

HON RON MARK, MINISTER OF DEFENCE

New Zealand Defence Force: Fixed High Frequency Radio Capability– Cabinet Material

December 2018

This publication provides the June 2018 Cabinet paper and associated minute of decision to undertake a competitive Request for Proposal process and evaluations to select a Fixed High Frequency Radio Capability for the New Zealand Defence Force.

The pack comprises the following documents:

- Cabinet Government Administration and Expenditure Review Committee minute of June 2018: *New Zealand Defence Force: Fixed High Frequency Radio Capability* [GOV-18-MIN-0034]
- Cabinet paper: *New Zealand Defence Force: Fixed High Frequency Radio Capability Update* [GOV-18-SUB-0034].

This pack has been released on the Ministry of Defence website, available at: www.defence.govt.nz/publications.

It has been necessary to withhold certain information in accordance with the following provisions of the Official Information Act 1982. Where information is withheld, the relevant sections of the Act are indicated in the body of the document. Where information has been withheld in accordance with section 9(2), no public interest has been identified that would outweigh the reasons for withholding it.

Information has been withheld from the documents where the making available of the information would be likely to prejudice the security or defence of New Zealand or the international relations of the Government of New Zealand (section 6(a)). In addition, information has been withheld in order to

- maintain the constitutional conventions for the time being which protect the confidentiality of advice tendered by Ministers of the Crown and officials (section 9(2)(f)(iv))
- enable a Minister of the Crown or any department or organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations) (section 9(2)(j)).





Cabinet Government Administration and Expenditure Review Committee

Minute of Decision

This document contains information for the New Zealand Cabinet. It must be treated in confidence and handled in accordance with any security classification, or other endorsement. The information can only be released, including under the Official Information Act 1982, by persons with the appropriate authority.

New Zealand Defence Force: Fixed High Frequency Radio Capability

Portfolio Defence

On 12 June 2018, the Cabinet Government Administration and Expenditure Review Committee:

1 **noted** that the New Zealand Defence Force (NZDF) uses its High Frequency Radio capability as a primary means of communication with smaller deployed force elements, and as a secondary means of communication to other force elements when satellite communication is unavailable;

2 [Redacted] s6(a)

3 **noted** that the NZDF’s High Frequency radio capability is currently used [Redacted] s6(a) as an emergency standby for Maritime New Zealand;

4 [Redacted] s9(2)(f)(iv)

5 [Redacted] s9(2)(f)(iv)

6 [Redacted] s9(2)(f)(iv)

7 **noted** that a Request for Proposal will enable a comprehensive evaluation of the costs and benefits of each option to allow a final decision to be made;

8 [Redacted] s9(2)(f)(iv), s9(2)(j)

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- 9 **authorised** the Secretary of Defence to undertake a competitive Request for Proposal process and evaluations to select a Fixed High Frequency Radio Capability within a capital cost of [REDACTED] s9(2)(f), with up to \$0.445 million operating and a \$0.475 million allowance for pre-acquisition capital costs;
- 10 **approved** the following changes to appropriation, with the following impact on the operating balance:

\$ million – increase				
Vote Defence Minister of Defence	2017/18	2018/19	2019/20	2020/21 & Out-years
Departmental Output Expense: Management of Equipment Procurement (funded by Revenue Department)	0.000	0.445	0.000	0.000
Non-departmental Capital Expenditure Defence Equipment	0.000	0.230	0.245	0.000

- 11 **noted** that the pre- acquisition costs of \$0.445 million in operating expenditure and \$0.475 million in capital expenditure are offset by operating receipts from the NZDF;
- 12 **noted** that the NZDF will fund the pre-acquisition costs [REDACTED] s9(2)(f)(iv) [REDACTED];
- 13 **agreed** that the changes to appropriations for 2018/19 in paragraph 10 above be included in the 2018/19 Supplementary Estimates and that, in the interim, the increase be met from Imprest Supply;
- 14 **invited** the Minister of Defence to report back to the Cabinet Government Administration and Expenditure Review Committee by [REDACTED] s9(2)(f)(iv) [REDACTED] with a Fixed High Frequency Radio Capability Project Implementation Business Case, and to seek approval to commit to contract.

Rachel Clarke
Committee Secretary

Present:

Hon Kelvin Davis
Hon Grant Robertson (Chair)
Hon Chris Hipkins
Hon Dr David Clark
Hon Stuart Nash
Hon Clare Curran
Hon Ron Mark
Hon Tracey Martin
Hon James Shaw

Officials present from:

Office of the Minister of Finance
Officials Committee For GOV

Hard-copy distribution:

Minister of Defence

Chair

Cabinet Government Administration and Expenditure Review Committee

NEW ZEALAND DEFENCE FORCE: FIXED HIGH FREQUENCY RADIO CAPABILITY UPDATE

Proposal

1. This paper seeks Cabinet approval to release a Request for Proposal to industry to obtain more accurate costs for updating the New Zealand Defence Force's Fixed High Frequency (HF) Radio Capability.

Executive Summary

2. The New Zealand Defence Force communicates from New Zealand to its deployed aircraft and ships using high frequency radio or satellite communications. High frequency radio is the primary communications medium for smaller ships, aircraft, and for deployed forces when satellite is unavailable.

3. [REDACTED] s6(a)
[REDACTED]
[REDACTED] The equipment dates back to the 1980s.
[REDACTED] s6(a)
[REDACTED]
[REDACTED]
[REDACTED]

4. Access to the fixed High Frequency radio system is available in an emergency to Maritime New Zealand. [REDACTED] s9(2)(f)(iv)
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

5. [REDACTED] s9(2)(f)(iv)
[REDACTED]
[REDACTED]
[REDACTED]

6. This paper [REDACTED] s9(2)(f)(iv) seeks Cabinet approval for the Secretary of Defence to release a Request for Proposal to gain sufficient information for a future investment decision. The process will be funded from existing baselines.

7. The Request for Proposal will seek clarity on both costs and the capability required to update to the system. The update is estimated to cost up to [REDACTED] s9(2)(j) [REDACTED], which is provided for in the current Defence Capital Plan. [REDACTED] s9(2)(f)(iv)

s9(2)(f)(iv)

Defence Review Context

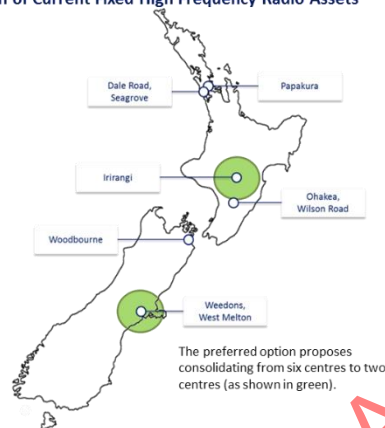
8. Defence is currently undertaking a number of reviews. Cabinet has approved the new Strategic Policy Statement 2018 [ERS-18-MIN-0008 refers], and is considering the Procurement Practices and Policy Review in May 2018. The Defence Capability Plan Review is scheduled to commence in July 2018.
9. The Fixed High Frequency Radio project is one of the investment decisions that must proceed prior to the Defence Capability Plan review. [REDACTED] s6(a) [REDACTED]
[REDACTED]. This project was identified in the March 2018 Conduct of Defence Reviews in 2018 Cabinet paper [CAB-18-MIN-0116 refers].

The Urgency with HF Radio – project interdependencies

10. High Frequency Radio is a critical communications capability for the New Zealand Defence Force's smaller platforms, as an essential fall back option for larger platforms and for platforms working south of 60 degrees South including the Southern Ocean and Antarctica. As such, this capability will be needed for the foreseeable future. [REDACTED] s6(a) [REDACTED]
[REDACTED]
11. Not having effective long-range high frequency radio capabilities within New Zealand will impact on the New Zealand Defence Force's ability to securely communicate with current and future assets, as well as with New Zealand's military partner countries over very long ranges. [REDACTED] s6(a) [REDACTED]
[REDACTED]
12. [REDACTED] s6(a) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

13. This project also intends to rationalise the number of high frequency radio sites from six down to two, as illustrated in the adjacent map and in Annex A.

Location of Current Fixed High Frequency Radio Assets



Military Communications

14. The Defence Force uses communications across all its military operations, for both tactical and strategic purposes.
15. Communications networks include satellite, high frequency radio, cable, and cellular radio to provide voice and data. Cable, and to a lesser extent cellular radio, cannot be used from deployed ships and aircraft.
16. The Defence Force is currently completing an update of its satellite communications capability, including acquiring access to the United States Wideband Global Satellite Communications system. [CAB Min (11) 41/13 refers].
17. High frequency radio systems complement satellite or terrestrial communications systems. It helps manage the risk of communications disruption or failure. The Defence Force uses high frequency radio:
- 17.1. for medium and short distance communications servicing areas up to the east coast of Australia and mainland New Zealand and its coastal areas respectively;
 - 17.2. to provide communications below 60 degrees South due to a lack of satellite coverage below that mark;
 - 17.3. as a primary communications channel for smaller platforms such as helicopters and inshore patrol vessels with limited or no satellite capability; and
 - 17.4. as an alternate communications channel for deployed force elements, located up to 10,000km from New Zealand, when satellite service is limited or unavailable.

18. [REDACTED] s6(a) [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

19. Table 1 summarises the attributes of satellite and high frequency radio.

Table 1: Comparison Satellite and High Frequency Radio

Communications Mode	Polar Regions?	Capacity	Service disrupters
Satellite	No	<ul style="list-style-type: none"> • voice; • high definition imagery; and • high capacity data. 	<ul style="list-style-type: none"> • natural phenomena; • service providers; and • human intervention.
High Frequency Radio	Yes	<ul style="list-style-type: none"> • voice; • low definition imagery; and • low capacity data. 	<ul style="list-style-type: none"> • natural phenomena.

The problem – the fixed high frequency radio capability is at its end of life

20. The current fixed high frequency radio system was installed in the 1980s and a limited upgrade was undertaken in 2005. [REDACTED] s6(a)
21. As a result, the system is becoming more difficult to maintain. [REDACTED] s6(a)
22. [REDACTED] s6(a)
23. An independent study into the life of the high frequency radio system was undertaken by Beca in May 2016. [REDACTED] s6(a)
24. [REDACTED] s6(a)
25. Without the high frequency radio system, the Defence Force will be unable to communicate in a timely manner between deployed force elements and New Zealand in some circumstances. This may result in compromises to personnel safety, military operations, and an inability to perform some of the Government’s mandated objectives for the Defence Force, as outlined in the Strategic Defence Policy Statement.

Other agency interest in High Frequency radio capability

26. In an emergency, Maritime New Zealand can use the Defence Force's current fixed High Frequency radio system. It does this through a memorandum of understanding.

27. Emergency responders, led by the Police, are concurrently developing a business case for their *Next Generation Critical Communications*. This system is to be capable of providing voice, data, and high definition imagery supporting potentially over 20,000 simultaneous users. It is a large high capacity system. The available technologies for this system mean that it is limited to communicating within line-of-sight of the New Zealand coastline.

28. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]

29. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

30. The New Zealand Defence Force's Network Enabled Army Programme is in the process of updating the Army's communications equipment. The radios being purchased as part of this update allow the Army to be interoperable with Police, emergency services and the High Frequency radio network, if and when they are deployed in a domestic emergency.

31. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]

32. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

33. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]

Investment objectives

34. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]

34.1. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]

34.2. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]

34.3. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]

34.4. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]

34.5. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]

Options analysis

35. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]

36. [Redacted] s6(a), s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

37. [Redacted] s9(2)(f)(iv) [Redacted]

Table 2: Capability of shortlisted options
s6(a), s9(2)(f)(iv)

[Redacted Table Content]

38. [Redacted] s6(a), s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]

39. [Redacted] s6(a), s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

40. [Redacted] s6(a), s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

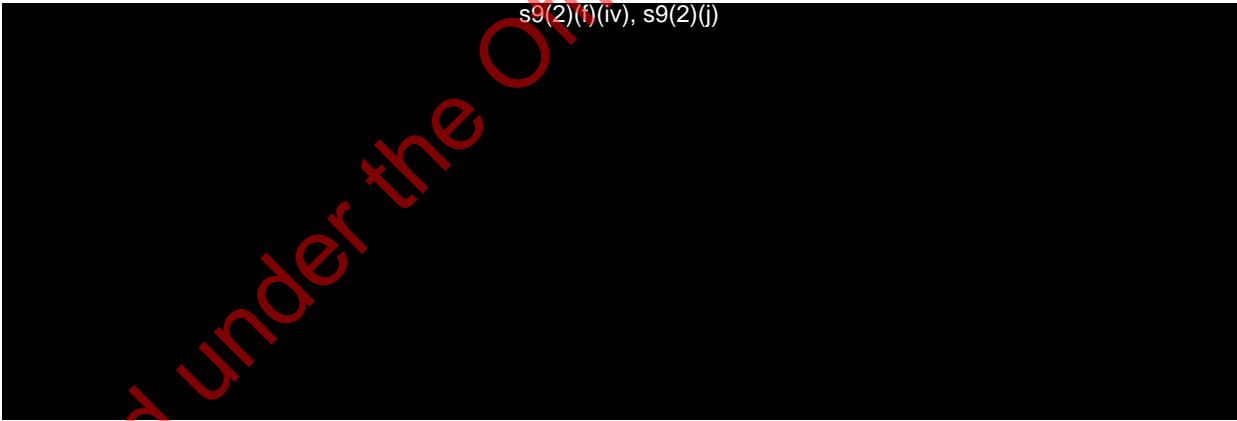
Costs

41. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

42. [Redacted] s6(a) [Redacted]
[Redacted]
[Redacted]

Table 3: Cost estimates of shortlisted options

s9(2)(f)(iv), s9(2)(j)



43. [Redacted] s9(2)(f)(iv) [Redacted]
[Redacted]
[Redacted]
[Redacted]

44. [Redacted] s9(2)(f)(iv), s9(2)(j) [Redacted]
[Redacted]
[Redacted]
[Redacted]

s6(a), s9(2)(f)(iv)

45.

s9(2)(f)(iv)

Request for Proposal

46. The Ministry of Defence seeks authority to approach the market to establish the costs [redacted] s9(2)(f)(iv)

47.

s9(2)(f)(iv)

Commercial Interest

48. Responses to a Request for Information indicate that industry finds the project attractive. New Zealand companies have responded with solutions as either prime or lead integrator for the project. Local industry has opportunities to support the construction and ongoing maintenance of the preferred high frequency radio capability.

Consultation

49. The Ministry of Defence has consulted with The Treasury, Government Chief Information Officer, and the State Services Commission on this project. The Department of the Prime Minister and Cabinet (Policy Advisory Group) has been informed.

50.

s9(2)(f)(iv)

51.

s9(2)(f)(iv)

Financial Implications

52. This paper seeks approval for expenditure for Vote Defence of up to \$0.445 million in operating and \$0.475 million in capital for pre-contract costs required for the Ministry of Defence to undertake tender processes and evaluations.
53. These pre-acquisition costs will be funded by the New Zealand Defence Force, and no new funding is being sought through this paper. The \$0.475 million in capital will be funded from inside the project's current capital funding allowance in the Defence Capital Plan 2016 of [REDACTED] s9(2)(j)
54. No further funding will be sought until Cabinet receives the Project Implementation Business Case [REDACTED] s9(2)(f)(iv)
55. [REDACTED] s9(2)(f)(iv), s9(2)(j)
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
56. [REDACTED] s9(2)(f)(iv), s9(2)(j)
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
57. [REDACTED] s9(2)(f)(iv)
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Other Implications and Publicity

58. There are no human rights, legislative, gender, disability, or regulatory implications. No publicity is planned other than releasing the proposed Request for Proposal in the Government Electronic Tenders Service.

Recommendations

59. I recommend that the Committee:
1. **note** that the New Zealand Defence Force uses its High Frequency Radio capability as a primary means of communication with smaller deployed force elements, and as a secondary means of communication to other force elements when satellite communication is unavailable;

2. [REDACTED] s6(a)
3. **note** that the New Zealand Defence Force's High Frequency radio capability is currently used [REDACTED] s6(a) as an emergency standby for Maritime New Zealand;
4. [REDACTED] s9(2)(f)(iv)
5. [REDACTED] s9(2)(f)(iv)
6. [REDACTED] s6(a), s9(2)(f)(iv)
7. **note** that a Request for Proposal will enable a comprehensive evaluation of the costs and benefits of each option to allow a final decision to be made;
8. [REDACTED] s9(2)(f)(iv)
9. **authorise** the Secretary of Defence to undertake a competitive Request for Proposal process and evaluations to select a Fixed High Frequency Radio Capability within a capital cost of [REDACTED] s9(2)(j), with up to the amount of \$0.445 million in operating and a \$0.475 million allowance for pre-acquisition capital costs;
10. **approve** the following changes to appropriation, with the following impact on the operating balance;

Vote Defence Minister of Defence	\$ million – increase			
	2017/18	2018/19	2019/20	2020/21 & Out-years
Departmental Output Expense: Management of Equipment Procurement <i>(funded by Revenue Department)</i>	0.000	0.445	0.000	0.000
Non-departmental Capital Expenditure Defence Equipment	0.000	0.230	0.245	0.000

11. **note** that the pre- acquisition costs of \$0.445 million in operating expenditure and \$0.475 million in capital expenditure are offset by operating receipts from the New Zealand Defence Force;
12. **note** that the New Zealand Defence Force will fund the pre-acquisition costs [REDACTED] s9(2)(f)(iv) [REDACTED];
13. **agree** that the changes to appropriations for 2018/19 above be included in the 2018/19 Supplementary Estimates and that, in the interim, the increase be met from Imprest Supply; and
14. **invite** the Minister of Defence to report back to the Cabinet Government Administration and Expenditure Review Committee with a Project Implementation Business Case by [REDACTED] s9(2)(f)(iv) [REDACTED], and at that time seek approval to commit to contract.

Authorised for lodgement

Hon Ron Mark
MINISTER OF DEFENCE

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OVERVIEW FIXED HIGH FREQUENCY RADIO CAPABILITY REFRESH

How does the Defence Force communicate with deployed forces?

The New Zealand Defence Force uses satellite, high frequency radio, cable, and cellular telecommunications networks to communicate between New Zealand and force elements deployed around the world, from Antarctica to Iraq.

Bearer	Comment
Cable	Can only be used from a fixed location
Cellular telecommunications	Can only be used within line of sight of cell sites
Geosynchronous satellite	Limited polar coverage, not available to all force elements, preferred primary channel
Low earth orbit satellite	Polar coverage, but lowest capacity solution
High frequency radio	Global coverage, alternate channel, lower data capacity than satellite

Problem

The New Zealand based radio system was introduced in the 1980s. [REDACTED] s6(a)

[REDACTED]

[REDACTED] s6(a)

[REDACTED]

[REDACTED]

Satellite technology has reduced the demand for high frequency radio. There are currently six radio centres across New Zealand. These could be consolidated to one or preferably two centres.

When does the Defence Force use High Frequency Radio?

High frequency is used to communicate with smaller ships and aircraft and when satellite is unavailable. Satellite may be unavailable due to geography (satellites are ineffective below 60° south), natural phenomena (solar storms, high sea states preventing satellite tracking, etc.) or due to denial or degradation of service.

Business Needs

- Retain ability to communicate with ships and aircraft close to New Zealand
- Retain global communications when satellite is unavailable
- Improve efficiency and effectiveness of the high frequency radio capability

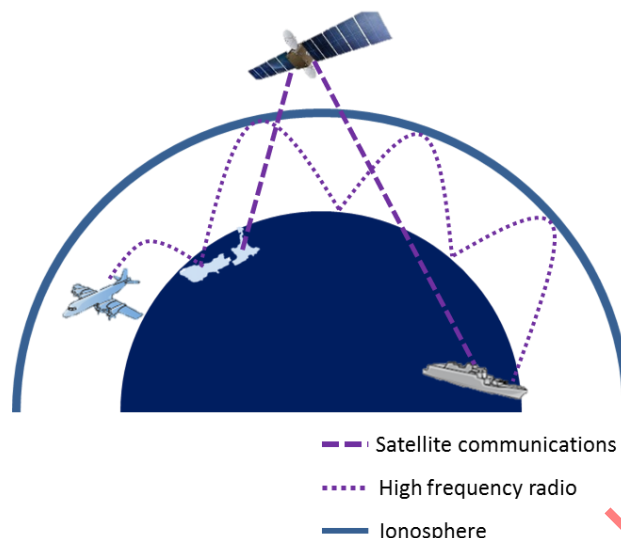
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What is High Frequency Radio?

High frequency radio was once known as short wave radio.

It allows long distance communication beyond the horizon, around the curve of the earth.

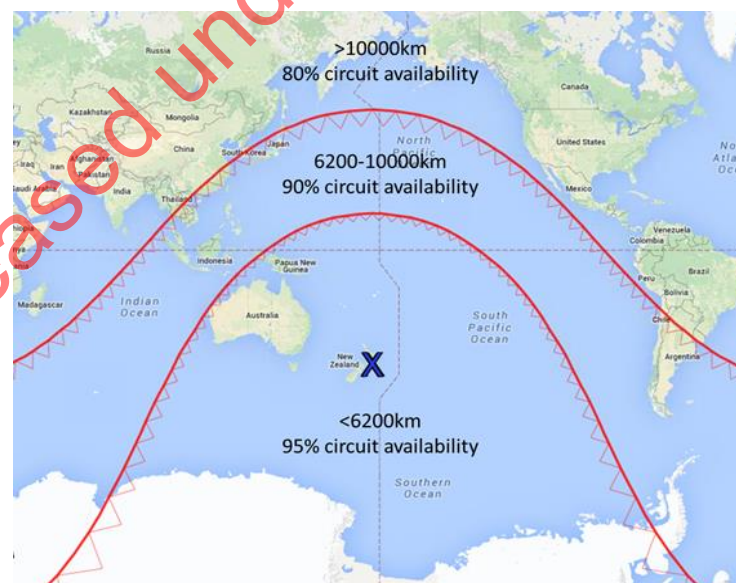
This is because the radio waves can be directed at an angle into the sky and refracted back to Earth from the ionosphere.



Where does the Defence Force use High Frequency Radio?

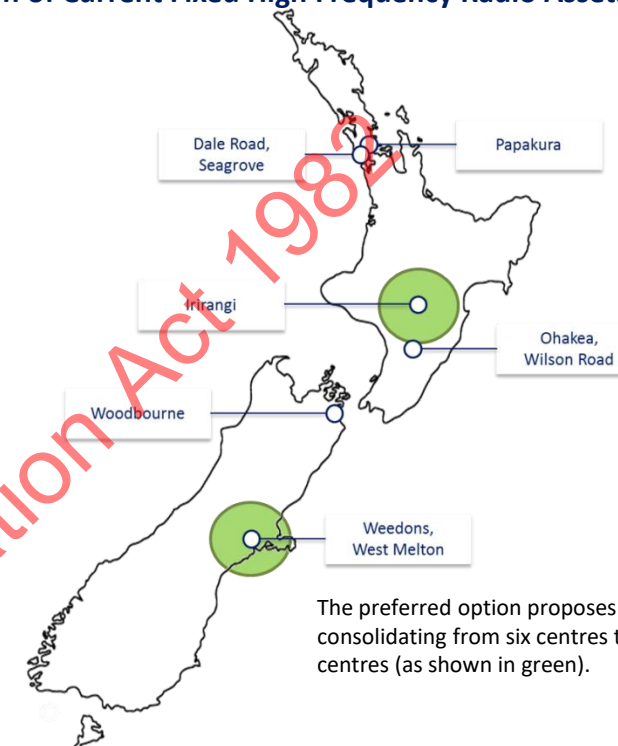
High frequency radio has near global reach. The Defence Force when operating in a satellite denied environment relies heavily on high frequency radio for communications. Critically, high frequency radio enables communication south of 60° South in the Southern Ocean (communication with platforms via satellite is difficult or unavailable in this area). [REDACTED] s6(a)

[REDACTED]



Operational requirement areas

Location of Current Fixed High Frequency Radio Assets



The preferred option proposes consolidating from six centres to two centres (as shown in green).

[REDACTED] s6(a), s9(2)(f)(iv), s9(2)(j)

Preferred Option

[REDACTED] s9(2)(f)(iv)

Next Steps

- Request for Proposal – July 2018
- PIBC for Cabinet consideration [REDACTED] s9(2)(f)(iv)