

HON ANDREW LITTLE, MINISTER OF DEFENCE

Contributing to Space Domain Awareness: Joint Commercial Operations

November 2023

This publication provides documents pertaining to Cabinet's August 2023 decision to provide regional coordination and a national cell to Joint Commercial Operations following the US's invitation.

The pack comprises the following documents:

- Contributing to Space Domain Awareness: Joint Commercial Operations minute of decision [ERS-23-MIN-0046]
- Contributing to Space Domain Awareness: Joint Commercial Operations Cabinet paper [ERS-23-SUB-0046]

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) of the Act, no public interest has been identified that would outweigh the reasons for withholding it.

Information is withheld where making it available 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)]
- the entrusting of information to the Government of New Zealand on the basis of confidence by the Government of any other country [section 6(b)(i)].

Information is also withheld in order to:

- maintain the effective conduct of public affairs through the free and frank expression of opinions by or between or to Ministers of the Crown or members of an organisation or officers and employees of any department or organisation in the course of their duty [section 9(2)(g)(i)].



Cabinet External Relations and Security 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.

Contributing To Space Domain Awareness: Joint Commercial Operations

Portfolio Defence

On 22 August 2023, the Cabinet External Relations and Security Committee:

- 1 **noted** that the New Zealand Defence Force (NZDF) has received an invitation from the United States to lead the Pacific Cell of the Joint Commercial Operations (JCO) space domain awareness initiative;
- 2 **noted** that New Zealand has a high dependency on space-based assets, including communications, navigation, financial services, Earth-based observation, and weather forecasting;
- 3 **noted** that the JCO is an unclassified monitoring and reporting operation that uses commercial sensors to contribute to space domain awareness by observing satellite activity and distributing unclassified reports to space operators worldwide when satellites deviate from normal parameters;
- 4 **noted** that JCO reporting is used by space operators and stakeholders so they can ensure, among other things, that the movement of satellites does not create hazards for other satellites, to move satellites to avoid collisions, and identify irresponsible activity or space debris that might cause damage;
- 5 **noted** that four options have been developed, and that it is recommended New Zealand accept the United States' invitation to lead a national cell and provide regional coordination for the Pacific time zone (Option Three in the paper under ERS-23-SUB-0046);
- 6 **noted** that Options Two and Three can be supported within the existing Vote Defence Force appropriation without effect on the delivery of other Outputs;
- 7 **agreed** that the NZDF provide regional coordination and a national cell to JCO (Option Three);
- 8 **noted** that, to ensure compliance with the New Zealand Nuclear Free Zone, Disarmament and Arms Control Act 1987, the National Annex to the JCO Concept of Operations would include caveats that JCO does not contribute to nuclear command and control systems and that NZDF personnel will not aid or abet activity enabling possession or control over nuclear weapons;
- 9 **noted** that NZDF's participation in the JCO will be for a period of two years, with future participation to be reconsidered by Cabinet after a period of eighteen months;

- 10 **noted** that, were the JCO parameters to change such that they affected the permissions provided in the paper under ERS-23-SUB-0046, officials would seek direction from the Minister of Defence;
- 11 **authorised** the Chief of Defence Force to advise the United States of Cabinet's decision.

Janine Harvey
Committee Secretary

Present:

Hon Kelvin Davis
Hon Andrew Little
Hon David Parker
Hon Nanaia Mahuta (Chair)

Officials present from:

Office of the Prime Minister
Officials Committee for ERS

Released by the Minister of Defence

CONTRIBUTING TO SPACE DOMAIN AWARENESS: JOINT COMMERCIAL OPERATIONS

Purpose

1. This paper seeks Cabinet approval for the New Zealand Defence Force (NZDF) to participate in the United States (US) led Joint Commercial Operations (JCO), an initiative to generate Space Domain Awareness (SDA) using unclassified commercial data.
2. Cabinet is being asked to consider participation in JCO as this is a new undertaking for the NZDF [REDACTED] s9(2)(g)(i) covers matters touching on several Ministerial portfolios, and concerns international relationships, security, and foreign policy.

Relation to Government Priorities

3. Participation in JCO supports the Government's priorities by laying the foundations for the future through:
 - 3.1. contributing to the space security element of the *National Security Strategy 2023*;
 - 3.2. contributing to the *Understand* theme of the *Defence Policy and Strategy Statement 2023*;
 - 3.3. contributing to New Zealand's National Space Policy objectives of:
 - 3.3.1. using space assets to protect and advance New Zealand's national security interests;
 - 3.3.2. understanding and managing the broad range of security risks in space and on Earth to protect New Zealand's national security interests;
 - 3.3.3. enhancing collaboration with the domestic space sector and international space and security partners in pursuit of New Zealand's national security interests;
 - 3.3.4. partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices;
 - 3.4. reinforcing our defence relationships in support of the international rules-based system;
 - 3.5. contributing to collective security efforts through provision of Space Domain Awareness; and
 - 3.6. ensuring Defence can attract, retain and develop a skilled, sustainable and diverse workforce.

Executive Summary

4. The NZDF has received an invitation from the US to participate in JCO, a commercial-military initiative to provide unclassified information that can be used for the protection and defence of satellites. It is an activity that 'looks up' into space to generate a clear unclassified picture of the location and movement of satellites. JCO contributes to the protection of satellites by using national cells coordinated through three time zones. The US invitation requests NZDF participation to lead regional (Pacific) coordination and contribute a national cell.
5. I recommend that the NZDF accepts this invitation for an initial period of two years. Participation in JCO provides the opportunity for the NZDF to gain valuable skills and experience at a modest resource cost, and make a constructive contribution to a system from which we have benefitted greatly, with no significant risks.
6. The importance of space based services to New Zealand is recognised in the *National Security Strategy 2023*, the *Defence Policy and Strategy Statement 2023*, and the *National Space Policy [2023]*. Contributing to international efforts to observe and protect the satellites that provide these services, enhances our national resilience, protects our national interests, and contributes to our national security.
7. Participation would consist of establishing an office of four New Zealand-based Defence Force staff operating on an 8½ hour per day weekday schedule using commercial monitoring services [REDACTED] s6(a), s6(b)(i)
8. A summary A3 is attached as Annex A.

Background

What is Joint Commercial Operations?

9. JCO is a US led initiative to provide unclassified information that can be used for the protection and defence of satellites. It is a commercial-military activity that 'looks up' into space to generate a clear picture of the location and movement of satellites. It is analogous to the function radar performs with aircraft and ships in order to establish the operating pictures that underpin air traffic control and maritime security.
10. JCO uses unclassified data from third-party commercial sensors to develop an operating picture of the movement of satellites in space. Staff use specialist software tools to passively monitor the location of satellites to identify when they have changed their orbital parameters – altitude and orbital plane. When movements outside of normal parameters are identified, unclassified reports are created for global dissemination to space operators. The information is used by satellite operators to ensure, among other things, that the movement of satellites does not create hazards for other satellites, to move satellites to avoid collisions, and identify irresponsible activity or space debris that might cause damage.
11. The JCO itself does not control satellites, rather it passively monitors activity and reports relevant observations. Many of these satellites provide services that New Zealand and other nations rely on for civilian and military purposes including

communications, navigation, timing (used by financial services), Earth observation, and weather forecasting.

12. JCO contributes to the protection of satellites by using national cells coordinated through three time zones. These work consecutively over 24 hours to monitor space domain awareness (SDA) input from commercial providers, in order to identify movement or changes in behaviour of satellites of interest [redacted] s6(b)(i)

13. The information generated by the JCO is distributed to over 500 government and other stakeholder recipients across 11 nations including: [redacted] s6(a), s6(b)(i) New Zealand [redacted] s6(a), s6(b)(i) on occurrence, and a summary is distributed on a weekly basis. The unclassified reports are distributed across a wide range of recipients including government agencies, industry, academia, and research and development institutions.

14. A detailed explanation of how the JCO operates is attached at Annex B.

Why is protecting satellites important to us?

15. Space is becoming increasingly congested and contested. As nations become ever more reliant on crucial space-enabled systems a clear picture of the position and movements of satellites is important to avoid debris-causing collisions with other satellites or pre-existing space debris – the result of which can cause extensive damage to, or destruction of, satellites.
16. None of these space-based services are New Zealand-owned. They are owned and operated by partner Governments or foreign companies [redacted] s9(2)(g)(i) [redacted] Contributing to the protection and defence of partner-owned satellites therefore contributes to our national security.

Why is the US asking us to lead the regional cell, and why now?

17. An underlying principle of JCO, reflecting the wide interests in space, is burden sharing. Dividing JCO operations over three separate time zones (known as follow-the-sun activities), provides continuity of monitoring, while sharing the burden of staffing.
18. The geographic location of New Zealand, coupled with our experience with JCO through the Royal New Zealand Air Force (RNZAF) experimentation programme, makes New Zealand a preferred candidate for the regional leadership role.
19. As well as being invited to provide regional leadership, we have also been invited to provide a national cell – this would be a pre-requisite to providing regional coordination as it would provide the appropriately trained personnel and back-up to fulfil the coordination function.

20. [redacted] s6(a), s6(b)(i)

¹ Given the large number of satellites in space (over 7,700) [redacted] s6(a), s6(b)(i)

Why should the NZDF prioritise participation in JCO given its other challenges?

21. Participation in the JCO provides a valuable opportunity to contribute to international space security at a modest cost [redacted] s6(a)
- [redacted] Although New Zealand is a member of the Combined Space Operations initiative (a multinational initiative to improve cooperation and coordination of activity in space), and contributes policy and legal input, [redacted] s9(2)(g)(i)
22. Participation in JCO enables the NZDF to provide a tangible contribution in return, without the need to invest in sovereign space capabilities. Its benefits are disproportionate to the costs and simultaneously advance the objectives of the *National Security Strategy 2023*, *Defence Policy and Strategy Statement 2023*, and New Zealand's *National Space Policy [2023]* by increasing our understanding of activities in space, collaborating with our security partners, and contributing to the protection of our national security interests. The Ministry of Business, Innovation and Employment has been consulted and commented that "...over the long term, this is of great benefit to the wider government and New Zealand as a whole."
23. The NZDF advises that it is able to resource participation within its existing baseline to form a national cell and undertake regional coordination without reducing the delivery of other Outputs. Only one staff member would be drawn from outside the existing NZDF Space Programme and 8 personnel would share the JCO work on a part-time basis in conjunction with existing roles. [redacted] s6(a), s9(2)(g)(i)
24. Participation in space activities, in particular the JCO, has the secondary benefit of signalling to NZDF personnel the Defence intent to operate in a contemporary, modern context. In a period of high personnel attrition, it may assist general staff retention efforts to generate new opportunities for personnel in an emerging discipline of growing national importance.
25. [redacted] s9(2)(g)(i)

Participation Options

What has New Zealand been asked to contribute?

26. New Zealand has been invited to provide regional coordination within the JCO and establish a national cell.
27. A New Zealand national cell would involve [redacted] s6(a), s9(2)(g)(i)

28. Regional coordination requires only one additional part-time staff member, over and above the staffing of a national cell. Other national cells are intended to be provided by [redacted] s6(a) [redacted] s6(a), s6(b)(i) [redacted] are expected to provide national cell contributions to other regions.

29. A summary of national cell and regional coordinator functions is set out in Annex C.

Options for New Zealand

30. Analysis has identified four options:

- 30.1. decline the invitation;
- 30.2. provide a national cell (with regional leadership being provided by a third nation);
- 30.3. provide regional coordination *and* a national cell (recommended); or
- 30.4. establish an equivalent sovereign JCO capability (provided for comparison, not recommended).

31. Aspects common to all options of participation:

- 31.1. **Staffing.** Options Two and Three require a commitment of [redacted] s6(a), s9(2)(g)(i) [redacted] Option Four requires a staffing commitment of [redacted]
- 31.2. **Costs.** The operating cost of Options Two and Three is approximately \$250k over two years for computer hardware, training and travel. This can be absorbed within the current Vote Defence Force Appropriation without reducing delivery of other Outputs through reprioritisation of effort within the NZDF Space Programme. The cost of Option Four is estimated at \$15-\$16m per annum. This could not be absorbed and would need to be bid for as part of the budgetary process.
- 31.3. **Legal.** Legal considerations of participation in JCO under New Zealand legislation are:
 - 31.3.1. NZDF personnel will at all times be subject to the *Armed Forces Discipline Act 1971*, and under the command and control of the NZDF.
 - 31.3.2. NZDF personnel will not be subject to US laws.

31.3.3. To ensure compliance with the *New Zealand Nuclear Free Zone, Disarmament and Arms Control Act 1987*, the National Annex to the JCO Concept of Operations would include the caveats that JCO does not contribute to nuclear command and control systems and that NZDF personnel will not aid or abet activity enabling possession or control over nuclear weapons.

31.3.4. *Radio communications / Warranting:* The JCO does not intercept private communications. Rather, it measures carrier wave signals from satellites to calculate their position and course. It does not require an intelligence warrant and is compliant with *section 133A Radiocommunications Act 1989*, and *section 216B Crimes Act 1961*, private communications.

31.3.5. *Evolution of JCO:* The JCO may continue to evolve in terms of purpose and the technology employed.

s9(2)(g)(i)

31.3.6.

s6(a)

31.3.7.

s6(a)

31.4.

s9(2)(g)(i)

31.5. **Participation period.** I recommend that if Cabinet approves participation in JCO (Option Two or Three), participation be limited to two years. After 18 months, Cabinet will be asked to consider whether or not participation should be extended. This will enable an assessment of the initiative, its future direction, and its connection to the NZDF and wider New Zealand space priorities.

Analysis

32. A summary of each option with an assessment of the risks and benefits is set out below.

Options One – Decline the invitation

33. Option One would see New Zealand decline the US invitation and take no part in the JCO initiative. The benefits and risks of this option are:

Benefit	Assessment
Resource management	Option One incurs no expenditure or allocation of personnel at a time when the NZDF is under considerable financial and workforce pressure. s9(2)(g)(i)
Risk	Assessment
The opportunity for regional coordination will close	s6(b)(i)
The opportunity for participation may close	<i>The National Security Strategy, the National Space Policy and the Defence Policy and Strategy Statement</i> all explicitly or implicitly endorse the need to partner in ensuring space remains secure. Not participating would entail missing a low-cost opportunity to advance these objectives. s6(a), s9(2)(g)(i)
Lost Opportunity	By not participating in JCO the NZDF will miss an opportunity to gain news skills and experience for its staff.

Option Two – National Cell (with an as yet unknown third country providing regional leadership):

34. Option Two would see New Zealand establish a national cell under the regional coordination of a third (as yet unnamed) nation. This is the lowest level at which New Zealand can participate.

35. This option would see a cell of [redacted] RNZAF [redacted] s6(a), s9(2)(g)(i) [redacted]. This can be accommodated through reprioritisation of effort within the existing NZDF Space Programme. The cell would undertake monitoring and reporting of information as directed by the (as yet unidentified) regional coordinator, with the following benefits and risks:

Benefit	Assessment
Bilateral and multi-lateral partner relationship building	Participation would provide a tangible, scaled, contribution to collective security efforts in space
Participation advances national security objectives	Space security is a core element of the <i>National Security Strategy 2023</i> . Independent access to SDA information, and the opportunity to make requests for monitoring of satellites of interest will enable a better informed national security system.
Mechanism to monitor irresponsible actions in space.	New Zealand promotes norms of responsible behaviour in space ² , and has previously publicly condemned irresponsible acts. ³ Access to SDA information provides independent access to information to determine whether actions may be deemed irresponsible.
Partnering and contributing to international efforts	The <i>National Security Strategy 2023</i> , <i>Defence Policy and Strategy Statement 2023</i> , and the <i>National Space Policy [2023]</i> all recognise the importance of partnering to advance national security.
Upskilling NZDF personnel	Participation in JCO will provide the NZDF with valuable skills and experience that can be used to increase the protection and security of data and communications. It enables mitigation and planning against disruption, and degradation or denial of access to space systems upon which the NZDF depends.
Risk	Assessment
	s9(2)(g)(i)
Mission Evolution	JCO is continuing to evolve with the potential for additional sensors to be incorporated. This may require an increase in staffing to maintain full monitoring and reporting. s6(a), s9(2)(g)(i)

Option Three – Regional Lead and National Cell

36. Option 3 includes the provision of a national cell as outlined in Option 2 plus undertaking the role of regional coordinator.

s6(a), s9(2)(g)(i)

A regional lead could not be provided without the support of a national cell. Benefits and risks of Option 3 are:

² United Nations General Assembly Resolution 75/36 *Reducing space threats through norms, rules and principles of responsible behaviour*

³ Minister Twyford's Tweet 16 November 2021. *New Zealand condemns Russia's destructive anti-satellite test overnight. Deliberate creation of debris causes unacceptable interference to sustainability, spaceflight and space infrastructure. It is irresponsible and undermines efforts to oppose the weaponisation of space.*

Benefit	Assessment
All the benefits of Option 2 above, plus:	
Greater autonomy	By providing regional coordination New Zealand would be better placed to manage its staffing and commitments to meet national considerations.
s6(a)	
Risk	Assessment
All the risks of Option 2, plus:	
s9(2)(g)(i)	

Option Four – Establish a sovereign capability

37. Option Four would see New Zealand decline the US invitation and develop a full proposal for development of a sovereign SDA capability. This will require further work with preliminary analysis indicating it would likely require approximately 16 full-time staff to provide a JCO equivalent capability, rostered from a pool of 24 part-time personnel at an estimated cost of \$15m-\$16 per annum⁴. This option is provided for comparison purposes and at this time is not recommended.

Benefit	Assessment
Tailored to New Zealand's requirements	A sovereign capability would be designed to meet New Zealand's requirements.
s9(2)(g)(i)	
Risk	Assessment
Funding	This option cannot be funded within the existing appropriation and would be contingent on a successful budget bid.
s6(a), s9(2)(g)(i)	

Option Analysis

38. **Option One.** Option One has no resource burden. It does not advance the objectives of the *National Security Strategy 2023*, the *Defence Policy and Strategy Statement 2023*, or the *National Space Policy [2023]*. s9(2)(g)(i)
Not recommended.

⁴ This includes the cost of commercial SDA contracts based on the US forecast of \$9.1m USD PA for a NZ JCO.

39. **Options Two and Three.** Options Two and Three have similar cost, benefits, and risks. Option Three incurs an additional staffing overhead for the Regional Coordination role of s6(a). However, the additional overhead is marginal, and has the benefit of providing greater skill and development for the NZDF and fulfilling the substance of the invitation. s6(a) **Option Three is recommended.**
40. **Option Four.** Option Four develops a national SDA capability and provides greater autonomy. Compared with either Option Two or Three, this would incur significantly greater cost and staffing requirements. It would take longer to be developed, and would be reliant on a successful future budget consideration. s6(a) **Not recommended.**
41. **Timeframe.** If either Option Two or Three is preferred, I recommend that the approval be for an initial period of two years. After 18 months, Cabinet will be asked to consider whether or not our participation should be extended.

Financial Implications

42. Costs for Options 2 and 3 will be managed within existing Defence appropriation. Should Cabinet decide to establish a sovereign JCO capability (Option Four), a business case would be prepared for consideration during the 2024 budgetary process.

Public Release

43. A communications plan, with a range of public release options, will be developed following Cabinet's decision.

Consultation and Engagement

44. This Cabinet paper has been consulted with the Ministry of Foreign Affairs and Trade, the Ministry of Business, Innovation and Employment and the Government Communications Security Bureau. The Department of the Prime Minister and Cabinet has been informed.

Next Steps

45. Once Cabinet has selected its preferred option, Defence will inform the US of the decision. If JCO participation (Options Two or Three) is selected, Defence will engage in communications, as directed by me, to establish the JCO Cell. If Option Four is selected, Defence will prepare a business case for consideration during the budgetary process.

Other Implications

46. There are no legislative, gender, disability, climate change, cost of living, external contractor or human rights implications resulting from participation in JCO.

Proactive Release

47. This paper, alongside its annexes, will be considered for proactive release following Cabinet decisions and any public announcement of these decisions, subject to any appropriate redactions and consultation with the US.

Recommendations

The Minister of Defence recommends that Cabinet:

1. **Note** that the New Zealand Defence Force (NZDF) has received an invitation from the United States to lead the Pacific Cell of the Joint Commercial Operations (JCO) space domain awareness initiative;
2. **Note** that New Zealand has a high dependency on space based assets including communications, navigation, financial services, Earth based observation, and weather forecasting;
3. **Note** that the JCO is an unclassified monitoring and reporting operation that uses commercial sensors to contribute to space domain awareness by observing satellite activity and distributing unclassified reports to space operators worldwide when satellites deviate from normal parameters.
4. **Note** that JCO reporting is used by space operators and stakeholders so they can ensure, among other things, that the movement of satellites does not create hazards for other satellites, to move satellites to avoid collisions, and identify irresponsible activity or space debris that might cause damage.
5. **Note** that four options have been developed and that it is recommended New Zealand accept the US invitation to lead a national cell and provide regional coordination for the Pacific time zone (Option Three);
6. **Note** that Options Two and Three can be supported within the existing Vote Defence Force appropriation without effect on the delivery of other Outputs;
7. **Agree** that the NZDF either:
 - 7.1. Decline the US invitation (not recommended); or
 - 7.2. Agree to provide a national cell to JCO with another country performing regional coordination (not recommended); or
 - 7.3. Agree to provide regional coordination and a national cell to JCO (recommended); or
 - 7.4. Decline the US invitation and prepare a business case for a sovereign JCO capability for Ministers' consideration as part of the 2024 Budget process (not recommended);
8. **Note** that if Ministers agree to participation, to ensure compliance with the New Zealand Nuclear Free Zone, Disarmament and Arms Control Act 1987, the

National Annex to the JCO Concept of Operations would include caveats that JCO does not contribute to nuclear command and control systems and that NZDF personnel will not aid or abet activity enabling possession or control over nuclear weapons;

9. **Note** that if Ministers agree to participation in JCO (Option Two or Three,) this will be for a period of two years, with future participation to be reconsidered by Cabinet after a period of eighteen months;
10. **Note** that were the JCO parameters to change such that they affected the permissions provided in this Cabinet paper, officials would seek direction from the Minister of Defence;
11. **Delegate** to the Chief of the Defence Force the authority to advise the US of Cabinet's decision.

Authorised for lodgement

Hon Andrew Little

MINISTER OF DEFENCE

Annexes:

- A. Space Domain Awareness - Joint Commercial Operations Summary A3
- B. New Zealand's Participation in the JCO
- C. Pacific Cell Leadership Roles and Responsibilities

Released by the Minister of Defence

Annex B: New Zealand's participation in JCO

The JCO Concept of Operations and National Annex set out the terms of New Zealand's proposed contribution. A summary of the relevant parts of this document are as follows:

The purpose of JCO

The JCO was set up to take advantage of the growing number of commercial Space Domain Awareness providers, by using their unclassified products in concert with sovereign US sensors, to help protect and defend satellites.

s6(a), s9(2)(g)(i)

Cells

A JCO national cell has three major elements:

- a. Military personnel who plan and execute missions and task commercial providers;
- b. Commercial sensor and data providers who are contracted to participate in the JCO; and
- c. Commercial software providers who are contracted by the US to participate in the JCO.

s6(a), s6(b)(i)

The data.

s6(b)(i)

s6(a), s9(2)(g)(i)

Annex C: Roles and responsibilities of Pacific cell leadership

As per the JCO Concept of Operations and draft New Zealand Appendix, leadership of JCO-Pacific is based on the following functions:

JCO Regional Coordinator. Responsible for the overall function of JCO-Pacific operations, including:

- management of shift schedules and rosters across contributing national cells in the region;
- standardised application of operating procedures;
- ensuring training and proficiency standards are maintained; and
- advice to the JCO global coordinator on matters relevant to effective operation of JCO-Pacific.

For New Zealand this role also performs functions of the New Zealand national cell contribution to JCO.

JCO National Cell Operations. Responsible for provision of Site and Deputy Site Leads (Military or Government Civil staff) to oversee the operations of the JCO cell. This entails:

- leadership and direction;
- event prioritisation; and
- timely communication of key events to interested parties.

The National Cell is also responsible for management of New Zealand crew rosters, training and proficiency, and advising of national matters relevant to the effective delivery of JCO effects.

Training. Contribute New Zealand JCO staff to provide JCO training necessary for continued JCO delivery. This includes NZDF personnel providing domestic and international JCO partner-nation training to ensure foundational and on-going proficiency needs of JCO are maintained. Case-by-case approval would be sought for international training delivery based on funding and national interest alignment.

Joint Commercial Operations - Space Domain Awareness



Why does Space Domain Awareness matter?

New Zealand has a critical reliance on space systems – through awareness the NZDF helps support the foundations for assured access

Space systems are **critical for New Zealand's wellbeing and security** –

s6(a)

New Zealand has a **growing space economy**. We are one of less than twelve active space launch countries; Growing tech and skills rich ecosystem; Government has Outer Space Treaty Obligations

s6(a)

Space is congested, with over 7,700 satellites in orbit and millions of uncontrolled pieces of debris, increasing risk of unintended collision which could cause major disruption on Earth

Space is contested. Space is the focus of great power competition.

s6(a)

Assured access is under threat

Space is increasingly congested & contested which presents challenges

Joint Commercial Operations

The JCO is a US-led commercial-military initiative that augments Government and Military space surveillance sensors to contribute to the protection and defence of satellites.

s6(a)

What is Space Domain Awareness?

Space Domain Awareness (SDA) is the surveillance of space to provide foundational knowledge of the space environment and characterisation of space objects to enable the timely assessment of and response to space threats, risks and events, both natural and man-made.

Assured access to space systems is accomplished through the protection and defence of satellites and their supporting infrastructure. The first step is to build a clear picture of what is happening in space – this is the role of SDA.

s6(a)



(U) Exaggerated image of space objects in low Earth orbit. Source: NASA

s6(a)

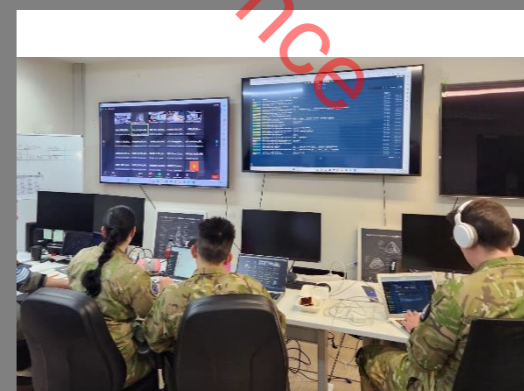
Key Considerations

Workforce s6(a) drawn from non-resource critical trades within baseline. Demonstrates agile management of workforce capacity, while offering retention benefits in a high-interest aerospace field.

Finance ~\$250k over two years absorbed within Vote Defence without impacting delivery of other Outputs

Legal NZDF participation will comply with NZ Nuclear Free Zone, Disarmament and Arms Control Act 1987. Participation is also compliant with section 133A Radio Communications Act 1989, and 216B Crimes Act 1961 (Private Communications), and the Privacy Act 2020.

s6(a)



(U) NZDF Personnel participating in JCO concept experimentation exercise

* Refer overleaf for amplifying notes to Figures and Images

Released by the Minister of Defence

Amplifying Notes for Figures & Images

s6(a)

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