Reach is one of air power’s most important characteristics, but for the first four decades of military aviation, reach was limited by the range and endurance of most aircraft. Since the early 1920’s, the United States Army Air Service conducted experimental air-to-air refuelling and in 1923 managed to keep a DH-4B airborne for more than 37 hours, with nine air-to-air refuels. Similar trials were being conducted in Britain and France. By the end of the World War II, the RAF had converted a Halifax bomber into a tanker aircraft that was capable of refuelling Lancaster aircraft which could have been used to bomb the Japanese mainland. The British system was later developed into the system now known as the probe-and-drogue system. In the 1950’s, Boeing developed the boom-and-receptacle refuelling method for the USAF to allow greater fuel flow rates than was possible with the probe-and-drogue system. The first boom-fitted KC-97 tankers flew in 1950. The newest generation of tankers the KC-30A and KC-46 continue the improvement of air-to-air refuelling whilst including advances in communications, tactical awareness and self protection.

An effective tanker force allows the projection of a nation’s air power far beyond what it would be without air-to-air refuelling. Five KC-30A aircraft are currently operated by No 33 Squadron at RAAF Base Amberley in Queensland. An additional two aircraft will be delivered by 2019 and the recent 2016 Defence White Paper provided options for a further two aircraft, at the Government’s discretion.

With a maximum takeoff weight of 233 tonnes and a wingspan of 60 metres, the KC-30A is the largest aircraft in the RAAF. It requires significant coordination, personnel, ground support, equipment, maintenance and logistics support to enable effective operations. The KC-30A is a multi-role tanker transport aircraft capable of carrying a combination of up to 270 passengers, 8 military pallets and 110 tonnes of fuel. The KC-30A flies globally in all roles, tanker, cargo and passenger transport. With an empty-weight range of 14 000 km, it can be repositioned to support operations around the world within 24 hours.

The typical KC-30A operating crew includes two pilots, an air refuelling operator and crew attendants as required to support passenger movements. Maintenance and support personnel are required for away base and extended operations. No 33 Squadron uses the KC-30A to support domestic and international tasking, exercises and training missions. The aircraft has the capability to be refuelled by another tanker, enabling it to conduct ultra-long range air-to-air refuelling or transport missions. The majority of air-to-air refuelling missions are in support of the F/A-18 Classic and Super Hornets in their major training areas and regularly facilitates long-range accompanied strike and air patrols across Australia.

The KC-30A is equipped with a number of radios, Link 16 datalink and mission planning systems, which combine to provide a high level of situation awareness to the pilots and air refuelling operator. This allows the crew to communicate securely with receiver aircraft and coordinating agencies. These enhanced communication capabilities allow the real time repositioning of the aircraft in anticipation of coalition requirements minimising the duration of the refuelling event and the time the receiver aircraft is away from its primary mission of providing tactical or close air support.

Since September 2014, No 33 Squadron has deployed a single KC-30A aircraft in support of Operation Okra in the Middle East as part of coalition operations against...
the Daesh in Iraq and Syria. With approximately 30 personnel, the detachment has conducted over 800 sorties expending 6400 flying hours and offloading 65 million pounds of fuel to RAAF and coalition aircraft. In Operation Okra, the KC-30A is delivering approximately twice the rate of effort and capability than a previous-generation tanker, such as a KC-135. This operation has demonstrated how the next-generation tanker can integrate into the air and ground network, ensuring maximum capability and flexibility while retaining its core function of providing fuel to other aircraft.

In addition to Operation Okra, the KC-30A is involved in a number of other significant activities.

- Receiver clearance programs, requiring significant engineering and flight test programs, are being conducted to enable safe and efficient refuelling of RAAF and allied aircraft by the KC-30A. The RAAF has recently completed F-35, F-16 and C-17 programs with plans to conduct additional programs with coalition partners over the next few years.
- RAAF KC-30A aircraft have participated in domestic and international exercises including Exercises Pitch Black, Talisman Saber, Red Flag and Cape North.
- The aircraft have also carried out national tasking supporting Government, ADF and coalition-partner activities, including fighter aircraft deployments to the Middle East, South-East Asia and the Pacific regions.
- The squadron also conducts ongoing aircrew and maintenance training.

In addition to the above activities, No 33 Squadron is expanding its KC-30A fleet and conducting a number of key program upgrades as part of Plan Jericho. Two additional aircraft will be added during 2017-2019, bringing the total fleet to seven. Plan Jericho will enable upgrades to communications and datalink node capability, mission system, advanced refuelling boom system, and many other systems. The additional aircraft, upgrades, training and development of RAAF aircrew and support personnel will all improve the functionality and employability of the KC-30A, further enhancing its reputation as the tanker of choice.

The KC-30A has enabled the RAAF to make a significant leap forward from legacy tankers used ‘behind the fight and out of sight’. The KC-30A will continue to mature and expand providing a fully networked and flexible multi-role aircraft that will be critical to the defence of Australia, protection of allied interests and support to domestic and regional incidents.

Key Points
- An integrated and networked tanker, such as the KC-30A, provides a significant increase in capability and enables extended air power projection.
- On Operation Okra, the KC-30A has provided significant fuel offload capability and demonstrated the advantages of next-generation tankers.
- Future fleet expansion, receiver clearance and modification programs will further enhance the KC-30A capability.