Final Business Case Evaluation Summary

Critical Communications Enhancement Program

July 2022

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Infrastructure New South Wales

About this report

The purpose of this report is to summarise the final business case for the last stage of the Critical Communications Enhancement Program (CCEP), which will expand coverage of the NSW Public Safety Network (PSN).

The PSN was established in 1993 to provide a common mobile radio communications platform for emergency services organisations (ESOs) and essential services.

NSW Telco Authority (NSWTA) is responsible for managing the PSN. Its customers are the ESOs (NSW State Emergency Service, NSW Police Force, Fire and Rescue NSW, NSW Ambulance and NSW Rural Fire Service) who rely on the network to communicate and protect the lives of their first responders and the community.

In 2016, in recognition of the need to increase the coverage of the PSN, the NSW Cabinet approved the scope of the CCEP. This scope included a statewide network to increase the available land coverage from less than 35% to more than 80% of the state and from 40% to 99.7% of the population.

From its inception, the CCEP was planned to be delivered in stages. The last stage of the CCEP is the subject of this final business case. It will add 318 additional radio sites, taking the full PSN to 675 sites and delivering 85% land coverage and 99.7% population coverage.

Critical Communications Enhancement Program

675
sites

85%
land coverage

99.7%
population coverage

Strategic context

State-level strategic goals and objectives

Completion of this final stage of the CCEP will put NSW in a similar position to other Australian states and territories, which have been investing or are in the process of completing large radio communications upgrades. Tasmania, Victoria, Queensland, South Australia and the Northern Territory all have shared, multi-agency radio networks used by first responders.

The final stage of the CCEP fulfils the Cabinet-endorsed policy of a statewide network (*SC0035-2016, Enhancing Critical Communications Services for Frontline and Public Safety Personnel*, ERC – 29 March 2016).

The CCEP also aligns with 2 Premier's Priorities – 'government made easy' and 'world class public service' and directly contributes to the delivery of 2 state outcomes – 'excellence in customer service' and 'digital leadership and innovation'.

The NSW Bushfire Inquiry, tasked with the examination of the causes, preparation and response to the devastating 2019-20 bushfires, supports 'expanding the PSN as a priority'. The CCEP is also central to implementing recommendations from a range of large-scale emergency response reviews and Coronial inquiries, evidencing the criticality of the PSN to the protection of our first responders.

Black Summer bushfires

The catastrophic 2019-20 NSW bushfire season lasted for 8 months and resulted in the tragic loss of life and property as well as flora and fauna devastation

Enhanced protection and better outcomes for our vulnerable communities

With the CCEP currently partially funded (as at the time of this final business case submission) and incomplete, funding for the final stage of the program enables completion of the PSN.

Without a completed statewide PSN, first responders, communities and transport routes in NSW remain vulnerable, particularly in regional NSW. An incomplete network also means that ESOs cannot migrate to the network and the program's full benefits and expected cost efficiencies cannot be realised.

The preferred option further enhances the safety of regional NSW by implementing solutions to minimise network outages and maximise availability in extreme weather events, such as bushfires, to which regional towns and communities in NSW are particularly vulnerable.

The preferred option will also provide economic stimulus through construction of 87% of sites (~277 sites) in regional NSW.

Project need

A statewide network is critical for emergency response

The technology the CCEP is using to build the PSN remains the best operational communications technology solution for first responders. Recent events have demonstrated the importance of fast and secure communications to respond to bushfires, floods, natural disasters and other emergencies. Between November 2019 and February 2020, more than 10 million radio calls were handled on the PSN.

The final stage of the CCEP is required to complete the PSN. Without it, towns and transport routes across NSW, particularly in regional areas, remain vulnerable, compromising the safety of first responders. The completed network will deliver contiguous coverage that spans large geographic areas including roads in both densely populated and rural areas.

ESOs require a statewide network that has not only the same or better coverage than their existing individual networks, but also provides mission-critical functionality in all types of emergencies including:

- enhanced resilience through longer site battery life, mobile generators and other mobile assets to help prevent, mitigate and manage network outages
- instantaneous mission-critical voice communications across a single network – with high-standard redundancy, group discussion capability and statewide, inter-regional coverage.

Currently the 5 ESOs run and maintain their own radio networks. The final stage of the CCEP will allow them to retire their ageing networks and migrate to the single, statewide and integrated PSN.

A single network will deliver greater cost efficiency

Migration to the PSN is a pathway to cost efficiency, reducing the cost of running multiple networks.

There are more than 70 NSW Government agencies that own and/or operate their own dedicated radio networks. The lack of statewide operational voice radio communications has resulted in the duplication of:

- state infrastructure, network infrastructure and active radio equipment design and delivery
- maintenance and management arrangements
- coverage
- spectrum
- contractual arrangements, including site and infrastructure tenure agreements, supply of equipment and services, and service delivery.

Project objectives and design

Objectives

The objectives from the original 2016 CCEP business case remain unchanged:

- Customers will benefit from the PSN's enhanced services once migrating to the new network.
- Voice and messaging services will be centrally managed on a high-performance infrastructure platform.
- The CCEP will help deliver priorities outlined in the NSW Government's *Operational Communications Strategy* to deliver 'one integrated portfolio' and 'evolve critical communications'.
- Investment in the program will deliver safety, operational and economic benefits for NSW.
- Improved communication capabilities for all first responders who rely on radio communications to carry out their duties.
- NSWTA will transform its operational capability and be able to centrally manage the network and provide clear accountability for network performance.
- Avoid duplicate capital and operating expenditure.

In addition, extensive customer consultation has provided clear requirements for mission-critical communications:

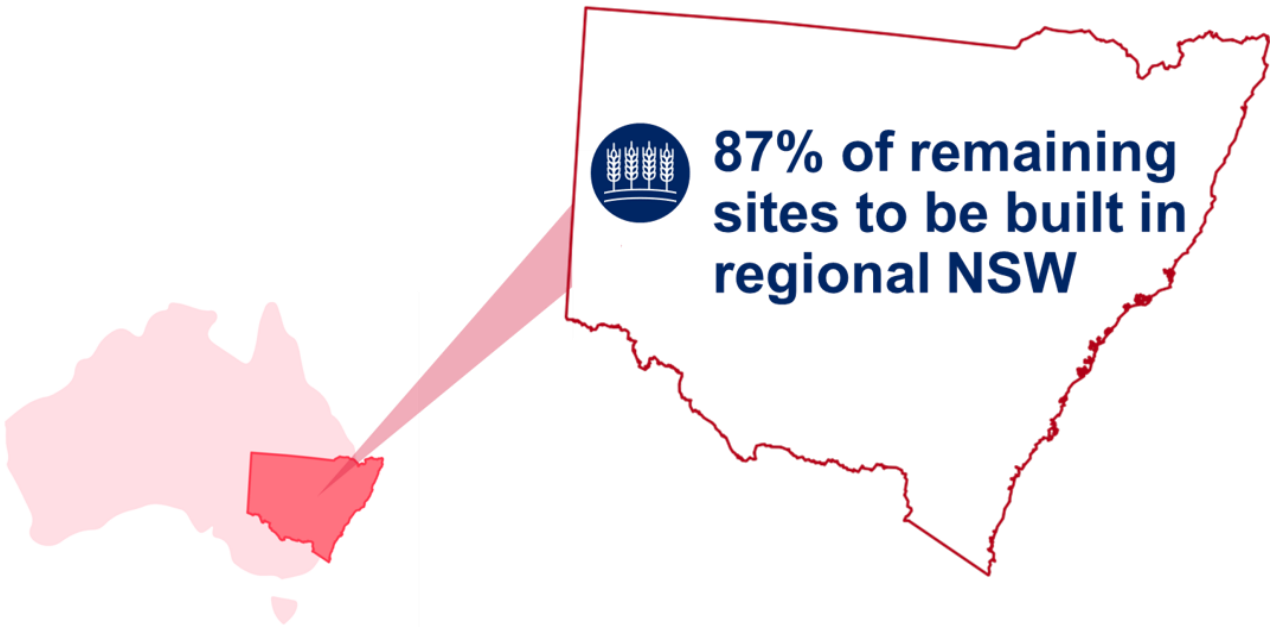
- Customers need statewide mission-critical voice communications as soon as possible.
- Coverage and availability are the key drivers for customers to migrate to the PSN.
- ESOs have an increasing appetite for data services to complement voice services.

Design

The final stage of the CCEP will deliver ~318 additional sites, bringing the PSN to a total of 675 sites.

Network land coverage will increase from 40% to 85% of the state and will increase coverage of the state's population from 94% to 99.7%.

Of the remaining sites to be built, 87% are located in regional NSW, which will deliver a significant stimulus effect to these regions.



When the CCEP is completed, ESOs will have greater population coverage than their individual networks and their existing land coverage will be matched in full.

Delivery of the final stage of the program will provide coverage to Western NSW for the first time – spanning a 390,000 km^2 area. This will extend coverage across the New England, Central and Southern regions. It will also enhance coverage in the Greater Metropolitan Area and the North Coast.

Options identification and assessment

This final business case presents 3 options: a Base Case, Option A (the preferred option) and Option B. The table below outlines the PSN land and population coverage under each option.

PSN coverage	Population coverage	Land coverage
Funding to date	96.6%	47.7%
Base Case	98%	85%
Option A	~99%	~90%
Option B	~99%	~90%

The **Base Case** delivers an additional ~318 sites, increasing land coverage from 40% to 85% of the state and increasing population coverage from 94% to 99.7%.

Option A delivers all the Base Case, as well as ESO requirements for safety and network resilience.

Option B delivers all the Base Case, plus option A, as well as:

- further PSN site and network resilience measures to minimise network outages
- centralised decommissioning – post ESO migration to PSN, NSWTA to coordinate a whole-of-government decommissioning program
- paging – deliver a whole-of-government, PSN paging solution for FRNSW, RFS and SES. As the unified paging solution has not been finalised, a conservative approach is taken to estimate the costs.

As the Base Case does not deliver the additional safety and resilience requirements, ESOs would not fully migrate to the PSN under this option.

Ultimately, the selection of the preferred option was determined by a value for money assessment to determine the option that could deliver ESO requirements, with less immediate investment and provide better long-term value for money.

Option A delivers the most efficient pathway to migration and the opportunity to reduce the cost of operating and maintaining separate ESO networks by rationalising infrastructure, reducing payments to third parties and reducing the duplication of overheads and future capital refresh costs.

Option A also provides for ESOs' future connectivity and communication needs by facilitating the progression of Public Safety Mobile Broadband to enable access to video, images and other data over the PSN.

In summary, Option A is the preferred option because it is unanimously supported by ESOs and delivers:

- the 2016 Cabinet endorsed scope of a statewide PSN with same or better coverage
- customer requirements, including safety and network resilience, to ensure all ESOs migrate to the PSN on completion
- a more efficient use of state funds by reducing the costs of running and maintaining duplicate networks.

Economic evaluation

The full scope of the program was approved by the Expenditure Review Committee of Cabinet in March 2016.

As part of the economic appraisal both the quantitative and qualitative benefits generated under each option have been considered. A total of 50 individual economic benefits were quantified from a whole-of-government and community perspective and verified with agencies through workshops.

The economic appraisal considers NSW Government costs and revenues from FY22 to FY31, within the expected timeframe to deliver a statewide PSN under the Base Case and the preferred option.

Key parameters for the economic appraisal are presented below.

Parameter	Input
Period of analysis	FY2022-FY2031
Base year	FY2021
Discount Rate	7%
Sensitivities	3% and 10%

The benefit cost ratio, in real and present value terms, is calculated as the sum of the incremental benefit above the Base Case of the relevant option and the cost of the Base Case all divided by the relevant option's cost.

The cost benefit analysis for the preferred option is for the period FY22 to FY31. While there are limitations in quantifying the benefits accrued from mission-critical response, the benefit cost ratio for the preferred option is estimated at 1.016 and 0.976 for Option B.

The cost benefit analysis has been undertaken in accordance with *NSW Government Guidelines for Economic Appraisal* and leverages economic benefits of the Infrastructure Rationalisation Program (November 2015) to ensure technical and policy consistency over the CCEP's funding lifecycle.

The following table provides an overview of the economic model framework.

Costs[1]			Benefits of a statewide PSN			
CCEP	Agency costs	PSMB progression	Economic		Financial	
Capex (incl. paging services) - Design - Build - Service delivery - Program management - Other (O&M Transformation) - Contingency - Decommissioning[2] **Opex** - Direct recurrent costs including O&M, backhaul, rent, spectrum, power	- SSKO costs on existing networks[3] - Agency opex to run existing networks - Decommissioning	- PSMB progression program; set up	**Agency** - Productivity improvements enabled by increased radio coverage - Productivity improvements due to radio network interoperability - Productivity improvements enabled by improved	**Community/ business** - Reduction in cardiac: mortality and in regional road accident deaths - Reduction in the economic cost of serious crime - Reduction in economic cost of floods, bushfires	**Government** - Improved outcomes, including cost savings, through reduced ratio infrastructure and greater device innovation - Freeing spectrum for emerging technology adoption	**Agency** - Cost savings through centralisation of business case functions - Cost savings through flow-on agency projects enabled by the IRP

network management system opex and blackspots - Program 'other' one-off costs: move and change management costs			network reliability			

[1] The financial appraisal considers financial costs to the NSW Government.
[2] Spread between agencies and Telco will vary between options.
[3] Only SSKO costs for FY22-FY27 are included. This is a conservative assumption as under the base case it is expected Police and RFS will have capital costs (i.e. SSKO type costs) post FY27 to remain operational.

The outcomes of the analysis

The economic analysis is deemed to be conservative for various reasons, including that user safety benefits (for first responders for example) have not been quantified in the economic analysis due to a lack of data that agencies could defensibly support. The economic analysis is unable to cost the economic risks of not completing the project. These risks have the potential to be catastrophic, given radio communication is the primary medium for mission-critical communications.

Ultimately, the selection of the preferred option was determined on a value for money basis both in the short and long term as it delivers on current user agency requirements of a mission critical voice network across their state-wide operational footprints and resilience recommendations following the 2020 bushfires.

This both:

- drives service delivery benefits for the citizens and business of NSW, and
- commits user agencies to migrating to the PSN, decommissioning redundant assets and avoiding duplicate investments (which has been the driver of CCEP since its inception).

The CCEP is expected to deliver the following network enhancements, based on the delivery of a statewide consolidated radio network:

Increased coverage

most agencies are expected to realise extensive mobile outdoor, portable outdoor and portable indoor coverage through accessing existing government coverage that was previously owned or managed by another agency

Network interoperability

interagency operational staff will have the capability to communicate on the ground through mutually accessible radio channels

Increased reliability

improved network design, quality of infrastructure, asset knowledge and asset maintenance will reduce network outage time and availability risk

Rationalisation

centralisation of network ownership and management will reduce duplication of support costs.

Funding the preferred option will enable ESOs to migrate to the PSN sooner and reduce the cost of running and maintaining duplicate networks.

Deliverability

Procurement

The following procurement approach will be implemented for the project:

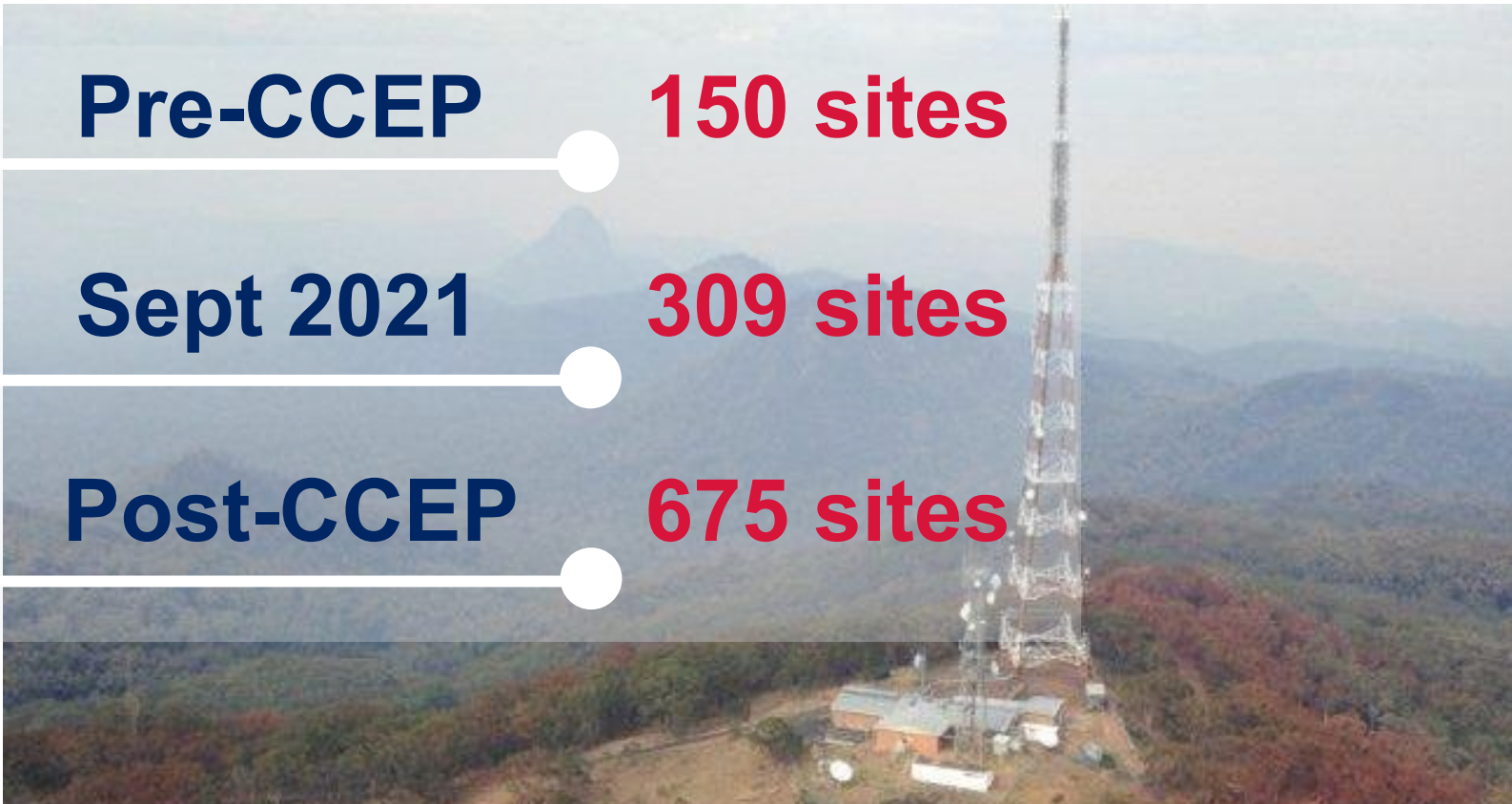
- Identify difficult to acquire sites under active contract to mitigate the risk of sites not completing and missing their baseline schedule dates. Alternate locations will be progressed in parallel as a separate package of design works, allowing NSWTA to investigate multiple site options where there are known risks with the prime candidate
- Introduce hold points in the site acquisition, environment and design works process to mitigate chances of progressing further with difficult sites when alternate sites could better support the program schedule
- Develop a new Statement of Works with improved clarity on accountabilities and additional NSWTA resources from Property, PMO and stakeholder functions to assist the vendors to achieve site acquisition, environment and design works completion
- Ensure learnings from experience are captured in this business case.

Commercial strategies to enable program delivery and reduce costs include:

- improved contracts – diversification of the current design services supply base will increase contestability and reduce delivery risks
- infrastructure owner partnerships to fast-track design and build – NSWTA is seeking colocation opportunities with infrastructure owners and mobile carriers to identify infrastructure that can be leveraged for faster site acquisition, environment and design works and site build.

Timeframe

As of September 2020, of the 675 sites within the total program, 309 sites (46%) had completed site acquisition, environment and design works. The preferred option has the program completing by FY27.



Key risks and mitigation

Key risks to the project include partner performance, engagement process with landowners, existing infrastructure not meeting NSWTA mission-critical status, delays caused by environmental impacts (such as bushfires), additional commercial claims from partners, and long lead times.

Risk mitigation measures include:

- reviewing minimum NSWTA design criteria with an option to reduce requirements on a case-by-case basis
- executive engagement with key agencies
- procuring critical portable infrastructure like Cells on Wheels to maintain radio communications
- securing equipment to cover program needs for 12-18 months.

The Infrastructure NSW view

The program objectives of the final business case are consistent with those outlined in the original 2016 CCEP Business Case.

Infrastructure NSW undertook a review in October 2020. Infrastructure NSW found that the final business case demonstrates a high level of confidence that the project is being effectively developed and delivered in accordance with the Government's objectives.

The preferred option (Option A) is supported by all 5 ESOs and completes the statewide PSN. This option meets customer requirements to protect ESOs' first responders and the communities of NSW during extreme weather events and positions the PSN to be the backbone for future whole-of-government connectivity and technology needs.

Infrastructure NSW found the options have been well considered and the preferred option is an appropriate response to the service need.