Airbases are fundamental to the employment of air power. The 5th-generation Air Force will continue to require capable and resilient airbases that can support networked air operations and be readily adapted to meet evolving operational and technological requirements.

Air Force Strategy 2017-2027, p 31

Technological developments of aircraft and Australia’s strategic circumstances have shaped the disposition of Air Force bases from the opening of Point Cook in 1914 to the current day. Initially, bases were established near the major industrial and population centres of Melbourne and Sydney. During the expansion of the late 1930s, other bases were established on the outskirts of Perth, Brisbane and Townsville. With the outbreak of war in 1939, additional new bases were established in all the major capital cities and numerous flying training bases were built in south eastern Australia to support the Empire Air Training Scheme. Later, as Japan entered the war, the defence of Australia and support to Allied forces in the Pacific campaign became overriding factors, with numerous airfields being built in northern Australia while a chain of advanced operational bases were established in an arc extending from Timor, through the New Guinea region to the New Hebrides.

Following World War II, the British nuclear program and European space program saw the establishment of airfields at Woomera and Maralinga in South Australia. The strategy of forward basing saw RAAF Learmonth and Cocos Island airfields upgraded in the 1960s and fighter squadrons permanently based at Butterworth in Malaysia. Coinciding replacement of the Mirage with the Hornet in the 1980s, changes in strategic posture saw Air Force reduce its forward presence at Butterworth while developing RAAF Tindal and building RAAF Curtin. The opening of RAAF Scherger in 1998 saw the completion of the umbrella of bases across northern Australia.

Thus in the past, the location and facilities of Air Force bases were determined by a combination of historical and strategic factors. In recent years, the introduction of new technology in aircraft, such as KC-30, C-17, Wedgetail and P-8, has added some new factors affecting the requirements for infrastructure on each Air Force base. These factors include:

- significant data transfer requirements for 5th-generation aircraft before, during and after missions,
- increased range of the aircraft allowing them to operate from bases further from their area of operation,
- larger, heavier aircraft requiring stronger pavements, and
- increased fuel usage by larger aircraft requiring larger fuel storage facilities.

These drivers have played out in the following ways.

- Wedgetail AEW&C and F-35 aircraft will primarily operate from RAAF Williamtown and Tindal.
- P-8 aircraft will have dedicated support facilities at RAAF Edinburgh, Darwin, Townsville and Pearce, as well as Cocos (Keeling) Islands airfield.
- KC-30 aircraft have suitable support facilities at RAAF Amberley, Townsville, Darwin, Edinburgh and Pearce.

Infrastructure Risks

As we have seen, technological and strategic circumstances have a significant influence on the infrastructure needed at a particular time. Since
infrastructure has a significant lead time to design and deliver, understanding how technological and strategic advances will impact our infrastructure requirements is very important. Some changes, like the increased range of a particular aircraft, are relatively easy to understand. What is not so easy is predicting the way Air Force will operate the aircraft as it becomes a truly 5th-generation air force.

Infrastructure is expensive and requires ongoing maintenance and periodic upgrades. This introduces another risk—adequate funding must be available to maintain and upgrade infrastructure. Maintaining adequate funding for infrastructure within the Defence program can be a challenge. By comparison, major equipment acquisitions usually have very long lead times and, once approved, the expenditure profile for a project is difficult to adjust. Over the years, Air Force infrastructure funding has been insufficient to maintain the estate. In addition, decisions to delay infrastructure projects have been made to prioritise funding for current operations or the capital acquisition program. The effect of deferring infrastructure projects, including major base redevelopments, does not generally create an immediate impact on operational capability. However, ongoing deferral of infrastructure projects can lead to increased deterioration of the estate, which increases the risk of failure of critical infrastructure at a time when it is needed for operations.

The Defence White Paper 2016 and the Integrated Investment Program 2016 allocated significant funds to ‘remediate the underinvestment of recent years in those key enablers essential to realising the full potential of the high technology systems entering service.’ Infrastructure is one of those key enablers.

Future Drivers

Climate change will increasingly impact on Defence. Climate change modelling has identified RAAF Townsville and Williamtown as two bases which will increasingly be at risk of flooding, particularly in storm surge conditions. Initially, this is likely to cause short-term disruptions to operations but, in the longer term, it may have a significant impact on the cost of operating and maintaining infrastructure at these bases if not addressed.

New capabilities also impact on training areas and their infrastructure. Air Force has employed weapons for aircrew-training purposes since it was formed. With increased focus on joint warfighting, Air Force now needs to practice releasing weapons as part of a joint force integrated with Army manoeuvre elements, necessitating a joint Air Force/Army range area. Increases in aircraft speed, weapon effects and gun calibres have resulted in expanded safety areas on weapon ranges. For example, the Evans Head range has reverted to a World War II safety template to allow F-18Fs to use their cannon. In recent decades, this range had been used by F-111s solely for dropping bombs. These changes can also affect the infrastructure required on the training areas.

Longer range aircraft and remotely operated systems may reduce the number of personnel based in remote locations and allow them to live and work in more desirable locations, such as Amberley and Williamtown. This can have flow-on effects to other fundamental inputs to capability such as personnel retention.

Infrastructure is essential to any military force, but particularly an air force. The location and capability of this infrastructure has always been the outcome of many conflicting factors—Government policy, strategic necessity, history and technology. All these factors are likely to continue to influence Air Force infrastructure in the future.

Key Points

- Air Force basing has historically been influenced by technology and strategy
- Infrastructure is expensive, but must be maintained and upgraded to remain effective
- Becoming a 5th-generation air force will drive our future infrastructure requirements

1 Integrated Investment Program 2016, p 40.