MELBOURNE AIRPORT

PFAS Management Framework

Document control

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ABBREVIATIONS

Abbreviation	Description
AFFF	Aqueous film forming foams
APAM	Australia Pacific Airports (Melbourne)
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure
ASLP	Australian Standard Leaching Procedure
CEMP	Construction Environmental Management Plan
EMP	Environmental Management Plan
LLDPE	Linear low-density polyethylene
PFAS NEMP	PFAS National Environmental Management Plan
PFAS	Per- and poly-fluoroalkyl substances
PFHxS	Perfluorohexane sulfonate
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonate
WTP	Water treatment plant

GLOSSARY OF TERMS

Term	Description
Major Development Plan	For any significant developments at Melbourne Airport, a Major Development Plan is required to be submitted to the Federal Government for approval in accordance with the requirements of the Airports Act 1996 (Cth).
The Gate 11 Soil Reuse Facility	Temporary PFAS soil storage facility which comprises a temporary soil and aggregate storage area, storm water management infrastructure and a water treatment plant (WTP) for the treatment of PFAS impacted wastewater.
Wastewater	Wastewater includes: captured stormwater, extracted surface water from drains or surface water bodies, extracted groundwater, wastewater generated during works (e.g. equipment wash water, leachate from stockpiles).
Surface stabilisation	Application to mitigate dust generation and/or erosion of newly placed and/or stockpiled soils including hydroseeding, soil binder, polymers or other equivalent product. Selection and use of stabilisation products is subject to approval by APAM Environment and Sustainability Team. A list of approved products is provided in the Melbourne Airport Environmental Management Plan.

1.0 INTRODUCTION

This PFAS Management Framework has been prepared to ensure that consistent environmental management practices are understood and implemented to manage the potential environmental risks associated with PFAS impacted material during construction and maintenance activities at Melbourne Airport.

1.1 Background

PFAS is a common contaminant on airport land due primarily to its legacy use in aqueous film forming foams (AFFF). Legacy formulations of AFFF contained a number of PFAS, specifically PFOS, PFHxS and PFOA, as active ingredients that are now known to be persistent in the environment. PFAS are highly soluble and mobile and require management during construction and maintenance projects to mitigate potential impact to the environment and off-site receptors (the subject of this framework).

Further details regarding the nature, knowledge and management options for PFAS are outlined in the PFAS National Environmental Management Plan (PFAS NEMP)[1].

1.2 Purpose of this document

The purpose of this document is to:

- Outline the minimum environmental management requirements required during construction and maintenance activities at Melbourne Airport
- Demonstrate how Melbourne Airport complies with the requirements of the PFAS NEMP.

1.3 PFAS Management Framework application

The PFAS Management Framework is a subordinate document to the Melbourne Airport Environment Management Plan (EMP). It applies to any maintenance or construction activities within the boundaries of Melbourne Airport controlled land where PFAS impacted materials (including fill, natural soil/rock and construction and demolition waste such as concrete or asphalt) is disturbed, or wastewater[2] is generated/intersected. More specifically, the framework outlines requirements for:

- Temporary soil storage (Section 2.0)
- Excavated material management (Section 3.0)
- Stockpile management (Section 4.0)
- Construction and demolition waste management, including asphalt and concrete (Section 5.5.0)
- Wastewater management (Section 6.0)
- Slurry management (Section 7.0)
- Off-site disposal (Section 8.0)
- Material tracking procedures (Section 9.0).

Note:

- This framework relates to the environmental management of PFAS impacted materials associated with construction and maintenance projects at Melbourne Airport. It must not be used as a framework for the management and remediation of legacy source areas.
- The framework provides specific guidance for the matters outlined. Where required, direct reference to the PFAS NEMP should be considered. Any liaison with regulators must be via the APAM Environment and Sustainability Team.

[1] HEPA, *PFAS National Environmental Management Plan*, Version 3.0, March 2025

[2] Wastewater includes: captured stormwater, extracted surface water from drains or surface water bodies, extracted groundwater, wastewater generated during works (e.g. equipment wash water, leachate from stockpiles).

- This framework outlines minimum environmental management requirements for construction and maintenance projects at Melbourne Airport. Additional management measures may be required on a project specific basis where warranted to manage potential risks associated with PFAS contamination.
- This framework does not outline occupational health and safety requirements.
- For projects subject to a Major Development Plan, additional requirements above those outlined in this Framework may be required as part of the approval process.
- As per other requirements outlined in the Melbourne Airport EMP, all works will be subject to approval, verification and compliance monitoring by the APAM Environment and Sustainability Team and the Commonwealth Regulator – the Airport Environment Officer.

1.4 Roles and responsibilities

The roles and responsibilities that apply to this framework are set out in the Melbourne Airport EMP.

It may be necessary to consult with regulators for higher risk activities or as recommended by the PFAS NEMP. This includes the Department of Infrastructure, Transport, Regional Development Communications and the Arts (DITRDCA) for environmental management on Commonwealth land and the Environment Protection Authority (EPA) Victoria for off-site impacts or management of waste off-site. All liaison with regulators must be coordinated through the APAM Environment and Sustainability Team.

1.5 Document review

Table 1 below outlines APAM's document review process in accordance with the overarching Melbourne Airport EMP to ensure this PFAS Management Framework remains current and opportunities for continuous improvement are captured.

Table 1: Document review process

Review Trigger	Description
Periodic	As required to confirm no material changes required to maintain alignment with Melbourne Airport EMP and current practices.
Response	Where a change in legislation or key guidance document occurs (e.g. release of an updated version of the PFAS NEMP).
Response	Where a significant data gap is identified as part of document implementation that increases the risk rating applied in the Melbourne Airport EMP.

2.0 TEMPORARY SOIL STORAGE FACILITY

In 2019, Melbourne Airport constructed and commenced operation of a purpose built, regulator approved temporary PFAS soil storage facility near airside Gate 11 ('the Gate 11 Soil Reuse Facility'). The Gate 11 Soil Reuse Facility comprises a temporary soil and aggregate storage area, storm water management infrastructure and a water treatment plant (WTP) for the treatment of PFAS impacted wastewater (**Figure 1**).

Figure 1: Gate 11 Soil Reuse Facility – Aerial photograph showing general layout (11 January 2025)

2.1 Soil storage

Subject to APAM approval, the facility accepts PFAS impacted soils, crushed rock/aggregate and asphalt. Storage of material within the facility is on a temporary basis until such time as an appropriate on-site reuse option is available.

2.2 Wastewater treatment

Subject to APAM approval, the WTP accepts PFAS impacted wastewater, including captured storm water, extracted surface water from drains and surface water bodies, extracted groundwater and wastewater generated during works (washdown, street sweeping, leachate from stockpiles), NDD slurry and concrete slurry (on a case-by-case basis). Treated water from the WTP is suitable to be re-used for on-site activities at Melbourne Airport such as dust suppression and irrigation subject to APAM approval. **Error! Reference source not found.** shows the general layout of the WTP.

3.0 EXCAVATED MATERIAL MANAGEMENT

Material that requires management under this management framework includes any fill or natural materials, including rock and sediments (i.e. excavated from drains) that are disturbed and excavated during maintenance or construction works.

Where small volumes (less than 10 m^3) of material are to be excavated and replaced within 48 hours (i.e. minor maintenance works), APAM's Environment and Sustainability Team may at its discretion determine that a project is exempt from requirements outlined in this framework. Any application that seeks an exemption must generally be able to demonstrate that:

- Works will be completed within the 48-hour timeframe
- Excavation depths will not intersect groundwater
- Works are not being completed where runoff or saturated soil may be present (e.g. due to a leaking service or known ground conditions)
- All material will be replaced into the excavation and appropriately compacted to minimise potential increased mobilisation
- Any surface coverings will be replaced within a 48-hour timeframe (i.e. concrete, crushed rock, topsoil with adequate stabilisation etc)
- Works will be undertaken in favourable weather conditions (no heavy rain events or high winds)
- Works will not be undertaken within 50 m of a drainage inlet or open drain
- Works will not be undertaken within 200 m of a natural surface water body, watercourse or wetland area.

3.1 Soil management options

The PFAS NEMP outlines general requirements for management and reuse of PFAS impacted soils. In general, management and reuse must not lead to an unacceptable risk to human health or the environment. Options for management and reuse of soil at Melbourne Airport include:

- Reuse on-site where an appropriate reuse option is available
- Storage within the Gate 11 Soil Reuse Facility where an appropriate reuse option is not available
- Offsite disposal or other APAM approved treatment where reuse or on-site storage are not feasible (See Section 8.0).

A workflow diagram for soil management and reuse is provided below in **Figure 2**. The workflow for soil management presented in **Figure 2** must be followed unless approved/ advised otherwise by APAM Environment and Sustainability Team.

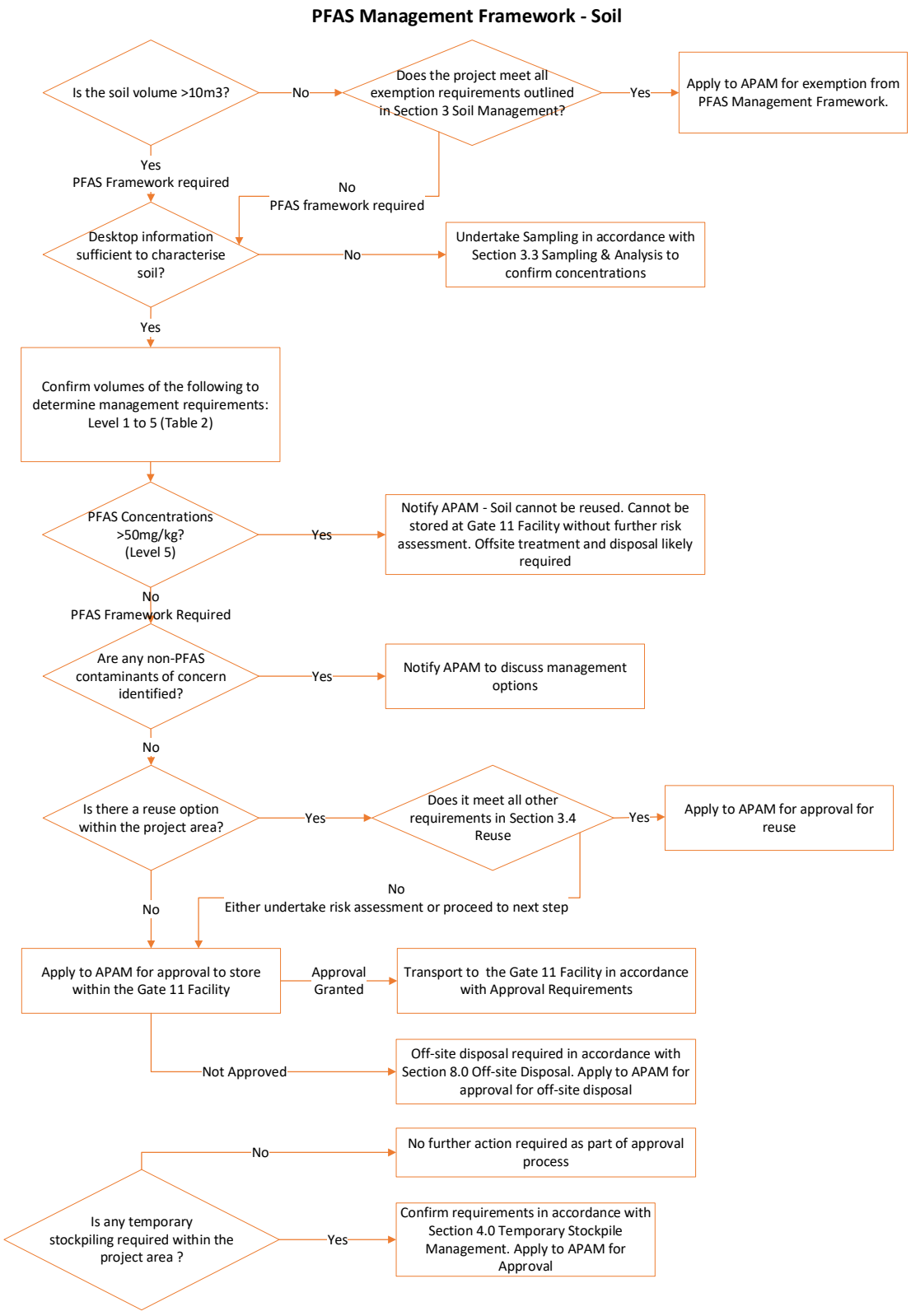


Figure 2: Workflow for soil management and reuse at Melbourne Airport

3.2 Desktop assessment

Prior to any excavation works, the APAM Environment and Sustainability Team must be contacted so that they can provide any relevant previous reports and/or data with regard to PFAS contamination. The APAM Environment and Sustainability Team will advise if there is sufficient data to inform the works, or if additional sampling and analysis is required.

3.3 Sampling & analysis

Where required and practicable, in-situ sampling of soil must be undertaken prior to disturbance to determine the appropriate level of management controls. Sampling must consider the full vertical and lateral extent of proposed excavations, including both fill and natural profiles, as well as the proposed reuse area (if reuse on-site is proposed).

Soil is to be sampled and analysed in accordance with the PFAS NEMP, which includes reference to the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM). At a minimum, this will include analysis for the PFAS 28 compounds analytical suite and Australian Standard Leaching Procedure (ASLP) analysis at pH neutral by a NATA accredited testing laboratory. The APAM Environment and Sustainability Team may consider maximum theoretical leachability to be an acceptable proxy in circumstances where only PFAS total concentrations are available. Where off-site disposal may be considered sampling and analysis must also comply with the *Environmental Protection Act 2017* and associated subordinate regulations and EPA guidelines[3], including but not limited to:

- EPA Publication 1968: Guide to classifying industrial waste
- EPA Publication 1828: Waste disposal categories – characteristics and thresholds

Sampling densities and distribution must be sufficient to characterise the range, distribution and average concentrations of PFAS in the soil areas under consideration. Sampling densities and spatial distribution must take into consideration EPA Publication 702 (Soil sampling for waste soils).

Suitability for reuse is not restricted to PFAS concentrations. Other contaminants of concern must also be considered when conducting sampling and analysis in accordance with Melbourne Airport's Environmental Management Plan and Airports (Environment Protection) Regulations 1997.

All laboratory results, GPS coordinates of sample locations and a summary of sampling activities must be provided to the APAM Environment and Sustainability Team electronically in both PDF and excel format. Laboratory data must be provided in ESdat database format (.csv file).

3.4 Reuse

3.4.1 Potential reuse options

Subject to environmental setting and risk assessment, reuse options that are recognised within the PFAS NEMP include:

- Use as fill in a commercial/industrial setting where there is minimum access to soil
- Use as fill below sealed surfaces such as car parks, roads, pavements and runways
- Use as construction fill on road embankments where stormwater runoff is limited or controlled
- Use as fill in areas where background PFAS concentrations present a similar or higher risk profile, provided that the total contamination mass of soil to be reused is substantially lower than that already present
- Reuse as construction materials (both soil and crushed construction waste such as concrete and bricks) provided that leachability of materials does not increase the risk profile.

[3] New revisions of EPA Publications are released from time to time. The latest version of the publication should be adopted.

3.4.2 Assessment for reuse suitability

When assessing the suitability of on-site reuse, the following factors need to be considered:

- Pre-existing conditions at the proposed reuse area
- Current and likely future uses of the reuse area
- Potential impacts to groundwater
- Proximity to surface water bodies, stormwater networks and sensitive receptors including ecological and First Nations cultural values
- Potential for reuse area environmental conditions to increase mobilisation/release of contaminants.

The reuse options presented in this PFAS MF is supported by risk assessment outlined in "Technical Background Document – Reuse of Soil Containing PFAS", Senversa 2025.

3.4.3 Areas where reuse is generally not acceptable

Areas that are considered unacceptable for reuse without further risk assessment and discussion with the APAM Environment and Sustainability and the regulator include (but are not limited to):

- Fill or burial within 2 m of maximum groundwater levels[4]
- Reuse within 200 m of a natural surface water body, watercourse or wetland area
- Reuse within 50 m of stormwater drain or artificial channel
- Reuse within areas of ecological or heritage significance
- Fill, burial or reuse in locations potentially affected by reasonably foreseeable future rising water levels
- Reuse in areas where background PFAS concentrations are lower than those in the material to be reused
- Reuse for more sensitive uses identified within the estate (e.g. recreational land, public open space, childcare centres).

3.5 Storage within the Gate 11 Soil Reuse Facility

Where no immediate reuse option is available or is not appropriate, soil and crushed rock/aggregate can be stored within the Gate 11 Soil Reuse Facility until a reuse option becomes available. Storage within the facility is subject to approval from the APAM Environment and Sustainability Team and will require the following:

- Confirmation of available storage capacity within the facility
- Provision of assessment information and documentation in accordance with Sections 3.2 and 3.3 of this framework
- Categorisation and segregation of material based on management levels provided in Section 3.6 of this framework
- Tracking of material in accordance with Section 9 of this framework.

Where no viable reuse option is available and storage in the Gate 11 Soil Reuse Facility is not feasible, offsite disposal in accordance with Section 8.0 of this framework may be required and/or alternate management subject to risk assessment.

[4] Regional investigations undertaken on airport land suggest that groundwater is greater than 2 m below ground surface. However, the Project Manager must satisfy the APAM Environment and Sustainability Team that it has considered the potential for shallow groundwater including perched systems.

The APAM Environment and Sustainability team must approve all applications for storage of material at the Gate 11 Soil Reuse Facility. A request to the APAM Environment and Sustainability team is required to receive application instruction information.

A key element of accepting material to maximise future reuse is ensuring appropriate segregation of excavated materials into relevant material types set out in Section 2 of the application form. This includes segregation of natural rock >250 mm from the natural clay/soil. Any mixing of material types such as fill with natural or demolition wastes with soil will result in material not being acceptable to be received at The Facility.

The types of “solid” material that the Gate 11 Soil Reuse Facility accepts is as follows:

- Natural clay/ soil
- Fill (subject to reuse suitability)
- Topsoil
- Crushed Rock
- Asphalt
- Rock
- Concrete.

These materials are stored and stockpiled in designated areas within the Gate 11 Soil Reuse Facility based on the material type and PFAS Management Level.

The Gate 11 Soil Reuse Facility is subject to management, operation and compliance with the Melbourne Airport EMP. In addition to the controls already implemented across the Gate 11 Soil Reuse Facility (base preparation, surface water catchment and treatment), Table 2, Section 3.6 outlines the specific requirements that apply to management of the materials in regard to PFAS Management Levels.

3.6 Management levels and requirements

Table 2 provides a framework for the management and on-site reuse of PFAS impacted material, including PFAS concentration levels and minimum management requirements for each level. The reuse area must also meet the requirements outlined in Section 3.4.

Storage at the Gate 11 Soil Reuse Facility must also meet the requirements outlined in Section 3.5. Any deviation from these requirements is subject to further risk assessment and approval from the APAM Environment and Sustainability Team before proceeding.

Table 2: Reuse and Gate 11 Soil Reuse Facility management levels and requirements

Management Level	PFOS + PFHxS Concentration		Reuse Management Requirement	Storage at the Gate 11 Soil Reuse Facility
	Total (mg/kg)**	Leachable (ASLP pH neutral) µg/L**		
Level 1	≤0.01	≤0.4	Reuse within same concentration areas with surface stabilisation improvements (e.g. hydromulch) If material is topsoil and has ASLP concentrations <0.07 µg/L, can be reused within same concentration areas without surface stabilisation	Stabilisation to minimise dust generation and surface water runoff using hydromulching or similar stabilisation product***.
Level 2	>0.01– 0.014	>0.4– 0.7	Reuse within same concentration areas with surface stabilisation i.e. >50 mm clean fill / topsoil / Level 1 materials	Stabilisation to minimise dust generation and surface water runoff using hydromulching or similar stabilisation product***.
Level 3	>0.014– 0.14	>0.7– 7	Reuse subject to specific risk assessment in accordance with the PFAS NEMP, followed by APAM approval	Temporary and final stockpiles covered with impermeable barrier to prevent infiltration to, and leaching from, stockpile (e.g. LDPE with maintenance; or impermeable geocomposite; or similar material)
Level 4	>0.14– 50*	>7– 2,500	Reuse subject to specific risk assessment in accordance with the PFAS NEMP, followed by APAM approval	Storage subject to specific risk assessment to confirm required controls followed by APAM approval
Level 5	>50 mg/kg*	>2,500 µg/L	Cannot be reused on-site. May require treatment prior to reuse, storage or disposal. May be able to be retained on-site under specific management circumstances subject to risk assessment, engineering controls and APAM approval.	Storage not permitted without further risk assessment and APAM approval. May require treatment prior to reuse, storage or disposal.

* The maximum total concentration of PFOS+PFHxS considered for reuse is 50 mg/kg. Any material that exceeds this must be segregated and an appropriate remediation strategy developed.
** The management requirements in this table for Management Levels 1 to 4 are driven by leachable, rather than total concentrations. The total concentrations listed here can be applied if leachable analysis has not been undertaken, as they have been back calculated and reflect the total acceptable soil concentration if 100% is conservatively assumed. However, slightly higher total concentrations may be acceptable provided that leachable concentrations have been measured and meet the relevant threshold, subject to APAM discretion and approval.
*** Where proposed management requirement is not feasible/ practicable, a higher level of management control must be adopted (e.g. LDPE).

Notes:

1) *Material not impacted by detectable PFAS concentrations can be reused on-site in line with the Airports (Environment Protection) Regulations 1997 or disposed of off-site in line with the Environment Protection Regulations 2021, without restrictions outlined in this framework.*
2) *The maximum total concentration considered for storage within the facility is 0.14 mg/kg and leachable concentration is 7µg/L. Any material that exceeds these thresholds will require further assessment in consultation with the APAM Environment and Sustainability Team to identify potentially unacceptable risks to human health associated with retaining the material on-site.*
3) *The maximum total concentration considered for reuse is 50 mg/kg. Any material that exceeds this concentration must be segregated and an appropriate remediation solution identified in consultation with the APAM Environment and Sustainability Team.*
4) *The use of statistical analysis and 95% upper confidence limits can be adopted for establishing PFAS Management Levels where sufficient data is available (e.g. 10 samples for like soil material).*
5) *Management levels have been selected from generic values provided in the PFAS NEMP along with values derived through risk-based assessment as outlined in the Technical Background Document (Senversa, 2025)[5].*
6) *Management levels presented above are based on a commercial/industrial use setting. Where a more sensitive land use is identified within the estate more conservative criteria may apply and will need to be considered as part of the risk assessment process required as outlined in Section 3.4.3.*
7) *Reuse management levels have not been provided for PFOA, as PFOS + PFHxS have been found to be the primary PFAS contaminants of concern and management driver at Melbourne Airport.*

[5] Technical Background Document – Reuse of Soil Containing PFAS, Melbourne Airport, Senversa, 2025

3.6.1 Level 1 material

Level 1 materials can be reused within the project boundary areas with minimal control measures above the general reuse requirements outlined in Section 3.4. Hydroseeding or another appropriate stabilisation layer is required unless otherwise approved by the APAM Environment and Sustainability Team. Where construction design cannot accommodate reuse within the project boundary, reuse within the APAM controlled areas of the airport may be possible, subject to approval from the APAM Environment and Sustainability Team.

Where no reuse option is available, Level 1 material can be stored within the Gate 11 Soil Reuse Facility subject to Level 1 control measures outlined in Section 3.5.

3.6.2 Level 2 material

Level 2 materials are recommended to be reused beneath a separation layer to further mitigate potential leaching and mobilisation of PFAS into surface water run-off. Where reuse is not beneath hardstand surfaces (concrete, asphalt), a minimum of 50 mm non-PFAS impacted clean soil (preferably low permeable soils) is required. Level 1 materials can be used to cover Level 2 materials with appropriate stabilisation as required.

Where no reuse option is available, Level 2 material can be stored within the Gate 11 Soil Reuse Facility subject to Level 2 control measures and requirements outlined in Section 3.5.

3.6.3 Level 3 and Level 4 material

Reuse of Level 3 and Level 4 materials require a risk assessment to identify potential risks to human health and/or the environment. Risk assessment must be conducted in accordance with Section 12.2 of the PFAS NEMP and in consultation with the APAM Environment and Sustainability Team.

Where no reuse option is available, Level 3 material can be stored in the Gate 11 Soil Reuse Facility as per Level 3 control measures and requirements outlined in Section 3.5 subject to APAM Environment and Sustainability Team approval. Storage of Level 4 material at the Gate 11 Soil Reuse Facility will require a risk assessment and APAM approval.

3.6.4 Level 5 material

Reuse of Level 5 material is not permitted and may require treatment prior to re-use, storage and disposal.

Storage at the Gate 11 Soil Reuse Facility is not permitted without further risk assessment and APAM Environment and Sustainability Team for approval.

4.0 TEMPORARY STOCKPILE MANAGEMENT

In addition to Section 5.2 – Erosion and sediment control, and Section 5.4 – Land and groundwater contamination of the Melbourne Airport EMP, the following outlines minimum environmental management requirements for temporary stockpiling of PFAS impacted material within the airport estate but outside of the Gate 11 Soil Reuse Facility. Storage within the Gate 11 Soil Reuse Facility is preferred to temporary stockpiling for periods >12 months. Stockpiling for >12 months outside the Gate 11 Soil Reuse Facility will require more rigorous engineering design and approval from the APAM Environment and Sustainability Team before proceeding.

4.1 General requirements

The following general requirements apply:

- Siting of stockpiles must only be in areas that meet the requirements outlined in Section 3.4. Stockpiling outside the project area or in areas that do not meet requirements outlined in Section 3.4 will require approval by APAM Environment and Sustainability Team. Additional controls may be required to mitigate potential risks in these locations.
- Excavation and handling of PFAS impacted material during heavy rain or strong winds must be avoided. Excavation and handling of PFAS impacted materials should only be undertaken in these adverse weather conditions in exceptional or emergency circumstances with approval by the APAM Environment and Sustainability Team and managed in accordance with the Melbourne Airport EMP.
- Preparation and management of stockpiles must be undertaken to minimise the potential for contamination of underlying and surrounding areas including uncontrolled runoff. In general, this involves keeping stockpiles dry and installation of appropriate covering, base layers and stormwater

controls. The level of management required will depend on the duration of stockpiling and the PFAS Management Level and location.

- Where more than one PFAS Management Level is identified, segregation of materials is required and signage must be installed to clearly indicate the different levels.
- Where sampling is not undertaken in situ prior to excavation, material must either be:
  - stored in skip bins or other appropriate waste collection containers that are fully contained to prevent discharges, leaching and loss of waste; or
  - stockpiled in accordance with Level 2 and Level 3 PFAS Management Level Requirements as detailed in Sections 4.2, 4.3 and 4.4, until adequate testing and classification of the material has been conducted.
- In accordance with Section 10.1.1 of the PFAS NEMP, where proposed volumes of stockpiled material are small (e.g. <10 m^3), the proposed storage is transient (<48 hours) and no adverse weather conditions are forecast (e.g. rainfall, high winds), APAM Environment and Sustainability Team may at its discretion reduce requirements for stockpiling of PFAS impacted material. Duration of storage will be assessed on a case-by case basis in consideration of risks, forecasted weather conditions and operational requirements.
- Any deviation from the requirements in Section 4.2 is subject to further risk assessment and approval from the APAM Environment and Sustainability Team and consultation with the regulator as required.

4.2 Base requirements

The following requirements apply for the base of temporary stockpiles, in order of preference:

- Where possible, any PFAS impacted material should be stockpiled on hardstand such as concrete or asphalt to minimise potential for leaching of contaminants into underlying soils. A minimum 0.25 mm linear low-density polyethylene (LLDPE) sheet with a minimum 300 mm overlap between sheets must be placed between the hardstand and stockpile to prevent PFAS contamination of underlying hardstand.
- Where hardstand areas are not available or practical for stockpiling for Level 1 to 2 PFAS impacted material, it must be stockpiled within the project boundary where surface soils have a similar or higher PFAS Management Level. If this is not possible, a base liner will be required as per the point below.
- Where hardstand areas are not available or practical, for stockpiling of Level 3 and 4 PFAS impacted material it can be located on unpaved area where surface soils have similar levels. Where Level 3 and 4 PFAS impacted materials are to be stockpiled on soils with lower levels of PFAS it must be stockpiled on a minimum 0.25 mm LLDPE sheet with a minimum 300 mm overlap between sheets for stockpiles less than 48 hours. For stockpiling between 48 hours and 12 months, an engineered base liner will be required in the stockpiling area, including:
  - Stripping of the topsoil (as required) and compaction of surface materials with a smooth drum roller.
  - Placement of clay or single composite lined base layer
  - Appropriate stormwater controls, including bund/leachate collection zone, banks, diversion drains etc.
- Stockpiling of any Level 5 material for less than 48 hours in an unpaved area will require an engineered base liner as described above. No stockpiling of Level 5 material for greater than 48 hours is permitted without further risk assessment to confirm controls.

4.3 Cover requirements

The following requirements apply for the covering of temporary stockpiles:

- For stockpiling of PFAS impacted material less than 48 hours with forecast rain or high winds, cover stockpiles with geotextile covering and appropriate anchoring.

- For stockpiling Level 1 PFAS impacted material for greater than 48 hours the above cover option can be maintained, alternatively a stabiliser can be used.
- For stockpiling Level 2, 3 and 4 PFAS impacted material greater than 48 hours to 12 months, more stringent levels of covering are required including:
  - Minimum 0.25 mm linear low density polyethylene (LLDPE) with a minimum 300 mm overlap between sheets.
  - Overlap to be positioned to minimise water ingress (i.e. overlap facing downslope).
  - Covering to extend 300 mm beyond toe of stockpile or anchored into the underlying soil.
  - Appropriate anchoring of covering (i.e. sandbags) to prevent movement of covers and water infiltration.

The cover system should also be designed and / or maintained to withstand the weather elements at the airport.

4.4 Temporary stockpiling base preparation and cover matrix

The following matrix summarises the types of base and cover required depending on duration and contaminant levels. Storage within the Gate 11 Soil Reuse Facility is preferred to temporary stockpiling for periods >12 months. Stockpiling for >12 months outside the Gate 11 Soil Reuse Facility will require more rigorous engineering design and approval from the APAM Environment and Sustainability Team before proceeding. See Appendix B for diagrams representing temporary stockpiling requirements.

Table 3: Temporary stockpiling requirements matrix

Stockpile Period	**<48 hrs**				**>48 hours to 12 months**			
PFAS Management Level	**1**	**2**	**3 & 4**	**5**	**1**	**2**	**3 & 4**	**5**
Base requirements								
Stockpile on hardstand area with minimum 0.25 mm LLDPE liner	X	X	X	X	X			
Stockpile on hardstand area with minimum 0.25 mm LLDPE liner and stormwater controls						X	X	
Stockpile in unpaved area with similar PFAS Management Levels	X	X	X		X	X		
Stockpile in unpaved area with minimum 0.25 mm LLDPE liner and stormwater controls			X			X		
Stockpile in unpaved area with engineered liner and stormwater controls				X			X	
Cover requirements								
Geotextile covering with appropriate anchoring	X	X	X		X			
Application of stabilisation product					X			
Minimum 0.25 mm LLDPE sheeting with appropriate anchoring (e.g. sandbags or into underlying soil)				X		X	X	

Notes:
1) Stockpile construction and dimensions must also meet the requirements outlined in the Melbourne Airport EMP.
2) If stockpiling is proposed in unpaved areas of the site with lower PFAS Management Levels, additional controls would be required as directed by APAM Environment and Sustainability Team.

4.5 Monitoring requirements

The following monitoring requirements apply:

- For stockpiles of Level 1 PFAS impacted material that have topsoil and seeding, Hydromulch or similar applied, weekly inspections are required until such time that grass has established over the extent of the stockpiles.
- For all stockpiles, at minimum, routine monthly inspections are required to verify that the controls are maintained.
- Prior to forecasted significant storm/ weather events, stockpiles must be checked to ensure that coverings are secure.
- Post any significant storm/ weather events, stockpile management integrity must be confirmed and rectified if required. Any uncontrolled discharges of sediment or leachate from stockpiles to surrounding areas are to be reported as an environmental incident.

5.0 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

Excavated hardstand materials, in particular concrete and asphalt, have the potential to be impacted by PFAS and therefore need to be considered under this framework.

In areas where the use of PFAS products in fire training and response exercises may have occurred (i.e. fire station, training ground or aircraft maintenance facility), other construction and demolition wastes such as bricks, wood, internal structures etc. could also be impacted. The potential for these wastes to be impacted by PFAS should be considered in consultation with the APAM Environment and Sustainability Team.

For the purpose of this framework, the management requirements for the excavation, handling, stockpiling and reuse of construction and demolition waste, are considered comparable to management of PFAS impacted soil. Construction and demolition waste materials must be segregated and stockpiled by material type to enable reuse wherever possible. Reuse of construction materials must be a viable reuse / recycling option that is appropriate and a geotechnically suitable replacement for other construction materials (i.e. not used as, or within, earth mounds). Examples of appropriate use include but are not limited to: haul roads, geotechnical sub-layers in pavement construction, crushed rock/concrete hardstand layers.

Melbourne Airport is committed to resource recovery and advice must be sought from APAM Environment and Sustainability Team prior to works. APAM Environment and Sustainability will assess the potential for construction and demolition waste to be PFAS impacted and will advise if PFAS testing of materials is required. Onsite reuse potential will be assessed on a case by case basis.

6.0 WASTEWATER MANAGEMENT

In addition to wastewater, surface water and stormwater management requirements outlined in the Melbourne Airport EMP, the PFAS NEMP requires that any proposed management or reuse of water must not result in an unacceptable risk to human health or the environment. The reuse must also be consistent with regulatory requirements.

6.1 Wastewater sources

During construction and maintenance activities, the following sources of wastewater are generally encountered:

- Captured stormwater.
- Extracted surface water from drains or surface water bodies.
- Extracted groundwater (where encountered during excavations).
- Wastewater generated during works (e.g. washdown, street sweeping, leachate from stockpiles).

Management controls must be considered to limit the potential for contamination of the environment (soil, groundwater and surface water) from activities. Where possible, stormwater must be diverted around the project areas to minimise the generation of potential wastewater.

6.2 Wastewater reuse and management options

Options for management or reuse of wastewater at Melbourne Airport include:

- Reuse on-site where an appropriate reuse option is available (Section 6.4.1).
- Disposal to the Gate 11 Soil Reuse Facility for treatment where an appropriate reuse option is not available (Section 6.5).
- Disposal to sewer subject to Trade Waste Agreement and APAM approval (Section 6.6).
- Offsite disposal or other APAM approved treatment where no other management or reuse option is feasible (see Section 8.0).

A workflow diagram for wastewater management and reuse is provided below in **Figure 3**.

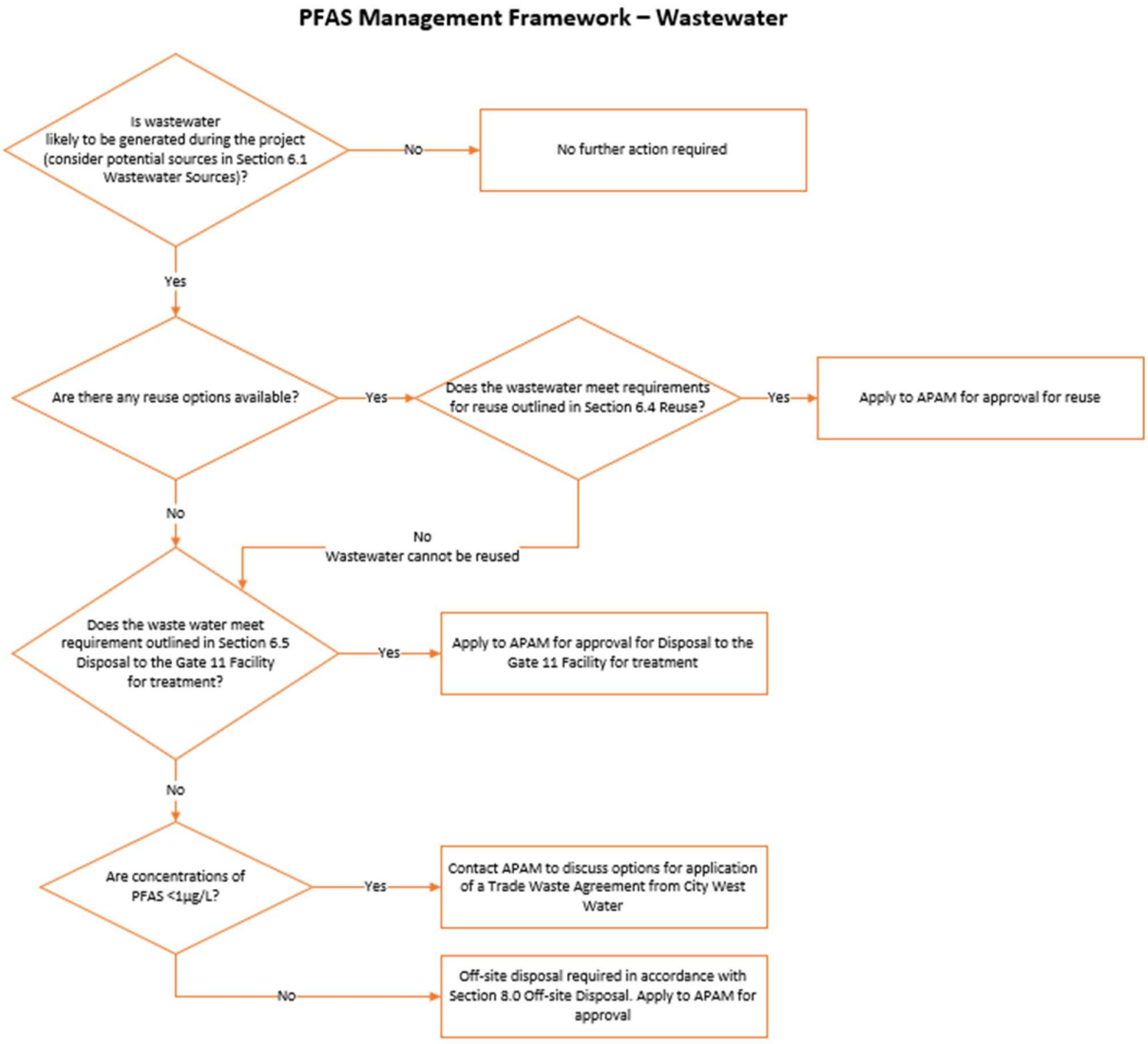


Figure 3: Workflow for wastewater management and reuse at Melbourne Airport

6.3 Sampling & analysis

Any wastewater that is collected on-site is required to be tested before any reuse or disposal options can be considered. Collected samples must be representative of the total volume of water being assessed and

sampling must consider potential off-site sources where the area of impact is not localised (e.g. when assessing surface water from drains or surface water bodies that may service a broad catchment).

Analysis must be undertaken in accordance with the Melbourne Airport EMP, PFAS NEMP and ASC NEPM with consideration of site specific human health and ecological acceptance limits and/or receiving facility disposal requirements as applicable.

Suitability for reuse or treatment is not restricted to PFAS concentrations. Other contaminants of concern should also be considered when conducting sampling and analysis.

All laboratory results, GPS coordinates of sample locations and a summary of sampling activities must be provided to the APAM Environment and Sustainability Team electronically in both PDF and excel format. Laboratory data must be provided in ESdat database format (.csv file).

6.4 Reuse

Acceptable reuse options for PFAS impacted water the airport may include:

- Dust suppression.
- Re-infiltration.
- Irrigation (i.e. grassed areas) in non-sensitive land use areas as described in Section 3.4.

6.4.1 Reuse general requirements

As any reuse option may impact the environment (soil, groundwater and surface water), any proposal for reuse must include a risk assessment which demonstrates low and acceptable risk, including consideration of:

- Concentration of PFAS in wastewater and proposed reuse area.
- Existing groundwater conditions, including depth to water table and PFAS concentrations.
- All potential receptors and potential exposure pathways.
- Potential runoff areas.
- Potential mobilisation of contaminants from soil.

In particular, the volume and rate of discharge during any reuse event must be undertaken in a controlled manner to limit impacts to existing environmental conditions and potential run-off into neighbouring stormwater drains.

Any proposed reuse of PFAS impacted water requires approval from the APAM Environment and Sustainability Team before proceeding and must demonstrate that the appropriate levels of control are in place to manage risks in line with the PFAS NEMP. Any proposed reuse that does not meet the requirements of this framework requires approval from the APAM Environment and Sustainability Team and consultation with the regulator as required.

6.5 Disposal to the Gate 11 Soil Reuse Facility

Where no reuse option is feasible, wastewater must be disposed to the Gate 11 Soil Reuse Facility for treatment. The APAM Environment and Sustainability team must approve all applications for disposal of wastewater at the Gate 11 Soil Reuse Facility Water Treatment Plant (WTP). A request to the APAM Environment and Sustainability team is required to receive application instruction information.

Disposal to the Gate 11 Soil Reuse Facility will be subject to approval from the APAM Environment and Sustainability Team and will require the following:

- Source / activity where wastewater will be generated
- Estimated volumes to confirm storage and treatment capacity within the facility

- Confirmation if any water quality testing has been undertaken and/or likely contaminants. High risk sources / activities may require provision of assessment information and documentation in accordance with Section 6.3 of this framework
- Maintaining a register of wastewater volumes disposed of at the WTP including source of waste, dates and volumes. The register must be submitted to the APAM Environment and Sustainability Team monthly (minimum), or at the completion of disposal

6.6 Discharge to sewer

At concentrations up to 1 µg/L, PFAS impacted water may be discharged to sewer, subject to obtaining a Trade Waste Agreement from Greater Western Water. Contact the APAM Environment and Sustainability Team in the first instance for further details.

6.7 Wastewater storage

Where reuse or disposal of wastewater is not immediately achievable, wastewater must be stored appropriately in accordance with requirements of the PFAS NEMP. In addition to controls listed in the Melbourne Airport EMP, Table 4 provides a framework for the storage of PFAS impacted wastewater within the airport estate. Deviation from these requirements is subject to further risk assessment and approval from the APAM Environment and Sustainability Team prior to proceeding.

Disposal at the Gate 11 Soil Reuse Facility is preferred to temporary storage for periods >6 months. Storage for >6 months outside the Gate 11 Soil Reuse Facility will require more rigorous engineering design and approval from the APAM Environment and Sustainability Team before proceeding.

Table 4: Wastewater storage requirements

Storage Period	Requirements
<48 hrs with no rain predicted	Packaged liquid containers or self-bunded containment vessels on impervious bottom liner (e.g. bunded pallet, tarp, plastic sheeting, membrane, etc.)
>48 hrs up to 6 months	Self-bunded containment vessels covered, with lockable access, on impervious, bunded hardstand, with effective stormwater controls (e.g. diversion drains, banks, etc.)

7.0 SLURRY MANAGEMENT

During construction and maintenance works, slurry is often generated during non-destructive drilling and from drilling muds. This generally consists of a mix of water and soil in a liquid/non-spadable form. Slurry wastes are often disposed of off-site as the volumes are typically low and not suitable for reuse due to high water content and poor geotechnical properties (Section 8.0).

Depending on volume, slurry may be suitable for disposal to the Gate 11 Soil Reuse Facility for treatment. Works planning should include estimates of slurry volumes and likely PFAS impacts to confirm feasibility of disposal to the facility in consultation with the APAM Environment and Sustainability Team. The APAM Environment and Sustainability team must approve all applications for disposal of slurry at the Gate 11 Water Treatment Plant (WTP). A request to the APAM Environment and Sustainability team is required to receive application instruction information.

Disposal to the Gate 11 Soil Reuse Facility will be subject to approval from the APAM Environment and Sustainability Team and will require the following:

- Source / activity where slurry will be generated
- Estimated volumes to confirm storage and treatment capacity within the facility
- Confirmation if any slurry quality testing has been undertaken and/or likely contaminants. High risk sources / activities may require provision of assessment information and documentation in accordance with Section 6.3 of this framework

- Maintaining a register of slurry volumes disposed of at the WTP including source of waste, dates and volumes. The register must be submitted to the APAM Environment and Sustainability Team monthly (minimum), or at the completion of disposal

Where larger volumes of slurry are expected to be generated, the slurry can be separated into liquid and spadable soil (e.g. using settlement tanks / or engineered drying ponds) and treated using the soil and wastewater management requirements outlined in the sections above. Any such on-site treatment of slurry will require approval from the APAM Environment and Sustainability Team before proceeding, and must demonstrate that the appropriate levels of control are in place to manage risks in line with the PFAS NEMP.

8.0 OFF-SITE DISPOSAL

The *Environmental Protection Act 2017* and associated subordinate regulations and EPA guidelines set out the regulatory framework for the management of industrial waste in Victoria. These regulations are triggered when these wastes (e.g. contaminated soil, slurry and/or water) generated from Commonwealth Airport Land are transported or disposed of outside the airport land.

The Environment Protection Authority (EPA) Victoria has provided several publications on aspects of these regulations (www.epa.vic.gov.au). EPA Publication 1828 establishes the characteristics and thresholds necessary for classification of wastes to determine the relevant waste disposal category. Version 1828.3, released in October 2024 incorporated waste disposal thresholds for PFAS (PFOA, PFOS and PFHxS).

Offsite disposal of any Priority Waste as defined in the *Environment Protection Act 2017* must be to a suitably licensed facility and the EPA Waste Tracker system must be used. Off-site disposal must also comply with the *Environment Protection Act 2017* and associated subordinate regulations and EPA guidelines. Records must be provided to the APAM Environment and Sustainability Team upon request.

9.0 MATERIAL TRACKING PROCEDURES

All maintenance and construction projects are required to have a material tracking procedure to document the management and movements of PFAS impacted material. At a minimum, the procedure should include documentation of the following:

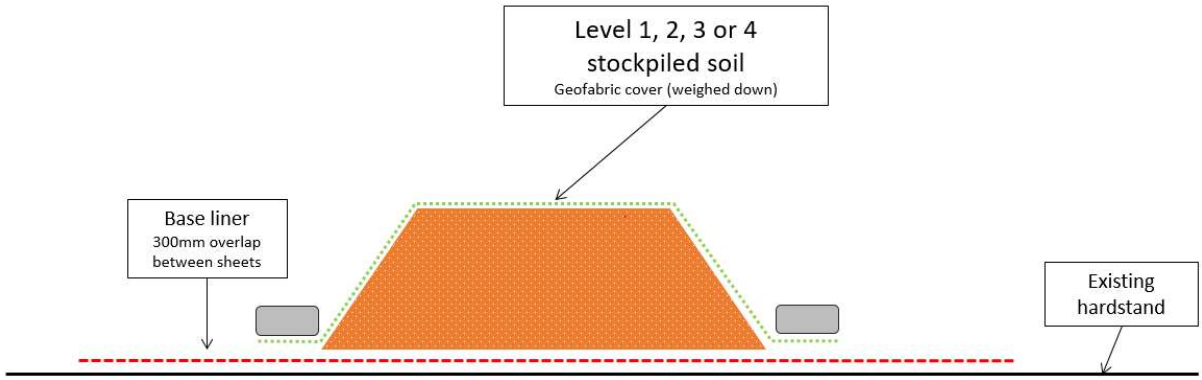
- Sources of PFAS impacted material, volumes generated and corresponding analytical test results (where available).
- Description of management measures implemented for each waste stream.
- Record of any associated approvals or permits for PFAS management issued by APAM or any other Authority, and documented compliance with any conditions of such approvals.
- The location of reuse or stockpiling areas (map and GPS coordinates).
- Maintenance records for temporary stockpile areas.
- Waste transport and disposal records for any material sent off-site.

APPENDIX A

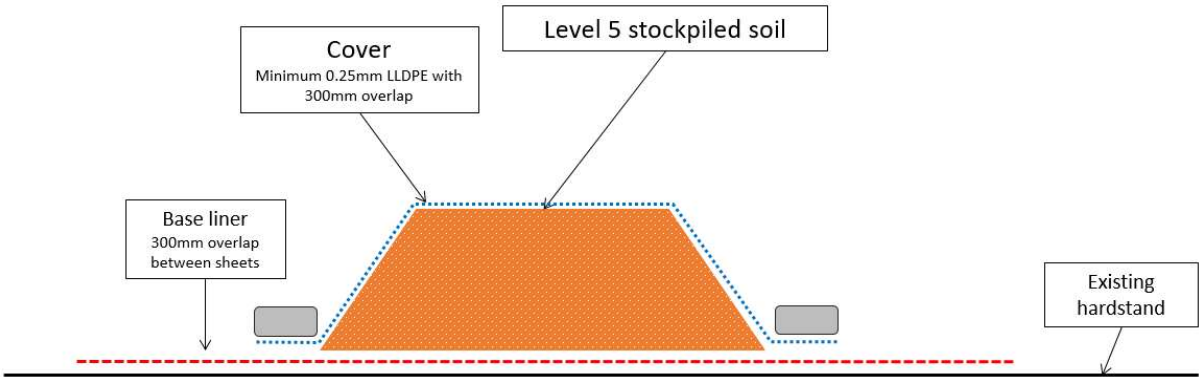
Temporary Stockpiling Requirements - Diagrams

Temporary stockpiling on existing hardstand <48 hours

Level 1, 2, 3 or 4

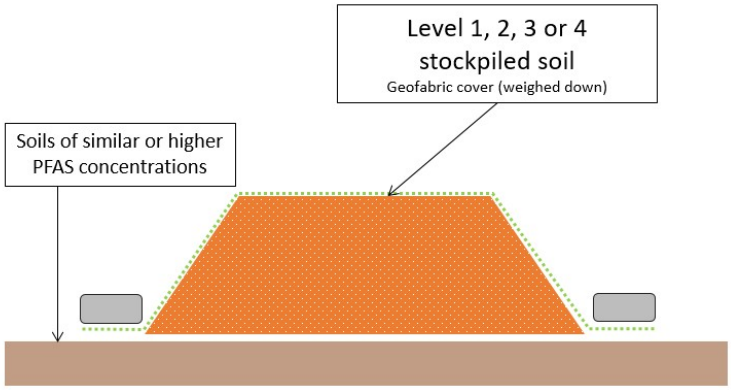


Level 5

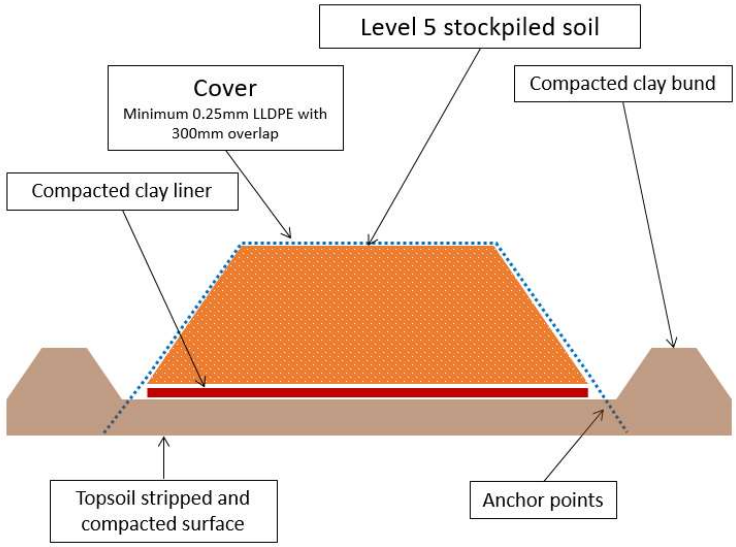


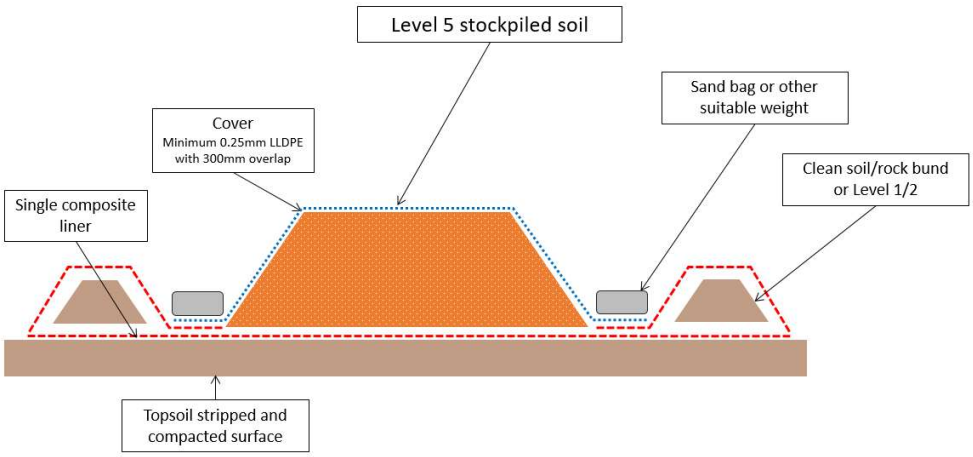
Temporary stockpiling in unpaved areas <48 hours

Level 1, 2, 3 or 4



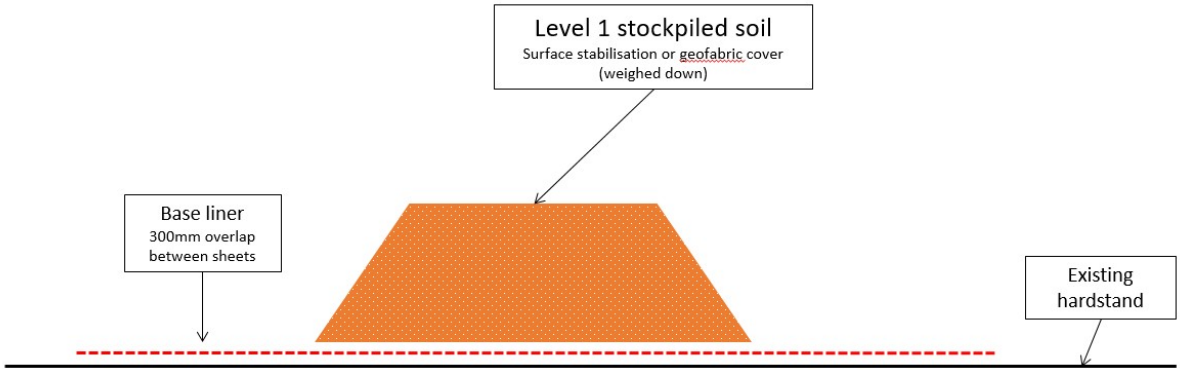
Level 5 (two options)



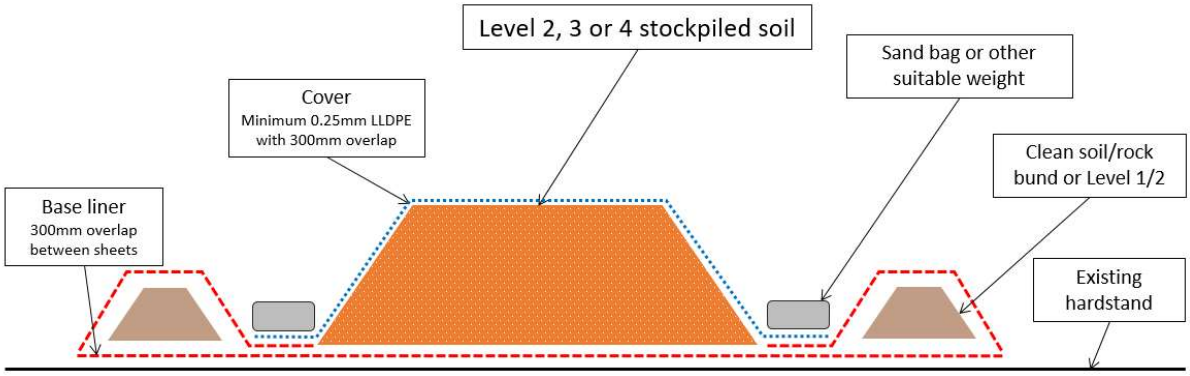


Temporary stockpiling on existing hardstand >48 hours – 12 months

Level 1

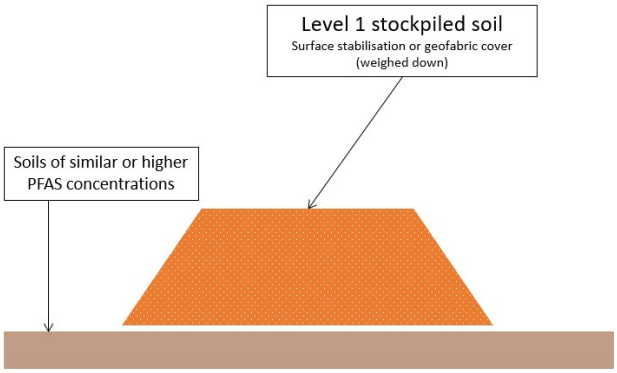


Level 2, 3 or 4

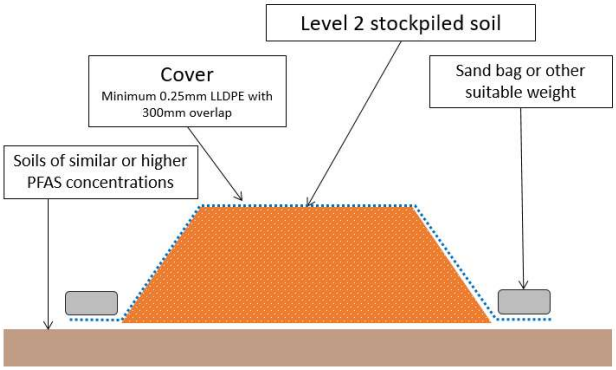


Temporary stockpiling in unpaved areas >48 hours – 12 months

Level 1



Level 2



Level 3 or 4 (two options)