

C-17 Maintenance Facility, Aircraft Apron and Associated Infrastructure Project, RAAF Base Amberley, Queensland

- 2.1 The Department of Defence (Defence) seeks approval from the Committee to supply new facilities at Royal Australian Air Force (RAAF) Base Amberley, Queensland in order to support C-17A aircraft.¹
- 2.2 36 Squadron is located at Amberley and is responsible for operating eight C-17A aircraft. These heavy airlift aircraft assist with strategic air transport, military operations and humanitarian efforts conducted both domestically and overseas. The aircraft have an unprecedented capacity for rapidly deploying troops, vehicles and supplies.²
- 2.3 Currently maintenance facilities at Amberley are shared, being used for the both the C-17A aircraft and KC-30A aircraft, the latter operated by 33 Squadron.³
- 2.4 The estimated cost of the project is \$219.4 million, excluding GST.
- 2.5 The project was referred to the Committee on 3 March 2016.

Conduct of the inquiry

- 2.6 Following referral, the inquiry was publicised on the Committee's website and via media release.
- 2.7 The Committee received one submission, one supplementary submission and two confidential submissions regarding the project costs and risk register from Defence. A list of submissions can be found at Appendix A.

1 Defence, submission 1, p. 12.

2 Defence, submission 1, p. 1.

3 Defence, submission 1, p. 1.

- 2.8 The Committee received a briefing from Defence and conducted public and in-camera hearings in Canberra on 20 April 2016. A transcript of the public hearing and the public submissions to the inquiry are available on the Committee's website.⁴

Need for the works

- 2.9 Amberley's existing heavy aircraft maintenance facilities, including the shared hangar and workshops, are insufficient to support both the C-17A and KC-30A aircraft. Existing facilities mean operations are conducted inefficiently. These shortfalls have been exacerbated by the subsequent acquisition of additional aircraft.⁵

- 2.10 At the public hearing, Defence stated:

...the C17 fleet has grown from four aircraft to eight aircraft, as it stands today, and the KC30A fleet is growing from five aircraft to seven aircraft confirmed. As such, additional and dedicated facilities are now required at RAAF Base Amberley to support the operations of enhanced C17A capability.⁶

- 2.11 Therefore, Defence proposes to construct a new maintenance facility, aircraft apron and explosive ordnance facilities to improve the efficiency of engineering and maintenance operations. The proposed maintenance facility will allow 36 Squadron to conduct both scheduled and unscheduled maintenance on the C-17A without relying on access to the 33 Squadron hangar or having to conduct maintenance activities on the aircraft apron.⁷

- 2.12 Defence personnel went on to note that the proposed works would alleviate inefficient work practices:

At the moment, the current limited facility we are using is licensed only to 10,000 kilos NEQ [net explosive quantity]. The new facility will be licensed to 20,000...At the moment, preparing in the old facility, 10,000 kilograms NEQ—a full load—would take about three days to prepare. We expect that to be back around one to 1½ days.⁸

- 2.13 When asked how the proposed works might assist Australia in meeting its humanitarian obligations, Defence responded:

4 <www.aph.gov.au/pwc>.

5 Defence, submission 1, p. 1.

6 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 1.

7 Defence, submission 1, pp. 1-2.

8 Group Captain Adam Williams, Defence, transcript of evidence, 20 April 2016, p. 7.

What we are talking about achieving for the C17 here is increased efficiency and decreased risk for the staff. That increased efficiency benefit can be realised in a number of ways. It may very well be extra C17 hours that we can generate. That has some other factors involved, like the Defence management and financial plan – increasing amounts for that to account for extra fuel and extra aircraft spares for extra use. It may also realise itself in the ability to reinvest workforce – so to output the same capability with fewer people – or it may simply be the ability to generate faster response out of the C17 by having the aircraft more prepared even when they are not currently tasked.⁹

- 2.14 Additionally, Defence personnel told the Committee how significant investment at Amberley reinforces its already strong contribution to the work of the Australian Defence Force:

It is an enduring base and it is also seen as a super base. It is one of the first Defence estate facilities where we are looking to consolidate our footprint.¹⁰

- 2.15 The Committee is satisfied that the need for the work exists.

Options considered

- 2.16 The proposed facilities are to be located at the northern end of Amberley's flight line, in the vicinity of the existing air movements section and apron.¹¹
- 2.17 The proposed site for the C-17 facilities and apron was selected to comply with Amberley's Flight Line Master Plan¹². The site optimises the operational effectiveness for 36 Squadron and the heavy airlift capability and Amberley as a whole.¹³
- 2.18 Defence has considered a range of options to meet their requirements. In the pre-hearing briefing, the Committee heard that these included 'do nothing', adaptive re-use of existing facilities and construction of new facilities. The decision to construct new facilities was based on optimal siting considerations and accordance with Defence's Flight Line Master Plan for Amberley.
- 2.19 Detailed consideration was given to the following elements:
-

9 Group Captain Adam Williams, Defence, transcript of evidence, 20 April 2016, p. 7.

10 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 4.

11 Defence, submission 1, p. 2.

12 See also Public Works Committee report 10/2015.

13 Defence, submission 1, p. 9.

2.20 **C-17 Maintenance Facility and Aircraft Apron**

The proposed maintenance facility will be located to the north of the air movements section and the aircraft parking apron, to the north of the existing northern apron. Various locations and configurations were considered for the maintenance facility, with the proposed layout satisfying a number of planning constraints, including the Flight Line Master Plan, explosive ordnance safety distances, environmental considerations and flooding level forecasts. The proposed maintenance facility and apron layout also allows for any future development of the site.¹⁴

2.21 **Explosive Ordnance Pallet Build Facilities**

The proposed explosive ordnance pallet build facility will be located immediately adjacent and to the north of the existing explosive ordnance precinct. The facility will be used for the palletisation of bulk explosive ordnance for air transport.¹⁵

2.22 **Counter Measure Facility**

The proposed counter measure facility will also be located adjacent and to the north of the [existing] explosive ordnance precinct. This facility has been designed to support both C-17A and C-27J (Battlefield Airlifter) operational requirements and provides an efficient solution that meets the requirements of both capabilities.¹⁶

2.23 The Committee found that Defence has considered a range of options to deliver the project and has selected the most suitable option.

Scope of the works

2.24 Defence has separated the works into six scope elements.

2.25 **1 - Maintenance Facility**

The proposed maintenance facility will accommodate a single C-17A aircraft with docking around the aircraft for maintenance purposes. It will also be sized to accommodate a single KC-30A aircraft. Telescopic docking will be installed to facilitate aircraft servicing tasks. In addition to the hangar floor space, this facility will include:

14 Defence, submission 1, p. 3.

15 Defence, submission 1, p. 3.

16 Defence, submission 1, p. 3.

- a logistics warehouse with a dedicated area for packing and dispatch, lockable quarantine/separation cages, and general storage for stacked pallets;¹⁷
- working accommodation for 40 staff, including six standard offices, an open plan office and a maintenance certification room;
- amenities including toilets, change rooms and a multi-function room suitable for 40 staff; and
- specialist workshops for maintenance, repair and certification tasks including the following:
 - avionics workshop;
 - structures workshop;
 - composites workshop;
 - decontamination room;
 - surface finishing workshop;
 - engines workshop/store; and
 - large aircraft counter-measures vault.¹⁸

2.26 **2 - Aircraft Apron and Associated Airfield Infrastructure**

The proposed aircraft apron will provide eight C-17A parking positions, with one position to be licensed as an explosive ordnance loading area. KC-30A aircraft will also be able to park on the C-17A parking positions, although with reduced wingtip clearances. In-ground hydrant refuelling will be provided at each of the eight parking positions.

The taxiways to the apron and taxi lanes to the parking positions and maintenance facility will be suitable for both C-17A and KC-30A aircraft. A tow road capable of supporting C-17A aircraft will connect the new apron to the existing air movements apron.¹⁹

2.27 **3 - Ground Support Equipment Facilities**

The proposed ground support equipment facilities include a shelter suitable for approximately 60 items of ground support equipment and materiel handling equipment and will be located to provide direct access to the apron and the maintenance facility. A diesel refuelling bowser to be located between the new apron and the existing air movements apron to

17 This scope item was amended during the public hearing. The climate controlled storage area is no longer required, as the facility will be naturally ventilated. See transcript of evidence, 20 April 2016, p. 1.

18 Defence, submission 1, pp. 9-10.

19 Defence, submission 1, p. 10.

allow refuelling of all ground support equipment/materiel handling equipment on the northern flight line.²⁰

2.28 **4 - Explosive Ordnance Pallet Build Facility**

The proposed explosive ordnance pallet build facility will provide a purpose built facility for the receipt of explosive ordnance from road transport and re-palletising for air transport. The facility will cater for up to two C-17A loads of explosive ordnance. The proposed explosive ordnance pallet build facility comprises:

- new road and bridge constructed across the main stormwater drain;
- an undercover delivery area to facilitate unloading of explosive ordnance from B-Double size road transport with drive-through access;
- a transit and cross loading capacity of 20,000 kg net explosive quantity;
- two aircraft pallet building areas located on opposite sides of the facility to accommodate two C-17A loads;
- segregation for specific types of explosive ordnance; and
- receptor traverses at Building 801, 802, and counter measure facility to provide protection to these buildings from the explosive ordnance pallet build facility.²¹

2.29 **5 - Counter Measure Facility**

The proposed counter measure facility will be a shared facility, designed for use by the C-17A and C-27J Battlefield Airlifter capabilities. The proposed facility includes:

- upgrade to the existing road;
- drive-through access suitable for the required materiel handling equipment;
- facilities suitable for the delivery and transit of Class 1.3 and 1.4 counter measures;
- a workspace for the unpacking and preparation of aircraft counter measures;
- access to the existing explosive ordnance precinct road network; and interceptor traverses.²²

20 Defence, submission 1, p. 10.

21 Defence, submission 1, pp. 10-11.

22 Defence, submission 1, p. 11.

2.30 6 – Infrastructure

C-17 Site Infrastructure.

The following infrastructure is required to directly support the proposed C-17 facilities:

- electrical services;
- airfield lighting;
- hydraulics services (including potable, water for fire-fighting purposes, sewerage services and stormwater drainage);
- communications; and
- security services.

Base Infrastructure Upgrade

In addition to the proposed C-17 facilities and site infrastructure, a significant increase in capacity of the base central emergency power station is proposed to address both existing and projected emergency power shortfalls. To meet Amberley’s critical load requirements, the proposed upgrade to the existing base central emergency power station involves installing two additional 2.5 MW diesel generators.²³

2.31 At the public hearing, the Committee queried if scope elements four and five would be used for other aircraft. Defence responded:

...the countermeasures facility will build countermeasures loads for both C17 and C27J [Battlefield Airlifter aircraft]²⁴ – that is the plan. The explosive ordnance pallet build facility will prepare standard military air transport pallets of explosives and dangerous goods that can be transported by C17, C27J or C130J. Anything that takes standard pallets and can carry explosives.²⁵

2.32 The project will also include civil works, infrastructure/essential service works, landscaping and the demolition of an existing apron.²⁶

2.33 At the public hearing, the Committee sought reassurance that the existing apron, marked for demolition, could not be re-used or upgraded. Defence responded:

We are going from what is basically an existing – it is an engineered gravel, so non-rigid pavement, with a wearing surface. The old Caribou aircraft were considerably lighter, smaller. For the

23 Defence, submission 1, p. 11.

24 Facilities to operate and maintain the C-27J Battlefield Airlifter aircraft were approved in Public Works Committee report 10/2015.

25 Group Captain Adam Williams, Defence, transcript of evidence, 20 April 2016, p. 6.

26 Defence, submission 1, p. 2.

C17 fleet that we are talking about, we require a rigid, structural pavement of high-strength concrete of about 400 millimetres thickness, so there is no chance to adaptively reuse that existing hardstand.²⁷

2.34 Defence went on to state that, where possible, it intended to construct facilities which are flexible enough to better accommodate current needs and future operational changes.²⁸

2.35 Defence explained how the docking equipment proposed for the new aircraft hangar will be suitable for different types of aircraft:

In the existing hangar, that docking moves out of the way to allow the C17 to come in and then they access the aircraft via GSE equipment – scissor lifts and so on. The docking system that is ... proposed for the C17 project is telescopic docking. That docking hangs off the roof and is two separate platforms. They move around the aircraft to whatever spot you need to get to. Because it is not [specific] to the plane and is now multi-aircraft functional, the KC30 will also be able to be fully maintained off that docking, as will any other aircraft that actually fits in that hangar.²⁹

2.36 Although it is expected that the existing hangar will generally be used for KC-30A maintenance and the new hangar for C-17A maintenance, Defence told the Committee:

...we [are] also looking to ensure with the new proposed maintenance facility that we are not bespokeing it and we provide ourselves with some operational flexibility for those unforeseen moments. If we are required to have two KC 30s in hangars, if that may be the operational requirement – we need to get two KC30s away sooner than a C17 – we take a C17 out of that proposed hangar and can work on two KC30s to meet the operational requirements.³⁰

2.37 Subject to Parliamentary approval, construction is expected to commence in early 2017 and be completed by late 2018.³¹

2.38 The Committee finds that the proposed scope of works is suitable for the works to meet its purpose.

27 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 9.

28 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 9.

29 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 9.

30 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 9.

31 Defence, submission 1, p. 22.

Heritage considerations

Indigenous Archaeological Heritage

- 2.39 As identified in Amberley's Heritage Management Plan 2013, the proposed maintenance facility and apron are located in areas identified as 'modified landscape with little or no heritage potential'. There is a stand of trees immediately north of the proposed apron site, which is considered to have high significance, although no specific description of the item is presented in the Heritage Management Plan. This area has a moderate potential to be affected by the works.³²
- 2.40 The proposed explosive ordnance pallet build facility and counter measures facility are located in areas identified as 'relatively unmodified with potential for cultural heritage'. Two isolated stone artefacts have been recorded within proximity of the proposed development sites and there is potential for more to be identified. As such, a site walk with the Jagera Daran People will be undertaken to discuss the potential impacts and solutions.³³
- 2.41 At the public hearing, Defence provided an update on these matters:
We have undertaken site walks with [the Jagera Daran People]. At the moment, there is no heightened risk that has been identified; however, that will be confirmed as we go forward, subject to parliamentary approval, prior to actual construction of the works.³⁴

Built Heritage

- 2.42 As noted in Public Works Committee report 10/2015, The Department of the Environment conditionally approved the removal of heritage buildings within the Flight Line boundary. While the current project sites fall within the Flight Line Master Plan boundary, it does not impact on any of the buildings or heritage values referred to the Department of the Environment. The only condition impacting on this project is Condition 6, which involves avoiding or mitigating impacts on any koala habitat within the project area.³⁵

32 Defence, submission 1, p. 4.

33 Defence, submission 1, p. 4.

34 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 7.

35 Defence, submission 1, p. 4.

Environmental considerations

Fauna

- 2.43 Defence identified that works associated with scope element four are assessed as having a high likelihood of impacting on koala habitat due to the loss of habitat trees. However, Defence also stated that the Environmental Assessment Report, conducted in March 2015, found that the impact from this project is not likely to adversely affect the habitat critical to the survival of the koala, and the works will not interfere substantially with the recovery of the koala in these areas. Any removal of trees will be conducted in accordance with the Base Environmental Management Plan and will comply with the off-set planting requirements.³⁶
- 2.44 At the public hearing the Committee heard that at least three koalas are being tracked at Amberley.³⁷ Although it is not anticipated that they would enter a work site during construction, appropriate management regimes will be employed throughout the construction activity through the development of a Construction Environmental Management Plan.³⁸
- 2.45 At the public hearing, Defence identified some of these regimes:
...as part of the project, [we] have a number of fauna systems for transfer through the area. There will be gates and bridges constructed for koalas to pass through the new security fence line that gets built around the EO [explosive ordnance] precinct.³⁹

Contamination, water quality and flooding

- 2.46 Quantities of perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) have been identified in soil samples throughout the proposed apron and maintenance facility sites, as a result of the historical use of Aqueous Film Forming Foam (AFFF). Elevated levels of nickel were also identified in one test location. The proposed apron civil works will result in the generation of potentially contaminated spoil material.⁴⁰
- 2.47 A plan for managing the contaminated spoil will be established and maintained and will form part of the Construction Environmental Management Plan. Defence is conducting further investigations to inform the plan, including:

36 Defence, submission 1, p. 5.

37 Air Commodore Scott Winchester, Defence, transcript of evidence, 20 April 2016, p. 8.

38 Defence, submission 1, p. 5.

39 Mr Justin Griffin, RPS Project Management, transcript of evidence, 20 April 2016, p. 8.

40 Defence, submission 1, p. 6.

- additional testing to further assess the contamination and assist with managing the risk associated with the potentially contaminated spoil material during construction;
 - sampling of potentially contaminated spoil prior to construction to characterise the material for landfill disposal; and,
 - balancing cut and fill across the sites by re-using material that is below the Defence's adopted screening guidelines for residential use.⁴¹
- 2.48 Amberley is located on the floodplain of the Bremer River and Warrill Creek, and is therefore prone to occasional flooding. All facilities are required to be located 0.3 metres above the Q100 flood level⁴². Therefore, the ground level of the maintenance facility site will be raised by up to 2.5 metres. The sites for explosive ordnance facilities are already above the Q100 flood level and no flood mitigation work is required.⁴³
- 2.49 Drainage from the base flows to the Bremer River, which provides water to local farms and industries, and for local recreational activities. The project's construction activities have potential to impact on the river's water quality, including sedimentation, contamination and the inadvertent dispersal of weed species. Implementation of the Construction Environmental Management Plan will ensure the risk to the local waters is effectively managed.⁴⁴
- 2.50 In the event of a fire or fuel spill on the apron, the Base Fire Service may use AFFF in response. Any surface run-off from the new apron will be captured and pass through a fuel interceptor (capacity of 20,000 litres) prior to entering grass-lined stormwater drains. Stormwater from the maintenance facility and the surrounding roads will be separate from the apron drainage and be directed into a fuel interceptor prior to passing through a bio-retention basin (or similar device) before entering the main base drainage channel. Stormwater from the explosive ordnance pallet build facility and the counter measures facility sites will be directed

41 Defence, submission 1, p. 6.

42 The Queensland Government is no longer using the Average Recurrence Interval (ARI) Q100 terminology (i.e. 1 in 100 year flood level) as it can suggest a fixed time recurrence interval between flooding events, which is not the case in reality. Instead it is supporting a more risk-based approach using flood probabilities known as Annual Exceedance Probability [AEP]. In correspondence to the secretariat, Defence confirmed that an AEP of 1% has been used as the basis for calculating the flood risk to design the facilities, which is the closest equivalent to the former Q100 ARI.

43 Defence, submission 1, p. 7.

44 Defence, submission 1, pp. 5-6.

through a bio-retention basin or similar device prior to discharging in to the main base drainage channel.⁴⁵

- 2.51 At the public hearing, the Committee heard that initial testing has revealed the level of all contaminants to be within safety thresholds. While the results from further testing have not yet been received, Defence has stated that risk posed by contamination is low to moderate.⁴⁶
- 2.52 Additionally, Defence reassured the Committee that the fuel interceptors and bio-retention basins are widely considered to be effective methods for treating fuel run-off and other currently-used AFFF products, prior to stormwater entering local waterways.⁴⁷

Community consultation

- 2.53 In accordance with its community consultation and communications strategy, Defence undertook the following consultative activities:
- detailed email correspondence with local groups and State and Federal members, with individual briefings conducted where requested;
 - notices in the local newspapers providing information on opportunities for the public to comment on issues relating to the project; and
 - a public consultation session held on 17 March 2016.⁴⁸
- 2.54 No major issues were raised at the public consultation session.⁴⁹

Cost of the works

- 2.55 The estimated cost of the project is \$219.4 million, excluding GST.
- 2.56 During the public hearing, the Committee noted that over \$1 billion worth of works have been approved for Amberley during the past decade. The Committee sought advice on the delivery outcomes for previous works at Amberley, specifically whether projects had been completed on time and within budget.
- 2.57 In response, Defence confirmed that all projects undertaken at Amberley since 2005 have been delivered within timeframe and budget, with the exception of some elements associated with the RAAF Base Amberley

45 Defence, submission 1, p. 6.

46 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 5.

47 Mr Justin Griffin, RPS Project Management and Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, p. 6.

48 Defence, submission 1.2, pp. 1-12.

49 Defence, submission 1.2, p. 14.

Redevelopment Stage 3 project⁵⁰ which had been subject to some minor delays.⁵¹

- 2.58 Defence provided further detail on the project costs in the confidential submission and during the in-camera hearing.
- 2.59 The Committee considers that the cost estimates for the project have been adequately assessed by Defence, and is satisfied that the proposed expenditure is cost effective. As the project will not be revenue generating, the Committee makes no comment in relation to this matter.

Committee comments

- 2.60 The Committee notes RAAF Base Amberley's role in assisting the Australian Defence Force to conduct domestic and international operations, and acknowledges that this requires significant investment to maintain. The Committee commends Defence's track record of delivering projects on time and within budget at Amberley.
- 2.61 The Committee did not identify any issues of concern with Defence's proposal and is satisfied that the project has merit in terms of need, scope and cost.
- 2.62 Having regard to its role and responsibilities contained in the *Public Works Committee Act 1969*, the Committee is of the view that this project signifies value for money for the Commonwealth and constitutes a project which is fit for purpose, having regard to the established need.

Recommendation 1

- 2.63 **The Committee recommends that the House of Representatives resolve, pursuant to Section 18(7) of the *Public Works Committee Act 1969*, that it is expedient to carry out the following proposed work: C-17 Maintenance Facility, Aircraft Apron and Associated Infrastructure Project, Royal Australian Air Force Base Amberley, Queensland.**
- 2.64 Proponent agencies must notify the Committee of any changes to the project scope, time, cost, function or design. The Committee also requires that a post-implementation report be provided within three months of project completion. A report template can be found on the Committee's website.

50 This project was approved in Public Works Committee report 11/2007.

51 Brigadier Noel Buetel, Defence, transcript of evidence, 20 April 2016, pp. 9-10.

Senator Dean Smith

Chair

2 May 2016