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PFAS INVESTIGATION AND MANAGEMENT PROGRAM

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RAAF WILLIAMS, LAVERTON AND RAAF BASE POINT COOK

PFAS MANAGEMENT AREA PLAN REVISION 1

24 April 2025

ACKNOWLEDGEMENT OF COUNTRY

Defence acknowledges the Traditional Custodians of Country throughout Australia. Defence recognises their continuing connection to traditional lands and waters and would like to pay respect to their Elders both past and present. Defence would also like to pay respect to the Aboriginal and Torres Strait Islander peoples who have contributed to the defence of Australia in times of peace and war.

ABOUT THIS DOCUMENT

This is the Defence PFAS Management Area Plan (PMAP) Revision 1 for RAAF Williams, Laverton and RAAF Base Point Cook.

This PMAP Revision replaces the PMAP for RAAF Williams Laverton dated August 2022.

The purpose of this PMAP is to document Defence's plan to manage potential risks to human health and the environment from PFAS on and from RAAF Williams Laverton and RAAF Base Point Cook. It provides an overview of the actions undertaken to date, ongoing and future actions.

The Environment Protection Authority Victoria and other relevant state and local agencies have been consulted in the development of this document.

Executive Summary

Background

In 2022, Defence published the initial Royal Australian Air Force (RAAF) Williams, Laverton PFAS Management Area Plan (2022 PMAP) for managing risks to human health and the environment from per- and poly-fluoroalkyl substances (PFAS) contamination associated with the base and surrounding areas. The contamination is mostly concentrated in areas where Aqueous Film Forming firefighting foams (AFFF) containing PFAS as an active ingredient, were previously stored, disposed of, or used for fire-fighting training.

Since the 2022 PMAP for the base was developed, Defence has implemented parts of the plan and undertaken further investigation and monitoring. Based on the progress achieved within the plan and the additional data obtained, Defence has used this information to revise the methodology required to manage the risks associated with PFAS.

In conjunction with RAAF Williams, Defence is also managing PFAS contamination at RAAF Base Point Cook. As both bases fall under the RAAF Williams operational region, this PMAP revision sets out the plan to manage risks to human health and the environment from exposure to PFAS contamination for both bases.

PFAS source areas, transport pathways and risk – RAAF Williams, Laverton

A total of four PFAS source areas have been identified through previous investigations undertaken at RAAF Williams, Laverton, these being:

- Source Area (SA) 01 – Wet Testing Area (extends partially off-base)
- SA02 – Western Finger Area (extends partially off-base)
- SA03 – Former Secondary Fire Training Area
- SA04 – Former General Engineering and Maintenance Store (GEMS) Compound (general engineering and maintenance) (now off-base and extends partially on-base)

PFAS was found to migrate away from identified source areas via pathways in surface water and groundwater. PFAS has been detected in surface water and groundwater, which has subsequently entered and been detected in samples taken from off-base waterways including Skeleton Creek and Laverton Creek.

Earlier studies suggest that people and animals may be exposed to PFAS at RAAF Williams, Laverton. This includes people consuming fish and eels from Skeleton Creek, animals coming into contact with contaminated soil both on and off the base, and wildlife being exposed to PFAS-affected water in Skeleton Creek and Laverton Creek off the base.

Two additional historical source areas associated with fire-fighting training are located in the Williams Landing area, west of the RAAF Williams Laverton. This land was previously part of RAAF Williams Laverton but was divested by Defence between 1996 and 2014 for residential development. While the primary fire-fighting infrastructure was removed during development, legacy PFAS has been identified in groundwater in the area.

PFAS source areas, transport pathways and risk – RAAF Base Point Cook

A total of ten PFAS source areas have been identified through previous investigations completed at RAAF Base Point Cook, including:

- SA01 – Former Fire Training Area
- SA02 – Fire Training Compound
- SA03 – Fire Fighting Practice Areas
- SA04 – Fire Fighting Practice Area C
- SA05 – The Fuel Farm
- SA06 – Old Hangers, Aircraft Parking, Refuelling & Maintenance
- SA07 – The Airfield
- SA08 – Sewage Treatment Plant and Rifle Range, Munitions / Sludge Dump
- SA09 – RAAF Lake and surface water discharge channels
- SA10 – Army & Air Force Canteen Service - Service Station and Car Wash

Surface water and groundwater have been identified as the principal way PFAS leaves source areas, migrating across RAAF Base Point Cook and off-base. Past sampling has detected PFAS in the surface water, groundwater, RAAF Lake and from pore water along the Port Phillip Bay foreshore.

Based on earlier studies undertaken at the base, exposure risks were identified. These exposures included people coming into contact with the soil in source areas on the base, people coming into contact with the surface water and shallow groundwater both on and off the base, and people eating seafood caught in Port Phillip Bay. Ecological exposure of animals and animal predators in areas near the base was also identified. The human health risk assessment undertaken at the time concluded that the risks to humans exposed to PFAS migrating from the base was low and acceptable, however there was no seafood consumption data included in the study. It is noted however, that the waters of Port Phillip Bay receive multiple sources of urban water that may contain PFAS.

Complete and Ongoing Risk Management Actions

The actions to assess and manage potential risks and the current status for each base are summarised in the following table.

Action	Description	Status
Action 1: Undertake a PFAS Mass Flux Assessment	A long term study to assess PFAS migration within the environment through repeated sampling. This commenced in Q3 2024 and will be completed over a period of approximately 12 months for both bases.	Commenced
Action 2: Off-base receptor management – Administrative Controls	At RAAF Williams, Laverton Defence has implemented signage along Skeleton Creek relating to precautionary advice. Defence will continue to implement long-term administrative controls at this base.	Ongoing
Action 3: Ongoing Monitoring Program	Defence has completed three sampling events on and off-base at RAAF Williams, Laverton since the initial 2022 PMAP. The Ongoing Monitoring Plan (OMP) has been revised and now incorporates RAAF Base Point Cook within this program. Defence will continue monitoring both bases under the revised PMAP.	Ongoing

Action	Description	Status
Action 4: Detailed Ecological Risk Assessment	An Ecological Risk Assessment (ERA) to address recommendations of previous work completed at each base commenced in Q3 2024 and will take approximately 12 months to complete.	Commenced
Action 5: Detailed Human Health Risk Assessment	At RAAF Base Point Cook, a Human Health Risk Assessment (HHRA) will be completed to address recommendations of previous work. Additional work to inform the HHRA commenced in Q3 2024 and will take approximately 12 months to complete. A risk assessment has been completed previously for RAAF Williams, Laverton as part of earlier work at this base.	Commenced

The risk management actions summarised in the table above will strengthen Defence's understanding of PFAS at each base and inform the future ongoing monitoring program and remedial works.

CONTENTS

GLOSSARY

AAFCANS	Army & Air Force Canteen Service
AFFF	Aqueous Film Forming Foam
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure, as amended 2013
Bases	RAAF Williams, Laverton and RAAF Base Point Cook
CBD	Central Business District
CSM	Conceptual Site Model
DSI	Detailed Site Investigation
ERA	Ecological Risk Assessment
FTA	Fire Training Area
FTC	Fire Training Compound
GEMS	General Engineering and Maintenance Store
ha	Hectares
HHRA	Human Health Risk Assessment
Management Area	The geographical area subject to Defence risk management actions. May include private or Defence owned detached properties beyond the boundaries of the base.
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
Off-site	Off-base (or other Defence property)
OMP	Ongoing Monitoring Plan
On-site	On-base (or other Defence property)
PMAP	PFAS Management Area Plan
PFAS	Per- and poly-fluoroalkyl substances
PFAS NEMP	PFAS National Environmental Management Plan
RAAF	Royal Australian Air Force
Risk management actions	Remediation and management actions to address potential risks to receptors from PFAS contamination.
Risk assessment(s)	The HHERA and/or HHRA
RMIT	Royal Melbourne Institute of Technology
Source	A source can be primary or secondary. Primary sources are generally areas where AFFF was used, stored or disposed of. Secondary sources may be an accumulation of contamination in the environment, such as in soil, sediments, or surface water bodies.

SA	Source Area
STP	Sewage treatment plant

Unless otherwise defined in this document, definitions provided in the PFAS National Environmental Management Plan (NEMP), or the ASC National Environment Protection Measure (NEPM) apply.

1 INTRODUCTION

1.1 Background and Purpose

In August 2022, Defence published the PFAS Management Area Plan (2022 PMAP) for Royal Australian Air Force (RAAF) Williams, Laverton to manage risks to human health and the environment from per- and poly-fluoroalkyl substances (PFAS) contamination associated with the base and surrounding areas.

Since the 2022 PMAP for RAAF Williams, Laverton was developed, Defence has implemented parts of the plan and reassessed what is now needed to manage the risk associated with PFAS contamination.

This assessment considered:

- Progress made since the implementation of the 2022 PMAP
- Data obtained from investigation and monitoring of PFAS conducted as per the Ongoing Monitoring Plan (OMP)
- A review of factors such as changes to government policy settings, base conditions and scientific methodologies and technology.

In conjunction with RAAF Williams, Defence is also managing PFAS contamination at RAAF Base Point Cook. As both RAAF Williams, Laverton and RAAF Base Point Cook fall under the RAAF Williams operational region, this PMAP revision sets out the updated and consolidated plan to manage risks to human health and the environment from exposure to PFAS contamination for both bases.

This PMAP revision has been developed in accordance with the PFAS National Environmental Management Plan (NEMP) (HEPA, 2025), which provides nationally consistent environmental guidance and standards for managing PFAS contamination. It is also consistent with Defence estate, environmental, and PFAS-specific strategies and guidance.

PMAPs are reviewed, and if required, updated periodically to account for changes in circumstances, such as progress in management and remediation, new monitoring data, changes in legislation, guidelines and policy, and advances in scientific information.

1.2 Management Priorities

In managing PFAS contamination to reduce risks to human health and the environment, Defence prioritises:

- minimising exposure to PFAS
- preventing or minimising migration of PFAS from the bases
- keeping the community informed.

1.3 Supporting Information

This PMAP revision is based on information from a range of different investigations including ongoing monitoring and sampling findings, human health and ecological risk assessments, and remediation activities. Further details and a full copy of these reports are provided on the Defence PFAS Investigation and Management program website.

The reports identified a range of potential health and environmental risks from exposure to PFAS, which are the focus of the risk management actions outlined in this document.

1.4 Limitations and Assumptions

This document has been developed based on the information available at the time of preparation, and incorporates the following limitations and assumptions:

- The currency and applicability of prior knowledge presented within the reports listed in Appendix A
- Due to data gaps in the current state of knowledge, the risk associated with PFAS at RAAF Base Point Cook remains uncertain. The data gaps are related to limited spatial and temporal monitoring data for key environmental media (including surface water, soil, sediment, pore water and groundwater), and the absence of biota data. Acknowledging existing data gaps and uncertainties in the PFAS risk assessment, it is essential to consider that the broader receiving environment, particularly Port Phillip Bay, is also subjected to potential PFAS contamination and industrial pollution from multiple other sources
- There is uncertainty in the understanding of PFAS mass migrating from RAAF Williams, Laverton and RAAF Base Point Cook, the relative contributions of the different source areas, the surface water and groundwater discharge mechanisms, and the potential risk to human health and the environment
- Government issued guidelines, advisories and policies
- Base infrastructure development and access constraints at the time of this report being prepared
- The current and ongoing development of the Williams Landing area within the former extent of RAAF Williams, Laverton.

This PMAP will be revised if new information (such as revised guidelines, regulatory requirements, site data or remedial techniques) becomes available and the characterisation of risk changes, requiring a revised management or remediation approach.

2 DESCRIPTION OF MANAGEMENT AREAS

The PFAS Management Area comprises RAAF Williams, Laverton and RAAF Base Point Cook and surrounding areas, as shown on Figure 1 in Appendix C.

RAAF Williams, Laverton and RAAF Base Point Cook are two separate bases and are located approximately 17 km and 20 km respectively to the southwest of the Melbourne central business district (CBD). The Bases are approximately 6.4 km from each other in a north-south direction.

2.1 RAAF Williams, Laverton

RAAF Williams, Laverton is approximately 150 hectares (ha) in size and currently consists of a series of administration and former residential buildings, warehouses, open storage areas, and sporting facilities.

The former extent of RAAF Williams, Laverton established in 1921 was approximately 430 ha. Following the closure of the airfield in 1996, the western half of RAAF Williams, Laverton comprising the former airfield, was sold and subsequently redeveloped as a mixed use (primarily residential) precinct. The portion of the land that was sold is now known as the suburb of Williams Landing.

The main activities at RAAF Williams, Laverton over time have included flight training, flight programs, general aircraft maintenance and testing, air surveys, and air shows. In recent times, operations at RAAF Williams, Laverton have reduced with the main functions now being related to (non-flight) training facilities, storage, maintenance and administration buildings, temporary accommodation, a childcare centre and sporting facilities.

Historically, PFAS-containing aqueous film forming foams (AFFF) were used in emergencies, and during fire training. In addition, electroplating has also been undertaken in buildings on-base. Electroplating typically used PFAS as a mist suppressant. PFAS has been identified in soils, surface water and groundwater (Quaternary age Newer Volcanics aquifer), both on-base and off-base.

The term '**Management Area**', as it applies to RAAF Williams, Laverton applies to two distinct areas:

- **On-site Monitoring Area**, which relates to the current extents of RAAF Williams, Laverton
- **Off-site Monitoring Area**, which includes private properties and public land to the west (former base extent), south-west and south of the base, and waterbodies and adjacent land situated hydraulically downgradient of the base, including Skeleton Creek and Sanctuary Lakes. Activities to be implemented in the off-Site Monitoring Area will focus on ongoing monitoring (sampling).

The land uses surrounding RAAF Williams, Laverton, are summarised in Table 1 and remain unchanged since the Management Area was originally defined. This, coupled with the understanding of risk associated with PFAS on and off-base at the time of preparing this PMAP revision mean that no changes to the Management Area have been proposed.

Table 1. RAAF Williams, Laverton surrounding land uses

Direction	Description
North	Laurie Emmins Reserve, which includes a picnic area, recreational lake, sporting clubs and a scout hall. Laverton Creek enters the base along the north eastern boundary. Further north and northwest are the suburbs of Laverton North and Truganina which consist of residential or industrial areas.
South	A railway corridor, which includes an Aircraft railway station, and light industrial areas are directly south of RAAF Williams, Laverton. Skeleton Creek, which drains into the Cheetham Wetlands approximately 4 km from the base, runs south of RAAF Williams, Laverton at a distance of approximately 500 m. Altona Meadows which consists of predominantly residential properties is situated to the south and south-west.
East	A residential area of Laverton is located directly east of RAAF Williams, Laverton. Laverton Creek flows beyond the eastern boundary and continues in an easterly, south easterly direction. Adjacent to the southeast corner of the base is a warehouse, surrounding by hardstand paving which is used for commercial activities. Laverton Secondary college is located approximately 100 m east of RAAF Williams, Laverton.
West	The mostly residential suburb of Williams Landing is located directly west of RAAF Williams, Laverton. The suburb also includes a natural wetland known as Laverton RAAF Swamp, along with several other smaller constructed wetlands (Ashcroft, Addison and Kingwell wetlands), conservation areas for native grassland, sporting ovals, and commercial areas.

2.2 RAAF Base Point Cook

RAAF Base Point Cook is approximately 341 ha in size and consists of accommodation and administration buildings, a rifle range and former sewage treatment plant (STP), a museum, aircraft hangers, an airfield and RAAF Lake, sand dunes and foreshore areas.

RAAF Base Point Cook is the oldest continuously operated military airfield in the world. It is the birthplace of the Australian Flying Corps and Royal Australian Air Force and was included in the National Heritage List in 2007. The base is currently used for aviation training by the RAAF, civilian aircraft, and commercial tenants including the Royal Melbourne Institute of Technology (RMIT) Flight Training Centre and the RAAF Museum.

PFAS-containing AFFF was historically used in emergencies and during fire training exercises at RAAF Base Point Cook. The main fire training area was located on the sand dunes to the east of the airfield within the boundary of the base itself. PFAS have been detected in soils, surface water (drains, RAAF Lake and Port Phillip Bay) and groundwater (Quaternary age sediments), both on-base and off-base.

A Management Area had not previously been developed for RAAF Base Point Cook. The term '**Management Area**', as it applies to RAAF Base Point Cook herein, has been defined by the current extent of monitoring locations in the OMP and can be broken down into two distinct areas:

- **On-site Monitoring Area,** which relates to the current extents of RAAF Base Point Cook
- **Off-site Monitoring Area,** which includes waterbodies and adjacent land situated hydraulically downgradient of the base to the south and east, including RAAF Lake, a portion of Port Phillip Bay, and a portion of land managed by Parks Victoria.

At the time of preparing this PMAP revision, further investigations were underway to understand the extent of PFAS across the identified source areas on the base and the potential for offsite migration of PFAS in surface water and groundwater. Once this has been completed, the potential risks to human and ecological health will be refined and further evaluated.

The land uses surrounding RAAF Base Point Cook are summarised in Table 2.

Table 2. RAAF Base Point Cook Surrounding Land Uses

Direction	Description
North	The northern half of RAAF Lake is located within the Point Cook Coastal Park. The residential suburb of Point Cook is located north of Point Cook Homestead Road.
South	Port Phillip Bay, with much of the area adjacent to RAAF Base Point Cook, is commonly used for recreational fishing. Access to the beach is restricted in the southeast and southwest of RAAF Base Point Cook.
East	Point Cook Coastal Park with the historical Point Cook Homestead is located on RAAF Base Point Cook eastern boundary. Within and extending into Port Phillip Bay is the Point Cook Marine Park and area of Ramsar listed wetlands.
West	The area to the west and southwest of RAAF Base Point Cook comprises residential properties and the market gardening area of Werribee South.

Information about the current Management and Monitoring Areas, and the environmental setting, such as climate, topography, geology, hydrology and various other aspects is provided in previous investigation documents, as listed in Appendix A.

3 EXTENT OF PFAS CONTAMINATION

This section provides an outline of the sources of PFAS contamination, transport pathways for migration of PFAS from a source area, and potential receptors such as humans and ecosystems that may be exposed to PFAS from RAAF Williams, Laverton and RAAF Base Point Cook.

Collectively, this information is used to develop a Conceptual Site model (CSM) for each base, which is provided in Appendix B. As part of this PMAP revision, the existing CSM for RAAF Williams, Laverton and RAAF Base Point Cook, including surrounding areas was reviewed for currency and updated as required. Refer to the documents listed in Appendix A for more information about the reports that have informed the latest revision of the CSM.

3.1 Source areas

Source areas can either be primary source areas or secondary source areas. Primary source areas are generally areas of PFAS contamination where AFFF was used, stored or disposed of, for example, a fire training area. Secondary source areas contain an accumulation of PFAS contamination in the environment, such as in soil, sediment, or surface water bodies, which has migrated from a primary source area.

The PFAS source areas that have been identified through previous investigations (Appendix A) are summarised in Table 3 for RAAF Williams, Laverton, and Table 4 for RAAF Base Point Cook. A map showing these source areas is provided as Figure 2A and Figure 2B in Appendix C.

Further investigations to help inform the assessment and implementation of management or remedial options are currently being undertaken and are outlined in the risk management actions within Section 4.

3.1.1 RAAF Williams, Laverton – Source Areas

The initial Detailed Site Investigation (DSI) (Aurecon, 2020) identified a total of 31 potential PFAS source areas across RAAF Williams, Laverton and the former base extent. Due to the refined understanding of historical uses of the base, results of ongoing field investigations, and the geographical overlap of some source areas, these have since been consolidated into four major source areas, as outlined in Table 3 (Refer to Appendix C, Figure 2A for location information).

Table 3. Known source areas of PFAS – RAAF Williams, Laverton

Source Area #	Source areas	Contaminating activities	Extent of PFAS contamination
On-base Sources			
SA01	Former Wet Testing Area (CSR_VIC_000501)	The former Wet Testing Area is located on the western boundary and is associated with the former Aircraft Maintenance and Refuelling area. The Wet Testing Area was subjected to weekly AFFF usage of fire equipment. Wet testing of equipment involved the discharge of AFFF onto the concrete apron and unsealed ground to the west of the testing area and hangers. The area to the west of the hardstand has since been divested and developed into residential allotments.	• Soil has been sampled from across the source area, with PFAS concentrations ranging from: PFOS - <0.005-0.5 mg/kg, PFOA - <0.005 mg/kg, PFOS+PFHxS - <0.005-0.515 mg/kg. • Surface water samples have not been collected from this source area. • Nine groundwater monitoring wells are located across the source area in the upper basalt aquifer, with concentrations ranging from: PFOS - 18-30.8 µg/L, PFOA - 0.55-1.43 µg/L, PFOS+PFHxS - 30-58 µg/L.
SA02	The Western Finger Area (CSR_VIC_000489)	The Western Finger Area is located in the south-western portion of the base and consists of a series of source areas which have been grouped together as SA02. Located on the northern side of the Western Finger Area, the Air Movements Area was subjected to weekly 'hot wheels' training where fire trucks would extinguish/hose down aircraft wheels to prevent fires occurring. There were also several known chemical storage areas and buildings which are included in SA02.	• Soil has been sampled from targeted locations across the source area, with PFAS concentrations ranging from: PFOS - <0.005-0.033 mg/kg, PFOA - <0.005 mg/kg, PFOS+PFHxS - <0.005-0.054 mg/kg. • Surface water samples have been collected from one of the surface water in-flow locations and one surface water out-flow locations from the source area, with water concentrations ranging from: PFOS – 0.15-1.1 µg/L, PFOA - <0.01-0.01 µg/L, PFOS+PFHxS – 0.15-1.31 µg/L. • Fifty groundwater monitoring wells are located across the source area within multiple basalt aquifers, with concentrations ranging from: PFOS – <0.01-8.3 µg/L, PFOA - <0.01-0.38 µg/L, PFOS+PFHxS – 0.63-14.9 µg/L.

Source Area #	Source areas	Contaminating activities	Extent of PFAS contamination
SA03	Former Secondary Fire Training Area (CSR_VIC_000488)	The former Secondary Fire Training Area on the hillside north of Doherty's Drain Ornamental Lake was used for monthly fire training exercises from approximately 1974 to 1975, and possibly longer. The DSI (Aurecon, 2020) reported that rubbish in the landfill was set alight and extinguished with AFFF. Landfilling is known to have occurred in this area until 1989, with known filling areas comprising the balance of SA03.	• Soil has been sampled from targeted locations across select landfill areas comprising the source area, with PFAS concentrations ranging from: PFOS - <0.005-0.054 mg/kg, PFOA - <0.005 mg/kg, PFOS+PFHxS - <0.005-0.054 mg/kg. • Surface water has not been collected from the source area, although sampling is regularly completed from the neighbouring Doherty's Drain where concentrations are below drinking water and recreational water guidance values. • Two groundwater monitoring wells are located in the upper basalt aquifer within the former fire training area (FTA), with concentrations ranging from: PFOS – <0.01-0.09 µg/L, PFOA - <0.01 µg/L, PFOS+PFHxS – 0.04-0.25 µg/L.
SA04	Former GEMS Compound Surrounds (CSR_VIC_000487)	The former GEMS Compound was divested in the mid-1990s. It was the location of a range of vehicle and equipment maintenance activities, repair, painting and fuel and chemical storage. The main workshop was used for the maintenance of fire trucks and was reportedly the locations of ad-hoc fire training, and a potential area for AFFF disposal or handheld extinguisher use.	• Soil has been sampled from the on-base area immediately surrounding the former GEMS Compound, with PFAS concentrations ranging from: PFOS - <0.005-8.1 mg/kg, PFOA - <0.005-0.051 mg/kg, PFOS+PFHxS - <0.005-8.26 mg/kg. • Surface water samples have not been collected from this source area. • Two groundwater monitoring wells in the upper basalt aquifer are located in close proximity to the Former GEMS Compound boundary, with PFAS concentrations ranging from: PFOS – 3.6-49 µg/L, PFOA - 0.16-3.51 µg/L, PFOS+PFHxS – 8.1-171 µg/L.

Historic divestment of the area to the west of the current base extent occurred over the period from the mid 1990's to 2014. The land formerly contained runways, a primary fire training area and a firepower demonstration area (refer to Figure 2C). The land is now occupied by the suburb of Williams Landing.

Areas of Williams Landing that were divested and redeveloped were subject to a series of six environmental audits by several environmental auditors from when the base was divested in 1996 until 2014. While fire training was acknowledged as a former use in the audits, AFFF chemicals and PFAS were not tested as part of these audits as PFAS was not identified as a group of potential contaminants of concern at that time. However, further investigations have identified PFAS in the shallow groundwater aquifer (Newer Volcanics) that likely originated from historical fire training practices in the local area. The PFAS identified in this area is not related to known PFAS sources on the RAAF Williams, Laverton base. The primary fire training infrastructure was removed during the redevelopment of the area.

Subsequent to completion of the environmental audits, risks associated with PFAS has been evaluated in stages of the development linked to historic fire training activities. The assessment was undertaken by the same environmental auditor and human health risk assessment support team that prepared three of the previous six audit reports (SLR, 2018). Based on the assessments undertaken, the risk associated with PFAS was considered to be low and acceptable.

Ongoing monitoring of surface water and groundwater across Williams Landing are included in the OMP to monitor legacy PFAS sources and any change in understanding the risk profile and CSM while the mass flux investigation is in progress.

3.1.2 RAAF Base Point Cook – Source Areas

Previous investigations at RAAF Base Point Cook, including the DSI (Senversa, 2020) identified 10 PFAS source areas. These source areas have been summarised in Table 4 with locations shown in Appendix C, Figure 2B.

Table 4. Known source areas of PFAS – RAAF Base Point Cook

Source Area #	Source Areas Descriptor and CSR Numbers	Contaminating activities	Extent of PFAS Contamination
SA01	Former Fire Training Area (FTA) (CSR_VIC_000125, CSR_VIC_000126, CSR_VIC_000127, CSR_VIC_000128, CSR_VIC_000129, CSR_VIC_000242, CSR_VIC_000459, CSR_VIC_000469).	Located in the south-eastern corner of RAAF Base Point Cook, the former fire training area encompassed six former burn pits where various liquid fuels were lit and extinguished for training. Due to the significant contamination identified in the area, a voluntary environmental audit commenced in 2012, and subsequent soil and groundwater remediation works focused on chlorinated hydrocarbon contamination were completed in 2016. PFAS mass was likely to have been removed during the remediation works.	• Soil has been sampled from across the source area, with PFAS concentrations ranging from: PFOS - 0.0054-0.47 mg/kg, PFOA - <0.005-0.0067 mg/kg, PFOS+PFHxS - 0.0054-0.518 mg/kg. • Surface water samples have not been collected from this source area. • Forty-five groundwater monitoring wells have been installed in this area including into the shallow Quaternary Aquifer and Brighton Group Aquifer, with PFAS concentrations ranging from: PFOS – <0.01-554 µg/L, PFOA - <0.01-19.4 µg/L, PFOS+PFHxS – <0.01-753 µg/L.
SA02	Fire Training Compound (FTC) (CSR_VIC_000456, CSR_VIC_000457, CSR_VIC_000470)	Encompassing Building 104, which was the former Fire Station and the concrete pads and grass areas east of Building 104 where AFFF products were stored and fire training activities occurred. In addition, a constructed surface water feature is present to the southeast of the former Fire Station, comprising a concrete lined Horizon Tank, constructed in the mid 1990's as part of a film set. The tank has been linked to fire training activities.	• Soil has been sampled from across the building and storage area footprint, along with around the boundary of the Horizon Tank, with PFAS concentrations ranging from: PFOS - <0.005-4.2 mg/kg, PFOA - <0.005-0.16 mg/kg, PFOS+PFHxS - <0.005-4.268 mg/kg. • Surface water samples not collected from this source area. • Four groundwater wells are located in the Quaternary aquifer within the building and storage area footprint, with PFAS concentrations ranging from: PFOS – 150-230 µg/L, PFOA - 9.6-26 µg/L, PFOS+PFHxS – 249-400 µg/L.
SA03	Fire Fighting Practice Areas *No current CSR assigned*	Practice area PS30 is a small concrete pad located immediately north of Building 161. Practice area PS31 is a small open area located to the west and southwest of Building 87. Anecdotal evidence indicated that training was undertaken in these areas by Defence fire services, and other agencies.	• Soil has been sampled from across both PS30 and PS31 of the source area, with all PFAS concentrations being below the laboratory detection limit. • Surface water samples not collected from this source area. • Two groundwater wells are located in, or in the immediate vicinity, of both PS30 and PS31, in the Newer Volcanics aquifer, with PFAS concentrations ranging from: PFOS – <0.01-0.07 µg/L, PFOA - <0.01 µg/L, PFOS+PFHxS – 0.02-0.19 µg/L.

Source Area #	Source Areas Descriptor and CSR Numbers	Contaminating activities	Extent of PFAS Contamination
SA04	Fire Fighting Practice Area C (CSR_VIC_000458)	This practice area is the concrete pad/apron area located southeast of Building 188, where anecdotal evidence indicated that training was undertaken by Defence fire services.	• Soil has been sampled across the northern boundary only of the source area, with PFAS concentrations ranging from: PFOS - 0.0058-0.52 mg/kg, PFOA - <0.005 mg/kg, PFOS+PFHxS - 0.0058-0.530 mg/kg. • Surface water samples have not been collected from this source area. • One groundwater monitoring well is located along the northern boundary of the source area, in the Newer Volcanics aquifer, with the PFAS concentrations being: PFOS - 960 µg/L, PFOA - 24 µg/L, PFOS+PFHxS – 1,260 µg/L.
SA05	The Fuel Farm (CSR_VIC_000266)	As a bulk fuel storage facility, it is likely AFFF was stored and potentially used here. The preliminary site investigation (Senversa, 2017) noted anecdotal evidence of a burst pipe and subsequent spill that occurred on the eastern side of the fuel farm in the early 1990's, however, the use of AFFF in response to the incident was not noted.	• Soils and surface water within this source area have not been assessed for PFAS. • One groundwater monitoring well is located in the central portion of the source area, in the Newer Volcanics aquifer, with the PFAS concentrations being: PFOS – 6.1 µg/L, PFOA – 1.6 µg/L, PFOS+PFHxS – 55.1 µg/L.
SA06	Old Hangers, Aircraft Parking, Refuelling & Maintenance (CSR_VIC_000119, CSR_VIC_000267, CSR_VIC_000268, CSR_VIC_000269, CSR_VIC_000274)	Aircraft have been maintained, refuelled and parked in this area since 1951, hence multiple accidental spills are likely to have occurred, and it is inferred these would have included AFFF.	• Soil has been sampled from targeted areas of this source area, particularly in the vicinity of the hangers, with PFAS concentrations ranging from: PFOS - <0.005-140 mg/kg, PFOA - <0.005-1.7 mg/kg, PFOS+PFHxS - <0.005-186 mg/kg. • Surface water samples have not been collected from this source area. • Five groundwater monitoring wells are located in the vicinity of the hangers, in the Newer Volcanics aquifer, with PFAS concentrations ranging from: PFOS - 13-86 µg/L, PFOA - 0.29-4.5 µg/L, PFOS+PFHxS – 17.5-107 µg/L.

Source Area #	Source Areas Descriptor and CSR Numbers	Contaminating activities	Extent of PFAS Contamination
SA07	The Airfield (CSR_VIC_000460, CSR_VIC_000461, CSR_VIC_000465)	AFFF has historically been used in the location of various documented aircraft crashes, as part of firefighting activities or emergency response.	• Soil has been sampled across this source area, with PFAS concentrations ranging from: PFOS - <0.005-0.73 mg/kg, PFOA - <0.005 mg/kg, PFOS+PFHxS - <0.005-0.778 mg/kg. • Surface water has been collected and sampled from various surface drains across the source area, with PFAS concentrations ranging from: PFOS - 0.24-120 µg/L, PFOA - 0.02-2.7 µg/L, PFOS+PFHxS - 0.36-153 µg/L. • Three groundwater monitoring wells are located around the boundary of the airfield, in the Newer Volcanics aquifer, with PFAS concentrations ranging from: PFOS - 1.1-160 µg/L, PFOA - 0.04-5 µg/L, PFOS+PFHxS – 2.3-239 µg/L.
SA08	STP and Rifle Range, Munitions / Sludge Dump (CSR_VIC_000118, CSR_VIC_000120, CSR_VIC_000123)	An STP operates in the southwest corner of RAAF Base Point Cook, with the treated effluent discharged to Port Phillip Bay. Residual bio-solids were historically spread to the south of the STP and the area between the STP and Port Phillip Bay was historically referred to as the “Waste Transit Area”. This area was used for dumping of general waste and sewage sludge. AFFF is potentially associated with the STP, biosolids and sludge.	• Soil has been sampled across the STP and Sludge Dump portions of this source area, with PFAS concentrations ranging from: PFOS - <0.005-0.83 mg/kg, PFOA - <0.005-0.013 mg/kg, PFOS+PFHxS - <0.005-0.899 mg/kg. • Surface water samples have not been collected from this source area. • Four groundwater monitoring wells have been installed across the STP and Sludge Dumps portions of this source area, in the Quaternary and Newer Volcanics aquifers, with PFAS concentrations ranging from: PFOS - 0.01-0.42 µg/L, PFOA - <0.01-0.05 µg/L, PFOS+PFHxS - 0.04-0.87 µg/L.
SA09	RAAF Lake and surface water discharge channels (CSR_VIC_000124)	The investigations did not identify evidence of a direct release or disposal of AFFF into RAAF Lake or the surface water network. However, PFAS-affected surface water is discharging from the base into RAAF Lake. Therefore, RAAF Lake acts as a basin for the PFAS in these surface water discharges, behaving as a secondary source and contributing to off-base discharge.	• Soil has been sampled around the edge of RAAF Lake, with PFAS concentrations ranging from: PFOS - 0.031-10.0 mg/kg, PFOA - <0.005-0.078 mg/kg, PFOS+PFHxS - 0.031-10.55 mg/kg. • Surface water has also been sampled around the edge of RAAF Lake, with PFAS concentrations ranging from: PFOS - 1.1-19 µg/L, PFOA - 0.01-0.32 µg/L, PFOS+PFHxS - 1.39-27.2 µg/L. • No groundwater monitoring wells have been installed in this source area.

Source Area #	Source Areas Descriptor and CSR Numbers	Contaminating activities	Extent of PFAS Contamination
SA10	Army & Air Force Canteen Service (AAFCANS) Service Station and Car Wash *No current CSR assigned*	The former service station included multiple underground tanks and a car wash, and was decommissioned in the 1990's. Historical information does not indicate evidence of direct release or disposal of AFFF in the area. However, as a former bulk fuel facility, AFFF was likely stored and potentially used in the area.	• Soils and surface water within this source area have not been assessed for PFAS. • One groundwater monitoring well is located in the source area, in the Newer Volcanics aquifer, with the PFAS concentrations being: PFOS – 2.4 µg/L, PFOA – 0.04 µg/L, PFOS+PFHxS – 3.26 µg/L.

3.2 Migration Pathways

PFAS can travel from a source to human or environmental receptors via migration pathways such as surface water and groundwater. The migration pathways identified within, and surrounding RAAF Williams, Laverton and RAAF Base Point Cook are summarised below.

3.2.1 RAAF Williams, Laverton

The surface water drainage infrastructure across RAAF Williams, Laverton comprises a series of concrete drains and pipes along with vegetated swales and culverts, which direct surface water run-off from buildings, road pavements, 'hard stand', and grassed areas either north into Doherty's Drain and Laverton Creek, which flow through the northern portion of the base, or south towards Skeleton Creek, approximately 700 m to the south of the base. The area north of Doherty's Drain, including SA04, consists of southerly overland surface water flow, largely without drainage infrastructure, towards the creek. Surface water from the concrete hard stand areas and buildings in the south-western portion of the base, including SA01 and SA02, largely flow to the south.

On a regional level, Doherty's Drain and Laverton Creek capture surface water from the suburbs to the north of the base and converge on-base. Laverton Creek and Skeleton Creek both flow to the southeast, discharging ultimately into Port Phillip Bay. Skeleton Creek flows through the Cheetham Wetlands prior to discharging to the bay. It is also understood that water is pumped from Skeleton Creek into Sanctuary Lakes to maintain water levels.

Local hydrogeology is broadly defined by the presence of a Newer Volcanics aquifer which consists of at least two basalt flows separated by intervening clay-rich layers. In the southern part of the base, the basalt layers are referred to as the upper and lower basalts. These layers are often not connected due to the intervening clay-rich layers, although some connectivity is present in some areas. Groundwater flow in both the upper and lower basalt aquifers is generally towards the south and southeast towards Port Phillip Bay, with the upper aquifer likely discharging to Skeleton Creek. PFAS-affected groundwater has been identified primarily relating to infiltration of PFAS from affected soils within the identified Source Areas. PFAS was identified in both upper and lower basalt aquifers, with PFAS concentrations being higher in the upper aquifer.

3.2.2 RAAF Base Point Cook

Broadly, the current RAAF Base Point Cook drainage network, consisting of both above and below ground infrastructure, allows movement of surface water from the operational areas of the Base, primarily in the northwest and central portions, to both RAAF Lake to the east, and Port Phillip Bay to the south. Connections with identified PFAS source areas provides potential preferential pathways for PFAS-affected sediment and surface water, away from the source areas to these water bodies (receptors). Drainage pathways currently understood to flow into RAAF Lake are likely from source areas SA03, SA04, SA05, SA06, SA07 and SA10. The balance of the source areas, SA01, SA02, SA08 and SA09, discharge to Port Phillip Bay either through surface water infrastructure or via overland flow.

In regard to aquifers, there are four key geological units that comprise major aquifers beneath RAAF Base Point Cook:

- the shallow fractured rock aquifer, located across the majority of the western and central portions of the base
- the shallow sand and Quaternary clayey sand aquifers (two separate aquifers) across the eastern portion of the base
- the Brighton Group aquifer which underlies the above three described aquifers.

Groundwater in the shallow fractured rock and Brighton Group aquifers migrates to the south to southeast, while groundwater in the shallow sand and Quaternary clayey sand aquifers flows to the east. PFAS-affected groundwater has been identified within all aquifers, with the exception of the Brighton Group aquifer where it has only been identified beneath SA01 – the Former Fire Training Area. PFAS identified in groundwater is linked to infiltration from affected soils within the identified source areas.

3.3 Receptors and Risks

3.3.1 RAAF Williams, Laverton

Based on information collected from stakeholders during consultation as part of the DSI (Aurecon, 2020), DSI Addendum (Aurecon, 2022a), HHRAs (enRiskS, 2022a and enRiskS, 2022b) and ERA (Aurecon, 2022b), several key exposure scenarios were identified as currently being realised within the Management Area, including the following:

- Human receptors
    - residents or visitors who consume home grown produce (vegetables) and poultry eggs at the base childcare centre and within the former base extents
    - recreational users (e.g. swimming, boating) within the Skeleton Creek and Sanctuary Lakes[1]
    - consumption of fish and eels recreationally caught from Skeleton Creek
- Ecological receptors
    - mammalian and avian consumers of terrestrial invertebrates in RAAF Swamp
    - direct exposure for ecological receptors to surface water at Laverton RAAF Swamp and the southern ponds of Cheetham Wetlands
    - mammalian and avian consumers of fish in all investigated assessment areas
    - migratory avian consumers of aquatic invertebrates at RAAF Swamp, Sanctuary Lakes and the southern ponds of Cheetham Wetlands.

[1] There may be complete Source-Pathway-Receptor linkages for humans accessing surface waters in public open spaces (constructed wetlands) with PFAS concentrations exceeding Tier 1 screening criteria. However, this exposure scenario is considered unlikely and infrequent due to the nature of the surface water bodies.

The DSI (Aurecon, 2020) concluded that the human health risks to on-base receptors, under the current exposure conditions are low and acceptable.

The DSI (Aurecon, 2020), HHRAs (enRiskS, 2022a and enRiskS, 2022b) and ERA (Aurecon, 2022b) identified the following risks:

- Risks linked to human receptors:
  - Risk ID, R01: Consumption of fish and eels from Skeleton Creek

- Risks linked to ecological receptors:
  - Risk ID, R02: Exposure of terrestrial ecological receptors to on-base impacted soils
  - Risk ID, R03: Exposure of terrestrial ecological receptors to off-base impacted soils at the Laverton RAAF Swamp
  - Risk ID, R04: Exposure of ecological receptors in surface water, and exposure of higher order avian and mammalian predators in Skeleton Creek, Laverton RAAF Swamp, the southern ponds of Cheetham Wetlands and Sanctuary Lakes.

3.3.2 RAAF Base Point Cook

The DSI (Senversa, 2020) identified PFAS sources, transport pathways for migration of PFAS from the source areas, and potential receptors including humans and ecosystems that may be exposed to PFAS. The potential exposure pathways included:

- Human receptors:
  - Incidental ingestion through direct contact with soil, sediment, surface water and/or groundwater
  - Extractive use of groundwater (currently no known users on-base or down gradient)
  - Ingestion of marine biota (e.g. recreationally caught seafood e.g. fish and crustaceans).

- Ecological receptors:
  - Direct contact and uptake from soil, sediment, surface water and/or groundwater by terrestrial and aquatic biota
  - Indirect contact via bioaccumulation i.e. ingestion of terrestrial and aquatic biota by higher order species.

Current and potential future on-base human receptors based on the draft redevelopment 2040 Zone Plan include Defence personnel, intrusive maintenance workers, contractors, residents, and visitors.

Current and potential future off-base receptors include residents at neighbouring properties located to the west, recreational users of Port Phillip Bay and RAAF Lake (including the foreshore and coastal park), intrusive maintenance workers, and users of extracted groundwater (stock, domestic and irrigation). Due to its shallow depth and ephemeral nature, the availability of biota within RAAF Lake is considered to be limited.

The DSI (Senversa, 2020) included a Tier 1 screening level risk assessment, and a detailed Tier 2 HHRA (Aecom, 2022c) and ERA (Aecom, 2022e) were completed for PFAS-affected media within and associated with the former FTA only (SA01). Based on these investigations, potential risks are as follows:

- Risks linked to human receptors:
  - Risk ID, R01: On-base - direct contact (dermal contact and incidental ingestion) with soil

  - Risk ID, R02: On-base and off-base – direct contact (dermal contact and incidental ingestion) with surface water
  - Risk ID, R03: On-base and off-base – direct contact (dermal contact and incidental ingestion) with shallow (between 0-2 mbgl) groundwater
  - Risk ID, R04: Off-base – consumption of marine biota (seafood) recreationally caught in Port Phillip Bay.

- Risks linked to ecological receptors:
  - Risk ID, R05: On-base and off-base - direct exposure of ecological receptors to soil, sediment and surface water
  - Risk ID, R06: On-bse and off-base - indirect exposure of ecological receptors via consumption of lower order species by higher order species

At the time of preparing this PMAP revision, further investigation is underway to understand the extent of PFAS across the identified source areas on the base.

4 Risk Management Actions

This section outlines the actions that Defence is, and will continue to take, to manage the risks associated with PFAS contamination on and around RAAF Williams, Laverton and RAAF Base Point Cook (as described in Section 3).

4.1 Background

In developing actions to address potential risks to receptors from PFAS contamination, Defence considers:

- whether an option is proportional to the identified risk/s
- the sustainability and longevity of an option (environmental, economic and social) in achieving an appropriate balance between benefits and effects
- views of the jurisdictional regulator and other stakeholders
- availability of best-practice management systems, remediation treatments and technologies
- site specific issues (including transformation, cross-contamination, and remobilisation)
- logistical and operational constraints
- effectiveness and validation status of technology
- success evaluation measures for the treatment or remediation outcomes
- the requirement for ongoing operations, management, maintenance or monitoring
- the net environmental benefit.

Defence prioritises source management and pathway management as preferable to receptor management, however, these components may also be progressed concurrently.

4.2 Implementation

Defence takes a risk-based approach to implementing actions under this PMAP and considers value for money in the use of public resources. Defence engages consultants to implement this PMAP.

Key factors for progressing and prioritising PMAP actions include:

Mitigating PFAS migration and protecting human health	Implementation of practicable solutions to prevent or minimise the migration of PFAS beyond the Defence property boundary, and measures to protect the community from exposure to PFAS.
Higher risks	The relative level of risk being addressed, including changes in land use.
Outcomes of completed works	Outcomes from further studies, technology trials or validated remedial works may change the profile or priority of source areas or works.
Linked actions	Whether the implementation of one response action is dependent on the implementation of another response action.
Use of public resources	Application of the Commonwealth Procurement Rules (issued under the *Public Governance, Performance and Accountability Act 2013*), including the Defence Infrastructure Panel – Environment, Heritage and Estate Engineering Services 2020-2025, to achieve value for money in procurement; and to use public money in an efficient, effective, economical and ethical manner. Cost-effectiveness may be facilitated through:

	• grouping the implementation of similar risk management actions within one or more Management Areas • aligning Defence infrastructure and maintenance plans with a PFAS response action.
Mandatory approvals	Timeframes for mandatory approvals and notification processes.
New legislation or policy	Development of relevant legislation, policy, guidelines and whole-of-government positioning.
Science and technology	The availability of new relevant science and technology.
Stakeholder input	Information from stakeholders that may impact a risk profile.

4.3 Current, Ongoing and Additional Risk Management Actions

4.3.1 Current and Ongoing Risk Management Actions

A screening assessment of options to manage the risks presented in Section 3 associated with RAAF Williams, Laverton was undertaken as part of the 2022 PMAP. Based on this assessment, the strategy adopted was to undertake further on-base assessment at RAAF Williams, Laverton to better characterise PFAS movement and understand risks, and the adoption of various risk management actions including off-base receptor management and implementation of an OMP. The current status of the actions for RAAF Williams, Laverton in the 2022 PMAP are detailed in Table 5 below.

4.3.2 Additional Risk Management Actions

Additional management actions have been identified since publication of the 2022 PMAP. These actions primarily relate to the inclusion of RAAF Base Point Cook within the 2024 PMAP and completion of a combined detailed HHRA for both RAAF Williams, Laverton and RAAF Base Point Cook. Additional management actions include (as described in Table 5):

- Action 1: Undertake a PFAS mass flux assessment at RAAF Base Point Cook
- Action 3: Undertake an ongoing monitoring program at RAAF Base Point Cook
- Action 4: Complete a detailed ERA for RAAF Base Point Cook
- Action 5: Complete a detailed HHRA for RAAF Base Point Cook.

In relation to Action 5, this additional management action has been identified to further characterise the human health risk, which will in turn help inform appropriate management or remedial strategies for identified PFAS sources areas on the base. This assessment commenced during Q3 2024 and will likely take approximately 12 months to complete.

Table 5. Status of 2022 PMAP Recommended Actions RAAF Williams, Laverton and New Actions for RAAF Williams, Laverton and RAAF Base Point Cook

Action	Description	Status	Reason / timeframe	Base
Action 1: Undertake a PFAS Mass Flux Assessment	A mass flux assessment will be conducted to assess the ongoing movement of PFAS from identified source areas, across and from the base into the surrounding environment through surface water drainage and groundwater. By better understanding these migration pathways, specific management or clean-up strategies can be as effective as possible.	Current	**2022 PMAP Action - Commenced.** The Mass Flux Assessment for RAAF Williams, Laverton, as detailed in the 2022 PMAP, has not yet been completed. This action is therefore still current. **New Action - Commenced.** As part of the 2024 PMAP, the Mass Flux Assessment has been extended to include RAAF Base Point Cook. The Mass Flux Assessment commenced during Q3 2024 and will be completed over a period of approximately 12 months.	RAAF Williams, Laverton RAAF Base Point Cook
Action 2: Off-base receptor management – administrative controls	Environment Protection Authority Victoria (EPA) established an area of precautionary advice in June 2021, relating to fish and eel consumption from Skeleton Creek. Defence has implemented long-term administrative controls to ensure community notification of the advice.	Current	**2022 PMAP Action - Ongoing.** To manage potential risk associated with consumption of fish or eels caught from Skeleton Creek to the South of Princes Freeway, Defence has installed precautionary signage at six locations along Skeleton Creek. Defence also maintains a public information line to facilitate enquiries from community members about the PFAS investigation or management activities Defence is undertaking within the RAAF Williams, Laverton PFAS Management Area. Defence will continue to implement the long-term administrative controls as necessary.	RAAF Williams, Laverton
Action 3: Ongoing Monitoring Program	Implementation of an ongoing monitoring program to monitor changes in PFAS concentrations in groundwater and surface water within the Management Area, particularly targeting identified source areas, off-base PFAS migration, and drainage to Skeleton Creek and ultimately Sanctuary Lakes and Cheetham Wetlands.	Current	**2022 PMAP Action - Ongoing.** Defence has completed three sampling events across RAAF Williams, Laverton since the 2022 PMAP. Six monthly OMP monitoring is ongoing at RAAF Williams, Laverton. **New Action - Commenced.** OMP monitoring commenced at RAAF Base Point Cook in Q4 2024. The OMP has been revised taking into account the results of the ongoing monitoring since 2021 and including RAAF Base Point Cook. The OMP Revision has been published on the Defence website.	RAAF Williams, Laverton RAAF Base Point Cook
Action 4: Detailed Ecological Risk	Based on the findings of the Preliminary ERA, Defence will conduct a Detailed ERA to update and further characterise the risk, refine the CSM,	Current	**2022 PMAP Action - Commenced.** The Detailed ERA for RAAF Williams, Laverton, as detailed in the 2022 PMAP, has not yet been completed.	RAAF Williams, Laverton

Action	Description	Status	Reason / timeframe	Base
Assessment (ERA)	to inform risk-based remediation or management strategies.		**New Action - Commenced.** The Detailed ERA has been extended to also include RAAF Base Point Cook as part of the 2024 PMAP. The combined Human Health and Ecological Risk Assessment commenced during Q3 2024 and will likely take approximately 12 months to complete.	RAAF Base Point Cook
Action 5: Detailed Human Health Risk Assessment (HHRA)	Based on investigation findings to date, Defence will conduct a HHRA to further characterise the risk and refine the CSM. This will inform risk-based remediation or management strategies.	Current	**New Action - Commenced.** A Human Health Risk Assessment will be completed for RAAF Base Point Cook to address PMAP Action 5. This assessment commenced during Q3 2024 and will likely take approximately 12 months to complete.	RAAF Base Point Cook

4.4 Ongoing Monitoring

Defence continues to monitor PFAS concentrations in the environment at the bases through an ongoing monitoring program. This allows for the timely identification and management of emerging risks and informs Defence's approach to the management of PFAS. Monitoring requirements are outlined in an ongoing monitoring plan (OMP). The OMP is reviewed annually and if required, amended to ensure it continues to provide the data needed to monitor important changes noted in PFAS concentrations and migration pathways. Monitoring for RAAF Williams, Laverton and RAAF Base Point Cook have recently been incorporated into one OMP.

The results from the ongoing monitoring program are shared with the EPA and are provided in an Ongoing Monitoring Report (OMR) that is made publicly available on the Defence website for the PFAS Investigation and Management program. The OMR provides an interpretation of the PFAS data collected, and an analysis of the significance of any changes in concentrations compared with previous sampling data, with respect to potential risks to humans or the environment, and whether a change to the OMP and CSM is required.

The OMP outlines management triggers and actions that Defence will undertake if certain results or trends are reported from the ongoing monitoring program sampling. This may include actions to confirm the accuracy of results through re-testing, notification to the EPA and other agencies upon the discovery of new PFAS detections or trends that appear to show an increase and/or decrease, and implementing additional investigations and risk management actions if the monitoring data indicates changes to the current risk profile.

5 NEXT STEPS

Defence are in the process of carrying out the risk management actions set out in this PMAP. Defence will continue to reassess its actions based on the results of the investigations and will also consider other factors when assessing response actions. Such factors might include changes to government policy settings and base conditions, advances in assessment and remediation technologies, and changes to regulatory criteria.

Defence will review, and if required, revise this PMAP at regular intervals to ensure this PMAP remains current, relevant and prioritises the appropriate actions to protect human health and the environment. Defence will continue to engage with Wyndham City Council, Hobsons Bay Council, EPA and other stakeholders, in addition to keeping the community informed of progress via the website to ensure information is available in an easily accessible form.

It is not possible to remove all PFAS from the environment. If remediation is required at RAAF Williams, Laverton and RAAF Base Point Cook, it will be undertaken so far as reasonably practicable. Unacceptable risks that may remain will be identified through monitoring, and be appropriately managed.

In determining what is reasonably practicable, a range of aspects will be considered, including the:

- level of risk from PFAS to human and ecological receptors
- environmental setting
- nature and extent of PFAS contamination
- availability of proven technologies suitable for the characteristics of the two bases
- logistical and operational constraints of the bases
- financial and sustainability aspects of each technology.

Once management activities and results have been verified, the PMAP will be updated to reflect a transition to long-term ongoing monitoring, and any other long-term management activities associated with managing any potential or remaining risks.

APPENDIX A References

Key documents

RAAF Williams, Laverton

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APPENDIX B Conceptual Site Model

This Appendix provides visualisations of the source – pathway – receptor relationships in the form of a tabular Conceptual Site Model for each base.

Preliminary CSM for PFAS at RAAF Base Point Cook (after Senversa, 2020)

Source Areas[4]	Exposure Medium	Transport Pathways[4]	Exposure Pathway	Human Receptors: On-site: Residential users of sensitive on- site areas (Accommodation and Administration Areas on-base)	Human Receptors: On-site: Recreational users of sensitive on- site areas (Accommodation and Administration Areas)	Human Receptors: On-site: Base Workers or Trainees on the remainder of the Base	Human Receptors: On-site: Intrusive/ Construction Workers on the remainder of the Base	Human Receptors: On-site: Other Users / Visitors	Human Receptors: Off-site: Residents (incl. Farmers)	Human Receptors: Off-site: Workers (on farms)	Human Receptors: Off-site: Intrusive/ short term workers	Human Receptors: Off-site: Recreational Users of surface waters off-site	Human Receptors: Off-site: Commercial purchasers of agricultural products	Human Receptors: Off-site: Consumers of fish or other biota from Port Phillip Bay	Ecological Receptors: On-site: Terrestrial	Ecological Receptors: On-site: Aquatic	Ecological Receptors: Off-site: Terrestrial	Ecological Receptors: Off-site: Aquatic
SA01-SA10	Soil	Transport pathways - various including windblown dust, run off and leaching to surface water, leaching to and migration in groundwater.	Inhalation - Dust and airborne particulates	Note 1					-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion	Note 1					-	-	-	-	-	-	-	-	-	-
			Dermal Contact	Note 1					-	-	-	-	-	-	-	-	-	-
			Consumption of home grown produce	Note 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-		-	-	-
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-		-	-	-
	Groundwater – Dune Sands - Eastern side of base.		Ingestion (potable Use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion in excavations	-	-	-	Note 2	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact in excavations	-	-	-	Note 2	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake (e.g. by deep-rooted plants)	-	-	-	-	-	-	-	-	-	-	-		-	-	-
	Groundwater – Newer Volcanics		Ingestion (potable Use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion in excavations	-	-	-		-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact in excavations	-	-	-		-	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake (e.g. by deep-rooted plants)	-	-	-	-	-	-	-	-	-	-	-		-	-	-
	Deeper Groundwater – Base of Newer Volcanics		Ingestion (potable Use)	Note 2	Note 2	Note 2	Note 2	Note 2	Note 3	Note 3	-	-	-	-	-	-	-	-
			Incidental Ingestion (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	Note 3	-	-	-	-	-
			Dermal Contact (during non-potable use)	Note 2	Note 2	Note 2	Note 2	Note 2	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion in excavations	-	-	-		-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact in excavations	-	-	-		-	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake (e.g. by deep-rooted plants)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Surface Water - Open Drains		Incidental Ingestion	-	-	Note 1	Note 1	Note 1	-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-	-	Note 1	Note 1	Note 1	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-	-Note 3	-	-
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-	Note 3	-	-
	Surface Water – RAAF Lake		Incidental Ingestion	-	-	-	-		-	-	-		-	-	-	-	-	-
			Dermal Contact	-	-	-	-		-	-	-		-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-		-	
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-		-	
	Surface Water – Port Phillip Bay		Incidental Ingestion	-	-	-	-	-	-	-	-		-	-	-	-	-	-
			Dermal Contact	-	-	-	-	-	-	-	-		-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Sediment - Open Drains		Incidental Ingestion	-	-	Note 1	Note 1	Note 1	-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-	-	Note 1	Note 1	Note 1	-	-	-	-	-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-	-Note 3	-	-
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-	Note 3	-	-
	Sediment – RAAF Lake		Incidental Ingestion	-	-	-	-		-	-	-		-	-	-	-	-	-
			Dermal Contact	-	-	-	-		-	-	-		-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-		-	
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-		-	
	Sediment – Port Phillip Bay		Incidental Ingestion	-	-	-	-	-	-	-	-		-	-	-	-	-	-
			Dermal Contact	-	-	-	-	-	-	-	-		-	-	-	-	-	-
			Direct Contact / Uptake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			Bioaccumulation / Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Legend:
-: Not applicable; pathway is not relevant and/or complete for this receptor.
Tier 1 Screening Level not exceeded
No Tier 1 Screening Level Available
Exceeds Tier 1 Screening Criteria
No sampling data currently

Notes

Note 1: Concentrations have been identified above the low-density residential screening level. This screening level is driven by a pathway of ingestion of home grown produce. Excluding this pathway, the risks associated with incidental soil contact are assessed to be low and acceptable.

Note 2: Groundwater is not extracted for use on-site, furthermore, potable water is not a protected beneficial use due to the Total Dissolved Solids. However, concentrations have been compared with screening levels for the purposes of screening.

Note 3: PFAS was identified at low concentrations on-site in the base of the Newer Volcanics. This aquifer is extracted for irrigation use off-site, and consideration is therefore given to the potential for this deep groundwater on-site to enter off-site bores during extraction (even though these bores are located hydraulically across-gradient). While this extracted water is not utilised as drinking water, concentrations have been compared with both potable water screening levels and incidental contact screening levels for the purposes of screening potential risks to off-site users of this groundwater. No suitable screening levels have been identified for agricultural uses (i.e. for the protection of crops, livestock, or consumers of these products); additional risk assessment could be undertaken to better understand whether the measured concentrations could pose potential risks via the key known exposure pathway (abstraction of water and use for crop irrigation).

Note 4: Refer to additional information provided in Section 3 of the main report text.
*: There is considered to be limited potential for site users to access drains, however, concentrations in sediment and surface water within the drains have been compared with human health screening levels (for incidental soil contact, and recreational water contact respectively) for the purposes of screening.

**: While surface water concentrations in some drainage channels exceed relevant screening criteria for direct toxicity (and relevant sediment screening levels for this pathway are not available), these drains are not protected under the Environment Reference Standard thus aquatic ecosystems protection within the drain itself is not considered a relevant beneficial use. However, the Environment Reference Standard does require that these waterways be managed to ensure no adverse impacts to health or the surrounding environment. The potential for secondary poisoning impacts to higher order receptors is likely to be low given the nature of the drains and their low potential to support biota which could significantly contribute to the diet of higher order predators, but warrants further assessment given the concentrations in exceedance of the water screening levels (and the absence of screening levels for sediment).

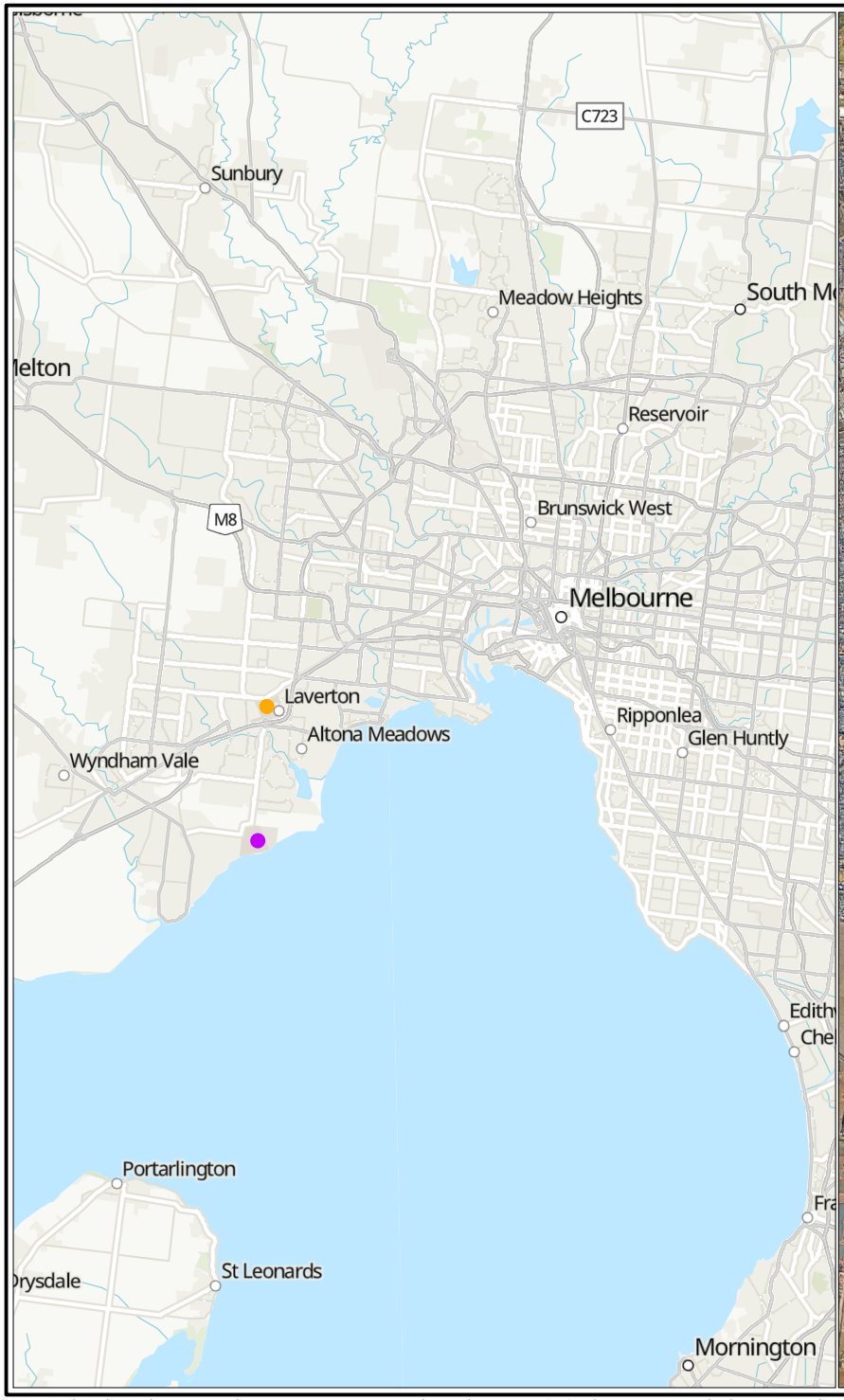
Preliminary CSM for PFAS at RAAF Williams, Laverton (after Aurecon, 2020, EnRiskS, 2022 and SLR, 2018)

Source Areas[5]	Exposure Medium	Transport Pathway[6]	Exposure Pathway	Human Receptors: Off-Site: Off-Site Residents	Off-Site: Off-Site Users of public open space	Off-Site: Off-Site commercial/industrial workers	On-site: Temporary on-Site Residents	On-site: Childcare Attendees (Low Density Res)[3]	On-site: Site-Visitors[2]	On-site: Base Workers or Trainees[2]	On-site: Intrusive Construction Workers	Ecological Receptors: Off-site[1]: Off-Site Aquatic Biota	Off-site[1]: Off-Site Terrestrial Biota	On-site[1]: On-Site Aquatic Biota	On-site[1]: On-Site Terrestrial Biota
SA01-SA04	Soil - Comm/Industrial	Transport pathways - various including windblown dust, run off and leaching to surface water, leaching to and migration in groundwater.	Inhalation of dust or particulates	-	-	-	-	-	-	-		-	-	-	-
			Incidental Ingestion	**		#	-	-				-	-	-	-
			Dermal Contact	**		#	-	-				-	-	-	-
			Consumption of home grown produce [4]	**	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-	-		-	
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-	-		-	
	On-Site groundwater - based on likely realised human health and ecological groundwater uses.		Ingestion (potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (non-potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (potable and other uses)	-	-	-	-	-	-	-	-	-	-	-	-
			Consumption of home grown produce[4]	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-	-	-	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-
	Off-Site groundwater - based on likely realised human health and ecological groundwater uses.		Ingestion (potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (non-potable use)	**	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (potable and other uses)	**	-	-	-	-	-	-	-	-	-	-	-
			Consumption of home grown produce	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-		##	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-		##	-	-
	Surface Water - Off-site (Skeleton Creek, Laverton Creek, Sanctuary Lakes, Cheetham Wetlands, Constructed Wetlands (various), RAAF Swamp – Public Open Space/Recreational Use)		Incidental Ingestion	-		-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-		-	-	-	-	-	-	-	-	-	-
			Consumption of recreationally caught fish	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-		-	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-		-	-	-
	Sediment / Pore Water (Skeleton Creek – Public Open Space) [5]		Incidental Ingestion	-	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-	**	**	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-			-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-			-	-
	Aquatic Food (Constructed wetlands, Skeleton Creek, Laverton Creek)		Ingestion	-	<	-	-	-	-	-	-	<	<	-	-
Suspected Off-Base Legacy PFAS Sources (Williams Landing)	Soil - Residential / Public Open Space (Former Primary Fire Training Area)	Transport pathways - various including windblown dust, run off and leaching to surface water, leaching to and migration in groundwater.	Inhalation of dust or particulates	-	-	-	-	-	-	-		-	-	-	-
			Incidental Ingestion	**		-	-	-				-	-	-	-
			Dermal Contact	**		-	-	-				-	-	-	-
			Consumption of home grown produce [4]	**	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-	-		-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-	-		-	-
	Soil - Residential / Public Open Space / Comm/Ind (Former Runways and Former Firepower Demonstration Area)		Inhalation of dust or particulates	-	-		-	-	-	-		-	-	-	-
			Incidental Ingestion	**			-	-				-	-	-	-
			Dermal Contact	**			-	-				-	-	-	-
			Consumption of home grown produce [4]	**	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-	-		-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-	-		-	-
	On-Site groundwater - based on likely realised human health and ecological groundwater uses.		Ingestion (potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (non-potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (potable and other uses)	-	-	-	-	-	-	-	-	-	-	-	-
			Consumption of home grown produce[4]	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-	-	-	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-	-	-	-	-
	Off-Site groundwater - based on likely realised human health and ecological groundwater uses.		Ingestion (potable use)	-	-	-	-	-	-	-	-	-	-	-	-
			Incidental Ingestion (non-potable use)	**	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact (potable and other uses)	**	-	-	-	-	-	-	-	-	-	-	-
			Consumption of home grown produce	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-		##	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-		##	-	-
	Surface Water - Off-site (Skeleton Creek, Laverton Creek, Sanctuary Lakes, Cheetham Wetlands, Constructed Wetlands (various), RAAF Swamp – Public Open Space/Recreational Use)		Incidental Ingestion	-		-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-		-	-	-	-	-	-	-	-	-	-
			Consumption of recreationally caught fish	-	-	-	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-		-	-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-		-	-	-
	Sediment / Pore Water (Skeleton Creek – Public Open Space) [5]		Incidental Ingestion	-	-	-	-	-	-	-	-	-	-	-	-
			Dermal Contact	-	**	**	-	-	-	-	-	-	-	-	-
			Direct Contact or Uptake	-	-	-	-	-	-	-	-			-	-
			Bioaccumulation or Secondary Poisoning	-	-	-	-	-	-	-	-			-	-
	Aquatic Food (Constructed wetlands, Skeleton Creek, Laverton Creek)		Ingestion	-	<	-	-	-	-	-	-	<	<	-	-

Tier 1 screening level not exceeded	Potential or identified complete pathway, but PFAS screening levels not exceeded or not likely to be exceeded at receptor
Tier 1 screening level exceeded	Complete pathway with potential exposure above Tier 1 screening level at receptor
Tier 1 screening level not available	Potentially complete pathway, but no Tier 1 screening level

1 Note that this is defined as an off-Site exposure scenario (i.e. the biota is located off-Site when in contact with media). Fauna, such as birds and mammals, that can move on and off-Site are covered in the on-Site Terrestrial Biota scenario as the exposure scenario occurs on-Site.
2 Includes users of golf course and sports fields.
3 Child or adult.
4 Includes fruits, vegetables and chicken eggs.
5 Currently no reliable criteria for Tier 1 assessment of sediment.
6 Refer to additional information provided in Section 3 of the main report text.
** Although exceedance of Tier 1 screening criteria, risk considered low and acceptable based on site-specific human health risk assessment.
# Boundary concentrations do not indicate the potential for exceedances of criteria relevant to the land use.
Groundwater ecological criteria are for marine and freshwater protection, which are not directly applicable to terrestrial biota (such as grass and trees).
< This is a potential exposure pathway that is considered potentially complete and requires further assessment as part of the HHRA. HHRA completed for Skeleton Creek has resulted in EPA precautionary advice against consumption of recreationally caught fish and eels.
'-: Not applicable; pathway is not relevant and/or complete for this receptor.

APPENDIX C Figures



Legend

- Laverton Management Area
- Point Cook Management Area
- Laverton On-site Monitoring Area
- Laverton Off-site Monitoring Area
- Laverton Site Boundary
- Point Cook Site Boundary
- Point Cook On-site Monitoring Area
- Point Cook Off-site Monitoring Area
- Former Extent of RAAF Williams
- Laverton Site Location
- Point Cook Site Location

JBS&G

Job No: 66022	
Client: Department of Defence	
Version: Rev A	Date: 05-Feb-2025
Drawn By: JS	Checked By: JS
Scale 1:55,000	

0 1,000 2,000
metres

Coord. Sys. GDA2020 MGA Zone 55

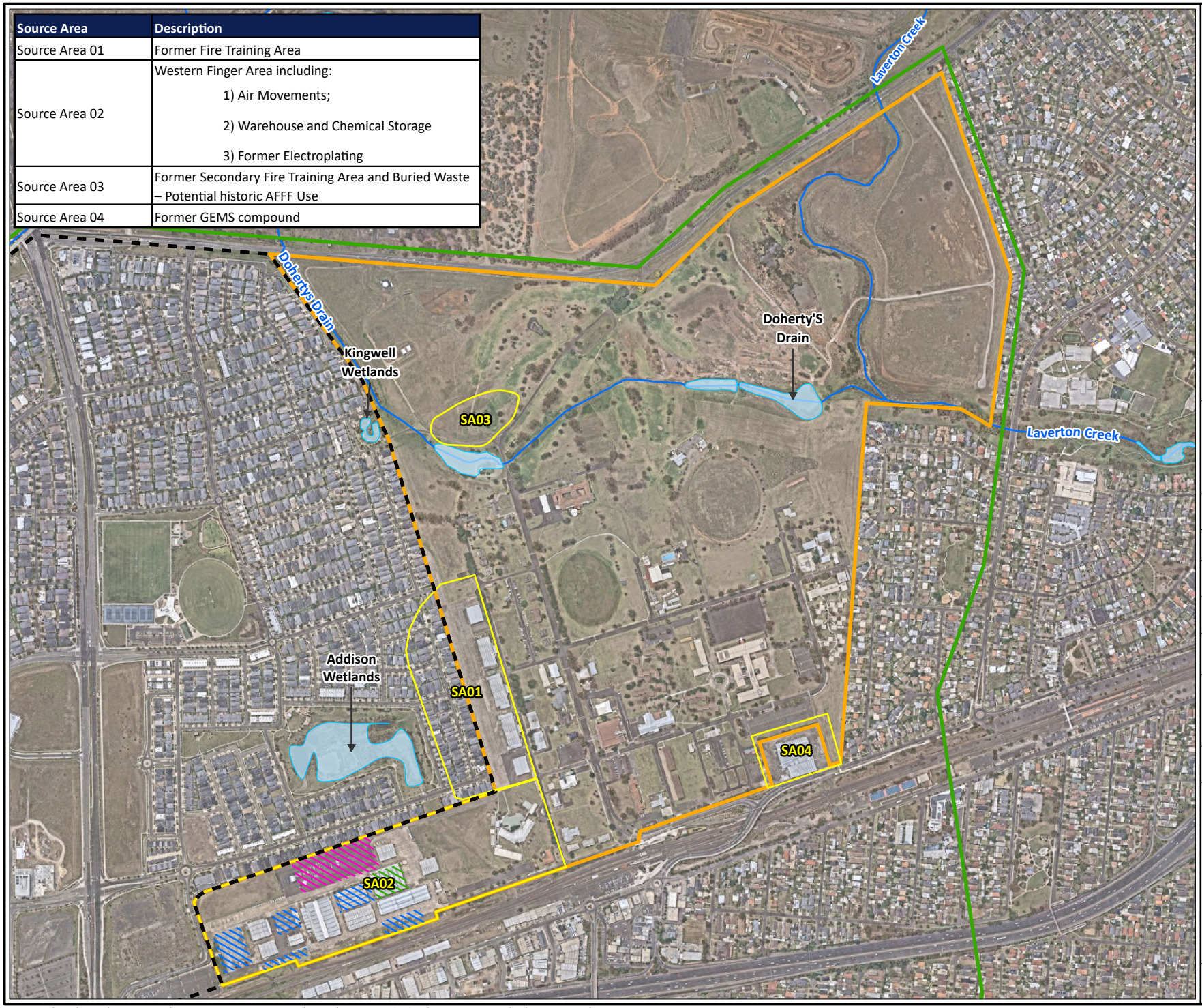
RAAF Williams, Laverton
RAAF Base Point Cook

SITE LOCATION

FIGURE 1

File Name: C:\Users\jstrauss\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\66022_RAAFWilliams\GIS\02_MapProjects\66022_RAAF_LavertonPointCook_PMAP.aprx; Name:66022_01_Site Location
Reference: ESRI Topographic Basemap - Accessed Imagery: 05/02/2025 & www.nearmap.com - Imagery Date: 17/03/2024

Source Area	Description
Source Area 01	Former Fire Training Area
Source Area 02	Western Finger Area including: 1) Air Movements; 2) Warehouse and Chemical Storage 3) Former Electroplating
Source Area 03	Former Secondary Fire Training Area and Buried Waste – Potential historic AFFF Use
Source Area 04	Former GEMS compound



Legend

- Laverton Management Area
- Laverton Site Boundary
- Laverton Source Area
- Former Extent of RAAF Williams
- Air Movements
- Former Chemical Storage Area
- Former Electroplating Area
- Waterbodies
- Watercourse

JBS&G

Job No: 66022

Client: Department of Defence

Version: Rev A | Date: 05-Feb-2025

Drawn By: JS | Checked By: JS

Scale 1:11,000

0 200 400
metres

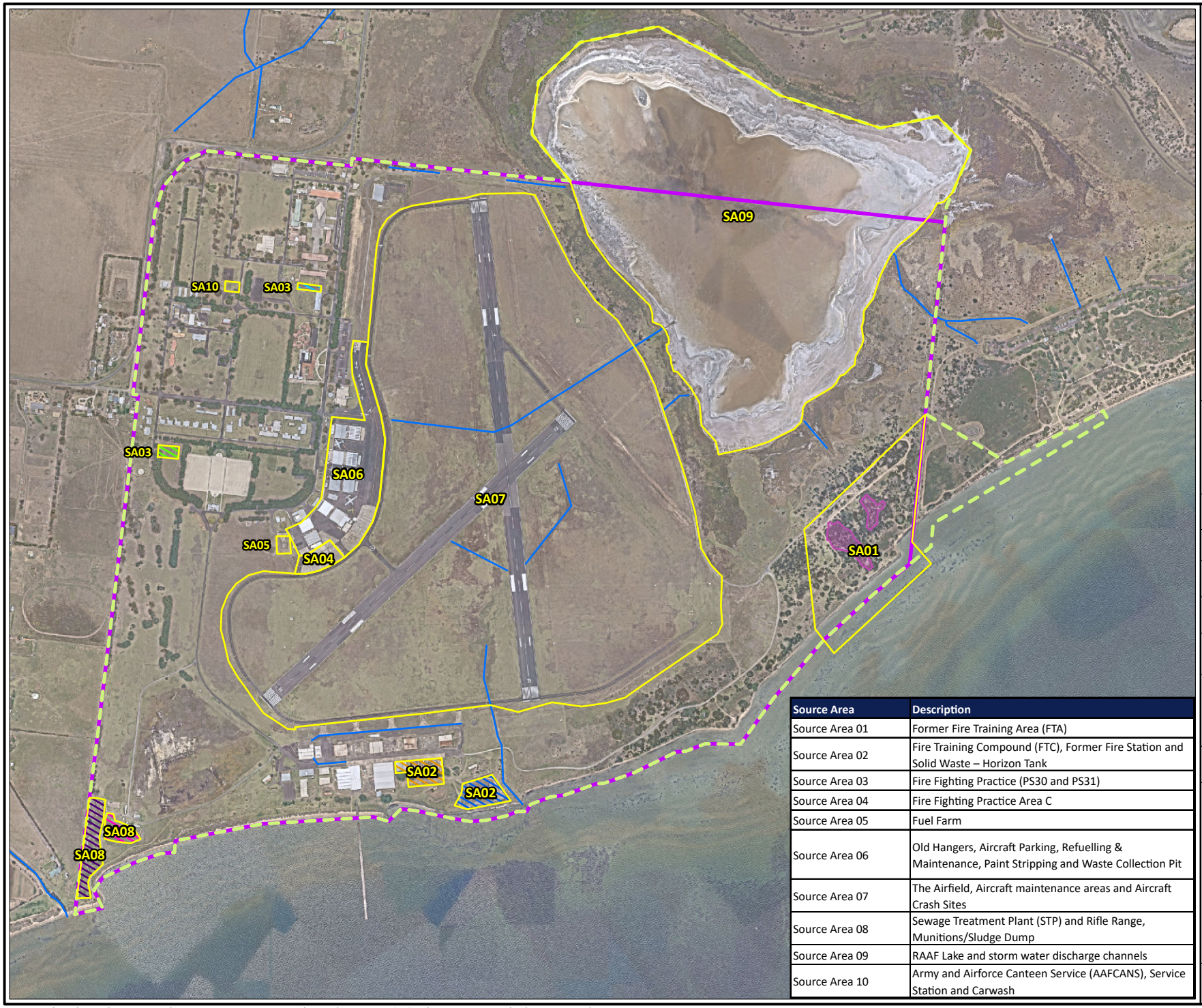
Coord. Sys. GDA2020 MGA Zone 55

RAAF Williams, Laverton

LAVERTON SOURCE AREAS

FIGURE 2A

File Name: C:\Users\jstrauss\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\66022_RAAFWilliams\GIS\02_MapProjects\66022_RAAF_LavertonPointCook_PMAP.aprx; Name:66022_02a_Laverton Source Areas
Reference: www.nearmap.com - Imagery Date: 01/12/2024



Source Area	Description
Source Area 01	Former Fire Training Area (FTA)
Source Area 02	Fire Training Compound (FTC), Former Fire Station and Solid Waste – Horizon Tank
Source Area 03	Fire Fighting Practice (PS30 and PS31)
Source Area 04	Fire Fighting Practice Area C
Source Area 05	Fuel Farm
Source Area 06	Old Hangers, Aircraft Parking, Refuelling & Maintenance, Paint Stripping and Waste Collection Pit
Source Area 07	The Airfield, Aircraft maintenance areas and Aircraft Crash Sites
Source Area 08	Sewage Treatment Plant (STP) and Rifle Range, Munitions/Sludge Dump
Source Area 09	RAAF Lake and storm water discharge channels
Source Area 10	Army and Airforce Canteen Service (AAFCANS), Service Station and Carwash

Legend

- Point Cook Management Area
- Point Cook Site Boundary
- Point Cook Source Area
- Remediated Area

Source Area 2, 3 and 8 Components

- Fire Training Compound and Former Fire Station
- Rifle Range
- SP30
- SP31
- STP
- Soild Waste - Horizon Tank
- Watercourse
- Point Cook Source Area

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Job No: 66022

Client: Department of Defence

Version: Rev A | Date: 05-Feb-2025

Drawn By: JS | Checked By: JS

Scale 1:14,000

0 200 400

metres

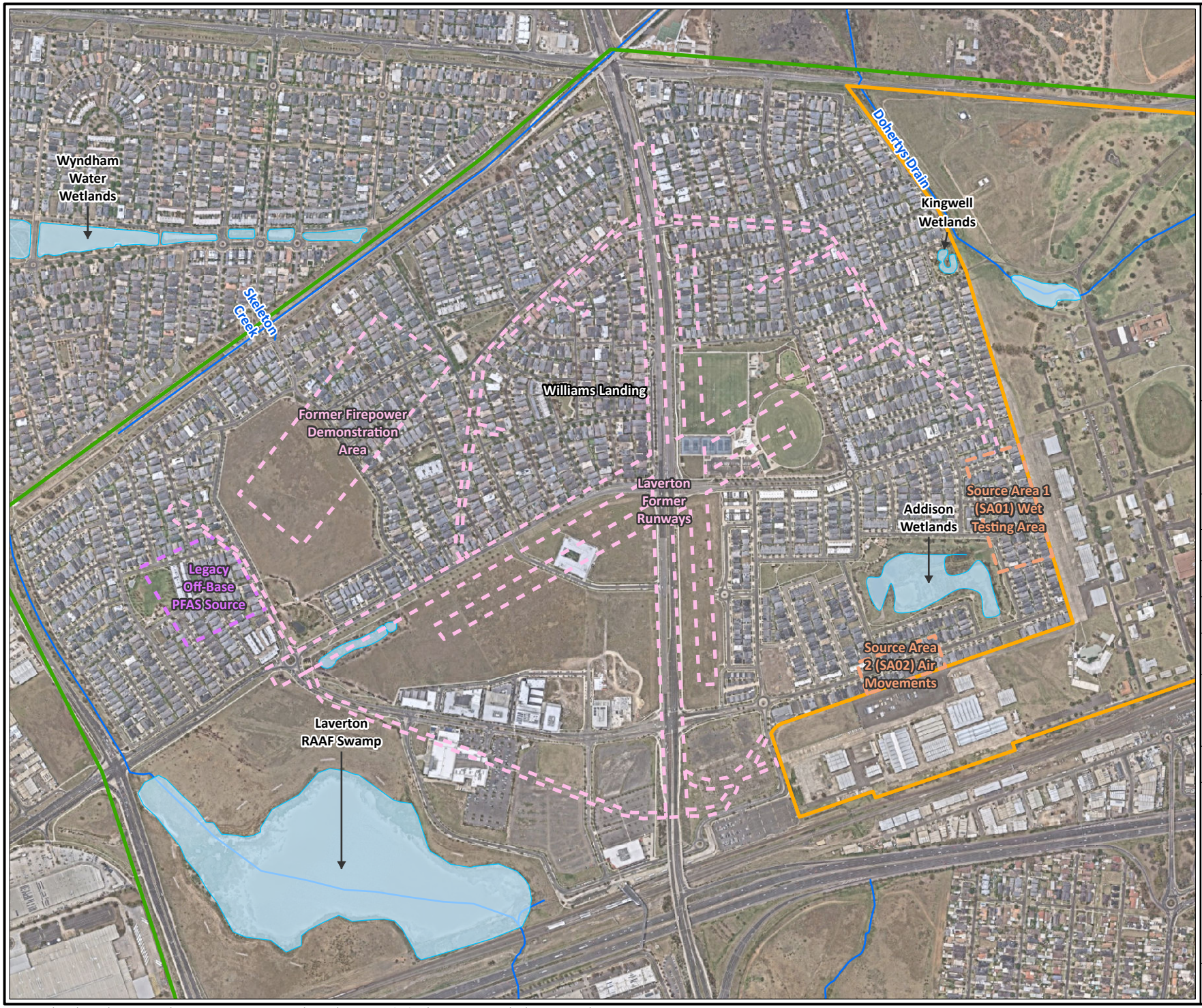
Coord. Sys. GDA2020 MGA Zone 55

RAAF Base Point Cook

POINT COOK SOURCE AREAS

FIGURE 2B

File Name: C:\Users\jstrauss\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\66022_RAAFWilliams\GIS\02_MapProjects\66022_RAAF_LavertonPointCook_PMAP.aprx; Name:66022_02b_Point Cook Source Areas
Reference: www.nearmap.com - Imagery Date: 01/12/2024



Legend

- Laverton Site Boundary
- Laverton Management Area
- Waterbodies
- Historic Off-Base Legacy PFAS Sources
- Areas where AFFF May Have Been Used Historically
- Off-Base Legacy PFAS Sources Associated with Known On-Base Sources
- Watercourse

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Job No: 66022	
Client: Department of Defence	
Version: Rev A	Date: 05-Feb-2025
Drawn By: JS	Checked By: JS

Scale 1:11,000

0 200 400
metres

Coord. Sys. GDA2020 MGA Zone 55

RAAF Williams, Laverton

SUSPECTED OFF-BASE LEGACY PFAS SOURCES

FIGURE 2C

File Name: C:\Users\jstrauss\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\66022_RAAFWilliams\GIS\02_MapProjects\66022_RAAF_LavertonPointCook_PMAP.aprx; Name:66022_02c_Laverton Historical PFAS Sources
Reference: www.nearmap.com - Imagery Date: 01/12/2024