Ground-Based Navigation Aid Review Panel Report and Recommendations

Version 1.0
Director NSS
26 April 2018

Executive Summary

The Ground-Based Navigation Aid Review Panel was set up by the New Southern Sky Working Group to fulfil the recommendations of the National Airspace and Air Navigation Plan with respect to ground-based navigation aids (GBNAs).

GBNAs are used for navigation by aircraft flying under instrument flight rules (IFR). The modernisation of aviation in New Zealand, led by the New Southern Sky programme, entails the predominant use of satellite positioning for performance-based navigation (PBN). One of the benefits of this is that many expensive to maintain and ageing GBNAs will no longer be required. In future, GBNAs will only be needed as an alternative to satellite navigation should something go wrong with the satellite service or an aircraft's equipment.

The National Airspace and Air Navigation Plan recommends that the provision of GBNAs be rationalised to provide a minimal network that will:

- ensure that in case satellite services are unavailable or degraded, all airborne aircraft can be safely recovered
- ensure that in case satellite services are unavailable or degraded, some flight services can be maintained on the main trunk routes.

The GBNA Review Panel concluded that these goals would be achieved by Airways' existing navigation plan to maintain GBNAs at all controlled airports, with the additional steps of retaining GBNAs at Kaitaia, Hokitika and the Chatham Islands.

The Panel further recommends that by 2020, all GBNAs should be VOR types with co-located DMEs. Of the GBNAs that would be retained, only those at Kaitaia, Tauranga Hokitika and Chatham Island are not currently VORs. Only Chatham Island does not have a DME.

The Panel notes that this review is a high-level consideration of the needs of aviation in New Zealand rather than a detailed analysis of actual operations. We also acknowledge that decisions about the future regulatory framework for PBN navigation may have implications for aviation operations we cannot anticipate. The implementation of our recommendations should therefore take account of relevant practical issues that emerge, to ensure that the objectives of the review are met.

Contents

Introduction

Modern aviation depends heavily on global navigation satellite systems (GNSS) for positioning information which enables accurate and efficient navigation and surveillance of aircraft. The New Southern Sky programme is intended to fully enable GNSS navigation and surveillance in New Zealand to ensure we take maximum advantage of its benefits. Chief among these benefits is performance-based navigation (PBN), which enables aircraft to use the most efficient routes and approaches, rather than flying point-to-point between fixed ground-based navigation aids (GBNAs). A further benefit is that many of these GBNAs, and their expensive maintenance, are no longer needed and may be removed[1].

As well as being accurate, GNSS services have proven to be robust. However, depending on them for instrument flight does make the aviation system susceptible to any degradation of satellite coverage, or malfunction of aircraft instruments that use it. Outages or losses of GNSS services may be rare and brief, but the systems have known vulnerabilities and can be disrupted by events in space and on the ground. Furthermore, the GPS system[2] used by aviation in New Zealand includes many satellites that are operating well beyond their design life. It cannot be assumed that historical good performance guarantees future performance. As other GNSS systems[3] are approved for PBN, there will be more redundancy in the services, but they will all be vulnerable to the same risks.

The risk of GNSS failure, even if low, requires that alternative means of navigation be available. The National Airspace and Air Navigation Plan, which is implemented by the New Southern Sky programme, recommended the development of a ground-based navigation strategy[4], based on consultation with the aviation sector, to ensure that adequate ground-based navigation aids remain to:

- ensure that in case of a GNSS outage, all airborne aircraft can be safely recovered
- ensure continuity of service can be maintained on the main trunk routes.

1 In fact, it may be quite costly to remove GBNAs, so in some cases it is cheaper in the medium term to retain them.

2 The US Global Positioning System is maintained by the US Air Force. GPS III is the next generation of GPS satellites; significant delays have pushed the launch of new satellites from 2014 to 2018.

3 The Russian GLONASS, Chinese Beidou and European Galileo systems are the main GNSS systems in addition to GPS.

4 The recommendation was that this should be done by the end of 2014; however, programme work commenced on 01 July 2014 and this target was clearly unrealistic.

The Ground-Based Navigation Aid Review Panel

The Ground-Based Navigation Aid Review Panel was set up by the New Southern Sky Working Group to fulfil the recommendations of the National Airspace and Air Navigation Plan[5] with respect to GBNAs.

The members of the Review Panel were chosen to provide expert knowledge of the GBNA network and its actual use, to include the agencies responsible for policy development and implementation, and to provide access to users of the network. Note that the Panel is not intended to *represent* users. It is an expert panel; users of the network have been consulted on its recommendations.

Review Panel members are listed in the appendix, along with the terms of reference for the review.

It is important to note that the purpose of the review is to determine the minimum provision of GBNAs that will perform the specified functions, without regard to the cost of that provision.

Previous work

Important precursors or resources for the work of the GBNA Review Panel include:

Analysis of the performance of GNSS operations without the support of conventional navaids in New Zealand airspace, O'Keefe, November 2010, Prepared for the Civil Aviation Authority by FANS PLANS P/L Canberra, Australia

Airways Future Navigation Aid Strategy -- Airways' plan for rationalising the GBNA network, 6 December 2013

National Airspace and Air Navigation Plan – Modernising New Zealand's Aviation System (often known as the NAANP) – June 2014

GNSS Sole Means Recommendation Report – New Southern Sky document, Beth Coughlan and Ray Harvey, 16 November 2015

Maintaining security and resilience in New Zealand's modernised aviation system – Tony Frost (MoT) and Brigid Borlase (CAA), 12 August 2016

New Zealand Ground-Based navigation Aid Infrastructure Strategy[6] – New Southern Sky document, Craig Dows, Steve Kelly and Ray Harvey, November 2016

The Minimum Operating Network

The first recommendation of the National Airspace and Air Navigation Plan is to ensure that if there is a GNSS outage, any aircraft in the air at the time can be safely recovered. The aircraft of concern are those flying IFR in the New Zealand FIR, and any aircraft

5 http://nss.govt.nz/assets/Uploads/NSS-Printed-Plan.pdf

6 http://www.nss.govt.nz/assets/08022017-GBNA-Strategy-V1.0.pdf

approaching New Zealand that are not able to divert to an area of GNSS coverage. We should also consider the risk from GNSS equipment malfunctions on aircraft or on the ground, or local degradation of GNSS services.

In order to safely recover aircraft flying IFR, a network of GBNAs must be sufficient to provide that a GBNA signal is accessible from anywhere an aircraft might be (even if the aircraft has to travel to detect it), and within the flight range of any such aircraft.

The *New Zealand Ground-Based Navigation Aid Infrastructure Strategy* calls a network of GBNAs with this capacity the minimum operating network (MON).

Determining the minimum operating network for New Zealand

The GBNA Review Panel approached the task of determining the MON by establishing a methodology for assessing the needs of the whole country. We decided to consider the implications for each area if all NDBs were removed, including whether any additional GBNAs would be required. Particular issues considered included:

- the current use of GBNAs
- the effects of weather on the need for GBNAs, particularly with respect to weather alternates
- terrain, including its effects on GBNA signal coverage and the constraints it places on aircraft with various levels of performance
- the limitations of actual operators in each area, including those due to the performance of aircraft used or the type of operations
- the infrastructure available at airports
- the location of services related to regional aviation operations (such as hospitals)
- The special needs of air ambulance services

Certain assumptions were made.

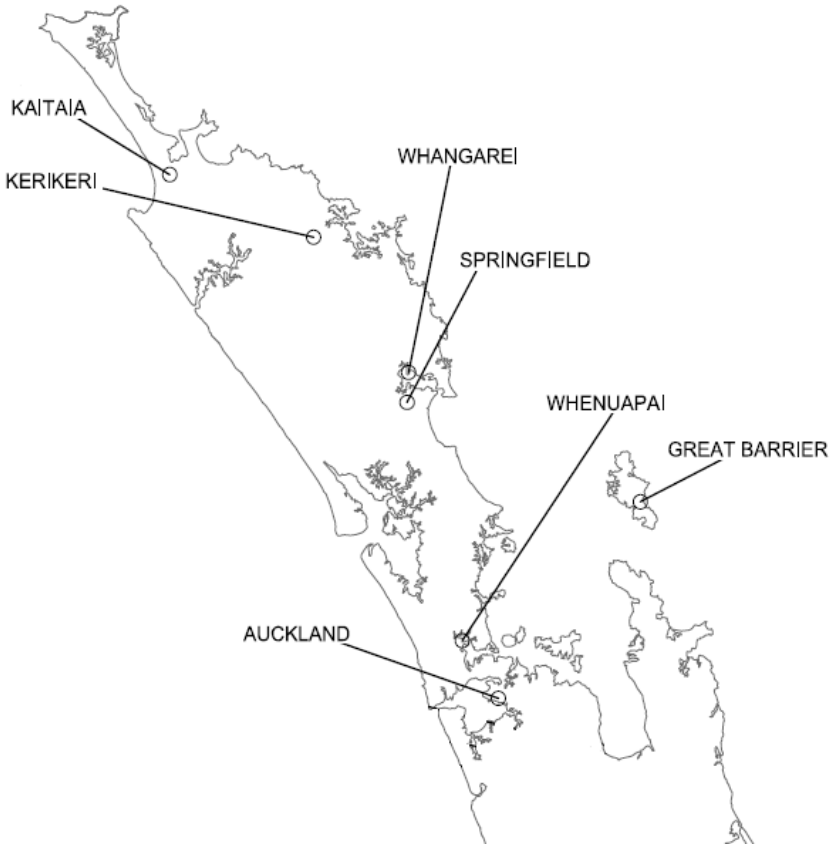
- In order to provide a fallback for recovering aircraft, MON GBNAs should be at aerodromes.
- All MON GBNAs will have at least one approach for each instrument approach runway end.
- GBNA procedures will be replaced by PBN procedures for aerodromes or routes from which GBNA are removed.
- New rules for GNSS will permit GNSS primary means navigation outside the navigation cover of GBNA

Three regions – Northland, the West Coast of the South Island and the Chatham Islands – were found to present special challenges.

Northland

Northland is a long peninsula that is somewhat isolated from other regions of the country. GBNAs (VORs) will be maintained at Whenuapai and Auckland. North of these are four NDB GBNAs: two near Whangarei, and one each at Kerikeri and Kaitaia. At some altitudes the NDB GBNA at Great Barrier Island may also be detectable.

Current location of GBNAs in Northland



For the purpose of emergency recovery, it would be possible for the Northland Region to be served by just one GBNA, which should be at an aerodrome. The Review Panel considered the existing GBNA sites to determine the best location for a single GBNA.

- Due to prevailing weather, Kerikeri was not preferred.
- Consideration of terrain and signal coverage favoured Kaitaia over Whangarei.
- The Kaitaia GBNA is part of the ICAO regional Air Navigation Plan.

An air ambulance service operates in Northland using helicopters. This raises issues relating to non-scheduled flights and the limitations of the aircraft. In particular, helicopters are more constrained by meteorological conditions – especially icing at higher altitudes – and by fuel capacity.

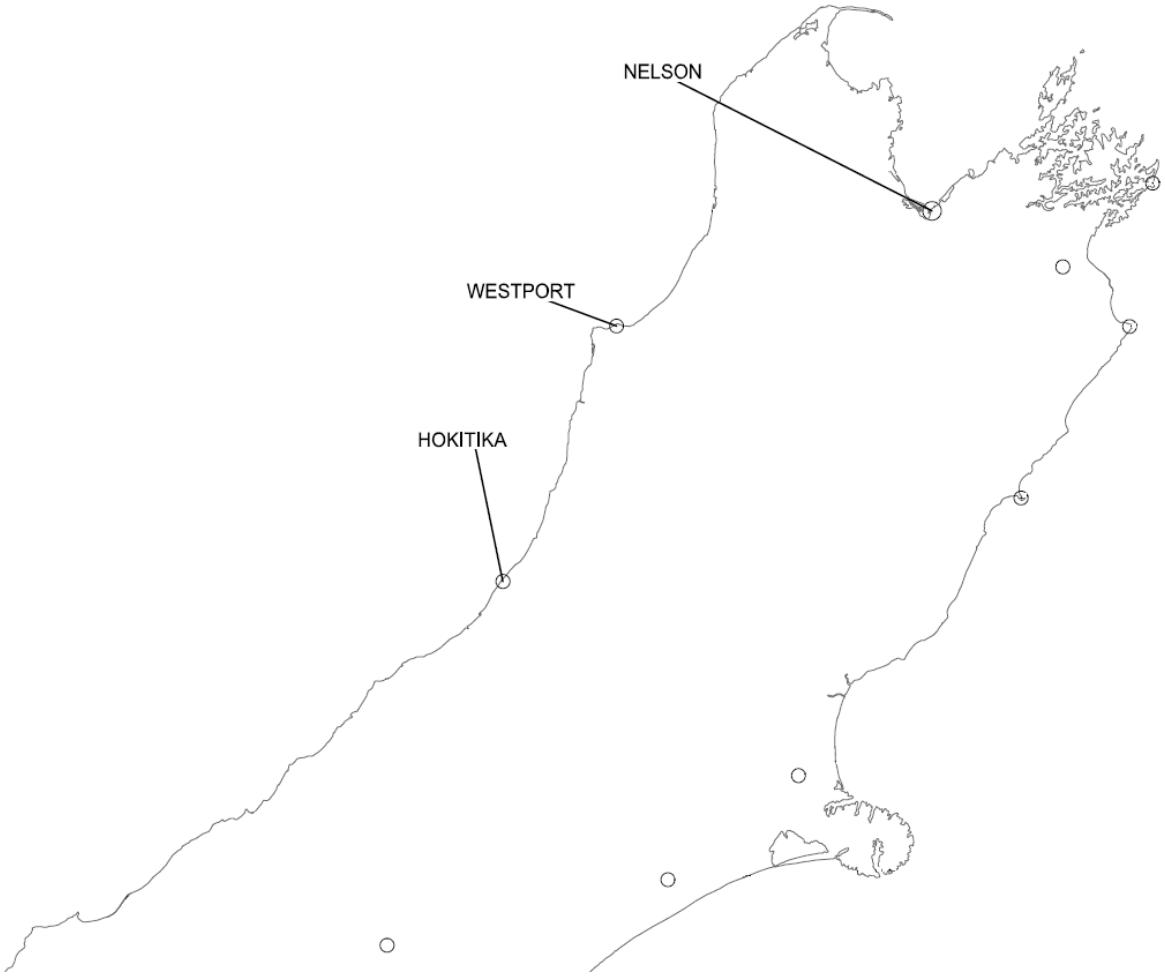
The Panel recommends that a GBNA be retained at Kaitaia to provide coverage of Northland and into the Oceanic FIR.

Recommendation
The MON should include a GBNA at Kaitaia.

West Coast

The West Coast of the South Island is also a somewhat distinct bit of airspace, with the Southern Alps providing a boundary to many air operations. There are currently GBNAs (NDBs) at Westport and Hokitika.

Current location of GBNAs on the West Coast



Considering the nature of operations on the West Coast, the function of the MON in this area could also be adequately served by a single GBNA. The central location of Hokitika and the longest runway in the region make it the most suitable location for the West Coast GBNA.

Recommendation
The MON should include a GBNA at Hokitika.

Chatham Islands

The Chatham Islands lie around 800km to the east of mainland New Zealand. Tuuta Airport is on the main island, Chatham Island, and has an NDB.

For aircraft travelling to or from the Chatham Islands, recovery to the mainland if GNSS services were lost could be difficult and risky – particularly for aircraft with lower performance than commercial jets. The islands' isolation also makes aircraft the only way of providing emergency assistance, such as medical aid.

Recommendation
The MON should include a GBNA on Chatham Island.to allow aircraft to be recovered to the Chatham Islands.

The rest of the country

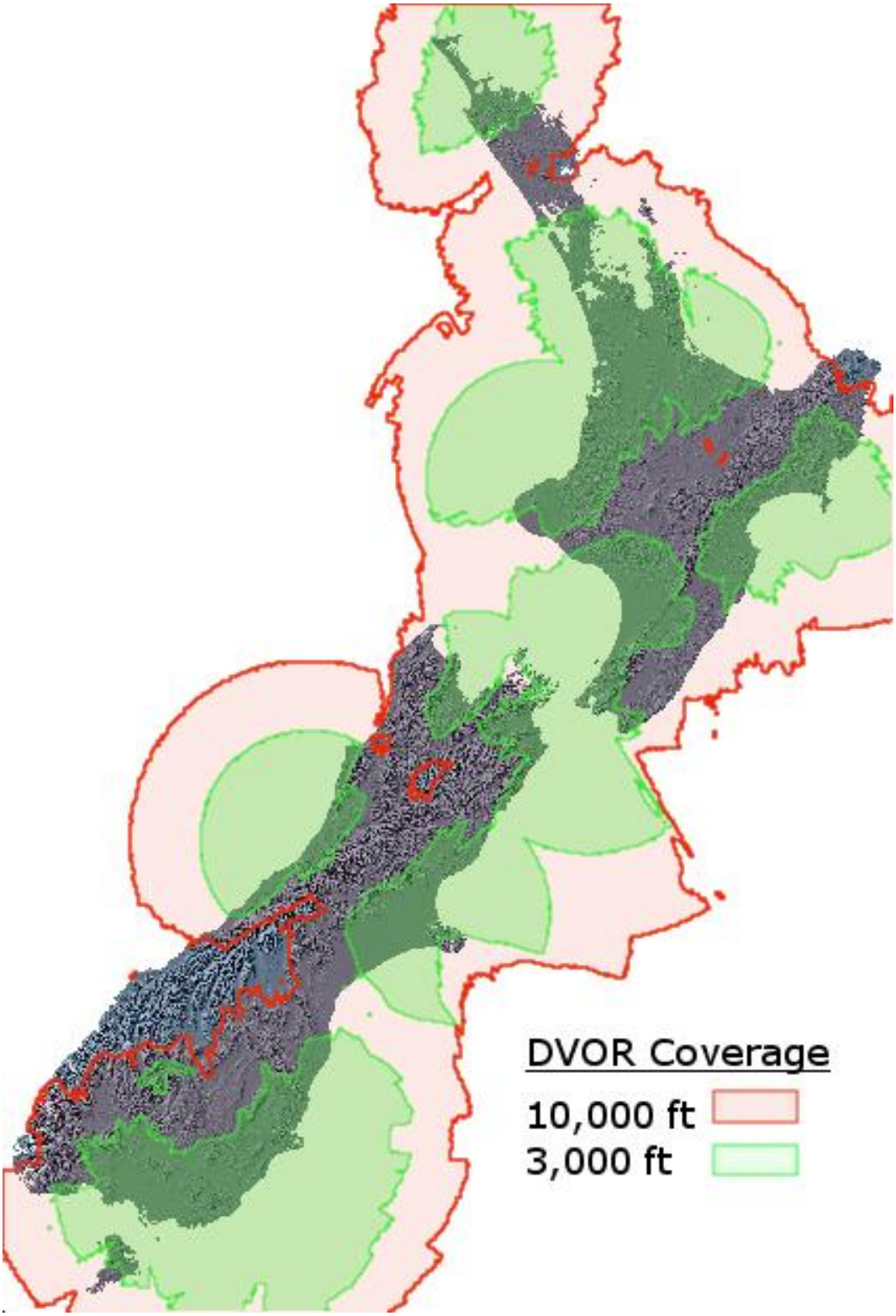
Airways' *Future Navigation Aid Strategy* includes its plan to have GBNAs at all controlled aerodromes until at least 2030. The VORs at controlled aerodromes have already been replaced, with a lifespan to 2030. Tauranga currently has an NDB, which will be retained with the expectation that it will eventually be replaced with a VOR.

As the coverage map shows, with the recommended GBNAs in Northland and the West Coast of the South Island, the GBNAs already at controlled aerodromes enable a signal to be received at almost every point in the FIR. Coverage is still excellent even at low altitude.

Furthermore, the GBNAs are close enough together that even aircraft having limited range and operating at low altitude could be recovered safely if they were to lose GNSS service.

Recommendation
The MON should include GBNAs at all controlled aerodromes, as proposed in Airways' GBNA Strategy.

Coverage provided by GBNAs at controlled aerodromes (plus Kaitaia and Hokitika) [7]



7 In this map, the GBNAs at Kaitaia, Tauranga and Hokitika are represented as VORs.

A small gap … and some bigger ones

The proposed network does leave a gap in GBNA coverage over the central North Island

A gap in GBNA coverage – 3,000 feet

The Panel's view is that this gap in coverage would not prevent recovery of aircraft that might be flying in the area. The gap exists only at lower altitudes, and the height of the underlying terrain makes it unlikely that aircraft flying IFR would operate in this space. Furthermore, the gap is surrounded on all sides and above by areas of GBNA coverage. Any aircraft that lost GNSS services in this area would quickly pick up a GBNA in whatever direction it flew.

There are also some significant gaps in coverage at lower altitudes on both coasts of the South Island. The Panel's view is that given the nature of operations in these areas, the spread of GBNAs is unlikely to prevent recovery of aircraft. However, this conclusion is subject to the limitations on the review (discussed below) with respect to types of operations considered and uncertainty about the future regulatory environment. Implementations of our recommendations will depend on practical confirmation that the proposed MON will meet its objectives.

GBNA type

The GBNAs at or near most aerodromes are Doppler VORs, but the recommended minimum network includes some NDBs – at Kaitaia, Tauranga, Hokitika and Chatham Island. Airways informed the Review Panel that it hopes to phase out non-essential

NDBs by 2020, subject to customer needs[8]. The Panel's enquiries indicate that many operators do not use NDBs, and that increasingly they are not equipped or trained to do so (most modern aircraft do not have Automatic Direction Finders). Hence, the Review Panel recommends that to be fully effective all GBNAs in the MON should be VORs. It is likely that existing resource consents for the location and operation of NDBs would also allow VORs to replace them.

The VOR at Dunedin is not at the airport, but nearby, and may not be ideal for recovery approaches. The airport itself has an NDB. Further analysis will be required to ensure the function of the MON is met.

Recommendation
By 2020, all GBNAs in the MON should be VORs.

DME transponders are usually co-located with GBNAs, to measure the distance between the aircraft and the navigation aid. For appropriately equipped aircraft, this information greatly increases the flexibility and safety of approaches. In particular, DMEs allow pilots to more precisely locate GBNAs without having to fly past them, and enable more accurate location of aircraft to assist air traffic management to maintain safe separation. Where suitable approach procedures are provided, lower minima are possible. We recommend that all locations in the MON have DMEs. All of the sites included in the recommended MON already have DMEs, except for Chatham Island.

Recommendation
The GBNAs that make up the MON should all have co-located DMEs.

The Contingency Network

The second recommendation of the National Airspace and Air Navigation Plan is to ensure that if there is a prolonged GNSS outage, some flight services can be maintained on the main trunk routes.

The National Airspace and Air Navigation Plan does not specify which routes are main trunk routes. In February 2017, the Director Civil Aviation determined that the main trunk routes, for the purpose of interpreting the Plan's recommendations, are those between Auckland, Wellington and Christchurch[9].

The *New Zealand Ground-Based Navigation Aid Infrastructure Strategy* describes a network of GBNAs with the capacity to provide a contingency navigation network.

8 NDBs that are privately funded, or operated by the New Zealand Defence Force, may remain.

9 This decision was released to members of the New Southern Sky Working Group by its Director, Steve Smyth, on 1 February 2017.

The contingency network is needed *in addition* to the MON, so assumes that the MON is in place. As discussed above, the criteria for the contingency network are different from those for the MON, so could entail different recommendations for providing GBNAs.

However, the wide GBNA coverage of the country provided by the recommended MON means that, to the extent that aviation operations can use GBNAs, the MON will ensure that a sufficient contingency network will be in place. In particular, the provision of GBNAs at Auckland, Wellington and Christchurch airports, as well as at alternate aerodromes and en route, will enable services to continue on the main trunk, albeit at a reduced volume of traffic.

Recommendation
The GBNA contingency requirement, to enable main trunk services to continue, and to provide security and resilience backup, in case of GNSS outage, will be adequately provided by the recommended MON.

Security and resilience

The *New Zealand Ground-Based Navigation Aid Infrastructure Strategy* also recommends that the network should take account of national security and resilience needs. These needs were further considered in the report, *Maintaining security and resilience in New Zealand's modernised aviation system,* prepared by the Ministry of Transport and CAA, which in turn recommended that these form part of the GBNA Review Panel's decision process. The Review Panel accepted this recommendation and included security and resilience considerations in its terms of reference.

Aircraft can provide crucial assistance in a local emergency situation, such as a natural disaster, and proved their worth after the earthquakes in Christchurch and Kaikoura. In particular, aircraft are useful in the early stages of an emergency, and might be the only way to quickly deliver medical assistance or evacuate people.

The recommendation that a GBNA be retained at the Chatham Islands was also based on security and resilience considerations.

Resilience planners expect aircraft providing emergency assistance to an isolated region to use satellite navigation or visual flight rules. It is unlikely that a natural disaster would coincide with a GNSS outage. In fact, it is more likely that a GBNA might be damaged or destroyed. It is possible to envisage security crises that might involve both a humanitarian emergency and a GNSS outage, but these are also unlikely and inherently unpredictable.

In short, it is difficult to plan for emergency scenarios in which GBNAs would be needed, though they may be useful in practice. Regional risk assessments and emergency plans should take GBNAs into account and consider how they might be affected by the greatest local risks. Assessments should also consider a region's vulnerability in a sustained GNSS outage.

Regional economic impact

The planned rationalisation of the GBNA network will mean that a few uncontrolled aerodromes will lose their GBNAs. Some of these aerodromes are near small communities and may support aviation services that are essential to those communities, either economically or for social connections, or in some other way. The GBNA Review Panel agreed that in addition to determining the MON and the contingency network, the Panel should give consideration to the needs of regions that might lose their GBNAs.

For the most part, operators at regional aerodromes are also adopting satellite technology, and GBNAs are being used less and less for primary navigation. The Review Panel has assumed that any GBNAs that are removed will be replaced by PBN procedures, so there is expected to be little impact on regional economies. However, for uncontrolled aerodromes, this assumption will be tested as the PBN Implementation Plan rolls out over 2017/18.

A brief GNSS outage is unlikely to have any economic effect on smaller regions, but a longer outage could affect aviation services at aerodromes and on routes for which GBNAs are not available. Such an event is unlikely, and regional services may be less dependent on IFR, and more flexible with respect to disruption that might last only a few days.

Limitations of the review

The Review Panel's recommendations should be read in light of what the Panel was able to take into account. The recommendations are based on a high-level overview of aviation in New Zealand. It is anticipated that implementation of the recommendations will require more detailed analysis to ensure that their objectives are met, and that they might need to be revised.

- In determining the MON, the Review Panel took account of aviation operations in New Zealand generally, but did not establish any threshold for what particular operations should be possible.
- The future regulatory framework for PBN operations is currently being developed by the CAA, in consultation with stakeholders. The GBNA review panel could therefore not take the regulatory environment into account. When rule proposals are agreed, the MON might be relevant to what operations are possible. This may provide a reason to modify the proposed rules, or the MON itself. However, the Review Panel's recommendations have no direct implications for what is required of aviation operations.
- Because the regulatory environment is yet to be determined, it is difficult for operators to estimate what implications the MON might have for current or future operations, or for them to meaningfully comment on the recommendations. Members of the Review Panel have consulted with stakeholders targeted for their likely insight, but the uncertainty has no doubt constrained responses.

A dissenting view

The Member of the Review Panel representing the New Zealand Defence Force does not endorse the following recommendations. The New Zealand Defence Force believes that the review's high-level approach is not adequate to the objective of determining the MON or New Zealand's security and resilience needs. In particular, the New Zealand Defence Force believes the lack of detailed evidence of the actual coverage of GBNAs, or formal risk assessment, weakens the review's conclusions.

Recommendations

1. The minimum operating network (MON) of GBNAs, to safely recover aircraft if GNSS services are lost or degraded, should comprise:
    a. GBNAs at all controlled aerodromes, which will provide signal coverage for most of the country
    b. a GBNA at Kaitaia to provide signal coverage for Northland and into the Oceanic FIR
    c. a GBNA at Hokitika to provide signal coverage for the West Coast of the South Island
    d. a GBNA on Chatham Island to allow aircraft to be recovered to the Chatham Islands.
2. By 2020, all GBNAs in the MON should be VORs.
3. The GBNAs that make up the MON should all have co-located DMEs.
4. The GBNA contingency requirement, to enable main trunk services to continue, and to provide security and resilience backup, in case of GNSS outage, will be adequately provided by the recommended MON.

Appendix One

Members of the Ground-Based Navigation Aid Review Panel

Ian Andrews	New Zealand Aviation Federation/ Aircraft Owners and Pilots Association
Russell Brown [Chair]	Ministry of Transport
Kayla Doherty [Secretary]	New Southern Sky
Garry Goodman	NZ Airports Association
Mike Haines	Airways
Ray Harvey	Civil Aviation Authority
Steve Kelly	Air New Zealand
Tony MacDonald	Qantas Group (Jetstar, JetConnect)
Wing Commander Stu Mackenzie	New Zealand Defence Force
Ashok Poduval	Aviation New Zealand
Sean Rogers	Civil Aviation Authority
Mark Shepherd	Air New Zealand
Steve Smyth [Observer]	New Southern Sky
Lachlan Thurston	NZ Airports Association
Peter Turnbull	Northland Emergency Services Trust (NEST)

Appendix Two

Ground Based Navigation Aids Review Panel:

Terms of reference

1. Purpose

The role of the Ground Based Navigation Aid (GBNA) review panel (GBNARP) is to review the current GBNA infrastructure and proposed changes, to ensure that it will provide New Zealand aviation system safety, security and resilience, in the event of aircraft Global Positioning System (GPS) loss, or partial, regional, national loss of the Global Navigation Satellite System (GNSS)[10] network.

2. Tasks of the GBNARP

Specifically, the GBNARP must evaluate the current network of GBNA to determine and recommend:

- the future GBNA infrastructure needed to support the minimum operating network (MON),
- the GBNA infrastructure required for a contingency network (CN) to ensure navigation capability between Auckland, Wellington, and Christchurch,
- the GBNA infrastructure necessary to support national security and resilience (NSR),
- a plan for change in the GBNA infrastructure to ensure a seamless transition from the current GBNA inventory to one that supports the MON and CN.

[10] The only GNSS service certified by the International Civil Aviation Organisation (ICAO) for aviation use is currently the United States Global Positioning System (GPS).

Accordingly, the GBNARP will recommend:

- the retention of a GBNA,
- the addition of a GBNA,
- the replacement of a GBNA,
- the planned removal of a GBNA,

When considering these matters the GBNARP must determine methods, processes and criteria on which to evaluate the GBNA network and make recommendations; consideration will include but is not limited to[11]:

- the current GBNA network,
- transitional GBNA infrastructure,
- the MON,
- the CN,
- the needs of users of the GBNA network including domestic and international operators, the New Zealand Defence Force (NZDF), smaller operators and helicopters, aerodrome operators, and general aviation (GA),

;

- the types of GBNA required for the New Zealand aviation system (VOR, DME, NDB),
- the acceptable levels of GBNA related risks for the New Zealand aviation system,
- the Global Air Navigation Plan (GANP), the National Airspace and Air Navigation Plan (NAANP), the NSS GBNA Strategy (2016), the Airways Future GBNA Strategy (2014), Civil Aviation rules and other relevant planning and strategy documents,

[11] These methods, processes and criteria were identified by the GBNA Workshop 30 Nov 16.

- any transitional arrangements necessary when modifying the GBNA network (e.g. the availability of published RNAV procedures, conventional procedures, and the availability of equipment on board aircraft),

- the requirement for periodic reassessment of the GBNA network,

- national security and resilience aspects of the GBNA[12]; and,

- the GBNA impact on aviation services to regional communities.

In making recommendations on these matters the panel is expected to engage, communicate with and seek feedback from their organisations and sector groups on the recommendations and their likely benefits and consequences. (refer also to Media management and engaging with aviation communities below).

The GBNARP does not:

- approve of expenditure by any agency, group or individual related to a GBNA,

- develop policy, rules or regulation on GBNA,

- directly procure equipment, materials, or technical services related to a GBNA,

- direct government or sector agencies,

- undertake any other activities normally done by member agencies.

[12] This includes regional access and assistance in emergencies

3. Powers to Act and reporting

The GBNARP will make recommendations on GBNA infrastructure changes to the relevant GBNA decision makers[13].

Reports will be available to all GBNARP members and their communities except where information is withheld under the Official Information Act 1982.

4. GBNARP membership

The GBNARP will comprise the following organisations representing the following sectors. Each organisation will have one representative on the panel.

Civil Aviation Authority:

> NSS lead partner and Government agency representing aviation safety,

Ministry of Transport:

> NSS partner and Government Ministry representing national security and resilience, lead Government Ministry with access to 'whole of Government' views,

Airways Corporation:

> NSS partner, State owned enterprise and New Zealand's air navigation service provider,

Air New Zealand:

> NSS collaborator, large airline, domestic carrier and international operator,

[13] The GBNA decision makers are the Airways Corporation and the owners of GBNA capabilities deployed in the NZ FIR.

Qantas Group (Jetstar/JetConnect):

NSS collaborator, large airline, domestic carriers and international operator,

NZ Airports Association:

NSS collaborator, aerodromes who may own and require the GBNA,

New Zealand Aviation Federation:

NSS collaborator through AOPA and Aviation NZ, GA, small domestic fixed wing and helicopter operators (Pt 135), Flying Training organisations and Emergency Management Services,

NZDF:

NSS collaborator; the Royal New Zealand Air Force (RNZAF) will represent the NZDF,

Aviation NZ:

NSS collaborator; Aviation NZ represent the interests of GA, particularly the Flight Training Organisations,

Others:

The GBNARP will invite input from and consider submissions from all aviation sector participants that use, own or pay for a GBNA capability within the NZ FIR. Local Government, or relevant Councils in the case of specific areas of IFR access, will need to be consulted when decisions on GBNA are considered.

5. Administration

5.1 Meeting location and format

The panel will meet in Wellington, Auckland or Christchurch as required.

Video conferencing will be available in exceptional circumstances.

Panel agendas and reports will be circulated five working days before the meeting

5.2 Meeting frequency

The GBNARP will meet initially on 26 January 2017 in Wellington.

The GBNARP will subsequently meet quarterly or as required by the panel.

GBNARP members will be one voting, with one backup (attending) to maintain continuity in the absence of the lead representative.

The GBNARP will complete its work within the 2017 calendar year.

5.3 Quorum and voting rights

A quorum will be half the number of organisations represented on the panel plus one.

The GBNARP may approve alternate members from representative organisations. Alternative members may vote in the absence of the principal organisational representative.

5.4 GBNARP Chair

The GBNARP will elect a Chair.

The Chair will not have a casting vote.

5.5 Meeting Minutes

Minutes of GBNARP meetings covering discussions, agreements, decisions, actions (time referenced) recommendations will be taken.

The business of the GBNARP, including reports and minutes, is subject to the Official Information Act 1982.

5.6 Servicing the GBNARP

The GBNARP will be serviced by the NSS team, with the support of programme partners where requested. This will include Director NSS having observer status at the meetings and being available to provide advice and guidance to the panel.

GBNARP members are expected to cover their costs of undertaking panel business and engagement with their sector groups.

The NSS team will maintain a Register of GBNARP recommendations with the date by which a response has been requested from the decision maker(s).

The NSS team will report any overdue responses to the Chair of the GBNARP as soon as they are flagged.

6. Acting in good faith

6.1 Conflicts of interest

The panel acknowledges that the nature of the work undertaken will inevitably lead to conflicts of interest (direct, indirect and perceived) and that these conflicts need to be managed transparently and carefully.

Conflicts of interest will be declared and recorded at each meeting.

The GBNARP will develop a process for managing conflicts of interest.

The Chair will decide on the appropriate management of conflicts of interest as they arise.

6.2 Framework for decision making

The GBNARP will strive for consensus decision making.

Where consensus cannot be achieved, the GBNARP will agree recommendations on a simple majority. Reports representing other views will be accepted by the GBNARP and forwarded with the recommendations to the appropriate decision makers (refer escalation process below).

6.3 Escalation

Where the GBNARP cannot achieve consensus and the work of the panel cannot proceed, the GBNARP may decide to escalate the matter for decision. Similarly, where a recommendation of the GBNARP is declined by the decision maker, escalation for an agreed decision at a higher level will use the following process:

- for matters of Security and Resilience, escalation will be to the Ministry of Transport for consultation with relevant agencies (NZDF, Civil Defence etc),
- for matters of Regional Economic Development, escalation will be to the Ministry of Transport for consultation with the Ministry of Business, Innovation and Employment for advice and direction as required,
- for matters of Aviation Safety, escalation will be to the Civil Aviation Authority.

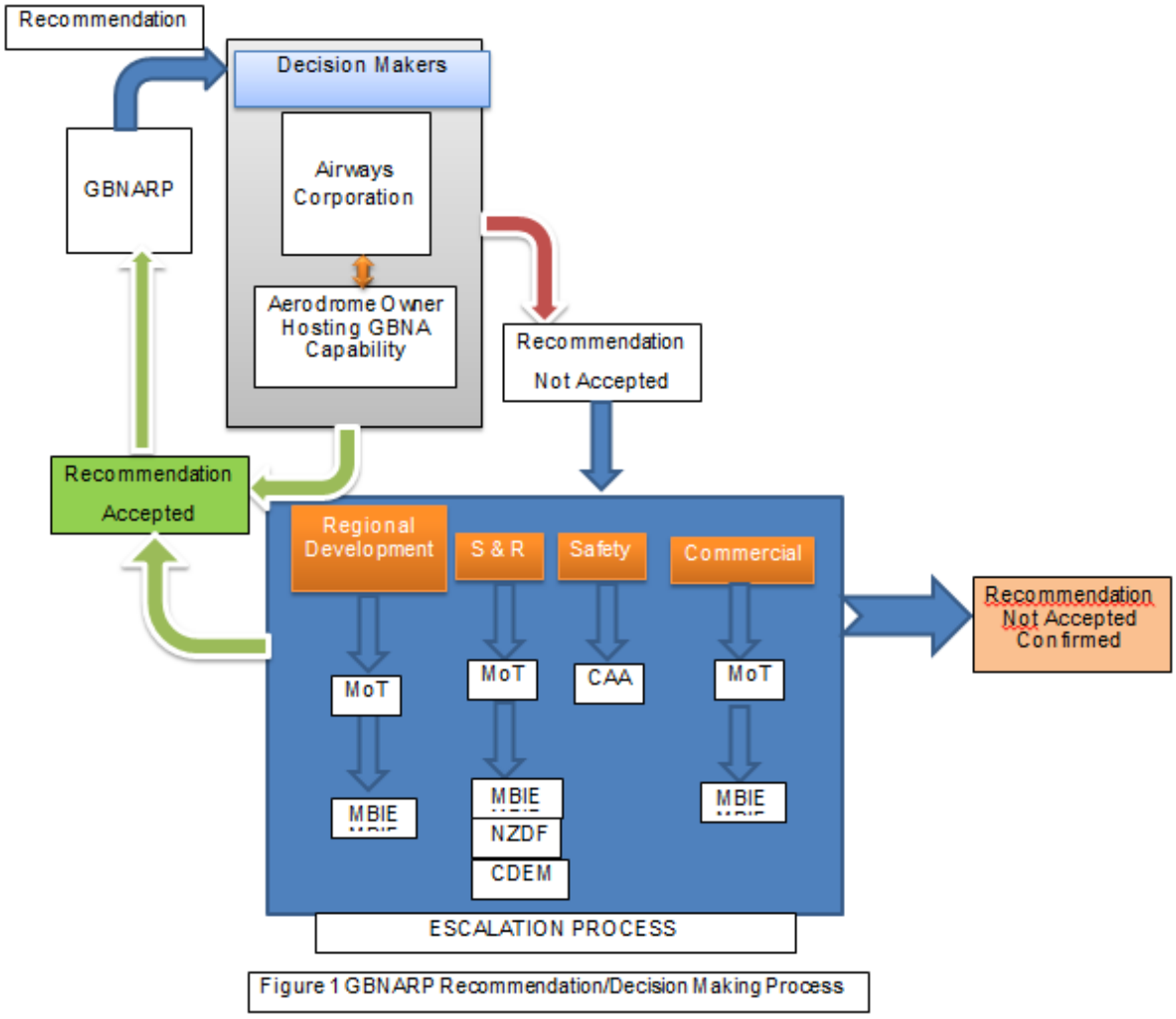


Figure 1 GBNARP Recommendation/Decision Making Process

7. Media management and engaging with aviation communities

The panel acknowledges the importance of communicating the business of the GBNARP and engaging with sectors of the aviation industry. The panel also acknowledges the need for clear and consistent messaging to stakeholders and operators.

The principal source of media information on the GBNARP will be the Chair of the GBNARP.[14]

[14] Not considered by the workshop but would be regarded as good practice

However, all GBNARP members have the right to discuss GBNA matters with the media from their perspective.

In so doing the GBNARP agrees a ‘no surprises approach and a commitment to share media releases, articles and communication material’ before publication.

The GBNARP will be provided agreed resource material by the NSS partners to support panel members engaging their community of interests.