RAAF Base Edinburgh

PFAS ONGOING MONITORING PLAN

March 2025

ACKNOWLEDGEMENT OF COUNTRY

Defence acknowledge the land of RAAF Base Edinburgh is the traditional lands for the Kaurna people and that Defence respects their spiritual relationship with their country.

Defence also acknowledge the Kaurna people as the custodians of the Adelaide region and that their cultural and heritage beliefs are still as important to the living Kaurna people today.

Defence also pay respects to the cultural authority of Aboriginal people visiting/attending from other areas of South Australia and across Australia.

Source: https://www.agd.sa.gov.au/aboriginal-affairs-and-reconciliation/statement-of-acknowledgement-welcome-to-country

CONTENTS

GLOSSARY

AFFF	Aqueous Film Forming Foam
ASC NEPM	*National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013
base	RAAF Base Edinburgh
CSM	Conceptual Site Model
DEW	Department for Environment and Water
DO	Dissolved Oxygen
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EPA SA	Environment Protection Authority South Australia
GPA	Groundwater Prohibition Area
HHRA	Human Health Risk Assessment
LOR	Limit of Reporting
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.
NATA	National Association of Testing Authorities
OMP	Ongoing Monitoring Plan
PERA	Preliminary Ecological Risk Assessment
PFAS	Per- and polyfluoroalkyl Substances
PFAS NEMP	PFAS National Environmental Management Plan
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
PMAP	PFAS Management Area Plan
QA/QC	Quality Assurance/Quality Control
Risk assessments	The HHRA and/or PERA
Risk management actions	Remediation and management actions to address potential risks to receptors from PFAS contamination.
SAQP	Sampling and Analysis Quality Plan
Source	A source can be primary or secondary. Primary sources are generally areas where AFFF was used or stored. Secondary sources may be an accumulation of contamination in the environment, such as in soil, sediments, or surface water bodies.
TDS	Total Dissolved Solids

Unless otherwise defined in this document, definitions provided in the NEMP or the ASC NEPM apply.

1 INTRODUCTION

1.1 Background

In March 2025 Defence prepared a revised PFAS Management Area Plan (PMAP) for managing risks to human health and the environment from per- and poly-fluoroalkyl substances (PFAS) contamination associated with RAAF Base Edinburgh (the base) and surrounding areas (the 2025 PMAP). An important requirement of the PMAP is to undertake ongoing monitoring of PFAS in the environment and to assess for changes in risks to human and ecological receptors from PFAS originating from the base. A copy of the 2025 PMAP is available for download from the Defence website.

This Ongoing Monitoring Plan (OMP) replaces the July 2019 OMP (the 2019 OMP).

1.2 Purpose

The OMP sets out requirements for collection of adequate data to identify and evaluate:

- spatial, and temporal (including seasonal) variability of PFAS in the environment;
- changes to sources, transport pathways and/or receptors, described as a conceptual site model (CSM) for the base (with consideration of the updated CSM in the 2025 PMAP);
- whether risks to human and ecological receptors require review;
- the influence that risk management activities at the base, as outlined in the 2025 PMAP, have had on PFAS in the environment; and
- whether the identified changes trigger an action and/or review.

The data collected may be used to inform where new risk management actions may be required, or to support a determination that remediation has been completed so far as reasonably practicable.

1.3 Supporting information

In developing the OMP, reference has been made to the PFAS National Environmental Management Plan (PFAS NEMP), the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (ASC NEPM, as amended 2013), Defence estate, environmental and PFAS-specific strategies and guidance, and other information as provided in the References section (Appendix A) of this document.

1.4 Constraints and assumptions

This OMP has been prepared based on information available at the time of writing and relies on the findings of the Detailed Site Investigation (DSI), risk assessments, mass flux assessments, remediation activities and ongoing monitoring program data, and management of risks documented in the 2025 PMAP. Defence recognises that there may still be gaps in information, and if required these will be progressively addressed while impacted sites are being managed.

This document has been developed based on the following assumptions:

- Ongoing access agreements will be extended for the term of the OMP with the City of Salisbury and the City of Playford Council for access to the groundwater monitoring well network within Council areas, including access to Kaurna Park Wetland for groundwater and surface water sampling.
- Ongoing management of the off-base groundwater well network will be undertaken by the Councils to ensure civil projects and road maintenance/upgrade works do not damage critical groundwater wells.
- Consent is able to be obtained for the State Department for Environment and Water (DEW), Council and private property bores targeted for ongoing sampling, as well as the Helps Road Drain automated surface water (stormwater) composite sampler located immediately downstream of the base.
- The current government issued guidelines, advisories and policies may change, and as a result may trigger a review of the OMP.

2 SITE SETTING

2.1 Base description

RAAF Base Edinburgh is located in Edinburgh, South Australia, approximately 25 km north of the Adelaide central business district, as shown in Figure B1 in Appendix B. The Base occupies an area of approximately 1,000 hectares (ha) and contains the following major features:

- An airfield;
- Airfield navigational aids;
- Explosive Ordnance areas;
- Fuel farm;
- Maintenance buildings;
- Hangars and aprons;
- Recreational, minor retail and training facilities;
- Working accommodation (e.g., temporary), Living-In Accommodation, and messing facilities;
- North East Defence Community Centre; and
- Open space used as an airfield buffer.

2.2 Management Area

The Management Area covers all of the base and discrete areas outside of the base where PFAS has been identified, and is the primary area throughout which risk management actions and ongoing monitoring have been completed to date. This includes Helps Road Drain and the Kaurna Park Wetland, as well as groundwater beneath parts of the suburbs of Penfield, Direk, Burton, Salisbury North, Paralowie, Waterloo Corner, St Kilda and Bolivar. The PFAS Management Area comprises RAAF Base Edinburgh and surrounding area, as shown on Figure B1 in Appendix B.

A general summary of the current land uses surrounding the base, with consideration of the land use zones identified in the South Australian Planning and Design Code, is provided below:

- **North:** A childcare facility is located within 200 m of the base boundary (on Argent Road). Commercial/industrial (strategic employment), agricultural (rural horticultural), and recreational (master planned neighbourhood and rural living) land uses are located to the north of the base, with low-density residential land (general neighbourhood) further to the north-east.
- **East:** Commercial/industrial (strategic employment and innovation, urban activity centre) land uses are located to the east of the base, including the Defence Science and Technology Group (DSTG) site located immediately south-east. Further to the east there is residential (established neighbourhood and housing diversity neighbourhood) land use.
- **South:** Agricultural (rural and rural living), industrial/commercial (strategic employment) and residential (general neighbourhood) land uses are located to the south of the base, with some areas designated open space (e.g., Kaurna Park Wetland).
- **West:** Agricultural (rural and rural horticultural) and commercial/industrial (strategic employment) land uses are located to the west of the base, with some recreational land uses.

Broadly, the agricultural areas off-base include broad acre cultivation of edible produce (e.g., wheat, vegetables) interspersed with more intensive market garden and hydroponic farming of fruits and vegetables, and smaller scale hobby farms used primarily for domestic scale production of edible produce. In addition, there are several properties that are used for domestic and commercial horse training activities to the north and west of the base.

2.3 Edinburgh GPA

The Management Area is aligned with Stage 1 of the Edinburgh Groundwater Prohibition Area (GPA). The Edinburgh GPA was established by the Environment Protection Authority South Australia (EPA SA) in early 2022 to protect both current and future landholders from accessing PFAS contaminated groundwater via a bore on their property. Stage 1 of the GPA prohibits the taking of groundwater from the 1st, 2nd and 3rd Quaternary aquifers (Q1 – Q3) and the Carisbrooke Sand (Q4) aquifer. The lateral extent of the Stage 1 GPA for the different aquifers varies throughout the Management Area, as shown on Figure B2 in Appendix B.

A subsequent extension of the GPA was established by the EPA SA in early 2023 (identified as Stage 2). The Stage 2 GPA extends beyond the Management Area and applies only to the Q1 and Q2 aquifers, to a depth of 20 metres below ground surface. The lateral extent of the Stage 2 GPA is also shown on Figure B2 in Appendix B.

2.4 Environmental Setting

A summary of the environmental setting of the Management Area is as follows:

- The highest temperatures are experienced during the months of January and February, both with a mean daily maximum temperature of 30°C. The lowest temperatures typically occur in July with a mean maximum temperature of 15.3°C.
- The highest rainfall rates typically occur during the month of July with a mean monthly rainfall of 53.8 mm, whilst the lowest mean rainfall occurs in the month of February (18 mm).
- The average prevailing wind direction since 1972 has been from the north-east in the morning (09:00 readings) and south-west in the afternoon (15:00 readings).
- The topography of the base and broader Management Area is relatively flat. Stormwater generated on-base is typically directed to the Helps Road Drain where it exits the base across the southern boundary. There is a second stormwater discharge point across the southern boundary to the north-west of the Helps Road Drain (identified as the Western Swale). However, this typically receives much lower volumes of stormwater given the unsealed nature of the small sub-catchment in this portion of the base.
- Stormwater within the Helps Road Drain off-base is directed to the Kaurna Park Wetland located approximately 2 km south to south-west of the base, entering the wetland at the north-eastern extent.
- The base and the broader Management Area are located in the Northern Adelaide Plains area, which comprises Quaternary and Tertiary aged sediments generated by the erosion of the Mount Lofty Ranges, located approximately 15 km to the east. The sedimentary sequence in the Management Area comprises approximately 500 m of Tertiary aged material overlain by approximately 100 m of Quaternary aged sediments.
- The main lithology within the Quaternary aged formations (the Pooraka Formation and the Hindmarsh Clay) typically comprises silty and sandy clays with isolated lenses of sand and gravel. These coarser units form a number of thin sub-aquifers separated by silt and clay aquitards. The shallowest of the Quaternary Aquifer units is the Q1 Aquifer, which may be semi-continuous and range from unconfined to semi-confined in nature. During the DSI program, the Q1 Aquifer was generally intersected at depths between 5 and 12 m below ground level throughout the Management Area.
- Below the Q1 Aquifer are the Q2, Q3 and Q4 Aquifers which are typically intersected at depths ranging from 16 to 30 m, 31 to 45 m and 46 to 60 m respectively. The Q2, Q3 and Q4 Aquifers

are also semi-continuous aquifers separated by clay and silt confining beds (i.e., aquitards). The Q4 Aquifer is also known regionally as the Carisbrooke Sand Aquifer.

- The Tertiary sediments which underlie the Quaternary sediments comprise four confined aquifers designated T1 to T4, each of which may comprise various sub-aquifers. The majority of abstracted groundwater in the Adelaide metropolitan area, including the Northern Adelaide Plains, is obtained from the T1 Aquifer. Within the Management Area, the T1 Aquifer is the primary aquifer used by market gardeners and commercial irrigators (i.e., high-volume irrigators) and is expected to occur at depths ranging from approximately 80 to 110 m.
- Regional groundwater flow is typically to the south-west, with components of groundwater flow in some areas being more westerly and some areas more southerly.

Further information about the Management Area environmental setting is provided in the 2019 OMP.

3 EXTENT OF PFAS CONTAMINATION

This section provides an outline of the PFAS sources, 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 the base. This information is often referred to as a CSM, which was reviewed as part of the 2025 PMAP revision. For more detailed information informing the CSM, refer to the reports listed in Appendix A.

3.1 Source areas

Source areas can be primary or secondary. Primary sources are generally areas of PFAS contamination where aqueous film forming foam (AFFF) was used or stored, 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 at RAAF Base Edinburgh through previous investigations (Appendix A) are presented the 2025 PMAP. A total of 12 primary PFAS source areas were identified during the DSI (JBS&G, 2018) and prioritised for risk management based on the amount of PFAS they contained. Additional monitoring and investigation has subsequently been undertaken at the base to improve understanding of these source areas and to inform the risk management requirements. The 2025 PMAP provides an update on the current status of source areas.

3.2 Transport pathways

PFAS can travel from a source to human or environmental receptors via transport pathways, such as surface water, groundwater and stormwater. The transport pathways identified at and surrounding RAAF Base Edinburgh were summarised in the DSI report completed in 2018 (JBS&G, 2018) and are briefly described below. A copy of the DSI report can be downloaded from the RAAF Base Edinburgh documents archive.

Laboratory analysis conducted on soil and concrete samples showed that the key analytes of interest, namely perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS), were readily able to leach from the samples when exposed to water. Without management, the soil and concrete source areas at the base present an ongoing source of PFAS contamination to nearby stormwater drainage features (including Helps Road Drain) and the underlying groundwater system.

Defence targeted remediation of highly impacted soils and concrete at the major source areas across the base to reduce leaching and hence limit the movement of PFAS from the base over the longer term.

Due to the persistence of PFAS in the environment, when PFAS contamination enters surface water and groundwater it can migrate long distances in the direction of flow. Evidence of off-base migration of PFAS in both surface water and groundwater has been confirmed by Defence's monitoring programs.

It was determined that the majority of PFAS discharging from the base is from surface water flows rather than groundwater (JBS&G, 2023). More specifically, the mass of PFAS discharging from the base during a typical rainfall year (i.e., where average stormwater discharge is expected) was estimated to be as much as ten times higher in surface water than groundwater.

In addition to the lateral migration of PFAS contamination in groundwater, sampling programs also identified vertical migration of PFAS contamination through the shallow Quaternary aquifers beneath and down hydraulic gradient of the base. PFAS contamination was found to extend to the Q4 Aquifer in some areas although at significantly lower concentrations than that observed in the overlying Q1 and Q2 Aquifers (the aquifers are shown on Figure B1, Appendix B). Field observations, groundwater analytical results, and assessments of water chemistry indicated a varying degree of hydraulic connectivity between the Quaternary Aquifer units, with a general downward hydraulic gradient between the Q1 and Q2 Aquifers and the underlying Q3 and Q4 Aquifers.

A transient water level monitoring program completed post the DSI program also identified a degree of interaction/connection between the Q3/Q4 and T1 Aquifers in some portions of the Management Area (noting this updated understanding has been reflected in the refined CSM presented in the 2025 PMAP). Continued monitoring of Q3 and Q4 wells as part of the ongoing monitoring program will allow an assessment of potential risks to the T1 Aquifer. Furthermore, targeted monitoring of water quality in the T1 Aquifer is being undertaken as part of the ongoing monitoring program (which supplements sampling completed during the DSI), with no identification of PFAS impacts in the T1 Aquifer.

The major stormwater drainage features throughout the base and the broader Management Area are unlined stormwater drains and detention basins. It is noted that the distribution of PFAS in the shallow groundwater system off-base tends to follow these water courses.

As noted above, soil and concrete remediation works at the base have been focussed on reducing the spread of PFAS to waterways and the underlying groundwater system by targeting remediation in shallow soils across key source areas where the highest PFAS concentrations and mass were identified.

3.3 Receptors and risks

Three potential exposure risk scenarios were identified by the Human Health Risk Assessment (HHRA) and Preliminary Ecological Risk Assessment (PERA) (JBS&G, 2019b).

Table 1 below describes each of these exposure scenarios and provides a summary of the control measures and management actions implemented by Defence, the EPA SA, and the City of Salisbury Council. Further details relating to the risk management actions implemented by Defence and the status of each action are presented in the 2025 PMAP.

Table 1. Potentially elevated PFAS exposure risks

Original risk scenarios	Current status of risks
Elevated human exposure through unlicensed use of Quaternary Aquifer groundwater, including potential future risk to licensed users.	• A program implemented by Defence to replace licensed Quaternary aquifer bores with deeper Tertiary aquifer (T1 and T2) bores in the Management Area. • Establishment of the Edinburgh GPA (as shown on Figure B2 in Appendix B). • The measures have removed any current or future risks to potential receptors that may be exposed to PFAS contaminated Quaternary aquifer groundwater. • Ongoing monitoring will continue to assess any potential for impacts to the underlying T1 Aquifer.

Original risk scenarios	Current status of risks
Elevated human exposure through consumption of carp from Kaurna Park Wetland, or other locations within Helps Road Drain downstream of the base.	• Existing signage that prohibits fishing was established by the City of Salisbury Council due to the wetland being a man-made stormwater detention basin. This prohibition existed prior to the PFAS investigations. • Additional signage has been erected at all entrances to the wetland and areas where other permanent surface water features are present to enhance the existing controls.
Exposure to ecological receptors (i.e., protected migratory birds) associated with consumption of aquatic biota in Kaurna Park Wetland.	• On-base remedial activities have been completed across key source areas to mitigate the ongoing risk of impact to surface water, including stormwater that discharges from the base and which is ultimately directed to the wetland via Helps Road Drain (refer to Section 3.2). • Over the longer term, this will reduce concentrations of PFAS leaving the base and reduce these risks further.

4 ONGOING MONITORING PLAN

This section sets out the data quality objectives (DQO), monitoring scope and assessment requirements. Changes made to the 2019 OMP are summarised in the following sections, and supporting rationale is provided in Appendix D.

4.1 Sampling, Analysis and Quality Plan

A Sampling and Analysis Quality Plan (SAQP) will be developed prior to implementation of the OMP. The SAQP will provide information on data quality assurance procedures and measures including data quality indicators (DQI), sampling methodologies and analytical methods. The SAQP will be updated as required.

4.2 Data Quality Objectives

The DQO process is an iterative planning approach used to define the type, quantity and quality of data that is needed to inform decisions relating to the environmental condition of a site. The seven-step DQO process:

- clarifies the study objective
- defines the most appropriate collection of data as relevant to the study objective
- determines the conditions from which to collect data
- specifies tolerable limits on decision errors, which will be used as the basis for establishing the quantity and quality of data needed to support the decision.

The DQOs for monitoring are presented in Table 2. They have been prepared in line with the DQO process outlined in Schedule B2 of the ASC NEPM.

Table 2. Data Quality Objectives

Process	Description
Step 1: State the problem	Concentrations of PFAS exceeding relevant human health and ecological screening criteria have been identified in multiple media, including soil, surface water and groundwater, at multiple locations on-base with migration of surface water and groundwater impacts off-base. These impacts triggered the EPA SA to establish a GPA surrounding RAAF Base Edinburgh, as well as Quaternary aquifer water supply bore replacement activities by Defence to mitigate potential risks to users of Quaternary aquifer groundwater. In addition, targeted soil and groundwater remediation activities have been completed on-base targeting mass reduction and a reduction in PFAS mass flux from the base via surface water and (to a lesser extent) groundwater. PFAS contamination in groundwater is known to extend vertically throughout the Quaternary aquifer system on- and off-base. However, a transient water level monitoring program completed post the DSI program identified a degree of interaction/connection between the deeper Q3/Q4 Quaternary aquifers and the underlying T1 Aquifer in some portions of the Management Area. Continued monitoring of Q3 and Q4 groundwater wells as part of the ongoing monitoring program will allow an assessment of potential risks to the T1 Aquifer.

<table>
<tr><th>Process</th><th>Description</th></tr>
<tr><td>Step 2: Identify the decision/goal of the study</td><td>The overall goal of the study is to continue a systematic routine groundwater and surface water sampling and analysis program to provide current and ongoing information on the distribution and concentrations of PFAS in the Management Area.
Specific goals of the ongoing monitoring program are to:
• understand the changes and trends in the nature, extent and magnitude of PFAS concentrations in groundwater and surface water within the Management Area
• understand if the nature, extent and magnitude of PFAS concentrations have changed in response to the risk management actions completed by Defence (as detailed in the 2025 PMAP)
• understand if the nature, extent and magnitude of PFAS concentrations have changed significantly to warrant refinement of any existing or future planned risk management measures.</td></tr>
<tr><td>Step 3: Identify the information inputs</td><td>To allow assessment of the data against the study goal listed in Step 2 above, the following inputs will be considered:
• PFAS results from previous environmental investigations, including the PFAS mass flux study (Appendix A)
• PFAS remedial activities completed at the base, including any associated PFAS data collection (Appendix A)
• meteorological data including rainfall
• groundwater and surface water data collected and analysed for PFAS during implementation of this OMP
• groundwater elevation data
• surface water conditions at time of sampling of surface water
• site status and land use scenarios and whether conditions and uses have changed
• historical monitoring results and statistical analysis to identify trends
• advances in laboratory analytical approaches and changes in regulatory requirements.
Key inputs to the decisions also include field observations and measurements, sample collection, preservation, storage, and transportation documentation for each media of concern, analytical methods, and field and laboratory Quality Assurance/Quality Control (QA/QC) data.</td></tr>
<tr><td>Step 4: Define the boundaries of the study</td><td>The spatial and temporal boundaries that apply for data collection are detailed below and will influence the decision-making process for ongoing monitoring:
• The spatial boundary for data collection and decision making is limited to the Management Area shown on Figure B1 in Appendix B, and the monitoring wells located in the immediate surrounds.
• The sampling completed as part of the OMP will be limited to groundwater and surface water at the frequencies defined in Section 4.3.
• Monitoring is to occur for a further three-year period after which time a review will be completed to assess what level of ongoing monitoring may be appropriate.</td></tr>
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Process	Description
Step 5: Develop the analytical approach/ decision rules	The data will be used to assess whether PFAS impacts as a result of historical use of AFFF at RAAF Base Edinburgh have changed in nature and extent, which may alter the understanding or assessment of identified risks to human or ecological receptors into the future. The decision rules can be defined as: • Analytical selection: all samples will be analysed for the extended PFAS suite (Section 4.5). • Analytical method selection for PFAS is based on achieving an appropriate laboratory limit of reporting (LOR) in the various media to be analysed based on the adopted human health and/or ecological screening criteria. • Sample locations have been selected with the objective of monitoring PFAS trends (temporal and seasonal) and providing early warning of changes in the migration of PFAS in surface water and groundwater. • If the laboratory QA/QC data are within the acceptable ranges, the data will be considered suitable for use. • If PFAS concentrations are reported above the laboratory LOR, where it was previously <LOR, then further assessment of the data may be required. Note, specific triggers for action and review of monitoring data and monitoring locations are detailed in Section 7, including triggers for resampling where PFAS is detected for the first time, or is detected above relevant guidance values. In addition, trigger and response measures are presented in relation to statistical assessment of the PFAS dataset (e.g., statistically significant increasing or decreasing trends). The decision on the acceptance of the analytical data should be made on the basis of the DQIs as follows: • **Precision:** A quantitative measure of the variability (or reproducibility) of data. • **Accuracy:** A quantitative measure of the closeness of reported data to the true value. • **Representativeness:** The confidence (expressed qualitatively) that data are representative of each medium present within the study area. • **Completeness:** A measure of the amount of useable data from a data collection activity. • **Comparability:** The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

<table>
<tr><th>Process</th><th>Description</th></tr>
<tr><td>Step 6: Specify performance or acceptance criteria</td><td>Specific limits for the works included in the OMP are in accordance with the appropriate guidance made or endorsed by state and national regulations, appropriate indicators of data quality, and standard procedures for field sampling and handling.
This step also examines the certainty of conclusive statements based on the available new data collected. This should include the following points to quantify tolerable limits:
• A decision can be made based on a certainty assumption of 95% confidence in any given data set. A limit on the decision error will be 5% that a conclusive statement may be a false positive or false negative.
• A decision error in the context of the decision rule presented above would lead to either underestimation or overestimation of the risk level associated with a particular sampling area.
• Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the study area. To address this, alternate locations may be sampled, or additional sampling events may be conducted.
• There may be limitations in the data if aspects of the OMP cannot be implemented, such as:
- Surface water locations may be dry at the time of sampling.
- Groundwater sampling locations are damaged or destroyed and therefore cannot be sampled.
- Access to some sampling locations could be being restricted due to operational activities or inaccessible due to weather.
• Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this the following measures are proposed:
- Collection of sufficient sample mass to facilitate analysis reported to standard laboratory detections limits. Collection of insufficient sample mass may result in raised detection limits.
- Field staff to follow a standard procedure when collecting samples, including decontamination of tools, and use of appropriate sample containers and preservation methods.
- Laboratories to follow a standard procedure when preparing samples for analysis and undertaking analysis.
- Laboratories to report QA/QC data for comparison with the DQIs established for the SAQP.</td></tr>
<tr><td>Step 7: Develop the plan for obtaining data</td><td>The scope and methodology for the sampling events to gather data is defined within this OMP document. The SAQP to be developed specific to implementing this OMP will define the manner in which data will be collected to achieve the study goals defined above.</td></tr>
</table>

4.3 Proposed monitoring intervals

Gauging of depth to groundwater and sampling of the nominated Quaternary aquifer groundwater monitoring wells (refer Section 4.4) will be undertaken annually in summer. This frequency is a reduction from the previous biannual monitoring program, which is made in consideration of the following:

- The establishment of the Edinburgh GPA and execution of the Quaternary aquifer water supply bore replacement program by Defence has effectively mitigated any risks related to use of PFAS contaminated Quaternary groundwater in the Management Area.
- Ongoing sampling completed since 2020 has not shown a significant seasonal trend in PFAS concentrations in Quaternary groundwater.
- The effects that risk management actions completed on-base (including targeted soil and groundwater remediation works) will have in reducing PFAS concentrations in Quaternary aquifer groundwater are only expected to be observed on a time scale that is represented in years rather than months.

Biannual sampling is proposed for the targeted T1 Aquifer bores (refer Section 4.4) to enable early identification of any PFAS impacts in the Tertiary aquifer system that may result from interaction/ connectivity with the overlying Q3/Q4 Aquifers.

Surface water sampling at targeted on-base and off-base locations is proposed biannually, targeting seasonal fluctuations in PFAS concentrations across the surface water network within the Management Area. While surface water within the stormwater network is generally ephemeral, surface water sampling during the summer sampling event will target opportunistic “first-flush” rainfall events where possible. Locations where surface water is permanently present will be sampled to identify any discernible trends in concentrations between relatively “wet” (i.e., winter) and “dry” (i.e., summer) periods. Retaining a biannual sampling frequency for surface water is considered appropriate on the basis that the targeted soil remediation works completed on-base are expected to have a more immediate effect on reducing PFAS concentrations in stormwater than compared to groundwater.

4.4 Monitoring locations

4.4.1 Groundwater

The ongoing groundwater monitoring program at RAAF Base Edinburgh consists of 43 x Q1, 23 x Q2, 9 x Q3 and 5 x Q4 Aquifer groundwater monitoring wells, 1 x Q2 private bore (no longer in use), 3 x T1 Aquifer production bores, and 1 x T1 observation well (installed and maintained by the DEW). The groundwater sample locations are depicted on Figure B3 in Appendix B, with sample location coordinates provided in Appendix C.

The breakdown of the individual groundwater wells including a summary of the justification for sampling is provided in the Table 3 below. In summary:

- A total of 4 wells are located up hydraulic gradient of the PFAS source areas to provide information on any changes to background conditions and assist with assessing any changes to groundwater flow direction.
- A total of 25 wells are proposed at locations on-base within, adjacent to or immediately down hydraulic gradient of identified PFAS source areas.
- A total of 16 wells are located along the base boundary and are targeted for monitoring changes in PFAS concentrations at the base boundary. These wells will also provide data to assist with any future PFAS mass flux assessment.

- A total of 10 wells are located adjacent to Helps Road Drain off-base, the primary surface water channel that directs stormwater from the base to the Kaurna Park Wetland, and after that to the Barker Inlet. Helps Road Drain has influenced the migration of PFAS from the base, which has led to elevated concentrations within the Quaternary aquifers as a result of groundwater recharge from the overlying stormwater system. A number of the targeted groundwater wells adjacent to Helps Road Drain have reported the highest concentrations of PFAS off-base.
- A total of 25 wells off-base are also targeted to monitor the lateral and vertical extent of PFAS impacts off-base, including a Q2 monitoring well in proximity to a licensed Quaternary aquifer groundwater user that is just outside the extent of the Edinburgh GPA.
- A total of 4 T1 Aquifer bores are targeted for ongoing monitoring to confirm the absence of PFAS impacts in the T1 Aquifer off-base.
- A private property Q2 Aquifer former water supply bore (now prohibited from beneficial use following establishment of the GPA) is targeted for ongoing monitoring to assist with assessing the lateral and vertical extent of PFAS impacts off-base. The property also has a newer T1 Aquifer bore that was installed as a replacement for the Q2 bore, which is also targeted for ongoing monitoring.

Off-site monitoring locations will require the agreement of the relevant local government authority, DEW, and private landowner (refer to Section 8.2).

Table 3. Summary of targeted groundwater monitoring locations

Location Description	Location ID On-Base Locations	Location ID Off-Base Locations	Rationale
Background north and north-east of base	**Q1 Aquifer Wells:** MW2135, MW2159 **Q2 Aquifer Wells:** MW2216	**Q1 Aquifer Wells:** MW4218	Monitoring wells located in background and/or up hydraulic gradient locations including off-base. Includes deeper groundwater monitoring wells due to the identified vertical migration between Quaternary aquifers. Monitoring will identify the presence of PFAS in groundwater concentrations either entering the base and/or localised changes to groundwater flow directions.
Source Area P4	**Q1 Aquifer Wells:** MW2358, MW2411 **Q2 Aquifer Wells:** MW2126	Nil	Monitoring wells with most significant PFAS concentrations located within remediated P4 source area. To be used to monitor changes in PFAS concentrations over time following soil remediation.
Source Areas P9 and P15, P11, P16 and P21.	**Q1 Aquifer Wells:** MW2116, MW2120, MW2148, MW2149, MW2188, MW2197, MW2201, MW2203 **Q2 Aquifer Wells:** MW2158, MW2189, MW2200, MW2202 **Q3 Aquifer Wells:** MW2270	Nil	Monitoring wells with most significant PFAS concentrations located within and down hydraulic gradient of remediated source areas. To be used to monitor changes in PFAS concentrations over time following soil remediation. Monitoring will also track migration of the PFAS plume over time.

Location Description	Location ID On-Base Locations	Location ID Off-Base Locations	Rationale
Source Areas P1, P3A & P3B, and P27	**Q1 Aquifer Wells:** MW2114, MW2130, MW2131, MW2193, MW2528, MW2490 **Q2 Aquifer Wells:** MW2157, MW2209, MW2210	Nil	Monitoring wells with most significant PFAS concentrations located within and down hydraulic gradient of remediated source areas. To be used to monitor changes in PFAS concentrations over time following soil remediation. Monitoring will also track migration of the PFAS plume over time.
Southern, western and northern base boundary	**Q1 Aquifer Wells:** MW2129, MW2172, MW2175, MW2180, MW2182, MW2184 **Q2 Aquifer Wells:** MW2145, MW2173, MW2176, MW2183, MW2185 **Q3 Aquifer Wells:** MW2275, MW2281 **Q4 Aquifer Wells:** MW2285, MW2286	**Q1 Aquifer Wells:** MW4013	Boundary locations within and down hydraulic gradient of identified source areas. These targeted locations will monitor PFAS concentrations at the base boundary and provide data to assist with any future PFAS mass flux assessment.
Helps Road Drain (off-base)	Nil	**Q1 Aquifer Wells:** MW4001, MW4015, MW4053 **Q2 Aquifer Wells:** MW4035, MW4045, MW4048 **Q3 Aquifer Wells:** MW4068, MW4069, MW4070 **Q4 Aquifer Wells:** MW4075	Monitoring wells targeting groundwater impacts influenced by historical migration of PFAS impacted surface water along both the former and current alignment of Helps Road Drain through the Southern Detention Basin, off-base to the Kaurna Park Wetland extending down to the Barker Inlet. Deeper aquifer units targeted as PFAS concentrations reported within the Q1, Q2, Q3, and Q4 Aquifers.

Location Description	Location ID On-Base Locations	Location ID Off-Base Locations	Rationale
Lateral and vertical extent of PFAS impacts off-base and proximity to a licensed Quaternary aquifer groundwater user	Nil	**Q1 Aquifer Wells:** MW4020, MW4023, MW4027, MW4037, MW4041, MW4052, MW4055, MW4057, MW4058, MW4059, MW4060, MW4064, MW4072, MW4219 **Q2 Aquifer Wells:** MW4021, MW4024, MW4065, MW4066, MW4076, MW4077 **Q3 Aquifer Wells:** MW4071, MW4073, MW4074 **Q4 Aquifer Wells:** MW4078, MW4079	Monitoring locations to continue to assess the lateral and vertical extent of PFAS impacts off-base. Monitoring will provide data on PFAS plume migration over time and changes in groundwater elevation and flow direction. MW4065 is also located adjacent to a licensed Q2 Aquifer groundwater user that is located just outside the extent of the Edinburgh GPA. Whilst this area off-base is not expected to be located down hydraulic gradient of any known source areas, ongoing monitoring will enable assessment of any potential risks to the private groundwater user in the event of a change in groundwater flow direction and PFAS plume extent.
Private Quaternary Bores	Nil	**Q2 Aquifer Wells:** MW4223	Monitoring of former water supply bore to continue to assess the lateral and vertical extent of PFAS impacts off-base.
Tertiary Aquifer Bores	Nil	**T1 Aquifer Bores:** MW4220 (DEW), MW4221 and MW4222 (Council), MW4230 (private property)	Biannual sampling of available City of Salisbury, DEW, and private property T1 Aquifer irrigation and observation bores to confirm absence of PFAS impacts in the Tertiary aquifer.

4.4.2 Surface Water

Surface water sampling locations have been selected based on previous critical data points (e.g., locations that are adjacent to source areas, are upstream of source areas, and those that have reported the highest concentrations to date) to extend the temporal data set and understanding of seasonal fluctuations in PFAS concentrations in surface water both on- and off-base. The breakdown of the individual surface water sample locations, including a summary of the justification for sampling, is provided in the Table 4 below.

On-base sampling locations are located throughout the major stormwater drainage features including Helps Road Drain, Taranaki Drain, and the Southern Detention Basin. The boundary discharge locations in the Western Swale and Helps Road Drain are also targeted.

The off-base locations are positioned downstream in Helps Road Drain, the inlet and outlet of the Kaurna Park Wetland and further downstream to Port Wakefield Road. In addition, a small number of locations within the stormwater network upstream of the base have been targeted to assess any potential for the introduction of PFAS contamination from off-base sources.

On-base surface water sampling will also be targeted in ephemeral drains immediately down-gradient of the remediated areas (i.e., prior to discharge of these drainage lines into Helps Road Drain). These sampling locations have not been formally nominated, but instead samples will be opportunistically collected where water is flowing during biannual sampling completed during or following a rainfall event. The targeted surface water sampling locations and remediated source areas are graphically presented on Figure B4 in Appendix B.

Further to the manual surface water sampling locations, ongoing sampling of the automated composite sampler (SW123) located immediately downstream of the base in Helps Road Drain should be undertaken on a monthly basis. Sampling of the composite sampler is to be coordinated through Water Data Services, the contractor engaged by the City of Salisbury to maintain the device. Water Data Services also complete monthly sampling on behalf of the Council (typically in the first week of each month). The location of the composite sampler is also shown on Figure B4 in Appendix B.

Off-base monitoring locations will require the agreement of the relevant local government authority (refer to Section 8.2).

Table 4. Summary of targeted surface water monitoring locations

Location Description	Location ID On-Base Locations	Location ID Off-Base Locations	Rationale
Upgradient locations	SW003, SW028	SW029, SW032, SW033	Designated upgradient on-base and off-base locations targeting potential off-base sources of PFAS entering the base.
On-base surface water drain network	SW006, SW017, SW018, SW019, SW021, SW050, SW054	Nil	Targeted sampling locations on-base along the surface water network including Helps Road Drain and the Taranaki Drain. Also includes locations within the Southern Detention Basin.
Surface water exiting the base	SW037	Nil	Targeted sampling location at the exit point of the Western Swale along the southern base boundary.
Helps Road Drain south of the base boundary	Nil	SW009, SW010, SW011, SW012, SW062, SW123	Includes sampling locations along the Helps Road Drain, entrance and exit to Kaurna Park Wetland and south along Helps Road Drain adjacent to Port Wakefield Road.
Kaurna Park Wetland	Nil	SW058, SW059, SW078	Targeted locations within Kaurna Park Wetland.

4.5 Sample analysis

Samples will be analysed by a National Association of Testing Authorities (NATA) accredited laboratory for a suite of PFAS as outlined in Appendix E, using NATA accredited methods.

Laboratory LORs must be selected to achieve the OMP objectives (Section 1.2) and the DQO's. The rationale for selecting LORs below the standard LOR must be provided in the SAQP.

QA/QC measures will be outlined within the SAQP.

In addition to PFAS, field measurement of water quality parameters such as pH, electrical conductivity (EC), redox potential, dissolved oxygen (DO), temperature, total dissolved solids (TDS), salinity, and turbidity (where feasible) will be undertaken on all surface and groundwater samples.

5 OTHER ASPECTS

To achieve the OMP objectives (Section 1.2), inform the CSM and allow assessment of the site risk profile, a review of other aspects should be undertaken, including (but not limited to) water use surveys, registered bore searches, change in land zoning, changes in land use on- and off-base, development works, remediation works, etc.

The review requirements for other aspects are outlined in Table 5.

Table 5. Other aspects review

Aspect	Review requirements
Information sources	The OMP will consider other sources of information, such as: • Data obtained from works associated with PMAP implementation, namely remediation actions. • PFAS data obtained during base development projects (where relevant). • Changes which may result from the specific or cumulative impact of remediation or containment actions, changes to the stormwater network, and/or changes to hydrogeology.
Development works or changes in on-base land use	The OMP will consider development works and/or changes in on-base land use that may have the potential to impact the nature and/or extent of PFAS, such as a significant change of land use in a remediated source area or alteration of the stormwater network. These changes may require review of the OMP to assess whether changes to monitoring will be required (noting actions may include reintroducing monitoring of existing wells on- or off-base, installing new monitoring wells, adding new surface water monitoring locations, or altering the frequency of monitoring).
Development works or changes in off-base land use	The OMP will consider development works and/or changes in off-base land use that may have the potential to impact the nature and/or extent of PFAS, such as a change of stormwater management within the Management Area. This may require review of the OMP to assess whether changes to the monitoring extent or frequency will be required.
Changes in the nature or extent of the Edinburgh GPA	Should the EPA SA propose or implement changes to the Edinburgh GPA (which may be triggered through interim audit advice), then this may trigger a review of the OMP to assess whether changes to the monitoring extent or frequency will be required.
Changes in nationally endorsed PFAS screening criteria	The OMP will consider any changes to the current human health and ecological screening criteria for PFAS, as presented in the PFAS NEMP 3.0 (HEPA, 2025). A change to the human health screening criteria will require a review of the adequacy of the GPA extents (lateral and vertical), which forms the primary off-base risk mitigation measure for PFAS contamination. This review should be undertaken in consultation with the Site Contamination Auditor as there may be a requirement to issue interim audit advice to EPA SA. It is noted that the PFAS NEMP 3.0 was released in March 2025 during the revision of this OMP (superseding the previous PFAS NEMP Version 2.0). This OMP has been developed with reference to the PFAS NEMP 3.0.

6 PFAS SCREENING CRITERIA

The adopted screening criteria references the PFAS NEMP 3.0 (HEPA, 2025), Defence estate and environmental strategies, and Defence PFAS-specific strategies and guidance. At the time of preparing this OMP, a number of guidance documents were available in Australia and referred to, including:

- HEPA, 2025. PFAS NEMP 3.0.
- Department of Health (DoH), April 2017. *Health Based Guidance Values for PFAS for use in site investigations in Australia*. This document is based on the works undertaken by Food Standards Australia New Zealand in 2017 (FSANZ, 2017).
- National Health and Medical Research Council (NHMRC), 2019. *Guidance on Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water*. August 2019 (NHMRC, 2019).
- ASC NEPM.

The adopted PFAS screening criteria to assess the data collected as part of the ongoing monitoring program are presented in Table 6 and Table 7.

Table 6 PFAS water criteria summary – human health

Media	Exposure scenario	Compound	Criteria	Comment/Reference
Groundwater	Drinking water	PFOS + PFHxS	0.07 µg/L	The values presented in the PFAS NEMP 3.0 (HEPA, 2025) are from DoH 2017, which published final health-based guidance values for PFAS for use in site investigations in Australia. DoH utilised the tolerable daily intake for PFOS and perfluorooctanoic acid (PFOA) from FSANZ (2017) and the methodology described in Chapter 6.3.3 of the NHMRC *Australian Drinking Water Guidelines* (ADWG) to determine drinking water values. For PFHxS, DoH 2017 noted that, *"FSANZ concluded that there was not enough toxicological and epidemiological information to justify establishing a tolerable daily intake. However, as a precaution, and for the purposes of site investigations, the PFOS tolerable daily intake should apply to PFHxS. In practice, this means that the level of PFHxS exposure should be added to the level of PFOS exposure; and this combined level be compared to the tolerable daily intake for PFOS."* The adoption of drinking water guidance values is based on the environmental values of groundwater, as documented in the DSI report (JBS&G, 2018) and 2019 PMAP.
		PFOA	0.56 µg/L	

Media	Exposure scenario	Compound	Criteria	Comment/Reference
Surface water	Recreational use	PFOS + PFHxS	2 µg/L	The values presented in the PFAS NEMP 3.0 (HEPA, 2025) are from NHMRC (2019), and are based on applying the tolerable daily intakes for PFOS and PFOA using an ingestion rate of 30 L per year (based on an ingestion rate of 0.2 L of water per event and an event frequency of 150 events per year). Once again, health based guidance values for recreational water have been adopted as a conservative screening measure, noting that there is no evidence to suggest that surface water in the Management Area is being used for swimming, which is the key exposure scenario considered in the development of these criteria.
		PFOA	10 µg/L	

Table 7 PFAS water criteria summary – ecological

Media	Exposure scenario	Compound	Criteria	Comment / Reference
Surface water	Freshwater (95% species protection - slightly to moderately disturbed systems)	PFOS	0.13 µg/L	The values are from the PFAS NEMP 3.0 (HEPA, 2025), which endorsed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality – technical draft default guideline values. It is understood that these guidelines are currently being reviewed and may be subject to future revision. As described in the DSI (JBS&G, 2018), the nearest sensitive surface water receptor downstream of the base is considered to be the Kaurna Park Wetland. This is a constructed stormwater detention system that is classified as a highly disturbed ecosystem according to guidance provided in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018). Therefore, more appropriate screening criteria may be the draft 90% species protection values applicable to highly disturbed ecosystems. However, with consideration of the fact that the guidelines do not account for effects which result from the biomagnification of toxicants in air-breathing animals or in animals which prey on aquatic organisms, the 95% species protection values were adopted as a conservative measure.
		PFOA	220 µg/L	

7 TRIGGERS FOR ACTION AND REVIEW

A critical step in establishing an effective monitoring program is to identify performance measures against which the environmental impact of PFAS can be assessed. Once these have been established, an action plan is necessary to describe the measures taken if pre-defined compliance levels are exceeded.

Performance measures designed to monitor the environmental impacts to groundwater and surface water have been assigned on the basis of the following definitions:

- **Assessment criteria:** a water quality standard that is identified as being appropriate to a contaminant in a water body in order to assess the overall impact on water quality.
- **Trigger level:** a specific assessment criterion applied to a contaminant to assess whether there have been possible adverse trends in environmental monitoring data. A trigger level is used as a tool to alert stakeholders and Regulators of these changes. The trigger levels and responses for the ongoing monitoring program at RAAF Base Edinburgh are described in Table 8.

Table 8 Trigger levels and responses

Trigger	Response
First time detection of PFAS above standard laboratory LOR in groundwater down hydraulic gradient of the identified PFAS plume off-base. OR First time detection of PFAS above standard laboratory LOR in groundwater cross or up hydraulic gradient to the identified PFAS plume off-base. OR First time exceedance of drinking water criteria in groundwater off-base.	• Request the analytical laboratory to re-analyse the sample to verify the detection. • If result is below the drinking water guidance value, then resample location during the next biannual T1 Aquifer bore monitoring event to verify detection. • If result is above the drinking water guidance value, then resample location within four weeks of laboratory confirmation to verify detection. • If a result above the drinking water guidance value is verified by resampling, then: - Notify the Site Contamination Auditor of the results as this may trigger a review of the adequacy of the GPA extents (lateral and/or vertical), which forms the primary off-base risk mitigation measure for PFAS contamination. The Site Contamination Auditor will determine if there is a requirement to issue Interim Audit Advice to EPA SA with a recommendation to review/amend the GPA extent. - Submit section 83A notification to EPA SA. • If PFAS detection is for an unregulated compound, then the need for resampling is to be made on a case-by-case basis. Review the need to submit a section 83A notification in consultation with the Site Contamination Auditor. • Review risk profile for identified potential receptors including confirmation of exposure pathways. • Issue water use surveys to any licensed extractive groundwater users in vicinity of the first-time PFAS detection (if not previously completed). • Review potential for off-base sources of PFAS to have contributed to identified cross or up hydraulic gradient impacts.

Trigger	Response
Detection of PFAS in the targeted T1 Aquifer bores.	• Request the analytical laboratory to re-analyse the sample to verify the detection. • If result is below the drinking water guidance value, then resample location during the next biannual T1 Aquifer bore monitoring event to verify detection. • If result is above the drinking water guidance value, then resample location within four weeks of laboratory confirmation to verify detection. • If a result above the drinking water guidance value is verified by resampling, then: - Notify the Site Contamination Auditor of the results as this may trigger a review of the adequacy of the GPA extents. The Site Contamination Auditor will determine if there is a requirement to issue Interim Audit Advice to EPA SA with a recommendation to review/amend the GPA extent. - Submit section 83A notification to EPA SA. • If PFAS detection is for an unregulated compound, then the need for resampling is to be made on a case-by-case basis. Submit a section 83A notification to EPA SA in consultation with the Site Contamination Auditor. • Review risk profile for identified potential receptors including confirmation of exposure pathways. • Issue water use surveys to any licensed extractive T1 groundwater users in vicinity of the first-time PFAS detection (if not previously completed).
First time exceedance of human health recreational guidelines in surface water off-base (Helps Road Drain and Kaurna Park Wetland).	• Request the analytical laboratory to re-analyse the sample to verify the detection. • Resample location within four weeks of confirmation to verify detection (if water still present). • Review risk profile, including confirmation of any potential exposure pathways. • Review management measures and amend if required.
Increasing PFAS trends identified by Mann-Kendall statistical trend test (with ≥95% confidence)	• Further assessment of the data to determine whether updates to the CSM and/or risk profile are required.
Decreasing PFAS trends identified by Mann-Kendall statistical trend test (with ≥95% confidence)	• Assess whether risks have been reduced, which may result in potential amendment to the sampling program. • Review whether reduction is related to risk management actions implemented by Defence.
Significant/unusual result not consistent with historical data (e.g., an order of magnitude increase in concentration)	• Request the analytical laboratory to re-analyse the sample to verify the result. • If result is confirmed, then resample location during the next biannual T1 Aquifer bore monitoring event to further verify the result. • Review risk profile for identified potential receptors including confirmation of exposure pathways. • Review activities occurring in proximity to the sample location to assess whether specific activities may have contributed to the significant or unusual result. • Review the need for an amendment to the sampling program (e.g., inclusion of additional monitoring points).

8 REPORTING REQUIREMENTS

8.1 Reporting

After each monitoring event, information and field and laboratory data will be documented in a sampling event report and will be uploaded to the Defence ESdat data management system in accordance with Annex L (Data Management) of the Defence Contamination Management Manual.

At the end of a specified monitoring period (typically 12 months but may vary) the whole data set (including the current and historic data) will be reviewed, and an Ongoing Monitoring Report prepared.

The Ongoing Monitoring Report will inform the objectives of this OMP, which are to identify and evaluate:

- spatial, and temporal (including seasonal) variability of PFAS in the environment
- changes to sources, transport pathways or receptors, described as a CSM for the base
- changes in risks to human and environmental receptors
- the influence that risk management activities at the base, as outlined in the 2025 PMAP, have had on PFAS in the environment, and
- whether the identified changes trigger a prescribed action and/or review (Section 7).

8.2 Stakeholder engagement

Engagement with a range of stakeholders, such as the EPA SA, Councils, other agencies, and the community will be undertaken. A stakeholder engagement plan will be prepared and/or updated to manage the engagement process.

Where off-base monitoring on private property is undertaken, a separate letter will be provided to the stakeholder presenting the results of the monitoring event.

The OMP will be published on the Defence website, along with the current PMAP and Ongoing Monitoring Report.

APPENDIX A REFERENCES

PMAP and OMP

Defence, 2019. *PFAS Management Area Plan, RAAF Base Edinburgh*, Australian Government Department of Defence, Revision 0, July 2019.

Defence, 2025. *PFAS Management Area Plan*, RAAF Base Edinburgh, Australian Government Department of Defence, Revision 1, March 2025.

Defence, 2019. *RAAF Base Edinburgh PMAP, Attachment 1: PFAS Ongoing Monitoring Plan (OMP)*, Australian Government Department of Defence, Revision 0, July 2019.

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AECOM, 2021a. *PFAS Soil Source Areas - Remediation Action Plan, RAAF Base EDN Technical Memo 33*, AECOM Australia Pty Ltd, 19 August 2021.

AECOM, 2024a. *RAAF Base Edinburgh PFAS Remediation - Soil Verification Report, Priority Area P4,* AECOM Australia Pty Ltd, 15 December 2023.

AECOM, 2024b. *RAAF Base Edinburgh PFAS Remediation - Soil Verification Report, Priority Area P9,* AECOM Australia Pty Ltd, 24 October 2023.

AECOM, 2024c. *RAAF Base Edinburgh PFAS Remediation - Soil Verification Report, Priority Area P10,* AECOM Australia Pty Ltd, 3 November 2023.

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AECOM, 2024f. *RAAF Base Edinburgh PFAS Remediation - Soil Verification Report, Priority Area P15,* AECOM Australia Pty Ltd, 10 November 2023.

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JBS&G, 2018. *RAAF Base Edinburgh Environmental Investigation of PFAS, Detailed Site Investigation (Rev 0)*, JBS&G Australia Pty Ltd, 11 December 2018.

JBS&G, 2019a. *RAAF Base Edinburgh Environmental Investigation of PFAS, Detailed Site Investigation Addendum Report (Rev 0)*, JBS&G Australia Pty Ltd, July 2019.

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JBS&G, 2023. *PFAS Mass Flux Study at RAAF Base Edinburgh, Detailed Report*. JBS&G Australia Pty Ltd, 14 February 2023.

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AECOM, 2021b. *Interpretive Report 2020, PFAS OMP - RAAF Base Edinburgh*, AECOM Australia Pty Ltd, 17 December 2021.

AECOM, 2023. *Interpretive Report 2021, PFAS OMP - RAAF Base Edinburgh*, AECOM Australia Pty Ltd, 18 October 2023.

AECOM, 2024h. *Ongoing Monitoring Report 2022, PFAS OMP - RAAF Base Edinburgh*, AECOM Australia Pty Ltd, 8 July 2024.

AECOM, 2024i. *Ongoing Monitoring Report 2023, PFAS OMP - RAAF Base Edinburgh*, AECOM Australia Pty Ltd, 17 July 2024.

Guidance Documents

ANZG, 2018. *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia, 2018.

Defence, 2023. *PMAP and OMP Revision Process*, PFAS Investigation and Management Program, Australian Government Department of Defence, Revision 0, dated 27 October 2023.

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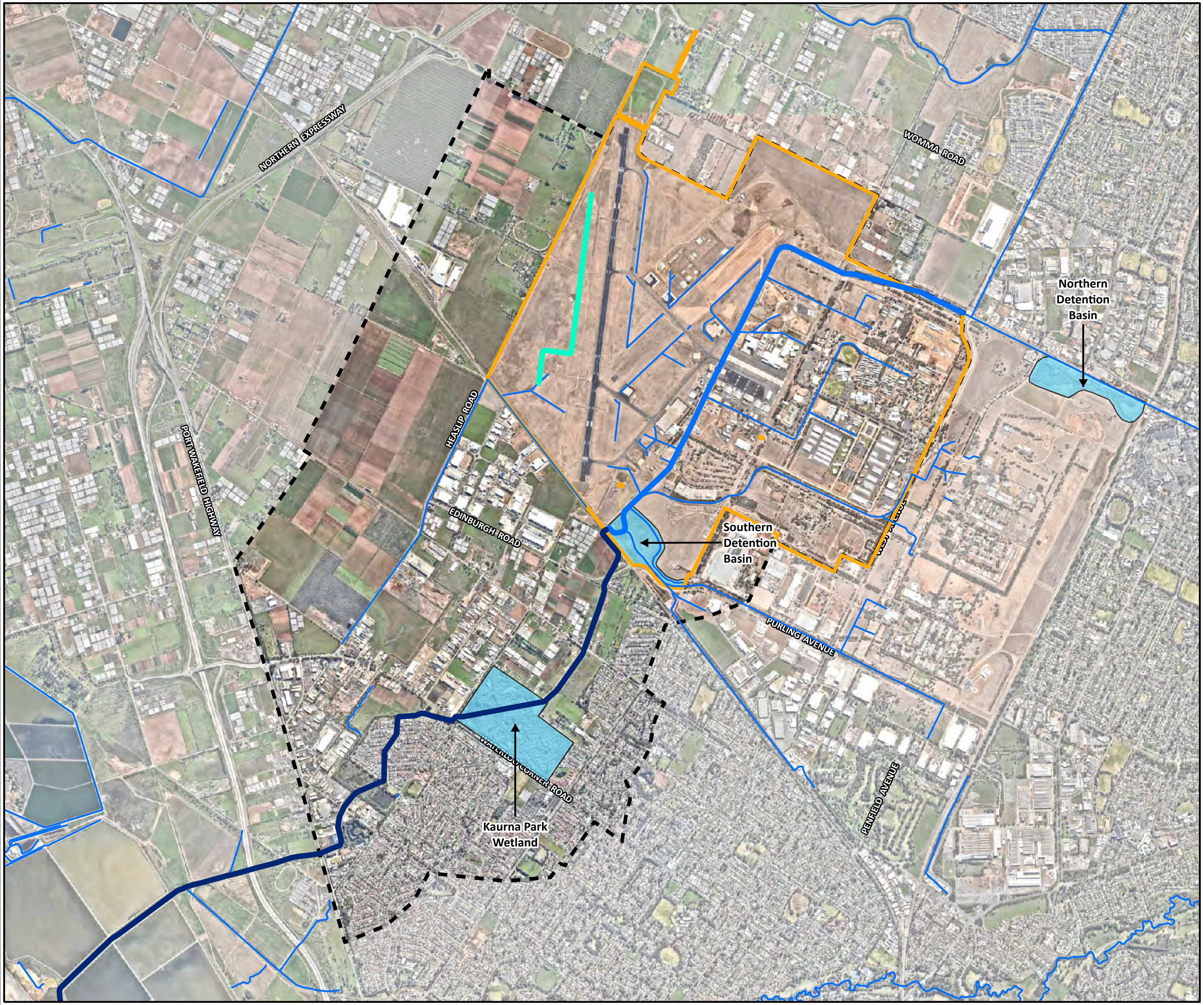
FSANZ, 2017. *Hazard Assessment Report: Perfluorooctane sulfonate (PFOS), Perfluorooctanoic acid (PFOA) and Perfluorohexane sulfonate (PFHxS)*, Food Standards Australia New Zealand, April 2017.

HEPA, 2025. *PFAS National Environmental Management Plan 3.0*, Heads of EPA Australia and New Zealand 2025.

APPENDIX B FIGURES



Legend

- RAAF Base Edinburgh Boundary
- Management Area
- Detention Basin
- Stormwater Drainage
- Helps Road Drain Onsite
- Helps Road Drain Offsite
- Western Swale

Job No: 58761

Client: Department of Defence

Version: FINAL | Date: 25-Feb-2025

Drawn By: JS | Checked By: MC

Scale 1:45,000

0 1 2
kilometres

Coord. Sys. GDA 1994 MGA Zone 54

RAAF Base Edinburgh, South Australia

RAAF BASE EDINBURGH AND SURROUNDS

FIGURE B1

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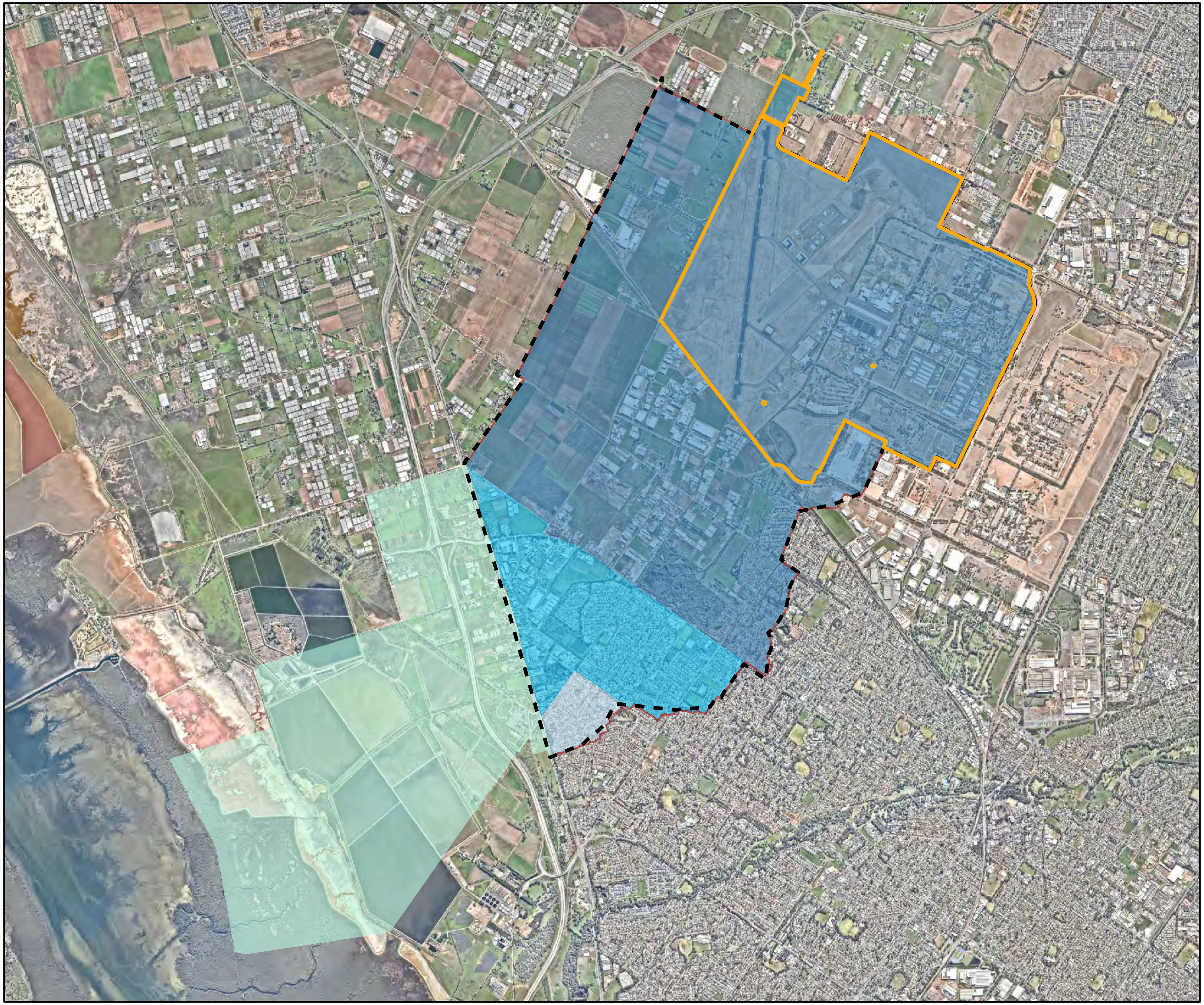
Reference: ESRI Imagery Basemap - Accessed Imagery: 25/09/2024 & www.nearmap.com - Imagery Date: 30/07/2024



Legend

- RAAF Base Edinburgh Boundary
- Management Area

Stage 1 and Stage 2 Groundwater Prohibition Areas

- Stage 1 - 0-30 m below ground level (Q1 and Q2 Aquifers)
- Stage 1 - 0-45 m below ground level (Q1, Q2 and Q3 Aquifers)
- Stage 1 - 0-60 m below ground level (Q1, Q2, Q3 and Carisbrooke Sand (Q4) Aquifers)
- Stage 2 - 0-20 m below ground level (Q1 and Q2 Aquifers)

JBS&G

Job No: 58761

Client: Department of Defence

Version: FINAL	Date: 25-Sep-2024
Drawn By: JS	Checked By: MC

Scale 1:58,000

0 1 2

kilometres

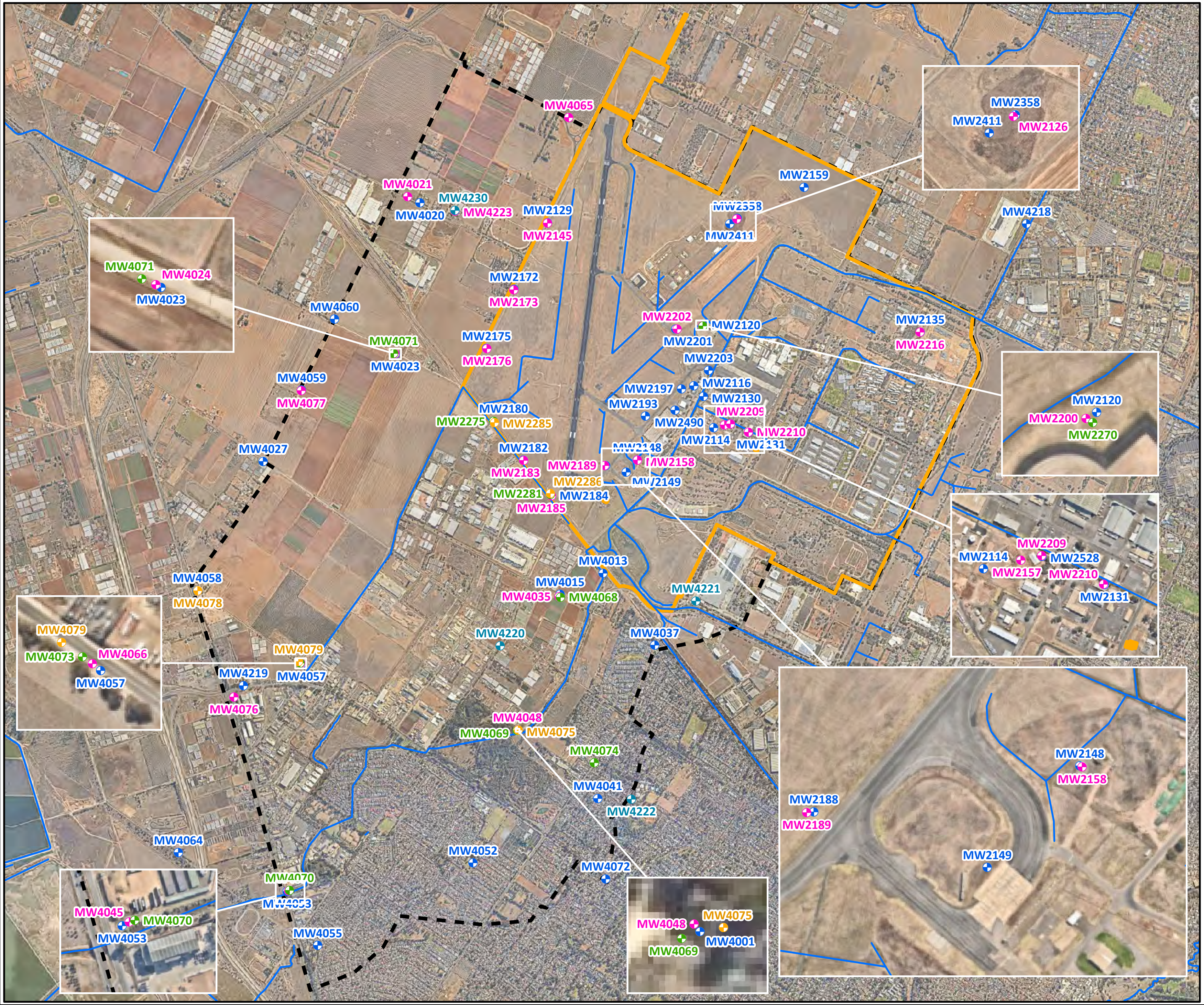
Coord. Sys. GDA 1994 MGA Zone 54

RAAF Base Edinburgh, South Australia

EDINBURGH GROUNDWATER PROHIBITION AREA EXTENTS

FIGURE B2

File Name: C:\Users\jstrauss\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\58761_RAAFEdinburgh\GIS\02_MapProjects\58761_DoD_EDN_PMAP_Implementation.aprx; Name:57861_C3_Edinburgh GPA Extents
Reference: ESRI Imagery Basemap - Accessed Imagery: 25/09/2024 & www.nearmap.com - Imagery Date: 30/07/2024



Legend

- Site_Boundary_240619
- Management Area
- Stormwater Drainage

Groundwater Monitoring Well

- Q1 Aquifer
- Q2 Aquifer
- Q3 Aquifer
- Q4 Aquifer
- T1 Aquifer

Job No: 58761	
Client: Department of Defence	
Version: FINAL	Date: 26-Feb-2025
Drawn By: TG	Checked By: MC
Scale 1:42,000	

0 0.75 1.5

Kilometres

Coord. Sys. GDA 1994 MGA Zone 54

RAAF Base Edinburgh, South Australia

OMP GROUNDWATER MONITORING LOCATIONS

FIGURE B3

File Name: C:\Users\tgilbert\JBS&G Australia\JBS&G - DCS - Internal - Documents\Projects\Department of Defence\58761_RAAFEdinburgh\GIS\02_MapProjects\58761_DoD_EDN_PMAP_OMP.aprx; Name:58761_02_PMAP_OMP_GroundwaterWells
Reference: ESRI Imagery Basemap - Accessed Imagery: 26/02/2025 & www.nearmap.com - Imagery Date: 05/05/2024

Legend

- Site Boundary
- Management Area
- Remediated PFAS Source Areas
- Detention Basin
- Helps Road Drain Offsite
- Helps Road Drain Onsite
- Surface Water Sample
- Flow Measurement Device and Automated Composite Sampler

JBS&G

Job No: 58761	
Client: Department of Defence	
Version: FINAL	Date: 05-Mar-2025
Drawn By: JS	Checked By: MC
Scale 1:42,000	

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kilometres

Coord. Sys. GDA 1994 MGA Zone 54

RAAF Base Edinburgh, South Australia

OMP SURFACE WATER MONITORING LOCATIONS

FIGURE B4

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Reference: ESRI Imagery Basemap - Accessed Imagery: 05/03/2025 & www.nearmap.com - Imagery Date: 05/05/2024

APPENDIX C SAMPLE LOCATION INFORMATION

RAAF Base Edinburgh PFAS OMP
Targeted Groundwater Sampling Locations

Location Code	Legacy Name	On/Off-Base	Area	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2135	GW2135	On-Base	Background North and Northeast of Base	284303.65	6156860.304	-34.7075718	138.6448313	20.504	Q1
MW2159	GW2159	On-Base	Background North and Northeast of Base	283365.069	6158028.597	-34.6968468	138.6348905	20.478	Q1
MW4218	-	Off-Base	Background North and Northeast of Base	285162.761	6157732.886	-34.732125905	138.58442623	9.09	Q1
MW2216	GW2216	On-Base	Background North and Northeast of Base	284302.256	6156858.146	-34.70759095	138.6448156	20.468	Q2
MW4001	GW2101	Off-Base	Helps Road Drain (off-base)	281051.12	6153645.1	-34.73584926	138.6085099	12.909	Q1
MW4015	GW2143	Off-Base	Helps Road Drain (off-base)	281393.67	6154742.55	-34.72603464	138.6125331	13.627	Q1
MW4053	GW2255	Off-Base	Helps Road Drain (off-base)	279188.909	6152343.871	-34.74717213	138.5878447	7.45	Q1
MW4035	GW2237	Off-Base	Helps Road Drain (off-base)	281385.49	6154724.714	-34.72619359	138.6124392	13.735	Q2
MW4045	GW2247	Off-Base	Helps Road Drain (off-base)	279199.241	6152349.625	-34.74712252	138.587959	7.328	Q2
MW4048	GW2250	Off-Base	Helps Road Drain (off-base)	281049.868	6153646.689	-34.73583468	138.6084967	12.975	Q2
MW4068	GW2276	Off-Base	Helps Road Drain (off-base)	281397.098	6154718.989	-34.72624766	138.6125644	13.749	Q3
MW4069	GW2277	Off-Base	Helps Road Drain (off-base)	281047.303	6153643.642	-34.73586158	138.6084679	12.92	Q3
MW4070	GW2278	Off-Base	Helps Road Drain (off-base)	279207.701	6152352.027	-34.74710271	138.588052	7.311	Q3
MW4075	GW2287	Off-Base	Helps Road Drain (off-base)	281056.027	6153645.937	-34.73584278	138.6085637	13.059	Q4
MW4020	GW2222	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280262.039	6157902.771	-34.69731845	138.6010065	13.97	Q1
MW4023	GW2225	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280062.128	6156682.135	-34.70827333	138.5985078	11.855	Q1
MW4027	GW2229	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278995.078	6155816.206	-34.71584508	138.5866391	9.532	Q1
MW4037	GW2239	Off-Base	Lateral and vertical extent of PFAS impacts off-base	282158.47	6154330.94	-34.72990662	138.6207730	15.193	Q1
MW4041	GW2243	Off-Base	Lateral and vertical extent of PFAS impacts off-base	281698.49	6153093.97	-34.74095355	138.6154327	14.606	Q1
MW4052	GW2254	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280690.601	6152573.495	-34.74542698	138.6042963	12.057	Q1
MW4055	GW2257	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279435.394	6151906.92	-34.75116227	138.5904208	7.883	Q1
MW4057	GW2259	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279304.791	6154180.176	-34.7306524	138.5895904	9.429	Q1
MW4058	GW2260	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278462.155	6154773.696	-34.7251225	138.5805504	9.407	Q1
MW4059	GW2261	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279305.562	6156391.634	-34.71072765	138.5901773	10.204	Q1
MW4060	GW2262	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279571.842	6156963.69	-34.70563095	138.593232	11.386	Q1
MW4064	GW2266	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278310.213	6152656.76	-34.74416262	138.5783357	5.885	Q1
MW4219	-	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278835.791	6154005.372	-34.69989048	138.6544269	22.01	Q1
MW4021	GW2223	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280162.081	6157953.67	-34.69683837	138.5999293	13.697	Q2
MW4024	GW2226	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280058.859	6156683.906	-34.70825667	138.5984726	11.895	Q2
MW4065	GW2267	Off-Base	Lateral and vertical extent of PFAS impacts off-base	281463.537	6158592.151	-34.69136457	138.6142922	17.754	Q2
MW4066	GW2268	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279299.733	6154184.38	-34.73061343	138.5895363	9.478	Q2
MW4076	GW2288	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278758.499	6153913.616	-34.73293587	138.5835586	7.942	Q2
MW4077	GW2289	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279303.525	6156386.059	-34.71077744	138.5901537	10.232	Q2
MW4071	GW2279	Off-Base	Lateral and vertical extent of PFAS impacts off-base	280049.801	6156687.674	-34.70822078	138.5983747	12.009	Q3
MW4072	GW2280	Off-Base	Lateral and vertical extent of PFAS impacts off-base	281762.567	6152443.874	-34.74682460	138.6159638	17.147	Q1
MW4073	GW2282	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279293.739	6154188.651	-34.73057366	138.589472	9.458	Q3
MW4074	GW2283	Off-Base	Lateral and vertical extent of PFAS impacts off-base	281669.974	6153381.792	-34.73835417	138.615196	14.06	Q3
MW4078	GW2290	Off-Base	Lateral and vertical extent of PFAS impacts off-base	278466.575	6154772.265	-34.72513635	138.5805983	9.537	Q4
MW4079	GW2291	Off-Base	Lateral and vertical extent of PFAS impacts off-base	279280.86	6154197.582	-34.73049041	138.5893338	9.505	Q4
MW2358	GW0008	On-Base	Source Area P4	282826.507	6157777.781	-34.69899246	138.6289507	20.062	Q1
MW2411	GW0321	On-Base	Source Area P4	282765.25	6157734.774	-34.69936695	138.6282713	18.718	Q1
MW2126	GW2126	On-Base	Source Area P4	282821.694	6157773.259	-34.69903218	138.628897	20.151	Q2
MW2114	GW2114	On-Base	Source Areas P1, P3A, P3B & P27	282634.947	6156088.193	-34.71417514	138.6264258	17.697	Q1
MW2130	GW2130	On-Base	Source Areas P1, P3A, P3B & P27	282552.47	6156339.583	-34.71189255	138.6255907	17.483	Q1
MW2131	GW2131	On-Base	Source Areas P1, P3A, P3B & P27	282917.551	6156051.529	-34.71456556	138.6295	18.058	Q1
MW2193	GW2193	On-Base	Source Areas P1, P3A, P3B & P27	282083.972	6156180.783	-34.71322357	138.6204378	15.918	Q1
MW2490	GW0416	On-Base	Source Areas P1, P3A, P3B & P27	282322.218	6156228.298	-34.71284622	138.6230497	17.58	Q1
MW2528	EDMW04	On-Base	Source Areas P1, P3A, P3B & P27	282771.879	6156117.22	-34.71394272	138.6279274	17.181	Q1
MW2157	GW2157	On-Base	Source Areas P1, P3A, P3B & P27	282722.366	6156108.631	-34.71400958	138.627385	17.777	Q2
MW2209	GW2209	On-Base	Source Areas P1, P3A, P3B & P27	282771.057	6156119.013	-34.71392639	138.6279189	17.075	Q2
MW2210	GW2210	On-Base	Source Areas P1, P3A, P3B & P27	282915.644	6156052.52	-34.71455622	138.6294795	18.087	Q2
MW2116	GW2116	On-Base	Source Areas P9 and P15, P11, P16 and P21	282474.473	6156425.192	-34.71110461	138.6247617	16.978	Q1
MW2120	GW2120	On-Base	Source Areas P9 and P15, P11, P16 and P21	282550.211	6156915.876	-34.70669961	138.6257145	18.18	Q1
MW2148	GW2148	On-Base	Source Areas P9 and P15, P11, P16 and P21	282016.563	6155826.88	-34.71639788	138.6196109	16.49	Q1
MW2149	GW2149	On-Base	Source Areas P9 and P15, P11, P16 and P21	281927.977	6155729.841	-34.71725331	138.6186192	16.626	Q1
MW2188	GW2188	On-Base	Source Areas P9 and P15, P11, P16 and P21	281762.006	6155782.891	-34.71673989	138.6168219	15.46	Q1

RAAF Base Edinburgh PFAS OMP
Targeted Groundwater Sampling Locations

Location Code	Legacy Name	On/Off-Base	Area	Easting	Northing	Latitude	Longitude	Elevation	Target Aquifer
MW2197	GW2197	On-Base	Source Areas P9 and P15, P11, P16 and P21	282374.703	6156402.056	-34.71129183	138.6236671	17.642	Q1
MW2201	GW2201	On-Base	Source Areas P9 and P15, P11, P16 and P21	282328.28	6156884.26	-34.70693724	138.623285	16.395	Q1
MW2203	GW2203	On-Base	Source Areas P9 and P15, P11, P16 and P21	282594.053	6156550.269	-34.71000309	138.6260987	16.772	Q1
MW2158	GW2158	On-Base	Source Areas P9 and P15, P11, P16 and P21	282018.71	6155826.137	-34.71640503	138.6196341	16.498	Q2
MW2189	GW2189	On-Base	Source Areas P9 and P15, P11, P16 and P21	281755.198	6155782.364	-34.71674319	138.6167474	15.201	Q2
MW2200	GW2200	On-Base	Source Areas P9 and P15, P11, P16 and P21	282543.677	6156912.168	-34.70673163	138.6256422	17.903	Q2
MW2202	GW2202	On-Base	Source Areas P9 and P15, P11, P16 and P21	282339.379	6156884.804	-34.7069347	138.6234062	16.473	Q2
MW2270	GW2270	On-Base	Source Areas P9 and P15, P11, P16 and P21	282547.804	6156909.705	-34.7067547	138.6256866	18.1	Q3
MW2129	GW2129	On-Base	Southern, Western & Northern Boundary	281293.3	6157743.13	-34.69897789	138.6122153	15.881	Q1
MW2172	GW2172	On-Base	Southern, Western & Northern Boundary	281021.721	6157205.643	-34.70376254	138.6091132	15.828	Q1
MW2175	GW2175	On-Base	Southern, Western & Northern Boundary	280799.695	6156727.962	-34.70801886	138.6065669	14.438	Q1
MW2180	GW2180	On-Base	Southern, Western & Northern Boundary	280854.437	6156141.191	-34.71331739	138.6070118	14.195	Q1
MW2182	GW2182	On-Base	Southern, Western & Northern Boundary	281097.704	6155825.423	-34.71621459	138.6095842	13.821	Q1
MW2184	GW2184	On-Base	Southern, Western & Northern Boundary	281322.651	6155539.506	-34.71883887	138.6119647	14.438	Q1
MW4013	GW2141	Off-Base	Southern, Western & Northern Boundary	281740.99	6154912.4	-34.72457855	138.6163673	13.123	Q1
MW2145	GW2145	On-Base	Southern, Western & Northern Boundary	281292.201	6157738.97	-34.69901514	138.6122023	15.838	Q2
MW2173	GW2173	On-Base	Southern, Western & Northern Boundary	281019.446	6157202.096	-34.70379401	138.6090875	15.882	Q2
MW2176	GW2176	On-Base	Southern, Western & Northern Boundary	280802.339	6156726.432	-34.70803321	138.6065953	14.282	Q2
MW2183	GW2183	On-Base	Southern, Western & Northern Boundary	281099.453	6155822.869	-34.71623798	138.6096027	14.831	Q2
MW2185	GW2185	On-Base	Southern, Western & Northern Boundary	281324.521	6155537.376	-34.71885846	138.6119845	15.286	Q2
MW2275	GW2275	On-Base	Southern, Western & Northern Boundary	280856.688	6156139.367	-34.71333431	138.6070359	14.121	Q3
MW2281	GW2281	On-Base	Southern, Western & Northern Boundary	281315.913	6155548.054	-34.71876041	138.6118934	15.229	Q3
MW2285	GW2285	On-Base	Southern, Western & Northern Boundary	280863.979	6156130.184	-34.71341861	138.6071131	14.287	Q4
MW2286	GW2286	On-Base	Southern, Western & Northern Boundary	281314.915	6155556.531	-34.71868382	138.6118847	15.323	Q4
MW4223	MW15586	Off-Base	Private Bore	280486.760	6157850.520	-34.69783750	138.6034444	-	Q2
MW4220	MW20327	Off-Base	Tertiary Aquifer Bores	280909.77	6154326.51	-34.7296795	138.6071443	-	T1
MW4221	MW21322	Off-Base	Tertiary Aquifer Bores	282490.91	6154688.32	-34.7267575	138.6244933	-	T1
MW4222	MW22767	Off-Base	Tertiary Aquifer Bores	281969.77	6153088.54	-34.7410605	138.6183923	-	T1
MW4230	-	Off-Base	Tertiary Aquifer Bores / Private Bore	280490.00	6157855.00	-	-	-	T1

RAAF Base Edinburgh PFAS OMP

Targeted Surface Water Sampling Locations

Location Code	On/Off-Base	Easting	Northing	Latitude	Longitude
SW003	On-Base	283148	6157551	-34.7011	138.6324
SW006	On-Base	281961.4	6155415	-34.7201	138.6189
SW009	Off-Base	281443	6154098	-34.7319	138.6129
SW010	Off-Base	281102	6153625	-34.736	138.6091
SW011	Off-Base	280418.6	6153512	-34.7369	138.6016
SW012	Off-Base	281694.9	6154967	-34.7241	138.6159
SW123 (Composite Sampler)	Off-Base	281672.0	6155013	-34.7236	138.6156
SW017	On-Base	282662	6156600	-34.7096	138.6269
SW018	On-Base	282495.8	6156265	-34.7126	138.625
SW019	On-Base	282793.3	6156126	-34.7139	138.6282
SW021	On-Base	283025.1	6155654	-34.7182	138.6306
SW028	On-Base	284158.6	6157225	-34.7043	138.6433
SW029	Off-Base	284701.9	6157000	-34.7064	138.6492
SW032	Off-Base	282965.8	6154400	-34.7295	138.6296
SW033	Off-Base	282572.2	6153923	-34.7337	138.6252
SW037	On-Base	280753.6	6156279	-34.7121	138.6059
SW050	On-Base	282305.2	6154665	-34.7269	138.6225
SW054	On-Base	282056.9	6154791	-34.7257	138.6198
SW058	Off-Base	281001.8	6153579	-34.7364	138.608
SW059	Off-Base	281224.4	6153143.463	-34.7404	138.6102
SW062	Off-Base	279192.8	6152310.49	-34.7474	138.5878
SW078	Off-Base	280330.2	6153491.8	-34.7370	138.6006

APPENDIX D OMP REVIEW

Table 9 OMP monitoring location and frequency review

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
Background north and north-east of base						
MW2325 (Q1)	No	Yes	No	No	Remove location from OMP	No longer considered necessary to continue to monitor background PFAS in this area of the base.
MW2134 (Q1), MW2218 (Q2)	Yes	Yes	No	No	Remove location from OMP	PFAS impacts detected in groundwater at this co-located pair of Q1 and Q2 monitoring wells are likely a result of historical activities on-base and therefore the locations are no longer considered a background monitoring location.
Source Area P4						
MW2394 (Q1), MW2162 (Q2)	Yes	Yes	No	No	Remove location from OMP	Remaining targeted Q1 and Q2 monitoring wells in this area (3 total) are considered sufficient to monitor the effect of soil remedial works in P4 on reducing groundwater concentrations over time.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
Source Areas P9 and P15, P11, P16, and P21.						
MW2194 (Q1)	Yes	Yes	No	No	Remove location from OMP	Location considered too far down hydraulic gradient of source area P11 to monitor the effect of soil and groundwater remedial works in the medium term. Location to be retained as a contingency monitoring location in the event that plume migration is evident at up hydraulic gradient location MW2197.
MW2150 (Q1)	Yes	Yes	No	No	Remove location from OMP	Location considered too far down hydraulic gradient of source area P9 to monitor the effect of soil and groundwater remedial works in the medium term. Location to be retained as a contingency monitoring location in the event that plume migration is evident at up hydraulic gradient location MW2188.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
MW2112 (Q1)	Yes	Yes	No	No	Remove location from OMP	Not within or located close to a remediated source area on-base, and not considered to be located down hydraulic gradient of a remediated source area. As such, ongoing monitoring of this well is not considered to provide benefit. Monitoring of other locations further down hydraulic gradient on the base boundary will assist with any future PFAS mass flux studies.
MW2499 (Q1)	Yes	Yes	No	No	Remove location from OMP	Remaining targeted Q1 wells in this area are considered sufficient to monitor the effect of soil and groundwater remedial works in P9 on reducing groundwater concentrations over time.
MW2272 (Q3), MW2284 (Q4)	Yes	Yes	No	No	Remove location from OMP	The integrity of these monitoring wells may be compromised and thus the data is not considered representative of PFAS concentrations in the Q3 and Q4 aquifer at these on-base locations. These monitoring wells will be decommissioned. Replacement is not considered necessary to inform changes to the nature or extent of PFAS impacts in the Quaternary aquifer in the Management Area.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
Southern, western & northern boundary						
MW2166 (Q1)	Yes	Yes	No	No	Remove location from OMP	Location is up and cross hydraulic gradient of known source areas on-base (effectively a background location), with reported concentrations remaining <LOR since monitoring began. Monitoring of this location is no longer considered necessary to provide data on PFAS impacts or the effects of risk management actions (e.g., remedial works) at the base.
MW2139 (Q1)	Yes	Yes	No	No	Remove location from OMP	Location is not down hydraulic gradient of any known source areas on-base, with relatively low PFAS concentrations being reported since monitoring began. Monitoring of this location is no longer considered necessary to provide data on PFAS impacts or the effects of risk management actions (e.g., remedial works) at the base.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
MW2169 (Q1)	Yes	Yes	No	No	Remove location from OMP	Location is not down hydraulic gradient of any known source areas on-base, with relatively low PFAS concentrations being reported since monitoring began. Monitoring of this location is no longer considered necessary to provide data on PFAS impacts or the effects of risk management actions (e.g., remedial works) at the base. Other targeted boundary locations are considered sufficient to monitor PFAS mass flux in groundwater across the base boundary.
MW2177 (Q1)	Yes	Yes	No	No	Remove location from OMP	Nearby Q1 monitoring wells MW2175 and MW2180 are considered sufficient to monitor PFAS mass flux in groundwater across the base boundary.
MW2137 (Q1)	Yes	Yes	No	No	Remove location from OMP	Nearby Q1 monitoring wells MW2184 and MW4013 are considered sufficient to monitor PFAS mass flux in groundwater across the base boundary.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
MW2501 (Q1)	Yes	Yes	No	No	Remove location from OMP	Nearby Q1 monitoring well MW4013 is considered sufficient to monitor PFAS mass flux in groundwater across the base boundary. Further, monitoring of surface water in the Southern Detention Basin will enable a review to determine if this monitoring location should be reintroduced at some point in the future (i.e., as a result of elevated surface water results in this area of the basin where standing water is more permanent that other areas of the basin or Helps Road Drain).
Helps Road Drain						
MW4003 (Q1)	Yes	Yes	No	No	Remove location from OMP	Nearby Q1 monitoring well MW4015 is considered sufficient to monitor PFAS in groundwater in the vicinity of Helps Road Drain.

Location	Does the location inform the nature of PFAS at the base	Does the location inform the extent of PFAS at the base	Does the location inform the risk profile at the base	Does the sampling frequency inform the risk profile	OMP Review Outcome	Reason
Lateral extent of PFAS impacts off-base and proximity to licensed Quaternary aquifer groundwater users						
MW4009 (Q1), MW4022 (Q2)	No	No	No	No	Remove location from OMP	This co-located pair of monitoring wells was originally targeted to inform ongoing assessment of potential risk to a neighbouring private groundwater user who was licensed to extract from a Q2 bore. However, since establishment of the Edinburgh GPA, the private bore can no longer be used and the owner has since installed a deeper T1 bore. As such, monitoring of these wells is no longer considered necessary, noting there is a co-located pair of Q1 and Q2 monitoring wells further to the east (MW4020 and MW4021) that will be targeted for ongoing monitoring to understand the lateral extent of the off-base PFAS plume.
MW4061 (Q1)	No	No	No	No	Remove location from OMP	Location is not down hydraulic gradient of any known source areas on-base, with only low PFAS concentrations being reported since monitoring began. Monitoring of this location is no longer considered necessary to inform the off-base extent of the PFAS plume.

APPENDIX E PFAS ANALYTICAL SUITE

Target analytes	
Perfluoroalkane sulfonic acids	
PFBS	Perfluorobutane sulfonic acid
PFPeS	Perfluoropentane sulfonic acid
PFHxS	Perfluorohexane sulfonic acid
PFHpS	Perfluoroheptane sulfonic acid
PFOS	Perfluorooctane sulfonic acid
PFDS	Perfluorodecane sulfonic acid
Perfluoroalkyl carboxylic acids	
PFBA	Perfluorobutanoic acid
PFPeA	Perfluoropentanoic acid
PFHxA	Perfluorohexanoic acid
PFHpA	Perfluoroheptanoic acid
PFOA	Perfluorooctanoic acid
PFNA	Perfluorononanoic acid
PFDA	Perfluorodecanoic acid
PFUnDA	Perfluoroundecanoic acid
PFDoDA	Perfluorododecanoic acid
PFTrDA	Perfluorotridecanoic acid
PFTeDA	Perfluorotetradecanoic acid
Perfluoroalkyl sulfonamides	
FOSA	Perfluorooctane sulfonamide
MeFOSA	N-Methyl perfluorooctane sulfonamide
EtFOSA	N-Ethyl perfluorooctane sulfonamide
MeFOSE	N-Methyl perfluorooctane sulfonamidoethanol
EtFOSE	N-Ethyl perfluorooctane sulfonamidoethanol
MeFOSAA	N-Methyl perfluorooctane sulfonamidoacetic acid
EtFOSAA	N-Ethyl perfluorooctane sulfonamidoacetic acid
(n:2) Fluorotelomer sulfonic acids	
4:2 FTS	4:2 Fluorotelomer sulfonic acid
6:2 FTS	6:2 Fluorotelomer sulfonic acid
8:2 FTS	8:2 Fluorotelomer sulfonic acid
10:2 FTS	10:2 Fluorotelomer sulfonic acid