



Groundwater and surface water flow paths

PFAS leaves the base in both surface water and groundwater.

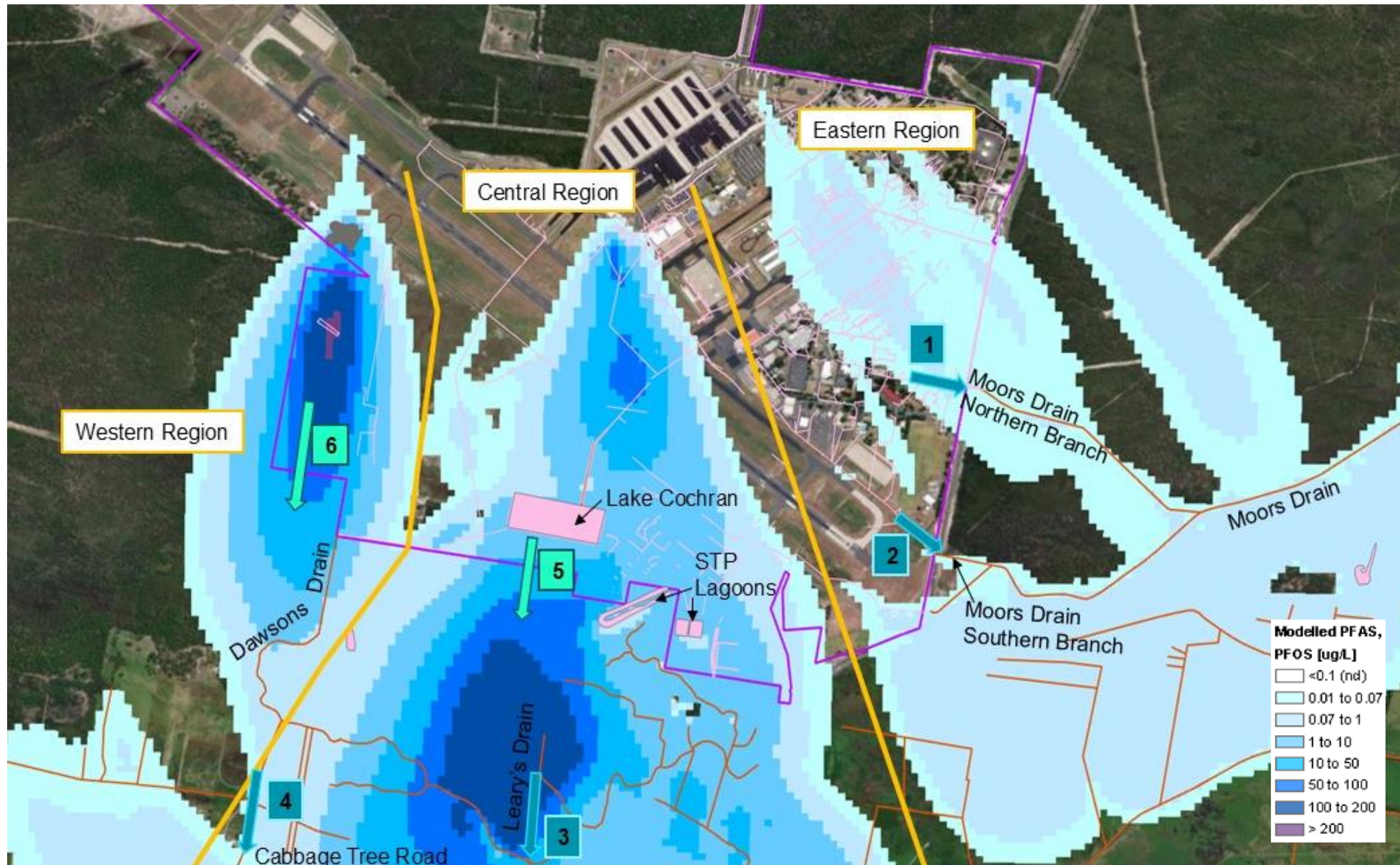
Defence is planning new remediation activities to:

- treat on and off base contaminated groundwater
- manage surface water catchment areas, including Moors Drain.

Planning approvals are also underway to install groundwater extraction wells south of the base near Cabbage Tree Road.

This system will target the PFAS contaminated groundwater within the Central Region. Extracted groundwater will be pumped back to the base for treatment.

This will decrease the amount of PFAS leaving the base towards Fullerton Cove.



Water flow direction

- Surface Water Discharge
- Groundwater Discharge



PFAS Management Area Plan and Ongoing Monitoring Plan update

- In 2023, Defence revised the 2019 RAAF Base Williamtown PFAS Management Area Plan based on the findings of the Groundwater Strategy Review.
- The PFAS Management Area Plan outlines actions to manage contamination on and around RAAF Base Williamtown.
- Planning and delivery of the following new actions is underway:
 - groundwater extraction and treatment in the Western Region (on base) and Central Region (off base)
 - Moors Drain catchment assessment within the Eastern Region to inform the design of the Moors Drain pumping system
 - former fire training pad assessment within the Central Region to inform remediation of the remaining PFAS in soil
 - investigation to further understand PFAS discharge into Dawson's Drain.
- In 2023, Defence updated the Ongoing Monitoring Plan in consultation with key NSW stakeholders. The review recommended retaining, removing, and adding sampling locations.



Extraction well installation in Western Region completed in September 2023

Scan the QR code to view the revised PFAS Management Area Plan or Ongoing Monitoring Report





2024 Ongoing Monitoring Results

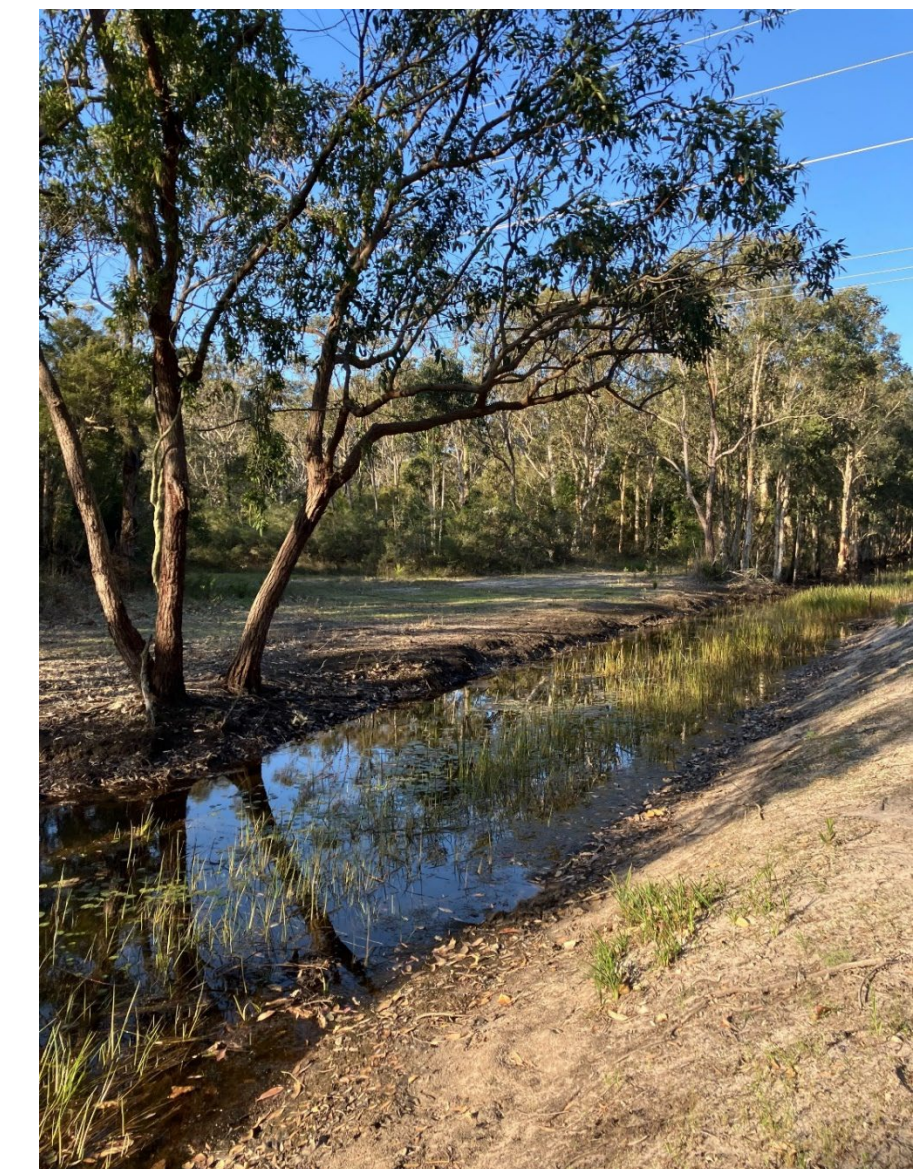
Sample type	Summary of findings
<p>Groundwater</p> <p>200 samples collected from 136 locations</p>	<ul style="list-style-type: none"> PFAS concentrations were similar to previous results with the highest concentrations detected at or nearby PFAS source areas on the base. Where remediation has occurred on the base, PFAS concentrations are beginning to stabilise or decrease. The groundwater plume extent remains unchanged.
<p>Surface water</p> <p>49 samples collected from 25 locations</p> <p>(Moors Drain, Dawson's Drain, Tilligerry Creek, Fourteen Foot Drain, Ten Foot Drain, Fullerton Cove Ring Drain, Lake Cochran)</p>	<ul style="list-style-type: none"> PFAS concentrations were similar to previous results. Where PFAS concentrations were higher than previous results, they were localised and assessed to present no further risks to people, plants or animals.
<p>Sediment</p> <p>52 samples collected from 26 locations</p> <p>(Moors Drain, Dawson's Drain, Tilligerry Creek, Fourteen Foot Drain, Ten Foot Drain, Fullerton Cove Ring Drain, Lake Cochran)</p>	<ul style="list-style-type: none"> PFAS concentrations were similar to previous results, however some fluctuating results were observed. Where PFAS concentrations were higher than previous results, they were localised and assessed to present no further risks to people, plants or animals.
<p>Aquatic biota</p> <p>(fish and prawns)</p> <p>12 samples collected from Fullerton Cove</p>	<ul style="list-style-type: none"> PFAS concentrations reported in fish and prawns were consistent with previous results. Precautionary advice from the NSW Government for the consumption of locally sourced seafood remains in place.

Summary

- A total of 313 samples were taken in 2024 during April and November.
- The understanding of PFAS source areas, transport pathways and potential exposure routes to people, plants and animals remains unchanged.
- The potential exposure risks to people within the management area remains unchanged.
- NSW Government precautionary advice remains in place.



Groundwater sampling at Williamtown



Sampling location at Moors Drain



Central Region: remediation update



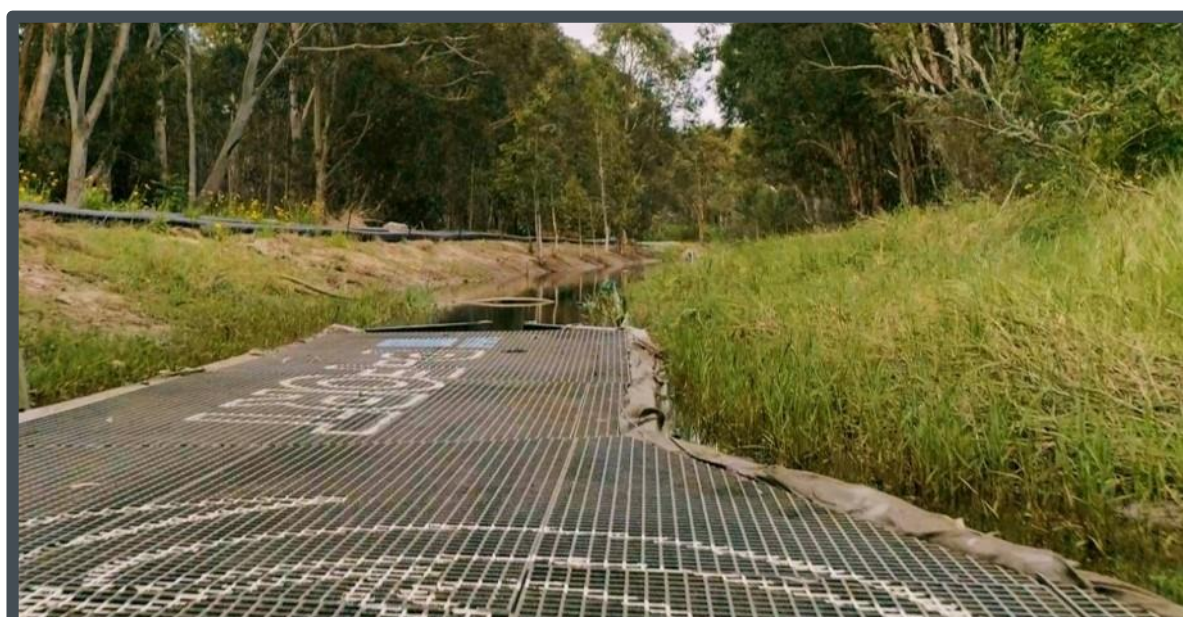
Water Treatment Plant

Over 2 billion litres of impacted groundwater treated and reused for on-base irrigation, preventing 13 kg of PFAS leaving the base.



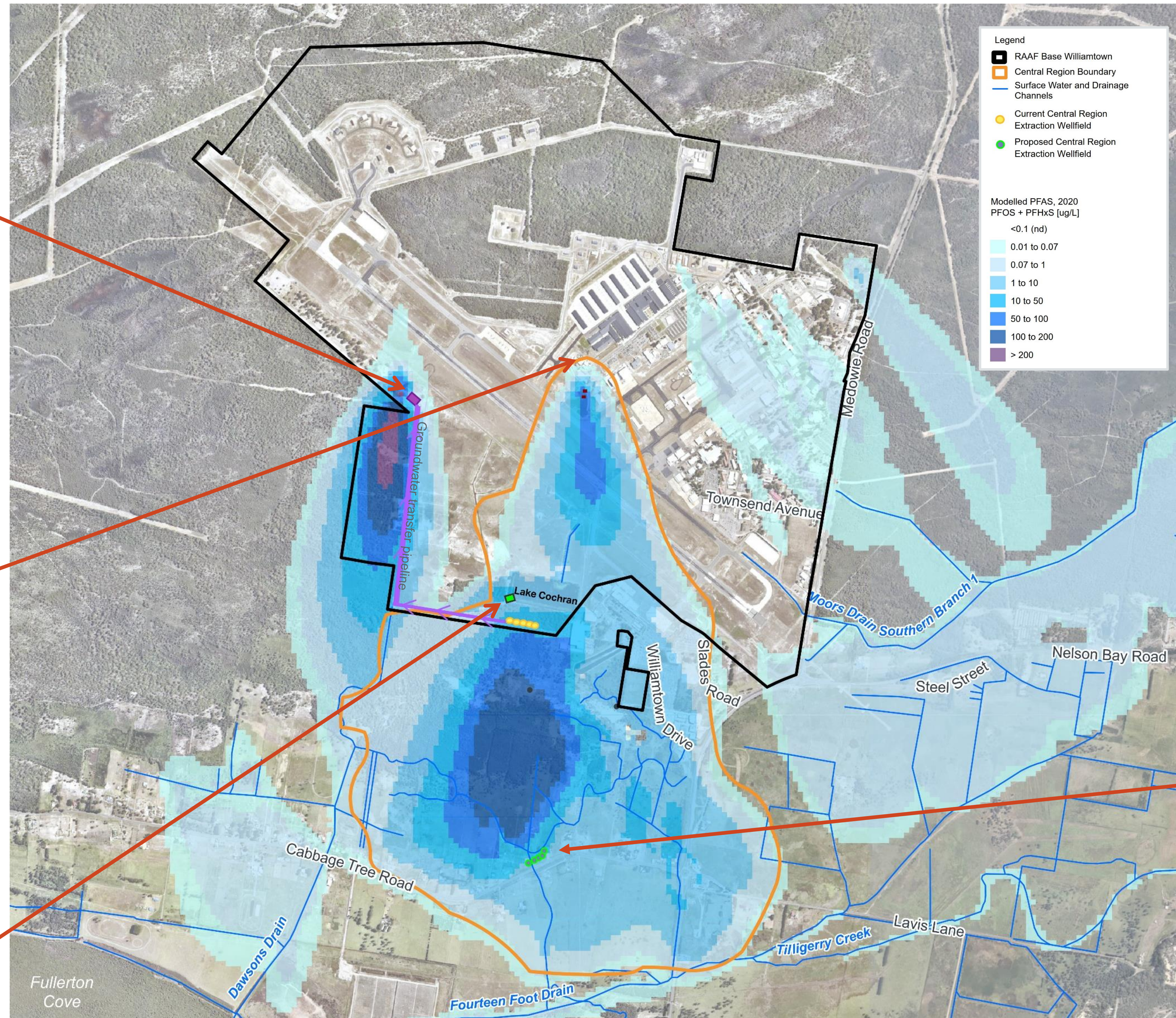
Excavation from key source areas

Over 2,200 tonnes of soil excavated and transported to a NSW EPA licenced landfill, removing over 15 kilograms of PFAS from the base.



Surface water treatment system

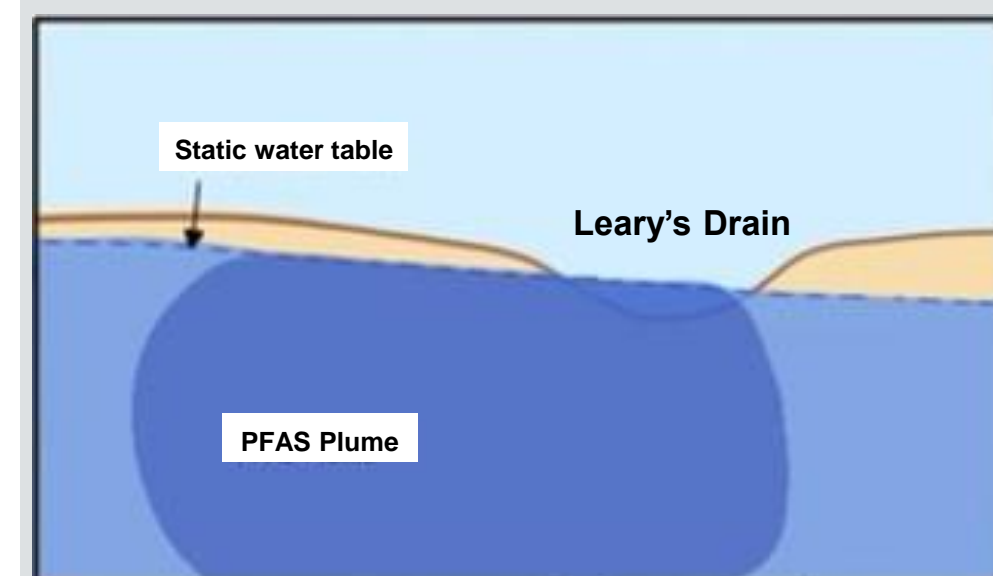
The passive barrier system trial successfully reduced PFAS concentrations in surface water through the granulated activated carbon system.



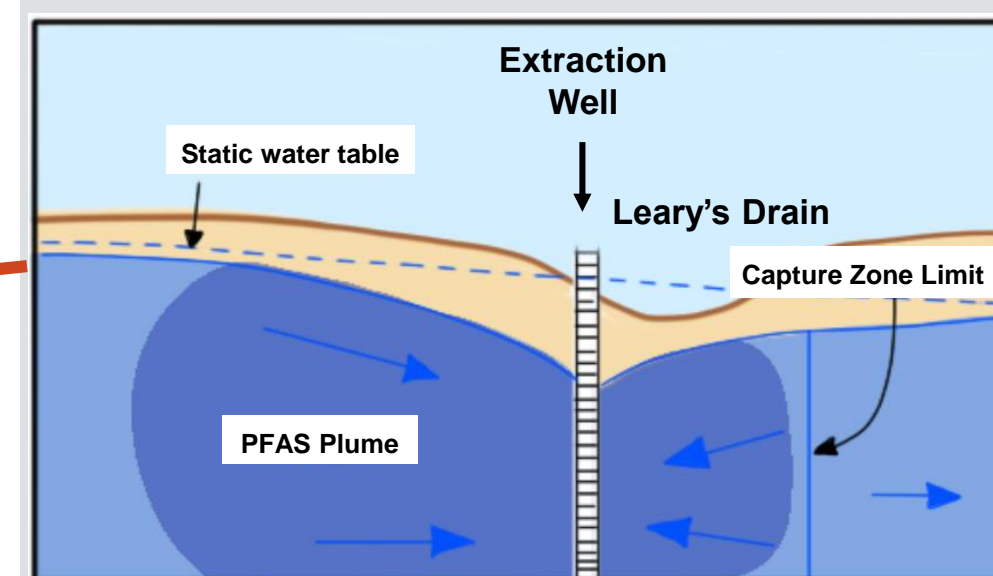
Groundwater extraction wells

Over the next 12 to 18 months Defence will install a groundwater extraction system within the NSW EPA Primary Management Zone near Cabbage Tree Road.

Once implemented, the system will extract and treat 2 million litres of contaminated water daily at the on-base Water Treatment Plant, potentially reducing up to 30 kg of PFAS entering Fullerton Cove each year.



Groundwater and PFAS Plume – no extraction system. Shallow groundwater discharging to drain.



Groundwater and PFAS Plume – with extraction well system. Reducing discharge to the drain and into Fullerton Cove.



Western Region: remediation update



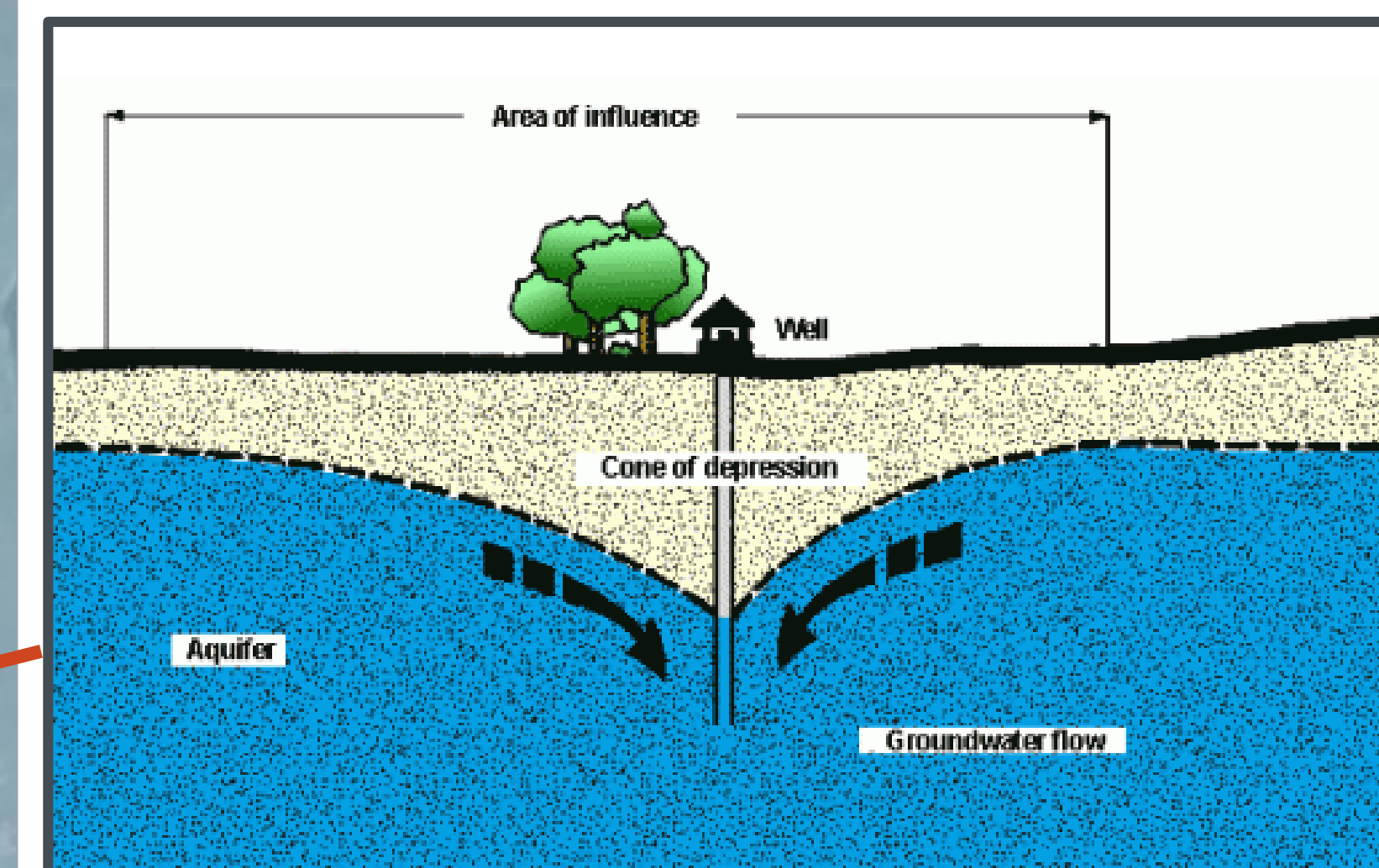
Water treatment plant

Over 1.6 billion litres of impacted groundwater has been treated and reused for on-base irrigation, **successfully removing 30 kg of PFAS from groundwater.**



Excavation from key source area

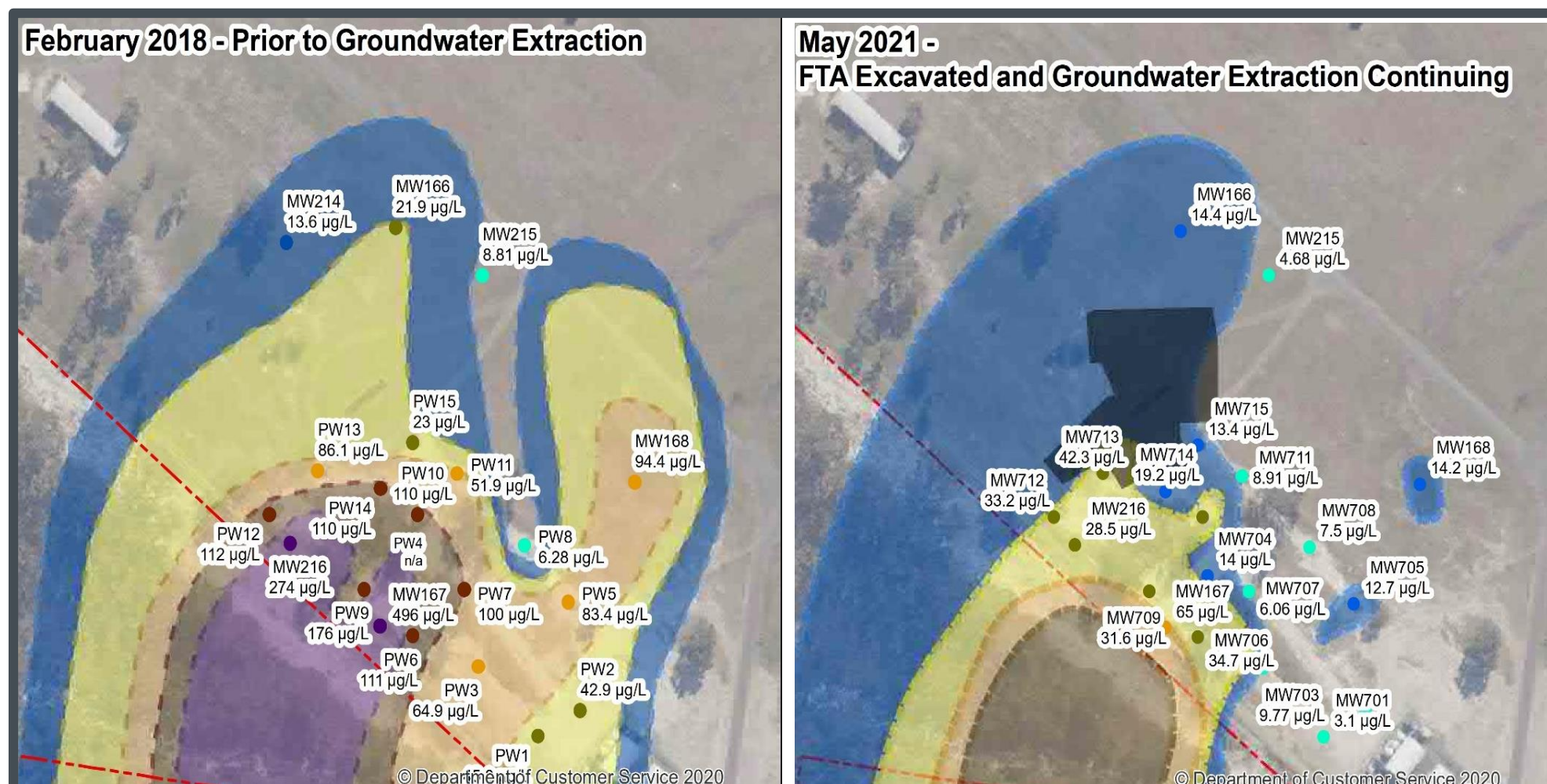
10,800 tonnes of soil has been excavated from the former fire training area, **removing 11 kg of PFAS.**



Groundwater extraction

Installation of the groundwater extraction wellfield on the southern boundary to extract and treat contaminated water is complete.

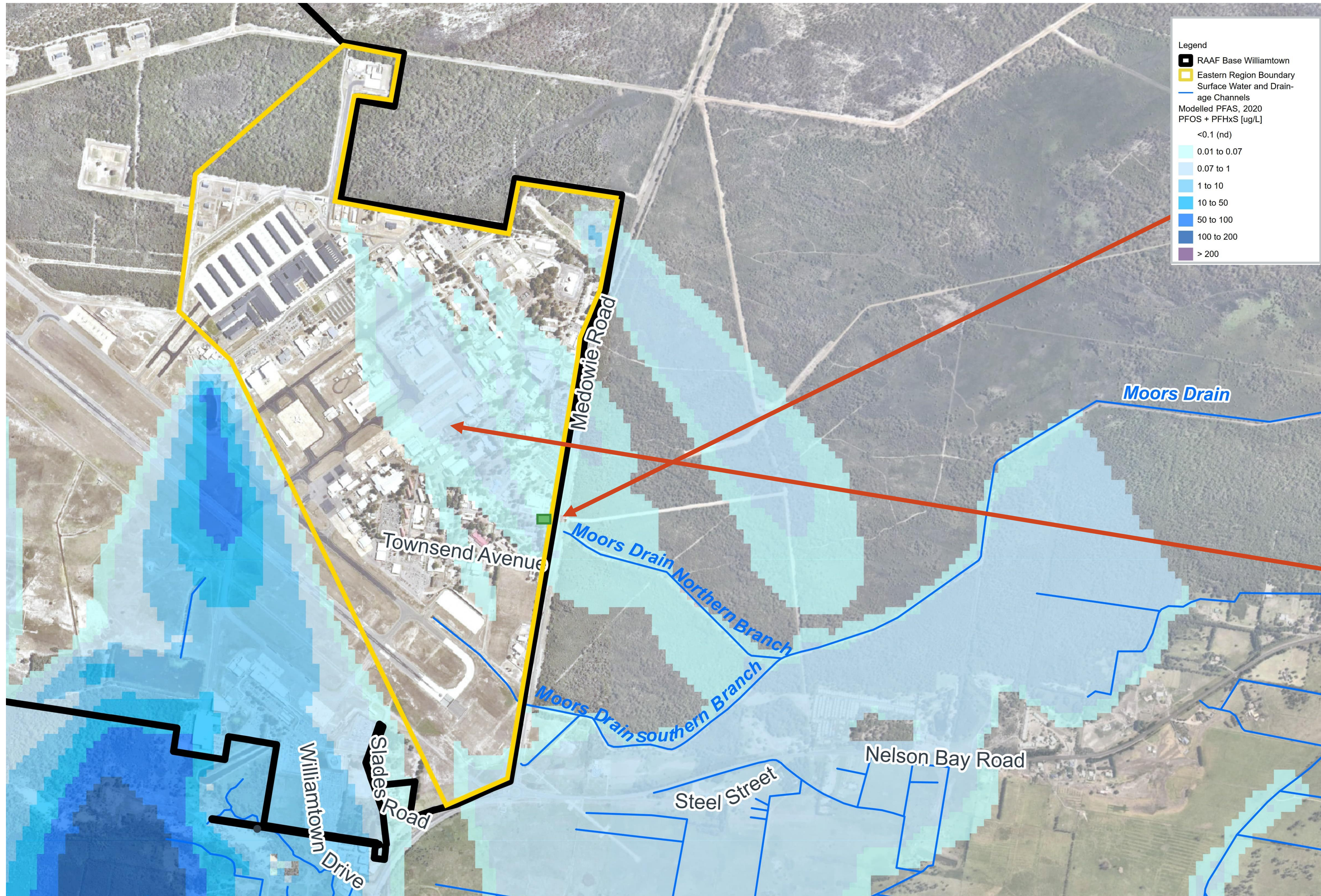
Once commissioned, over the next 12 to 18 months it is expected to reduce the amount of **PFAS being released into the environment by 90%.**



Monitoring data shows a reduced PFAS plume at the former fire training area since groundwater extraction and treatment commenced.



Eastern Region: remediation update



Moors Drain water treatment plant

760 million litres of water from Moors Drain has been treated and discharged back into Moors Drain, preventing **over 3 kg of PFAS** leaving the base.



Understanding the complex drainage network

Defence is taking a systematic drain network sampling approach to inform capacity design of a new water treatment plant and identify effective locations to capture and treat surface water.

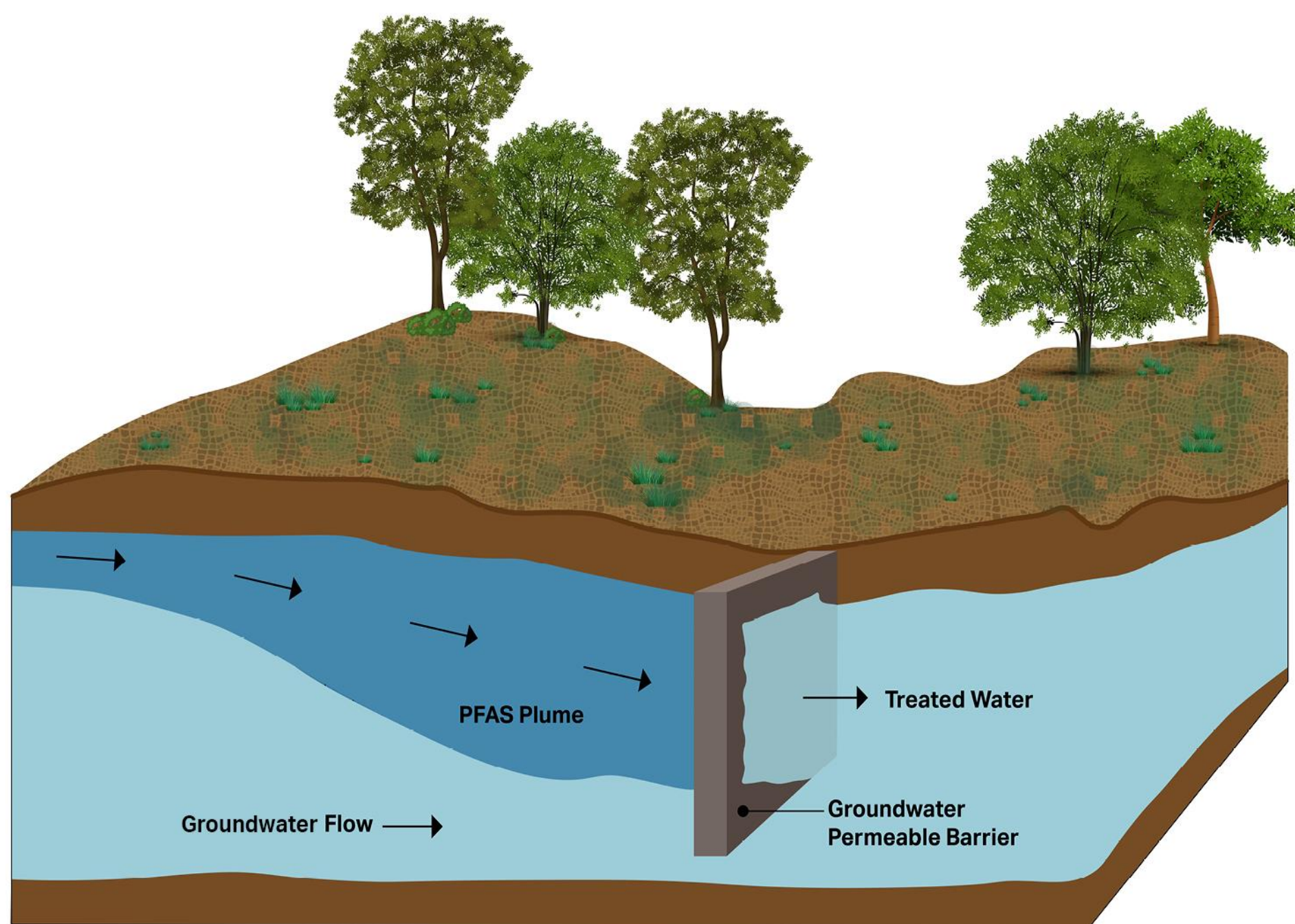


Proposed technology trial: permeable reactive barrier

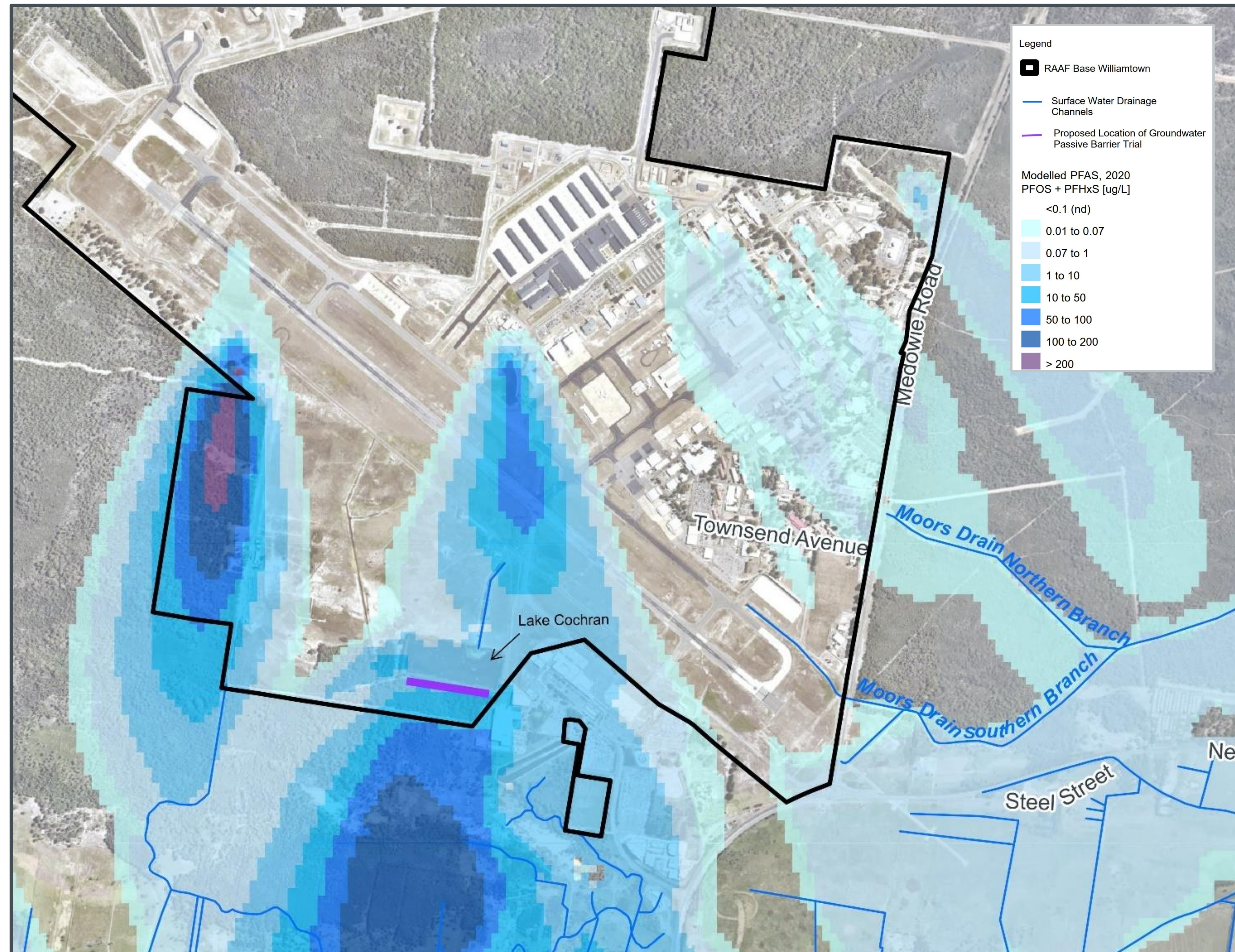
The groundwater strategy review recommended re-using the southern area water treatment plant to treat groundwater off- base near Cabbage Tree Road.

It also recommended trialling a passive treatment approach for groundwater at the southern base boundary where concentrations are lower.

Following a successful trial at Lake Cochrane to treat surface water, Defence will install a permeable reactive barrier at the southern base boundary to treat groundwater. This works by removing PFAS as the groundwater flows through a permeable, granulated activated carbon system.

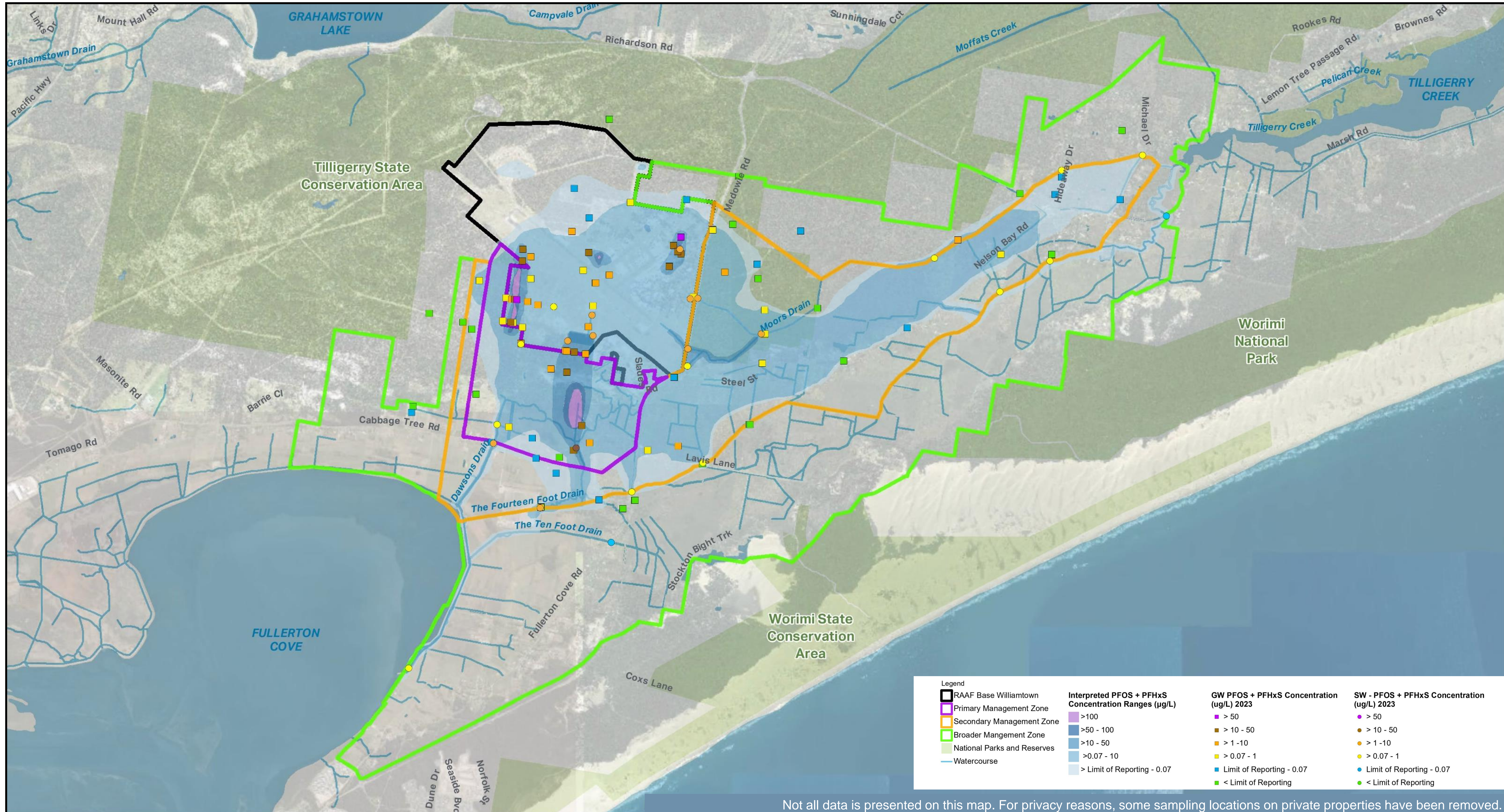


Example of a permeable reactive barrier being used within a groundwater table





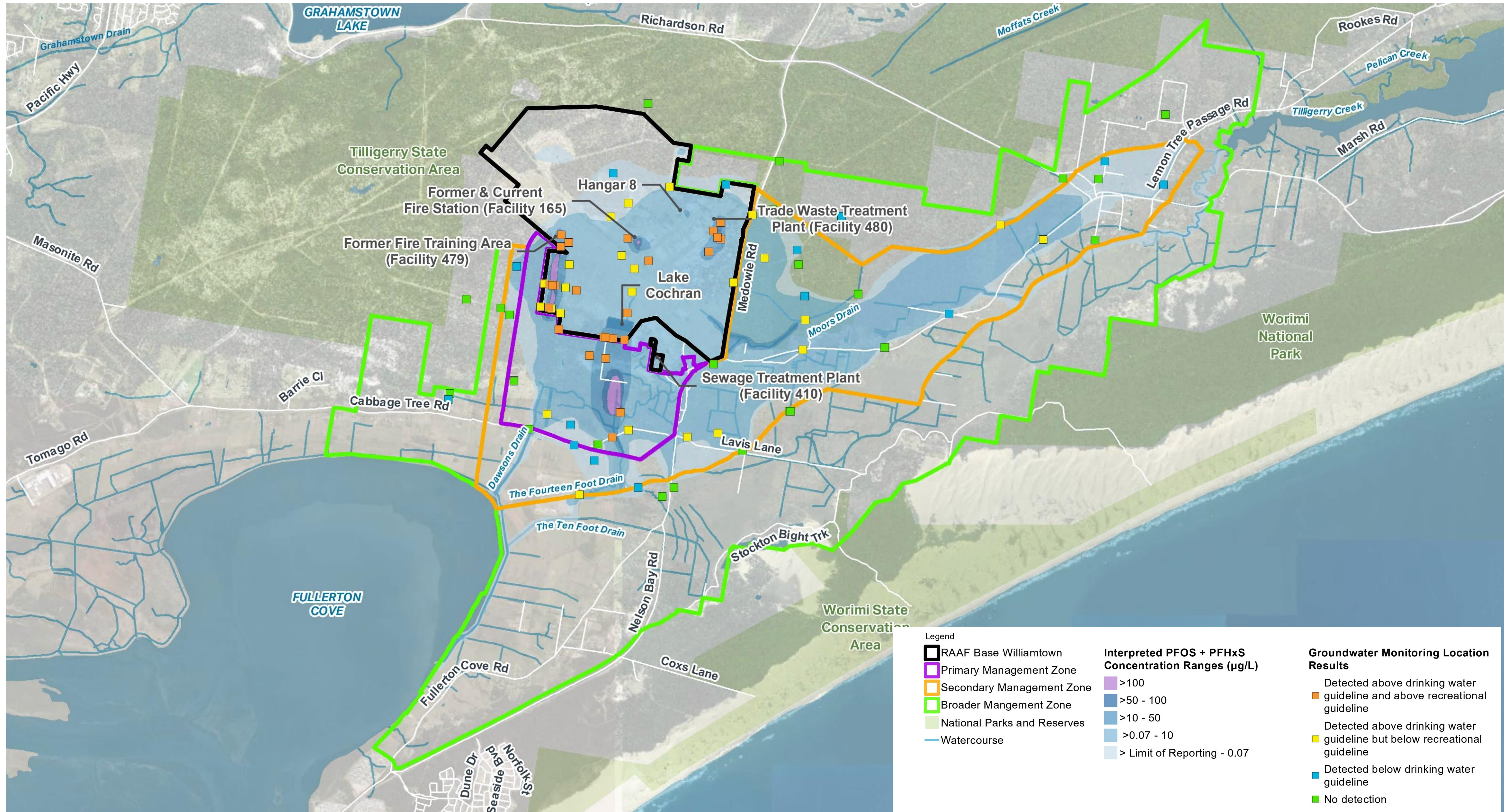
Groundwater and surface water sampling results from monitoring period: April 2024 – September 2024



Not all data is presented on this map. For privacy reasons, some sampling locations on private properties have been removed.

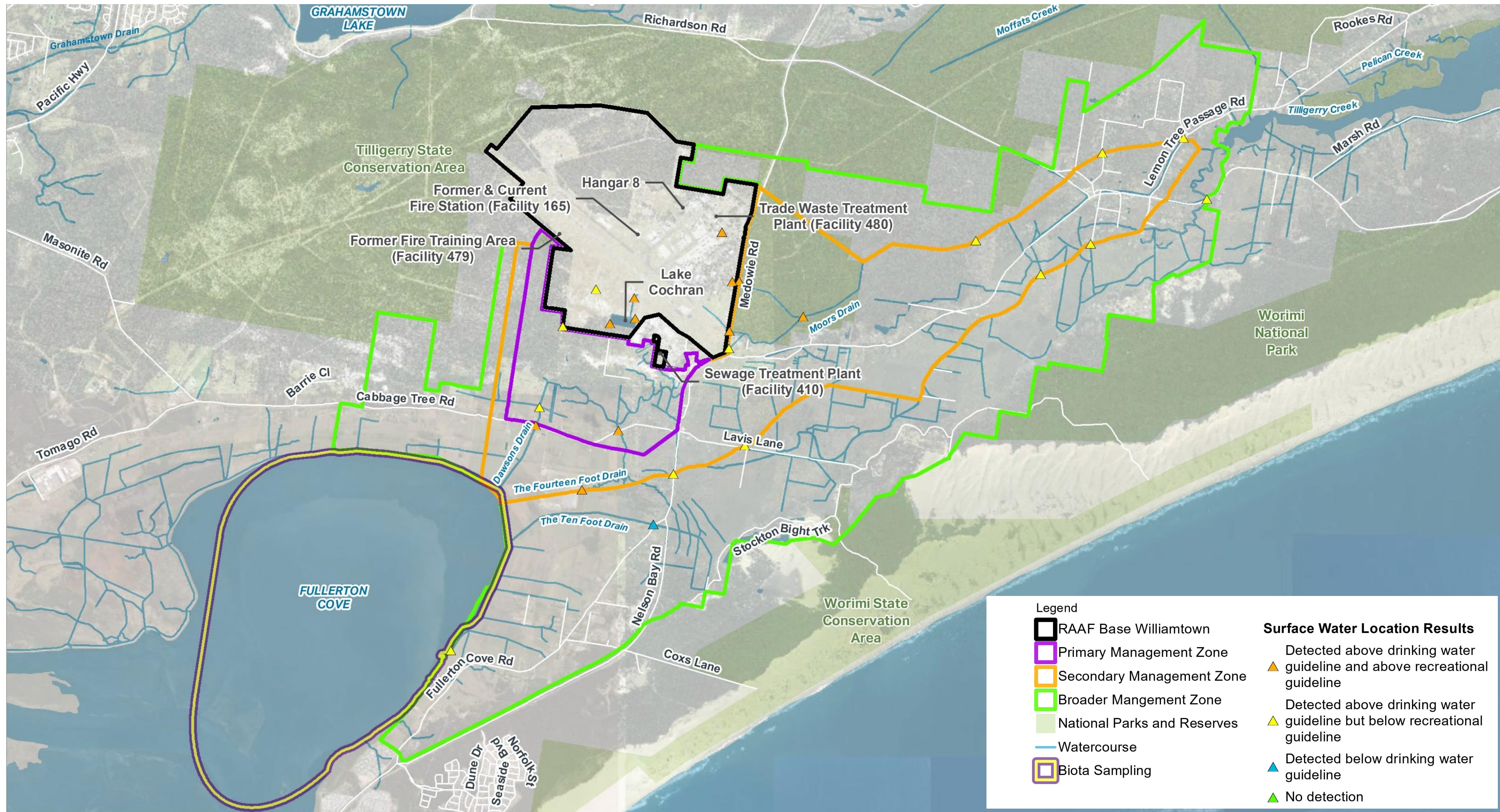


RAAF Base Williamtown - groundwater sampling results from April 2024 – September 2024



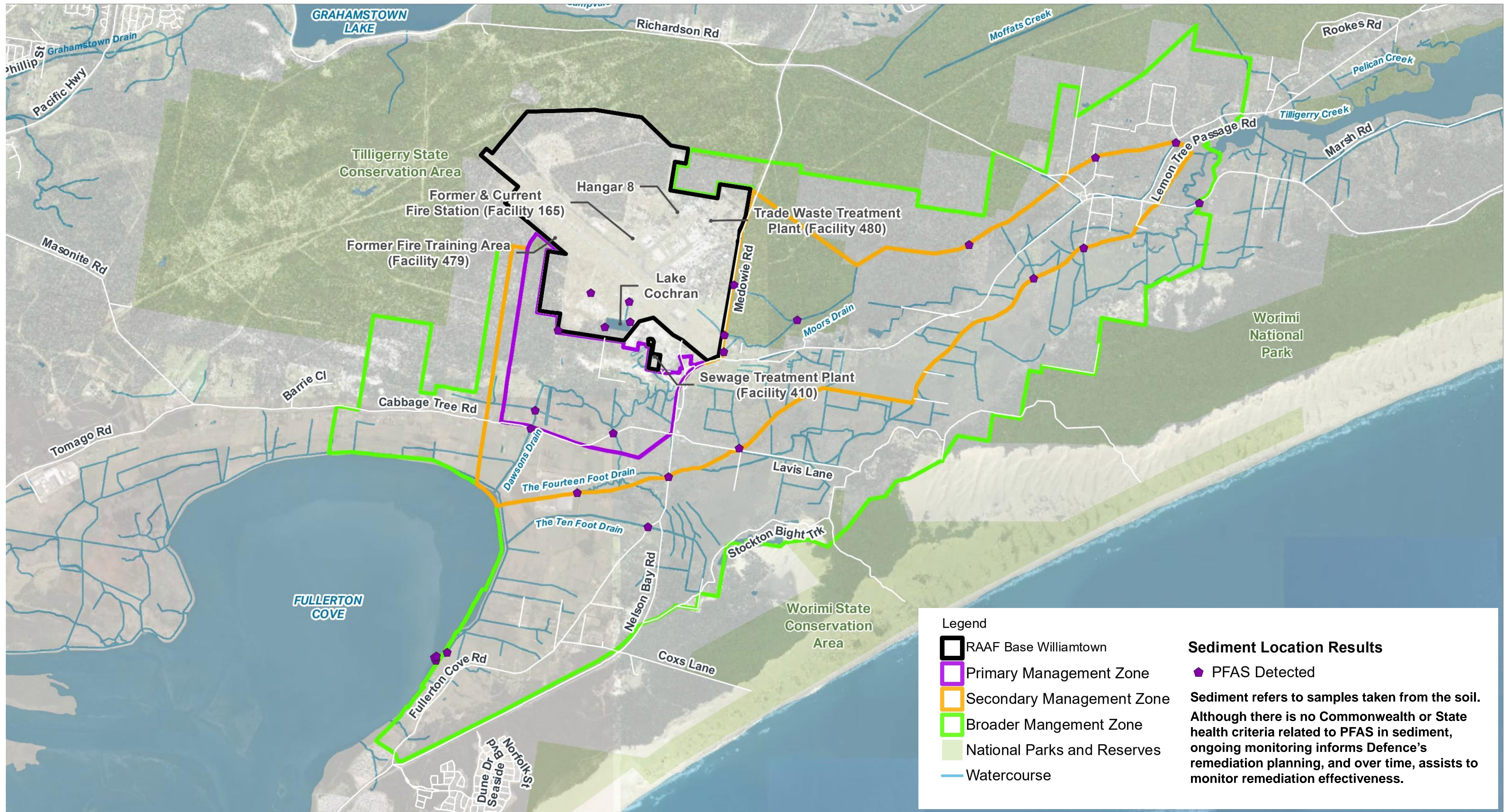


RAAF Base Williamtown - surface water sampling results from April 2024 – September 2024





RAAF Base Williamtown - sediment sampling results from April 2024 – September 2024



Legend

- RAAF Base Williamtown
- Primary Management Zone
- Secondary Management Zone
- Broader Management Zone
- National Parks and Reserves
- Watercourse

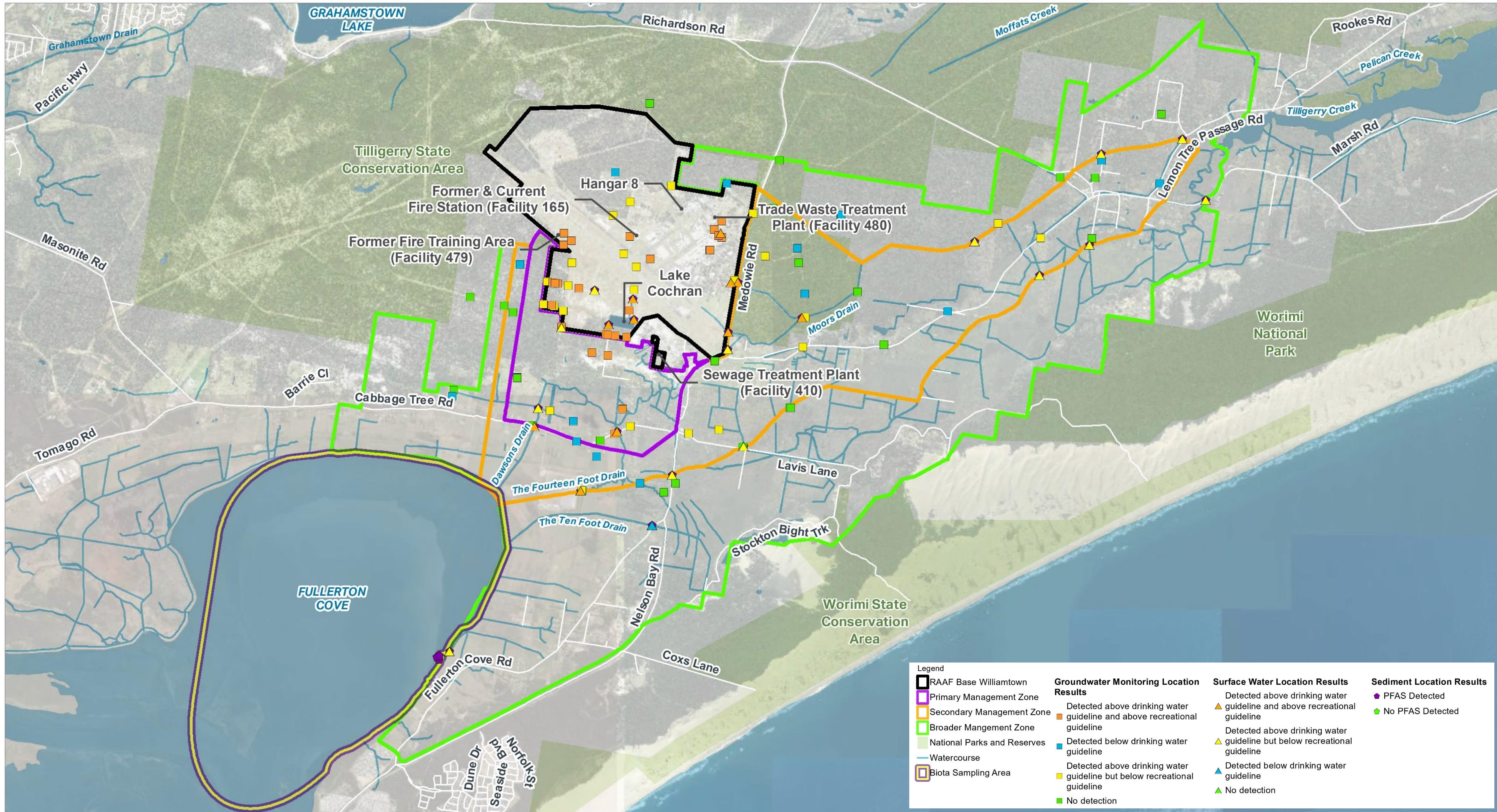
Sediment Location Results

- PFAS Detected

Sediment refers to samples taken from the soil. Although there is no Commonwealth or State health criteria related to PFAS in sediment, ongoing monitoring informs Defence's remediation planning, and over time, assists to monitor remediation effectiveness.

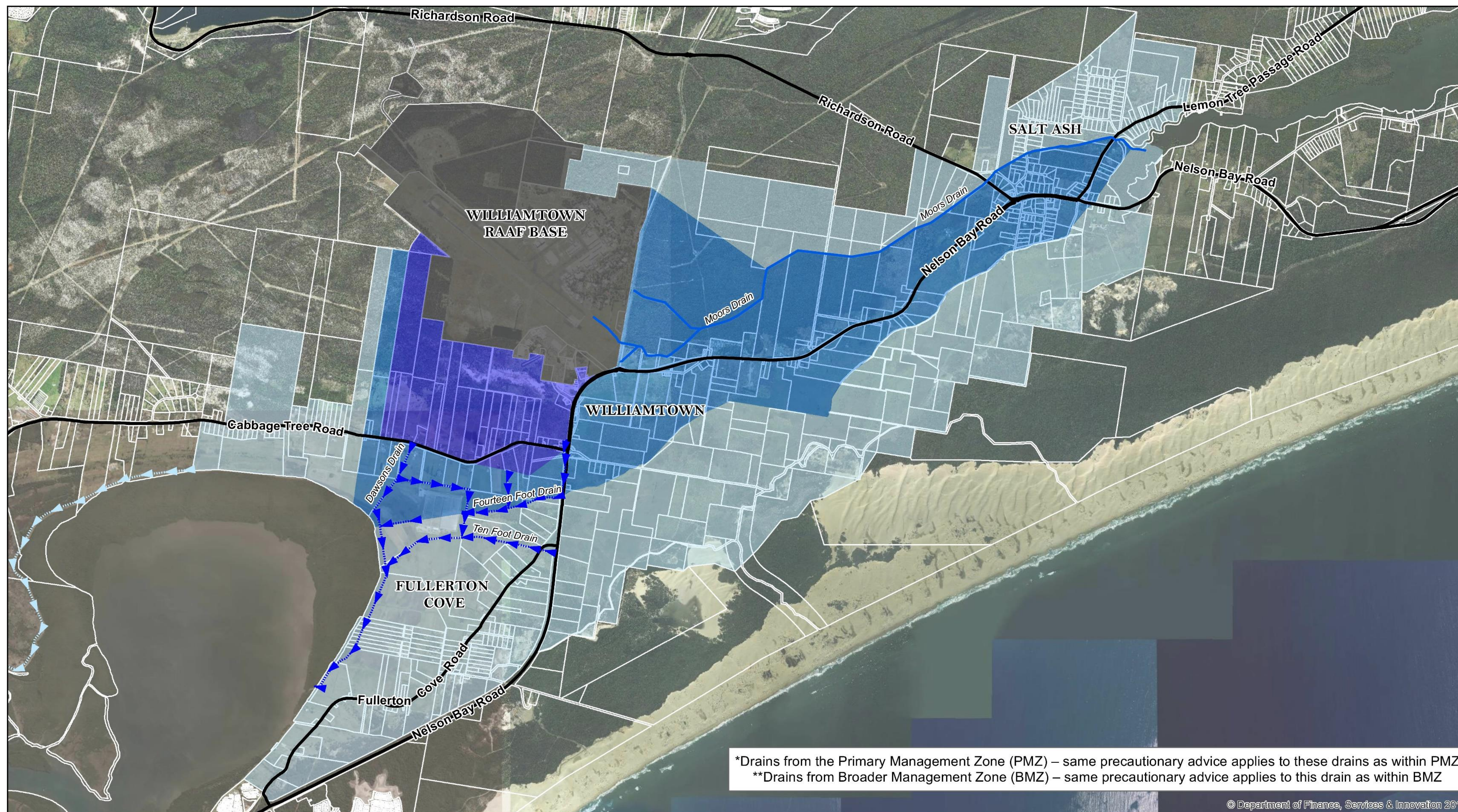


RAAF Base Williamtown - sampling results from April 2024 – September 2024





Williamstown PFAS Management Area



*Drains from the Primary Management Zone (PMZ) – same precautionary advice applies to these drains as within PMZ
 **Drains from Broader Management Zone (BMZ) – same precautionary advice applies to this drain as within BMZ

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	Primary Management Zone		Roads
	Secondary Management Zone		Moors Drain
	Broader Management Zone		Drains from Primary Management Zone*
	Williamstown RAAF Base		Drains from Broader Management Zone**
	Property Boundary		

Williamstown Management Area

Map Created: 19/12/2017

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 information in the map and any consequences of such acts or omissions.

Base imagery: Nearmap 17 November 2017

N

0 1,000 2,000 Metres

Coordinate System: GDA 1994 MGA Zone 56

