

Australian Super Hornet Air Quality Monitoring Plan

Version 2.2



Approved by:

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AMENDMENT HISTORY

Version	Date	Minister's Approval Date	Comments
1.0	09 Oct 2012	27 April 2014	First issue. 01 Jun 12 – Submitted to DSEWPaC for approval.
2.0	04 Sep 2020	N/A	Full review: - New format. - Changes to support introduction of the EA-18G. - Changed to show compliance with monitoring requirements. - Incorporation of recommendations from 2019 audit. See Annex B for details.
2.1	18 May 2022	23 June 2022	Amendments made after review by Department of Agriculture, Water and Environment. See Annex B for details.
2.2	July 2026	N/A	Minor review, updates to correct website addresses and bring DOCUMENT CONTROL into alignment with amended conditions of approval (Variation 3, 2023). See Annex B for details.

ANNUAL REVIEW

Year	Date	Reviewer
2023	1 September 2023	Sean Cummins, WGCDR Tanya Evans
2024	24 May 2024	Anthony Treston, WGCDR Tanya Evans
2025	13 March 2025	Anthony Treston, WGCDR Tanya Evans
2026	July 2026	Sean Cummins, WGCDR Ashleigh Gomba

DEFINITIONS

Definitions applicable to the Variation to Conditions attached to Approval of the Australian Super Hornet Flying Operations, RAAF Base, Amberley, QLD (EPBC 2008/4410)¹, and this Air Quality Monitoring Plan:

Approved	A document approved in writing by the Minister.
Department	The Australian Government agency responsible for administering the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth).
Minister	The Australian Government Minister administering the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), including any delegate thereof.

DOCUMENT CONTROL

The document is to be reviewed as required or at least every five years by RAAF Base Amberley Senior Australian Defence Force Officer or their delegate, in consultation with relevant Force Element Group and other applicable stakeholders.

Reviews are to occur with 'Track Changes' function engaged. All reviews **must** be provided to the Environment Manager in Air Force Headquarters before being sent for signature of the Senior Australian Defence Force Officer.

A revised plan **must** be submitted to the Department, **unless** the taking of the action in accordance with the revised plan would not be likely to have a new or increased impact. In this case the approval holder **must**:

- i. notify the Department in writing that the approved plan has been revised and provide the Department with an electronic copy of the revised plan;
- ii. provide the Department with an electronic copy of the plan marked up with track changes to show the differences between the approved action management plan and the revised plan;
- iii. provide the Department with an explanation of the differences between the approved action management plan and the revised plan;
- iv. provide the Department with the reasons the approval holder considers that taking the Action in accordance with the plan would not be likely to have a new or increased impact;
- v. provide written notice of the date on which the approval holder will implement the plan (plan implementation date), being at least 20 business days after the date of providing notice of the revision of the plan, or a date agreed to in writing with the Department;
- vi. implement the revised plan from the plan implementation date; and

¹ Webpage link [<https://epbcpbpublicportal.environment.gov.au/all-referrals/project-referral-summary/project-decision/?id=37dd7269-00e0-ed11-a7c7-00224818abd2>]

- vii. for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan would not be likely to have a new or increased impact.

Otherwise, the last approved plan **must** be implemented until the Minister approves the revised plan, at which point the revised plan **must** be implemented. The revised plan **must** be published on the Australian Super Hornet flying operations² webpage within three (3) months of being approved.

² [Australian Super Hornet flying operations | Defence \[https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations\]](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations)

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F/A-18F AND EA-18G AIR QUALITY MONITORING PLAN

PURPOSE

1. The purpose of this Air Quality Monitoring Plan is to outline how Defence will comply with Condition 4 of the Minister's approved action of Super Hornet flying operations at RAAF Base Amberley.

BACKGROUND

2. Beginning in March 2010 the Royal Australian Air Force (RAAF) introduced into service 24 F/A-18F Super Hornet aircraft at RAAF Base Amberley. In accordance with the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth), operation of the Super Hornet was approved by the Minister for Environment Protection, Heritage and the Arts subject to the Department of Defence meeting conditions attached to the approval. The approval was supported by outcomes of the 2009 Public Environment Report which included two rounds of public consultation. In 2012, 2014 and 2023, the Department issued variations to the original conditions attached to the approval⁴.

3. Note that the 2009 Public Environment Report (PER) comprises two documents⁵:

- a. Draft Public Environment Report for the Flying Operations of the F/A-18F Super Hornet at RAAF Base Amberley – referred to henceforth as the Draft PER;
- b. Australian Super Hornet Public Environment Report – Supplementary Report for Flying Operations of the Australian Super Hornet at RAAF Base Amberley November 2009 (EPBC No 2008/4410) – referred to henceforth as the Supplementary Report.

4. Under the conditions attached to the approval, the Department of Defence is required to implement the following plans and strategies for operation of the Super Hornet at RAAF Base Amberley⁶:

- a. Australian Super Hornet Noise Management Plan
- b. Noise Monitoring and Complaints Handling Strategy
- c. Australian Super Hornet Noise Mitigation and Complaint Resolution Strategy
- d. Air Quality Monitoring Plan.

5. This document addresses the requirements for the Air Quality Monitoring Plan. The requirements were originally defined in Condition 4 as provided in the 2010 approval and have been retained since.

⁴ [Conditions of approval \[https://epbcpportal.environment.gov.au/all-referrals/project-referral-summary/project-decision/?id=37dd7269-00e0-ed11-a7c7-00224818abd2\]](https://epbcpportal.environment.gov.au/all-referrals/project-referral-summary/project-decision/?id=37dd7269-00e0-ed11-a7c7-00224818abd2) can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations]

⁵ PER documents can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations].

⁶ All Plans and Strategies can be accessed from from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations]

6. From February 2017 the Royal Australian Air Force has operated 12 EA-18G Growler aircraft from RAAF Base Amberley, alongside the 24 F/A-18F Super Hornet aircraft. The EA-18G Growler is a derivative of the F/A-18F Super Hornet and shares the same overall airframe design and uses the same engines.

APPLICABILITY

7. The Australian Super Hornet Air Quality Monitoring Plan (hereafter referred to as 'this Plan') applies to operation of RAAF F/A-18F Super Hornet and E/A-18G Growler aircraft at RAAF Base Amberley. As the F/A-18F and EA-18G share the same fundamental airframe design and use the same engines, use of 'Super Hornet' within this Plan refers to both the F/A-18F and the EA-18G.

SCOPE

8. The scope of this Plan is defined by the requirements of Condition 4 of the Minister's approval of Super Hornet flying operations at RAAF Base Amberley:

- a. The person taking the action must implement the approved Air Quality Monitoring Plan.

COMPLIANCE WITH THIS PLAN

9. This Plan replaces the F/A-18F Australian Super Hornet Air Quality Monitoring Plan Version 2.1 dated May 2022. Compliance with the Australian Super Hornet Air Quality Monitoring Plan Version 2.2 is required in accordance with Condition 8A. This Plan takes effect from the implementation date as notified to the Minister in accordance with Condition 8B.

RECORD KEEPING

10. Accurate records substantiating all activities associated with the implementation of this Plan must be maintained. These records must be made available upon request and may be subject to internal and external audits, or used to verify compliance with the conditions of approval.

SUMMARY OF LIKELY SUPER HORNET AIR QUALITY IMPACTS FROM THE PUBLIC ENVIRONMENT REPORT

11. The Public Environment Report (comprising the Draft PER and Supplementary Report⁷) described the existing air environment by reviewing air quality data collected by the Queensland Department of Environment and Resource Management (DERM) at their Flinders View air quality monitoring station. Air quality is good with concentrations of NO₂, SO₂, ozone and PM₁₀ below the ambient air quality goals in the Queensland Environment Protection Policy (Air) [EPP(Air)]. The Public Environment Report highlighted the key findings of a DERM investigation (1997) regarding regional air dispersion patterns in south-east Queensland:

- a. During summer, sea breezes carry pollutants from Brisbane towards Ipswich in the afternoon and these emissions can stagnate west of Ipswich in the evening. In the morning, these pollutants are transported back towards Brisbane.
- b. During winter, pollutants from Brisbane travel south-west to Ipswich in the evening and return to Brisbane the following morning.

12. This regional air dispersion pattern significantly influences the air quality in the Ipswich area, including RAAF Base Amberley.

13. The potential air impacts of the Super Hornet at RAAF Base Amberley were assessed by estimating emissions for a worst case hour of operations and modelling these emissions to predict the concentrations at modelled locations. The worst case intensive hour modelling used for Super Hornet operations at RAAF Base Amberley was 14 aircraft taking-off in one hour.

14. The Public Environment Report concluded that the potential for air quality impacts from Super Hornet operations are very small. Local air quality is more likely to be influenced by other sources, including regional air dispersion. The predicted concentrations from Super Hornet operations were higher than for F-111 operations because more aircraft can potentially take off each hour. The methodology used for the assessment was considered conservative, and it was concluded that there is a low risk of new air quality impacts from Super Hornet operations at RAAF Base Amberley.

15. Given the minimal predicted air quality impacts of Super Hornet flying operations at Amberley, no specific impact mitigation measures were proposed.

16. Air quality monitoring has been conducted to date for the following 4 periods:

- a. June 2014 to May 2015
- b. June 2015 to May 2016
- c. June 2016 to May 2017
- d. July 2018 to December 2018

17. Analysis of the air quality data found there were no exceedances of air quality objectives on any days where there were Super Hornet movements. However, the record of

⁷ PER documents can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [<https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations>].

movements throughout all monitoring periods showed movements below the number required to validate the air quality model in accordance with the superseded condition 4(b). The current variation to the conditions of approval has removed this requirement outlined in the former condition 4(b).

PUBLIC CONSULTATION - ISSUES RAISED AND DEFENCE RESPONSES

18. As part of the public consultation process for the Draft Public Environment Report, concerns were raised about the air quality impacts of Super Hornet flying operations in relation to the effects on water quality in rainwater tanks.
19. One submission highlighted that fuel dumping and additional flight movements may have impacts on water quality. It was noted that residents to the south, west and north of RAAF Base Amberley only have access to rainwater tanks as a source of drinking water and dams for watering livestock.
20. Defence responded that the Super Hornet aircraft is capable of releasing fuel during flight in order to reduce the weight of the aircraft for a safe landing. This is only done in emergency situations and in accordance with strict procedures. Fuel dumping is completed no lower than 6,000 ft (1,820m) above ground level, preferably over the sea. Fuel jettisoned at these heights vaporises almost immediately and disperses into the air.
21. Another submission expressed concerns about impacts on water quality in rainwater tanks and proposed a testing regime on selected properties to provide an assurance that before and after effects on water quality will not be negative.
22. Defence responded that potential impacts to water quality in rainwater tanks from military aircraft operations have been studied previously, for example at RAAF Base Williamstown. At Williamstown, water samples were taken from 20 tanks near flight paths and three control samples away from the area. These samples were evaluated for hydrocarbons (essentially kerosene) present in fuel, metals and formaldehyde. Evidence from Williamstown suggest that there needs to be careful consideration of the indicators/markers used in the testing/monitoring as some indicators do not have a direct correlation with other possible contaminants. All of the sampled water was within guidelines for suitability for drinking. No petroleum hydrocarbons were detected, suggesting that there is no detectable contamination of rainwater tank water from hydrocarbons present in aircraft fuel and exhaust emissions. Metals, at low concentrations, were found in some samples, but there was no correlation between their presence and aircraft flight paths.
23. Although the previous study found no relationship between aircraft overflight and quality of water in rainwater tanks, Defence recognises the concerns of the community around RAAF Base Amberley. To address these concerns, in 2009, Defence undertook water quality testing of selected rainwater tanks⁸. This was achieved through collection of water samples from rainwater tanks near current flight paths and control samples from areas away from the area.
24. In late 2013, Spotless Facility Services Pty Ltd engaged AECOM Australia Pty Ltd (AECOM) to undertake a second round of testing. This was undertaken between 25 November 2013 and 3 February 2014. The second round of testing was to allow assessment of any impact

⁸ The [2010 - Rainwater Tank Testing Super Hornet Public Environment Report](https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2010.pdf) (<https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2010.pdf>) can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website (<https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations>)

as a result of the introduction of the Super Hornet.

25. In accordance with the F/A-18F Australian Super Hornet Air Quality Monitoring Plan Version 1.0⁹:

- a. Water sampling was completed within a one week period during dry-weather conditions. Water samples were analysed for the following constituents based on likely emissions from aircraft:
 - (1) Metals (Arsenic, Beryllium, Cadmium, Chromium, Nickel, Lead, Zinc);
 - (2) Formaldehyde;
 - (3) Total Petroleum Hydrocarbons (C10-C36); and
 - (4) Polycyclic Aromatic Hydrocarbons (phenanthrene, fluoranthene, pyrene, anthracene, benzo(a) pyrene, benzo(a)fluoranthene, chrysene, anthanthrene and naphthalene).
- b. Results were assessed against Australian Drinking Water Guidelines (National Health and Medical Research Council and Agricultural and Resource Management Council of Australian and New Zealand, 2011) and formed the baseline for comparison of water quality results following introduction of the Super Hornet fleet.

⁹ The [Australian Super Hornet Air Quality Monitoring Plan V1.0](https://www.defence.gov.au/sites/default/files/2022-12/AustralianSuperHornetAirQualityMonitoringPlanVersion1.0-2012.pdf) [https://www.defence.gov.au/sites/default/files/2022-12/AustralianSuperHornetAirQualityMonitoringPlanVersion1.0-2012.pdf] can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations]

AIR QUALITY MONITORING

Requirement 1

Monitor air quality near a sensitive receiver in close proximity to or on RAAF Base Amberley.

26. Defence will establish an air quality monitoring station(s) near a sensitive receiver in close proximity to or on RAAF Base Amberley to monitor air quality. The Public Environment Report identified seventeen locations as potentially sensitive to air quality impacts from Super Hornet flying operations.

27. AECOM conducted an Air Quality Monitoring Station Site Selection analysis for the Australian Super Hornet operations at RAAF Base Amberley (dated 23 May 2014). In accordance with the Air Quality Monitoring Plan site selection criteria and the requirements of Australian Standard *AS/NZS 3580.1.1:2007 – Methods for sampling and analysis of ambient air Part 1.1: Guide to siting air monitoring equipment*, the site selection analysis nominated a preferred monitoring location. After communication with members of the surrounding Amberley RAAF base community regarding sensitive receptor locations, such as a Childcare Centre, the preferred and selected location for the air quality monitoring station was identified as a grassed area on the western side of the parking lot behind building A052, shown as “Monitoring Location” in Figure 1. Coordinates of the monitoring station are: 27° 38’ 24.92” S, 152° 41’ 39.02” E.



Figure 1: Location of monitoring station (green) in relation to weather station (yellow)

28. Defence will engage the services of a consultant with suitable expertise to undertake

air quality monitoring and reporting. The consultant will be selected based on task appreciation, methodology, relevant experience and value for money. The consultant will determine the optimal location for a monitoring station based on relevant siting criteria including, but not limited to:

- a. proximity to aircraft take-off flight paths;
- b. domestic and residential emitters (principally traffic),
- c. prevailing winds;
- d. access to services (electricity and telecommunications);
- e. landholder consent; and
- f. arrangements to secure the monitoring equipment.

29. The air quality objectives for the Air Quality Monitoring Plan are taken from the Public Environment Report. They are the relevant air quality objectives specified in the Queensland *Environment Protection (Air) Policy 2008* [EPP (Air)], as shown in Table 1. The EPP (Air) air quality objectives are consistent with the National Environment Protection (Ambient Air Quality) Measure 2015.

Requirement 2

A process for validation of the accuracy of Super Hornet air quality impacts modelled in the PER of the action.

30. Consultants will be engaged by Defence to collect, evaluate and report the air quality data collected from the air quality monitoring station. The results will be the production of an Air Quality Monitoring Report which is planned to be published annually, during testing periods. The report will evaluate the accuracy of the predictions about Super Hornet air quality impacts as modelled in the Public Environment Report. The report will also compare the measured air quality data to the air quality objectives identified in Table 1.

31. The annual Air Quality Monitoring Report will be tabled to the local community through the Amberley Consultative Working Group (ACWG), which includes representatives from Federal, State and Local governments, community leaders and interested members of the community. The annual Air Quality Monitoring Report will be made available on the Australian Super Hornet flying operations website¹⁰.

¹⁰ Air Quality Monitoring Reports can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [<https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations>]

Table One: Relevant Air Quality Objectives from EPP(Air)

Table 1: Standards for Pollutants

Column 1 Item	Column 2 Pollutant	Column 3 Averaging period	Column 4 Maximum concentration standard	Column 5 Maximum allowable exceedances
1	Carbon monoxide	8 hours	9.0 ppm	1 day a year
2	Nitrogen dioxide	1 hour 1 year	0.12 ppm 0.03 ppm	1 day a year None
3	Photochemical oxidants (as ozone)	1 hour 4 hours	0.10 ppm 0.08 ppm	1 day a year 1 day a year
4	Sulfur dioxide	1 hour 1 day 1 year	0.20 ppm 0.08 ppm 0.02 ppm	1 day a year 1 day a year None
5	Lead	1 year	0.50 µg/m ³	None
6	Particles as PM ₁₀	1 day 1 year	50 µg/m ³ 25 µg/m ³	None None
7	Particles as PM _{2.5}	1 day 1 year	25 µg/m ³ 8 µg/m ³	None None

Source: *National Environment Protection (Ambient Air Quality) Measure* (NEPM)
<https://www.legislation.gov.au/Details/F2016C00215>

32. The air quality monitoring and reporting will occur for a minimum period of 3 years. Sufficient data must be collected in order to determine the accuracy of the air quality impacts predicted in the PER. A failure to validate the accuracy of the air quality impact predictions published in the PER would warrant the air quality monitoring and reporting to continue.

33. Monitoring and reporting has occurred for the following periods:

- a. June 2014 to May 2015
- b. June 2015 to May 2016
- c. June 2016 to May 2017

34. The reports could not confirm the accuracy of the air quality predictions in the PER, citing there were insufficient movement numbers recorded during the three years to draw conclusions.

- a. Further monitoring and reporting was undertaken for July – December 2018, but again there were insufficient movement numbers recorded to draw conclusions.
- b. An internal review of the reports was conducted in 2020, and found that the movements numbers used were lower than the numbers recorded in the highly accurate Noise and Flight Path Monitoring system. A preliminary assessment concluded there were likely enough movements to validate the air quality impact predictions.
- c. Hence in order to validate the accuracy of the air quality impact predictions, either the air quality monitoring and reporting must continue, or a reassessment be performed using higher quality data for air movements such as from the Noise and Flight Path Monitoring system.
- d. Air Force Head Quarters contracted Umwelt to conduct a review into the historical Air Quality monitoring results at RAAF base Amberley. The intent of the review was to determine why, after over 21000hrs of air quality monitoring for the Super Hornets we were still unable to validate the modelling in the PER as well as if the air quality monitoring program should continue in association with condition 4 of EPBC 2008/4410.

The review confirms that from over 21,000 hours of air quality monitoring data that impacts are small, the Queensland criteria are readily complied with and that the overall findings (i.e., order of magnitude of air quality impacts predicted by the PER) are accurate and that ongoing monitoring isn't necessary to confirm or further validate these findings. The outcome being that continuation of the air quality monitoring program is no longer planned.

<https://www.defence.gov.au/sites/default/files/2022-12/Review-Australian-Super-Hornet-Air-Quality-Monitoring-Data.pdf>

Requirement 3

Should the measured air quality values exceed relevant air quality objectives, a commitment to working with the relevant State authorities to determine sources of pollutants and potential mitigation measures.

35. The air quality monitoring undertaken between 2014 and 2018 confirmed that relevant air quality objectives were not exceeded.

RAIN TANK WATER MONITORING

Requirement 4

An undertaking to post the results of rain tank water quality testing conducted in accordance with the Public Environment Report on an appropriate website for public information.

36. In 2009, prior to the introduction of Super Hornet, Defence conducted a first round of rain tank water testing.

37. A report describing the results of the rainwater tank water quality testing is available on the Aircraft Noise website¹¹. A copy is available from the Ipswich Library, 40 South Street, Ipswich. Members of the public may also request a copy of the report by contacting the RAAF Base Amberley Air Base Operations Centre.

Requirement 5

In the event that rainwater contamination is found to occur as a result of the proposal, identification and implementation of appropriate measures to mitigate the contamination.

38. The water quality tests were repeated between November 2013 and February 2014¹², following the introduction of all 24 F/A-18F aircraft. The results showed there was no detectable relationship between the ASH operations at RAAF Base Amberley and the concentration of contaminants in water samples from rainwater tanks in the vicinity of the base. No further water quality monitoring is planned.

¹¹ The [2010 - Rainwater Tank Testing Super Hornet Public Environment Report](https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2010.pdf) [https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2010.pdf] can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations]

¹² The [2014 - Rainwater Tank Testing - Post Introduction Testing - Australian Super Hornet Flying Operations](https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2013.pdf) [https://www.defence.gov.au/sites/default/files/2022-12/RainwaterTankTestingSuperHornetReport-2013.pdf] can be accessed from the [Australian Super Hornet flying operations](https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) website [https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations]

ANNEX A – RECOMMENDATIONS FROM 2019 COMPLIANCE AUDIT

The Australian Super Hornet Independent Compliance Audit (Umwelt, 2019) made a number of recommendations in regard to the Australian Super Hornet Air Quality Monitoring Plan, Version 1.0 (Defence, 2012).

A summary of Air Quality Monitoring Plan recommendations and resolutions is provided below.

Audit Reference and Recommendation	Defence Remediation Action
Condition/Indicator 4/1.3.1 It is recommended that the annual review of the Air Quality Monitoring Plan be completed as detailed in the Plan, or the Plan be amended to reflect the intended review cycle. The plan would benefit from a thorough revision to ensure all details within it are up to date and to reflect what is intended to be conducted in order to maintain compliance with Condition 4. All reports required to be made available on the web should be uploaded and air quality monitoring reports should be tabled at the Amberley Consultative Working Group meetings.	Annual review governance is now formalised in section DOCUMENT CONTROL. A complete overhaul of the plan has been made to bring all details up to date, as detailed in Annex B. All reports are available on the Australian Super Hornet flying operations website (https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations) and have been scheduled for tabling at the Amberley Consultative Working Group meeting.
AQMP V1.0 paragraph 3 Update Plan with current web location of the Public Environment Report (PER).	Mentions of the PER are now footnoted with the current link: Australian Super Hornet flying operations (https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations)
AQMP V1.0 paragraph 21 The plan should be updated to include a figure that shows the location of the air quality monitor.	Location details were added in paragraph 27, and a figure displaying the location was added on page 7.
AQMP V1.0 paragraph 29 Update Plan with current web location of rainwater tank test results. Ensure tank testing results are posted on the website, provided to Ipswich library and provided to the public if requested.	The rainwater tank sampling test results have been published to Australian Super Hornet flying operations website (https://www.defence.gov.au/about/accessing-information/environmental-compliance-reports/australian-super-hornet-flying-operations)

Audit Reference and Recommendation	Defence Remediation Action
AQMP V1.0 paragraph 32 It is recommended that all of the requirements specified in the Air Quality Monitoring Plan be implemented or the Plan be reviewed, updated and changes approved by the Minister. Given the Plan has not been reviewed and updated since October 2012, a review and update to the Plan is highly recommended.	This updated plan was prepared, incorporating all recommendations concerning changes to the Air Quality Monitoring Plan, and V2.1 submitted to the Environment Minister for consideration.

ANNEX B – DETAILS OF PLAN UPDATES

Version 2.0, 04 Sep 2020

All references are in relation to V1.0 unless otherwise stated.

Document Reference	Change	Justification
Section DOCUMENT CONTROL	New section that formalises a review and governance process.	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Section BACKGROUND	Updated to reflect recent history, summarise companion plans, reflect introduction of E/A-18G Growlers.	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Section SCOPE	Removed details of companion plans.	Simplification; other plans are listed for reference, but their details not required to implement the AQMP.
Section COMPLIANCE WITH THIS PLAN	New section	Formalises document history and transition to new Plan.
Section RECORD KEEPING	New section that formalises governance process.	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Section SUMMARY OF LIKELY SUPER HORNET AIR QUALITY IMPACTS FROM THE PUBLIC ENVIRONMENT REPORT	Updated to reflect recent history	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Section PUBLIC CONSULTATION - ISSUES RAISED AND DEFENCE RESPONSES	Updated to reflect recent history	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Paragraph 27	Added details about monitoring site.	To satisfy 2019 audit recommendations for AQMP V1.0 para 21 (refer Annex A)

**Australian Super Hornet
Air Quality Monitoring Plan**

Paragraph 29	Removed redundant reference to National Environment Protection Council standard.	Minor tidying.
Paragraphs 33 – 35	Updated to reflect recent history	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Figure 1	Added details about monitoring site.	To satisfy 2019 audit recommendations for AQMP V1.0 para 21 (refer Annex A)
Section RAIN TANK WATER MONITORING	Updated to reflect recent history	To satisfy 2019 audit recommendations for indicator 4/1.3.1 (refer Annex A)
Paragraph 39	Updated to reflect results of rainwater tank testing and conclusion that no further testing was required.	Updating to remain current.
Section MAINTENANCE OF PLAN	Removed and replaced by sections COMPLIANCE WITH THIS PLAN, RECORD KEEPING and DOCUMENT CONTROL	Restructure.
Table 1	Updated to reflect updated Air Quality Objectives from EPP(Air)	Updating to remain current.

Version 2.1, 23 Jun 2022

All references are in relation to V2.0 unless otherwise stated.

Document Reference	Change	Justification
All	Various minor edits were made to text to enhance clarity without changing the substance.	To improve readability and accuracy of the Plan.
Section DOCUMENT CONTROL	Removed statement: Annual reviews do not need the Minister's approval.	This statement is not compatible with the Conditions of Approval, which do require Ministerial approval if significant changes are made.
Section DOCUMENT CONTROL	Replacement text was provided (see <i>NOTE</i> in the text), to be implemented once a request to change Condition 8 is approved, which will allow changes to management plans without approval from the Minister in some circumstances.	This is only placeholder text, but will become necessary in order to bring the Plan into alignment with any changes to Condition 8.
Paragraph 9	Updated the version number of the Plan from 2.0 to 2.1	Required since 2.1 is now the approved version of the Plan.
Paragraph 17	Updated references to Condition 4b to reflect changes to the Conditions of Approval in 2014.	To bring the Plan up to date with current Conditions.
Paragraph 24	In reference to rainwater tanks, added: In late 2013, Spotless Facility Services Pty Ltd engaged AECOM Australia Pty Ltd (AECOM) to undertake a second round of testing. This was undertaken between 25 November 2013 and 3 February 2014.	To reflect history of implementation of the Plan
Paragraph 27	In relation to monitor site selection, added: After communication with members of the surrounding Amberley RAAF base community regarding sensitive receptor	To clarify history of air quality monitor site selection

	locations, such as a Childcare Centre	
Paragraph 29	Corrected reference to National Environment Protection (Ambient Air Quality) Measure 2015.	Corrections to text.
Paragraph 34	This is a major update that replaces paragraphs 34 and 35 in V2.0. This change reports on an air quality monitoring assessment performed by an independent third party auditor, which found that Defence had in effect met its air quality monitoring requirements and that further air quality monitoring was not required.	To update history of developments in air quality monitoring and provide justification for the cessation of air quality monitoring.
Annex A	Minor edits to update references and paragraph numbers.	Corrections to text.
Annex B	A new addition to the Plan that details compliance with the recommendations made in the Australian Super Hornet Independent Compliance Audit (Umwelt, 2019).	To record and detail compliance with the 2019 audit recommendations.
Annex C	A new addition to the Plan that details changes made since V1.0	

Version 2.2, July 2026

References are in relation to Version 2.1.

Document Reference	Change	Justification
Section DOCUMENT CONTROL	Amended to align with Variation 3 (2023) of the conditions of approval, specifically Condition 8 and its subparts. Annual review requirements have been changed to as required or at least every five years.	To align with updated and approved conditions of approval. Changing annual review periods will not have a new or increased impact on the environment as this Plan has met all requirements and is no longer ongoing.
Throughout	Updated web links	To bring document up to date.
Throughout	Minor edits	Corrections and clarifications, without changing any requirements.
Paragraph 3	New paragraph to explain the structure of the Public Environment Report and its referenced documentation.	Text added for clarity.
Paragraph 7	Amended to reflect scope of most recent variation to the conditions (2022).	No change to requirements, change required to make document current.
Paragraph 8	Removed – text was in reference to the original wording of Condition 4 which set out the requirements of the AQMP. This text was replaced in the 2014 variation to the conditions.	No change to requirements; removed text no longer current. Original requirements are retained in this Plan.
Paragraph 9	Updated to reflect compliance with current plan versions.	No change to requirements; reflecting document updates.
Paragraph 34	Changed wording to make explicit that air quality monitoring is no longer being undertaken, and added further explanation as to why.	Clarification of previously approved (see V2.1) cessation of air quality monitoring.

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Paragraph 35	Updated to reflect current status of air quality monitoring.	To bring document up to date.
Annex A	Removed as no longer relevant.	To bring document up to date. Referred to historical implementation of the Plan referencing a superseded definition of Condition 4.
Annex B	Updated to keep current.	To bring document up to date.