Fulton Hogan

Construction Environmental Management Plan

Document details

Operation
Taxiway Zulu and Northern Compound Project

Date
14 June 2019

Taxiway Zulu and Northern Compound Project

EPBC Number: 2016/7837
Project Name: Taxiway Zulu and Northern Compound Project
Proponent: Australian Pacific Airports (Melbourne) Pty Ltd | ABN 62 076 999 114
Location: Melbourne Airport
Project No: CP17038
Document Title: Construction Environmental Management Plan
Revision: 5
Revision Date: 14 June 2019
Client Name: Melbourne Airport
Client Number: CP17038

Environmental Manager: Samantha Chandler

REVISION	DATE	PREPARED BY	BRIEF DESCRIPTION OF CHANGE
0	15/04/2019	Samantha Chandler	Developed a Construction Environmental Management Plan for the Taxiway Zulu and NAR Projects
1	09/05/2019	Samantha Chandler	Addressing DoEE comments from the Adequacy checklist.
2	17/05/2019	Samantha Chandler	Addressing APAM's comments in response to DoEE comments
3	23/05/2019	Samantha Chandler	Addressing APAM's comments and incorporating Jacob's comments
4	13/06/2019	Samantha Chandler	Updating the figures within the document
5	14/06/2019	Samantha Chandler	Updating the CEMP based off DoEE's requirements (13/06/2019) and discussions with Nick Walker (14/06/2019).

Fulton Hogan Construction Pty Ltd
ABN: 46 010 240 758
Building 7, Botanicca Corporate Park
572 Swan Street
Richmond, VIC 3121
T: +613 9340 6200
www.fultonhogan.com.au

Fulton Hogan

Table of Contents

Glossary

► Definitions & Terms

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

Environmental Aspect

Elements of an organisations: activities, products or services that could interact with the environment.

Environmental Impact

Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

ISO14001:2015

An international voluntary standard for environmental management systems, this is one standard in the ISO 14000 series of International Standards on environmental management.

SWMS

Safe Work Method Statement is a systematic approach to the identification of work task related hazards and controls.

RASCI

Clear outline of responsibilities that indicates which positions are Responsible, Accountable, Supportive, Consulted, and Informed for specific activities.

Sustainable

Characteristic of a process or state, that can be maintained at a certain level indefinitely.

Acronyms

► Acronyms used in this document

APAM	Australian Pacific Airports (Melbourne)
AEO	Airport Environmental Officer
CAMs	Case Action Management System
CHMP	Cultural Heritage Management Plan
DIRDC	Department of Infrastructure, Regional Development and Cities
DoEE	Department of Environment and Energy
EMS	Environmental Management System
EPA	Environmental Protection Authority
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
GGF	Growling Grass Frog (*Litoria raniformis)*
HDD	Horizontal Directional Drilling
ICT	Information and Communication Technology
IECA	International Erosion Control Association
IWRG	Industrial Waste Resource Guidelines
NAR	Northern Access Route
NATA	National Association of Testing Authorities
NCR	Non-Conformance Report
NDD	Non-Destructive Digging
NEPM	National Environment Protection Measures
NGER	National Greenhouse and Energy Reporting
NTGVVP	Natural Temperate Grassland of the Victorian Volcanic Plain
PERCOW	Permit to Commence Work
PFAS	Per- and Poly-Fluoroalkyl Substances (Chemical Group)
PFHxS	Perfluorohexane Sulfonate
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PIW	Prescribed Industrial Waste
SEPP	State Environment Protection Policy
SWMS	Safe Work Method Statement
VPZ	Vegetation Protection Zone
WSO	Work Safety Officer

Part A: Overview

1. Introduction

1.1. Purpose

This Construction Environmental Management Plan (CEMP) outlines how Fulton Hogan will manage the environmental requirements to ensure a positive environmental performance for the Taxiway Zulu and Northern Access Route (NAR) (also referred to as the Northern Compound) project at Melbourne Airport ('the Project'). This document will ensure that all activities are undertaken consistently in accordance with regulatory and approval requirements and with minimal impact to the environment.

Protection of the environment is integral to the philosophy of Fulton Hogan's ISO 14001:2015 accredited Environmental Management System (EMS).

The management framework outlined in this CEMP provides clear guidelines for avoiding, reducing and managing environmental risks.

The structure of this modified CEMP is defined below;

Section	Detail
Part A: Overview	This section outlines; ▪ Introduction ▪ Project Description ▪ Resources, Roles and Responsibilities ▪ Environmental Commitments ▪ Planning and Risk Management ▪ Awareness, Training, Competence and Communication ▪ Monitoring, Inspections and Audits ▪ Incident and Emergency Management ▪ Reporting ▪ Maintenance and Retention of Records ▪ Construction Environmental Management Plan Review
Part B: Site Specific Environmental Management	This section outlines in detail the key environmental aspects to manage on the project
Part C: Appendices	This section provides the information to support the EMP ▪ 1: Approvals and Compliance Table ▪ 2: Fulton Hogan's Environmental and Sustainability Policy ▪ 3: Aspects and Impacts Risk Assessment Register ▪ 4: Weekly Environmental Inspection Checklist ▪ 5: Jacobs PFAS Delineation Maps ▪ 6: Curriculum Vitae

2. Project Description

This CEMP applies to all personnel, contractors and sub-contractors associated with the Project.

The scope of the Project involves Australia Pacific Airports (Melbourne) Pty Ltd (Melbourne Airport) constructing the Taxiway Zulu Program and a new Northern Access Route (including a construction compound).

Taxiway Zulu Program

The Taxiway Zulu Program will enable the future extension to Terminal 2 Pier D to create additional aircraft contact gate capacity for Terminal 2 and upgrades to the existing taxiway pavement. It also supports future parallel runway operations and improves aircraft traffic movements in the airport's northern precinct.

The scope of works includes the following overarching components:

- New taxiway network in the Northern Precinct totalling approximately 243,000 square metres of aircraft pavement;
- Replacement of aircraft pavement at the end of its serviceable life; and
- Associated services and utilities necessary to support development (including lighting, drainage and power).

Northern Access Route

The Northern Access Route will provide access for construction service associated with development of the Taxiway Zulu Program on the north side of the Airport.

The scope of works includes the following components:

- Road access networks including new tie-in access from the existing C743 Sunbury Road and Oaklands Road roundabout;
- Contractor compound (civil platform);
- External access points will be provided via Gate 3 (at the Sunbury Road and Oakland Road roundabout) with a security gatehouse and gates; and
- Associated services and utilities including stormwater diversions, fencing, signage, services relocations and infrastructure upgrades.

Specific works include site establishment, bulk earthworks including verge and swale drain construction, flexible pavement construction (for the new haul road, perimeter road and airside road), widening and rehabilitation of the existing airside haul road, application of topsoil and seeding to the newly constructed verges and swale drains, placement and compaction of asphalt surface, stormwater drainage installation, airfield electrical works (including high voltage and low voltage), street lighting installation, airfield communications and ICT works, installation of a new sewer and water reticulation system (including horizontal directional boring of the new Water main under the existing taxiways and connection into existing mains), construction of new pits (low voltage electricity, communications and water mains), construction of the new gate house, canopy and WSO facility hut, installation of new fencing (perimeter, compound and security gates), signage and line marking, demolition of any existing infrastructure made redundant and provision of continual access for airside traffic throughout the works by diverting the airside traffic to the existing perimeter road.

The equipment and infrastructure onsite will vary significantly throughout the life of the project. Equipment to be utilised for the Project will include, but is not limited to the following; Excavators (5, 13, 20, 30, and 45 Tonne), trucks, trailers, tandem trucks, bobcats, articulating dump trucks, light vehicles, light towers, tele handlers, and various hand tools. Infrastructure will include, site sheds, bunded chemical storage containers, washout bays, waste and recycling bins, sediment and erosion control devices, dewatering pods, generators and diesel tanks.

The Project forms part of a broader airfield development program, to enable the future expansion of the international terminal, improve aircraft movements in the airport's northern precinct and support the operations of a future third runway and, establish a construction compound and access for current and future works on the northern side of the Airport

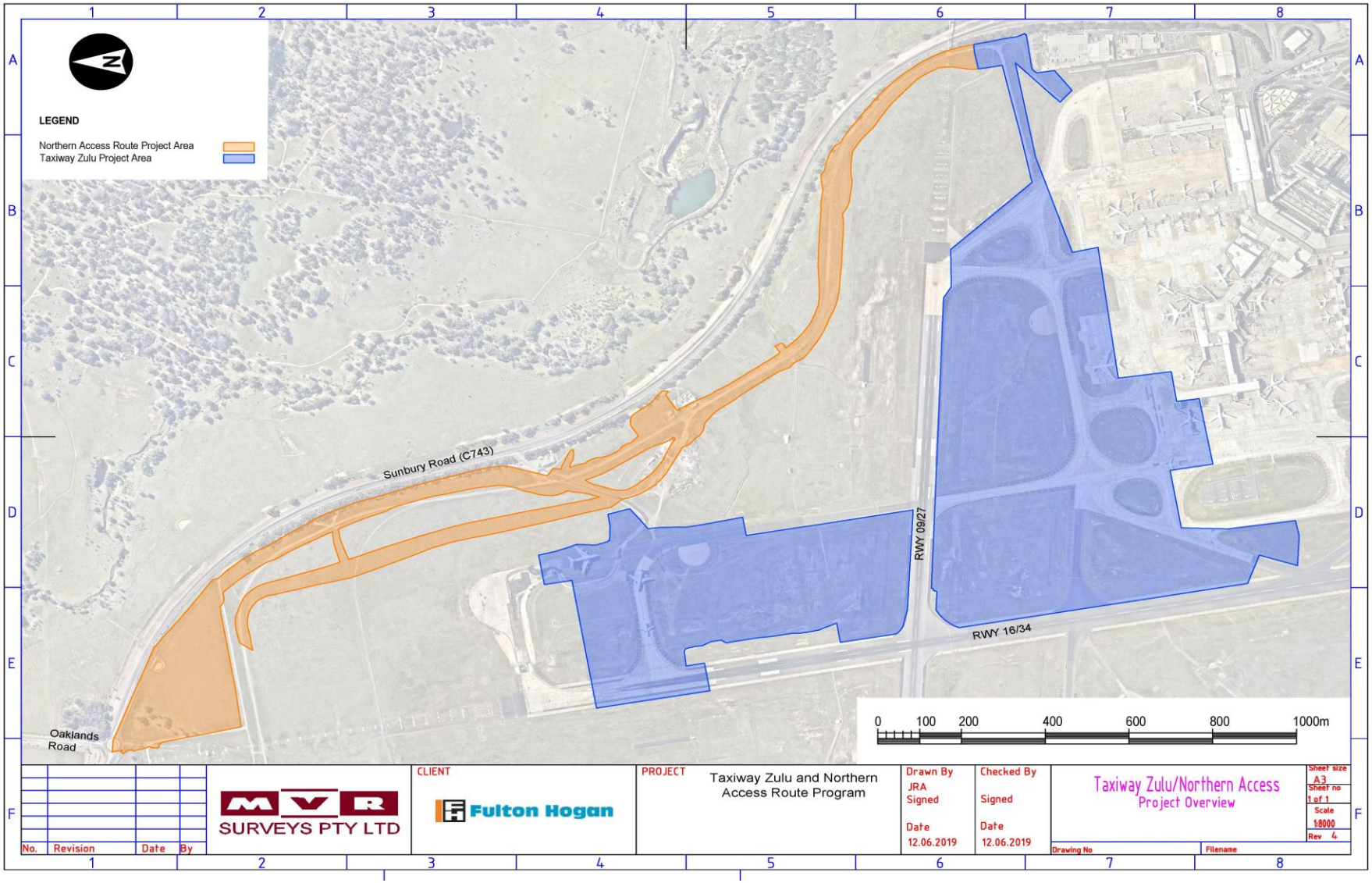


Figure 1: Project Overview – Taxiway Zulu and Northern Access Route extent of works

2.1. Approval and compliance requirements

2.1.1. EPBC Act Approval (Jan 09, 2018)

Fulton Hogan's CEMP has been prepared to fulfil the specific approval conditions defined in the Approval Notice 2016/7837, issued under sections 130(1) and 133 of the Environment Protection and Biodiversity Act 1999 (EPBC Act), signed on the 9 January 2018.

The proposed action to which this approval applies is 'to expand airside infrastructure including taxiways, taxi lanes and aprons, and construct a northern construction-site compound and associated infrastructure at Melbourne Airport, approximately 20 km north-west of Melbourne'.

The Project area contains native vegetation that corresponds to the EPBC Act listed Natural Temperate Grassland of the Victorian Volcanic Plan ecological community. In addition, the Project area is located upstream and adjacent to waterways supporting known habitat of the EPBC Act listed Growling Grass Frog *(Litoria Raniformis)*, including Moonee Ponds Creek to the east and Deep Creek to the west.

Specific contractor conditions are required to be addressed as part of the Approval notice 2016/7837, which are outlined below. Compliance with conditions which are relevant to the preparation of this CEMP is addressed in Appendix 1: Approvals and Compliance Table.

Condition 1: The approval holder must not clear more than 18.913 ha of natural temperate grassland of the Victorian volcanic plain ecological community from the site.

Condition 4: States "To mitigate impacts on the growling grass frog the approval holder [APAM)] must submit a Construction Environment Management Plan (CEMP) for the Minister's approval prior to the commencement of the action. The approved plan must be implemented. The CEMP must include but not be limited to:

a) Runoff controls to ensure that the quality of the adjacent waterways is maintained or improved.
b) Best practice sediment control to be implemented during construction.
c) Detailed measures to avoid spills of fuels and management of accidental spills to avoid the introduction of pollutants and biocides during construction.
d) Cleaning construction vehicles prior to entering the site to avoid the introduction and spread of weeds and pathogens. Cleaning of trucks leaving the site to prevent impacts from construction sediments to nearby growling grass frog populations.
e) Routine management procedures to prevent local air and water quality impacts, such as daily inspections, dust suppression and storage and handling of chemicals.
f) Monitoring and relevant remediation measures in the event of adverse monitoring results."

Condition 6: Relates to the PFAS Management Plan which Jacobs have developed. Fulton Hogan will adopt and implement the PFAS Management Plan as part of this CEMP. Where the PFAS Management Plan refers to the CEMP for additional detail on environmental management measures, these are outlined in the relevant sections of the CEMP.
Condition 6 States that "The PFAS Management Plan, along with the sections of the Construction Environment Management Plan (CEMP) and Operational Environment Management Plan (OEMP) for the proposed action relating to contamination and soils, must be prepared by a suitably qualified expert and must, in relation to management of PFAS:

a) be consistent with:
    i. The National Environment Protection Council's National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), and
    ii. The Department of the Environment and Energy's National Water Quality Management Strategy, including the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), noting that the draft default guideline values for PFOS and PFOA in freshwater, as applied by the Victorian state government, are to be used until the default guideline values are finalised, and
b) detail implementation and operational procedures that are appropriate to the risk posed by any contamination, noting the persistence, mobility and/or bioaccumulation potential of PFOS, PFHxS and PFOA, including:
    i. roles and responsibilities; and
    ii. management of PFAS contamination within the project area, including strategies to reduce runoff and migration of contamination across and off the proposed site; and

iii. a contingency action plan for unexpected PFAS contaminant discoveries, including coordination, communication and engagement requirements, and

c) detail soil and water monitoring requirements and testing and disposal procedures within the project area that are appropriate to the risk posed by any contamination, including references to relevant provisions of airport environmental management plan/s including on-site and, where relevant, off-site, PFAS contamination monitoring arrangements, and

d) detail review procedures that are appropriate to the risk posed by any PFAS contamination, and

e) impose the following performance measures for managing earthworks and storage of spoil to minimise the release of PFAS, due to disturbance of PFAS contaminated soils or sediments within the project area:.

i. contaminated waste material (including excavated soil or sediment, and any leachate from soil or sediment, or water arising from de-watering of sediment or soil) to be handled appropriately to the risk posed by the contamination and disposed of in an environmentally sound manner such that potential for the PFAS content to enter the environment is minimised; and

ii. contaminated waste material, including excavated soil or sediment, with a PFOS+ PFHxS or PFOA content above 50 milligrams per kilogram (mg / kg) to be stored or disposed of in an environmentally sound manner, to achieve nil environmental release of PFOS, PFHxS and PFOA content. The PFAS Management Plan will need to detail how materials at these concentrations, if encountered, would be handled to achieve nil environmental release; and

iii. all soil remaining at the site of the action to be suitable for purpose."

2.1.2. DoEE Environmental Management Plan Guidelines (DoEE, 2014)

The content of Fulton Hogan's CEMP has been prepared to accommodate the DoEE requirements in accordance with the Environmental Management Plan Guidelines (DoEE, 2014) (the Guidelines). Table 1 below provides a summary of the content requirements as per the Guidelines, along with the relevant sections of the report in which the requirements are addressed.

This CEMP will be used to inform the Project team the specific environmental requirements that need to be addressed as part of the Approval requirements.

► **Table 1: DoEE guideline compliance**

DoEE Guideline Requirement	CEMP Section
Cover Page and declaration of accuracy	Front of document
Document version control	Page 2
Table of Contents	Page 4
Introduction	Section 1: Introduction
Conditions of approval reference table	Appendix 1: Approvals and Compliance
Project description	Section 2: Project Description
Objectives and targets	Section 4.2: Objectives and Targets
Roles and responsibilities	Section 3: Resources, Roles and Responsibilities
Reporting	Section 9: Reporting
Environmental training	Section 6: Awareness, Training, Competence and Communication
Emergency contacts	Section 3.3.1: Emergency Contacts
Emergency procedures	Section 8: Incident and Emergency Management
Potential environmental impacts and risks	Section 5.2: Aspects and Impacts and Appendix 3: Aspects and Impacts Risk Assessment Register
Environmental management measures	Part B: Site specific environmental management
Audit and review	Section 7: Monitoring, Inspections and Audit. Section 11: CEMP Review

2.1.3. Major Development Plan Approval (Feb 08, 2019) – Amended Plans

The Project is a Major Development under Section 89(m) of the Airports Act 1996, as it is 'development of a kind that is likely to have significant environmental or ecological impact'. The delegate of the Minister for the Environment and Energy determined the Project as a controlled action under Section 75 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). It is therefore a requirement of the Airports Act 1996, that a Major Development Plan be prepared and submitted to the Minister for Infrastructure and Transport for approval. The Major Development Plan for this project was granted approval on 8 February 2019.

The project will provide a copy of amended plans to the department when final design of the project's footprint is complete. Any amendments to the footprint will not have a greater impact on MNES than has been approved in EPBC 2016/7837.

3. Resources, Roles and Responsibilities

3.1. RASCI

Fulton Hogan's RASCI identifies the management and operational responsibilities for each position involved in the implementation of environmental management for the Project.

The acronym RASCI stands for:

R	Responsible	Does the work
A	Accountable	Has ultimate responsibility, signs off R's work
S	Supportive	Provides resources / implementation support
C	Consulted	Has information/perspective/capability used to complete the work
I	Informed	Should be notified of outcomes but need not be consulted.

► Table 2: Operational Responsibilities

RESPONSIBILITIES	JOB TITLE					
	Operations Manager	Department Manager / Major Project Manager	Minor Project Manager / Engineer	Foreman / Site Manager	Site Environment Manager	Regional Environment Manager
Development of CEMP's	A	A	A	C	R	C
Reviewing and approving CEMP's	A	R	I	I	I	R
Reviewing Subcontractor CEMP's, Work procedures and SWMS for appropriate environmental content			AR	S	R	
Annual review of CEMP/s objectives and targets	I	A	S	C	S	R
Communicating and training staff on the CEMP, including the PFAS Management Plan	I	A	R	S	R	C
Ensuring communication of relevant site environmental risks and controls as part of Site Inductions		A	R	S	S	
Implementing the CEMP and PFAS Management Plan and managing sites to comply with legal and other requirements	A	R	R	R	S	S
Maintaining necessary environmental management records for activities under are of responsibility		A	R	R	R	

RESPONSIBILITIES	TITLE TLE					
	Operations Manager	Department Manager / Major Project Manager	Minor Project Manager / Engineer	Foreman / Site Manager	Site Environment Manager	Regional Environment Manager
Undertaking Monthly Environmental Reporting (Fulton Hogan and Client), including monthly assessment of performance against Objectives and Targets		A			R	
Reporting and investigating incidents and non-conformances and ensuring corrective and preventive action is taken and is effective	I	A	R	R	R	C
Auditing sites against the requirements of the CEMP, including the PFAS Management Plan	I	S	S	S	S	AR

3.1.1. Emergency Contacts

The key environmental emergency contacts for the Project are provide in Table 3 below. The Incident and Emergency Response Contact List will be displayed within the site sheds.

► **Table 3: Key Emergency contacts**

ACC Melbourne Airport Coordination Centre		03 9297 1601	**FH Project Director**	Nick Hrysomallis	0402 479 640
APAM Environmental Manager	Nick Walker	03 8326 3033	**FH Project Manager**	Steve Felsinger	0400 936 115
Airfield Interface Manager	Peter Gaukrodger	0499 789 977	**FH Project Manager**	Nicholas Terpstra	0409 627 574
APAM Project Manager	Ben Torwick	0425 785 256	**FH Superintendent (24/7)**	Vince Cicitta	0407 858 831
APAM Development Manager	Kevin McFarlane	03 9297 1134	**FH Senior Foreman**	Kaneti Uluave	0429 953 251
			FH Environment Manager	Samantha Chandler	0409 632 675
			FH Safety Manager	Niall Guing	0409 627 574

3.2. Sub-contractors

All subcontractors will be engaged as per Fulton Hogan's Subcontracting, Purchasing and Hiring Procedure. This procedure requires that all Subcontractors and Suppliers have a signed Subcontract Agreement and produce required documentation.

In line with the conditions of our contracts, approvals and/or sites, Sub-contractors will comply with all statutory and Fulton Hogan's CEMP requirements. Sub-contractors will be required to operate in a manner that is in line with the requirements of this CEMP and any relevant Safe Work Method Statement (SWMS). Fulton Hogan will review all subcontractors work activities prior to their arrival at site to ensure that they will not pose a new or increases risk to the environment.

Subcontractors are required to report all incidents to their Fulton Hogan Supervisor as soon as practicable and safe to do so.

3.2.1. Sub-contractor Contacts

► Table 4: Sub-Contractor Contact List

Sub-Contractor	Function	Contact No.
ADB Safegate Pty Ltd	Electrical Works	*TBC* **Sub-Contractors yet to be finalised.**
Bidd Construction Group Pty Ltd.	Plant Hire	
BTB Australia Pty Ltd.	Boring Works	
Cut and Core Pty Ltd	Concrete Cutting Works	
Hanson Pty Ltd	Concrete Supply	
Holcim Pty Ltd	Rock Supply	
IDig Developments	Labour	
KL Modular Systems (Aust.) Pty. Ltd	Building	
MVR Surveys Pry Ltd	Survey Set-out	
Oak Park Tullamarine Pty Ltd	Structural Works and PCC Pavement	
Rob Carr Pty Ltd.	Pipe Jacking	
The Frame Group Pty Ltd	ICT Requirement	

4. Environmental Commitments

4.1. Organisational Policies

Organisational commitments to the environment and sustainability are detailed within the Environmental Policy and the Sustainability Policy (refer to Appendix 2.1 and 2.2)

All operations shall be undertaken in a manner consistent with the Policies.

The Policies shall be taken into account during the setting of the Projects Objectives and Targets.

4.2. Objectives and Targets

4.2.1. Objectives

Objectives for this Project have been separated into three categories: Corporate, Southern Region and Project-specific. The Corporate and Southern Region business within Fulton Hogan set internal environmental objectives and targets every financial year, which are measured and reported to Fulton Hogan's management team on a monthly basis. These are outlined below.

Corporate Objectives

- Zero Legal Infringements: Operate in a manner which meets and where possible exceeds environmental compliance requirements
- Provision of environmental training through Fulton Hogan's Envirowise.

Southern Region Objectives

- Environmental compliance: Through completion of environmental inspection checklists and reporting of issues and improvements identified.
- Develop our people: Through our site staff (senior project engineers and below) participating in environmental inspections.

Project-specific Objectives

Project-specific environmental objectives are defined in Part B of the CEMP for each significant environmental aspect. This includes specific objectives of the EPBC Act Approval (2016/7837).

4.2.2. Targets

Targets for this Project are also separated into three categories, as per the objectives above. Both Corporate and Southern region targets are reported monthly to Fulton Hogan's management team. Project-specific targets will be reported monthly to APAM.

Corporate Targets

- To have zero environmental notices, infringements or prosecutions.
- To have >80% of PDP AU personnel trained in EnviroWise environmental training

Southern Region Targets

- To have >95% Environmental Inspection completion rate.
- Two CAMs Cases, Inspection or hazards raised per month
- Two environmental inspections per month to be conducted with project staff
- Aim for all foreman and leading hands on the project to undergo 'Green Card' training.

Project-specific Targets

- Project specific environmental targets are defined in Part B of the CEMP for each significant environmental aspect.

4.2.3. Measurement of Objectives and Targets

Corporate and Southern Region

Corporate and Southern Region objectives and targets are tracked and reported to Fulton Hogan management monthly via an Environmental Traffic Light Report.

A more detailed assessment of the operations performance against these objectives and targets shall be undertaken on an annual basis as a part of the annual review of this CEMP and as part of Management Reviews. Required improvements, in order to achieve these objectives and targets, are identified as part of this review.

Corporate and Southern Region Performance over each 12-month period will be assessed as follows:

► Table 5: Measurements of Targets against the actual performance and any changes required.

TARGET	ACTUAL PERFORMANCE	ANY CHANGES REQUIRED TO IMPROVE ON ACHIEVING TARGET
Corporate Targets		
To have 0 environmental notices, infringements or prosecutions.		
To have >80% of PDP AU personnel trained in EnviroWise environmental training		
Southern Region Targets		
To have >95% Environmental Inspection completion rate.		
2 x CAMs cases, inspections or hazards to be raised per month		
2 x Environmental inspections per month to be conducted with project staff		
All foreman/leading hands to undergo 'Green Card' training.		

Project-specific Targets

Performance against project-specific targets will be reported to APAM in a monthly report.

5. Planning and Risk Management

Environmental planning for the Project has been undertaken utilising the relevant documentation from Fulton Hogan's Environmental Management System, legislation, environmental guidelines and our industry experience.

5.1. Environmental, Legal and Other Requirements

Compliance with legal obligations is mandatory to the success of the Project. The Project personnel will undertake measures to manage all environmental impacts, in compliance with all relevant environmental legislative and approval requirements.

5.1.1. Legal Register

The key pieces of environmental legislation that affect the Project operations are identified in the Aspects and Impacts Risk Assessment Register (refer Appendix 3).

5.1.2. Legislative Updates

Fulton Hogan subscribes to the Environment Essentials legal update service for the monitoring of all Commonwealth, State and Local Government legislation.

When relevant changes to legislation occur, Environmental Essentials will send an email to the Regional Environmental Manager, who will distribute the information to the Project Site Environmental Manager. Significant changes will be issued via a Green Alert.

The Project will then facilitate the incorporation of any required changes into their operations management system. Any changes to legislation that have an impact on operations will be communicated via Toolbox and team meetings where applicable, to ensure operational change.

5.1.3. Licences and Approvals

The following licences and approvals have been obtained and are relevant to the Project operations. Some additional permits and approvals are still required for final approval of this Project.

► **Table 6: Licences and Approvals required for the Project**

SITE	LOCATION	REGULATORY OR OTHER BODY	DETAILS
Melbourne Airport	Taxiway Zulu and Northern Compound Project	Australian Government - Department of Environment and Energy (DoEE)	**Approval No:** EBPC 2016/7837, 9 January 2018. This approval details the requirements that must be adhered to in terms of clearing EPBC Act listed Natural Temperate Grassland of Victoria Volcanic Plan (NTGVVP) ecological community and the management of listed threatened species, which is the Growling Grass Frog (*Litoria raniformis*). The PFAS Management Plan has been approved by DoEE This CEMP is yet to be approved by DoEE
		Australian Government – Department of Infrastructure, Regional Development and Cities (DIRDC)	**MDP Approval:** 8 February 2019 **Building Permit No:** TBC
		APAM	Permit to Commence Work (PERCOW) issued by APAM. **Application No:** TBC

5.1.4. Relevant Standards and Guidelines

The relevant Standards and Guidelines for the Project are identified in the Aspects and Impacts Risk Assessment Register as part of the Legal and Other Requirements Column (Refer Appendix 3).

5.1.5. Stakeholders and Other Interested Parties

The following table details the sustainability and environmental needs of key stakeholders and interested parties to the Project.

► **Table 7: Stakeholder and Other interested parties involved with the Project**

STAKEHOLDER / INTERESTED PARTY	NEEDS
Australian Government - Department of Environment and Energy (DoEE)	Adhere to the approval conditions to remove native vegetation and protect the GGF.
Australian Government – Department of Infrastructure, Regional Development and Cities (DIRDC)	To adhere to the MDP and Building Permit requirements
APAM	Ensure we meet APAM's PERCOW requirements, Melbourne Airports Environment Policy, Melbourne Airport's Environment Strategy and Melbourne Airports Environmental Management Plan.
Jacobs's	To meet the design requirements during construction.
Superintendent	To meet Superintendents requirements during construction.

5.2. Aspects and Impacts Risk Assessment

Risk assessment and management was undertaken in accordance with the Group Risk & Opportunity Management Procedure. This procedure is based on the standard AS/NZS ISO 31000:2009, Risk Management – Principles and Guidelines.

Significant environmental aspects of the Project were identified through the use of Fulton Hogan's Aspects and Impacts Risk Assessment Register (refer Appendix 3).

5.2.1. Sensitive receptors

An indication of potential receptors that might be impacted by the Project has been determined by first reviewing the potential beneficial uses of the site.

"Beneficial use" is defined in Section 2.03 of the Airports (Environment Protection) Regulations 1997 as a use of the environment or any element or segment of the environment, which is:

Conducive to public benefit, welfare, safety, health or aesthetic enjoyment, and which requires protection from the effects of waste discharges, emissions or deposits, or of the emission of noise.

An element of the environment is any of the principal constituent parts of the environment including land, water, atmosphere, vegetation, climate, sound, odour, aesthetics, fish and wildlife.

The following on and off-site receptors have been identified:

Human Health

- Construction workers related to upgrade of the NAR and Zulu and reuse of the soils.
- Maintenance and contract workers at Melbourne Airport.
- General public on and off-site.
- Recreational users of Moonee Ponds Creek and Arundel Creek.

Ecological Health

- On-site flora and fauna, including aquatic ecosystems associated with Arundel Creek located approximately 1 km to the west of the project area.
- Aquatic and terrestrial ecosystems within Moonee Ponds Creek - a surface water way located about 150-250 m to the east of the NAR, and Deep Creek – a surface water way located about 270 m west from proposed soil storage area.
- The Growling Grass Frog and Australian Grayling (both EPBCA listed threatened species) are identified as relevant to the aquatic and terrestrial ecosystems outline above. The Growling Grass Frog and/or their likely habitat have been verified to be present in Arundel Creek, Moonee Ponds Creek and Deep Creek. The Australian Grayling is present in Deep Creek (Flora and Fauna Assessment of the Runway Development Program, Melbourne Airport: Existing Conditions and Impact Assessment Report, Biosis, April 2015).

Key receptors, surface water features, monitoring points and potential ground and surface water extraction points in the vicinity of the Project are shown in Figure 2.

This figure highlights the known and likely Growling Grass Frog habitat within Moonee Ponds Creek and Arundel Creek in relation to the project boundaries for Zulu and NAR. boundaries for Zulu and NAR.

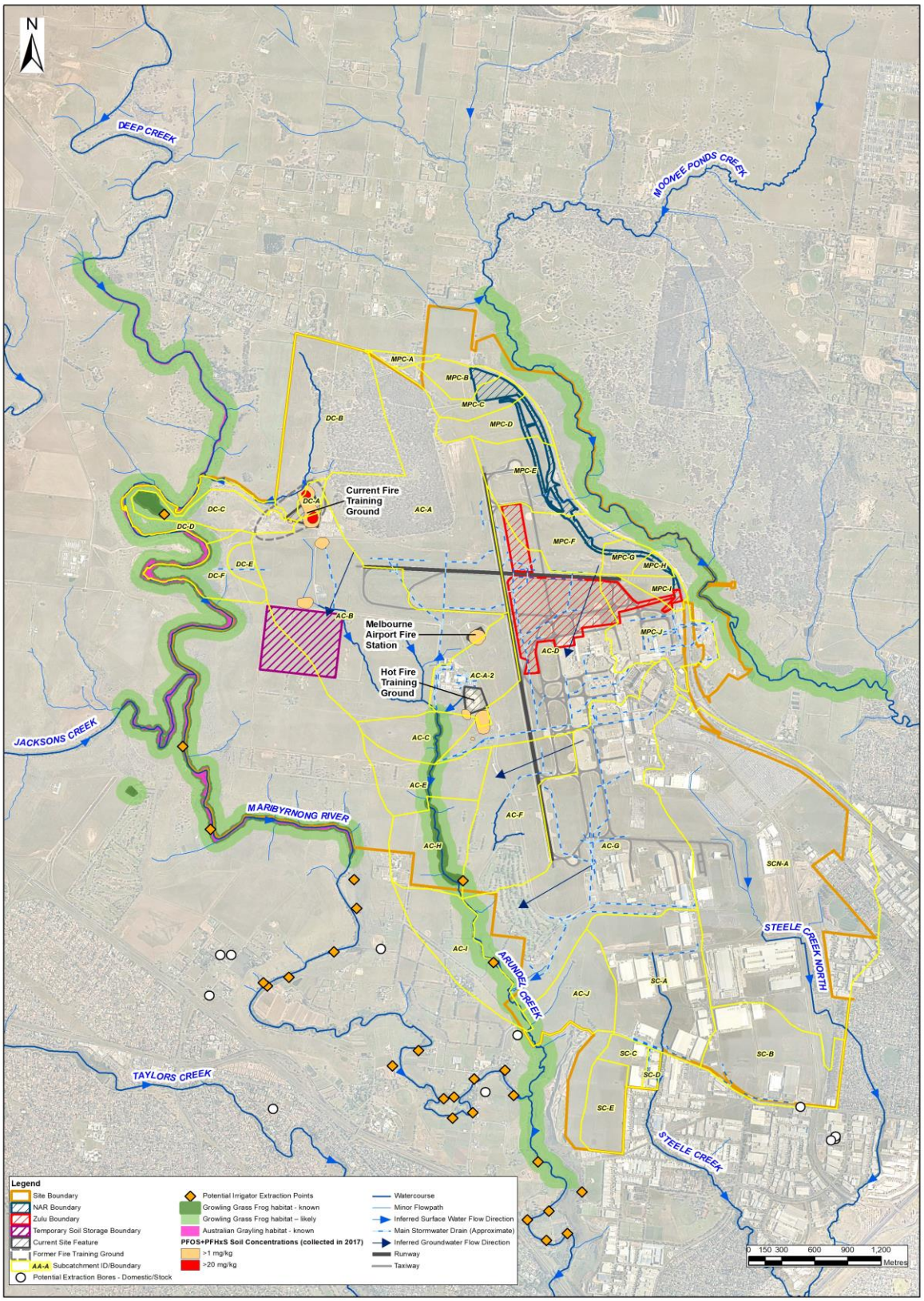


Figure 2: Key Receptors

5.2.2. Risk Assessment

An environmental risk assessment was conducted for the Project, which reviewed each construction activity against the potential environmental impacts including where impacts may occur for stakeholders and the surrounding community.

The Aspects and Impacts Risk Assessment Register (Appendix 3) details the legislative requirements for each activity, as well as the objectives and targets, the control measures required to minimise these risks and achieve the required targets.

The Aspects and Impacts Risk Assessment Register will be reviewed on an annual basis, or if the scope/activities change significantly, or as a result of an environmental incident or non-compliance.

5.2.3. Significant Environmental Aspects

Aspects are deemed significant if they have a pre-controls risk rating of 7 (Medium) or higher.

Significant environmental aspects for the Project have been identified as follows:

- Flora and Fauna Management – protect the Nationally Significant NTGVVP native grasses with fencing and signage to ensure that no additional native grasses are removed or damaged. Implement stormwater and sediment control measures to protect the Growling Grass Frog habitat.
- Soil and Material Management – contaminated soil management, PFAS contamination management, stockpiling and disposal or excess spoil, slurry management and disposal during boring.
- Water Quality – including stormwater diversions around the construction zone, surface water management, contaminated water (surface and perched groundwater) management and water main dewatering from the pits.
- Erosion and Sediment control – Controlling sediment and erosion control by implementing the recommendations in TOPOs Erosion and sediment control plan.
- Air Quality – including dust management during existing pavement demolition, earthworks and loading out stockpiles.
- Storage and Handling of Hazardous and Flammable materials - including the effective, bunded storage and management of fuels, oils, chemicals, powders, sealants, lubricants and paints.
- Noise and Vibration – demolition during the water main construction, concrete break out of taxiways.
- Resource and Waste Management – machinery truck wash, concrete washout, street sweeper waste water, used flammable material containers, asbestos, excess concrete, asphalt and crushed rock.

5.3. Environmental To Do Lists

The Site Environmental Manager will develop specific Environmental “To Do Lists” for the Project. These To Do Lists will be developed from aerial Nearmap photographs, with the project design information overlaid over the top. Relevant environmental controls specified in the CEMP will be included on the To Do Lists so that all site personnel can easily see from the Aerial plan what is required and where within the project boundary.

Each week after the environmental inspection, the Site Environmental Manager will update these To Do Lists to reflect any non-conformances or areas for improvement. This can include replacing stormwater controls, fixing any temporary fencing or signage, changing over of bins or cleaning up specific areas etc. These updated To Do Lists are then sent to the Project team. The foreman and labourers will work together to close out any environmental actions in a timely manner.

6. Awareness, Training, Competence and Communication

The requirements stipulated in this CEMP and all subordinate environmental documents must be conveyed to all persons involved in the works carried out on the Project. This will be conveyed through site inductions, To Do Lists which will be displayed in the site sheds and office, toolbox talks, site environmental posters and weekly site meetings. Commitment shall be sought from all individuals that these requirements will be adhered to.

6.1. REALity Culture

A culture of providing sound environmental performance is an integral part of the overall Fulton Hogan culture program. Fulton Hogan's REALity program highlights the integral values of the company.

- **R**espect;
- **E**nergy and Effort;
- **A**ttitude; and
- **L**eadership.

Each of these directly impact on the manner in which Fulton Hogan's operations interact with the environment. All staff have contributed to the development of what this culture means to the Project, and have signed a commitment to adhere to these values.

6.2. Induction

All personnel entering the site (Delivery, Service Personnel, Site Wide, Visitors) must attend an induction that includes Environmental information specific to the Project. This information relates to the environmental values of the site and broader local area and the actions required to avoid, minimise, and manage the impacts on these values. This includes a PowerPoint presentation and online induction materials.

6.2.1. Company Induction

All new salaried employees must undergo the Company Induction Process. The Company Induction must be completed in accordance with the Fulton Hogan On boarding and Induction Procedure. This process includes the assignment of training modules, which address environmental risk and hazard identification and management.

6.2.2. Site/Project Induction

Site/Project inductions will include information regarding the following; Health, safety, environment and quality rules and procedures of the site, exit and emergency evacuation points, toilet facilities, and other rules and local/site specific conditions that apply to the site for example, all personnel will be informed of the requirements regarding the Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019). This knowledge is then verified through a questionnaire. Every person on site shall have some form of approved induction, including site visitors, who must be escorted around the site.

6.3. Communication

Communication shall be undertaken in accordance with the Company's Communications Manual. This manual details the standard for how Fulton Hogan communicates with its staff, stakeholders, customers and the community. It sets the standard of how communications are managed internally and how all employees are expected to communicate and engage with stakeholders in terms of planning, executing, measuring, reporting and researching.

6.3.1. Toolbox

Toolbox meetings shall be the main form of communication to address changes to the environmental requirements, as well as a platform for staff to raise suggestions and innovative ideas to their direct management. Tool Box meetings shall be undertaken every month and must be documented on the company Toolbox Form.

6.3.2. Victorian/Tasmanian Environmental Representatives Meeting

The Vic/Tas Environmental Representatives Meeting is attended by Fulton Hogan's environmental leaders, representing each of the operations within Fulton Hogan. This meeting is held every three months. It is the platform for each operation to raise ideas, concerns and innovative ideas and share learning's from their experiences.

The Site Environmental Manager will attend these meetings. If unavailable, then an alternative representative from the Project will attend. Where applicable, relevant information from these meetings will be communicated to those involved in the Project through various means including; toolboxes, pre-starts, internal meetings, media resources, emails etc.

6.3.3. GreenAlerts

GreenAlerts shall be used to communicate significant environmental incidents, innovations or changes in requirements at a company level. These allow the learning's and any required changes to be shared across all operations in Australia.

The Site Environmental Manager shall ensure that learning's from GreenAlerts are communicated to all relevant personnel and Melbourne Airport.

6.4. Training

Training shall be undertaken and records shall be maintained in accordance with the procedures outlined in Fulton Hogan's Learning, Training and Development Procedure.

6.4.1. EnviroWise

All Fulton Hogan personnel are required to undertake Fulton Hogan's internal Environmental Training Program - EnviroWise. Key subcontractors may also be invited to attend this training.

This half-day training details the environmental requirements, risk and controls to personnel to ensure they have a good baseline environmental awareness and knowledge for the undertaking of their works.

6.4.2. PFAS Training

Prensa will be engaged to conduct a training workshop in relation to PFAS management. This will include a simplified account of the requirements outlined in Jacobs PFAS Management Plan, the current OH&S requirements and the EPBC Approval requirements for this Project with the aim to minimise any incidents or non-conformances.

A copy of Jacob's PFAS Management Plan will be available to construction workers requiring access to soils or performing excavation works on the site, so they are made aware of their obligations with regards to protecting themselves, other site workers, the general public and the environment.

6.4.3. Plant Hygiene Training

The hygiene protocol required to clean machinery, vehicles and equipment prior to entering and leaving the site, will be communicated to all contractors and staff during the site induction and daily prestart.

A Toolbox will be given outlining the requirements of the hygiene protocol to prevent the spread of noxious weeds and the possible introduction of the fungal pathogen responsible for the amphibian disease chytridiomycosis (*chytrid fungus*). This fungal pathogen can be transported by contaminated machinery and equipment. The fungal pathogen is widespread and is likely to be present within local waterways, however construction works may result in the introduction of a novel strain which would place additional pressure on Growling Grass Frog.

6.4.4. Continued Training

Continued training will be carried out as necessary, to ensure staff are adequately competent and understand their role in ensuring sustainable outcomes.

7. Monitoring, Inspections and Audits

Regular monitoring, inspections and audits shall be conducted to verify compliance with the requirements of this CEMP and any regulatory requirements, permit or approval conditions.

Section 4 of the EPBC Act approval (2016/7837) specifically requires the following to be conducted during construction;

- (e) Routine management procedures to prevent local air and water quality impacts, such as daily inspections, dust suppression and storage and handling of chemicals.
- (f) Monitoring and relevant remediation measures in the event of adverse monitoring results.

Fulton Hogan will conduct formal weekly environmental inspections, which will address all environmental aspects outlined for the Project, including the specific EPBC Act approval requirements. If any inconsistences or non-conformances are found during these weekly inspections, then remediation measures will be implemented to address these non-conformances.

The monitoring, inspections and audit requirements are detailed below.

7.1. On-going Visual Monitoring

Ongoing visual monitoring will be undertaken daily during construction works by the Foreman / Site Manager and weekly via environmental site inspections (refer to Section 7.2 below).

Environmental monitoring, including monitoring of subcontractors' activities, must be conducted as an on-going activity during the normal (continuous) course of supervision of works or for high risk activities.

Records of such surveillance should be kept if any environmental issues are observed. These should be documented as an environmental incident / non-conformance in Fulton Hogan's Case Action Management system (CAMs) or a diary note as appropriate.

A Non-Conformance Report (NCR) is raised on CAMs when either an environmental incident occurs and/or there is a non-conformance out on site with either the works or monitoring results. All NCR's will be raised within the client monthly report and communicated in the toolbox meeting if relevant to the team.

7.2. Environmental Site Inspections

Inspections of the Project site shall be undertaken at a frequency no less than once a week by the Site Environmental Manager.

In addition to the periodic inspections, additional inspections must be undertaken prior to significant weather events (i.e. rain, wind etc.) to ensure the site is safe and the weather will not create an environmental incident. Following significant weather events, existing controls will be inspected and reviewed to ensure their continued efficacy and the site will be assessed to ensure that no further controls are required.

Any defects and/or deficiencies in control measures identified by monitoring undertaken shall be rectified immediately and these control measures shall be cleaned, repaired and augmented as required to ensure effective control thereafter.

Areas for inspection must include:

- The Site - to identify if any additional areas require measures
- The Environmental Protection Measures - to identify if they are working effectively (i.e. are they appropriate for the location, installed correctly or require maintenance?)
- The processes of work – to identify if people are undertaking correct work practices

Inspections shall be recorded on the site specific Weekly Environmental Inspection Checklist which is now completed online through Salesforce. A printable version is included in Appendix 4.

Any resulting outcomes which are found to be non-conforming or resulting from an environmental incident, will be rectified on the CEMP and the Environmental To Do List, so the foreman and subcontractors can implement the required environmental controls to minimise a re-occurrence.

7.3. Physical/Chemical and Resource Monitoring - Overview

Any adverse monitoring results will be discussed with APAM and the Superintendent to work out a solution. The adverse monitoring result will be raised as a non-conformance in Salesforce, so it can be tracked and closed out in the appropriate time-frame required.

7.3.1. Water Monitoring

During the start of the Project, any perched groundwater, subsoil water, water within any water main pits and surface stormwater entering our work zone shall be tested to determine the potential contamination level. Specialist environmental consultants (Prensa) will be used to test each water source and then compare the results against the Airport and EPA requirements, to determine whether the water is permitted to either be discharged to grass, discharged to stormwater drains or swales or removed offsite by licenced EPA contractors for treatment and disposal.

Visual water quality monitoring will be undertaken as part of the weekly environmental inspections to review turbidity levels.

A water monitoring program will be developed, based off the initial water quality results and the water treatment and disposal options required for each water source (stormwater leaving the site via the swales, surface water, perched groundwater and/or pooled surface water on site).

Refer to Section 13.5 for detailed information on water monitoring.

7.3.2. Soil and Material Monitoring

Jacobs have completed an Environmental Site Assessment (2017) for the Project which details the soil contamination status including the PFAS contaminated areas.

The PFAS Management Plan (Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019): Section 7) outlines the monitoring strategy for the Project with regard to PFAS impacted materials.

The proposed monitoring strategy has been adopted in Part B of this CEMP (Refer to Section 15.5 Monitoring). The particulars are outlined in the Environmental Management Controls and Monitoring sub-sections of Section 15 of this document - Soil and Material Management.

Fulton Hogan shall undertake a daily visual assessment of the site for contaminated soils and materials during stripping, excavating and when importing fill material.

All contractors importing material to site will be required to demonstrate that the imported fill is classified as either 'Fill Material' or provide a 'Letter of Compliance' to show that the material has been sourced from virgin material within the quarry.

Refer to Section 15.5 for further detailed information relating to soil and material monitoring.

7.3.3. Flora and Fauna Monitoring

Fulton Hogan will undertake visual inspections of the Vegetation Protection – No Go Zone fencing and the native grasses within the vicinity of the construction works during the weekly environmental inspections and daily during works within the vicinity of the area.

Personnel will be trained/inducted in the identification of significant flora and fauna and the contingency procedures in Section 12 utilising the processes outlined in Section 6.

Refer to Section 12.5 for further detailed information relating to flora and fauna monitoring.

7.3.4. Sediment and Erosion Control Monitoring

Fulton Hogan shall monitor the site for instances of soil erosion and the effectiveness of erosion and sedimentation controls during the weekly environmental inspections or prior to large predicted rain events. If additional controls are required prior to the large rain event, these will be deployed.

Best practice site management requires all erosion and sediment control measures to be inspected at the following frequencies and include the following checks as a minimum:

Following large rain/unprecedented weather events, existing controls will be inspected and reviewed to ensure continued efficiency and the site will be assessed to ensure that no further controls are required.

Any defects and/or deficiencies in control measures identified by monitoring undertaken shall be rectified immediately and these control measures shall be cleaned, repaired and augmented as required to ensure effective control thereafter.

Refer to Section 14.5 for detailed information relating to sediment and erosion control monitoring, with additional requirements detailed in the Erosion and Sediment Control Plan (TOPO, 2019).

7.3.5. Resource Use and Waste Monitoring

Fulton Hogan shall monitor the site for instances of inappropriate waste management during the weekly environmental inspection.

Fulton Hogan will also track and record the waste management outcome of all construction waste, to ensure the highest level of recycling and reuse is employed. Monthly records will be provided to Melbourne Airport.

Refer to Section 18.5 for further information relating to Resource use and waste monitoring.

7.3.6. Hazardous and Flammable Materials (Fuel, Chemicals, Oils, Lubricants etc.) Monitoring

Hazardous waste bunded storage containers shall be monitored for compliance during the environmental weekly inspections. The use of these substances in the field will also be monitored, i.e. ensuring that black plastic spill trays are being used out on site for the mobile storage of hazardous containers, and that spill kits are fully stocked and accessible in each work zone where hazardous materials are being used.

Refer to Section 17.5 for further information relating to hazardous and flammable materials monitoring.

7.3.7. Air Quality Monitoring

Air quality will be monitored daily through visual monitoring of haul roads, excavation areas, demolition areas and temporary stockpile locations for generation of dust.

Dust suppressants such as soil binders will be reviewed with APAM, to look to utilise these products for the haul roads, open swales, and hydro-seeding areas to minimise dust generation if the water carts do not adequately suppress dust. A soil binder will be chosen that is suitable to be used near a waterway and does not cause harm to fauna including the Growling Grass Frogs.

Refer to Section 16.5 for further information relating to Air quality monitoring.

7.4. Audits

7.4.1. Internal Audits

The Regional Environment Manager shall undertake audits of the implementation of the CEMP. The Regional Environment Manager shall maintain an Audit Schedule, with audits to be scheduled on a risk-based approach. Internal audits will be conducted biannually.

Internal audits of subcontractor performance will also be undertaken, to establish their compliance with the CEMP for their task. This will be undertaken on an as needed basis, during times of works where there is potential to impact on significant environmental aspects. Audits of subcontractors will be undertaken on annual basis as a minimum.

These internal audits will be utilised to ensure that activities are complying with planned arrangements and that controls have been properly implemented and maintained.

Audits are conducted utilising Fulton Hogan's ISO14001 accredited systems through Salesforce.

7.4.2. ISO14001 Certification Audits

As part of Fulton Hogan's ISO 14001:2015 certification, the Project may be required to participate in certification audits. This will occur if the Project is randomly sampled for the audit.

7.4.3. External Audits

Fulton Hogan will be externally audited by APAM during the Project. Routine audits will be conducted monthly by APAM throughout the life of the Project (at a minimum), with more frequent audits during key stages of construction such as during the establishment of site environmental controls, or during the main earthworks component. A detailed audit against all approval conditions will be conducted every 6 months by APAM.

Erosion and sediment control audits will be conducted by an IECA accredited consultant, to review compliance against the Erosion and Sediment Control Plan (ESCP) to maintain best practice.

Where corrective actions are required and/or continuous improvement opportunities exist, these will be communicated in the site Environmental To Do lists following review with APAM.

8. Hazards, Non-conformances and Incidents

8.1. Definitions of a Hazard, Non-conformance and Incident

8.1.1. Defining a Hazard

An environmental 'Hazard' is defined as a substance, a state or an event which has **the potential to threaten** the surrounding natural environment / or adversely affect people's health, including pollution.

8.1.2. Defining a Non-Conformance

An environmental 'Non-conformance' for this project is defined as **not complying with the requirements of this CEMP**.

8.1.3. Defining an Incident

An environmental 'Incident' is defined as "an event which **causes harm to an environmental receptor** e.g. a spill, erosion and sediment-laden water entering a stormwater drain/waterway, any pollution which leaves the site boundary or non-compliance with this CEMP."

Project-specific examples of environmental incidents or near misses can be found within the Aspects and Impacts Risk Assessment Register (refer to Appendix 3). The Aspects and Impacts Risk Assessment Register provides a range of Project scenarios for each environmental aspect/hazard and then identifies the controls required to reduce these potential risks to an acceptable level.

Some examples of project environmental incidents include an unplanned discharge to the waterway, an oil or fuel spill, stripping additional native grasses or potentially impacting Growling Grass Frog populations through uncontrolled sediment leaving the site.

8.2. Incident Response

Incidents and emergencies will be managed in accordance with Fulton Hogan's Incident and Emergency Management Procedures.

These detail how to:

- Plan: for incidents and emergencies by preparing a Project specific Emergency Response Plan. This contains site-specific procedures to follow in the event of emergencies.
- Respond: in the event of different emergency scenarios;
- Notify: required persons;
- Report; and
- Undertake: incident investigation.

The Fulton Hogan Incident and Emergency Response Handbook describes the procedures to follow in the event of specific emergency situation. This handbook will be made site specific and displayed at all the site sheds. Emergency contacts shall also be completed in this document. Environmental drills will be completed annually on the Project site with a site attendance sheet recorded. All incidents shall be raised in CAMs, which is Fulton Hogan's incident reporting database.

8.3. Hazards, Non-conformances and Incident Reporting

8.3.1. Hazard reporting

If an implemented control fails to appropriately manage an environmental aspect (without causing an incident), then a hazard will be raised in CAMs. This hazard is then tracked through the Hazard Register. A timeframe will be allocated to ensure the hazard is closed out promptly, if not immediately.

8.3.2. Non-conformance reporting

Non-conformances such as not complying with the CEMP will be captured in CAMs as a Non-Conformance Report (NCR). All NCRs will be reviewed to determine the root cause and action required.

8.3.3. Incident reporting

If an environmental incident occurs on site, such as an unplanned discharge or an oil or fuel spill, an Incident Report will be generated in CAMs. Environmental incidents are ranked against the Aspects and Impacts Risk Assessment Register Matrix, which categorises the risk as either Low, Medium, High or Extreme (refer to Appendix 3).

All environmental incidents must be immediately reported to the Melbourne Airport Coordination Centre on (03) 9297 1601 within 24 hours of any incidents on site, including any chemical, oil and fuel spills over 5 litres or any spills that enter a drain. APAM are then responsible to report any significant incidents to the AEO, DoEE and/or the EPA depending on the location and nature of the incident.

Fulton Hogan will prepare a CAMs incident report for submission to the Melbourne Airport Environment Team within 48 hours of any environmental incident occurring.

All environmental incidents will be investigated in detail, with corrective actions implemented and closed out as appropriate.

A CAMs incident report captures the following information;

- **Detail -** A detailed description of what happened
- **Immediate Action -** What immediate action was taken
- **Source** - How was the incident discovered; Inspection, Observation, Audit, Management review, Regulatory/Authority, Reported Occurrence, Test
- **Type** -Hazard/Potential Non-conformity, Improvement, Incident, Nonconformity
- **Environment** - Defines the Environmental category (Air emissions, contaminated soil/land, flora and fauna, waste and resources, chemical/material, heritage/archaeology, erosion/sediment and water, noise and vibration
- **When** - When did this incident occur, time and when it was reported
- **Where –** Defines the specific location of the incident
- **Impact –** Defines the environmental impact (Air pollution, amenity/nuisance, ecological loss/damage, groundwater pollution, Land pollution, surface water pollution, other impact)
- **Risk Assessment –** Defines the risk assessment based off the potential likelihood and potential incident or hazard consequence.

Note: Cases with a High or Extreme risk levels will also require a Root Cause Investigation to be completed internally.

All environmental incidents will be investigated in detail, with corrective actions implemented and closed out as appropriate. The findings from the environmental investigation will be reported to the wider project team, where new management measures are required or corrective actions are needed to close out the incident. Feedback will be provided to the Project team and subcontractors on the findings of incident investigations and incident trends relative to their area.

Any significant hazards, incidents or non-conformances will be reported in the monthly report and communicated in toolbox meetings to share lessons learnt. As works progress on site, environmental documentation will be updated to reflect any change in site conditions or any new risks identified. Through this adaptive approach, we will continue to update these live documents, based on any new risks, Non-conformances or hazards identified, to constantly re-assess the adequacy of the site controls specified and procedures used to address these risks.

9. Reporting

9.1. Client Reports / Representation

Fulton Hogan will provide a monthly report to the Superintendent and APAM detailing our progress over the previous month. The environmental information will include;

- any environmental incidents or non-conformances,
- results from any water monitoring, soil or material testing or asbestos confirmation,
- updates to any environmental documentation,
- environmental initiatives,
- waste management records,
- audit results; and
- planned activities for the following month.

9.2. Monthly Environmental Traffic Light Reporting

Environmental statistics shall be compiled and trend analysis shall occur every month as part of Fulton Hogan's Environmental Traffic Light Reporting. As part of this process, an assessment is made on the performance of the Objectives and Targets.

Completed reports shall be provided to APAM, and the Regional Environment Manager to be used in the development of Regional and Corporate Reports. Regional reports shall be provided back to the operation in order to provide comparative data.

Environmental Traffic Light Reports shall be communicated to operational staff to provide feedback on the sites performance.

10. Maintenance and Retention of Records

Environmental management records, which demonstrate implementation of the CEMP shall be established, filed and maintained.

All records shall be retained in accordance with statutory requirements and the Fulton Hogan's Document Control- Documents Data and Records procedure. Records arising from requirements of environmental licences and EPA Waste Certificates shall be retained for at least 7 years.

11. Construction Environmental Management Plan Review

The CEMP shall be reviewed on an annual basis as a minimum and at other times as required (legislative changes, approval changes, client changes, operational changes, incident or innovation improvement or other) to ensure its continued adequacy and effectiveness.

As this CEMP is a live document, we can update this document at any time, to reflect a change in site conditions or requirements or if we receive non-conformances or complaints.

As part of the EPBC Act Approval (2016/7837) conditions, the approval holder (APAM) may choose to revise a management plan (including this CEMP) which has been approved by the Minister under Condition 4 without submitted it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan would not be likely to have a new or increased impact.

If APAM makes this choice, they must;

- (a) notify the Department in writing that the approved plan has been revised and provide the Department with an electronic copy of the revised plans.
- (b) implement the revised plan from the date that the plan is submitted to the Department; and
- (c) for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan would not be likely to have a new or increased impact.

Part B: Site Specific Environmental Management

This section of the CEMP provides specific controls for the environmental aspects that have been identified through the Project Aspects and Impacts Risk Assessment Register (Refer to Appendix 3).

It is noted that during delivery, Fulton Hogan will also utilise a 'poster' style CEMP for the Project, in conjunction with this CEMP. The 'poster' style CEMP will be utilised at site compounds/prestart locations in a readily accessible and visible location. Hardcopy CEMPs are made available at the relevant offices as required. i.e. Foreman's Office and Main Site Office.

This style of plan has been used extensively in the past for the successful delivery of Melbourne Airport projects.

12. Flora and Fauna Management

12.1. Context

A- Flora and Fauna Management
► **Flora** ▪ The construction works are within the EPBC Act listed Natural Temperate Grassland of Victoria Volcanic Plain (NTGVVP) ecological community, which is listed as "Critically endangered". ▪ Under the EPBC Act approval, APAM must not clear more than **18.913 ha** of NTGVVP of which **9.317 hectares relates to Northern Access Route and 9.4ha relates to Taxiway Zulu** in addition 9 scattered immature Grey Box trees will be removed. ▪ The contractor must work within the constraints provided by this plan, and not remove or damage any native grasses outside the areas nominated for removal by this plan (Total of 18.913ha). ► **Fauna** ▪ The construction zone is located upstream and adjacent to Moonee Ponds creek (approximately 160m east of the construction area) which is known to support important breeding populations of the EPBC Act listed Growling Grass Frog (GGF) ▪ 11 migratory bird species are predicted to occur in the Project area, however the area does not provide important habitat for an ecologically significant proportion of any of these species. ▪ Due to the disturbance history, intensive management (e.g. frequent mowing) and existing infrastructure located between the construction area and these GGF populations, it is considered unlikely that Growling Grass Frogs utilise these areas for foraging, over-wintering or dispersal.

12.2. Risk Rating Summary

A – Flora and Fauna Management
▪ The residual risk rating for the identified Flora and Fauna Management hazards has been determined as **Medium** following the implementation of the control measures outlined in Section 12.4

12.3. Objectives, Targets and Project Compliance Requirements

A – Flora and Fauna Management	
Objectives	▪ To minimise impacts to native vegetation communities (other than those approved for removal) and known habitat areas for listed threatened species. ▪ To avoid the introduction of invasive species and weeds to the project area and surrounds. ▪ To prevent aircraft hazards associated with wildlife on the airfield.
Targets	▪ To comply with the EPBC Act Approval (2016/7837) requirements for the Taxiway Zulu and Northern Compound Projects ▪ Ensure that Native Grass boundary signage and bollards are maintained along the edges of the native grass boundaries and not moved by project staff or subcontractors. ▪ To install and maintain stormwater runoff controls to ensure the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved where EPBC Act listed Growling Grass Frog (*Litoria raniformis*) breed. ▪ To ensure that no more than 18.913 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain ecological community (NTGVVP) is removed during construction works. ▪ To complete the project without introducing and spreading weeds on site.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Environmental Protection and Biodiversity Conservation (EPBC) Act (1999) 2. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 3. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 4. Melbourne Airport PERCOW - APAM File: TBC 5. Airports Act (1996) 6. Airport (Environmental Protection) Regulations (1997) 7. Melbourne Airport - Environmental Management Plan (2018) 8. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017 9. Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019

12.4. Environmental Management Controls

A – Flora and Fauna Management				
Control ID		**Required Environmental Management Measures**	**Timing**	**References**
A	1	All site workers will be briefed within the site induction, pre-starts and specific toolbox meetings in regard to the management and protection of significant Flora and Fauna	During Induction	
A	2	A specific toolbox meeting will provide details about NTGVVP indigenous grasses, what they look like, the importance of Vegetation Protection Zones (VPZs) and the requirements to avoid impacts.	Prior to works commencing, periodically after then.	
A	3	A specific toolbox meeting will be presented on the GGF, so that all site workers are aware of their significance and the importance of water quality management and the maintenance of erosion and sediment controls across the site.	Prior to works commencing, periodically after then.	
A	4	Fact sheets (NTGVVP and GGF) will be displayed in the site sheds and lunchrooms after the toolbox meetings.	Once the toolbox has been conducted.	

Flora and Fauna Management			Timing	References
A	5	The weekly environmental inspection checklist includes flora and fauna management such as reviewing the VPZ fencing, native grass boundary bollards and signage, erosion and sediment control effectiveness or repair and stormwater management. Any identified deficiencies which will result in an imminent environmental impact, shall be repaired immediately.	Immediately following identification.	Appendix 4
A	6	Ensure all stockpiles; equipment and machinery are located away from identified habitat and buffer zones.	At all times	Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019
A	7	The use of herbicides, fertilisers and pesticides within or in close proximity to all waterbodies should be minimised and where possible, avoided. If use cannot be avoided, they must be suitable for use adjacent to waterways.	At all times	
A	8	The use of herbicides should be avoided during the part of the breeding season when eggs and tadpoles of Growling Grass Frogs are most likely to be present (i.e. September to December).	As required	
A	9	All general waste bins airside will have lids which are required to be closed when not in use to minimise bird attraction	At all times.	
A	10	If any person on site suspects that a flora or fauna species of significance has been identified they should notify their Supervisor immediately. Investigations and approvals must be sought as appropriate to the discovery.	At all times.	
A	11	A specific toolbox meeting will be dedicated to snake awareness and the requirements for relocation.	When seasonally appropriate.	
A	12	Any artificial lighting required during construction will only be directed over construction areas, and will avoid increasing light in adjacent waterways.	At all times.	
Specific Management for Native Grasses			**Timing**	**References**
A	13	A surveyor will be engaged to mark out the construction boundary and the permitted areas for the grasses to be removed.	Initial works.	Figures 2-3
A	14	VPZ will be established to protect NTGVVP on the site boundaries by erecting fencing and signage.	Initial works.	Figures 2-3
A	15	VPZ fencing will be installed from the construction site side with all waste materials removed immediately. Vegetation inside the VPZ must not be impacted by the installation (or removal) of fencing.	Initial works.	Figures 2-3

Specific Management for Native Grasses			Timing	References
A	16	Vegetation protection fencing will be clearly signed with "Vegetation Protection Zone - No Unauthorised personnel, Materials or Equipment beyond this point".	At all times following fence erection.	
A	17	A qualified ecologist (Biosis) will verify the construction boundary and VPZ delineation.	Initial works.	
A	18	A representative of the APAM Environment Team will verify the VPZ delineation	When required.	
A	19	A Hold Point Release document will be developed and a site meeting held to ensure that APAM and Biosis both sign this Hold Point Release document prior to any grass being stripped. VPZ fencing and signage will be maintained for the duration of the works.	When required.	
A	20	VPZ fencing will not be removed or relocated without prior approval from the Site Manager and the APAM Environment Team	At all times.	

12.5. Monitoring

A- Flora and Fauna Management
▪ The Weekly environmental inspection checklist (Refer to Appendix 4) includes the following monitoring requirements; ○ Review whether the vegetation protection boundary signage and bollards are being moved along the edges of the native grass boundaries. ○ Does the Vegetation Protection Fencing require maintenance ○ Are the stormwater controls being maintained or do they require maintenance. ○ Has any additional native grass being removed during construction works ○ Are any weeds growing within our construction boundary

12.6. Contingencies

A – Flora and Fauna Management
▪ If any GGF or other fauna are found during construction, work in that area will immediately cease. Contact the APAM Environment Team immediately who will advise on the next steps. ▪ If additional native grasses are stripped beyond the permitted area, notify APAM immediately and raise a CAMs case. DoEE must also be notified in these circumstances. ▪ Fulton Hogan will undertake visual inspections of the Vegetation Protection – No Go Zone fencing and the native grasses within the vicinity of the construction works during the weekly environmental inspections and daily during works within the vicinity of the area. If the fencing is found to be damaged, it will be fixed immediately.

Figure 3: Significant native grasses permitted to be removed within the Taxiway Zulu boundary

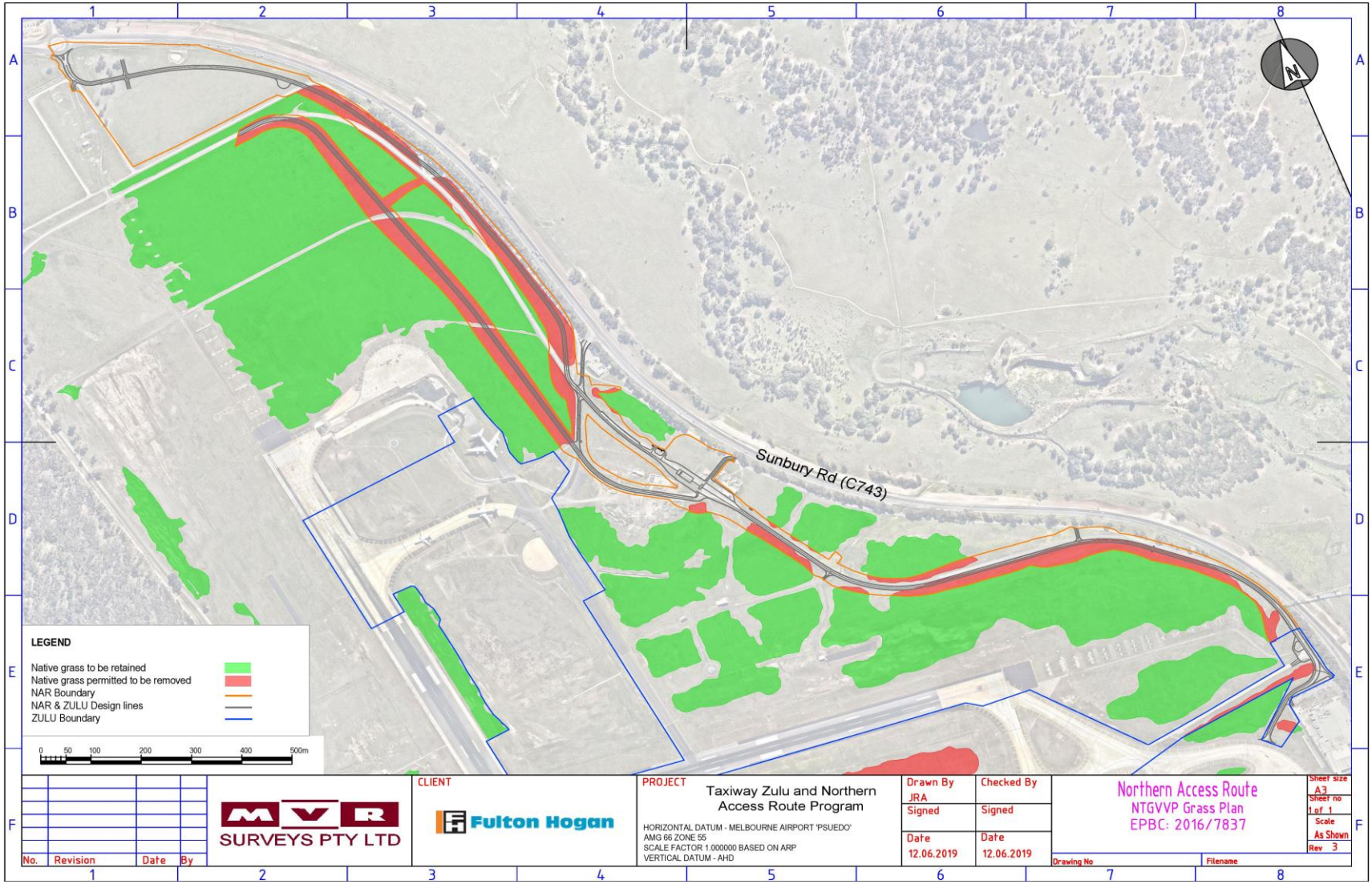


Figure 4: Significant native grasses permitted to be removed within the NAR boundary

13. Water Management

13.1. Context

B - Water Management

► Water Management Overview

- Condition 4 of the EPBC Act Approval, specifically states that the CEMP must include controls to ensure that the quality of the adjacent waterways is maintained or improved and routine management procedures to prevent impacts to local water quality are put in place.
- Water Management includes the consideration of all water sources (surface water, subsoil water, perched groundwater and construction wastewater) and catchment areas to mitigate and manage impacts to land, groundwater and surface waters.
- Surface water runoff will be managed in accordance with the process outlined in Figure 5 at the end of this section and described in the sections below.
- Construction wastewater will be temporarily stored, tested and assessed, so that management options can be reviewed and selected accordingly.
- Subsoil water and perched groundwater, will be contained, tested and assessed, in order that management options can be reviewed and selected accordingly.
- Water management controls are detailed in Section 13.4.

► Surface water runoff

NAR

- All stormwater within the NAR footprint currently discharges to Moonee Ponds Creek. This creek is known to contain breeding populations of EPBC Act listed Growling Grass Frog (*Litoria raniformis*) which must be protected (Biosis, CP 17038 - Taxiway Zulu and Northern Compound Project, Melbourne Airport 11 July 2017). Drainage outlets for the NAR project area are shown in Figure 6.
    - Water management within the NAR footprint will be separated into two stages; Stage 1 - Clean and Grub and Stage 2 - Excavation.
        - Stage 1 – Site stormwater will be diverted around the construction zone through the existing drainage network.
        - Stage 2 – During earthworks, further water management will be required as the existing stormwater drainage network is removed.

ZULU

- All surface water within Taxiway Zulu footprint discharges into Arundel Creek, with the exception of a single small catchment, which flows into Moonee Ponds Creek. Drainage outlets for the Zulu project are shown in **Figure 6**.
- Controls for the management of surface water runoff for Zulu and NAR project areas will be informed by a risk assessment and consideration of contaminants in surface water and mobilised within sediment loads. The risk assessment will consider:
    - PFASs in solution (either dissolved in water or as the leachable component of soils) as a primary driver of risk to sensitive receptors (as per Jacobs PFAS Management Plan, Revision 4, dated 1 April 2019)
    - PFASs sorbed to soil / sediment
    - A baseline assessment of groundwater and surface water in the vicinity of the project area, with a focus on indirect and direct runoff and groundwater discharge to adjacent creeks (Moonee Ponds Creek and Arundel Creek)
    - Current conditions at the site, including existing source-pathway-receptor linkages and the mobilisation of PFASs from on-site soils to Moonee Ponds Creek and Arundel Creek including consideration of sensitive ecological receptors

  - Likely changes to these linkages and associated risks due to project activities, particularly as it relates to soil disturbance.
  - Risk categories will be based on acceptance criteria for discharge, on-site management and off-site disposal. A risk-based approach to determining criteria will be adopted based on potential maximum concentrations (of relevant contaminant(s)) at the receptor.
- Two general risk categories will be identified:
  - Low and acceptable risk: surface water generated during construction is unlikely to significantly impact the quality of runoff entering Moonee Ponds Creek or Arundel Creek.
  - Risk cannot be excluded:
    - Concentrations are such that, direct discharge to Moonee Ponds Creek or Arundel Creek may result in unacceptable impacts; however on-site management is appropriate and feasible.
    - Concentrations are such that direct discharge Moonee Ponds Creek or Arundel Creek may result in unacceptable impacts; on-site management is not feasible and off-site disposal / treatment is required.
- Management and controls for each risk category are further described in Section 13.4.
- Monitoring requirements are detailed in Section 13.5.

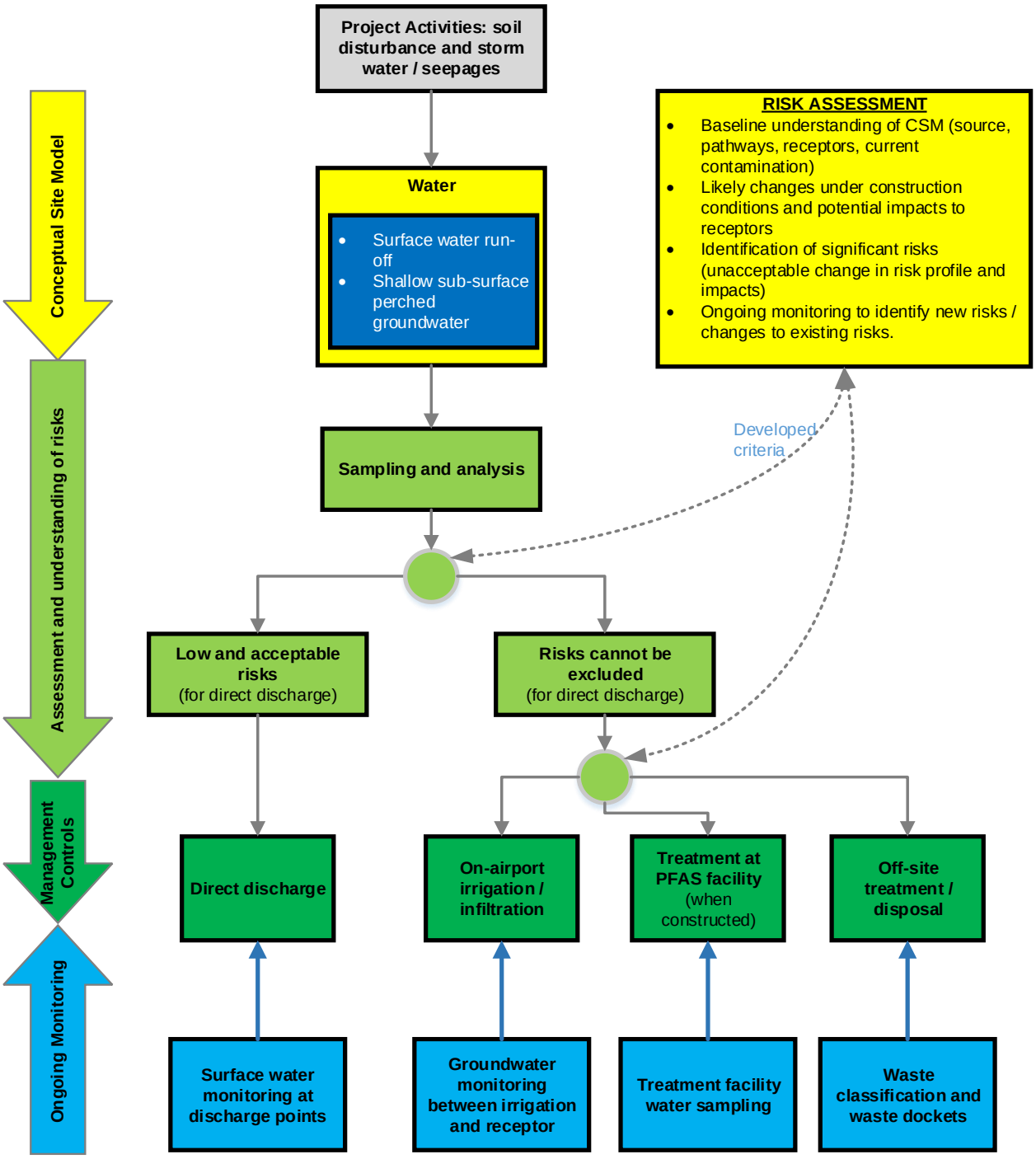


Figure 5: Surface water management framework

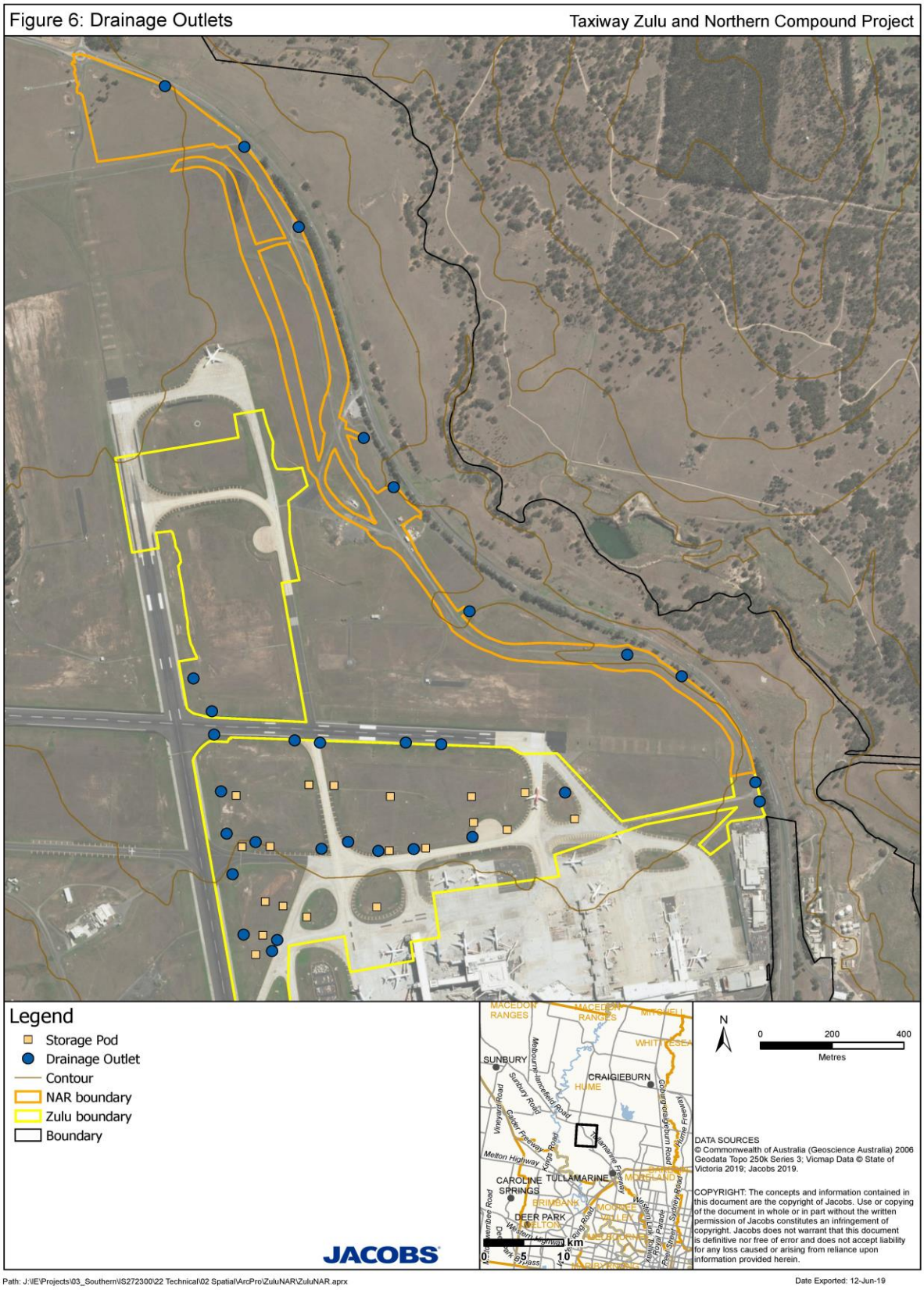


Figure 6: Showing the surface water drainage outlets for NAR and Zulu (actually pit inlets). The proposed contaminated pod locations for Zulu are shown beside the drainage outlet.

13.2. Risk Rating Summary

B – Water Management
▪ The residual risk rating for the identified Water Management hazards has been determined as **Medium** following the implementation of the control measures outlined in Section 13.4.

13.3. Objectives, Targets and Project Compliance Requirements

B – Water Management (Surface, Subsoil and Perched Groundwater)	
Objectives	▪ To ensure that the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved with regard to Project activities ▪ To manage PFAS impacted surface water (including subsoil water and perched groundwater) in accordance the PFAS NEMP.
Targets	▪ No discharge of water to the environment where quality and suitability have not been confirmed as per the risk assessment process. Including: o Direct discharge of water to the environment only where quality has been confirmed suitable as per the risk assessment process. o On-site management (such as by irrigation / infiltration of water within the airport only) where the quality has been confirmed suitable as per the risk assessment process. o All water confirmed as unsuitable for discharge / on site management to be disposed offsite.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: TBC 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environment Protection Act (1970) 8. SEPP (Waters) 2018 9. Water Act 1989 10. ANZECC Guidelines 11. TOPO Erosion and Sediment Control Plan 2019 12. Prensa Report - Additional stormwater and sediment sampling, Alpha Taxiway, Melbourne Airport (2017) 13. Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019),

13.4. Environmental Management Controls

B – Water Management				
Control ID		**Required Environmental Management Measures**	**Timing**	**References**
General				
B	1	Establish a background for surface and groundwater quality within the vicinity of Zulu and NAR. Testing will include: ▪ Representative locations for stormwater discharge to Moonee Ponds Creek and Arundel Creeks ▪ Groundwater quality between each project area and downstream receptors (Moonee Ponds Creek and Arundel Creeks)	Prior to works commencing (where possible during a rain event.)	
B	2	All contaminated water movement and disposal is tracked through Fulton Hogan's Contaminated Material and Water Tracking Register.	Ongoing.	
Drainage Infrastructure - NAR			**Timing**	**References**
B	3	Prior to earthworks commencing, earth bunds will be constructed to divert external stormwater around the construction zone.	Prior to earthworks commencing	TOPO Erosion and Sediment Control Plan
B	4	A separate earth bund will be constructed on the northern side of NAR to contain the construction water within the construction zone.	Prior to earthworks commencing	TOPO Erosion and Sediment Control Plan
B	5	Protect all live open stormwater drains, pits, swales and culverts with sediment control devices as specified in the TOPO Erosion and Sediment Control Plan.	Prior to works commencing and then ongoing	TOPO Erosion and Sediment Control Plan
Drainage infrastructure - Zulu			**Timing**	**References**
B	6	Prior to stripping the soil, place sandbags and inlet protection around all stormwater drains to trap sediment and filter stormwater.	Prior to construction commencing.	TOPO Erosion and Sediment Control Plan
B	7	Water barriers will be set up around each active construction area. Place sandbags along the inside edge boundary of the water barriers to minimise stormwater ingress from the surrounding external catchment	Prior to construction commencing.	
B	8	Install a series of velocity controls (check dams) along the swale drains to prevent scour or concentrated flow paths	Prior to construction commencing	TOPO Erosion and Sediment Control Plan (Section 7. Drainage Control)

Surface water runoff (including shallow sub-soil water / perched groundwater) management			Timing	References
Collection procedures				
B	9	Surface water runoff, pooled water and subsurface seepages within the Project footprint will be directed to storage basins and / or collected using street sweeper / vacuum trucks into contamination pods located within the project area. Storage basins will be sized to collect a first flush discharge event for a pre-determined storm event. For smaller volumes of perched groundwater and/or subsoil water, the street sweeper will be used to directly remove the water and discharge into the street sweeper washout bay for temporary storage until the water can be removed by Remondis.	Prior to and during construction	TOPO Erosion and Sediment Control Plan
Sampling and Analysis				
B	10	Samples of accumulated water will be taken and analysed for a range of potential pollutants including PFAS. Based on the results, an appropriate management approach will be decided with consideration to the surface water management framework. The management approach will be confirmed with APAM before proceeding.	During construction	
Management scenario – water suitable for direct discharge				
B	11	Surface water runoff will be directed to outlets for direct discharge to Moonee Ponds Creek and Arundel Creek via drainage infrastructure discussed above and in the TOPO erosion and sediment control plan. Sediment controls are further discussed in Section 14 of this CEMP. Outlet points for NAR Zulu are shown in **Figures 6**. Monitoring requirements for outlet points is further detailed in Section 13.5.	During construction	TOPO Erosion and Sediment Control Plan
Management scenario – onsite management				
B	12	Suitable water will be re-used on site. Options will include either irrigation, re-infiltration or for dust suppression.	During construction	
Management scenario – offsite treatment / disposal				
B	13	Water from sediment/storage basins and contamination pods will be collected by a liquid waste contractor (Remondis) in EPA licensed trucks for disposal and treatment at their licensed facility off-site.	During construction	

Groundwater Management			Timing	References
B	14	Groundwater is not expected to be encountered during the works.		
Construction Wastewater Management			**Timing**	**References**
NDD and HDD Water Management				
B	15	Use sandbags to surround the non-destructive digging (NDD) or horizontal directional drilling (HDD) trucks to contain slurry water within a specified area.	Prior to works commencing. During NDD/HDD operations.	
B	16	Use sandbags during any demolition operations to intercept any sediment prior to stormwater flowing into the drains or excavated areas.	As required	
Concrete Wastewater (pH > 9)				
B	17	Several concrete washout bays will be constructed within the landside compound at NAR to accept the discharge of concrete wastewater.	Prior to construction works commencing.	Figures 14 &15
B	18	Concrete wastewater will be discharged into these concrete washout bays.	As required	
B	19	Concrete wastewater will be dewatered by a liquid waste contractor (Remondis) in EPA licensed trucks for disposal and treatment at their licensed facility off-site.	Dewater as required.	
Street Sweeper Wastewater				
B	20	Several street sweeper washout bays will be constructed within the landside compound at NAR.	Prior to construction works commencing	Figures 14 &15
B	21	Street sweepers will use these bays to wash out wastewater from cleaning pavement areas, haul roads, taxiways and asphalt areas, pumping out water within pits or pooled water not contaminated with concrete.	Daily	
B	22	Street sweeper wastewater will be tested by specialist environmental consultants, to review the contamination status prior to disposal.	At the start of the project.	Section 13.6
B	23	Where the wastewater is determined to be contaminated, the street sweeper washout bay will be dewatered by a liquid waste contractor (Remondis) in EPA licensed trucks for disposal and treatment at their licensed facility off-site.	As required.	Section 13.5

13.5. Monitoring Summary

13.5.1. Water Monitoring Summary - Fulton Hogan

► Table 8: Fulton Hogan's Water Monitoring requirements

Monitoring Type	Details	Frequency of Monitoring	Timing
Surface water runoff (including shallow sub-soil water / perched water)			
Pooled water	Monitoring of all pooled / collected water prior to consideration of management option.	To be confirmed	During construction
Direct discharge	Monitoring of all outlets for discharge to relevant receptors (Moonee Ponds Creek and Arundel Creek).	To be confirmed	During construction
Onsite management	Monitoring of groundwater immediately down gradient of the on-site management area(s) used for irrigation / infiltration and upgradient from relevant receptors (Moonee Ponds Creek and Arundel Creek).	To be confirmed	During Construction
Offsite disposal	Waste classification and waste dockets		NA
Other water sources			
Perched Groundwater (where encountered)	Test any perched groundwater to determine the classification and management options.	Where encountered	During construction.
Construction wastewater	Construction wastewater will be tested upon collection at the start of the project to determine appropriate management options.	As required – upon collection	During Construction

13.5.2. Water Monitoring Summary - APAM

Airport-wide water monitoring that will be conducted by APAM during construction and operation of the Project is outlined in Section 7.1 of the Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019). This is summarised in Table 9 below.

► Table 9: APAM's Water Monitoring requirements

Monitoring Type	Details	Frequency of Monitoring	Timing
APAM Water Testing			
Surface Water Monitoring	Monitoring for PFAS extended suite (28 compounds), in line with APAM's airport-wide ongoing monitoring program	Quarterly	During construction and operation
	Stream health monitoring in Arundel Creek, Deep Creek and Moonee Ponds Creek	Annual	During construction and operation
Groundwater Monitoring	Monitoring for PFAS extended suite (28 compounds), in line with APAM's airport-wide ongoing monitoring program	Annual	During construction and operation

13.6. Contingencies

B - Water Management

▶ Identifying greater amounts of contaminated water than the developed plan can accommodate

- Throughout the project, the quantity of water encountered during the works will be estimated as part of the routine planning of works. In the case of a significant increase in the estimated volume of water encountered, a review of the management strategy will be undertaken by Fulton Hogan in conjunction with APAM.
- Additional or standby areas for infiltration will be identified.
- Additional resources to temporarily contain water will be identified such as contamination pods, settlement tanks or construction of sediment basins.
- If additional water is required to be removed offsite quickly, then extra EPA licensed trucks will be used for disposal.

▶ Capacity of the management systems is compromised (reduced)

- On-site management of water via infiltration may be compromised as a result of environmental factors. Airport operations may also constrain some planned management activities. This may limit the capacity of the management approach.
- Throughout the project, consideration shall be made as to environmental factors (such as forecast heavy or prolonged rainfall) or airport related logistical matters, such that the contingency arrangement can be put in place with minimal interruption to the planned water management activities.

▶ Unknown contaminants

- The presence of unknown or suspicious materials may result in atypical water quality results.
- This may be highlighted by the uncovering of unusual materials or by noting odours within the water.
- In the event that any significant unknown type of material is identified at the Project site, an assessment of the impact of the material and resultant generated water on the works would be undertaken by Fulton Hogan and our consultant. Environmental controls would be established to contain the material and generated water to a confined area, to mitigate any impacts to the surrounding environment. This assessment will identify an approach for testing the material and the generated water for potential contamination. Once the material and generated water is classified, we can then review the management requirements to the satisfaction of APAM and the environmental regulators. This event will be raised as a Hazard in CAMs, so we can track the progress and close out.
- Temporary storage of the water may be required.
- If evidence suggests that the level and extent of contamination is significantly greater than assumed, including the potential for contamination to impact local groundwater, further investigation will be performed to determine its extent.
- Should any unknown contaminants be encountered during site works, their potential impacts will be managed and mitigated to prevent any unacceptable environmental impacts, and in accordance with regulatory requirements.

14. Sediment and Erosion Control Management

14.1. Context

C – Sediment and Erosion Control

▶ Sediment and Erosion Control Overview

- Under the EPBC Act Approval (2016/7837) conditions, there is a strong emphasis on sediment control.
- Section 4 of the EPBC Act Approval, specifically states the CEMP must include but not be limited to the following (in relation to sediment and erosion control);

  (a) Runoff controls to ensure that the quality of the adjacent waterways is maintained or improved.

  (b) Best practice sediment control to be implemented during construction.

  (d) Cleaning of trucks leaving the site to prevent impacts from construction sediments to nearby growling grass frog populations.

▶ Sediment and Erosion Control Design

- To ensure 'best practice sediment and erosion controls' are utilised for this project, IECA registered consultants TOPO provided the Erosion and sediment control plans for both NAR and Zulu.
- These plans have been prepared against the minimum standards nominated within the IECA (2008) Best Practice Erosion and Sediment Control Guidelines.
- Compliance with this plan will assist in compliance with the EPBC Act Approval (2016/7837) conditions, Airports Act 1996, Airports (Environmental Protection) Regulations 1997, and the State Environmental Planning Policy (Waters) 2018 (SEPP Waters).

▶ Taxiway Victor Extension

- The erosion and sediment control management requirements for the extended Taxiway Victor area will be dependent on the taxiway's final design.
- The project will ensure that the same principles of best practice management will be applied to this area (consistent with the existing TOPO Erosion and Sediment Control (ESC) plan).
- When the ESC for Taxiway Victor is finalised, a copy will be provided to DoEE.

▶ Sediment and Erosion Control Management

- Fulton Hogan will implement best practice sediment and erosion control for the Project by installing and maintaining the environmental controls detailed in TOPO's Erosion and sediment control plans.

14.2. Risk Rating Summary

C – Sediment and Erosion Control

- The residual risk rating for the identified Sediment and Erosion Control hazards has been determined as **Medium** following the implementation of control measures outlined in Section 14.4

14.3. Objectives, Targets and Project Requirements

C – Sediment and Erosion Control	
Objectives	▪ To install and maintain runoff controls to ensure that the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved. ▪ To implement best practice sediment control during construction to minimise sediment-laden water from leaving the Project site. ▪ To ensure trucks are clean prior to leaving the site to prevent impacts from construction sediments to nearby Growling Grass Frog populations.
Targets	▪ All water discharged from the site to comply with the Airports (Environment Protection) Regulations 1997 and the SEPP (Waters) 2018. ▪ Regular maintenance of sediment controls and basins to minimise sediment laden water leaving the site. ▪ Regular maintenance of the rumble grids, wash down facility and haul roads to minimise sediment leaving the site.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environmental Protection Act (1970) 8. SEPP (Waters) 2018IECA: Best Practice Erosion and Sediment (BPESC) document (2008) 9. EPA – Construction techniques for sediment pollution control (Publication 275) 10. TOPO – Erosion and sediment control plans (2019)

14.4. Environmental Management Controls

C – Sediment and Erosion Control				
Control ID		**Required Environmental Management Measures**		
NAR – Stage 1: Clear and grub area			**Timing**	**References**
C	1	Use TOPO's Erosion and sediment control plans to set up the required controls for NAR specifically for the Clear and Grub phase.	Prior to construction works commencing	TOPO Erosion and sediment control plans.
C	2	Install clean water diversion earth bunds along the southern edge of the project to divert airside 'clean' stormwater away from our construction zone.	Prior to construction works commencing	TOPO Erosion and sediment control plans.
C	3	Install diversion earth bunds on the northern side to keep our construction site 'dirty' water within the works area.	Prior to construction works commencing	TOPO Erosion and sediment control plans.

NAR – Stage 1: Clear and grub area			Timing	References
C	4	Utilise the existing dam as a Type 2 sediment basin to capture 'dirty' site water for potential re-use for dust suppression (subject to testing).	During all stages of construction	TOPO Erosion and sediment control plans.
C	5	Utilise existing channels to divert clean stormwater from the south to the north then discharge offsite.	During Stage 1 clear and grub phase	TOPO Erosion and sediment control plans.
C	6	Install rock filter dams as specified in the TOPO plans to remove sediment prior to water leaving the site.	During Stage 1 clear and grub phase	TOPO Erosion and sediment control plans.
C	7	Complete early excavation for the sediment basins to divert construction water from the site. Sediment basins will be located after the rock filter dam outlet points. Refer to the TOPO Plans for the locations of the rock filter dams along each catchment outlet. These sediment basins will be designed to capture and hold construction stormwater prior to it discharging into the catchment outlets to Moonee Ponds Creek. The sediment basins will be constructed, if the water requires additional treatment or disposal. Treat the stormwater for turbidity and pH if required or dispose offsite if contaminated.Treat the stormwater for turbidity and pH if required or dispose offsite if contaminated.	During Stage 1 clear and grub phase	Refer to the TOPO Erosion and sediment control plans for the rock filter dam outlet points for NAR.
C	8	Install sediment fence where the topsoil bund and rock filter dams are not possible on downslope side of alignment, where we are constrained by the Airside perimeter fence line. This is the case for the southern end of NAR between the catchment outlets of 8 and 9.	During Stage 1 clear and grub phase	TOPO Erosion and sediment control plans.
C	9	TOPO will be engaged to conduct an IECA audit against the Erosion and sediment control plan, to ensure that the controls are implemented and installed correctly to the required standard prior to the main construction commencing.	During Stage 1 clear and grub phase	
NAR – Stage 2: Earthworks			**Timing**	**References**
C	10	During Stage 2 works, existing drainage is removed so the clean water diversion needs to be connected to the newly installed stormwater culverts.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.
C	11	Install check dams inside the construction footprint to slow down dirty water.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.
C	12	Install inlet protection – Refer to Page 32 of the TOPO plans for the specifications.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.
C	13	Install sediment controls at culvert inlets and stabilise outlet channels.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.

NAR – Stage 2: Earthworks			Timing	References
C	14	Aim to stabilise the landscaped outer batter immediately after formation along the Perimeter Road.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.
C	15	Stabilise swales and clean water flow paths immediately after excavation to maintain a clean water flow through the site. Topsoil and seed as soon as possible or use a dust suppressant.	During Stage 2 earthworks	TOPO Erosion and sediment control plans.
Zulu Construction Works			**Timing**	**References**
C	16	Install inlet protection on any nearby stormwater pits that may be subject to runoff from the work area.	Prior to works commencing	TOPO Erosion and sediment control plans
C	17	Install inlet protection on any existing pits prior to stripping and demolition works.	Prior to works commencing	TOPO Erosion and sediment control plans
C	18	Surround strip drains with sandbags to filter stormwater prior to discharge.	Prior to works commencing	TOPO Erosion and sediment control plans
C	19	Use water barriers to delineate the construction perimeter for Zulu. Place sandbags along the inside construction edge of the water barriers, to divert airside catchment stormwater around our construction zone.	Prior to works commencing	
C	20	Install check dams along the swale drains to slow the stormwater down and prevent concentrated drainage flows.	During construction	TOPO Erosion and sediment control plans
C	21	Retain existing ground cover (concrete slabs) for as long as possible to minimise the amount of construction water to treat	During works	TOPO Erosion and sediment control plans
General Site Management			**Timing**	**References**
C	22	Settlement tanks may be required within NAR to treat turbid water. These will be installed beside the rock filter dam outlets away from native grass areas, if the sediment ponds are not required.	Once the water has been classified	
C	23	Silt socks will be utilised within swales for additional water treatment to reduce turbidity if required.	During construction	
C	24	Earthworks will be staged, so there will be less exposed areas to manage in terms of sediment and erosion control.	During construction	
C	25	Weather forecasts will be reviewed when planning earthworks and ground disturbing activities. Where practicable, earthworks and ground disturbing activities will be avoided during periods of heavy rainfall or high winds.	During construction	

General Site Management			Timing	References
C	26	Disturbed areas shall be stabilised with grass as early as practicable, to minimise the time period that areas are left exposed. Soil binders may be added to the hydro-seeding mix or exposed areas for dust suppression depending on the location and time of seeding when required. A soil binder will be chosen that is suitable to be used near a waterway and does not cause harm to fauna including the Growling Grass Frogs.	During construction	
C	27	Use street sweepers on pavement areas to maintain a clean site and minimise any sediment flowing into nearby stormwater drains.	During construction	
Vehicle and Road Management			**Timing**	**References**
C	28	No mud, crushed rock or other debris shall be allowed onto the live taxiways. Use the street sweeper to regularly clean the construction area	Ongoing	
C	29	Use crushed rock and/or ballast rock in the site laydown area and exit haul road to minimise sediment being carted offsite.	During site set up	
C	30	Dust suppressant products will be used on the haul roads to minimise dust during construction.	Ongoing	
C	31	All heavy plant, equipment and vehicles must remain within approved worksite and access areas.	Ongoing	
C	32	All trucks carrying potential dust generating materials must be covered.	Ongoing	
C	33	Use a water truck for dust suppression to reduce the surface and air transport of fine sediment during ground disturbing works.	Ongoing	
C	34	All vehicles and trucks must use the rumble grids to exit the construction work area at Sunbury Road.	Ongoing	
C	35	Ensure trucks and machinery are clean prior to leaving the site to prevent impacts from construction sediments to nearby Growling Grass Frog populations. Use the wash down facilities provided at the NAR site laydown area.	Ongoing	
C	36	During wet weather events, vehicle movements shall be restricted to those necessary.	Ongoing	

14.5. Monitoring

Site inspections and monitoring is to be undertaken in accordance with Sections 6.17 and 7.4 of the Best Practice Erosion and Sediment Control Document (IECA, 2008).

The required monitoring is defined by TOPO's Erosion and sediment control Plan (Refer to Section 10). Best practice site management requires all erosion and sediment control measures to be inspected at the following frequencies and include the following checks as a minimum:

Monitoring Type	Frequency of Monitoring	Details	Timing
Sediment and Erosion Control	Daily site inspections	- All drainage, erosion and sediment control measures - Occurrences of excessive sediment deposition (whether on-site or off-site) - All site discharge points (including dewatering activities as appropriate)	During a rainfall event .
	Weekly	- All drainage, erosion and sediment control measures - Occurrences of excessive sediment deposition (whether on-site or off-site) - Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements	During construction
	Prior to anticipated runoff producing rainfall (within 24 hours of expected rainfall)	- All drainage, erosion and sediment control measures - All temporary flow diversion and drainage works	During construction.
	Following runoff producing rainfall (within 18 hours of rainfall event)	- All drainage, erosion and sediment control measures - Occurrences of excessive sediment deposition (whether on-site or off-site) - Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements	During construction

14.6. Contingencies

C - Sediment and Erosion Control

- When a site inspection detects a notable failure in the adopted erosion and sediment control measures, then the source of this failure must be reported in CAMs, investigated and appropriate amendments made to the site and the erosion and sediment control plan.
- Any defects and/or deficiencies in control measures identified by monitoring shall be rectified immediately and these control measures shall be cleaned, repaired and augmented as required to ensure effective control thereafter.
- If the sediment control devices specified by TOPO, do not minimise sediment laden water to the required turbidity level prior to leaving the site, then additional measures will implemented such as;
    - Installing a settlement tank at the end of the catchment to flocculate and treat the water prior to discharging to stormwater;
    - Construct a sediment basins to treat large volumes of construction stormwater; or
    - Installing additional sediment control devices such as sandbags and silt socks along the catchment to further treat the water and drop out sediment.

15. Soil and Material Management

15.1. Context

D – Soil and Material Management

▶ Soil

- The Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019) details the soil (topsoil and subsoil) categorisation for each area, contaminant distribution and the management measures for movement and temporary storage of the soil.
- All soils have been classified into either Category 1 or Category 2 contamination, based on the classification below , with soil delineation maps provided in Appendix 5;

Soil Category	Threshold (leachable concentration (µg/l)	Likely percentage of total soils	Total Mass of PFAS (approx.) (mg)[1]
Category 1	Less than or equal to 0.4	90%	2417 (2.4g)
Category 2	Greater than 0.4	10%	772 (0.77g)

- In accordance with the PFAS NEMP, if material tested has concentrations of PFOS, PFOA or PFHxS which exceed 50 mg/kg, these materials cannot be considered for on-site reuse nor disposal to landfill. Should such material be identified, offsite treatment will be required to reduce concentrations to below 50 mg/kg, after which material can be assessed for disposal to landfill. All transport of such material off-site would require approval from the Victorian EPA. **Note:** the highest concentration of total PFAS encountered within the project area to date was 0.032 mg/kg for PFOS, so this is unlikely to occur.
- If the soils are not contaminated with PFAS, either they will be reviewed against the Airports (Environment Protection) Regulations 1997 for onsite reuse or they will be classified for disposal offsite.
- For disposal offsite, soils will be classified against the Victorian EPA Industrial Waste Resource Guidelines (IWRG621), to determine whether the soil is classified as either Category A (highest level Prescribed Industrial Waste ((PIW)), Category B (medium level PIW) or Category C (lowest level PIW) contamination for disposal.

▶ Materials

- Concrete, crushed rock and bitumen will be tested in accordance with Jacobs PFAS Management Plan.
- Concrete and street sweeper slurry from the washout bays, as well as NDD and HDD slurry, will be tested for contamination including PFAS prior to disposal, to review the stockpiling and disposal options.

15.2. Risk Rating Summary

D – Soil and Material Management
▪ The residual risk rating for the identified Soil and Material Management hazards has been determined as **Low - Medium** following the implementation of the control measures outlined in Section 15.4.

15.3. Objectives, Targets and Project Requirements

D – Soil and Material Management	
Objectives	▪ To complete the project without causing land contamination. ▪ To manage the existing contamination as required by the Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019). ▪ To manage the unknown contamination within the concrete, crushed rock and bitumen at Zulu.
Target	▪ To separate and manage the soil and materials into their corresponding Category 1 and 2 contamination requirements, as detailed in Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019). ▪ To have no major uncontrolled leaks or spills resulting in soil contamination.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act (1996) 5. Airport (Environmental Protection) Regulations (1997) 6. PFAS National Environmental Management Plan (January 2018) 7. Environmental Protection Act (1970) 8. Environment Protection Authority Industrial Waste Resource Guidelines 9. Melbourne Airport - Environmental Management Plan (2018) 10. Jacobs, Taxiway Zulu Program Contaminated Land Assessment (2014) 11. Jacobs, Taxiway Zulu and T2T Apron Project - Contaminated Land Assessment (2017) 12. Jacobs, NAR and Taxiway Zulu Per and PFAS Investigation Environmental Site Assessment (2018). 13. Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019)

15.4. Environmental Management Controls

D – Soil and Material Management				
Control ID		**Required Environmental Measures**		
Excavation of Soils and Material			**Timing**	**References**
D	1	Refer to Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019) for all contaminated soil management including stripping and stockpile requirements.	At all times	Jacob's PFAS Management Plan
D	2	All areas defined as Category 2 PFAS contaminated soil or material will be delineated on the ground by the surveyor prior to stripping so the boundary is clearly visible to the excavator driver.	Prior to construction commencing	Appendix 5 Jacobs PFAS soil delineation plans
D	3	Category 2 contaminated soils will be stripped and stockpiled separately at a temporary stockpile location within the project site boundary, until the temporary storage location is available.	During construction	Section 6.14 Temporary stockpiling in Jacobs PFAS Management Plan
D	4	The majority of the soil is classified as Category 1. These soils are to be stripped and stockpiled within the temporary stockpile location within the project boundary for Zulu and NAR until the temporary storage location is available.	During construction	Section 6.14 Temporary stockpiling in Jacobs PFAS Management Plan
D	6	Any soil or material contaminated from an oil or fuel spill will be tested prior to disposal against the EPA IWRG guidelines and the PFAS NEMP.	Prior to disposal	
D	7	All contaminated soil and material movements will be tracked through Fulton Hogan's Contaminated Material and Water Tracking Register.	At all times.	
D	8	Prior to any contaminated material leaving site, the Soil or Material Classification Letter and the corresponding laboratory results need to be send to the landfill or treatment facility for prior approval. Ensure the cartage contractor has a copy of the Soil or Material Classification Letter and the laboratory results along with the electronic copy of the EPA Waste Transport Certificate completed.	As per control.	
D	9	All trucks are required to cover their loads with their tarpaulin PRIOR to leaving site.	At all times.	
D	10	Contaminated soil (Category A, B or C) is to be disposed offsite in EPA licensed trucks to an EPA accredited landfill or treatment facility.	At all times.	EPA IWRG621

Importation of Material			Timing	References
D	11	All imported fill and aggregate material must have evidence that the material is not contaminated. (Letter of Compliance or Soil/Material Assessment meeting EPA Fill material requirements)	At all times.	
D	12	APAM approval is required prior to importing material.	At all times.	
D	13	All temporary stockpiles (crushed rock, cement treated crushed rock, sand etc.) imported to site will be stored in APAM approved stockpile areas. Sandbags will be placed around the stockpile area to contain any sediment.	At all times	
Stockpiling/Managing Materials (Contaminated Materials)			**Timing**	**References**
D	14	All material will be stockpiled separately according to its PFAS contamination status (Category 1 or 2) and its material type. (e.g. topsoil, subsoil, crushed rock, bitumen, NDD slurry).	At all times.	
D	15	All staff and subcontractors will be inducted and trained to follow Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019)	Ongoing Training	Jacobs PFAS Management Plan
Vehicle Management/Disposal of PPE			**Timing**	**References**
D	16	Ensure the tires on all plant and equipment used to cart and stockpile PFAS material are clean before exiting the site.	Ongoing	
D	17	Trucks are to brush down their tail gates prior to leaving the stockpile location.	Every time.	
D	18	Bins will be placed in the dedicated decontamination area for disposable gloves and other potentially contaminated PPE.	Prior to works commencing.	

15.5. Monitoring

Monitoring Type	Details	Frequency of Monitoring	Timing
Soil and Material	Concrete, crushed rock and bitumen testing to be completed in accordance with the approved Jacobs PFAS Management Plan.	As required	Prior to and/or during construction depending on access constraints.
	Observation and recording of excavation methods	During each excavation activity – recorded in the Foreman's site diary	During construction
	Visual records (photographs) of material being excavated and stockpiled	During each excavation activity	During construction
	Tracking of soil and material movements will be captured in the Contaminated material and Waste tracking register	As required	During construction
	Inspection of temporary stockpiles (Both Category 1 & 2 – PFAS Contaminated)	Weekly Before / after significant weather events	During construction

Monitoring Type	Details	Frequency of Monitoring	Timing
Soil and Material	Survey of the excavated areas to provide estimated volumes	At completion of the excavation works	During construction

15.6. Contingencies

D – Soil and Material Management

▶ Soil Management

- There is likely to be unexpected conditions on site which could include the following consequences;
  - An increased volume of contaminated soil or material
  - Uncovering presently unknown types of contamination
- If these unexpected conditions arise, the procedures outlined in Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019) will be followed.

▶ Material Testing

- Concrete, crushed rock and bitumen within Zulu is yet to be tested for potential contamination including PFAS.
  - There is the potential that there will not be sufficient room to stockpile this material temporarily within the project boundary if the material is deemed contaminated with PFAS.
  - This material will be tested in accordance with Jacobs PFAS Management Plan to the required volume to be removed, so the classification status, stockpile requirements, re-use or disposal requirements can be determined.
- The presence of unknown or suspicious materials may result in atypical laboratory results.
  - This may be highlighted by uncovering unusual materials or by noting odours from nearby fuel lines within the soil or material.
  - In the event that any significant unknown type of material is identified at the Project site, an assessment of the impact of the material and resultant potential contamination will be investigated by Fulton Hogan and specialist consultants.
  - This assessment will identify an approach for managing the material to the satisfaction of APAM.
  - The event will be raised as a Hazard in CAMs, so we can track the progress and close out accordingly.

▶ Temporary Stockpile Management

- Limited temporary stockpile locations exist within the Project boundary.
  - Fulton Hogan will provide frequent survey information to APAM regarding the estimated stockpile volumes and the existing capacity of temporary stockpile areas to stay ahead of capacity.
  - A temporary storage facility has been nominated in the Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019) to accommodate the required soil and material volume for the Project for both Category 1 and 2 soils. As soon as this facility is available, it will be utilised by the Project.

16. Air Quality Management

16.1. Context

E – Air Quality
▪ Many construction activities have the capacity to generate excessive amounts of dust. This dust has significant implications for airport operations as well as possible health and environmental impacts.

16.2. Risk Rating Summary

E – Air Quality
▪ The residual risk rating for the identified Air Quality hazards has been determined as **Low** following the implementation of the following control measures.

16.3. Objectives, Targets and Project Compliance Requirements

E – Air Quality	
Objectives	▪ Ensure the generation of dust, other air emissions and odour does not cause nuisance to the airport operations or sensitive receptors. ▪ To comply with all legislative reporting requirements. ▪ To prevent any impacts to human health or the environment. ▪ To comply with Section 4(e) of the EPBC Act Approval (2016/7837) to prevent local air quality impacts through dust suppression.
Targets	▪ To have no HIGH risk rated incidents or stakeholder complaints regarding a reduction in air quality. ▪ To control dust during concrete demolition works ▪ To implement dust control measures at the temporary stockpile locations ▪ No visible dust beyond the site boundary. ▪ Implement speed restrictions on the haul roads to minimise dust
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act (1996) 5. Airport (Environmental Protection) Regulations (1997) 6. PFAS National Environmental Management Plan (January 2018) 7. Environmental Protection Act (1970) 8. National Environment Protection Measures (NEPM) Ambient Air Quality 9. National Greenhouse and Energy Reporting Act (2007) 10. SEPP (Air Quality Management)

16.4. Environmental Management Controls

E – Air Quality Management				
Control ID		**Required Environmental Management Measures Minimise Odour Generation**		
Minimise Odour Generation			**Timing**	**References**
E	1	Daily pre-start inspection of machinery and equipment to review whether any odour or emissions are evident.	At the start of each shift.	
E	2	Defective machinery or machinery that creates significant emissions and/or odour to be decommissioned and removed.	When applicable.	
E	3	Store all hazardous chemicals, fuels and oils within ventilated, bunded chemical storage containers in accordance with the relevant SDS.	At all times.	
Minimise Dust Emissions			**Timing**	**References**
E	4	Water carts will be used on site to control dust when required, especially on the haul roads and during pavement demolition and earthworks.	During applicable works.	
E	5	Due to the presence of PFAS contaminated soils, there will be an extra vigilance using water carts or furphys to control dust, to minimise the risk of exposure to workers and the potential for PFAS to contaminate other areas.	At all times	
E	6	Temporary fencing and shade cloth will be used beside taxiways during concrete demolition, to minimise dust and protect workers from flying debris.	During demolition	
E	7	Water used for dust suppression must adhere to Melbourne Airport's EMP requirements for suitable water quality action trigger levels for on-site reuse.	At all times.	Table 7 of Melbourne Airports EMP
E	8	When conditions are conducive to dust generation, soil binders (or other dust suppression materials) will be utilised on high risk areas such as haul roads when required.	During construction	
E	9	Truck tarpaulins are used to cover the aggregate loads during cartage.	At all times.	
E	10	Haulage and plant are restricted to defined travel paths.	At all times.	
E	11	Reduce speed limits to 15km/hr for trucks and vehicles on haul roads to minimise dust.	At all times	
E	12	Dust suppressants such as soil binders will be reviewed with APAM to look to utilise these products for the haul roads, open swales, and hydro-seeding areas to minimise dust generation during construction when required. A soil binder will be chosen that is suitable to be used near a waterway and does not cause harm to fauna including the Growling Grass Frog.	When required	

16.5. Monitoring

Monitoring Type	Details	Frequency of Monitoring	Timing
Air Quality	Conduct visual monitoring to review dust levels on the haul roads, during demolition and during earthworks.	Daily Weekly – Environmental inspection	During construction

16.6. Contingencies

E - Air Quality
▪ The project manager will obtain daily weather reports from the Melbourne Airport Bureau of Meteorology weather station to review the weather conditions for the day and review the prevailing wind. ▪ In the event of hot, dry, windy conditions where dust generation can't be suitably controlled, works will be reallocated to non-dust generating activities or the operations will cease until the dust levels can be minimised. ▪ Additional water carts or furphys will be utilised if dust becomes an issue on the haul roads or Fulton Hogan will review whether a sealant can be sprayed over the road as a temporary seal. ▪ Dust suppressant products such as soil binders will be reviewed when required, for haul roads and the temporary stockpile locations, if dust management cannot be controlled with the water cart. ▪ Speeds on the haul roads will be reduced to 15km/hr to minimise dust during construction and loading out material.

17. Hazardous and Flammable Materials

17.1. Context

F – Hazardous and Flammable Materials
▪ Some of the products required for the Project are of hazardous and/or flammable in nature. ▪ Improper storage, disposal, and/or use poses a significant environmental risk.

17.2. Risk Rating Summary

F – Hazardous and Flammable Materials
▪ The residual risk rating for the identified Hazardous and Flammable Materials hazards has been determined as **Low to Medium** following the implementation of the control measures outlined in Section 17.4.

17.3. Objectives, Targets and Project Compliance Requirements

F – Hazardous and Flammable Materials	
Objectives	▪ To comply with Section 4(c) of the EPBC Act Approval (2016/7837) to incorporate detailed measures to avoid spills of fuels and management of accident spills to avoid the introduction of pollutants and biocides during construction. ▪ To prevent contamination of land, groundwater and surface waters.
Targets	▪ To have no HIGH risk rated incidents relating to a hazardous waste spill during construction ▪ Correct storage of hazardous materials and dangerous goods for the duration of the works ▪ Use appropriately licensed contractors to remove hazardous waste ▪ No breaches of regulatory requirements (as listed below) for the use, management and storage of hazardous materials.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environmental Protection Act (1970) 8. SEPP (Prevention and Management of Contamination of Land) 9. SEPP (Waters) 2018 10. EPA Liquid storage and handling guidelines, Pub 1698 (June 2018) 11. AS 1940 Storage and Handling of Flammable and Combustible Liquids 12. Dangerous Goods Act 1985 13. Dangerous Goods (Storage and Handling) Regulations, 2012 14. Managing Risk of Hazardous Chemicals, Code of Practice, Safework Australia, 2012

17.4. Environmental Management Controls

F – Hazardous and Flammable Materials				
Control ID		**Required Environmental Management Measures**		
Hazardous and Flammable Materials Storage and Use			**Timing**	**References**
F	1	All hazardous and flammable materials will be stored within yellow bunded hazardous goods containers when not in use on site.	When works finish for the day.	
F	2	All hazardous and flammable materials will be stored within either black bunded plastic trays or buckets when in use on site to contain any spills airside.	At all times	
F	3	Subcontractors are to store their hazardous and flammable materials either in Fulton Hogan bunded containers (for small quantities) or within their bunded trailers or utes.	At all times	

Hazardous and Flammable Materials Storage and Use			Timing	References
F	4	A register for dangerous goods stored and handled on site will be maintained. It will record the volume and type of hazardous materials stored, and the current version of the SDS. Update the register when a new material is introduced to site or when the use of an existing material is discontinued.	At all times.	
F	5	All hazardous and flammable materials will have clear labels or contain an ID tag identifying the substance (diesel, unleaded, petrol or 2-stroke).	At all times.	
F	6	All generators and diesel tanks will be self bunded. Additionally they will be stored on two layers of black plastic with sandbags around the edge to act as secondary bunding, to contain any fuel spills during re-fuelling.	At all times.	
F	7	All chemicals, fuels and oils must contain a SDS to be kept within the hazardous goods container.	At all times.	
F	8	Only compatible chemicals will be stored together.	At all times.	
F	9	Empty chemicals, fuels, oils and paint cans will be segregated and stored within the designated Red 240L Hazardous waste bins for collection and disposal at an appropriately licensed facility.	At all times.	
Refuelling Procedure			**Timing**	**References**
F	10	Plant, equipment and vehicles will be refuelled within designated refuelling areas.	Where possible	
F	11	The designated refuelling area will be at least 30m away from any waterways or drainage lines.	At all times.	
F	12	Mobile refuelling trucks will be used to deliver fuel to machinery airside. These trucks will be equipped with refuelling spill mats, trays and spill kits.	At all times.	
F	13	Jerry cans will be used to refill small tools and equipment.	When applicable.	
Spill Management			**Timing**	**References**
F	14	Yellow 240L wheeled spill kits will be maintained within work areas, landside and airside compounds and within the vicinity of the hazardous goods bunded containers.	At all times.	
F	15	Plant and machinery shall be serviced and inspected regularly for oil and fuel leaks.	Pre-Start	
F	16	Identified plant leaks will be rectified immediately.	At all times.	
F	17	Contaminated spill kit material will be disposed of into the black labelled 240L Contaminated waste bins.	At all times.	
F	18	Waste transport and disposal certificates must be obtained for any waste associated with spill management.	At all times.	

17.5. Monitoring

Monitoring Type	Details	Frequency of Monitoring	Timing
Hazardous and Flammable Materials	Conduct visual monitoring to review the storage and handling of hazardous materials including chemicals.	Daily	Prior to and/or during construction depending on access constraints.
	Monitoring the storage of hazardous and flammable materials	Weekly – Environmental inspection	During construction
	SDS Register	Bi-Annually	During construction

17.6. Contingencies

F – Hazardous and Flammable Materials

► Construction equipment failing during construction works causing an oil or fuel spill

- Subcontractors over use of machinery and not maintaining equipment may often result in a spill. If a spill occurs undertake the following management requirements;
  - Take immediate action to control the spill, contain the area, report the incident to the foreman and environmental manager, so they can assist with the clean-up, reporting and correct disposal of waste material.
  - During the CAMs investigation, review why the spill occurred and what management measures are required to minimise a reoccurrence (machinery maintenance records, refuelling location, poor bunding etc.)
  - **Small spills**: Place absorbent material over the spill; dispose the material into the contaminated waste bags and store within the Black 240L Contaminated waste bins.
  - **Large spills**: Use an appropriate machine (bobcat or excavator) to contain the spill, place the material onto black plastic. Test the material for contamination including PFAS and dispose the contaminated material as required by APAM and the legislative requirements.
  - Report any spills greater than 5L or where any material enters the stormwater drainage system immediately to Superintendent and the Melbourne Airport Coordination Centre (03 9297 1601), followed by a CAMs incident report within 48 hours to the Melbourne Airport Environmental Team.

► Inadequate facilities available to bund flammable and hazardous materials

- Inform subcontractors prior to starting works, that they need to either bring their own bunded containers, trailers, trays or buckets to effectively contain their products while in use on site and during storage overnight.
- Fulton Hogan and OPT (Main subcontractor) will utilise their own yellow bunded containers airside and landside for storage of chemicals, fuels and oils.
- Black plastic trays and/or buckets will be provided airside for subcontractors to utilise during works to contain their products.
- Weekly environmental site inspections will monitor the requirements for storage of flammable and hazardous goods to maintain capacity where needed.

18. Resource Use and Waste Management

18.1. Context

G – Resource Use and Waste Management
▪ Fulton Hogan has a commitment to sustainable resource use and is mindful of its waste generation and the impacts that these wastes have on the surrounding communities and the environment. ▪ The type of waste streams expected to occur on the project include NDD and HDD slurry, concrete and street sweeper slurry, additional concrete from concrete pours, demolition concrete, bitumen and crushed rock from Zulu, waste from supplier packaging and general waste.

18.2. Risk Rating Summary

G – Resource Use and Waste Management
▪ The residual risk rating for the identified Resource Use and Waste Management hazards has been determined as **Low to Medium** following the implementation of the control measures outlined in Section 18.4.

18.3. Objectives, Targets and Project Compliance Requirements

G – Resource Use and Waste Management	
Objectives	▪ To manage waste in accordance with the regulatory guidelines and requirements. ▪ Promote sustainability by looking at greener alternatives when ordering materials and equipment ▪ To reduce the level of contamination in waste streams by recycling where possible. ▪ To ensure FOD is managed appropriately to not cause a risk to airside operations.
Targets	▪ To have no HIGH risk rated incidents relating to waste management or inappropriate resource use ▪ Work towards minimising our environmental footprint through innovation, energy and resource efficient operations focused on reducing, reusing and recycling ▪ Avoid the generation of waste by reducing the amount of general waste sent to landfill. ▪ Manage waste as a resource. ▪ A minimum of 50% of construction waste will be re-used or recycled during the project. ▪ To have no incidents relating to FOD airside.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environment Protection Act (1970) 7. Environment Protection (Industrial Waste Resource) Regulations 8. EPA Victoria – State Environment Protection Policy - Prevention and Management of Contamination of Land in Victoria, Publication 854, June 2002 9. EPA Victoria - Industrial Waste Resource Guidelines – Solid Industrial Waste Hazard Categorisation and Management (IWRG631), 1 July 2009

	10. EPA Victoria - Industrial Waste Resource Guidelines – Solid Industrial Waste Hazard Categorisation and Management (IWRG631), 1 July 2009 11. SEPP (Waters) 2018 12. Litter Act 1987

18.4. Environmental Protection Measures

G – Resource Use and Waste Management				
Control ID		**Required Environmental Management Measures**		
General Waste Management - Waste Minimisation			**Timing**	**References**
G	1	The waste hierarchy AVOID – REDUCE – REUSE - RECYCLE will be used both airside and landside.	At all times.	
General Waste Management – Waste on Site			**Timing**	**References**
G	2	All bins that contain general waste material that could blow away causing a FOD issue or attract wildlife, must have closable lids that remain closed when not in use.	At all times.	
G	3	Use the street sweeper and/or metal broom sweeper to continually clean the construction area to reduce FOD.	At all times	
G	4	All waste disposed from the site shall be taken to an appropriate facility in accordance with EPA's waste guidelines.	At all times.	
G	5	All waste and recycling bins will be clearly labelled to minimise cross contamination.	At all times.	
G	6	No waste shall be left on site when the site is demobilised, unless it has been approved. This shall include the removal of all waste facilities and temporary access tracks at the completion of works	Demobilisation	
Recycling			**Timing**	**References**
G	7	Demolition concrete, dried concrete slurry, crushed rock and bitumen/asphalt will be tested for contamination including PFAS.	On-going.	
G	8	Non-PFAS impacted concrete and dried concrete slurry will be placed into tandem trucks for recycling off-site, or re-used onsite.	On-going.	
G	9	Any PFAS impacted/contaminated concrete, crushed rock or asphalt/bitumen will be managed as per the Jacobs PFAS Management Plan	On-going.	Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019)
G	10	Non-PFAS impacted asphalt/ bitumen from the demolition works, will be sent off-site to be re-used as recycled asphalt pavement.	On-going.	
G	11	Non-PFAS impacted crushed rock (cement treated or untreated) which is acceptable for temporary roads or subgrade remediation areas, will be re-used where possible in for fill or hardstand areas or sent offsite for recycling	On-going.	
G	12	Steel, metal and copper wire will be collected and recycled for scrap metal.	On-going.	

Recycling			Timing	References
G	13	240L and 4.5m^3 bins will be used to collect paper and cardboard landside for recycling.	On-going.	
G	14	Timber, pallets, plastic, polystyrene and printer cartridges will be segregated for recycling.	On-going.	
Concrete Slurry			**Timing**	**References**
G	15	A designated concrete washout area will be constructed airside, which is lined with plywood over the existing concrete surface, black plastic, crushed rock over the top and sandbags around the edges to contain any slurry from storing the concrete washout bins. Signage will be used to inform drivers to washout their concrete trucks prior to leaving the work area.	Construct prior to works starting	
G	16	Concrete trucks requiring washout must do so either into the designated concrete washout bay area where the concrete washout bins are located or into the concrete washout bags which can be moved to the concrete washout area by a forklift	At all times.	Figures 12-13
G	17	Concrete washout bins will be located >10m away from any stormwater drains.	At all times.	
G	18	A designated bunded concrete washout bay will be constructed with three layers of black plastic and geofabric over the top to contain concrete wastewater.	Prior to works starting	
G	19	Any concrete slurry generated during concrete cutting will be cleaned up by the street sweeper and discharged into the designated concrete washout bays for disposal.	When applicable.	
G	20	Concrete wastewater from the concrete washout bays will be removed by EPA licensed tankers when required and disposed as contaminated water under EPA guidelines.	When required.	
G	21	A bunded concrete dry out area will be constructed with three layers of black plastic and geofabric over the plastic to contain wet concrete slurry until it dries out. Once the wastewater is removed from the concrete washout bays, the generated slurry will be collected and transferred to this dry out area to allow the concrete slurry to dry out prior to testing for contamination.	Prior to works starting.	
Street Sweeper Slurry			**Timing**	**References**
G	22	A designated bunded street sweeper washout bay will be constructed with three layers of black plastic and geofabric over the top for the street sweepers to discharge their wastewater into.	Prior to works starting.	Figures 12-13
G	23	Street sweepers requiring washout must do so into the designated sweeper washout bay which will have clear signage.	When Required.	Figures 12-13
G	24	The concrete and street sweeper washout bays will be separated so that the slurry is not cross-contaminated as this is important for slurry disposal offsite.	At all times.	Figures 12-13

Street Sweeper Slurry			Timing	References
G	25	Street sweeper wastewater will be removed by an EPA licensed tankers when required and disposed as contaminated water under EPA guidelines.	When required.	
G	26	A bunded street sweeper dry out area will be constructed with three layers of black plastic and geofabric over the plastic to contain wet street sweeper slurry until it dries out. Once the wastewater is removed from the street sweeper washout bays, the generated slurry will be collected and transferred to this area to dry out prior to testing for contamination.	Prior to works starting.	
HDD Slurry			**Timing**	**References**
G	27	A separate bunded area will be constructed to discharge the HDD slurry into. This will be constructed with three layers of black plastic and geofabric over the top to contain the slurry prior to testing.	Prior to works starting .	
G	28	HDD slurry will be removed from the drilling area using either a vacuum pump into a storage tank or pumped into a treatment truck for storage and transport to the HDD dry out area.	When required.	
NDD Slurry			**Timing**	**References**
G	29	A separate bunded area will be constructed to contain NDD slurry. This will be constructed with three layers of black plastic and geofabric over the top to contain the slurry.	Prior to works starting	
G	30	NDD trucks will use this dry out area to discharge their waste into for disposal. This will allow the material to dry out prior to testing for classification for either re-use or disposal depending on the PFAS contamination.	When required	

18.5. Monitoring

Monitoring Type	Details	Frequency of Monitoring	Timing
Resource Use and Waste Management	Review for instances of inappropriate waste management	Weekly – Environmental inspection	During construction
	Track and record the waste management outcome of all construction waste to ensure the highest level of recycling and reuse is employed.	Monthly – Client report	During construction
	Contaminated Material and Water Tracking Register will be used to track Prescribed Industrial waste sent offsite.	Monthly	During construction
	The integrity of wash out bays and dry outs areas will be assessed during the weekly environmental inspections (Appendix 4).	Weekly – Environmental inspection	During construction

	Review which bins need to be emptied or changed over including concrete washout bins, contaminated and hazardous waste bins, recycling bins etc.	Weekly – Environmental inspection	During construction
	Review whether the washout bays require dewatering	Weekly – Environmental inspection	During construction

18.6. Contingencies

G – Resource Use and Waste Management

► Uncontained waste

- In the event that uncontained waste is observed,
  - Report the incident in CAMs so it can be tracked and closed out;
  - Clean up the uncontained waste,
  - Identify the source of the inappropriate waste handling and rectify as required

- Monitor the concrete washout bins within the washout bay area for uncontained concrete slurry.
  - Review the area within and around the washout bay, to ensure the wash down water is contained.
  - Ensure the concrete bins are not being overfilled
  - Ensure the concrete trucks are washing out correctly into the washout bins.
    - Any concrete truck drivers that fail to washout correctly within the wash down area, will be formerly removed from site and banned from returning.
  - Ensure the concrete washout bins are changed over regularly to minimise overfilling.

- The street sweeper and concrete washout bays will be monitored weekly for compliance to ensure they are not being overfilled
  - Review the capacity each week to determine if the wastewater needs to be removed by an EPA licensed contractor for disposal
  - Monitor the slurry levels within the washout bay to ensure they maintain capacity as required.
  - Any non-conformance from the environmental inspections will be rectified immediately.

19. Asbestos Management

19.1. Context

H - Asbestos Management
▪ Asbestos may be found beneath the concrete apron at Zulu within underground existing ducts and the coating of existing fuel main infrastructure.

19.2. Risk Rating Summary

H - Asbestos Management – Risk Rating Summary
▪ The residual risk rating for the identified Asbestos Management hazards has been determined as **Low** following the implementation of the control measures outlined in 19.4

19.3. Objectives, Targets and Project Compliance Requirements

H – Asbestos Management	
Objectives	▪ To manage and dispose of asbestos properly.
Targets	▪ To have no HIGH risk rated incidents in relation to asbestos management ▪ No breaches of regulatory requirements (as listed below) in the management of asbestos for the duration of the project
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environmental Protection Act (1970) 7. EPA Victoria - Asbestos transport and disposal IWRG611.2, June 2017 8. APAM - Asbestos Identification and Removal Process.

19.4. Environmental Management Controls

H – Asbestos Management				
Control ID		**Required Environmental Management Measures**		
Asbestos Procedure			**Timing**	**References**
H	1	If asbestos is suspected or identified, barricade off the area and notify the Site Manager and the APAM Project Manager – Contingencies are to be followed.	At all times.	
H	2	Specialist hygienist contractors will be brought in to test the material and classify the type of asbestos.	When required	
H	3	Licensed asbestos removal contractors (AWARE or Delta) will remove and dispose of the asbestos to the appropriate EPA licensed landfill (Hi-Quality Sales in Bulla).	When required	
H	4	Hygienist consultants will conduct air quality monitoring during the asbestos removal if deemed to be required.	If required.	
H	5	The asbestos removal contractors will be required to provide EPA documentation to confirm that the asbestos was disposed of to a suitable landfill.	When applicable.	

19.5. Asbestos Monitoring

H - Asbestos Management
▪ If asbestos is identified, a Workplace Asbestos Register will be set up to track the asbestos location and removal. ▪ Air quality monitoring will be conducted during asbestos removal, if required.

19.6. Contingencies

H - Asbestos Management
► **Potential Asbestos is discovered during excavating within the construction zone** ▪ If asbestos is suspected the process to follow is; ○ Barricade off the area and notify the Site Manager and the APAM Project Manager. ○ Record the details in CAMs initially as a hazard so the information can be tracked and closed out as required. ○ Engage a hygienist to test the material to confirm whether the suspected material is asbestos or not ○ Follow Fulton Hogan's Asbestos Management Procedures for the detailed management requirements. ○ Specialist removalists (AWARE or Delta) will be engaged to remove the asbestos to a suitably licensed landfill. ○ Prensa will conduct air quality monitoring during the asbestos removal if required. **Asbestos Contacts** ▪ Prensa – (03) 9508 0100 ▪ Aware – (03) 9580 5326 ▪ Delta – (03) 9646 8277

20. Noise and Vibration Management

20.1. Context

I – Noise and Vibration
▪ Noise and vibration is likely to occur during the demolition of the pavement within Taxiway Zulu. ▪ Fulton Hogan will notify APAM prior to works commencing, so that APAM can notify the required stakeholders. **► Working Hours** ▪ Fulton Hogan will work to normal working hours of 7:00am until 6:00pm where possible. ▪ Taxiway Zulu will contain both day and night shift for the majority of the project

Monday - Friday	7:00am to 6:00pm	Main Construction Works
Monday - Friday	4:00am to 6:00pm	If early testing pours are required
Saturday	7:00am to 5:00pm	Main Construction Works
Monday - Sunday	12:00am to 6:00am	Pilot boring for the water main, Taxiway works Night works will be necessary where operational constraints prevent works from being conducted during normal work hours.

20.2. Risk Rating Summary

I – Noise and Vibration
▪ The residual risk rating for the identified Noise and Vibration hazards has been determined as **Low** following the implementation of the control measures outlined in Section 20.4.

20.3. Objectives, Targets and Project Compliance Requirements

I – Noise and Vibration	
Objectives	▪ To carry out construction activities within minimal disturbance to the airport and neighbouring stakeholders with regard to noise or vibration complaints.
Targets	▪ No HIGH risk rated incidents or stakeholder complaints regarding noise ▪ No HIGH risk rated incidents or stakeholder complaints regarding vibration ▪ Notify APAM prior to demolition works commencing, so that the relevant stakeholders can be informed.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environmental Protection Act (1970) 7. SEPP (Control of Noise from Commerce, Industry and Trade) 1989 8. Australian Standards 2436 - Guide to noise and vibration control on construction, demolition and maintenance site, 2010

20.4. Environmental Protection Measures

I – Noise and Vibration				
Control ID		**Required Environmental Management Measures**		
Noise and Vibration Management			**Timing**	**References**
I	1	Daily pre-start checklists must be completed on all plant, equipment and vehicles prior to starting works.	Prestart, daily	
I	2	All equipment will be monitored to prevent excess noise in accordance with the manufacturer's recommendations.	Pre-start, daily.	
I	3	Works or activities which have the potential to generate significant levels of noise or vibration will be planned and undertaken during standard working hours (7am - 6pm Monday to Friday)	As required	

20.5. Monitoring

I – Noise and Vibration

- All equipment will be monitored to prevent excess noise in accordance with manufacturer's recommendations.
- Noise monitoring may be required if complaints are received from sensitive receptors.

20.6. Contingencies

I - Noise and Vibration

► **During demolition works, the Project may receive noise or vibration complaints.**

- If we receive a noise compliant, the process to follow is:
  - Identify the area where the compliant was registered
  - Raise an incident in CAMs
  - If the complaint relates to noise impacting on amenity, corrective actions such as the substituting machinery and equipment for less noisy equipment will be considered and implemented, where practicable.

- If we receive a vibration complaint, the process to follow is:
  - Identify the area where the compliant was registered
  - Raise an incident on CAMs
  - Assess the equipment being used, can an alternative machine be substituted.
  - Look to conduct an assessment on the impact of ground vibration from the activities if working beside existing buildings or significant assets.

21. Weeds and Plant Hygiene Management

21.1. Context

J – Weeds and Plant Hygiene

▶ Weed and Plant Hygiene Protocol

- For the DoEE EPBC Act Approval (2016/7837), Biosis prepared an report; *Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017*) which details the weed and plant hygiene requirements for this Project. The report states;
  - The risk of introducing or spreading potentially invasive species will be mitigated by implementing a site hygiene protocol, which will require all machinery, equipment and vehicles to be clean of plant propagules prior to first entering the site.
  - Retained vegetation will be monitored for novel weeds during and immediately following construction, with the aim of detecting and controlling any new weed introductions.

▶ EPBC Approval requirements

- The EPBC Act Approval (2016/7837) conditions, specify the weed and pathogen management required to mitigate any impacts to Growling Grass Frog which include plant hygiene requirements.
- Section 4 of the EPBC Act Approval, specifically states that the CEMP must include;

  (d) Cleaning construction vehicles prior to entering site to avoid the introduction and spread of weeds and pathogens. Cleaning of trucks leaving the site to prevent impacts from construction sediments to nearby growling grass frog populations.

▶ Plant Hygiene Requirements

- Biosis have developed a flowchart (Figure 7) which summaries the hygiene protocol requirements to protect the Growling Grass Frog (GGF) habitat during construction
- The hygiene protocol for GGF is about reducing the risk of bringing the Chytrid fungus and other pathogens into a catchment area or spreading it between catchments.
- The Project is located within the catchment area for Moonee Ponds Creek and Arundel Creek however, no waterbodies (creeks) are located within the Project boundary.
- Two swales cross within the NAR project that will require the '10m buffer non-habitat waterways' conditions to apply.
- The 'Known, likely and potential habitat' requirements in the flowchart relate to working in and around Moonee Ponds and Arundel creek.

▶ Known Weeds

- Weeds are present and common within the Project area.
- According to Biosis report; *Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017*) the common weeds include Chilean Needle Grass (*Nassella neesiana*), Rat-tail Grass (*Sporobolus africanus*), Serrated Tussock (*Nassella trichotoma*), Paspalum (*Paspalum dilatatum*), Cocksfoot (*Dactylis glomerata*) and Couch (*Cynodon dactylon*).

21.2. Risk Rating Summary

J – Weeds and Plant Hygiene

The residual risk rating for the identified Weed and Plant Hygiene hazards has been determined as **Low** following the implementation of the following control measures.

21.3. Objectives, Targets and Project Compliance Requirements

J – Weeds and Plant Hygiene	
Objectives	▪ To complete the project without introducing and spreading weeds into the EPBC Act listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP). ▪ To comply with Section 4(d) of the EPBC Act Approval (2016/7837) to mitigate impacts on the Growling Grass Frog by implementing plant hygiene measures to avoid the spread of weeds and pathogens.
Targets	▪ Ensure all construction vehicles, trucks, machinery and equipment are clean prior to entering and leaving the site to avoid the introduction and spread of weeds and pathogens. ▪ Implement the hygiene protocol for GGF to reduce the risk of bringing the Chytrid fungus and other pathogens into the catchment area or spreading it between catchments. ▪ Ensure all machinery, equipment, trucks, vehicles and boots are washed down with Phytoclean prior to entering any 10m buffer non-habitat waterway zones when ground conditions are wet. ▪ No introduction or spread of weeds within the construction work area. ▪ No novel weed introduction or spread from construction areas into NTGVVP retained vegetation ▪ Revegetate bare topsoil areas via grass seeding to minimise weed establishment
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017 8. Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019 9. Biosis – Growling Grass Frog (*Litoria raniformis*) habitat management protocols - hygiene protocol, 2019

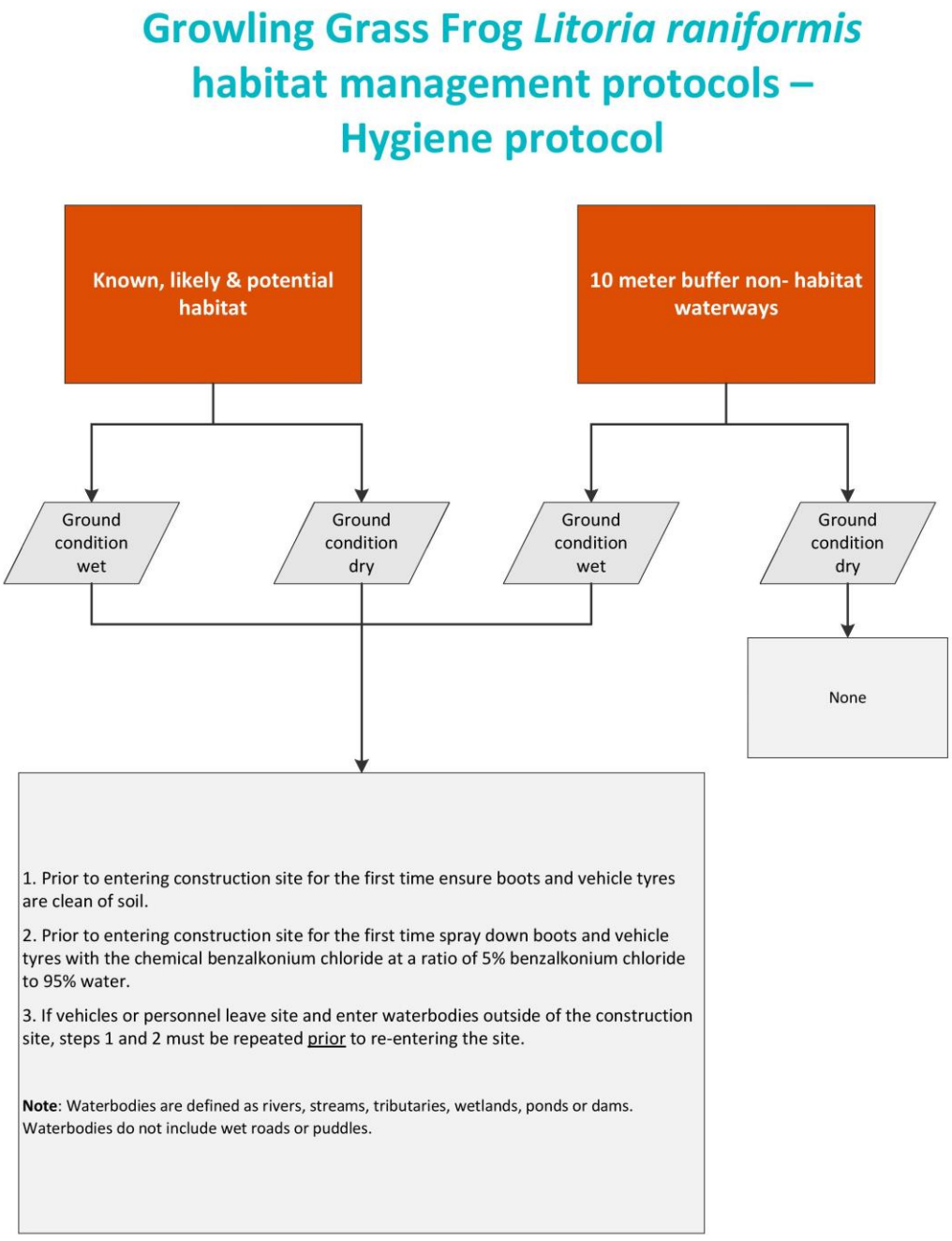
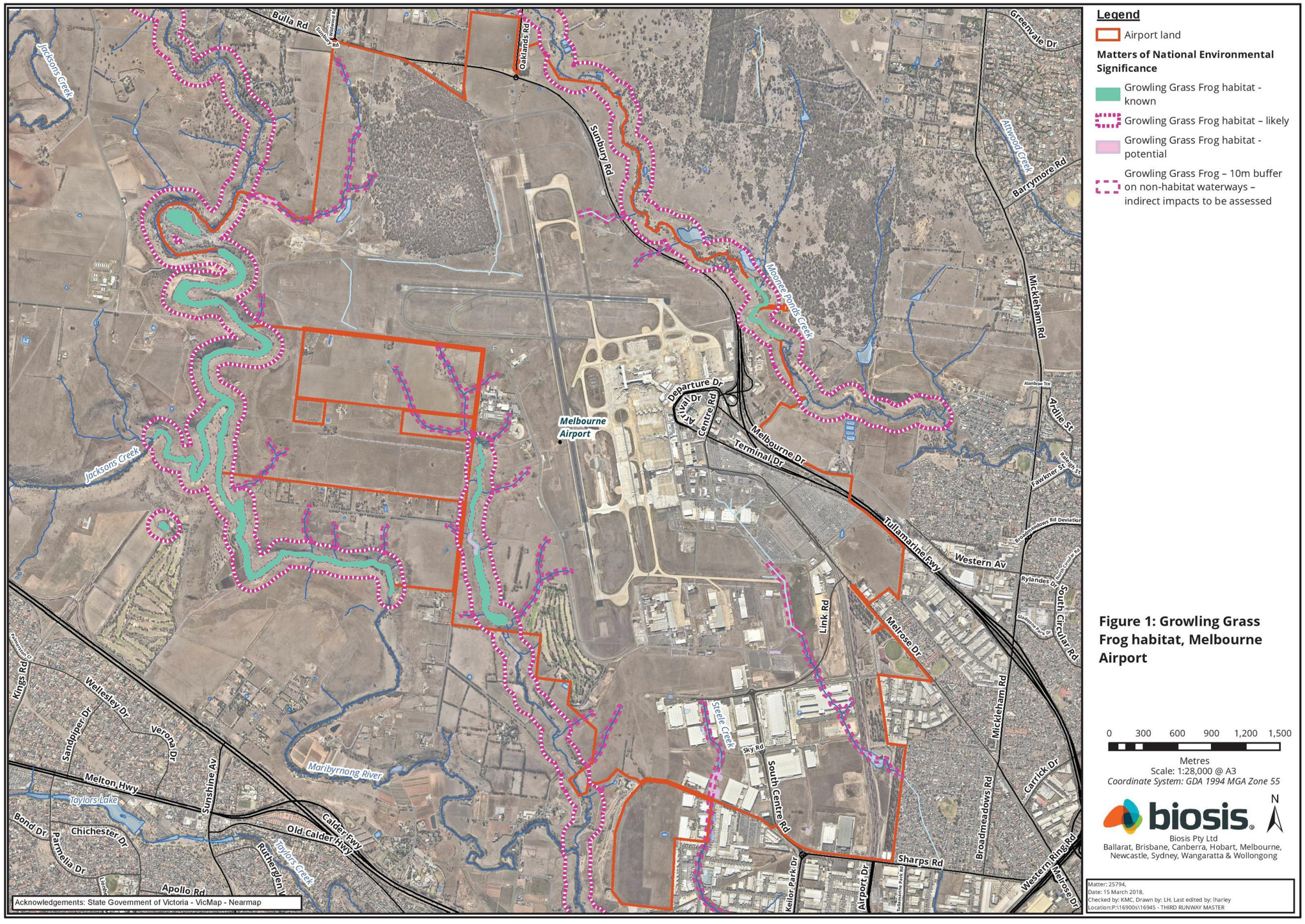


Figure 7. Growling Grass Frog habitat management protocols – Hygiene Protocol



Legend

- Airport land

Matters of National Environmental Significance

- Growling Grass Frog habitat - known
- Growling Grass Frog habitat – likely
- Growling Grass Frog habitat - potential
- Growling Grass Frog – 10m buffer on non-habitat waterways – indirect impacts to be assessed

Figure 1: Growling Grass Frog habitat, Melbourne Airport

0 300 600 900 1,200 1,500

Metres
Scale: 1:28,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

biosis

Biosis Pty Ltd
Ballarat, Brisbane, Canberra, Hobart, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

Matter: 25794,
Date: 15 March 2018,
Checked by: KMC, Drawn by: LH, Last edited by: lharley
Location:P:\169005\116945 - THIRD RUNWAY MASTER

Figure 8. Growling Grass Frog habitat at Melbourne Airport.

21.4. Environmental Management Controls

J – Weeds and Plant Hygiene				
Control ID		**Required Environmental Management Measures**		
Weeds and Plant Hygiene Management			**Timing**	**References**
J	1	A hygiene protocol will be implemented which requires all construction machinery, trucks and/or vehicles to be clean (free of soil) and free of plant reproductive material (weeds) prior to entering the site airside. This will help to prevent weed invasion and the introduction of the fungal pathogen responsible for the amphibian disease chytridiomycosis (*chytrid fungus*) which can be transported by contaminated machinery and equipment during construction.	At all times	Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017
J	2	Subcontractors and suppliers will be advised of this hygiene requirement within their subcontractor agreement and during the site induction.	Site Induction	
J	3	Suppliers must ensure that any soil or aggregate materials delivered to site are weed free.	At all times.	Fulton Hogan subcontractor agreement
J	4	All construction plant and machinery will be inspected during the 'Mobile Plant Inspection Checklist' prior to entering airside, to ensure they are clean and free from weeds and plant reproductive material.	At all times	
J	5	All trucks operators and site personnel will be responsible to ensure their trucks and site vehicles are clean and free of plant reproductive material (weeds) prior to entering and leaving the airside Project area.	At all times	
J	6	If construction plant, machinery, trucks or vehicles are not deemed to be clean at the NAR airside gate, they will either be sent offsite to be cleaned or arrange for the machinery to hosed down over the rumble grids.	At all times	
J	7	Biosis have developed an operational and infrastructure maintenance Growling Grass Frog (GGF) habitat management plan, which details the requirements for working within potential GGF habitat catchment areas. Fulton Hogan will utilise these guidelines to implement the hygiene protocol required to protect the GGF habitat.	At all times	Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019

Weeds and Plant Hygiene Management			Timing	References
J	8	Biosis have developed a GGF habitat management protocol flowchart, which summaries the hygiene protocol requirements for this Project to protect the GGF during construction. This flowchart has been developed based on a risk basked approach for either working in 'known, likely or potential habitat sites' or in a '10m buffer non-habitat waterway area'.	At all times	Figure 7 Biosis – Growling Grass Frog (*Litoria raniformis*) habitat management protocols - hygiene protocol.
J	9	Two main swales within NAR have a 10m buffer on non –habitat waterways for GGF. When either of these swales are disturbed during construction, all construction machinery, trucks, vehicles and boots will be required to be sprayed down with Phytoclean which contains (benzalkonium chloride) chemical prior to entering these waterway areas. Note: *this is only required during wet ground conditions (during and after a rain event)*.	Only when ground conditions are wet	Figure 8 Growling Grass Frog habitat at Melbourne Airport
J	10	After soils or materials have been taken to the temporary PFAS stockpile location and tipped, the trucks are required to brush down their tail gates prior to leaving the stockpile area as part of the Project decontamination requirements. A waterless method is preferred using either brushes or brooms to minimise the generation of waste slurry or wastewater.	After each load is dropped off	Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019)
J	11	Best practice erosion and sediment controls will be installed within the construction footprint as specified in the TOPO Erosion and Sediment Control Plans. These controls will minimise sedimentation to the adjacent waterways and GGF habitat.		TOPO – Erosion and sediment control plans (2019)
J	12	Weekly environmental inspections will be undertaken on the erosion and sediment control measures, to ensure the controls are maintained and are promptly repaired where required to protect the GGF habitat downstream.	Weekly	Weekly environmental inspection checklist
J	13	No vehicles, trucks or machinery are to exit the site at Sunbury Road or Gate 22 with loose soil, mud or weeds on their tyres. Ballast rock and rumble grids will be used at the NAR Gate 3 haul road exit to Sunbury road, to drop out sediment prior to leaving the site.	At all times.	

Weed management			Timing	References
J	14	Hygiene protocol will be implemented during construction to avoid the spread and/or introduction of weeds. The focus will particularly be on weeds listed as noxious under the Victorian *Catchment and Land Protection Act 1994.* The required outcome is no novel weed introduction or spread from construction areas into NTGVVP retained vegetation as a result of construction activities.	At all times	Biosis – Additional information for Assessment by Preliminary documentation (EPBC 2016/7837)
J	15	During the weekly environmental inspection, the construction footprint and adjacent areas will be reviewed for the introduction and spread of weeds that require remediation. .	Weekly	Weekly environmental inspection checklist
J	16	Weed spraying within the construction boundary is the responsibility of Fulton Hogan. Specialist contractors will be used to spray the weeds with herbicide at the correct time of the year when the weeds are growing strongly but before seed set. Use frog-sensitive herbicides such as Roundup Bioactive or Fusilade. The intended herbicide Safety Data Sheet (SDS) will be submitted to APAMs Environmental Team for review prior to using the product airside.	As required	Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019
J	17	Revegetate bare topsoil areas via grass seeding to minimise weed establishment.	As required	

21.5. Monitoring

J – Weeds and Plant Hygiene			
Monitoring Type	**Details**	**Frequency of Monitoring**	**Timing**
Weeds and Plant Hygiene	Review construction machinery, equipment, trucks and/or vehicles are clean and free of plant reproductive material before first entering the proposed construction area.	As required prior to entering the airside construction works.	During construction
	Check the site for the presence of noxious weeds within the project boundaries	Weekly – Environmental inspection	During construction
	Monitoring the NTGVVP adjacent to our construction boundary to identify any novel weed introductions.	Weekly – Environmental inspection	During construction

21.6. Contingencies

J – Weeds and Plant Hygiene

- **Movement of soil and/or contaminated machinery and equipment could potentially introduce new weeds, or result in the spread of existing weeds.**
  - This is a key threat to NTGVVP and would result in a reduction in quality of retained areas of NTGVVP immediately adjacent to the proposed action area.
    - Hygiene protocol will be established which requires all construction machinery and/or vehicles to be cleaned thoroughly.
    - Refer to Section 21.4 for the required management
  - In the event that noxious weeds are identified within our construction boundary,
    - Arrange for the weeds to be sprayed by a licenced contractor during the correct time of the year.
    - Check the sprayed area after a few weeks to see whether the weeds have died. Additional spraying may be required.
  - If construction machinery, trucks or site vehicles do not meet the requirements for cleanliness under the weed and plant hygiene protocol, then the required process is;
    - Send the machinery or trucks to be cleaned offsite.
    - Hose down the machinery, trucks or vehicles over the rumble grids at the NAR exit
    - The Project staff will then review for cleanliness and approve as required.
- **Introduction of the fungal pathogen responsible for the amphibian disease chytridiomycosis (chytrid fungus)**
  - As this fungal pathogen can be transported by contaminated machinery and equipment during construction, the proposed mitigation method is;
    - Implement a hygiene protocol as discussed in Section 21.4 to manage the cleaning of machinery, equipment, trucks and vehicles entering the site.

22. Heritage Management

22.1. Context

K – Heritage
Biosis completed a Due Diligence Assessment (6 August 2014) for the Taxiway Zulu Project which included the Northern Access Route Project. ▪ A total of 41 Aboriginal places were recorded within 500 metres of the study area with the majority being artefact scatters located along Moonee Ponds Creek and the margins of the neighbouring Grey Box woodland forest. ▪ No Aboriginal or Historic cultural heritage were identified during the site inspection and this has been attributed to the land use history of the study area. As such there is very low potential that in situ cultural heritage remains within the study area and for the same reason, the study area has also been assessed as having 'very low archaeological potential.' ▪ Biosis advised that no further investigation regarding Aboriginal or historic heritage values within the study area is required. ▪ An existing Cultural Heritage Management Plan (CHMP) intersects with the Taxiway Zulu project area: Runway Development Program, Melbourne Airport, Tullamarine, Victoria: Cultural Heritage Management Plan 12774, 2017. This document shows the Artefact scatter locations around the airport but not within our works area. ▪ A requirement of the CHMP is to complete a "*cross cultural induction training session must be conducted with all site managers, lead hands and anyone involved in undertaking ground penetrating works by representatives of the RAP prior to or at the commencement of construction works. A heritage advisor may also attend this training session. The training session must include a brief history of the Aboriginal occupation of the region; a summary of the archaeological investigations conducted within the Activity Area; specific details of all Aboriginal places identified during the CHMP; a summary of the conditions and contingencies contained within the CHMP; and the obligations of site workers/contractors and Sponsors under the Aboriginal Heritage Act 2006. This training session must be organised and paid for by the site contractors and/or Sponsor*."

22.2. Risk Rating Summary

K – Heritage
The residual risk rating for the identified Soil and Material Management hazards has been determined as **Low** following the implementation of the control measures outlined in Section 22.4.

22.3. Objectives, Targets and Project Compliance Requirements

K – Heritage	
Objectives	▪ Complete the project without harming any new Aboriginal or European Cultural Heritage areas discovered.
Targets	▪ Arrange a Cross Cultural Induction Training Session with the Wurundjeri Tribe ▪ Notify and manage any identified Aboriginal or European heritage as required by the regulators.
Project Compliance Requirements; Legislation, Permits, Reference Documents, Procedures.	1. Department of Infrastructure, Regional Development and Cities (DIRDC) **Approval:** 8th February 2019 2. Melbourne Airport PERCOW - APAM File: MEL XXXXX 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Aboriginal Heritage Act (2006) 7. Heritage Act (1995) 8. Environmental Protection and Biodiversity Conservation (EPBC) Act (1999)Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837). 9. Biosis - Runway Development Program, Melbourne Airport, Tullamarine, Victoria: Cultural Heritage Management Plan 12774, 2017. 10. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) 11. Biosis – Taxiway Zulu, Melbourne Airport, Victoria: Due Diligence Assessment, 6 August 2014.

22.4. Environmental Management Requirements

K – Heritage				
Control ID		**Required Environmental Management Measures**		
Heritage Management Requirements			**Timing**	**References**
K	1	A cross cultural induction training session must be conducted with all site managers, lead hands and anyone involved in undertaking ground penetrating works by representatives of the RAP prior to or at the commencement of construction works. A heritage advisor may also attend this training session. The training session must include a brief history of the Aboriginal occupation of the region; a summary of the archaeological investigations conducted within the Activity Area; specific details of all Aboriginal places identified during the CHMP; a summary of the conditions and contingencies contained within the CHMP; and the obligations of site workers/contractors and Sponsors under the Aboriginal Heritage Act 2006.	Prior to commencement of construction works.	Pg. 10 - CHMP 12774
K	2	All site workers will be briefed within Fulton Hogan's site induction, pre-starts and specific toolbox meetings in regard to management and protection of Cultural Heritage values around the airport.	During Inductions/On-going education.	
K	3	No activities are to occur outside the extent of works/predefined paths. Variations must be reviewed in	On-going	

		conjunction with the CHMP to assess potential impacts on Cultural/Heritage values.		
Heritage Management Requirements			**Timing**	**References**
K	4	A copy of the CHMP must be maintained and available on-site.	At all times.	

22.5. Monitoring

K – Heritage
▪ Ongoing informal monitoring to identify potential historical artefacts will be conducted by all site personnel especially during excavation works.

22.6. Contingencies

K – Heritage
▪ If a suspected Aboriginal or European heritage site is discovered during work on site, construction staff will cease work immediately in the vicinity of the discovery, notify the Project Manager or Superintendent and the APAM Environmental Team.

23. References

APAM, Asbestos Identification and Removal Process.

Airport (Environmental Protection) Regulations.1997

ANZECC, Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018

Australian Standards 2436 - Guide to noise and vibration control on construction, demolition and maintenance site, 2010

Australian Standards 1940 - Storage and Handling of Flammable and Combustible Liquids, 2017

Biosis - Runway Development Program, Melbourne Airport, Tullamarine, Victoria: Cultural Heritage Management Plan 12774, 2017.

Biosis – Taxiway Zulu, Melbourne Airport, Victoria: Due Diligence Assessment, 6 August 2014

Biosis -Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837), July 2017

Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 201 7.

Biosis – Growling Grass Frog (*Litoria raniformis*) habitat management protocols - hygiene protocol, 2019

EPA Victoria - Asbestos transport and disposal (IWRG611.2), June 2017

EPA Victoria - Construction techniques for sediment pollution control (Publication 275), May 1991

EPA Victoria - Industrial Waste Resource Guidelines – Solid Industrial Waste Hazard Categorisation and Management (IWRG631), 1 July 2009

EPA Victoria - Industrial Waste Resource Guidelines – Soil Hazard Categorisation and Management (IWRG621), 1 July 2009

EPA Victoria - Liquid storage and handling guidelines, Pub 1698, June 2018

EPA Victoria – State Environment Protection Policy (Waters), Gazette No. S499, 2018

EPA Victoria – State Environment Protection Policy - Prevention and Management of Contamination of Land in Victoria, Publication 854, June 2002

EPA Victoria – State Environment Protection Policy - Control of Noise from Commerce, Industry and Trade, 1989

EPA Victoria – State Environment Protection Policy - Prevention and Management of Contamination of Land, Publication S95, June 2002

EPA Victoria – State Environment Protection - Air Quality Management, Publication S40, December 2001

Jacobs - PFAS Management Plan, Revision 4, dated 1 April 2019

Jacobs - NAR and Taxiway Zulu Per - and Polyfluorinated Alkyl Substances Investigation - Environmental Site Assessment, 2018

Jacobs - Taxiway Zulu Program Contaminated Land Assessment, 2014

Jacobs -Taxiway Zulu and T2T Apron Project - Contaminated Land Assessment, 2017

Melbourne Airport - Environmental Management Plan, 2018

National Water Quality Management Strategy, Australian Drinking Water Guidelines 6 (2011) – Updated August 2018.

National Environment Protection Council - National Environment Protection (Ambient Air Quality) Measure, 1998

Prensa Report - Additional stormwater and sediment sampling, Alpha Taxiway, Melbourne Airport, 2017

Safework Australia - Managing Risk of Hazardous Chemicals in the workplace, Code of Practice, July 2012.

The Heads of EPAs Australian and New Zealand (HEPA), PFAS National Environmental Management Plan, January 2018

TOPO - Erosion and Sediment Control Plan, 2019

Worksafe - Storage and Handling of dangerous goods, November 2012.

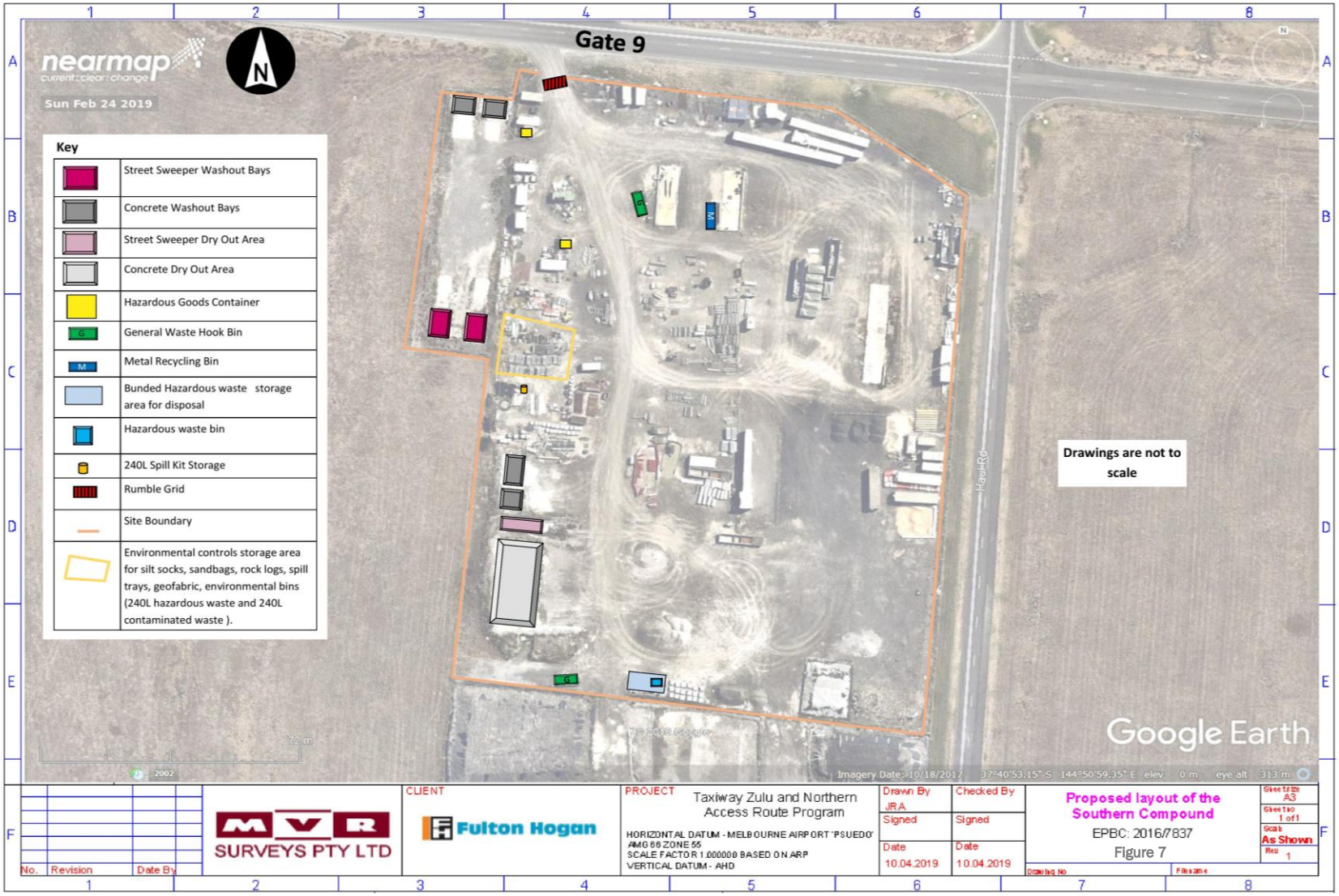


Figure 9. Proposed layout of the Southern Compound laydown area at Gate 9.

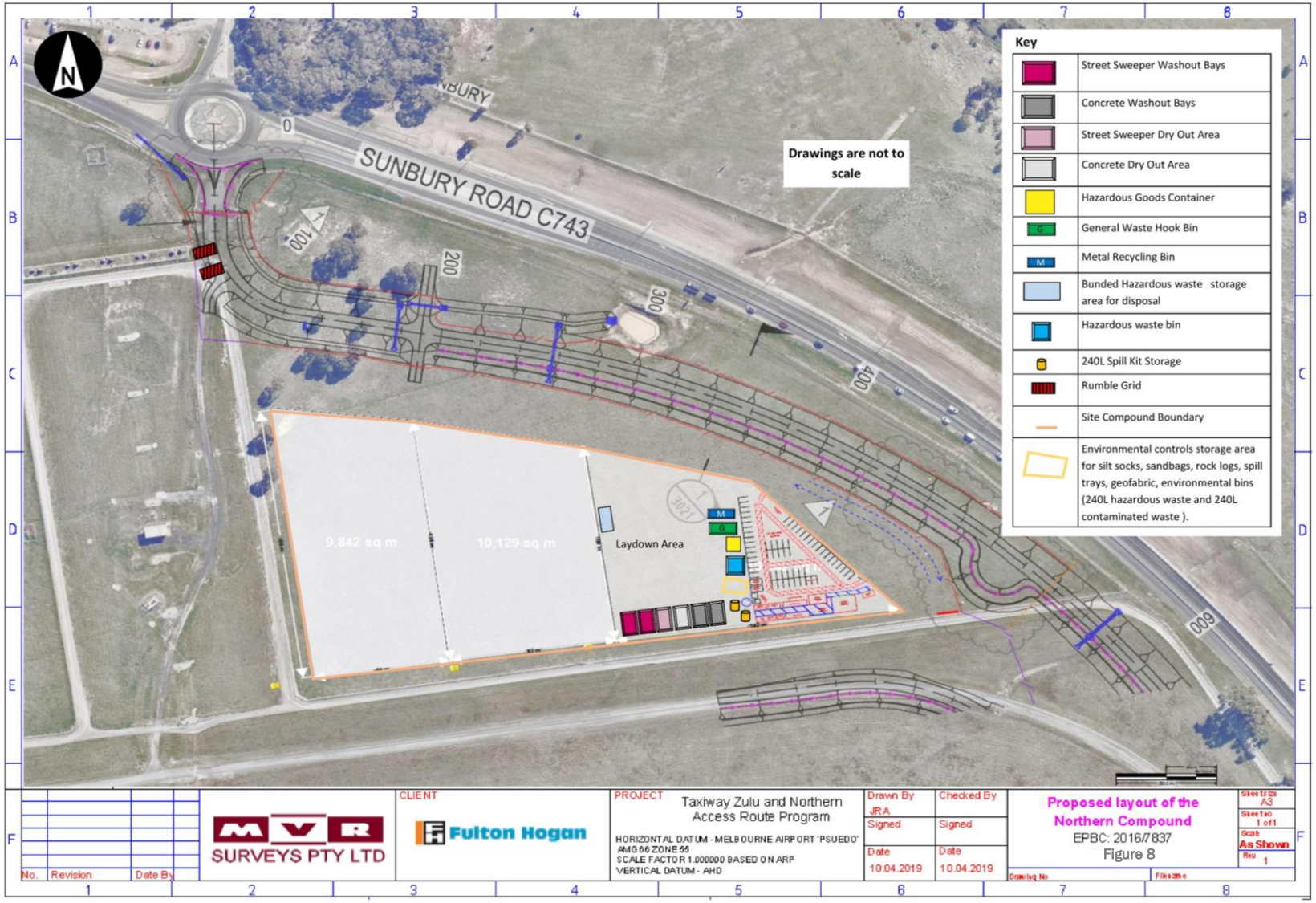


Figure 10. Proposed layout of the Northern Compound

Part C: Appendices

1

APPENDIX 1

Approvals and Compliance Table

24. Appendices

24.1. Appendix 1: Approvals and Compliance Table

The Table 11 below details the contractor's approval conditions as required by the EPBC Approval Notice (2016/7837)

► **Table 11: Approvals and CEMP compliance**

Approval Conditions				Compliance Assessment		Key Commitments
EPBC Approval Section	Detail	Sub - Section	Detail	Compliant	CEMP Section	
4	To mitigate impacts on the growling grass frog, the approval holder must submit a Construction Environment Management Plan (CEMP) for the Minister's approval prior to the commencement of the action. The approved plan must be implemented. The CEMP must include but not be limited to the following:	a	Runoff controls to ensure that the quality of the adjacent waterways is maintained or improved.	✓	Section 13. Section 14.	Section 13.1. Water management Section 14. 1. Sediment and Erosion Control Management
		b	Best practice sediment control to be implemented during construction.	✓	Section 14.	Section 14. 1. Sediment and Erosion Control Management Refer to TOPO's Erosion and sediment control Plans
		c	Detailed measures to avoid spills of fuels and management of accidental spills to avoid the introduction of pollutants and biocides during construction.	✓	Section 17 Section 17.	Section 17. Hazardous and Flammable Materials details the requirements for hazardous storage and use as well as the refuelling requirements. Section 17.4. Spill Management details the requirements to clean up a spill.
		d	Cleaning construction vehicles prior to entering the site to avoid the introduction and spread of weeds and pathogens. Cleaning of trucks leaving the site to prevent impacts from construction sediments to nearby growling grass frog populations.	✓	Section 21	Section 21 Weeds and Plant hygiene details the cleaning requirements for trucks and vehicles. No plant pathogen requirements have been advised to Fulton Hogan. In Section 21.4 (J9) we added that "Weed spraying will be conducted by Melbourne Airport unless otherwise advised. Trucks and machinery will be cleaned in a designated wash down facility within the NAR landside compound area. (Refer to table 21.4 Control J4)

		e	Routine management procedures to prevent local air and water quality impacts, such as daily inspections, dust suppression and storage and handling of chemicals.	✓	Section 7	Section 7: Monitoring, Inspections and Audits details the monitoring and inspection requirements for the project to minimise environmental impacts. Part B details the ongoing visual monitoring in the monitoring section for the environmental aspects where this is required. The weekly environmental inspection checklist is provided in Appendix 4.
		f	Monitoring and relevant remediation measures in the event of adverse monitoring results	✓	Section 7.3.1	Section 7.3 Physical/Chemical and Resource Monitoring provides a brief overview of the monitoring. Detailed monitoring requirements are now specified in Part B of the document for each environmental aspect.
6	The PFAS Management Plan, along with the sections of the Construction Environment Management Plan (CEMP) and Operational Environment Management Plan (OEMP) for the proposed action relating to contamination and soils, must be prepared by a suitably qualified expert and must, in relation to management of PFAS:	b	Detail implementation and operational procedures that are appropriate to the risk posed by any contamination, noting the persistence, mobility and/or bioaccumulation potential of PFOS, PFHxS and PFOA, including: i. roles and responsibilities	✓	Section 3.0 Table 2	Section 3 details the resources, roles and responsibilities. Section 3.2 I have added Jacob's site responsibilities as noted in Section 6.4 of their document. Section 6.4 only relates to roles and responsibilities for PFAS whereas our RASCI model in section 3.3 details the roles and responsibilities for the entire project.
			ii. management of PFAS contamination within the project area, including strategies to reduce runoff and migration of contamination across and off the proposed site;	✓	Section 15.1	Category 1 and Category 2 soils are defined in Section 15.1. Category 1 and 2 soils relate to classification for PFAS contamination on site. Category A, B and C soils are also defined in Section 15.1. This definition relates to soil disposal offsite as defined by the Victorian EPA.
			iii. a contingency action plan for unexpected PFAS contaminant discoveries, including coordination, communication and engagement requirements	✓	Section 15.6	Refer to Section 15.6 where additional contingencies have been added.

		c	Detail soil and water monitoring requirements and testing and disposal procedures within the project area that are appropriate to the risk posed by any contamination, including references to relevant provisions of airport environmental management plan/s including on-site and, where relevant, off-site, PFAS contamination monitoring arrangements	✓	Section 15.5 Section 13.5	**Soil Monitoring** A soil monitoring overview is provided in Section 7.3.2. A more detailed overview is provided in Section 15.5. This section has now been amended to match the layout of Jacobs PFAS Mgt Plan. Soil Disposal: All NAR soil is to be retained on site as part of the cut to fill requirements. Zulu soil is planned to be stockpiled at Gate 11 once this facility is available. **Water Monitoring** A water monitoring overview is provided in Section 7.3.1. A more detailed overview is provided in Section 13.5. This section has now been amended to match the layout of Jacobs PFAS Mgt Plan. Water disposal is outlined in Section 13.6 based on the water quality results and the classification for disposal or discharge offsite.
		d	Detail review procedures that are appropriate to the risk posed by any PFAS contamination	N/A	Refer to Section 7.4 Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019)	Key review procedures relating to PFAS Management include; Soil and Material Management, Water Management, Flora and Fauna and Sediment and Erosion Control Management. These Management areas in Part B of the CEMP are reviewed on an annual basis during the internal audit or more frequently if required following incidents or non-conformances.

		e	Impose the following performance measures for managing earthworks and storage of spoil to minimise the release of PFAS, due to disturbance of PFAS contaminated soils or sediments within the project area: i. Contaminated waste material (including excavated soil or sediment, and any leachate from soil or sediment, or water arising from de-watering of sediment or soil) to be handled appropriately to the risk posed by the contamination and disposed of in an environmentally sound manner such that potential for the PFAS content to enter the environment is minimised;	✓	Section 13. Section 15.	Section 13: Water Management is now included within this CEMP Section 15.4 has now been updated to include more detail in relation to the Category 1 and Category 2 soil management. As Gate 11 will not be readily available to accept material, we will need to follow Jacob's Temporary stockpile requirements outlined in Section 16.14 of the PFAS Management Plan.
			ii. Contaminated waste material, including excavated soil or sediment, with a PFOS+ PFHxS or PFOA content above 50 milligrams per kilogram (mg / kg) to be stored or disposed of in an environmentally sound manner, to achieve nil environmental release of PFOS, PFHxS and PFOA content. The PFAS Management Plan will need to detail how materials at these concentrations, if encountered, would be handled to achieve nil environmental release;	N/A	Refer to Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019) Section 6.15.4	Water Management is outlined in Section 13.4
			iii. All soil remaining at the site of the action to be suitable for purpose.	N/A	Refer to Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019) Section 5.7, 5.8, and 6.0	Fulton Hogan has prepared a program which details the project management required for each stage of construction work including the excavation requirements. NAR: Haul road soil will be stripped within NAR and then used to create the earth diversion bunds for the clear and dirty water diversions as specified in TOPOs Erosion and sediment control Plans. NAR is a cut to fill job, so the Category 1 PFAS contaminated material will be re-used as fill where possible. Category 2 soil will be taken directly to the temporary stockpile location or to Gate 11 once it's available.

						Zulu: soil will be stripped and stored either at the temporary stockpile location or at Gate 11 once it's available.

2

APPENDIX 2

Environmental and Sustainability Policy

24.2. Appendix 2.1: Fulton Hogan's Environmental Policy

Environmental Policy

Working together to protect our environment

We will:

- Work towards minimising our environmental footprint through innovation, energy and resource efficient operations focused on reducing, reusing and recycling
- Meet or exceed all obligations and consent conditions applicable to our activities
- Recognise that environmental management encompasses diverse aspects including flora, fauna, water, community and cultural interests
- Identify impacts to the environment and implement effective controls
- Set objectives and targets to measure, manage and improve our performance
- Train our people to identify environmental risks and opportunities to improve our performance
- Work closely with our subcontractors and suppliers to ensure they meet our expectations
- Drive continual improvement through the proactive use of environmental management systems

Our people will be environmental leaders by:

- Minimising the long term environmental impact of our activities
- Planning for and addressing all environmental risks and opportunities
- Pursuing innovative ways to improve our environmental performance

C W Bruyn
Group Chief Executive Officer
June 2018

Fulton Hogan

24.3. Appendix 2.2: Fulton Hogan's Sustainability Policy

Sustainability Policy

Successful and enduring infrastructure company

We will:

People

- Create a workplace that puts the health, safety and wellbeing of our people first
- Build a performance culture based on leadership, great people and personal development
- Embed our REAL values and behaviours to empower our people to make sustainable decisions
- Value diversity and inclusivity

Planet

- Contribute towards and protect our natural environment
- Invest in a clean energy future that reduces our emissions and impact on the environment
- Promote products and services that use sustainable materials

Profit

- Long term shareholder value by building our reputation as a leading employer, while continuing to reinvest in the future growth of the company

Partnership

- Build long term relationships with our stakeholders by understanding their key priorities
- Work closely with our customers and suppliers to ensure our products and services are value-adding and industry leading
- Strengthen our community and indigenous relations by encouraging our people to connect and be part of the local community

Our people will be sustainability leaders by:

- Actively working towards minimising our environmental footprint
- Applying innovation, life cycle thinking and effective planning to drive performance across the business
- Sharing our sustainability journey with our partners and stakeholders

C W Bruyn
Group Chief Executive Officer
June 2018

Fulton Hogan

3

APPENDIX 3

Aspects and Impacts Risk Assessment Register Rev.2

Fulton Hogan

NORTHERN ACCESS ROUTE (CP17038) and TAXIWAY ZULU (CP14038) MELBOURNE AIRPORT
ENVIRONMENTAL ASPECTS & IMPACTS RISK ASSESSMENT REGISTER

Current as of: 22-May-19 **Revision: 2**

NOTE: All aspects with a pre-control risk rating of MEDIUM, HIGH or EXTREME are DoEEmed to be Significant

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Site Induction	Soil and Crushed Rock Management	No knowledge of attending the site induction so no knowledge of the contaminated material including PFAS contaminated spoil (soil, crushed rock, asphalt or concrete)	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act (1996) 5. Airport (Environmental Protection) Regulations (1997) 6. PFAS National Environmental Management Plan (January 2018) 7. Environmental Protection Act (1970) 8. Environment Protection (Industrial Waste Resource) Regulations 9 SEPP (Prevention and Management of Contamination of Land) 10. Melbourne Airport - Environmental Management Plan (2018) 11. Jacobs Taxiway Zulu Program Contaminated Land Assessment (2014) 12. Jacobs: Taxiway Zulu and T2T Apron Project - Contaminated Land Assessment (2017) 13. Jacobs NAR and Taxiway Zulu Per and PFAS Investigation Environmental Site Assessment (2018). 14. Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019), 15. EPA Guidelines for Major Construction Sites	**1.** To complete the project without causing land contamination. **2.** To manage the existing contamination as required by the Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019). **3.** To manage the unknown contamination within the concrete, crushed rock and bitumen at Zulu.	**1.** To separate and manage the soil and materials into their corresponding Category 1 and 2 contamination requirements, as detailed in Jacob's PFAS Management Plan (Revision 4, dated 1 April 2019). **2.** To have no major uncontrolled leaks or spills resulting in soil contamination.	Sig.	Pos.	13 M	Full site induction which includes PFAS contaminated soil Section 15. Soil and Material Management	Sig.	U.Li.	9 M	1. Completed site induction records	All Personnel	Start of the project then Ongoing
Clear and grub the topsoil.		Topsoil is mixed with the subsoil which is then unsuitable to be re-used for landscaping.				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Start of the project
Excavation of the soil during bulking out.		Mixing PFAS contaminated soil with Fill Material creating further contaminated soil to manage.				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management Fulton Hogan Incident and Emergency Response Flow Chart – Encountering contaminated soil	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contaminated land assessment reports	Foreman Environmental Manager	Start of the project
		Finding additional contaminated soil				Sig.	Pos.	13 M	Section 15. Soil and Material Management Fulton Hogan Incident and Emergency Response Flow Chart – Encountering contaminated soil	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contaminated land assessment reports	Foreman Environmental Manager	Start of the project
Excavation of the crushed rock beneath the concrete or the asphalt pavement		Mixing PFAS contaminated crushed rock with material not contaminated				Sig.	Pos.	13 M	Section 15. Soil and Material Management Fulton Hogan Incident and Emergency Response Flow Chart – Encountering contaminated soil	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contaminated land assessment reports	Foreman Environmental Manager	Start of the project
		Not understanding which crushed rock areas are contaminated				Sig.	Pos.	13 M	Section 15. Soil and Material Management Fulton Hogan Incident and Emergency Response Flow Chart – Encountering contaminated soil	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contaminated land assessment reports. 4. Fulton Hogan To Do List	Foreman Environmental Manager	Start of the project
Carting soil material to the stockpile location		Carting PFAS contaminated soil onto local roads. PFAS is only permitted to be carted within the airside perimeter road.				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management Jacobs PFAS Management Plan 2018	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs soil reports 4. Fulton Hogan To Do List 5. Contam. Soil and GW Tracking Register	Foreman Environmental Manager	Ongoing
Truck and Vehicle Movements		Mud is carted onto Sunbury Road from trucks not using the rumble grids.				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 14. Sediment and Erosion Control Section 18. Resource Use and Waste Management	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Stockpiling soil airside		Creates dust issues to nearby aeroplanes.				Sig.	U.Li.	9 M	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management	Sig.	Rare	6 L	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
		PFAS contaminated material isn't separated into either soil, crushed rock, concrete or asphalt				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs soil reports 4. Fulton Hogan To Do List	Foreman Environmental Manager	Ongoing
		Not managing contaminated soil stockpiles appropriately, such that there is potential to cause contaminated leachate				Sig.	Li.	17 H	Section 15. Soil and Material Management	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
		Trucks not following the PFAS Management Plan requirements to clean their tailgates leading to a spread of PFAS contaminated material				Minor	Li.	12 M	Section 15. Soil and Material Management Section 21: Weeds and Plant Hygiene	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Truck Drivers	Ongoing
Management of stockpiles		PFAS contaminated material is not taken to the correct stockpile location.				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019), 2018 Fulton Hogan's Traffic Management Plan	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contaminated land assessment report 4. Contam. Soil and GW Tracking Register 5. Fulton Hogan's To Do List	Foreman Truck Drivers	Ongoing
Importing soil and/or crushed rock to site		Soil or crushed rock brought onto site is contaminated				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Letter of Compliance (Clean Fill) Certificate from Suppliers	Foreman Environmental Manager Engineers	Ongoing
Soil disposal to landfill		PFAS contaminated soil is carted to a landfill instead of the designated stockpile location.				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs Contaminated land assessment report 4. Contam. Soil and GW Tracking Register 5. Fulton Hogan's To Do List	Foreman Environmental Manager Engineers Truck Drivers	Ongoing

Environmental Aspects and Impacts Risk Assessment Register
Northern Access Route (CP17038) and Taxiway Zulu (CP14038)
Revision: 2

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Site Induction	Flora	No knowledge of the significance of the EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP)	1. Environmental Protection and Biodiversity Conservation (EPBC) Act (1999) 2. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 3. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019 . 4.Melbourne Airport PERCOW - APAM File: MEL xxxxx 5. Airports Act (1996) 6. Airport (Environmental Protection) Regulations (1997) 7. Melbourne Airport - Environmental Management Plan (2018) 8. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017 9. Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019	**1.** To minimise impacts to native vegetation communities (other than those approved for removal). **2.**To avoid the introduction of invasive species and weeds to the project area and surrounds.	**1.** To comply with the EPBC Act Approval (2016/7837) requirements for the Taxiway Zulu and Northern Compound Projects **2.** Ensure that Native Grass boundary signage and bollards are maintained along the edges of the native grass boundaries and not moved by project staff or subcontractors. **3.** To ensure that no more than 18.913 hectares of Natural Temperate Grassland of the Victorian Volcanic Plain ecological community (NTGVVP) is removed during construction works. **4.**To complete the project without introducing and spreading weeds on site.	Sig.	Li.	17 H	Site induction to include significant Flora Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Completed site induction records	All Personnel	Start of the project then Ongoing
Site establishment		Clearing beyond the permitted boundary permitted causing damage to the listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP)				Major	Li.	21 H	Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Start of the project
Stripping the topsoil						Major	Li.	21 H		Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager Excavator Operator	Start of the project
Setting up the installation of Native Grass boundary signage and bollards to mark out the NTGVVP grass areas		Not using Biosis and the surveyor to mark out the native grass boundary areas causing clearing beyond the boundary permitted and breaching the EPBC Permit approval				Major	Li.	21 H	Site induction to include significant Flora Section 12: Flora and Fauna Management ITP Native Grasses hold point signed off by APAM and Biosis Hold Point Release Document to sign off on with Biosis and APAM.	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Surveyor to mark out Native grass boundary area with Biosis during the site inspection	Foreman Environmental Manager Biosis ecologist	Start of the project
Setting up the installation of Vegetation Protection No Go Zone fencing and signage		Crowd control temporary fencing and signage not installed in the correct location potentially causing damage to the listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP)				Sig.	Li.	17 H	Section 12: Flora and Fauna Management ITP Native Grasses Hold Point Release Document to sign off on. Survey to mark out the Vegetation Protection - No Go Zone area with Biosis ecologist during the site inspection to compare the Native grass mapped areas	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. Surveyor used to mark out the boundary 2. CAMs Incident Report	Foreman Environmental Manager Biosis ecologist	Start of the project then Ongoing
		Fencing and signage is not maintained causing damage to EPBC listed indigenous grasses				Sig.	Pos.	13 M	Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Truck, Vehicle and Plant Movements during construction		Non permitted access within the No Go Zones causing damage to the EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP)				Sig.	Li.	17 H	Section 12: Flora and Fauna Management Traffic Management Plan	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Stockpiling of Materials or Soil						Sig.	Li.	17 H	Section 12: Flora and Fauna Management Traffic Management Plan	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Induction	Fauna	Not attending the induction so knowledge of the significance of the EPBC listed Growling Grass Frog nearby within Moonee Ponds Creek	1. Environmental Protection and Biodiversity Conservation (EPBC) Act (1999) 2. Department of Environment and Energy (DoEE) EPBC Permit approval (2016/7837) January 2018. 3.Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 4. Melbourne Airport PERCOW - APAM File: MEL xxxxx 5. Airports Act (1996) 6. Airport (Environmental Protection) Regulations (1997) 7. Melbourne Airport - Environmental Management Plan (2018) 8. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017 9. Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019	**1.** To minimise impacts to known habitat areas for listed threatened species. **2.** To prevent aircraft hazards associated with wildlife on the airfield.	**1.** To comply with the EPBC Act Approval (2016/7837) requirements for the Taxiway Zulu and Northern Compound Projects **2.** To install and maintain stormwater runoff controls to ensure the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved where EPBC Act listed Growling Grass Frog (Litoria raniformis) breed.	Sig.	Pos.	13 M	Site induction to include significant Fauna Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Completed site induction records	All Personnel	Start of the project then Ongoing
Site establishment		Damage to the habitat that is likely to support listed Fauna species.				Sig.	Li.	17 H	Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Vegetation Clearing for construction						Sig.	Li.	17 H	Section 12: Flora and Fauna Management Survey to mark out the Vegetation Protection - No Go Zone area and the actual Native Grass Boundary area.	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. Surveyor report	Surveyor & Foreman	Ongoing
Truck and Vehicle Movements						Sig.	Li.	17 H	Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman	Ongoing
Earthworks		Not protecting stormwater drains with sediment controls leading to turbid stormwater entering Moonee Ponds creek or Arundel Creek where the EPBC listed Growling Grass Frog (Litoria raniformis) is known to breed				Sig.	Pos.	13 M	Section 12: Flora and Fauna Management Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman	Ongoing
Stormwater Management during construction						Sig.	Li.	17 H	Section 12: Flora and Fauna Management Section 13. Water Management	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Waste Management		Attraction of wildlife to site airside				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing

Environmental Aspects and Impacts Risk Assessment Register
Northern Access Route (CP17038) and Taxiway Zulu (CP14038)
Revision: 2

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Induction	Water Management and Perched Groundwater Management	No knowledge of attending the site induction so knowledge of the contaminated water including PFAS	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environment Protection Act (1970) 8. SEPP (Waters) 2018 9. Water Act 1989 10. ANZECC Guidelines 11. IECA: Best Practice Erosion and Sediment (BPESC) document 12. Prensa Report - Additional stormwater and sediment sampling, Alpha Taxiway, Melbourne Airport (2017) 13. Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019),	**1.** To ensure that the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved with regard to Project activities **2.** To manage PFAS impacted surface water (including subsoil water and perched groundwater) in accordance the PFAS NEMP.	**1.**No discharge of water to the environment where quality and suitability have not been confirmed as per the risk assessment process. Including: **2.** Direct discharge of water to the environment only where quality has been confirmed suitable as per the risk assessment process. **3.** On-site management (such as by irrigation / infiltration of water within the airport only) where the quality has been confirmed suitable as per the risk assessment process. **4.** All water confirmed as unsuitable for discharge / on site management to be disposed offsite.	Sig.	Pos.	13 M	Full site induction Section 13. Water Management	Sig.	U.Li.	9 M	1. Completed site induction records	All Personnel	Start of the project then Ongoing
Site establishment		Not installing sediment controls leading to turbid stormwater entering either Moonee Ponds Creek or Arundel Creek				Sig.	Li.	17 H	Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Bulk earthworks		Not managing perched groundwater which is likely to be encountered at depth which is often contaminated				Sig.	Li.	17 H	Section 13. Water Management	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Arrange for Prensa to test any perched groundwater to classify the water for disposal.	All Personnel	Ongoing
Managing known contaminated water from surface water or swales		Not diverting the known contaminated stormwater around the construction zone.				Sig.	Li.	17 H	Section 13. Water Management	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
		Not removing the contaminated water from the construction zone or within the pits - Possible OH&S Issues				Sig.	Pos.	13 M	Section 13. Water Management	Sig.	U.Li.	9 M	1. Completed site induction records	All Personnel	Start of the project then Ongoing
Stockpiling soil and crushed rock		Pollution of Stormwater from stockpiles being placed beside stormwater drains or swales				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Demolition of the concrete pavement and asphalt areas		Pollution of stormwater from the aggregates within the concrete and asphalt				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Earthworks to construct the new pavement and asphalt areas		Not contrdling sediment draining into either Arundel Creek or Moonee Ponds Creek				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Applying bitumen emulsion without watching the weather conditions		Rain event causes bitumen runoff into the swale drain contaminating the stormwater				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Demolition of the haul road (NAR)		Pollution of stormwater from the haul road aggregates				Sig.	Pos.	13 M	Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Earthworks to construct the new haul road (NAR)		Not contrdling sediment leading to contamination of Moonee Ponds Creek				Sig.	Li.	17 H	Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Construction of the stormwater drainage and new water main		Pollution of the existing stormwater drains				Sig.	Pos.	13 M	Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Concreting the new aprons		Not protecting stormwater drains prior to concreting allowing concrete slurry to wash into the drains				Sig.	Pos.	13 M	Section 13. Water Management Section 14. Sediment and Erosion Control Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Contam. Soil and GW Tracking Register	All Personnel	Ongoing
Excavating the water main to 5m DoEEp		Discharging the potentially contaminated perched groundwater directly into the stormwater drain.				Sig.	Li.	17 H	Section 13. Water Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Arrange for Prensa to test any perched groundwater within the water main pit prior to dewatering.	Foreman Environmental Manager	Ongoing
		Not diverting potentially contaminated water from the taxiways away from the construction zone.				Sig.	Li.	17 H	Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Use of Hazardous and Flammable Materials on site		Pollution to stormwater from an oil or fuel spill				Sig.	Pos.	13 M	Section 13. Water Management Section 18. Resource Use and Waste Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Storage of Hazardous and Flammable Materials						Sig.	Pos.	13 M	Section 13. Water Management Section 18. Resource Use and Waste Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Truck, Vehicle and Machinery Movements						Sig.	Pos.	13 M	Section 13. Water Management Section 18. Resource Use and Waste Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Street sweeper and concrete washout water		Not discharging wastewater into the designated washout bays or bins causing pollution to stormwater.				Sig.	Pos.	13 M	Section 13. Water Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Not dewatering the washout bays to maintain capacity causing an overflow into the drains				Sig.	Pos.	13 M	Section 13. Water Management Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager Street Sweeper Drivers	Ongoing
Dewatering pooled stormwater areas		Area becomes saturated with water which may attract birds				Sig.	Pos.	13 M	Section 13. Water Management Section 12: Flora and Fauna Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Temporary stockpiling and storage of PFAS impacted material		Surface water runoff from stockpiled material				Minor	Pos.	8 m	Section 13. Water Management Section 14. Sediment and Erosion Control Section 15. Soil and Material Management Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019).	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Fluiod ingress and leaching of contaminants to groundwater from stockpiled material				Sig.	Pos.	13 M	Section 13. Water Management Section 15. Soil and Material Management Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019).	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing

Environmental Aspects and Impacts Risk Assessment Register
Northern Access Route (CP17038) and Taxiway Zulu (CP14038)
Revision: 2

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Site establishment of the laydown areas, stockpile area and the airside bunker area	Erosion and Sediment Control	Erosion of exposed surfaces leading to pollution of the waterways (Moonee Ponds Creek or Arundel Creek	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval : 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environmental Protection Act (1970) 8. SEPP (Waters) 2018. 9. EPA – Construction techniques for sediment pollution control (Publication 275) 10. IECA: Best Practice Erosion and Sediment (BPESC) document	**1.**To install and maintain runoff controls to ensure that the quality of the adjacent waterways (Moonee Ponds Creek and Arundel Creek) is maintained or improved. **2.** To implement best practice sediment control during construction to minimise sediment laden water from leaving the Project site. **3.**To ensure trucks are clean prior to leaving the site to prevent impacts from construction sediments to nearby Growling Grass Frog populations.	**1.** All water discharged from the site to comply with the Airports (Environment Protection) Regulations 1997 and the SEPP (Waters) 2018. **2.** Regular maintenance of sediment controls and basins to minimise sediment laden water leaving the site. **3.** Regular maintenance of the rumble grids, wash down facility and haul roads to minimise sediment leaving the site.	Sig.	Pos.	13 M	Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Installing sediment controls		Not installing or maintaining sediment controls leading to pollution to Moonee Ponds creek which could effect the Nationally significant Growling Grass Frog populations				Major	Pos.	18 H	Section 12: Flora and Fauna Management Section 13. Water Management Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Installation of Haul Roads and access tracks		Erosion of exposed surfaces leading to pollution of the waterways (Moonee Ponds Creek or Arundel Creek				Sig.	Pos.	14 M	Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Earthworks during soil and crushed rock removal						Sig.	Li.	17 H	Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Working beside live stormwater drains and swales						Sig.	Li.	17 H	Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Operating plant and equipment						Sig.	Pos.	13 M	Section 14. Sediment and Erosion Control	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Trucks exiting onto Sunbury Road		Mud tracked onto Sunbury road due to rumble grids not being used or the haul road maintained				Sig.	Li.	17 H	Section 14. Sediment and Erosion Control	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Litter and Waste management	Resource Use and Waste Management	Bird attraction Airside from bins not being closed	1. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval : 8th February 2019. 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environment Protection Act (2018) 7. Environment Protection (Industrial Waste Resource) Regulations 8. SEPP (Prevention and Management of Contamination of Land). 9. EPA Industrial Waste Resource Guidelines – Solid Industrial Waste Hazard Categorisation and Management. 10. SEPP (Waters) 2018 11. Litter Act 1987	**1.**To manage waste in accordance with the regulatory guidelines and requirements. **2.** Promote sustainability by looking at greener alternatives when ordering materials and equipment **3.** To reduce the level of contamination in waste streams by recycling where possible. **4.** To ensure FOD is managed appropriately to not cause a risk to airside operations.	**1.** To have no HIGH risk rated incidents relating to waste management or inappropriate resource use **2.** Work towards minimising our environmental footprint through innovation, energy and resource efficient operations focused on reducing, reusing and recycling **3.** Avoid the generation of waste by reducing the amount of general waste sent to landfill. **4.** Manage waste as a resource **5.** Aim to meet and exceed Melbourne Airports target of 50% recycling **6.** To have no incidents relating to FOD airside	Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Waste not being separated into recycled materials				Sig.	Li.	17 H	Section 18. Resource Use and Waste Management	Sig.	Pos.	13 M	1. Weekly environmental inspection	All Personnel	Ongoing
Demolition of concrete and asphalt		Mixing PFAS contaminated material with material not contaminated				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019),	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contamination reports 4. Arrange for further testing by Prensa	Project Manager Environmental Manager Foreman	Ongoing
		Not understanding which materials (concrete, crushed rock or asphalt) are contaminated				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report 3. Jacobs contamination reports 4. Arrange for further testing by Prensa	Project Manager Environmental Manager Foreman	Ongoing
		Concrete and asphalt not being separated into recycled materials if not contaminated				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management	Minor	U.Li.	5L	1. Weekly environmental inspection 2. CAMs Incident Report	Project Manager Environmental Manager Foreman	Ongoing
Demolition Waste		Waste not being separated into recycled materials				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management	Minor	U.Li.	5L	1. Weekly environmental inspection	All Personnel	Ongoing
Concrete trucks discharging concrete wastewater		Concrete trucks not discharging into the concrete washout bins causing surface water and soil contamination				Sig.	Li.	17 H	Section 18. Resource Use and Waste Management Section 17. Hazardous and Flammable Materials	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	Truck Drivers and the Foreman	Ongoing
Disposal of concrete wastewater		Concrete wastewater slurry not being recycled if not contaminated				Sig.	Pos.	13 M	Section 18. Resource Use and Waste Management	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. Prensa washout bay testing (to be arranged)	Foreman Environmental Manager	Ongoing
FOD Management during construction		FOD blows onto nearby taxiway				Major	Pos.	18 H	Section 18. Resource Use and Waste Management	Major	U.Li.	14 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing

Environmental Aspects and Impacts Risk Assessment Register
Northern Access Route (CP17038) and Taxiway Zulu (CP14038)
Revision: 2

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Demolition works	Asbestos Management	Discovering asbestos	1. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 1996 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environment Protection Act 1970 7. EPA Victoria - Asbestos transport and Disposal IWRG611.2., June 2017 8. APAM Asbestos Identification and Removal Process. 9. Fulton Hogan - Asbestos Management Procedure.	1. To manage and dispose of asbestos appropriately	1. To have no HIGH risk rated incidents in relation to asbestos management 2. No breaches of regulatory requirements (as listed below) in the management of asbestos for the duration of the project	Sig.	Li.	17 H	Section 19. Asbestos Management Dial before you Dig Review the Design Drawings for existing assets	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. APAM Asbestos Identification and Removal Process. 3. FH - Incident and Emergency Response Flowchart – Asbestos. 3. FH - Asbestos Management Procedure 4. FH - Asbestos Removal Plan Review Checklist 5. FH - Workplace Asbestos Register.	All Personnel	Ongoing
Storage and handling of asbestos		Asbestos becoming windborne and blowing offsite				Sig.	Pos.	13 M	Section 19. Asbestos Management	Sig.	U.Li.	9 M		All Personnel	Ongoing
Disposal of asbestos		Not disposing asbestos to the correct landfill				Sig.	Pos.	13 M	Section 19. Asbestos Management Section 15. Soil and Material Management	Sig.	U.Li.	9 M		Foreman & Environmental Manager	Ongoing
Storage of Hazardous and Flammable Materials	Hazardous and Flammable Materials - Fuels, Oils, Chemicals, Powders, Paints	Contamination to the stormwater drain.	1. Department of Environment and Energy (DoEE) EPBC approval (2016/7837) January 2018. 2.Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environmental Protection Act (1970) 8. SEPP (Prevention and Management of Contamination of Land) 9. SEPP (Waters) 2018 10. EPA Liquid storage and handling guidelines, Pub 1698 (June 2018) 11. AS 1940 - Storage and Handling of Flammable and Combustible Liquids 13. Dangerous Goods Act 1985 14. Dangerous Goods (Storage and Handling) Regulations 2012 15. Managing Risk of Hazardous Chemicals, Code of Practice, Safework Australia 2012.	1. To comply with Section 4(c) of the EPBC Act Approval (2016/7837) to incorporate detailed measures to avoid spills of fuels and management of accident spills to avoid the introduction of pollutants and biocides during construction. 2. To prevent contamination of land, groundwater and surface waters. .	1. To have no HIGH risk rated incidents relating to a hazardous waste spill during construction 2. Correct storage of hazardous materials and dangerous goods for the duration of the works 3. Use appropriately licensed contractors to remove hazardous waste 4. No breaches of regulatory requirements (as listed below) for the use, management and storage of hazardous materials.	Sig.	Pos.	13 M	Section 13. Water Management Section 14. Sediment and Erosion Control Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		No SDS kept in the bunded container				Minor	Pos.	8 M	Section 17. Hazardous and Flammable Materials	Minor	U.Li.	5 L	Quarterly review of the SDS's within the containers	Environmental & Safety Manager	Quarterly
		Hazardous materials not stored in the bunded containers or buckets when on site				Sig.	Li.	17 H	Section 17. Hazardous and Flammable Materials	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Handling of Hazardous and Flammable Materials		Hazardous materials not labelled properly with ID Tags				Sig.	Pos.	13 M	Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection	All Personnel	Ongoing
		Contamination to the soil from a spill				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Contamination to waterways (surface water or groundwater) from a spill				Sig.	Pos.	14 M	Section 13. Water Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Refuelling plant and equipment		Contamination to the soil from a spill				Minor	Li.	12 M	Section 15. Soil and Material Management Section 17. Hazardous and Flammable Materials	Minor	Pos.	8 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Contamination to waterways (surface water or groundwater) from a spill				Minor	Li.	12 M	Section 13. Water Management Section 17. Hazardous and Flammable Materials	Minor	Pos.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Operating machinery		Either an oil or fuel spill which contaminates the soil or surface water				Minor	Li.	13 M	Section 17. Hazardous and Flammable Materials	Minor	Pos.	10 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Disposal of contaminated material from an oil or fuel spill		Contaminated material not disposed to a licensed EPA facility or landfill				Sig.	Pos.	13 M	Section 15. Soil and Material Management Section 17. Hazardous and Flammable Materials	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	Environmental Manager	Ongoing
Demolition of the concrete pavement and asphalt areas	Noise	Disturbance to the Terminal and nearby businesses from excess noise	1. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act 19966. 4. Airport (Environmental Protection) Regulations 1997. 5. Melbourne Airport - Environmental Management Plan (2018) 6. Environmental Protection Act (1970) 7. SEPP (Control of Noise from Commerce, Industry and Trade) 1989 8. Australian Standards 2436 - Guide to noise and vibration control on construction, demolition and maintenance site, 2010	To carry out construction activities within minimal disturbance to the airport and neighbouring stakeholders with regard to noise complaints.	1. No HIGH risk rated incidents or stakeholder complaints regarding noise 2. Notify APAM prior to demolition works commencing, so that the relevant stakeholders can be informed.	Sig.	Pos.	13 M	Section 20. Noise and Vibration	Minor	U.Li.	5L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Truck, Vehicle and Machinery Movements during earthworks and the water pit excavation						Sig.	Pos.	13 M	Section 20. Noise and Vibration	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
	Vibration	Disturbance to the Terminal nearby businesses from excess vibration		To carry out construction activities within minimal disturbance to the airport and neighbouring stakeholders with regard to vibration complaints.	1. No HIGH risk rated incidents or stakeholder complaints regarding vibration 2. Notify APAM prior to demolition works commencing, so that the relevant stakeholders can be informed.	Sig.	Pos.	13 M	Section 20. Noise and Vibration	Sig.	U.Li.	9 M	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing

Environmental Aspects and Impacts Risk Assessment Register
Northern Access Route (CP17038) and Taxiway Zulu (CP14038)
Revision: 2

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			
Importing plant and equipment to site	Weeds and Plant Hygiene	Importation and spread of weeds into the EPBC listed grass area	1. Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act 1996 5. Airport (Environmental Protection) Regulations 1997. 6. Melbourne Airport - Environmental Management Plan (2018) 7. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837) July 2017 8. Biosis – Melbourne Airport operational and infrastructure maintenance Growling Grass frog habitat management plan, 9 May 2019 9. Biosis – Growling Grass Frog (Litoria raniformis) habitat management protocols - hygiene protocol.	**1.** To complete the project without introducing and spreading weeds into the EPBC listed Natural Temperate Grassland of the Victorian Volcanic Plain Community (NTGVVP). **2.** To comply with Section 4(d) of the EPBC Act Approval (2016/7837) to mitigate impacts on the Growling Grass Frog by implementing plant hygiene measures to avoid the spread of weeds and pathogens.	**1.**Ensure all construction vehicles, trucks, machinery and equipment are clean prior to entering and leaving the site to avoid the introduction and spread of weeds and pathogens. **2.** Implement the hygiene protocol for GGF to reduce the risk of bringing the Chytrid fungus and other pathogens into the catchment area or spreading it between catchments. **3.** Ensure all machinery, equipment, trucks, vehicles and boots are washed down with Phytoclean prior to entering any 10m buffer non-habitat waterway zones when ground conditions are wet. **4.** No introduction or spread of weeds within the construction work area. **5.** No novel weed introduction or spread from construction areas into NTGVVP retained vegetation **6.** Revegetate bare topsoil areas via grass seeding to minimise weed establishment	Sig.	Pos.	13 M	Section 12: Flora and Fauna Management Section 21: Weeds and Plant Hygiene	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Truck,Vehicle and Machinery Movements		Importation and spread of weeds into the EPBC listed grass area				Sig.	Pos.	13 M	Section 12: Flora and Fauna Management Section 21: Weeds and Plant Hygiene	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
		Possible importation and spread of fungal pathogens from not following the hygiene protocol which could affect the Growling Grass Frog				Sig.	Pos.	13 M	Section 12: Flora and Fauna Management Section 21: Weeds and Plant Hygiene	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report	All Personnel	Ongoing
Demolition	Air Quality - Odour and Dust	Generation of dust during concrete demolition	1.Department of Environment and Energy (DoEE) EPBC Approval (2016/7837) January 2018. 2. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 3. Melbourne Airport PERCOW - APAM File: MEL xxxxx 4. Airports Act (1996) 5. Airport (Environmental Protection) Regulations (1997) 6. Melbourne Airport - Environmental Management Plan (2018) 7. Environmental Protection Act (1970) 8. National Environment Protection Measures (NEPM) Ambient Air Quality 9. National Greenhouse and Energy Reporting Act (2007) 10. SEPP (Air Quality Management) 11. Jacobs PFAS Management Plan (Revision 4, dated 1 April 2019),	**1.** Ensure the generation of dust, other air emissions and odour does not cause nuisance to the airport operations or sensitive receptors. **2.**To comply with all legislative reporting requirements. **3.** To prevent any impacts to human health or the environment. **4.** To comply with Section 4(e) of the EPBC Act Approval (2016/7837) to prevent local air quality impacts through dust suppression.	**1.** To have no HIGH risk rated incidents or stakeholder complaints regarding a reduction in air quality. **2.** To control dust during concrete demolition works **3.** To implement dust control measures at the temporary stockpile locations **4.** No visible dust beyond the site boundary. **5.** Implement speed restrictions on the haul roads to minimise dust	Sig.	Li.	17 H	Section 16. Air Quality	Sig.	Pos.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Mobile Plant Prestart Checklist 4. Weather Station Data	Foreman Environmental Manager	Ongoing
Excavation and bulk earthworks		Generation of dust to the nearby taxiways and Sunbury Road during road works				Sig.	Li.	17 H	Section 15. Soil and Material Management Section 16. Air Quality	Sig.	U.Li.	13 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Mobile Plant Prestart Checklist	Foreman Environmental Manager	Ongoing
Loading out soil						Sig.	Pos.	19 H	Section 15. Soil and Material Management Section 16. Air Quality	Minor	Pos.	8 M	1. Weekly environmental inspection 2. CAMs Incident Report 3. Mobile Plant Prestart Checklist 4. Weather Station Data	Foreman Environmental Manager	Ongoing
Truck and Vehicle Movements		Emission from engines				Minor	Pos.	8 M	Section 16. Air Quality	Minor	U.Li.	5 L	1. Weekly environmental inspection 2. CAMs Incident Report 3. Mobile Plant Prestart Checklist	Foreman Environmental Manager	Ongoing
		Generation of dust during removal of soil on the haul roads				Sig.	Li.	17 H	Section 16. Air Quality	Minor	U.Li.	5L	1. Weekly environmental inspection 2. CAMs Incident Report 3. Mobile Plant Prestart Checklist 4. Weather Station Data	Foreman Environmental Manager	Ongoing
Temporary stockpiling and storage of PFAS impacted material		Dust generation from stockpiled material				Sig.	Li.	17 H	Section 16. Air Quality	Minor	Pos.	8 M	1. Weekly environmental inspection 2. CAMs Incident Report	Foreman Environmental Manager	Ongoing
Clearing and Grubbing Vegetation	Heritage - Aboriginal and European	Damage to Aboriginal or European Cultural Heritage	1. Department of Infrastructure, Regional Development and Cities (DIRDC) Approval: 8th February 2019. 2. Melbourne Airport PERCOW - APAM File: MEL xxxxx 3. Airports Act (1996) 4. Airport (Environmental Protection) Regulations (1997) 5. Melbourne Airport - Environmental Management Plan (2018) 6. Aboriginal Heritage Act (2006) 7. Heritage Act (1995) 8. Environmental Protection and Biodiversity Conservation (EPBC) Act (1999) 9. Biosis - Taxiway Zulu and Northern Compound Project - Additional information for assessment by Preliminary Documentation (EPBC 2016/7837). 10. Biosis - Runway Development Program, Melbourne Airport, Tullamarine, Victoria: Cultural Heritage Management Plan 12774, 2017. 11. Biosis – Taxiway Zulu, Melbourne Airport, Victoria: Due Diligence Assessment, 6 August 2014	**1.** Complete the project without harming any new Aboriginal or European Cultural Heritage areas discovered.	**1.** Arrange a Cross Cultural Induction Training Session with the Wurundjeri Tribe **2.** Notify and manage any identified Aboriginal or European heritage as required by the regulators.	Sig.	Pos.	13 M	Section 12: Flora and Fauna Management Section 21. Weeds and Plant Hygiene	Sig.	Rare	6 L	1. Weekly environmental inspection 2. CAMs Incident Report 3. Surveyor mapped boundary	All Personnel	Ongoing
Truck and Plant Movements						Sig.	Pos.	13 M	Section 21. Weeds and Plant Hygiene	Sig.	Rare	6 L	1. Weekly environmental inspection 2. CAMs Incident Report 3. Traffic Management Plan	All Personnel	Ongoing

ACTIVITY	ASPECT/HAZARD	IMPACT	LEGISLATIVE AND OTHER REQUIREMENTS	OBJECTIVES	TARGETS	PRE-CONTROL RISK			CONTROL MEASURES TO BE IMPLEMENTED	POST-CONTROL RISK			REFERENCES (RECORDS TO BE KEPT AND RELEVANT INFORMATION)	RESPONSIBLE PERSON	TIMEFRAME
						CONSEQUENCE	LIKELIHOOD	RISK RATING		CONSEQUENCE	LIKELIHOOD	RISK RATING			

Potential Likelihood Level	Potential Consequence Level				
	Insignificant	Minor	Significant	Major	Catastrophic
Almost Certain *The potential consequence is expected to occur in most circumstances*	Med 11	High 16	High 20	Ext 23	Ext 25
Likely *The potential consequence will probably occur in most circumstances*	Med 7	Med 12	High 17	High 21	Ext 24
Possible *The potential consequence is expected to occur at some time*	Low 4	Med 8	Med 13	High 18	High 22
Unlikely *The potential consequence could occur at some time*	Low 2	Low 5	Med 9	Med 14	High 19
Rare *The potential consequence may occur in exceptional circumstances*	Low 1	Low 3	Low 6	Med 10	Med 15

Most Likely or Worst Consequence

Least Likely or Lowest Consequence

4

APPENDIX 4

Weekly Environmental Inspection Checklist

Weekly Environmental Inspection Checklist

Melbourne Airport Projects

DATE	
MAIN INSPECTOR	
SECONDARY INSPECTOR	

Aspect	CONSIDERATIONS/POTENTIAL PROBLEMS	P F N/A	CORRECTIVE ACTION REQUIRED / COMMENTS *(If Fail is selected, a Hazard will be raised in CAMs)*
Noise and Vibration	Noise or Vibration Complaints from neighbouring stakeholders		
Air Quality- Odour Emissions and Dust	Visible smoke emissions from the machinery airside		
	Odour emissions from machinery		
	Dust complaints		
	Inadequate dust prevention (Shade cloth, water cart, furphy)		
	Excessive dust generation within the work area (NAR or ZULU)		
	Excessive dust generation from the temporary stockpiles stored on site		
	Water cart not used to suppress dust		
	Is a soil binder required to suppress dust on the haul road or stockpile area		
Sediment and Erosion Control Management	Is TOPO's ESCP being followed in terms of sediment controls installed		
	Do the diversion bunds need maintenance - erosion, cracking		
	Are the sediment controls being maintained – sediment fence, sandbags, rock logs		
	Are the rock filter dams being maintained		
	Are the check dams being maintained		
	Have sandbags been placed around all stormwater drainage pits and grated drains prior to construction		
	Are more silt socks/rock logs or sandbags required in the outlet swales to slow the water down - NAR		
	Does the sediment basin require maintenance - NAR		
	Are there signs of soil erosion that need to be addressed		
	Do rumble grids require maintenance		
	Is there sediment build up on roads which requires the street sweeper		
Water Management	Have the diversion bunds been constructed (clean water/dirty water) - NAR		
	Have sandbags been placed beside the water barriers to divert offsite water around the construction zone - ZULU		
	Do the swales need to be cleaned out to remove sediment build up		
	Is formwork covering the stormwater pits or water main pits during construction		
	Is turbid water discharging uncontrolled offsite which could affect the GGF		

LEGEND:

P: Pass **F: Fail – Corrective action required** **N/A: Not Applicable**

DATE	
MAIN INSPECTOR	
SECONDARY INSPECTOR	

Aspect	CONSIDERATIONS/POTENTIAL PROBLEMS	P F N/A	CORRECTIVE ACTION REQUIRED / COMMENTS (If Fail is selected, a Hazard will be raised in CAMs)
Water Management continued	Are more check dams or rock drop structures required to slow down water within the swales?		
	Refuelling zone located >30m from a waterway		
	Does the wash down bay require maintenance		
	Machinery and bins located away from waterways and/or drainage lines		
	Does any ponded water require to be pumped out (location)		
	Do any contaminated pods require to be pumped out (location, pod no)		
	Are the stormwater drains contaminated with concrete wastewater		
	Has the water (surface water, perched groundwater, subsoil water) been tested for contamination including PFAS		
	Other considerations		
	Has groundwater or perched water been encountered during construction (location)		
	Does the water need to be pumped out for disposal (volume)		
	Other considerations:		
Soil and Material Management	Is the temporary stockpile located within 30m of a waterway or drainage line?		
	Is the temporary stockpile >2m in height		
	Has the soil or material been correctly stockpiled into either Category 1 and Category 2 or not contaminated		
	Have the temporary stockpiles been covered in 0.25mm LDPE sheeting and anchored down at completion of the day or night shift to prevent water ingress		
	Has sediment fence been installed around the temporary stockpile and does it require maintenance		
	Has the soil, crushed rock, concrete or asphalt been tested for contamination including PFAS		
	Has the imported crushed rock and soil been classified prior to import		
	Is the PFAS contaminated material stored correctly at Gate 11		
	Has any contaminated soil/material been encountered which requires testing?		
	Other		

LEGEND:
P: Pass **F: Fail – Corrective action required** **N/A: Not Applicable**

Weekly Environmental Inspection Checklist

Melbourne Airport Projects

DATE	
MAIN INSPECTOR	
SECONDARY INSPECTOR	

Aspect	CONSIDERATIONS/POTENTIAL PROBLEMS	P F N/A	CORRECTIVE ACTION REQUIRED / COMMENTS (If Fail is selected, a Hazard will be raised in CAMs)
Resources and Waste Management	Waste not separated into recycled and general waste		
	Litter and waste strewn about the work area (Airside)?		
	Are the bin lids closed to prevent bird attraction and FOD		
	Do the general waste bins need to be emptied		
	Do the recycling bins need to be emptied		
	Do the hazardous waste bins need to be emptied (Red 240L or $1m^3$ Bins)		
	Do the contaminated waste bins (black 240L bin or drums) need to be emptied		
	Does the concrete washout bin require to be changed over		
	Is the concrete washout bin located >10m away from stormwater drain		
	Does the concrete washout area require maintenance (fix sandbags, remove hardened concrete, sweep around the area etc.).		
Washout Bay Management	Does the concrete or street sweeper washout bay need to be pumped out by the disposal company		
	Does the concrete washout bay need the slurry removed to the dry out bay?		
	Does the street sweeper washout bay need the slurry removed to the dry out bay		
	Does the concrete dry out area need the concrete removed to the recyclers		
	Does the street sweeper dry out area need to be tested for disposal		
	Does the NDD or HDD washout bay require maintenance		
Hazardous and Flammable Materials Management (including Fuels and Oils)	Evidence of chemical, fuel or oil spills on site (airside)		
	Is the spill over 5L and need to be reported to APAM		
	Has the spill entered the stormwater drainage system		
	Are fuels, oils and chemicals stored within the black trays, buckets or bunded containers		
	Are chemicals, fuels and oils stored beside live stormwater drains		
	Are the generators and diesel tanks bunded with black plastic as a secondary bund		
	Spill kits not maintained or available		
	Is the SDS folder available within the yellow bunded flammable goods container		
	Are the SDS's current. Do any additional SDS's need to be added to the folder		

LEGEND:

P: Pass **F: Fail – Corrective action required** **N/A: Not Applicable**

Weekly Environmental Inspection Checklist

Melbourne Airport Projects

DATE	
MAIN INSPECTOR	
SECONDARY INSPECTOR	

Aspect	CONSIDERATIONS/POTENTIAL PROBLEMS	P F N/A	CORRECTIVE ACTION REQUIRED / COMMENTS (If Fail is selected, a Hazard will be raised in CAMs)
Asbestos Management	Has asbestos been encountered		
	Does the potential asbestos require testing by a hygienist		
	Has the area been barricaded off and protected		
Flora and Fauna Management	Is the Vegetation Protection Zone fencing installed and signage up for native grass protection		
	Is the VPZ fencing free from damage		
	Are the bollards for the VPZ in the correct locations		
	Have Biosis verified the boundary and VPZ delineation		
	Have APAM signed the hold point release to permit stripping grass (NAR/ZULU)		
	Has any significant flora or fauna been identified during works		
	Has 'additional' native grass been stripped during construction works outside our permitted boundary		
	Has any Native Grass been damaged due to incorrect stockpiling, machinery storage outside the No Go Zone		
	Has there been a breach of the Native grass No Go Zone.		
	Is stormwater being discharged correctly offsite so it won't impact on the GGF		
Weed and Plant Hygiene Management	Are there any new weeds within the construction boundary that need to be managed		
	Are construction vehicles/trucks and machinery being cleaned prior to entering the site and leaving site to avoid the introduction and spread of weeds and pathogens.		
	Are trucks being cleaned prior to leaving the site to prevent impacts from construction sediments to nearby growling grass frog populations		
	Plant hygiene protocol is being implemented successfully		
Heritage	Has any cultural heritage or European heritage been found		
Light Spillage (Night Works)	Luminaires (light sources) are aimed to avoid increasing light levels in adjacent waterways		
Other Hazards:			

LEGEND:

P: Pass **F: Fail – Corrective action required** **N/A: Not Applicable**

5

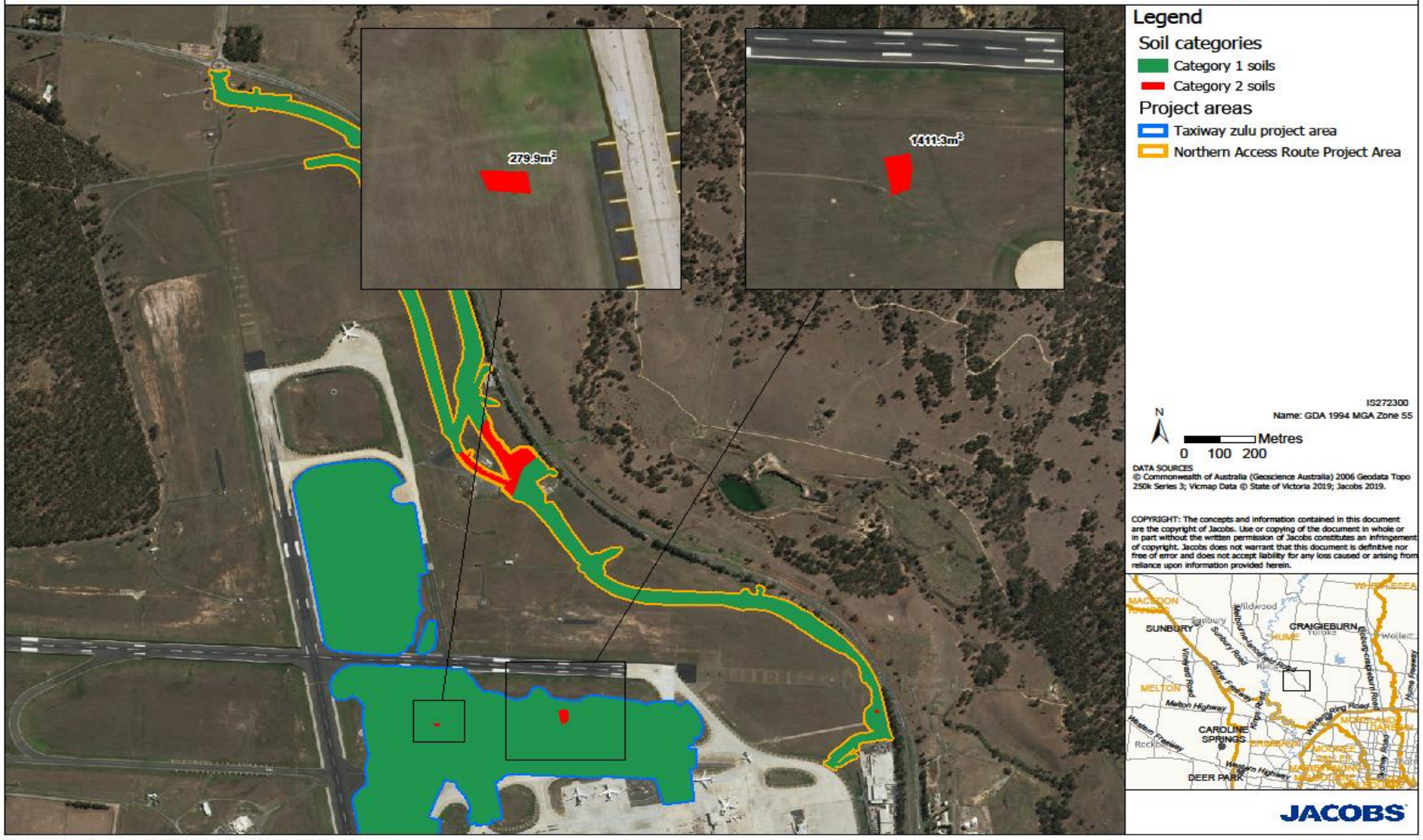
APPENDIX 5

Jacobs PFAS Delineation Maps

Rev.1

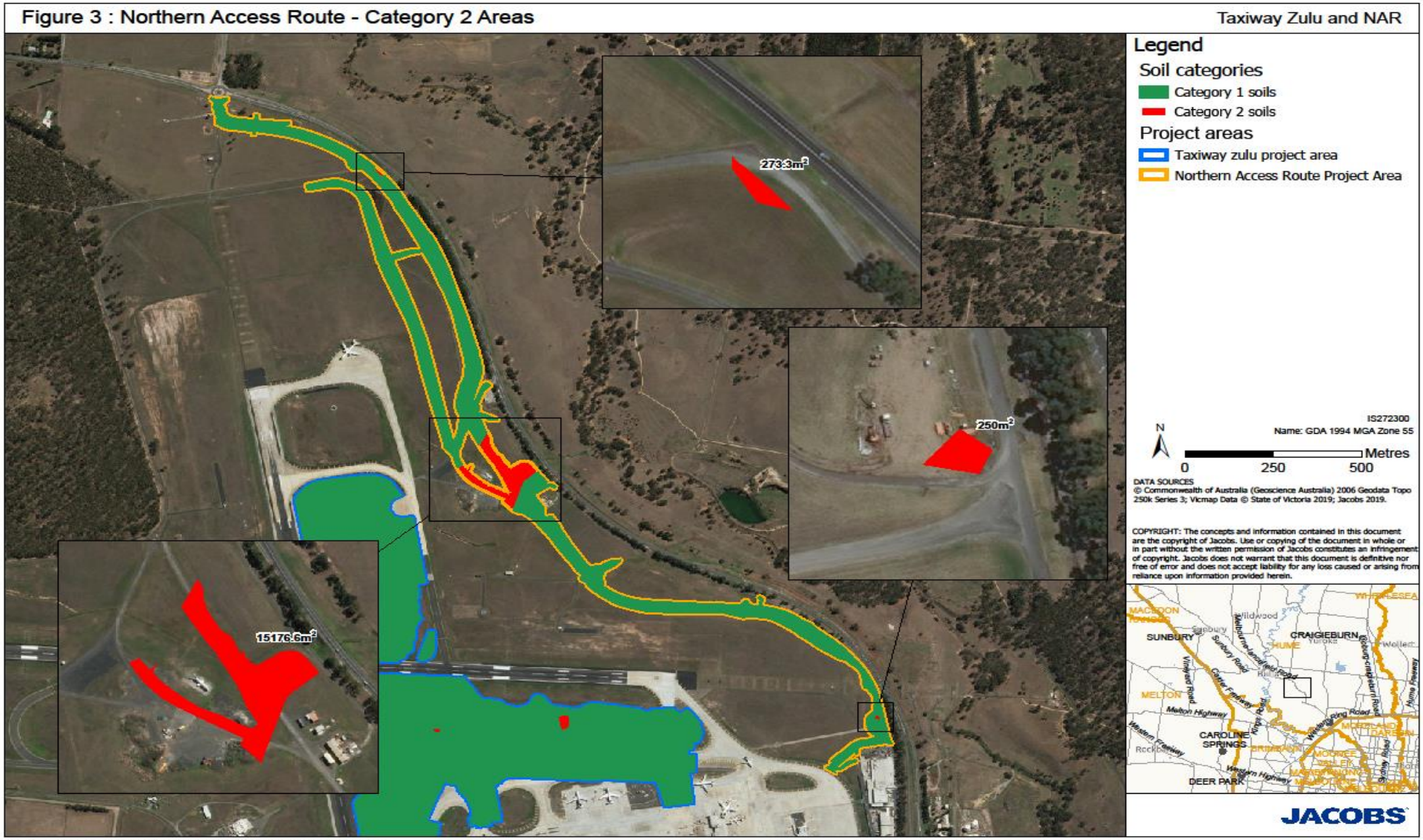
24.6. Appendix 5: Jacobs PFAS Delineation Maps

Figure 2 : Zulu - Category 2 Areas



Path: J:\IE\Projects\03_Southern\IS272300\22 Technical\02 Spatial\ArcPro\ZuluNAR\ZuluNAR.aprx

Figure 3 : Northern Access Route - Category 2 Areas



Path: J:\IE\Projects\03_Southern\IS272300\22 Technical\02 Spatial\ArcPro\ZuluNAR\ZuluNAR.aprx

24.7. Appendix 6: Curriculum Vitae – Author

Author	Qualifications	Experience
	Bachelor of Agricultural Science University of Melbourne IS Accredited Professional (ISAPs)	Samantha has over 19 years of diverse experience in agricultural and environmental consultancy, environmental management systems, site management and compliance, soil and water contamination, wetland construction and planting, sediment and erosion control, creek diversions, soil amelioration, landscaping and project management. Samantha has a comprehensive understanding of Environmental Management Systems to ISO14001:2015 standards. She has worked in a wide range of infrastructure projects and alliances including Streamlining Hoddle Street, M80 Upgrade (E2P and S2C), Melbourne Water Pipelines Alliance, Cleanaway landfill remediation, Westgate and Eastlink. Samantha has also worked at Melbourne Airport for 8 years on all Fulton Hogan projects, so she is familiar with the environmental aspects such as nationally significant flora and fauna and PFAS contaminated soil and water management. Samantha is sensitive to stakeholder concerns, builds strong relationships and applies innovation to drive sustainability and long-term environmental results on her projects.