of IFP Design Organisation Certificates in NZ
- This authorises both to design IFP within the NZ FIR provided they meet the minimum requirements established by the rule relating to:
  - Design Equipment
  - Aeronautical Data
  - Design Technical Standards
  - Design Procedures
  - Document control
- The Certificate holder must also maintain a holistic state certified Safety Management System

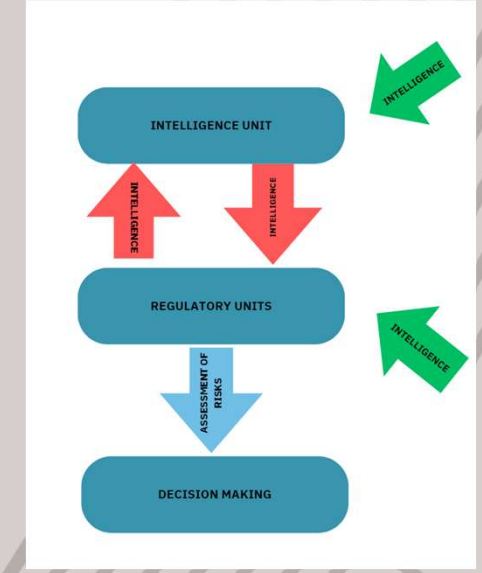
Regulation of IFPD

Role of the Certificate Holder

- GE Naverus and Aeropath are authorised through their individual CAR 173 certifications to ‘certify’ each IFP they design
- This must be done in accordance with the guidance contained with the secondary legislation which references various ICAO guidance directly

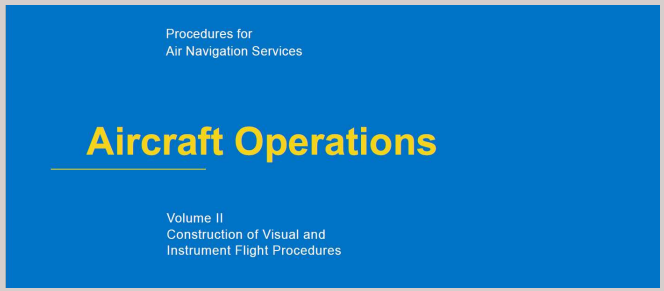
Role of the CAA

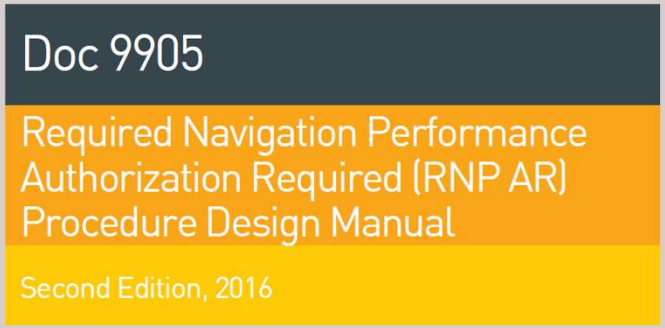
- This is prescribed within the primary and secondary legislation
- The CAA ensures compliance with rules - ongoing monitoring and inspection of the IFP Design activities.
- Once a notified by the Certificate holder of a new or amended IFP, the CAA will ensure the new IFP are published



Regulation of IFPD

- IFPD ICAO standards are prescribed in CAR Part 173





(1) ICAO Documents—

(i) Doc 8168, Procedures for Air Navigation Services – Aircraft Operations — Volume I Flight Procedures, and Volume II, Construction of Visual and Instrument Flight Procedures:

(ii) Doc 8697, Aeronautical Chart Manual:

(iii) Doc 9365, Manual of All-Weather Operations:

(iv) Doc 9613 Performance Based Navigation Manual — Volume I Concept and Implementation Guidance, and Volume II Implementing RNAV and RNP:

(v) Doc 9881, Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information:

(2) ICAO Annexes—

(i) Annex 4, Aeronautical Charts:

(ii) Annex 6, Operation of Aircraft:

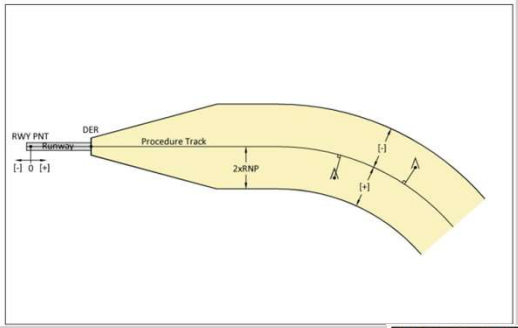
(iii) Annex 11, Air Traffic Services:

(iv) Annex 14, Volumes I & II Aerodromes:

(v) Annex 15, Aeronautical Information Services:

(3) Any other guideline or standard that is applicable to a particular type of instrument flight procedure and is acceptable to the Director.

Regulation of IFP – State accepted design



- RNP AR Departure/EOSID criteria

(iv) Doc 9613 Performance Based Navigation Manual — Volume I Concept and Implementation Guidance, and Volume II Implementing RNAV and RNP:

(v) Doc 9881, Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information:

(2) ICAO Annexes—

(i) Annex 4, Aeronautical Charts:

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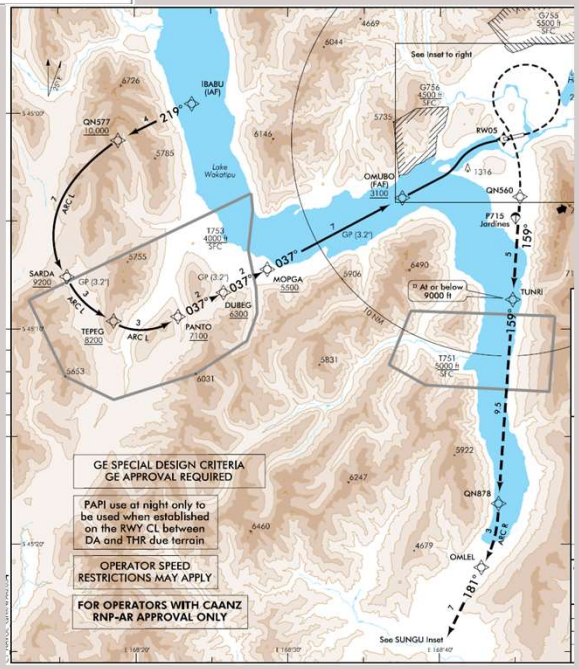


- GE RNP AR criteria (Queenstown only)

Regulation in practice – Procedure Maintenance

4.4.3 Published procedures shall be subjected to a periodic review, including validation (4.6), to ensure that they continue to comply with changing criteria, to confirm continued adequate obstacle clearance and that they meet user requirements. The individual States shall establish the interval for periodic review of instrument flight procedures according to the needs of the State. The maximum interval for this review is five years.

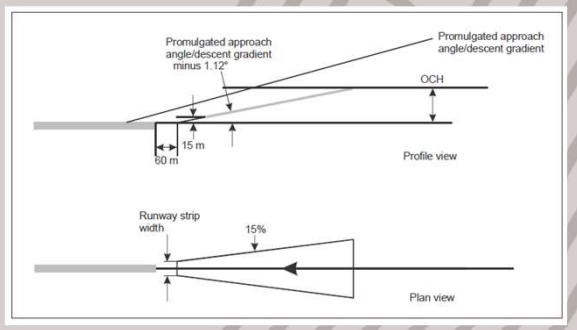
173.63 Maintenance of instrument flight procedures

(a) An applicant for the grant of an instrument flight procedure service certificate must establish a procedure for maintaining, in accordance with the requirements of this Part, every instrument flight procedure that, in accordance with the statement required under rule 173.61(c)(5), is maintained under the authority of the certificate.

(b) The procedure required by paragraph (a) must include details for every instrument flight procedure to be reviewed, and flight validated if necessary,—

(1) on a periodic basis ensuring that the instrument flight procedure continues to meet the applicable standards and requirements of this Part; and

(2) if there is a change in any of the data referred to in rule 173.53(a)(2) that may affect the integrity of the instrument flight procedure.



Regulation in practice – PBN

Present vs Future State

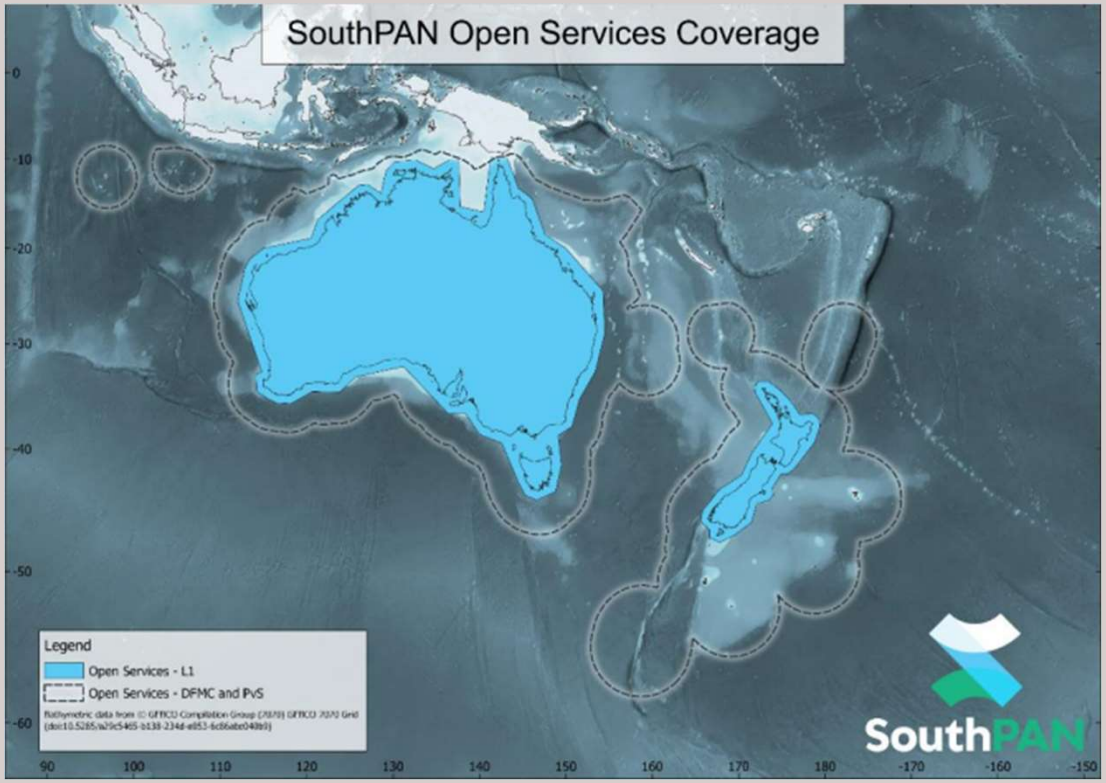
Flight Phase	Navigation Specification	Navigation Type
Oceanic	RNP 10 (RNAV 10)	LNAV
	RNP 4	LNAV
Domestic Enroute	RNAV 2	LNAV
Arrival procedures	RNAV 1	LNAV
	RNP 1	LNAV
Approach procedures	RNAV (GNSS)[1]	LNAV
	RNAV (GNSS)[1] + BARO VNAV[2]	LNAV/VNAV
	RNP AR APCH[3]	LNAV/VNAV
	RNP AR APCH (Special)[4]	LNAV/VNAV
Departure procedures	RNAV 1	LNAV
	RNP 1	LNAV
	RNP AR DP (Special)[5]	LNAV

Table 1: PBN Specifications Implemented in NZ

Flight Phase	Navigation Specification	Navigation Type
Oceanic	RNP 2	LNAV
Domestic Enroute	RNP 2	LNAV
	RNP 0.3(H)[1]	LNAV
Arrival Procedures	RNP 0.3(H)[1]	LNAV
Approach Procedures	RNP 0.3(H)[1]	LNAV
Departure procedures	RNP 0.3(H)[1]	LNAV
	RNP AR DP[2]	LNAV
Enroute, Terminal and Approach Procedures	A-RNP[3]	LNAV & LNAV/VNAV[4]

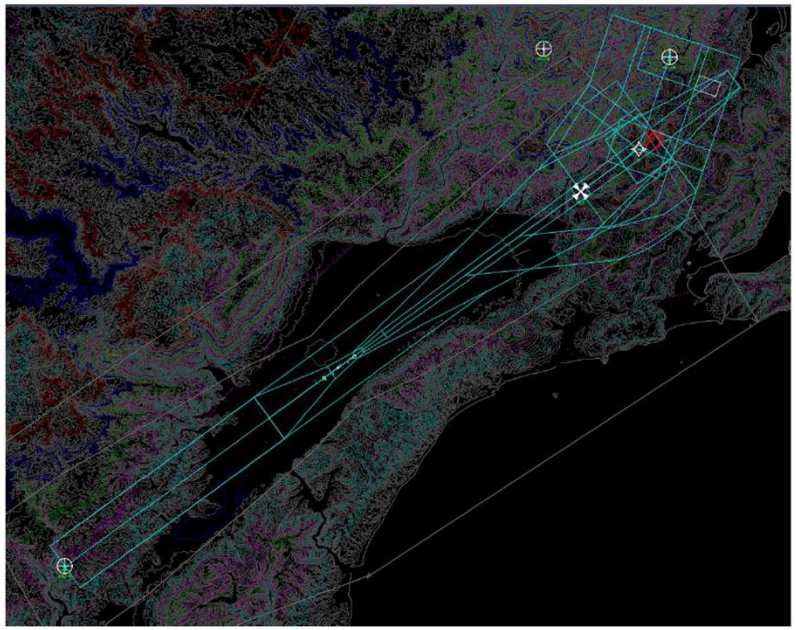
Table 2: Future PBN Specifications

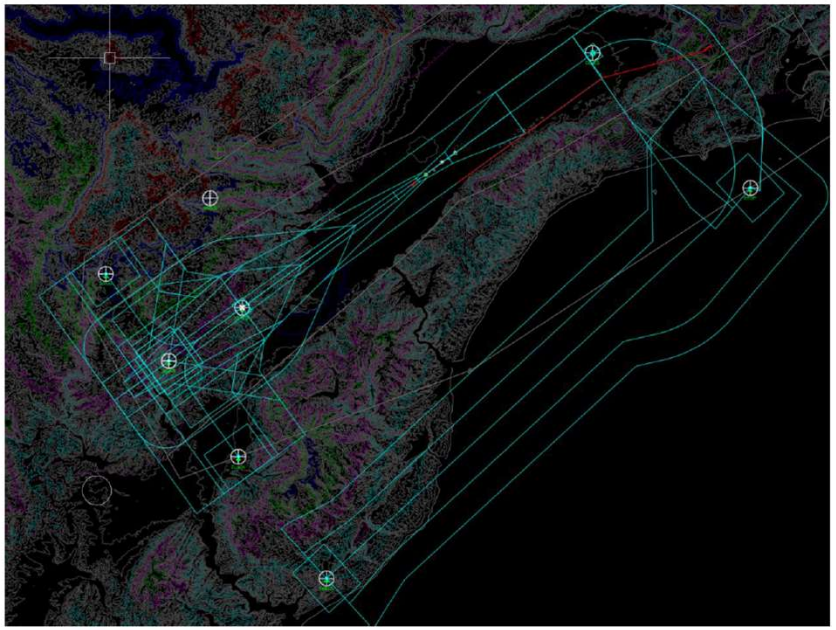
Regulation in practice – SBAS



- Benefits:
  - LPV approaches with vertical guidance
  - Improved IFP minima:
    - LPV 250
    - LPV 200
  - RNP 0.3 (Without RAIM)
  - Point in space LPV approaches
- Challenges:
  - Aerodrome infrastructure
  - Fleet equipage

Regulation in practice – SBAS





SBAS would give a minima comparable to the current ILS

Procedures will link into existing STARs

Regulation in Practice - who does it

- Oversight of IFP Design is conducted by Aeronautical Services Unit(ASU)
- All regulatory staff conduct induction regulatory training.
- After completing successful on the job training and assessment, new staff are delegated with inspector powers (search/seizure etc)
- ASU maintains a competency framework to ensure adequate subject matter expertise is retained within the unit
- Currently have 8 inspectors within the unit of which 3 have specific IFP training and/or experience.
- All ASU inspectors are cross trained to cover various different air navigation disciplines.

Summary

In New Zealand

- IFP Design Organisations must hold a CAR 173 Certificate
- IFP must be designed in accordance with applicable ICAO IFP and AIP standards
- CAA NZ ensures all design activities are conducted in accordance with these requirements
- As holder of a CAR 173 IFP Design Certificate, Aeropath and GE Naverus are authorised to certify new and amended IFP
- The CAA NZ promulgates those IFP in the NZ Air Navigation Register, AIP and the National Gazette