

Melbourne Airport Environment Strategy 2018

**MELBOURNE
AIRPORT**

An aerial photograph of an airport tarmac. In the foreground, the wing and engine of a large aircraft are visible. The wing has the text 'HLS-TM' painted on it. Below the wing, there are several ground support vehicles, including a baggage loader and a tug. A person in a high-visibility vest is walking on the tarmac. In the background, another aircraft is parked at a gate. The sky is overcast. The overall image has a greenish tint.

Foreward

Melbourne Airport's 2018 Master Plan was approved by the Commonwealth Minister in February 2019. A copy of the approved Master Plan can be found at my.melbourneairport.com/masterplan.

The Environment Strategy forms part of the approved Master Plan.

This document has been extracted from relevant sections of the Master Plan for ease of use and access.

Other parts of the Master Plan that may be of interest (which are not included in this document) are Section 2.0 – Vision and Development Objectives, and Section 5.6 – Cultural heritage and environmental context.

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Environment and Sustainability Manager
June 2019

16.0 Environment Strategy

KEY FEATURES



PROACTIVE ENVIRONMENTAL MANAGEMENT

Melbourne Airport continues to actively respond to key environmental challenges including:

protecting biodiversity

managing contaminants

continuously improving our performance

16.1 Overview and objectives

The goal of the Melbourne Airport Environmental Policy is for the airport 'to be an environmental leader for transport and logistics sites in Australia'. This strategy details how this goal will be achieved.

Given the complex cultural heritage and environmental setting within which Melbourne Airport operates, achieving this goal will require continuous improvement and following a clear environment strategy.

This strategy has been developed to provide direction to Melbourne Airport in achieving its environmental policy goal and, in doing so, satisfy the relevant requirements of the Airports Act. Furthermore, this strategy has been written such that it forms an integrated component of the Master Plan and can also be read as a stand-alone document.

16.1.1 Melbourne Airport's legislative obligations and environmental policy

The objectives of the Environment Strategy are to:

- continually improve environmental management practices
- ensure Indigenous and non-Indigenous (historical) cultural heritage sites are protected
- ensure strong stewardship of the physical environment
- meet all compliance obligations and maintain the goodwill of regulators, passengers and the community
- future-proof the environmental value of the airport site.

These objectives have been developed to provide overall direction to the strategy and encompass multiple environmental aspects over which the airport has an impact. Each environmental aspect represents a grouping of environmental management considerations with a common focus that are used to manage the airport's environmental impacts (Table 16-1). These aspect groupings are useful for day-to-day implementation of the strategy via the airport's Environmental Management Framework.



Table 16-1: Relationship between overall strategy objectives and environmental aspects

	Overall objectives				
	Continually improve environmental management practices	Ensure Indigenous and non-Indigenous (historical) cultural heritage sites are protected	Ensure strong stewardship of the physical environment	Meet all compliance obligations and maintain goodwill	Future-proof the environmental value of the airport site
Environmental management	✓	✓	✓	✓	✓
Sustainability in planning and design	✓	✓	✓		✓
Energy and carbon	✓			✓	✓
Hazardous materials	✓		✓	✓	✓
Cultural heritage	✓	✓		✓	
Land and water management	✓		✓	✓	✓
Biodiversity and conservation	✓		✓	✓	✓
Air quality and ground-based noise ¹	✓		✓	✓	✓
Waste management	✓		✓	✓	✓

Note¹: that any air-quality impacts, noise impacts and greenhouse gas emissions that are directly attributable to aircraft are subject to different legislation and are outside of the airport's direct operational control. These aspects are therefore outside the scope of the Environment Strategy. However, Melbourne Airport recognises the significance of these aspects and works continuously with airlines and stakeholders to pursue positive environmental outcomes in relation to these matters.

16.2 Environment strategy context

16.2.1 Our operating context in relation to this strategy

This section provides an overview of Melbourne Airport's present operating context and how this could change into the future. More detailed discussion for the current and future operating context is provided for each environmental aspect in the 'Action plans' section of this strategy.

16.2.1.1 Present day

Melbourne Airport has a unique cultural heritage and environmental setting.

The airport is located on a broad plateau on the land of the Wurundjeri people, the traditional owners. Our site encompasses several environmentally important areas (including one of Victoria's largest remaining stands of Grey Box Woodland) and provides potential habitat for a range of native fauna (such as the Australian grayling and the growling grass frog). There are 182 locations on or near the airport where artefacts of cultural significance have been found. Our site interacts with multiple natural surface waterways that support aquatic ecological communities and are used for irrigation and stock watering purposes. Figure 16-1 provides an overview of key environmental values at Melbourne Airport.

Operations at the Melbourne Airport site are expansive and are characterised by a large number of different organisations undertaking a variety of activities under varying degrees of control by the airport. There are a number of locations on site of known water and soil contamination, some of which have been caused by airport operations (e.g. firefighting foams and fuel storage) and some of which are likely due to historic or off-site activities (e.g. the use pesticides and herbicides).

16.2.1.2 Environmentally significant areas

Melbourne Airport has completed extensive biodiversity and heritage investigations since the last Master Plan. Based on these investigations and feedback from stakeholders, the following areas have been identified as being environmentally significant for the purposes of section 71(2)(h)(ii) of the Airports Act:

- cultural and historical heritage sites identified on Figure 16-9
- grey box woodland, natural temperate grassland and seasonal herbaceous wetlands identified on Figure 16-1 (matters of national environmental significance)
- growling grass frog and Australian grayling habitat identified on Figure 16-1 (matters of national environmental significance), and likely growling grass frog habitat identified on Figure 16-15.

16.2.1.3 Growth of operations and demand

The population of Melbourne is growing rapidly and, with it, demand for air travel is also growing.

Significant growth is forecast for the airport and this growth is set to occur within a context of evolving environmental and carbon regulation, increasing energy prices and a changing climate.

The 2023 airport development concept includes the Runway Development Program, which will involve a third runway and extensions to the existing east-west runway. The 2038 concept includes the expansion of the terminal buildings and new extended piers. These expansions are intended to meet a significant increase in demand for air travel. By 2038 Melbourne Airport is expected to cater for more than 65 million passengers per year (up from 35.2 million in FY17). Over this same period, aircraft movements are expected to increase from 238,000 to 384,000 movements per year and freight throughput is expected to almost double. Figures 16-2 and 16-3 show the environment and heritage values with the 2023 and 2038 development footprints.

Historically, growth of this magnitude for organisations has required increased consumption of natural resources. This increased consumption has both local and global risk implications for the airport's environment and heritage. Recognising these risks, Melbourne Airport is taking action by investing in renewable energy, energy efficiency, water efficiency, improved waste management and sustainable procurement. By implementing these actions Melbourne Airport will continually improve the resource efficiency of our operations and minimise our overall ecological footprint.

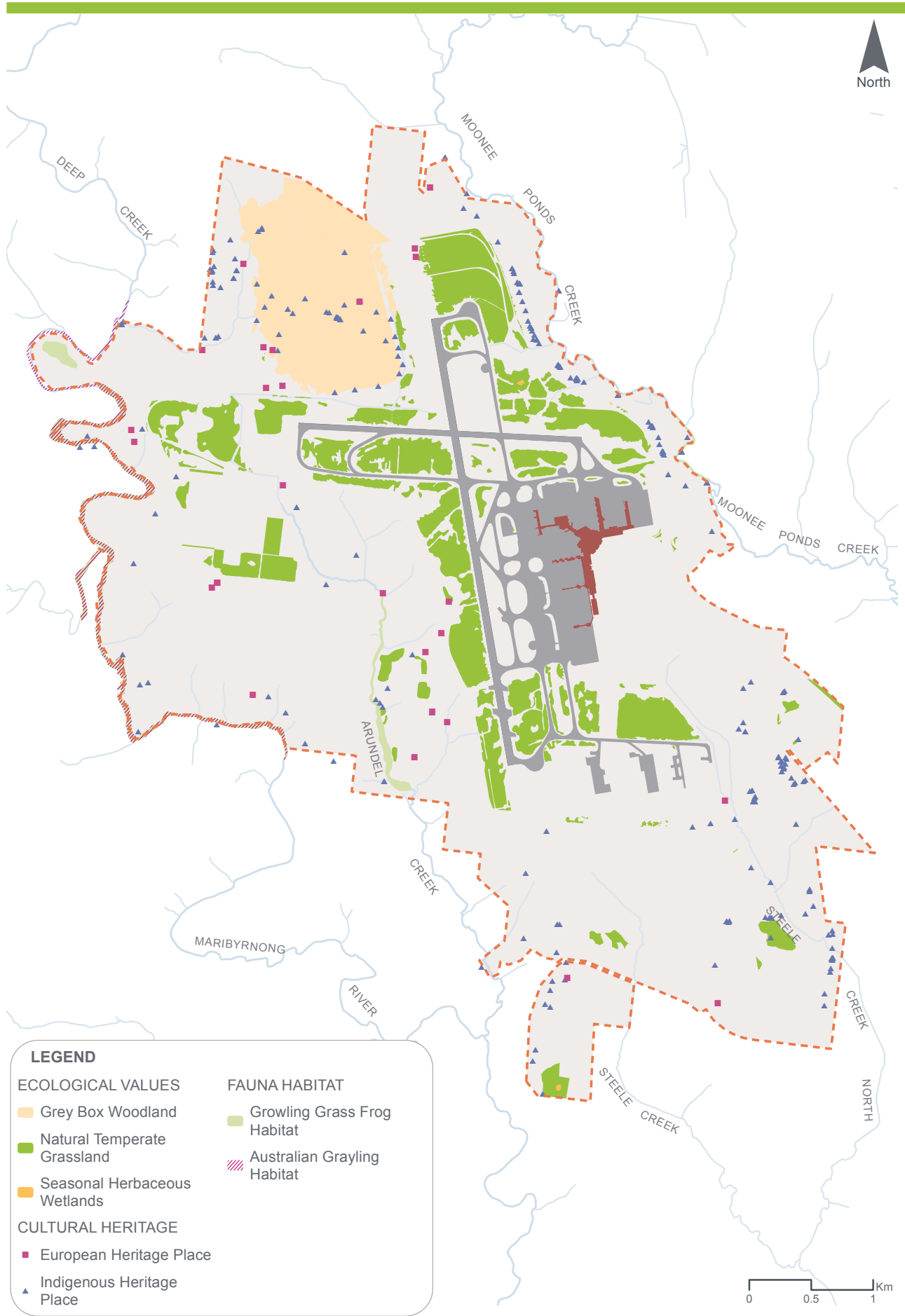


Figure 16-1: Environment and Heritage Values

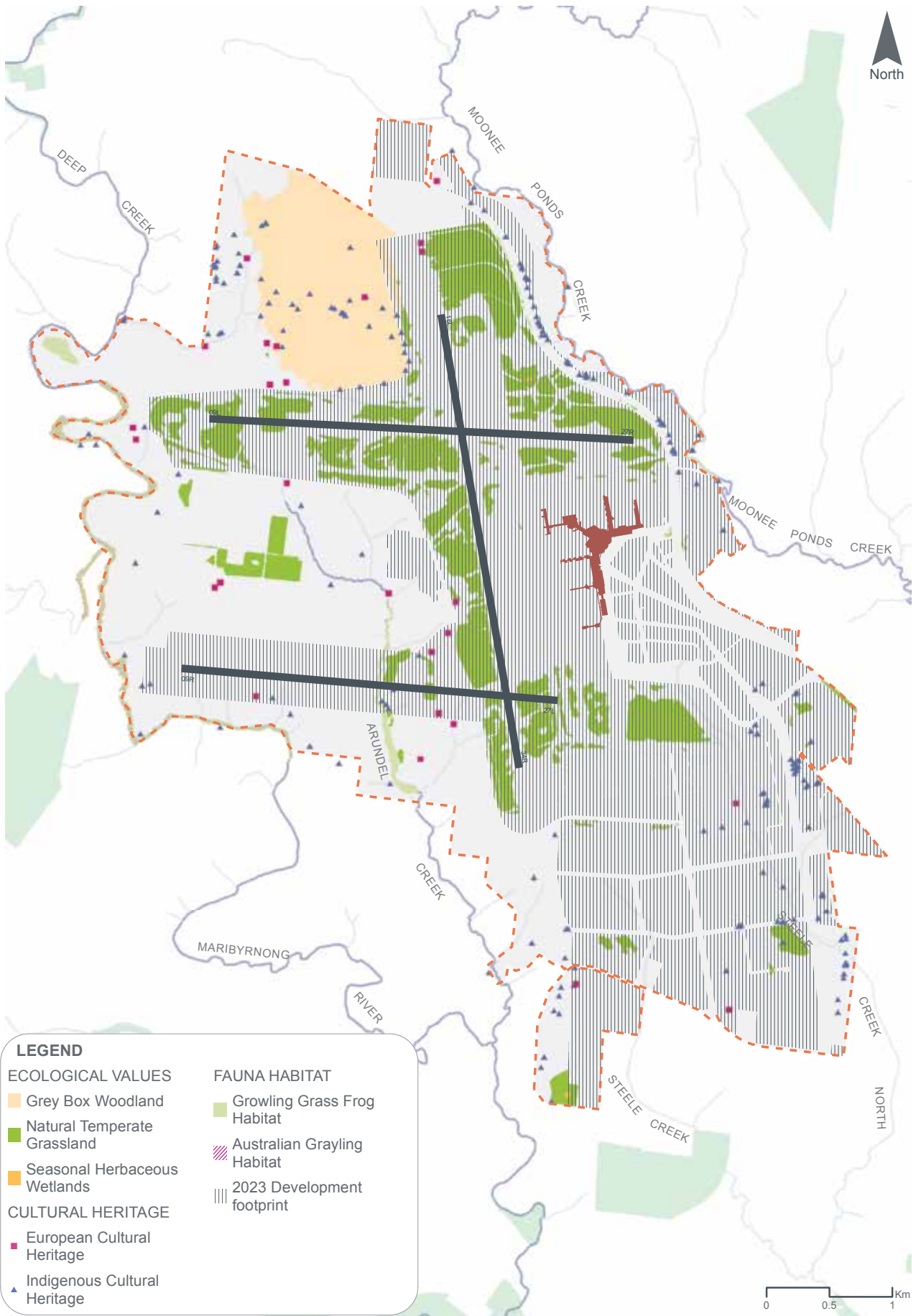


Figure 16-2: Environment and Heritage Values 2023

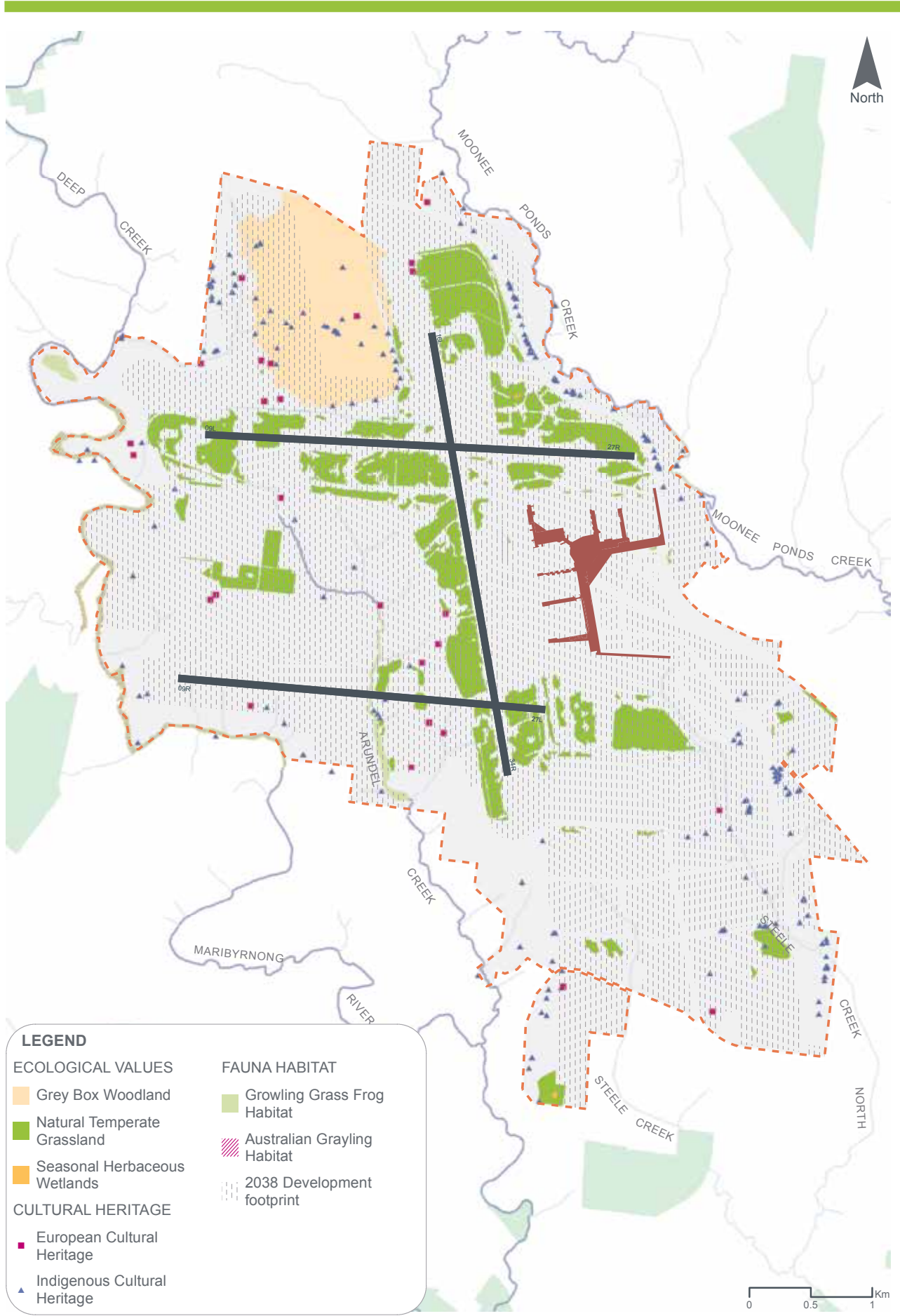


Figure 16-3: Environment and Heritage Values 2038

16.2.1.3 Expanded physical footprint

The potential impacts of future expansions will be assessed in advance. Risks will be mitigated through the implementation of pre-approved management and offsets plans.

Figure 16-1 shows all areas that are environmentally and culturally significant within the airport's boundaries. As shown in Figures 16.2 and 16.3, the proposed Airport expansions will result in the disruption of known (or as yet undiscovered) areas of cultural and/or environmental value. Similarly, it is possible that works will intersect with areas of contamination or could result in emissions to air, land or water. Well-planned and proactive environmental management of expansion works will therefore be critical.

More specifically, for major development projects such as the Runway Development Program, thorough investigations and management programs for environmental and cultural impact are required prior to approvals being granted by the federal government, in accordance with the requirements of the Airports Act. For other development projects, Melbourne Airport requires that higher risk proponents prepare detailed Construction Environment Management Plans (CEMPs), which must be approved by the airport prior to works commencing. Similarly, higher risk tenants require approved Operational Environmental Management Plans (OEMPs). All lower risk projects and tenants are required to adhere to Melbourne Airport's Code of Environmental Practice as part of their approval and lease conditions.

Through these assessment, approval and management mechanisms, Melbourne Airport will ensure that the environmental values and performance of the airport is safeguarded into the future.

16.2.1.4 Evolving regulation and expectations

The compliance environment within which Melbourne Airport operates will continue to evolve.

Melbourne Airport maintains, as part of its Environmental Management System, a register of state and Commonwealth environmental and cultural heritage Acts, regulations and policies with which it must comply (Appendix E). Each of these documents is subject to ongoing changes (e.g. the Airports Act has been updated 30 times since it was released in 1996).

Changes to the regulatory environment are an inevitable result of continuous improvement in regulation as new science is integrated and community expectations shift. For example, the body of knowledge around the health risks of diesel exhaust particulates or PFAS (per- and poly-fluoroalkyl substances found in firefighting foams) has improved in recent years and this has been reflected in regulatory shifts.

Similarly, Melbourne Airport tracks the environmental management expectations of a broad range of stakeholders including its customers, tenants, airlines, neighbours, community groups and shareholders. Historically, these expectations have been focused on planning considerations, managing current risks, responding to incidents, maintaining compliance, providing guidance and reporting to regulators. These expectations will continue as our stakeholders become increasingly interested in the broader, long-term risks we manage. In particular, this interest relates to the airport's contribution to the sustainability of Melbourne (and Victoria) as a whole, and how the airport will manage risks and opportunities related to climate change.

16.2.1.5 Climate change

Climate change will amplify a number of risks and opportunities already faced by Melbourne Airport, and could introduce some new ones. Melbourne Airport will work to build its resilience to a range of possible future scenarios.

Melbourne Airport is located within a temperate climate, with warm to hot summers, mild springs and autumns and cool winters. The region is showery with fairly consistent rainfall throughout the year. The region is on the boundary of the hot inland areas and the cool Southern Ocean. This results in temperature differences that can cause strong cold fronts to form, which sometimes lead to severe weather conditions such as gales, thunderstorms and heavy rain. The region can also experience extreme heat in summer.

Historically, climatic events such as storms, high winds, fog, heatwaves and bushfires (smoke) have resulted in service disruptions, delays and temporary airport closures, each of which has had financial implications. Of these events, all (except fog) are expected to increase with climate change.

Melbourne Airport has undertaken a Climate Risk and Vulnerability Assessment, and a similar assessment has been undertaken as part of the Runway Development Program. The identified climate-related risks and opportunities can be categorised as being physical or transitional in nature.

Physical risks and opportunities result directly from the physical effects of climate change. For Melbourne Airport, projected changes in climate will exacerbate many existing climate-related risks, in particular those risks related to high temperatures, extreme rainfall, drought and fire weather are likely to increase in both likelihood and severity. The effect of climate change on other weather-driven risks such as those related to wind and lightning is less clear. These physical factors can impact airport operations as well as the health and resilience of the surrounding environment.

Transition risks and opportunities are not directly linked to climate-related events but relate to the regulatory and market transformation likely to result from governments and communities acting to curtail greenhouse gas emissions and/or adapt to climate change. These risks have been examined and have the potential to affect access to capital, reputation, investor concerns and regulatory pressure on the carbon-intensive aviation sector. The airport's current enterprise risk management system includes transition risks related to state and federal carbon policies and energy market volatility. Conversely, some of these factors also represent opportunities to drive projects in renewable energy and resource efficiency.

The magnitude of climate-related risks and opportunities will depend on:

- whether the world is successful in actively moving towards the goals set in the Paris Agreement to keep 'global average temperature to well below 2°C above pre-industrial levels'
- the degree to which the Australian and Victorian Regulatory environments align with these global aspirations.

Furthermore, the resilience of Melbourne Airport contributes directly to the resilience of Victoria as a whole. Therefore, in the interests of future-proofing its operations and environmental performance in the face of this uncertainty, Melbourne Airport will work to build its resilience to a range of possible future scenarios, through the development of a Climate Change Adaptation and Mitigation Framework.

16.2.2 Building on past strategies and stakeholder consultation

This strategy builds on the successes of and lessons learned from the implementation of past strategies.

Melbourne Airport has maintained an Environment Strategy since the Airports Act first came into force in 1996. Since 2013, the Act has required that the Environment Strategy be prepared as an integral part of the five-yearly airport Master Plan. Over time, Melbourne Airport has established a culture of proactive environmental management and continuous improvement. This 2018 strategy represents the next iteration in this process. Key improvements in this strategy include:

- **Overarching objectives that span multiple environmental aspects.** In past strategies, objectives have been unique to each environmental aspect. By reframing our objectives at a higher level our subsequent actions will better address the inter-related nature of environmental impacts. Our Environment Team will also have greater flexibility in responding to new challenges that could arise.
- **Increased aspirations.** Melbourne Airport achieved 56 of the 58 targets detailed in the 2013 Environment Strategy (Appendix C). Many of these targets represent the maintenance of a high standard of ongoing environmental management and are now considered to be ongoing functions of the Environment Team. The new targets described in this 2018 strategy represent the next steps in continuous improvement.
- **Responsiveness to an evolving risk profile.** The growth of the airport forecast in the 2018 Master Plan will bring with it changes to the risks that airport operations pose for the surrounding environment. Similarly, the growth of the airport will also create opportunities for improved environmental management. The strategy has been developed to allow Melbourne Airport to mitigate these evolving risks and to realise new opportunities.

16.2.3 Stakeholder consultation

The development of this strategy has been further guided by extensive engagement with our stakeholders.

As part of the formal Master Planning process, Melbourne Airport has sought input directly from the following stakeholders in relation to the Airport Environment Strategy:

- the Department of Infrastructure, Regional Development and Cities, whose representative – the Airport Environment Officer – provided detailed feedback on an early exposure draft of this document and meets regularly with Melbourne Airport’s Environment Team
- the Victorian Department of Environment, Land, Water and Planning, who have provided feedback on an early exposure draft of this document
- the Community Aviation Consultation Group
- community, state and Commonwealth agencies
- Essendon Airport P/L
- Victorian Planning Authority
- local government authorities
- Airservices and CASA
- meetings with local environmental groups.

Further, this strategy has drawn extensively on the ongoing stakeholder engagement that forms a vital component of the operation of Melbourne Airport’s Environmental Management System (EMS). Specifically, this has involved:

- consultation with internal and external teams responsible for the Runway Development Program MDP
- consultation with Department of Infrastructure, Regional Development and Cities and the Department of Environment and Energy – in relation to managing approvals and referral processes
- regular discussions with EPA Victoria in relation to managing environmental impacts
- discussions with Heritage Victoria in relation to developing Cultural Heritage Management Plans and implementing recommendations
- consultation with contractors, tenants, monitoring professionals and technical advisors.

Airport uses and the local community will continue to be involved in the development of future strategies, through the Airport's existing stakeholder engagement forums, and other consultation portals as appropriate.

A copy of the final Environment Strategy will be available to tenants, contractors, airport users and the local community via the Melbourne Airport website. All groups will be notified of its finalisation via internal and external communications that will include relevant web links. A limited number of hard copies will also be made available.

More information about the overall consultation in the development of the Airport Master Plan is provided in section 3.3.

16.2.4 Risks and opportunities

Changes to Melbourne Airport’s operating context, and future uncertainties, present a range of risks and opportunities in relation to environmental management.

The international risk management standard (ISO 31000) definition of risk is the 'effect of uncertainty on objectives'. The Environment Strategy has been developed to safeguard the achievement of the airport’s environmental objectives in the face of existing contextual challenges and future uncertainty.

This Environment Strategy addresses the risks that the airport can pose to the environment in which it operates. It also addresses the risks that affect the effective operation and development of the airport.

Similarly, opportunities to improve the airport’s environmental performance are identified. Melbourne Airport’s Environmental Risk Register documents the specified control measures for more than 140 of these risks. However, the key environmental risks and opportunities can be grouped into five broad categories for the purpose of this strategic-level summary:

- ecological health
- cultural heritage
- pollution and contamination
- licence to operate
- climate risk.

These risk categories each interact with a number of environmental management aspects and each will therefore be managed through a combination of the action plans specified within this strategy (Table 16-2).

Table 16-2: Relationship between overall strategy objectives and environmental aspects

 <p>ECOLOGICAL HEALTH</p>	<p>Melbourne Airport supports a broad range of ecological communities, rare and threatened species and ecosystems. Threats to these significant assets include the continued growth of the airport, introduced plants and animals, contamination and climate change. Similarly, development works provide the opportunity to implement measures that further safeguard and improve ecological health.</p>
 <p>CULTURAL HERITAGE</p>	<p>There are many locations on or near the airport where artefacts of cultural significance have been found. The unique cultural heritage assets of the airport are also subject to the impacts of growth, infrastructure development and erosion. Similarly, development works will afford the opportunity to better understand the significance of our cultural heritage sites and ensure their ongoing management and protection.</p>
 <p>POLLUTION AND CONTAMINATION</p>	<p>Melbourne Airport has historical land and groundwater contamination that must be effectively managed. Ongoing risks to the environment include surface and groundwater contamination, impacts on plants and animals and the cost of management and remediation. As the airport expands, it is likely that works will interact with areas of contamination and that the risk of new impacts will need to be minimised. This will also present opportunities for mitigating legacy contamination issues and improving ongoing management.</p>
 <p>LICENCE TO OPERATE</p>	<p>The airport’s licence to operate relates not only to our regulatory compliance but to our reputation and the social responsibility we exercise in engaging with our stakeholders. These are all impacted by our environmental performance. Compliance with evolving regulation and community expectations is managed through our EMS, which includes a continuous improvement loop to ensure we retain control and oversight over dynamic day-to-day operations as the airport grows.</p>
 <p>CLIMATE RISKS</p>	<p>Climate change will amplify a number of risks and opportunities already faced by Melbourne Airport, and could introduce some new ones. Physical risks can affect airport operations, staff health and safety, and the surrounding environment. Such risks relate to high temperatures, extreme rainfall, drought and fire weather, which are likely to increase in both likelihood and severity. Transition risks relate to the regulatory and market transformation likely to result from governments and communities acting to curtail greenhouse gas emissions and/or adapt to climate change. The magnitude of these risks will depend on the rate of global decarbonisation and the related regulatory and market changes. Melbourne Airport will work to build its resilience and capitalise on opportunities across a range of possible future scenarios through the development of the Climate Change Adaptation and Mitigation Framework.</p>

16.2.5 Strategy structure

The structure of the strategy reflects the inter-related nature of objectives, environmental aspects, targets and actions.

In summary, the structure of the Environment Strategy includes:

- overarching objectives that cover multiple environmental aspects
- targets defined against each environmental aspect
- action plans that support the achievement of targets and which, in application, represent a measurable set of performance indicators.

Note: action plans each serve to mitigate one or more environmental risks, or to realise one or more opportunities. This structure is represented in Figure 16-4.



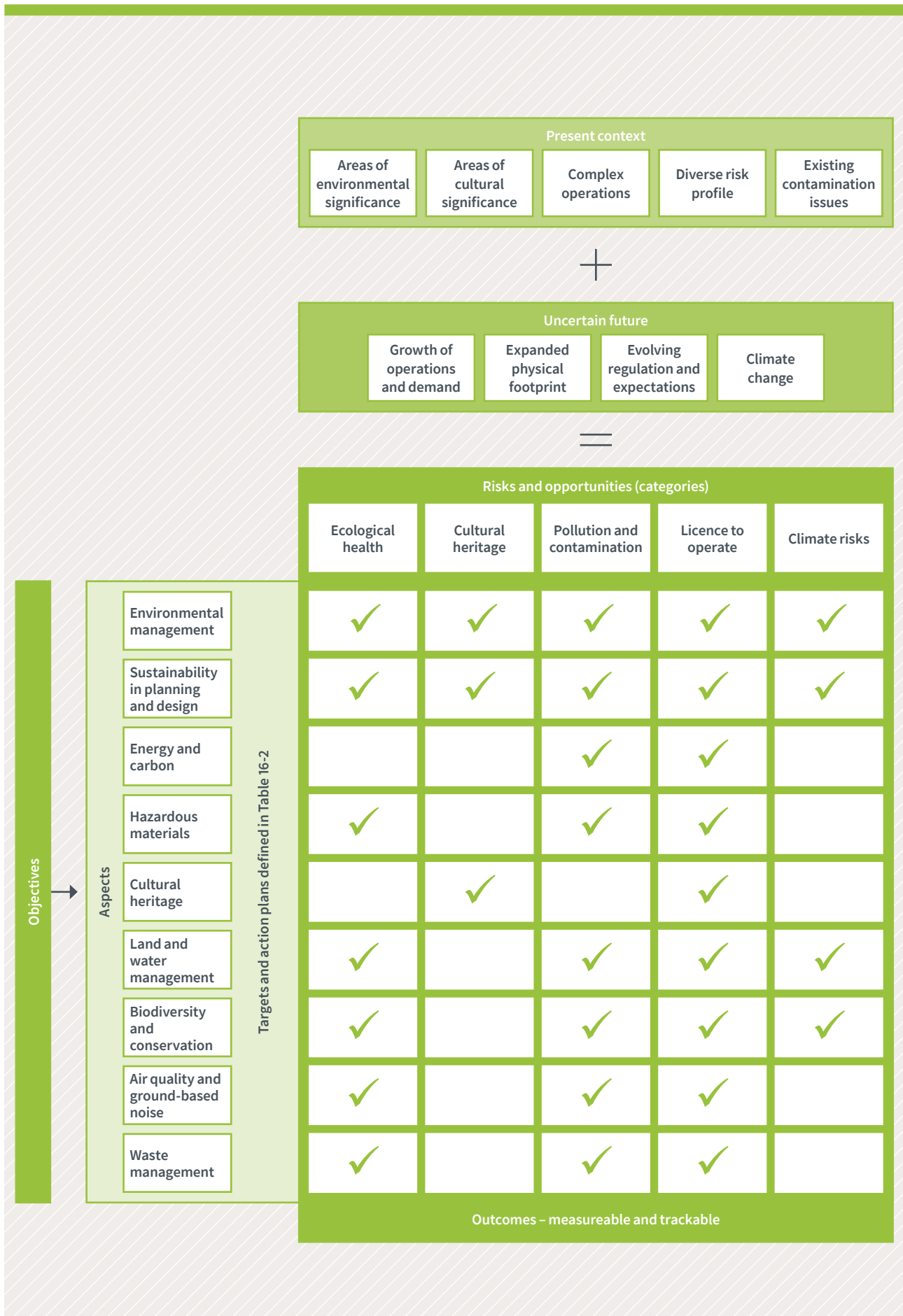


Figure 16-4: Airport Environment Strategy conceptual structure

16.2.6 Targets

Through the development of this Environment Strategy, Melbourne Airport has identified and committed to a number of targets within each environmental aspect. These targets serve two purposes:

1. To provide specific direction for environmental management activities

2. To allow for the tracking of environmental performance and the implementation of this strategy.

The targets are described in Table 16-3.

The achievement of each target is supported by defined action plans. The completion of the actions represent a measurable set of key performance indicators. Action plans for each environmental aspect are provided in section 16-4.

Table 16-3: Environmental targets for Melbourne Airport

Aspect	Targets
Environmental management	100% of scheduled inspections and audits completed
	100% of follow-up actions from inspections and audits closed out
	100% of Operational Environmental Management Plans received and reviewed
	100% of Codes of Environmental Practice signed and returned
	100% of new staff and contractors undertake Environmental Induction Training
	Maintain certified EMS to ISO 14001: 2015
Sustainability in planning and design	Integrate ESD principles in new developments
	Implement appropriate actions that build climate resilience based on the outcomes of the Climate Change Adaptation and Mitigation Framework
	Complete and commence implementation of the Melbourne Airport Integrated Water Plan
	Reduce total potable water use (from FY17 levels)
	Implement a Melbourne Airport Sustainable Procurement Policy
Energy and carbon	Achieve 20% reduction of annual grid electricity consumption
	Install 10 megawatts of renewable energy capacity
	Establish science-based carbon reduction targets
	Implement the Airports Council International Level 2 Airport Carbon Accreditation and progress towards Level 3 accreditation
	Implement a Carbon Management Plan
Hazardous materials	Reduce the use of hazardous substances
Cultural heritage	Identify and implement opportunities for enhanced visitor experiences based on Melbourne Airport's cultural and environmental heritage assets
	Develop and implement a site wide Cultural Heritage Management Plan

Aspect	Targets
Land and water management	Complete a site-wide PFAS investigation and associated risk assessments
	Implement a site-wide Contaminated Land Management Strategy
	Reduce the total number of off-site noncompliances observed in surface water monitoring (from FY17)
	Increase the resilience of receiving waterways
	Implement a Groundwater Monitoring and Management Strategy
Biodiversity and conservation	Develop a Strategic Biodiversity Advanced Offsets Framework
	Continue to implement the Biodiversity and Conservation Management Plan
	No net increase in Melbourne Airport's annual target 12-month average wildlife strike rate
	Implement a site-wide Integrated Pest Management Plan
	Implement an Ecological Community Management and Improvement Plan for high value ecological areas
	20% reduction of high threat weeds within the grey box woodland and growling grass frog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River (from FY17)
	50% reduction of feral pest animals within the grey box woodland and growling grass frog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River (from FY17)
Air quality and ground-based noise	Undertake a feasibility assessment for replacing diesel ground support equipment with electric alternatives
	Improve the reliability of the data capture rate of the Air Quality Monitoring Plan
	Continue to facilitate Noise Abatement Committee meetings
Waste management	Implement a Melbourne Airport Waste Management Strategy
	Implement a Melbourne Airport Sustainable Procurement Policy to reduce the adverse environmental, social and economic impacts of purchased products and services
	Reduce the total waste disposed to landfill (from FY17)
	Reduce level of contamination of commingled recycling from APAM and tenant bin rooms

16.3 Implementing the strategy

This strategy will be implemented via Melbourne Airport's Environmental Management Framework.

16.3.1 Environment Management Framework

Melbourne Airport has an Environmental Management Framework that is designed to ensure that processes for continuous improvement and ongoing monitoring of compliance are embedded in the way we work.

The Environment Strategy forms one part of the Environmental Management Framework and is one of the key mechanisms for ensuring that the commitments made in Melbourne Airport's Environmental Policy are met. The strategy is enacted and implemented via the EMS.

More generally, Melbourne Airport operates within a framework of corporate governance, goals and values. These are reflected in the environmental management principles outlined in the Environment Policy. The Environmental Management Framework enables Melbourne Airport to effectively manage and adapt to environmental risks and continually improve environmental management practices and performance.

Under the framework, environmental compliance is internally monitored and reviewed on an ongoing basis. Compliance is also externally (and annually) reviewed by the Airport Environment Officer (AEO), on behalf of the Department of Infrastructure, Regional Development and Cities, via the annual Airport Environment Report. In addition, the EMS itself is externally audited periodically as part of maintaining ISO certification. These processes, and the overall framework, are shown in Figure 16-5.

Where an Environment Strategy action relates to the development of a new plan, policy, framework or guideline, the AEO will be engaged as a stakeholder in the development in these documents through:

1. Reviewing the document lists at the AEO / Melbourne Airport monthly meetings, and discussing upcoming projects / documents and their time frames
2. Providing the AEO an opportunity to identify key aspects of the document that they identify as being relevant to the document and its development
3. As the document is developed, it can be provided to the AEO as a working draft or similar for comment within a timeframe advised by APAM. Alternatively, where the AEO has expressed an interest, the AEO may attend meetings / workshops as part of the document development and consultation process.
4. The AEO may provide comment / advice to APAM for APAM's consideration at any time in the document development process.

Following finalisation of the documents, Melbourne Airport will undertake their implementation in a timely manner.

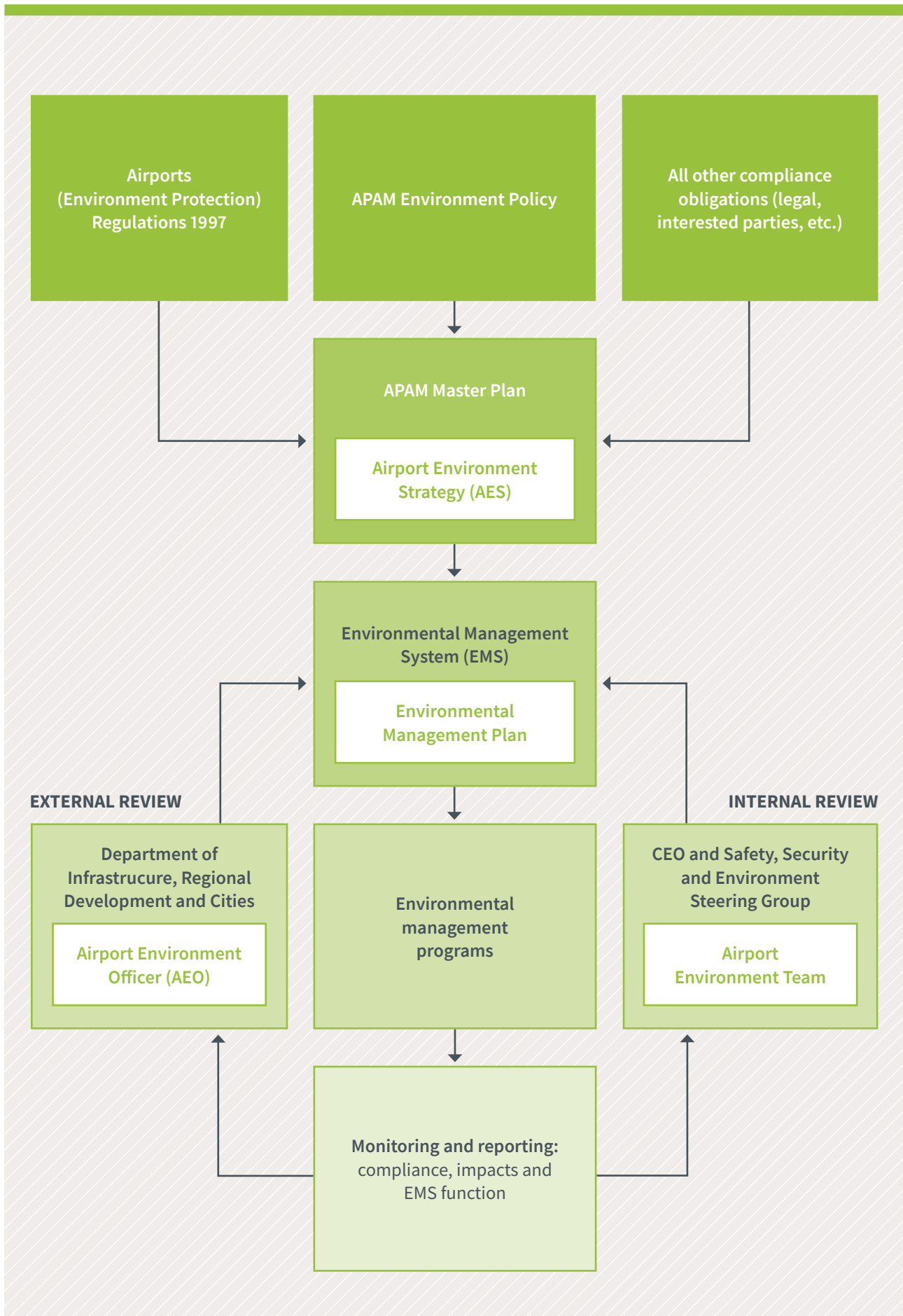


Figure 16-5: APAM Environment Management Framework and continuous improvement review loop

16.3.2 Environmental Management System

Central to the framework is Melbourne Airport's certified EMS, which has been in operation since 2004 and has recently been updated to align with the current EMS standard (ISO14001:2015). The EMS consists of the policies, plans, procedures and activities that together form a system to manage the environmental aspects of the airport and enable compliance with environmental legislation. Internal and external audits of the EMS are undertaken regularly to assess the compliance of operational systems. The EMS is the primary mechanism for implementing this strategy.

The EMS applies to all Melbourne Airport staff, contractors and subcontractors. Key elements of the EMS, of relevance to the Environment Strategy, are described below.

16.3.2.1 Environmental Site Register

A component of the EMS is the Environmental Site Register, which records site-specific environmental and cultural heritage attributes and environmental assessment results. The register is used by Melbourne Airport staff to determine the level of environmental risk and environmental mitigation measures that may be associated with proposed works. Melbourne Airport maintains the Environmental Site Register for:

- water quality, air and noise monitoring
- septic and fuel tank locations and inspections
- Aboriginal and European heritage site locations
- flora and fauna assessments
- groundwater monitoring
- contaminated land assessments.

16.3.2.2 Environmental responsibilities

The responsibility for environmental performance at Melbourne Airport lies with the board of directors and the CEO, supported by Corporate Services business unit and the Senior Leadership Team. This group is responsible for establishing, reviewing and implementing the EMS. The airport Environment Team is responsible for identifying and delivering strategies to address environmental issues and for providing advice and support across the organisation. Responsible environmental management requires the coordinated and cohesive involvement of all airport staff, tenants, business operators and contractors.

Airport tenants, business operators and contractors are required to perform their activities in accordance with the EMS, the Environment Policy and the Environment Strategy and must ensure their activities are compliant with applicable legislation and policy.

Figure 16-6 provides an overview of the corporate structure of the airport (left-hand side) and each team's responsibilities across the different environmental areas: Environmental Performance, Environmental Policy and Strategy, EMS documented information and Operations and documented information. Under the area of 'Operations and documented information', the diagonal indicates that maintenance of this area is split across the Senior Leadership Team and the Environment Manager on a sliding scale.

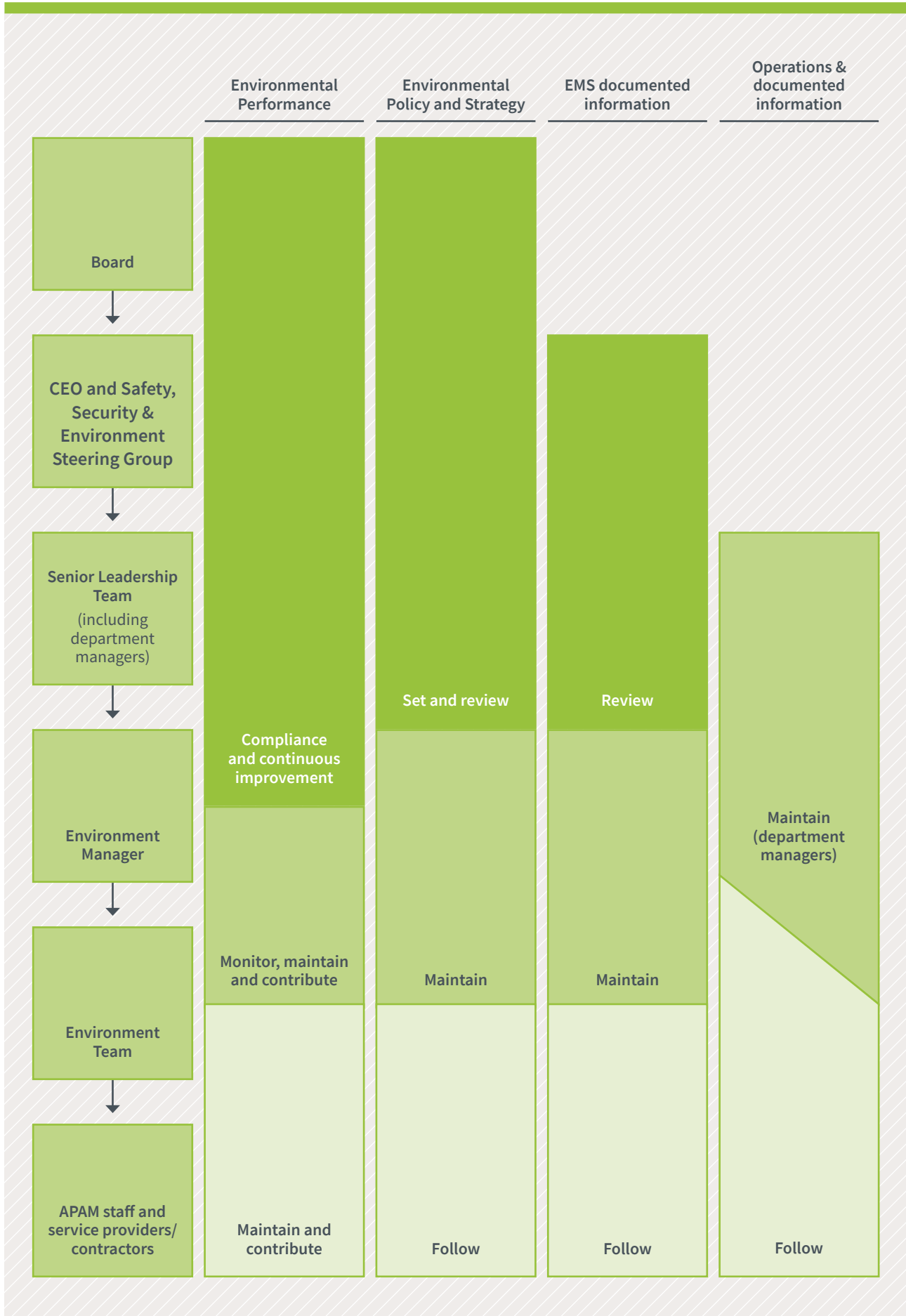


Figure 16-6: APAM Environment management responsibilities, relative to EMS documents

16.3.2.3 Environmental monitoring

Environmental monitoring is a critical component of Melbourne Airport's EMS to evaluate compliance, identify issues and opportunities, obtain information about environmental performance and encourage continual improvement. Under the Airports (Environment Protection) Regulations, the airport is required to monitor the levels of pollution (if any) present in air, water or soil at the airport and the level of ground noise generated at the airport in accordance with the Environment Strategy.

The Environment Strategy reflects the self-regulatory framework of the Airports (Environment Protection) Regulations and includes real-time monitoring and targeted audits to manage risks and inform airport decision making. If monitoring identifies noncompliance, Melbourne Airport undertakes necessary corrective actions. Where appropriate, the public display of data will demonstrate the airport's efforts to mitigate environmental impacts.

Melbourne Airport continues to refine and direct its environmental monitoring program. All monitoring and monitoring advice is provided by a range of suitably qualified technical specialists. In addition to monitoring environmental effects within the airport site, Melbourne Airport also monitors some aspects that can affect the surrounding environment.

Melbourne Airport will provide the results of routine monitoring to the Secretary of the department on an annual basis via the Annual Environment Report. If monitoring discloses pollution (as defined by the Airports (Environment Protection) Regulations 1997) the airport will undertake reporting in accordance with section 6.04 of the Airports (Environment Protection) Regulations 1997.

Monitoring programs undertaken in accordance with the Environment Strategy are listed in Table 16-4.

16.3.3 Environmental awareness and training

Ongoing environmental awareness and education within business units across Melbourne Airport is essential to identify and manage risks and to achieve positive environmental outcomes. As outlined in the EMS, Melbourne Airport administers an effective environmental training program through environmental induction training, environmental awareness training and job-specific environmental training. Topics include regulatory requirements, spill response, biodiversity awareness and management of hazardous materials.

APAM employees whose work may result in a significant impact to the environment are expected to be competent in that work, and to have received appropriate training. An effective environmental awareness and training program is essential for achieving good environmental performance.

APAM delivers three levels of environmental training:

1. Environmental Induction Training – to introduce new employees to APAM's Environment Policy, the EMS and the Environment Strategy
2. Environmental Awareness Training – to update employees with developments in APAM's Environment Policy, the EMS, the Environment Strategy and key environmental management initiatives
3. Job-specific environmental training – to provide employees involved in activities that have potential for significant environmental impact with the skills needed to undertake these activities in a competent manner.

APAM's tenants and other operators are required to undertake relevant training related to the environmental risks associated with their operations. These requirements are documented within tenants'/ operators' OEMPs and/or CEMPs. Compliance is verified via APAM's inspection and audit program.

Contractor managers (i.e. APAM employees who oversee work undertaken by a contractor) are responsible for obtaining assurance that contractors undertaking activities at Melbourne Airport are appropriately trained and competent. Contractors working at the airport must undergo an induction, which includes a section that outlines their responsibilities under APAM's EMS.

Table 16-4: APAM's ongoing environmental monitoring program

Environmental aspect	Monitoring type	Specified frequency
Environmental management	Reporting to Safety, Security and Environment Steering Group	2-monthly
	Internal EMS Conformance Audit	Annual
	Environment Management System ISO14001 External Audit	9-monthly
	Environment Management System ISO14001 Recertification	3-yearly
Sustainability in planning and design	Qualitative review of the implementation of the ESD principles in new developments	Ongoing
	Water use	Monthly
Energy and carbon	Gas use	Monthly
	Fuel use	Monthly
	Electricity use (overall)	Monthly
	Electricity use (multiple submeters)	Ongoing
	Fuel usage (ground vehicles)	Weekly
Hazardous materials	Underground storage tank integrity testing	Annual
	Inspections of hazardous materials storage areas	Regular and ongoing
Cultural heritage	Archaeological site monitoring	As required
Land and water management	Soil contamination testing	Prior to all major construction activities
	Soil erosion	Monthly during CEMP inspections
	Stormwater quality	Quarterly
	Groundwater quality	Annual
	Visual inspections of stormwater outlets	Twice weekly inspections of nearby creeks
	Stream health monitoring surveys	6-monthly
Biodiversity and conservation	Airside wildlife monitoring	Daily
	Flora and fauna monitoring	Annual / prior to all major construction activities
Air quality and ground-based noise	Carbon monoxide, oxides of nitrogen, ozone, sulphur dioxide, particulate matter—onsite and offsite	Hourly with annual report
	Ground-based noise	As required
Waste management	Bin room inspections	Regular and ongoing
	Triple interceptor traps	3 weeks to 12 months, depending on trap
	Trade/greasy waste discharge monitoring	3 weeks to 12 months, depending on trap
	APAM internal office waste audit	6-monthly

16.4 Action plans

Achieving the objectives of this strategy and the targets for each environmental aspect requires:

- an understanding of the current situation and future trends
- a sequenced set of actions to be undertaken, with assigned responsibilities and timeframes for implementation.

Proactive environmental management will be critical to achieving the goals of this strategy. This action plan ensures that Melbourne Airport's EMS is fully functional and continues to be improved.

16.4.1 Environmental management

16.4.1.1 Targets

- 100% of scheduled inspections and audits completed
- 100% of follow-up actions from inspections and audits closed out
- 100% of Operational Environmental Management Plans received and reviewed
- 100% of Codes of Environmental Practice signed and returned
- 100% of new staff and contractors undertake Environmental Induction Training
- Maintain certified EMS to ISO 14001:2015

16.4.1.2 Background

Melbourne Airport's certified EMS has been in operation since 2004 and has recently been updated to align with the current EMS standard (ISO14001:2015). APAM is committed to maintaining this certification. The EMS is the primary mechanism for implementing the Environment Strategy.

The responsibility for environmental performance at Melbourne Airport lies with the board of directors and the CEO. The board and the CEO are supported by the Corporate Services business unit and the Senior Leadership Team in the establishment, review and implementation of the Environmental Management Framework and System. These have been designed to ensure that processes for continuous improvement and ongoing monitoring of compliance are embedded in the way we work. The Environment Team is responsible for identifying and delivering strategies to address environmental issues and for providing advice and support regarding environmental matters across the organisation.

The following sections provide the targets committed to, relevant foundational knowledge, and an action plan for achieving the targets under each environmental aspect.

The EMS provides a framework for monitoring and addressing environmental impacts associated with APAM's operations. The EMS consists of the policies, plans, procedures and activities that together form a systematic approach to managing environmental aspects and meeting compliance obligations. Internal and external audits of the EMS are undertaken regularly to assess the compliance of operational systems.

The EMS applies to all Melbourne Airport staff, contractors and subcontractors. Environmental compliance is internally monitored and reviewed on an ongoing basis. Compliance is also externally (and annually) reviewed by the AEO, on behalf of the Department of Infrastructure, Regional Development and Cities, via the annual Airport Environment Report. In addition, the EMS itself is externally audited periodically as part of maintaining ISO certification.

Airport tenants, business operators and contractors are required to perform their activities in accordance with the Airport Environment Strategy, Environment Policy and the EMS and must ensure their activities are compliant with applicable legislation and policy.

APAM monitors and measures the following areas of the EMS:

- environmental objectives
- operations and activities that can have a significant environmental impact
- compliance with applicable environmental legislation and other compliance obligations.

APAM tracks non-conformances and the corrective and preventive actions developed to address them.

An important aspect in an EMS is the identification and management of actual or potential contraventions of the Environmental Policy or the EMS, and the incorporation of improvement suggestions to the system and procedures. The EMS requires that a process is in place to ensure that non-conformances are addressed through corrective and preventive action(s).

APAM uses the Safety (and environment) Incident Management System (SIMS) to document and track non-conformances. When SIMS is not available to the staff reporting the non-conformance, a templated Incident Report Form is used and is then provided to the Environment Team. In either case, non-conformances are registered, investigated, addressed and closed-out.

Within the airport's complex operating environment, maintaining the day-to-day functionality of the EMS, while at the same time continually improving the efficiency and effectiveness of its processes, presents an ongoing challenge for the Environment Team. The action plan at Table 16-5 summarises the activities in operating and maintaining the continuous improvement loop of the EMS, and provides a clear pathway to ensure the Airport Environment Team effectively manages the EMS.

While we achieved, or are continuing to implement all of the last Environment Strategy's targets, our new targets ensure we remain proactive in our monitoring, inspection and compliance programs using a risk-based approach.

Table 16-5: Action plan for environmental management at Melbourne Airport

Action	Details	Timeframe
1	Implement EMS updates from 2018 internal audit	2019
2	Ensure the Environmental Policy and Airport Environment Strategy are hosted on the internet for distribution to sub-lessees, licensees, other airport users and the local community	2019
3	Develop and implement a risk-based inspection and audit schedule for tenants, contractors and relevant APAM operations	Annual
4	Maintain a register of follow-up actions	Ongoing
5	Allocate adequate resourcing to review tenant OEMPs at the required frequency and follow up if required	Annual
6	Regular inspections of low-risk tenants to ensure their COEPs are current and available	Annual
7	Regular inspections of high-risk tenants to ensure their OEMPs are current and available	Annual
8	Regularly report progress on targets to the Senior Leadership Team	2-monthly
9	Ensure the Melbourne Airport employee and contractor environmental induction is up to date	Annual
10	Record all attendance for environmental inductions	Ongoing
11	Undertake regular external audits of the EMS	9-monthly
12	Implement corrective actions to the EMS as required	Ongoing
13	Submit Annual Environmental Report to DIRDC, including reporting on environmental issues/incidents	Annual
14	Conduct formal monthly meetings with the AEO to review environmental progress and implementation of the Environment Strategy	Monthly
15	Update and maintain internet site to provide environmental information to the community	Annual
16	Prepare and make publicly available information on key environmental achievements	Ongoing

16.4.2 Sustainability in planning and design

Melbourne Airport recognises its responsibility for contributing to the sustainability of Melbourne (and Victoria) as a whole. This action plan is targeted at ensuring that planning and design decisions are focused on building long-term sustainability and resilience.

16.4.2.1 Targets

- Integrate Environmentally/Ecologically Sustainable Design (ESD) principles into new developments
- Implement appropriate actions that build climate resilience based on the outcomes of the Climate Change Adaptation and Mitigation Framework
- Complete and commence implementation of the Melbourne Airport Integrated Water Plan
- Reduce total potable water use (from FY17 levels)
- Implement a Melbourne Airport Sustainable Procurement Policy

16.4.2.2 Background

This action plan focuses on issues that are significantly broader (in terms of space and time) than the airport's day-to-day operations. Specifically, this includes ESD, climate resilience, water efficiency and procurement considerations. Energy and carbon have similarly broad implications and are addressed in a separate (albeit related) action plan.

Ecologically Sustainable Development

ESD aims to meet the needs of people today while conserving our ecosystems for the benefit of future generations.

The Melbourne Airport Planning and Urban Design Strategy (2015) provides a framework to encourage the adoption of ESD principles and initiatives in Melbourne Airport projects. The incorporation of ESD principles into asset management and operational practices at the airport will drive efficiencies in resource use, minimise environmental impacts and maximise commercial returns.

The future development of plans for Melbourne Airport to accommodate the predicted passenger growth will result in an increasing demand on natural resources and potentially increased impacts on the environment. Challenges associated with this growth and potential environmental impacts include:

- the rising cost of utilities
- increased water demand and potential scarcity exacerbated by climate change
- the depletion of non-renewable resources and materials
- increased carbon emissions
- climate change impacts
- other adverse environmental impacts including ecological harm, pollution and waste generation.

Melbourne Airport recognises the need to achieve a balance between future development and its environmental impacts. The mitigation of environmental impacts will be addressed by the integration of ESD principles into design guidelines, construction management and the operation and maintenance of buildings and infrastructure.

Melbourne Airport has developed a number of initiatives and design principles aimed at mitigating environmental impacts and improving the efficiency of resources in development projects. Indeed, the new Terminal 4 development was completed in line with the Leadership in Energy and Environmental Design (LEED) Guidelines.

The airport's 'Contractor Guide to Working at Melbourne Airport', and property and retail works fit-out guides, provide direction for incorporating ESD principles into the design and fit-out of Melbourne Airport developments. These guides recognise the importance of environmentally sensitive building design and construction practices to achieve high-performance building operations that are efficient and effective and fit for purpose. This includes the use of environmentally sustainable materials, low-volatile organic compound finishes, and improved energy and water efficiency.



Climate resilience

The climate resilience of Melbourne Airport contributes directly to the climate resilience of Victoria as a whole. Therefore, in the interests of future-proofing its operations and environmental performance in the face of this climate change uncertainty, Melbourne Airport will work to build its resilience to a range of possible future scenarios.

To this end, Melbourne Airport has undertaken a Climate Risk and Vulnerability Assessment, and a similar assessment has been undertaken as part of the Runway Development Program.

Through these assessments, Melbourne Airport has concluded that projected changes in climate will exacerbate many existing climate-related risks. In particular, those risks related to high temperatures, extreme rainfall, drought and fire weather are likely to increase in both likelihood and severity. The effect of climate change on other weather-driven risks such as those related to wind and lightning is less clear.

Similarly, risks continue to arise from the regulatory and market transformation from governments and communities acting to reduce greenhouse gas emissions and/or adapt to climate change. These risks have been examined and have the potential to affect access to capital, reputation, investor concerns and regulatory pressure on the carbon-intensive aviation sector. Conversely, some of these factors also represent opportunities to drive projects in renewable energy and resource efficiency.

In the interests of future-proofing its operations and environmental performance in the face of this uncertainty, Melbourne Airport will work to build its resilience to a range of possible future scenarios. A key action will be to develop a Climate Change Adaptation and Mitigation Framework. This will be developed in consultation with stakeholders, including the state government. The framework will be designed to complement the Climate Change Strategy and Transport System Adaptation Action Plan, which will be developed by the state government under the *Climate Change Act 2017* from 2020.

Water

Responsible water consumption and management is a key priority for Melbourne Airport due to the forecast demand from future airport growth and the potential impacts that climate change (and Melbourne's population growth) could have on water availability.

The main demand for water use in the airport comes from:

- terminal buildings, including bathroom facilities
- catering facilities
- airport and aircraft maintenance
- cooling towers.

Melbourne Airport's potable water network is undergoing a significant end-of-life replacement program to ensure it supports current and future demands.

Melbourne Airport is developing an Integrated Water Plan that will promote water efficiency and water-sensitive urban design initiatives and minimise potable water consumption and improve water quality. The intended benefits of the upgrade and plan are:

- more accurate, efficient and cost-effective operation of water utilities
- water supply that is more reliable and of higher quality
- development of additional water re-use and treatment facilities
- securing sufficient water capacity for current operations and projected growth
- reduction in the total potable water consumption of the airport precinct through efficiencies, demand reduction and water re-use
- feasibility analyses into further opportunities for water re-use and supply diversification.

Furthermore, Melbourne Airport has invested in significant rainwater and stormwater harvesting infrastructure and water treatment facilities. There are further opportunities to expand and complement this existing infrastructure. The incorporation of water-sensitive urban design initiatives within specific developments will result in a reduction in potable water demand and costs.

Sustainable procurement

Sustainable procurement is a process that aims to reduce the triple bottom line (environmental, social and economic) impacts of purchased products and services. The process considers such impacts across the lifecycle of a product or service, from raw materials to operation and disposal/recycling. The scale of Melbourne Airport's operations means that the upstream and downstream impacts of its procurement decisions can be far reaching and long-lasting.

In recognition of this potential, Melbourne Airport is in the process of developing a Sustainable Procurement Policy to help it better manage the sustainability risks up and down its supply chain.

Melbourne Airport only had 2 targets related to ESD in the Environment Strategy, both of which have been achieved. Our new Environment Strategy builds on these achievements and focuses on integrated water management and further reducing our potable water use, and will deliver a Sustainable Procurement Policy.

Table 16-6 presents the action plan for sustainability at Melbourne Airport.

Table 16-6: Action plan for sustainability at Melbourne Airport

Action	Details	Timeframe
1	Review the implementation of the ESD principles outlined in the Melbourne Airport Planning and Urban Design Strategy and the contractor guidelines for working at Melbourne Airport for new developments	Ongoing
2	Complete and start implementing the Melbourne Airport Integrated Water Plan including developing specific action plans to re-use water, reduce the use of potable water and improve water quality	2019
3	Develop a Melbourne Airport Sustainable Procurement Policy	2019
4	Collaborate with Melbourne Airport business partners and tenants to identify opportunities for potable water-saving measures	Ongoing
5	Monitor potable water consumption across Melbourne Airport and investigate/ implement improvements to the monitoring system	Annual
6	Review the ESD principles in the Melbourne Airport Planning and Urban Design Strategy and the Melbourne Airport Development Manual and identify opportunities to adopt improved sustainability measures (e.g. Infrastructure Sustainability Council of Australia IS rating, LEED, Green Star – Communities, National Australian Built Environment Rating System, and Global Reporting Initiative). Update as necessary	2019
7	Investigate opportunities to maximise climate resilience at Melbourne Airport (inside and outside) through review of planting guidelines and the development of a landscape strategy for Melbourne airport	2020
8	Implement, where appropriate, recommendations from above	2020+
9	Develop a Climate Change Adaptation and Mitigation Framework in consultation with stakeholders, including the state government. The framework will be designed to complement the Climate Change Strategy and Transport System Adaptation Action Plan, which will be developed by the state government under the Climate Change Act from 2020	2020+
10	Review the implementation of the Sustainable Procurement Policy	2022

16.4.3 Energy and carbon

The Australian energy market is in a state of change. Melbourne Airport will need to balance volatile energy prices, evolving grid dynamics, new technologies and decarbonisation. This action plan is aimed at ensuring Melbourne Airport strikes this balance while still ensuring reliability of the services it provides to customers and tenants.

16.4.3.1 Targets

- 20% reduction of annual grid electricity consumption by FY20 (compared with FY17)
- Install 10 megawatts of renewable energy capacity by 2021
- Establish science-based carbon reduction targets
- Implement the Airports Council International Level 2 Airport Carbon Accreditation and progress towards Level 3 accreditation
- Develop a Carbon Management Plan

16.4.3.2 Background

Melbourne Airport has long been committed to reducing its energy intensity and carbon footprint. Under its 2003 Environment Strategy, the airport developed and implemented an Energy Management Plan. Over subsequent years, the airport has, among other measures, rolled-out LED lighting and energy efficient appliances, continued to offset carbon emissions for APAM staff flights and vehicle emissions, and installed an 8 megawatt gas-fired tri-generation system (Figure 16-7).

Primarily as a result of the tri-generation system, APAM's Scope 1 and 2 greenhouse gas emissions dropped by 22 percent in FY17 compared with FY16 (Figure 16-8) In late 2017 the airport achieved Level 1 accreditation under the International Airport Carbon Accreditation scheme through our policy commitment to emissions¹ reduction and the development of a Scope 1 and 2 carbon footprint.

¹ Scope 1 emissions are from sources that are directly controlled by APAM (e.g. gas boilers and on-site vehicles). Scope 2 emissions are from the generation of purchased electricity.



Figure 16-7: Melbourne Airport's Tri-generation Plant – low carbon electricity generation

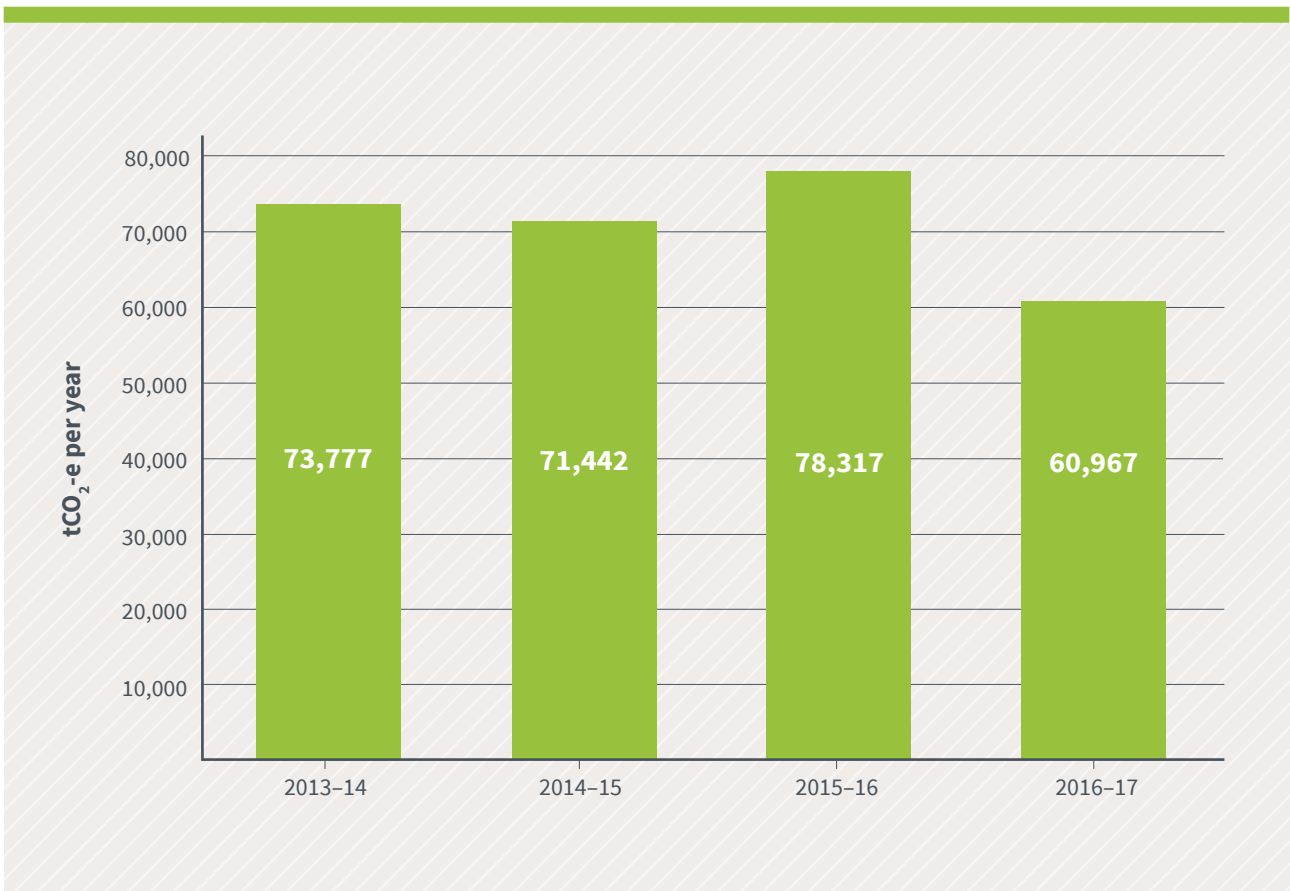


Figure 16-8: APAM Scope 1 and 2 emissions

From an energy perspective, APAM's electricity consumption has varied slightly year to year but has not grown appreciably since FY14. This demonstrates the effectiveness of the implemented energy efficiency measures, given the growth of APAM's operations in recent years. However, electricity consumption across the airport as a whole (which includes non-APAM areas) has grown, as has energy from fossil fuels consumed on site.

Melbourne Airport is now facing significant challenges to its energy and carbon management position. These challenges are driven by:

- sustained increases in wholesale price for electricity and gas. APAM Common Use energy is projected to cost significantly more in FY18 than in FY17. Increases in gas prices have altered the economics of operating the tri-generation system. Indeed, the emissions reduction unlocked by this system are at risk of being lost
- Property and Aviation business unit developments, which place upward pressure on energy demand. Overall, this upward trend in consumption is forecast to continue. APAM forecasts a 20 percent increase in airport-wide electricity consumption by FY20
- the need for APAM to play its part in reducing emissions in line with Victoria's target of net zero emissions by 2050.

These challenges are expected to play out in an environment of rapidly evolving technology and economics. Renewable energy installations are becoming increasingly cost competitive and energy storage technologies are coming to scalable maturity. The software and contractual developments necessary to govern microgrids and peer-to-peer energy trading are rapidly emerging, and Power Purchase Agreements are becoming an established solution.

Responding to these challenges and changes in context, Melbourne Airport will:

- roll out its Energy Strategy, which aims to reduce energy intensity by 20 percent by 2020. This strategy focuses on APAM's 'common energy use', which is energy (electricity and natural gas) over which APAM has direct operational control to service the operation of the airport (aviation processing, lighting, thermal plant, etc.) and supporting infrastructure (such as car parks, airfield lighting, data centres and roads). The strategy will be achieved by:
 - » optimising energy use through energy efficiency measures and smart monitoring and control systems
 - » transitioning to renewable energy
 - » targeting smart procurement options
- roll out a Solar Adoption Program, which aims to have 11 megawatts of solar PV generation installed on site by FY21
- roll out a Carbon Management Plan, which will include formalised emissions reduction targets and a pathway for achieving them.

While Melbourne Airport was unable to achieve the target of 'Aim for 15 percent of operational energy consumption to be generated or purchased through on-site renewables or accredited green power schemes' in the last strategy period, energy use where the Airport has operational control has not grown appreciably since FY14. Our new strategy will deliver best practice targets for carbon emissions and continue to reduce our grid consumption of electricity.

Table 16-7 presents the action plan for energy and carbon at Melbourne Airport.

Table 16-7: Action plan for energy and carbon at Melbourne Airport

Action	Details	Timeframe
1	Roll out the APAM Energy Strategy, which aims to reduce annual grid electricity consumption by 20% by 2020	Ongoing
2	Collaborate with Melbourne Airport business partners and tenants to identify opportunities for energy-saving measures	Ongoing
3	Explore the use of alternative fuel sources for airside equipment, including examination of electric vehicles, hybrid vehicles and alternative options for auxiliary power units	Ongoing
4	Roll-out the Solar Adoption Program, which aims to have 10MW of solar PV generation installed on site by FY21	2021
5	Formulate a carbon emissions reduction target using the science-based target-setting methodology	2019
6	Develop and begin implementing a Melbourne Airport Carbon Reduction Plan to reduce carbon emissions from Melbourne Airport's own operations	2019+
7	Quantify Scope 3 emissions, set a Scope 3 emissions reduction target and develop a plan to engage with stakeholders on methods for Scope 3 emissions reduction	2019+
8	Maintain compliance with existing energy and greenhouse reporting and assessment programs including 'the National Greenhouse and Energy Reporting Scheme and the National Pollutant Inventory'	Annual

16.4.4 Hazardous materials

Melbourne Airport will continue to work to minimise the risk associated with hazardous materials. Through our action plan, we will systematically examine options to replace hazardous materials with non-hazardous alternatives, and we will manage the use and storage of those hazardous materials that cannot be avoided.

16.4.4.1 Target

- Reduce the use of hazardous substances

16.4.4.2 Background

A number of hazardous materials are stored and used at Melbourne Airport. These include fuels, oils, solvent-based chemicals and hazardous building materials. Without appropriate management and procedures, hazardous materials have the potential to affect the environment, including soil, groundwater, surface water, air quality and human health and safety.

Sources and uses of hazardous materials at Melbourne Airport include:

- bulk aviation and automotive fuel storage and handling
- fire training and the storage and use of firefighting foam
- tenant-operated maintenance facilities for vehicles and aircraft
- general airport operation, construction, maintenance and landscaping, including the use and disposal of pesticides and herbicides, solvents and paints, batteries, and asbestos-containing materials within existing buildings, fuels and cleaning chemicals
- other hazardous materials present in buildings and structures including:
 - » lead-based paints
 - » polychlorinated biphenyls (which may be present in lighting capacitors and transformers)
 - » ozone-depleting substances (potentially used as refrigerants in cooling systems)
 - » water used in cooling towers (may be a source of legionella bacteria).

Furthermore, some operational and construction activities can affect soil quality. The Airports (Environment Protection) Regulations require expert examination of contaminated sites if there is a possibility they could affect the surrounding area.

Melbourne Airport has several control measures in place to ensure all activities involving hazardous materials are appropriately managed:

- The Melbourne Airport Emergency Plan details standard operating procedures to minimise volatile organic and odorous emissions in the event of chemical spills and to reduce any potential environmental impacts.
- Business partners and tenants are required, as part of their OEMPs, to maintain registers detailing all hazardous materials (including asbestos) stored, handled or used as part of their operations. The individual OEMPs must include provisions for phasing out hazardous materials in favour of safer alternatives and reviews are conducted annually. Similarly, OEMPs include procedures that allow for managing by-products. Business partners and tenants are responsible for ensuring that, for operations under their control, these procedures and control measures are adhered to and that appropriate records and registers maintained.

Melbourne Airport will continue to store, handle, use and dispose of hazardous materials appropriately and will explore further options for sustainable environmental management principles. This is supported by our hazardous materials action plan (Table 16-8).

Table 16-8: Action plan for hazardous materials at Melbourne Airport

Action	Details	Timeframe
1	Investigate replacing hazardous materials with non-hazardous substances and/or identify options to reduce their use	2019+
2	Map location of hazardous materials for APAM using a geographic information system (GIS)	Ongoing
3	Undertake regular inspections of hazardous materials storage areas	Ongoing
4	Ensure all applicable airport staff (and tenants) are trained in environmental emergencies/spill responses	Ongoing
5	Develop and implement an airport-wide framework to guide the control and management of hazardous substances	2020
6	Maintain the Asbestos Register, inspect sites annually and map the location of sites using a geographic information system	Ongoing



16.4.5 Cultural heritage

This action plan will ensure the management of a range of risks that have the potential to have temporary or lasting impacts on cultural heritage values, in particular the risk of disturbance due to construction activities.

16.4.5.1 Targets

- Develop and implement a site-wide Cultural Heritage Management Plan
- Identify and implement opportunities for enhanced visitor experiences based on Melbourne Airport's cultural and environmental heritage assets

16.4.5.2 Background

There are 182 known sites at which artefacts of cultural and heritage significance have been identified on or near the airport. Maintaining cultural heritage values on site is a high priority, as is maintaining a good ongoing relationship with the Registered Aboriginal Party.

Indigenous silcrete stone artefact scatters are common on site and there are cultural heritage sites including scarred trees within the Grey Box Woodland. There are also five historical heritage sites on airport land listed on the Victorian Heritage Inventory under section 121 of the *Victorian Heritage Act 1995*, including the Oakland Junction Township Site, agricultural sites, the Steele Creek Tributary Bridge Ruin and St Mary's Church. It is likely that there are further sites of cultural significance not yet discovered on airport land.

There are a range of risks that have the potential to have temporary or lasting impacts on cultural heritage values. These risks are managed through approval processes for scheduled works but also through undertaking additional assessments for Heritage Management Plan updates, to track the condition of cultural heritage values.

The most common cause of damage is inadequate identification and consideration of cultural heritage throughout the life of a project. To mitigate this risk, Melbourne Airport regularly undertakes assessments under Commonwealth and state legislative requirements to actively manage Indigenous and non-Indigenous cultural heritage values. Prior to beginning works in the vicinity of a recorded site or in areas of cultural heritage sensitivity, Melbourne Airport liaises with specialists and stakeholders to manage any potential disturbance. These assessments and liaison guide the approvals process.

Heritage values are currently documented in a web application tool that also provides a range of management actions to prevent, control or reduce the major risks to culturally significant areas. The Environment Team also maintains a Cultural Heritage Environmental Site Register. This register includes the location of Indigenous and non-Indigenous sites within and adjacent to the airport.

Where construction works are planned in areas of known or potential heritage values, Melbourne Airport requires the project contractor to prepare and implement a Construction Environmental Management Plan (CEMP) that outlines appropriate management measures and contingency plans. This includes cultural awareness training for all site personnel. In construction areas where a Cultural Heritage Management Plan (CHMP) is required, the actions stipulated within the plan are also required to be addressed within the CEMP.

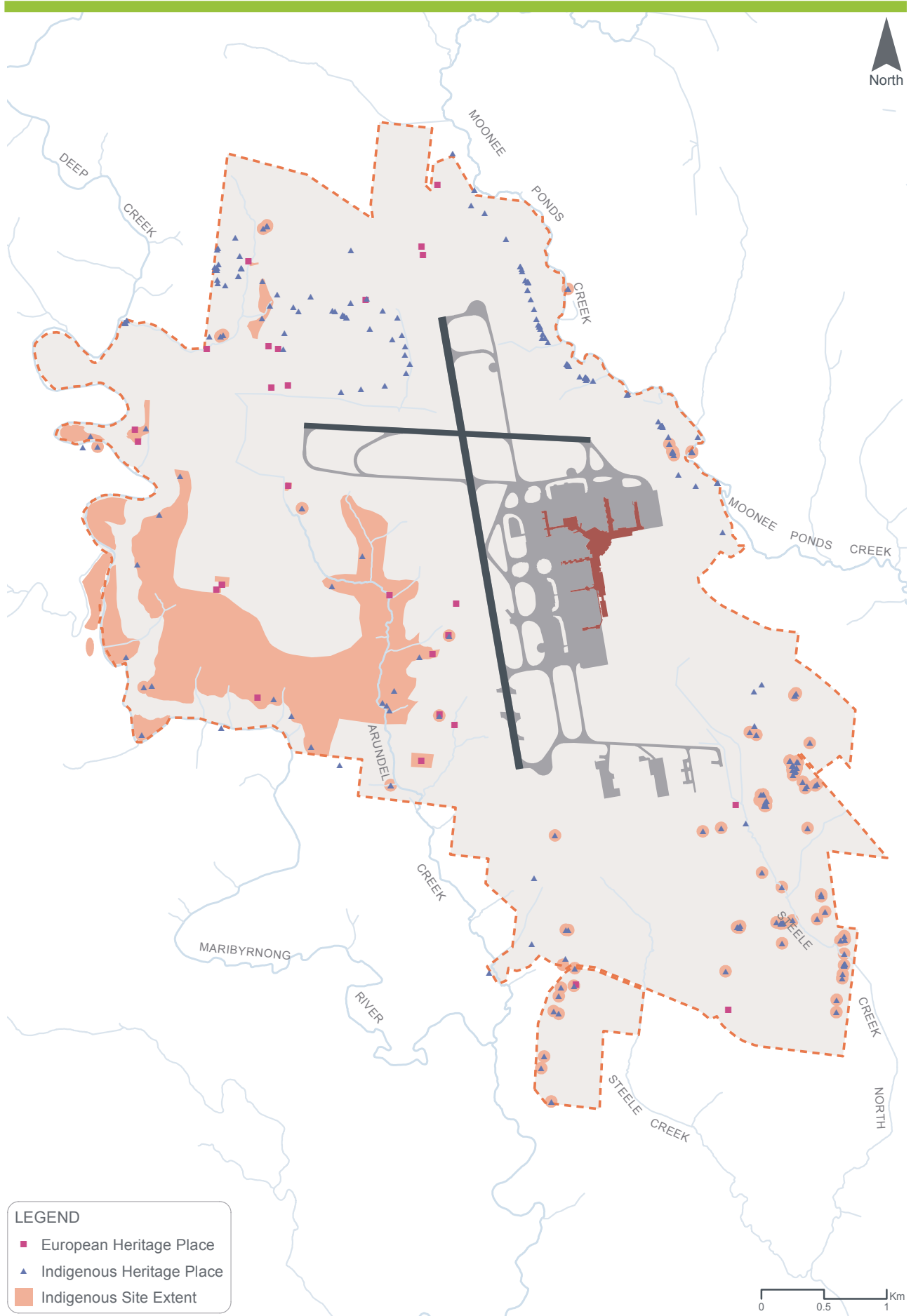
Recently, a CHMP was prepared for the Runway Development Program. The CHMP has been approved by the Wurundjeri Council. All mitigation works will be undertaken in accordance with approved CHMP conditions.

The continued management and conservation of cultural heritage is an important aspect of the airport's future planning. Melbourne Airport also recognises the value in promoting this information and connecting with the community and its passengers through enhanced experiences and the sharing of local knowledge. Our cultural heritage action plan works towards these ends (Table 16-9). Figure 16-9 shows all areas of cultural significance within the airport's boundaries.

Table 16-9: Action plan for cultural heritage at Melbourne Airport

Action	Details	Timeframe
1	Complete airport-wide assessment of heritage assets	2019
2	Develop a field guide for identifying and managing sensitive cultural heritage matters onsite	2019
3	Train relevant employees in how to use CHMP and recognising cultural heritage values	Ongoing
4	Maintain and update heritage values on the airport's geographic information system	Ongoing
5	Consult with relevant stakeholders on proposals that have a potential impact on items of heritage value	Ongoing
6	Develop and implement a Cultural Heritage Management Plan including consultation with stakeholders for areas outside of the Runway Development Program footprint	2019
7	Identify opportunities for enhanced visitor experiences based on Melbourne Airport's cultural and environmental heritage assets	2022





LEGEND

- European Heritage Place
- ▲ Indigenous Heritage Place
- Indigenous Site Extent





Area of archeological potential

Areas of undisturbed or minimally disturbed soils are potential archaeological deposits (PADs). PADs typically contain stone artefacts but may also include hearths, burials and other sub-surface archaeological features. PADs have not been archaeologically tested, so the nature of sub-surface deposits has yet to be confirmed. Until they are tested, they need to be managed in the same way as artefact sites.



Artefact scatters

Artefact scatters are the most common Indigenous cultural heritage on Melbourne Airport land. They consist of flaked and ground stone tools and 'waste' from production. They are found in both surface and sub-surface contexts across the majority of the landscape. Artefacts tend to be found in the denser clusters near water, points with good views and other prominent landmarks.



Stone quarry

Stone quarries are locations where Aboriginal people sourced raw stone material. Typically they are exposed to seams of silcrete, quartz or other hard material suitable for stone tools. There is one quarry in Melbourne Airport, located on an eroded section of Arundel Creek that has exposed a silcrete seam.



Scarred trees

Scarred trees have been modified by Aboriginal people to remove bark to make shields, water carriers and other implements, leaving a scar. There are eight known scar trees located in the Greg Box Forest. The trees are alive, but vary in condition.



Deep alluvial deposits

The riverbanks of Deep Creek and the Maribyrnong River have sections of alluvial deposits built up over many thousands of years. These deposits can contain evidence of past Indigenous land use such as charcoal hearths, ancestral remains and stone artefacts. Antiquity for Aboriginal occupation of Australia was first established in alluvial deposits at the nearby Keilor Skull site. These deposits can contain cultural heritage material and features in clay depths of more than two metres.



Delisted Heritage Inventory sites

Delisted Heritage Inventory sites are considered destroyed or are unable to be relocated. Typically they have been removed by runway construction or by erosion. Delisted sites remain on the Heritage Inventory as an historical record but do not require approvals to harm.



Archaeological deposits

Archaeological deposits include the remains of homesteads and other buildings. Ruins may be completely collapsed or removed and only foundations remain. Surviving under-floor deposits or rubbish heaps may provide a wealth of information about past lifestyles of European settlers and early settlement.



Standing Structures

Standing structures includes culverts, homesteads or other built structures that are still standing. They are often in poor condition, but others remain in use as part of current road infrastructure.

16.4.6 Land and water management

The management of land and water at Melbourne Airport involves mitigating risks that have a potential impact on both of these interrelated environmental aspects. As such, this action plan addresses land and water management as an integrated environmental issue.

16.4.6.1 Targets

- Complete a site-wide PFAS investigation and undertake associated risk assessments
- Implement a site-wide Contaminated Land Monitoring and Management Strategy
- Reduce the total number of off-site noncompliances observed in surface water monitoring (from FY17)
- Increase the resilience of receiving waterways
- Implement a Groundwater Monitoring and Management Strategy

16.4.6.2 Background – land

The soil at Melbourne Airport overlies relatively shallow newer volcanic basalt, which is a hard and compact rock. Hazardous liquids such as fuels, oils and solvent-based chemicals, which are used frequently at Melbourne Airport, have a high potential to contaminate land. Activities that have the potential to affect the soil at the site included:

- chemical and waste storage, handling use and disposal
- water run-off from vehicle-related activities including aircraft maintenance and car park facilities
- importation and storage of contaminated fill
- fuel storage tanks and associated infrastructure
- demolition and construction works.

Due to the broad range of activities that can cause soil contamination, Melbourne Airport has developed numerous control measures to minimise and manage this issue. Any incidents of soil contamination and the ways in which this is managed are added to the Environmental Site Register. This allows for easy identification of when further investigations are required for particular sites or projects.

Furthermore, a site-wide contaminated land investigation is underway. This investigation will be used to better inform Melbourne Airport of the site's contamination status and the construction activities that result in the excavation of soil and generation of spoil at the airport.

The ongoing growth of Melbourne Airport will result in significant expansion to the airport's physical footprint. With this expansion there is a risk that works will interact with areas of soil contamination or could result in new contamination events. Careful consideration and management will also be necessary for transporting existing and imported fill material.

Melbourne Airport assesses all activities including construction and demolition projects for their potential impact on land, groundwater and surrounding waterways. Control measures are developed to minimise the impact of developments on these environmental aspects, and monitoring programs are in place to evaluate the effectiveness of these measures.

Through its land and water action plan, Melbourne Airport will investigate opportunities to remediate and repurpose airport land that adds value for the airport, local communities and environment.

PFAS contamination

Per- and poly- fluorinated alkyl substances (PFAS) are manufactured chemicals that are used to make products resistant to heat, stains, grease and water. PFAS have been widely used for more than 50 years in many consumer and industrial products, including carpets, cookware, clothing, food packaging, pesticides, stain repellents, firefighting foams, mist suppressants and coatings. PFAS are stable chemicals that are resistant to physical, chemical and biological degradation. Because of these properties, PFAS last for a long time and they can be found in humans, animals and throughout the environment in Australia and other parts of the world.

At airports, foams containing PFAS (known as aqueous film forming foams or AFFF) were historically used because they are very effective at putting out liquid fuel fires. Foams containing PFAS have been stored and/or used at a number of locations within the airport, including the following sites leased by Airservices Australia, CASA or the Commonwealth.

- The current and former fire training grounds, located in the north-west corner of the airport.
- The Melbourne Airport Fire Station, Learning Academy Hot Fire Training Ground and Smoke Hut located in the central portion of the airport, to the west of the main runway.
- A Satellite Fire Station and Hangar/Maintenance Area located to the east of the main runway.

Other tenants have stored and/or used the foams in maintenance hangars and the aviation fuel storage depot.

The PFAS National Environment Management Plan (NEMP) provides guidance on the assessment and management of sites contaminated by PFAS. The PFAS NEMP was released in February 2018 and was developed by the Heads of EPAs Australia and New Zealand (HEPA) and the Australian Government Department of Environment and Energy. The Commonwealth, State and Territory Environment

Ministers have endorsed the PFAS NEMP. Melbourne Airport follows the PFAS NEMP to address all aspects of PFAS management on site.

As part of its ongoing environmental management and monitoring of the airport in accordance with the Airports Act and regulations, Melbourne Airport is assessing and monitoring PFAS contamination on airport property. As part of this process, Melbourne Airport has established a Project Control Group (PCG) to review this issue in detail. The PCG consists of Melbourne Airport and:

- Commonwealth Department of Infrastructure, Regional Development and Cities (DIRDC)
- EPA Victoria
- Airservices Australia

Melbourne Airport is also working closely with other relevant stakeholders including:

- Melbourne Water
- Other airport tenants
- Neighbouring local councils
- Community stakeholders

Melbourne Airport will continue to work with airport tenants to manage potential risks from PFAS contamination at the airport.

16.4.6.3 Background – surface water

Melbourne Airport is located on a broad plateau in the catchments of the Yarra and Maribyrnong rivers, with several local waterways located on or adjacent to the airport site (Figure 16-11). The headwaters of Arundel Creek, Steele Creek and Steele Creek North originate on the airport site itself. These waterways support aquatic ecological communities and are also used for irrigation and stock watering purposes. Some reaches of Arundel Creek, the Maribyrnong River, Moonee Ponds Creek and Deep Creek also provide habitat for threatened species including the growling grass frog, *Litoria raniformis* and Australian grayling, *Prototroctes maraena*. These receiving waterways are an integral part of the local natural environment, and ongoing management for maintaining or improving their health is a key objective of the strategy.

Stormwater run-off at Melbourne Airport is managed through an extensive drainage network that includes vegetated swales, drainage pits, subsurface pipes, retention basins, raingardens and gross pollutant traps. Site management practices such as effective spill response, construction site audits, erosion/sediment control, street sweeping and regular stormwater pit and gross pollutant trap maintenance are implemented to minimise potential contaminants leaving the airport site.

Water quality monitoring and stream health assessments have identified the need to increase the resilience of receiving waterways to airport stormwater flows. Some reaches of Moonee Ponds Creek, Arundel Creek and Deep Creek have degraded habitats and as such are more susceptible to impacts from stormwater flows. Revegetation and regeneration, weed and pest animal control, repairing bank erosion and stock management are all important considerations for future management.

Surface water pollutants have been primarily associated with certain firefighting foams (PFAS), heavy metals from aircraft operations and the road network and fuel storage. APAM's surface water monitoring program found that levels of some contaminants were above adopted guidelines at a number of locations across the site. No unacceptable human health risks have been found and APAM continues to monitor water quality at and surrounding the airport to inform future management actions.

The growing Melbourne Airport footprint will result in an increase in hard surfaces and stormwater run-off. This is expected to increase pressure on stormwater infrastructure and the receiving waterways. Without effective management, adverse environmental impacts could occur, such as bank erosion, weed invasion and degradation of aquatic and terrestrial habitat.

Climate change projections for the region indicate that surface water environments are likely to be affected by a number of climate variables including:

- altered rainfall patterns, with less rainfall in winter and spring affecting catchment rainfall and run-off regimes
- more frequent extreme daily rainfall events, with increased potential for flooding
- increased ambient air temperatures and evaporation, with more hot days and fewer cold nights (potential impacts include increased surface water temperatures, drier catchment soils and decreased run-off)
- higher incidence of severe fire weather conditions, with potential surface water impacts from a bushfire including high loads of ash and sediment run-off and bank destabilisation.

In response to these challenges, through the development of an Integrated Water Plan, Melbourne Airport has identified opportunities to improve water quality and increase the stability and resilience of receiving waterways to accommodate increased

airport stormwater flows and minimise environmental impacts. These include better site management, new infrastructure, water re-use and habitat improvement. More specifically, key principles in managing stormwater discharge from the airport include:

- improving stormwater quality by upgrading water treatment measures such as filtration and retention
- reducing the potential for contaminants and litter in the stormwater catchments to enter the drainage network
- managing stormwater volumes so that peak flows and flow velocities are reduced to mitigate downstream erosion impacts and improve surface water quality
- identifying stormwater re-use opportunities through treatment and harvesting.

Through its action plan for land and water, Melbourne Airport will prioritise improving the quality of stormwater run-off and receiving waters through managing contaminants and increasing the resilience of the system through improved processes and technologies.

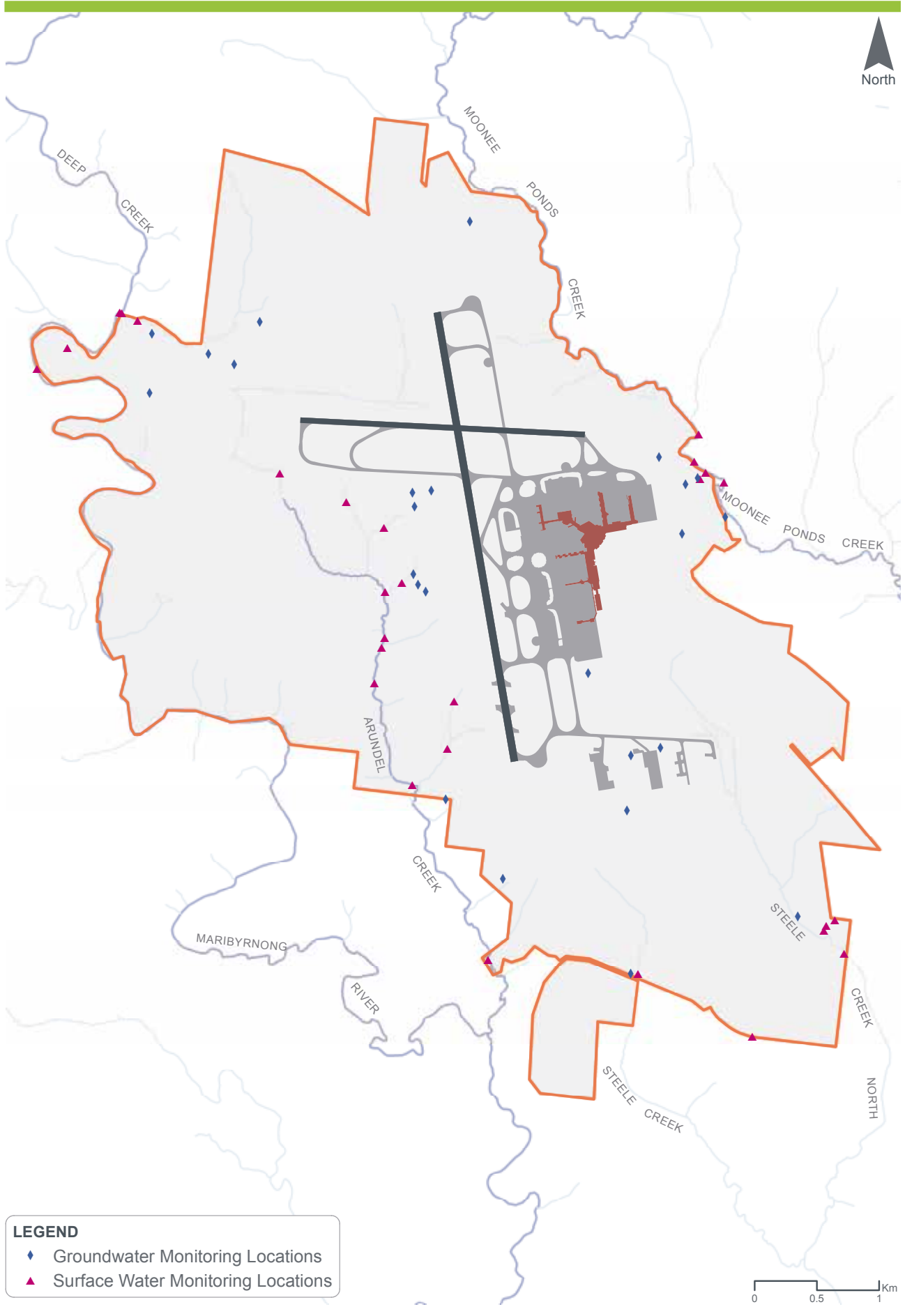


Figure 16-11: Location of waterways and groundwater monitoring points at Melbourne Airport

16.4.6.4 Background – groundwater

Melbourne Airport is located above a regional aquifer. In some areas groundwater occurs at a shallower depth, interacting with surface and near-surface infrastructure. In these locations groundwater is vulnerable to contamination from surface activities. Understanding groundwater flow patterns, interactions and potential sources of contamination is critical to identifying risks, management and remediation. A simplified cross-section through the site showing the aquifers and groundwater depth is shown in Figure 16-12.

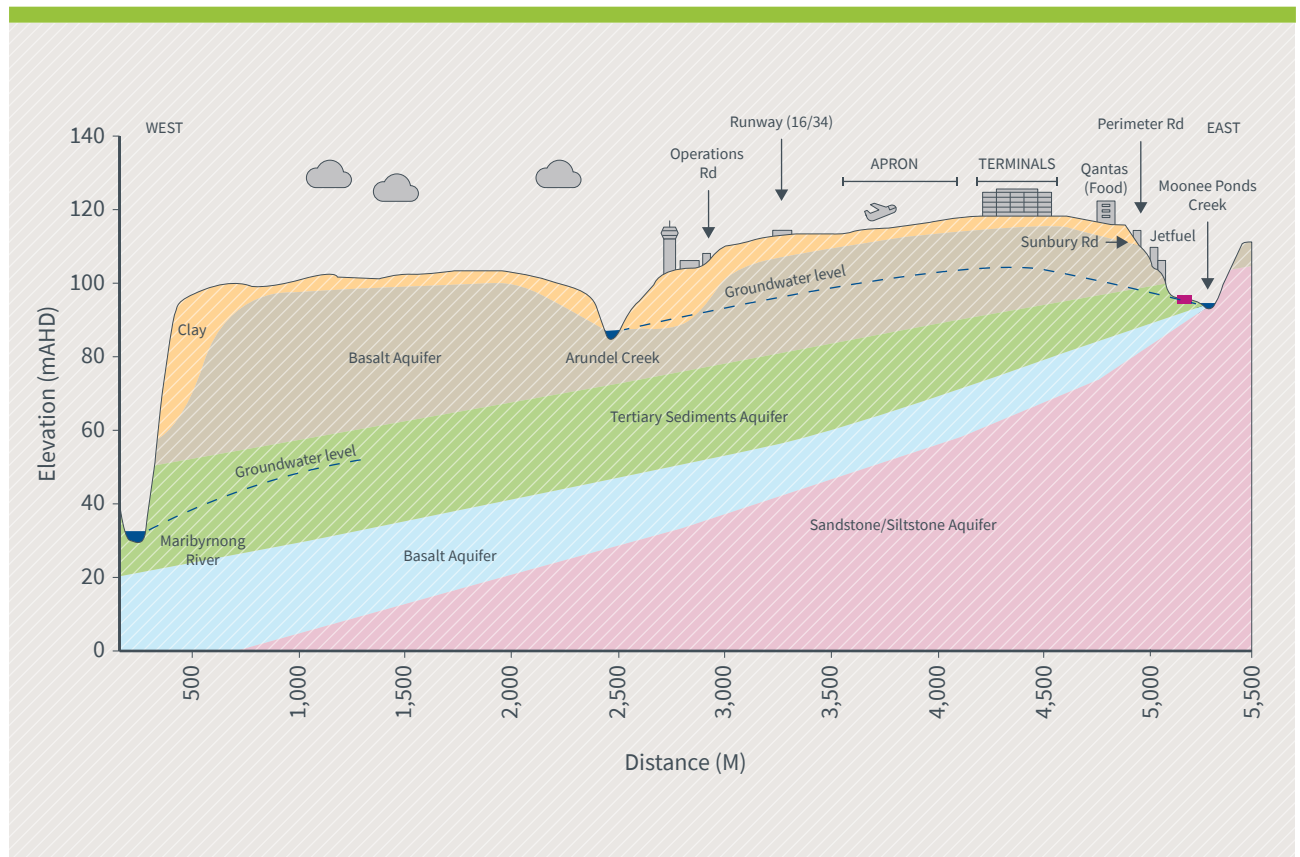


Figure 16-12: Simplified cross-section beneath Melbourne Airport showing aquifer and groundwater level

Potential groundwater contamination sources include:

- aircraft and vehicle maintenance, fuel storage and fuelling activities (including those undertaken at hangars and ancillary workshops)
- fire control operations including firefighting training, with reliance on the use of foam concentrates and powders
- petrol stations and other storage of petroleum hydrocarbons
- construction and refurbishment-related works
- existing solid waste disposal areas and areas with interim containment of impacted soils
- surrounding land uses (e.g. former landfills, agricultural uses).

Monitoring and managing groundwater is a key focus of Melbourne Airport due to the long-term use of the site and the historical use of chemicals and oils

and fuels. There are approximately 70 groundwater bores at the airport to monitor groundwater quality. Monitoring is regularly conducted at high-risk sites where current or historical activities have led to groundwater contamination.

The effects of climate change have the potential to affect groundwater levels and quality through increased localised recharge from stormwater run-off and from surface water bodies to groundwater.

To mitigate potential impacts on groundwater, Melbourne Airport undertakes the following measures:

- review of tenants' operational environmental management plans to assess whether appropriate emergency response (including spill response) and management measures are in place
- regular inspections and operational audits of active areas to verify existing management measures that are in place to mitigate potential risks

- compulsory spill response training to relevant personnel
- maintenance of existing infrastructure to minimise spills and uncontrolled discharges that could reach groundwater
- ongoing monitoring of known areas with contaminated groundwater
- ongoing development and implementation of CEMPs that include measures to prevent groundwater contamination during construction projects
- communication of existing groundwater information and identified sources of contamination to business operators and future developers
- working with relevant government agencies and stakeholders to identify priorities and effective management solutions for all site contaminants.

The completion of large stormwater management projects such as the Steele Creek North harvesting project, installation of a sediment and hydrocarbon trap to protect Moonee Ponds Creek and ongoing ground and surface water quality monitoring have all been achieved over the time frame of the last strategy. The airport is building on this information and experience to further improve land and water management over the next strategy.

The ongoing protection and maintenance of groundwater quality at Melbourne Airport is required to ensure compliance and to manage risks. Melbourne Airport has an overarching plan that assesses risks and sets appropriately designed management actions. The future management actions for groundwater are outlined in the action plan at Table 16-10.

Table 16-10: Action plan for land and water management at Melbourne Airport

Action	Details	Timeframe
1	Develop a site-wide Environmental Management Plan for APAM operations that includes measures to prevent contamination of land and water	2019
2	Design and construct a medium-term containment facility for managing contaminated soils	2019
3	Identify opportunities across the airport to improve surface water quality including water-sensitive urban design and improved management practices, with a focus on Arundel Creek	2019+
4	Improve the stability and resilience of waterways by actively managing feral animals, weeds, erosion	Ongoing
5	Develop a Contaminated Land Monitoring and Management Strategy that identifies contaminants of concern, priority sites and priorities for remediation	2019
6	Identifying priority sites for management and/or remediation that follow a risk-based approach	2019+
7	Develop and implement a Groundwater Monitoring and Management Strategy that identifies contaminants of concern and prioritises groundwater monitoring and remediation actions	2019
8	Identify groundwater monitoring locations, frequency of monitoring and remediation following a risk-based approach	2019
9	Develop a geographic information system that captures and graphically presents Melbourne Airport's site land and water management attributes	2019
10	Undertake annual stream health monitoring surveys	Annual
11	Implement the PFAS National Environmental Management Plan, or any other such documents that may supersede this in time	Ongoing
12	Continue to ensure that tenants that meet legislative and lease obligations relating to entry and exit site audits/assessments	Ongoing
13	Map the existing underground and above ground tanks on the GIS	2019

16.4.7 Biodiversity and conservation

The Melbourne Airport site is home to, or is likely to support, threatened ecological communities, threatened species and migratory species. We will continue to conserve the site's biodiversity during day-to-day operations and through the upcoming period of airport expansion.

16.4.7.1 Targets

- Develop a Strategic Biodiversity Advanced Offsets Framework
- Continue to implement the Biodiversity and Conservation Management Plan
- No net increase in Melbourne Airport's annual target 12-month average wildlife strike rate
- Implement a site-wide Integrated Pest Management Plan
- Implement an Ecological Community Management and Improvement Plan for high value ecological areas
- 20% reduction of high threat weeds within the grey box woodland and growling grassfrog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River
- 50% reduction of feral pest animals within the grey box woodland and growling grassfrog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River

16.4.7.2 Background

The Melbourne Airport site is home to, or is likely to support, threatened ecological communities, threatened species and migratory species that are defined as Matters of National Environmental Significance (MNES). These MNES are inherently linked. The threatened ecological communities provide habitat for threatened or migratory species.

The site's Grey Box Woodland area is representative of a nationally threatened ecological community and is recognised as one of the largest remaining stands of this vegetation type in Victoria (Figure 16-15). It is listed on the Australian Heritage Council, Department of the Environment, Australian Heritage Database, the Register of the National Estate and the Commonwealth Heritage List. The woodlands provide potential suitable foraging habitat for the swift parrot, which is listed as endangered under Commonwealth legislation.

Areas across the site are designated as National Temperate Grasslands of the Victorian Volcanic Plains. Although degraded in some locations, the ecological community is nationally critically endangered, one classification short of extinction. Targeted surveys for the golden sun moth and striped legless lizard have not detected either species across the site over many years.

A range of endangered vegetation types have been mapped in waterways in and around the airport. The growling grass frog, a threatened species, is known to inhabit Moonee Ponds Creek and other surrounding waterways.

Within this sensitive environment, Melbourne Airport is subject to a range of existing and potential biodiversity threats. These include:

- infrastructure development and changes to surrounding land use
- weeds, pest animal invasion and grazing (rabbits, kangaroos and cattle)
- wildlife strikes
- stormwater and drainage run-off and water-quality impacts
- lack of prescribed fire (to aid germination and biodiversity health)
- climate change
- bushfire and wildfire.

The interconnected nature of the ecological values at Melbourne Airport therefore demands an integrated management approach.



Figure 16-13: Natural regeneration

Melbourne Airport has commissioned a number of ecological studies and assessments since acquiring the lease in 1997. In 2017 a Biodiversity and Conservation Management Plan (BCMP) was finalised. The BCMP contains targets, strategies, actions and monitoring requirements for a range of flora and fauna management areas.

The BCMP documents a wide range of management actions to prevent, control or reduce the major risks to environmentally important areas and MNES. These areas are actively managed for biodiversity and conservation purposes. For example, Melbourne Airport has actively managed the Grey Box Woodland since 2001, which has led to an overall improvement in the quality of this threatened community.

In addition, Melbourne Airport implements further measures to minimise impacts to fauna habitats and threatened species. Any proposed development at Melbourne Airport considers biodiversity values. Building on existing information, detailed assessments are undertaken prior to any development with the potential to impact on these values. All proposed developments consider options to minimise impacts to fauna habitats and threatened species, or where appropriate, offset those impacts at another location.

The conservation and active management of environmentally important areas at the airport is a key priority and will be achieved through continued application of robust monitoring programs and assessments, and through implementing an airport-wide framework for offsets. The associated management actions for achieving these outcomes are provided in our biodiversity and conservation management plan.

We engage with the community to help encourage the protection of biodiversity beyond the boundaries of the Airport. An example is our support of the Conservation Volunteers Program, which has been working to help preserve the endangered eastern barred bandicoot adjacent to the airport (Figure 16-14).

The airport has continued to build its knowledge of the site's biodiversity and conservation values over the period of the last strategy, having achieved all or continuing to undertake all identified targets. This strategy has specific targets around reducing key threatening processes (pest plants and animals), and implementing a management plan for areas of high environmental value to ensure these areas are improved over the life of this strategy.

Table 16-11 presents the action plan for biodiversity and conservation at Melbourne Airport. Figure 16-15 shows the ecological values and fauna habitat at Melbourne Airport.



Figure 16-14: Eastern barred bandicoot

Table 16-11: Action plan for biodiversity and conservation management at Melbourne Airport

Action	Details	Timeframe
1	Complete airport-wide assessment of biodiversity assets	2019
2	Develop a Strategic Biodiversity Offsets Framework to guide the identification, negotiation and selection of off-site offset agreements	2019+
3	Develop and implement a site-wide Integrated Pest Management Plan focused on reducing pest animals on the airfield	2019
4	Review the Biodiversity and Conservation Management Plan, with a focus on improving the long-term habitat and ecological functions that support MNES onsite (endangered flora and fauna)	Ongoing
5	Implement the Biodiversity and Conservation Management Plan	Ongoing
6	Monitor and track Melbourne Airport's annual target 12-month average wildlife strike rate	Annual
7	Maintain biodiversity GIS mapping	Ongoing
8	Remove prickly pear weeds from grey box woodland and growling grass frog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River	Ongoing
9	Undertake ripping and other rabbit control in grey box woodland and growling grass frog habitat areas of Moonee Ponds Creek, Deep Creek and Maribynong River	Ongoing
10	Implement the Wildlife Hazard Management Plan	Ongoing
11	Maintain a committee to address wildlife management at the airport	2-monthly
12	Implement the Melbourne Airport Tree Removal and Replacement Procedure	Ongoing

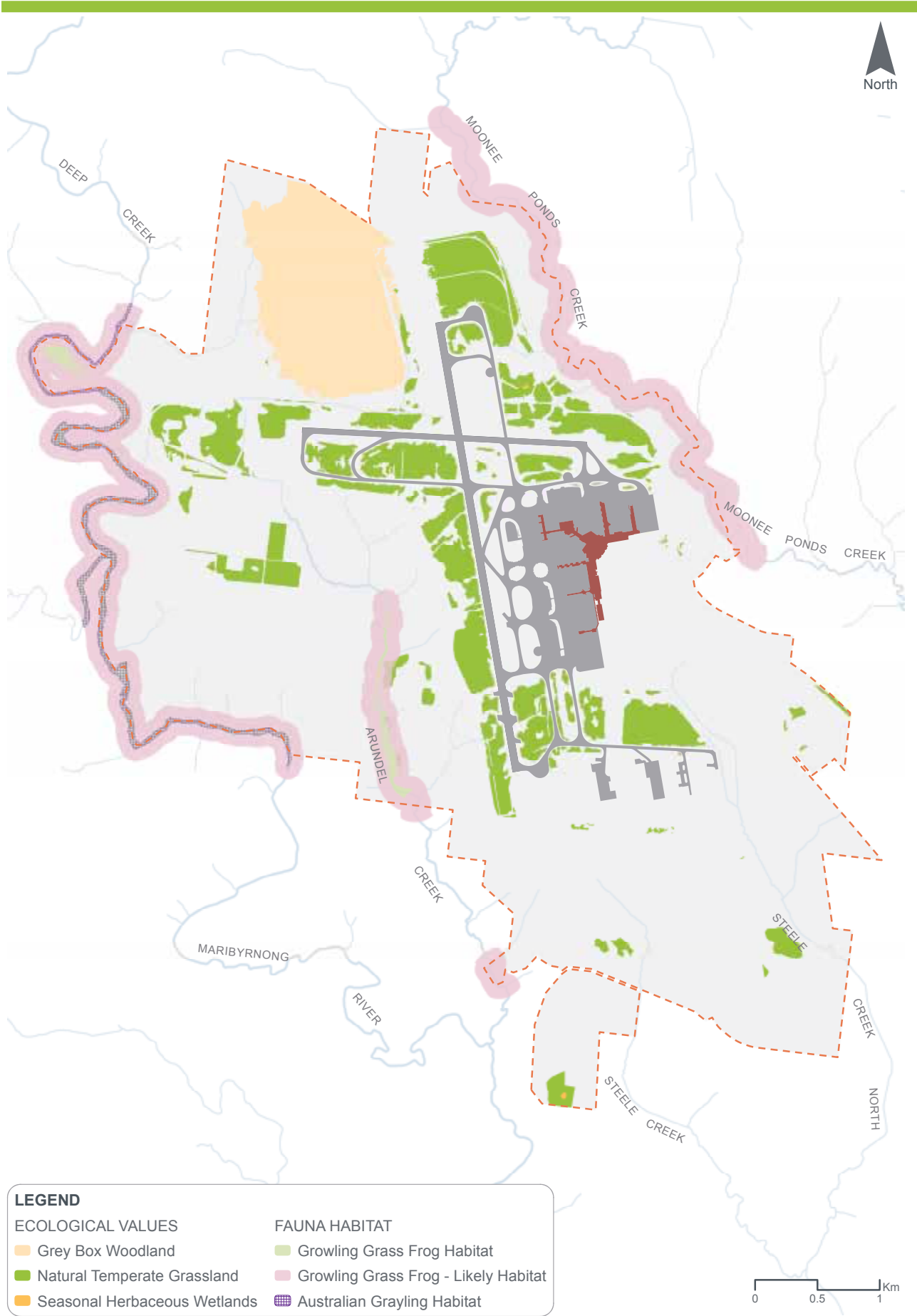


Figure 16-15: Ecological Values and Fauna Habitat

16.4.8 Air quality and ground-based noise

A number of activities at the airport have the potential to affect both air quality and ground-based noise. As such, this action plan looks to manage these impacts in an integrated manner.

16.4.8.1 Targets

- Undertake a feasibility assessment for replacing diesel ground support equipment with electric alternatives
- Improve the reliability of the data capture rate of the Air Quality Monitoring Plan
- Continue to facilitate Noise Abatement Committee meetings

16.4.8.2 Background – air quality

Air quality in the vicinity of Melbourne Airport is typically affected by a range of sources and factors that are outside the control and boundary of the airport. For example, management of bushfires, controlled burns, wind-blown dust and smog from city-wide motor vehicle emissions, are not within the airport's control. In addition, meteorological factors can act to worsen Melbourne's air quality, for example, recirculating light winds (the 'Melbourne eddy') or wind-blown dust from the Mallee or Wimmera.

Nevertheless, activities within the airport boundary do contribute materially to Melbourne's air quality and Melbourne Airport reports annually to the National Pollutant Inventory via EPA Victoria.

Airport activities that can affect air quality include:

- aircraft operating on the ground and at low heights near ground level (less than approximately 900 metres above ground level)
- on-airport road vehicle traffic
- ground support equipment using diesel fuel on the apron
- ground power units and auxiliary (aircraft) power units
- power generation facility emissions related to Melbourne Airport operations and maintenance, other than those specifically for flying aircraft (e.g. from boilers, emergency generators and air-conditioners)
- emissions related to fire training operations including smoky emissions and the use of firefighting materials

- emissions of hydrocarbons and odours from aircraft and road vehicle refuelling/de-fuelling and emissions from fuel storage tanks
- emissions of dust and odours produced during construction works
- ozone-depleting refrigerants used in chillers.

Maintaining a sound scientific understanding of the airport's air emissions and air quality will enable adaptive management in the future. Melbourne Airport has been monitoring air quality since 2013. Two monitoring stations continuously monitor air pollutants including nitrogen dioxide (NO₂), sulphur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), hydrocarbons, airborne fine particulate matter (PM₁₀ and PM_{2.5}) and meteorological parameters such as wind speed and direction.

In 2016–17 an air quality impact assessment was undertaken to investigate the effects of ground-based activities on the surrounding environment and compliance with relevant legislation. The assessment was undertaken through extensive modelling and primarily to support the Runway Development Program. When compared with national and Victorian air quality standards, the data shows that key air pollutants do not represent a significant air quality issue for Melbourne Airport.

The most effective mitigation measures for air emissions at Melbourne Airport will be achieved through minimising and improving the efficiency of movements by aircraft, road vehicles and ground support equipment and advances in aircraft technology and emissions management. Efficiencies can be gained through switching to higher quality fossil fuels or replacing existing vehicles with electric or hybrid versions, resulting in lower emissions and better local air quality. Vehicles and plant are serviced on a regular basis using the Maximo asset management system to track when an asset is due to be serviced. This ensures that Melbourne Airport assets receive appropriate servicing and emissions to air are minimised.

Melbourne Airport continues to swap out ozone-depleting refrigerants with lower or no ozone depletion potential, for example the R-123 dichlorotrifluoroethane gas to R-134a tetrafluoroethane in the Terminal Service Building chillers, although there was no change to chiller refrigerants in 2016–17.

In line with the EMS, air quality management procedures are outlined in CEMPs, OEMPs and Permit to Commence Work conditions to minimise emissions of dust, odour and other air pollutants.

16.4.8.3 Background – ground-based noise

The management of airport noise is separated into air and ground-based noise sources. The noise generated by aircraft during flight, taxiing, landing and take-off is regulated by Airservices (chapter 9). While air noise tends to be a more significant source of noise impacts on surrounding areas than ground-based noise sources, this action plan focuses on Melbourne Airport’s ground-based noise sources that have the potential to adversely affect the local community.

Ground-based noise sources at Melbourne Airport include:

- aircraft ground movements
- aircraft maintenance and testing including engine ground running
- fixed and mobile plant and equipment (e.g. power-generation facilities and GSE such as tow vehicles and fuel trucks)
- construction and demolition noise
- infrastructure maintenance
- road traffic noise from vehicles on the Melbourne Airport site (public and airport vehicles).

Melbourne Airport receives few ground-based noise complaints and has not experienced a serious incident related to noise emissions generated by ground-based operations.

Furthermore, Melbourne Airport has a specific policy in relation to ground running of aircraft (Melbourne Airport Operational Safety Policy: Ground Running of Aircraft, March 2015), which is used by airlines and maintenance staff. This policy specifies locations and procedures where aircraft ground running can be undertaken.

Melbourne Airport also conducts noise monitoring and manages the environmental impact in relation to ground-based noise sources by:

- holding quarterly Noise Abatement Committee meetings
- monitoring all noise complaints monthly to determine whether there are any particular emerging trends or issues
- managing and responding to any noise complaints received by Airservices in accordance with the airport’s EMS procedures.

Melbourne Airport will plan for the potential increase in ground-based noise sources as the airport continues to grow. Noise management measures will be integrated into airport operations and procedures when planning for new development.

Table 16-12 presents the action plan for air quality and ground-based noise at Melbourne Airport.

Table 16-12: Action plan for air quality and ground-based noise at Melbourne Airport

Action	Details	Timeframe
1	Explore the use of alternative fuel sources for airside equipment, including examination of electric vehicles, hybrid vehicles and alternative options for auxiliary power units	2019
2	Develop and start implementing an Air Quality Monitoring Plan including a review of existing modelling and recommendations for improvement. The plan will include both on and off-site monitoring	2019
3	Continue to adopt fixed electrical ground power units to minimise use of diesel-fuelled auxiliary power units	Ongoing
4	Facilitate discussions with Airservices and other key stakeholders on ways to minimise aircraft taxiing times, idling times and unnecessary aircraft engine usage	Ongoing
5	Ensure CEMPs outline strategies to manage dust	Ongoing
6	Undertake monthly site inspections of construction sites to make sure dust is appropriately managed	Monthly
7	Carry out annual National Pollutant Inventory reporting and submit to EPA Victoria	Annual
8	Hold quarterly Noise Abatement Committee meetings	3-monthly
9	Monitor all noise complaints to determine whether there are any particular emerging trends or issues	2-monthly

16.4.9 Waste management

Under this action plan, Melbourne Airport will take a leadership role in ensuring tenants and operators contribute to improvements in waste management.

16.4.9.1 Targets

- Implement a Melbourne Airport Waste Management Strategy
- Implement a Melbourne Airport Sustainable Procurement Policy to reduce the adverse environmental, social and economic impacts of purchased products and services
- Reduce the total waste disposed to landfill (from FY17 levels)
- Reduce level of contamination of commingled recycling from APAM and tenant bin rooms

16.4.9.2 Background

Waste is generated by both Melbourne Airport and operators (including tenants, airlines, retailers, ground handlers, maintenance, engineering, catering companies, construction and development). Due to the variety of contributors, waste streams are wide ranging and include quarantine waste, prescribed industrial wastes (solid and liquid), foreign object debris, organic waste (food and vegetation), paper, cardboard, and food and beverage containers. Ad hoc waste types include scrap metal, construction and demolition waste, concrete and asphalt, electronics and computers, furniture, office fittings and unclaimed baggage.

APAM, airlines and on-site operators generate at least 13,000 tonnes of solid waste every year. However, only about 20 percent of the total waste stream is under APAM's direct control. A breakdown of Melbourne Airport's waste types is provided in Figure 16-16.

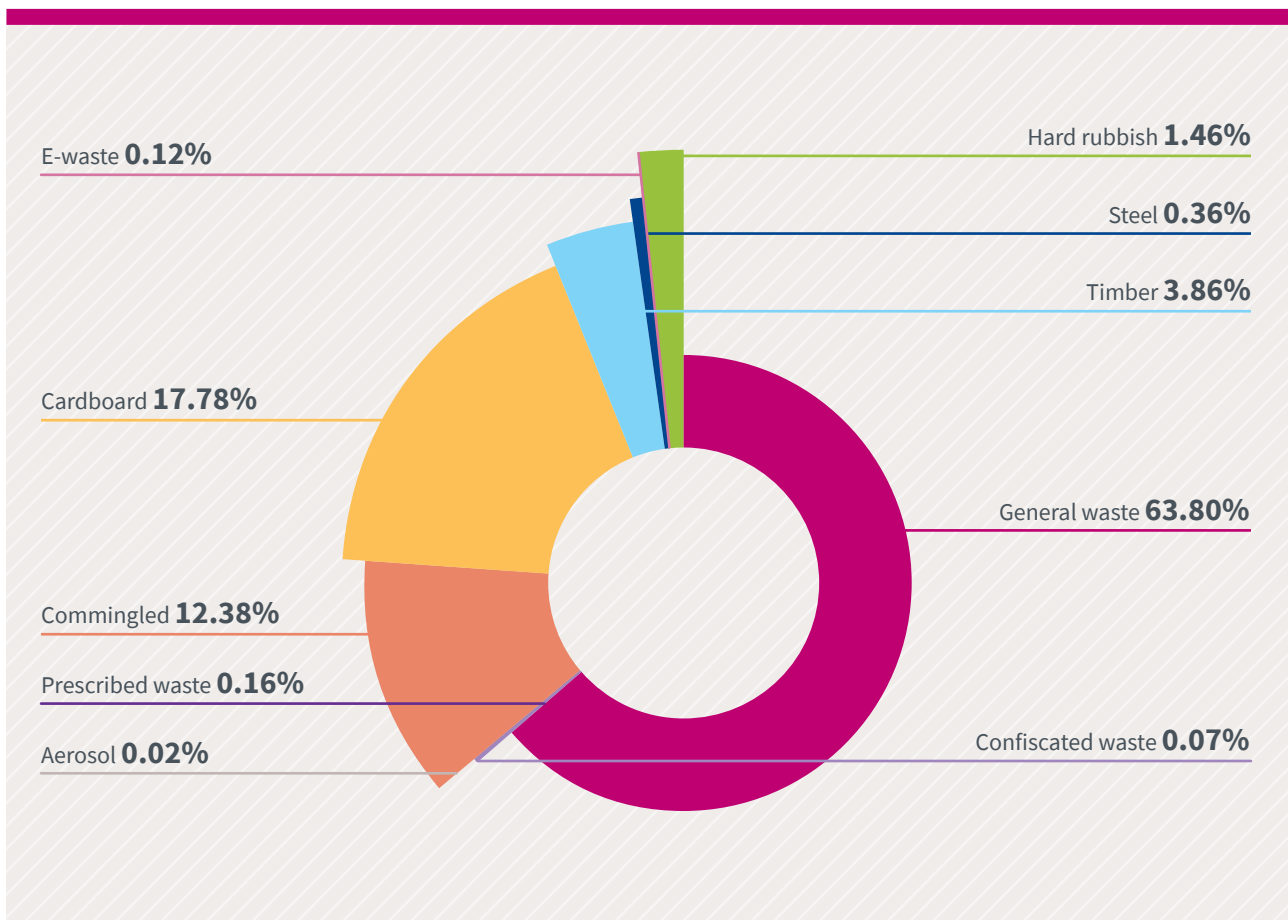


Figure 16-16: Melbourne Airport waste breakdown

Due to the nature of operations required at an airport, there are a number of potential waste-related issues:

- inconsistent solid waste disposal by Melbourne Airport operators, contractors and tenants
- inappropriate storage of waste oils, chemicals and other hazardous waste materials
- limited options and regulatory restrictions for the recycling and re-use of certain waste streams
- waste water run-off from airport operations such as aircraft and vehicle wash down
- generation of waste in an environment where many products must be used once and then disposed of
- illegal dumping of waste.

Waste management has transformed in the past decade as the cost of raw material and waste disposal has increased. There is an increasing awareness of the embedded, life-cycle impacts of materials associated with their extraction, transport, use and, ultimately, disposal.

The airport recognises that waste processes need to be effectively managed to reduce negative impacts. In 2016 Melbourne Airport appointed a single operator to collect all waste streams across the site. This has resulted in

improved waste management efficiencies and cost savings. Since 2016 Melbourne Airport has recycled more than 32 percent of waste generated on site (as at January 2017).

Melbourne Airport’s Waste Minimisation and Environmental Policies documents the airport’s commitment to reducing the quantity of waste generated and the associated costs of managing that waste. The policy covers all airport operations and applies to all individuals, employees and contractors conducting business activities at the airport.

Under these policies, waste management is undertaken under a set of principles and the waste hierarchy framework. The framework aims to reduce, reuse, recycle and treat waste rather than dispose of it, particularly to landfill (Figure 16-17).

There are limited on-site options for the management and treatment of most waste streams. However, construction waste is recycled and re-used on site, as is waste vegetation as mulch across the site. Quarantine waste, defined as material from overseas that poses a potential biohazard threat to Australia, must be securely contained not only on site at Melbourne Airport but also during transport to approved disposal facilities.

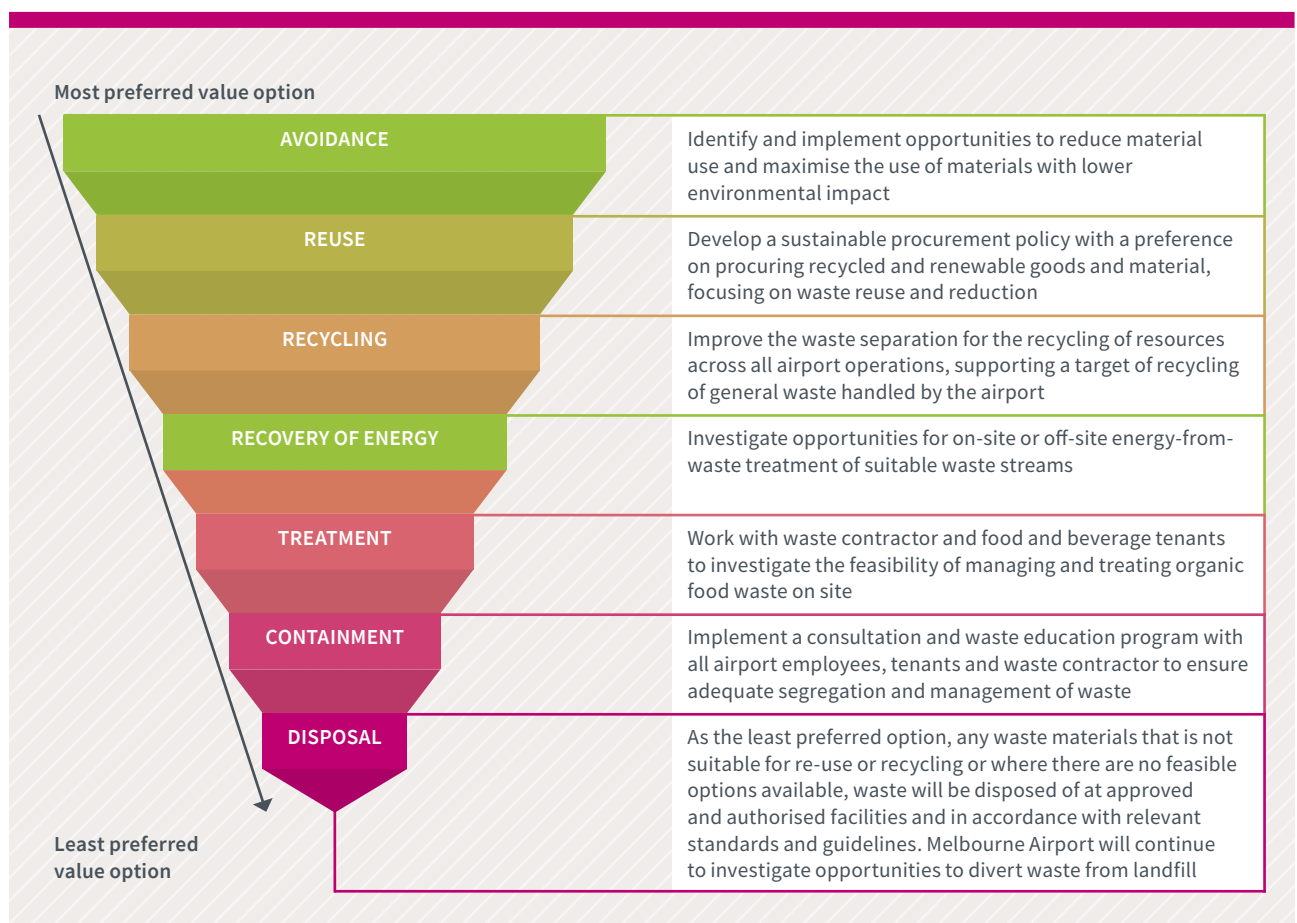


Figure 16-17: Alignment of Melbourne Airport’s waste objectives to the management hierarchy

Melbourne Airport applies on-site waste minimisation and management practices across all airport-managed facilities by investigating new policies and procedures and encouraging accountability and efficiency. The reduction of waste being disposed to landfill is a priority for the airport to minimise environmental impacts.

Over the next five years, construction and demolition waste will be generated, including a range of waste from surplus or off-cut construction materials and clearing and the demolition of existing infrastructure. This development and its associated waste generation presents an opportunity to explore alternative management practices for these waste streams.

Our waste management action plan will help ensure that Melbourne Airport continues to improve its waste management practices. Central to this plan will be the development of Waste Management Strategy to manage all airport and construction wastes (including hazardous materials). The strategy will identify the type, amount and impact of waste streams and provide recommendations for improvement in accordance with the waste management hierarchy. The Waste Management Strategy will be complemented by a Sustainable Procurement Policy that will aim to reduce the adverse environmental, social and economic impacts of purchased products and services.

Table 16-13 presents the action plan for waste management at Melbourne Airport.

Table 16-13: Action plan for waste management at Melbourne Airport

Action	Details	Timeframe
1	Develop a Melbourne Airport Waste Management Strategy to manage all airport and construction wastes (including hazardous materials)	2019
2	Develop behavioural awareness campaign for tenants and employees about how to manage waste correctly	2019
3	Develop a Melbourne Airport Sustainable Procurement Policy to reduce the adverse environmental, social and economic impacts of purchased products and services	2019
4	Collaborate with Melbourne Airport business partners and tenants to identify opportunities for improving waste management measures	Ongoing
5	Conduct regular tenant inspections to ensure appropriate waste management systems are in place. In addition, check for bin contamination and provide feedback on how to improve	Ongoing
6	Undertake 6-monthly waste audits of APAM offices	Ongoing
7	Conduct regular inspections of bin rooms to monitor waste segregation	3-monthly
8	Continue to ensure that waste management and resource recovery are considered through development proposals for both construction and operational phases	Ongoing
9	Continue to implement the management strategy and ensure tenants include waste management and resource recovery through their OEMPs	Ongoing

Appendix C:

2013

Environment

Strategy

Achievements

2013 Environment Strategy achievements

Over the past five years Melbourne Airport has implemented a range of initiatives to improve the environmental performance of the airport in accordance with the 2013 Environment Strategy.

Aspect	Achievement
Ecologically sustainable development (ESD)	The new T4 development has been completed in line with Leadership in Energy and Environmental Design (LEED) Guidelines, including compliance with LEED criteria to have positive outcomes in the areas of sustainable sites, water efficiency, energy and atmosphere, material and resources, indoor environmental quality, innovation in design and regional priority.
	Publication and implementation of ESD guidance and principles. The technical manuals (e.g. Melbourne Airport Sustainable Buildings and Infrastructure Guide and the Development Manual) identifies ESD principles that can be considered at all stages of airport projects.
	Incorporation of ESD principles into the Runway 16 High Intensity Approach Lighting Project that delivered savings in both energy and maintenance through replacing old incandescent lights with new-generation LED lighting.
	Melbourne Airport Technical Standards were updated to be inclusive of ESD principles, in particular electrical and mechanical services, to improve efficiencies across the business.
Energy and climate change	Melbourne Airport successfully became Airport Carbon Accredited by Airports Council International under its carbon standard for airports. The accreditation recognises Melbourne Airport's commitment to reducing its impacts on the environment and in managing and reducing carbon emissions.
	Melbourne Airport continued the annual offset program for all of its staff flights and vehicle emissions, resulting in an average offset of 2,550 tonnes of carbon dioxide emissions per year.
	Melbourne Airport commissioned an eight megawatt tri-generation plant, which will result in an estimated reduction in carbon dioxide emissions of 920,000 tonnes over 15 years.
	A car park lighting upgrade was rolled out to reduce Melbourne Airport car park's lighting energy consumption. The project results in an annual energy saving of approximately 2,000 megawatt hours.
	Melbourne Airport revised its standards for lighting in all new projects and renewal and refurbishment projects and mandated the use of energy efficient technology, including LED lighting, to reduce energy consumption and operating costs.

Aspect	Achievement
Waste and resource management	In 2016 Melbourne Airport appointed a new specialist waste contractor to provide advanced waste management and cleaning solutions. Since the appointment the airport has improved its performance and recycled more than 32 percent of its waste generated on site. Efficiencies were also gained through one company collecting waste streams from various locations across the precinct and disposing off site.
	Melbourne Airport completed a detailed planning and feasibility study for the future development of a centralised waste facility. The benefits identified include efficiency within waste management logistics, improved waste-type segregation, cost reduction and opportunities to create a waste-to-energy plant.
	Waste audits of key locations were conducted and resulted in identifying incorrect waste disposal practices at retail tenancies and concessionaires. Actions were taken to improve waste management at these locations to improve future waste disposal efficiencies.
	New waste compactors were installed, with access for trained personnel only. This initiative has seen improved waste segregation, a reduction in the quantity of waste to landfill, and an increase in recycling volumes.
	A consolidated waste tracking system has been implemented since April 2016. The data captured can be used to target areas for future waste management improvements and initiatives.
	The airport's Waste Minimisation Policy was updated, outlining Melbourne Airport's commitment to reducing waste and continually adapt and improve management practices.
Water consumption management	Water-sensitive urban design practices were, and continue to be, incorporated in all new designs, ranging from car parks to warehouses. The use of bioswales and rain gardens was initiated to reduce the required size of water mains and improve water quality through local detention and bioretention treatment.
	The new T4 precinct was designed and constructed to incorporate rainwater harvesting for use in toilet flushing (greywater) to reduce potable water catchment.

Aspect	Achievement
Water quality – stormwater	<p>Phase 1 of the Airport Drive Stormwater Treatment and Reuse System Project was completed and received a national award in stormwater engineering excellence. The system harvests non-potable water from Melbourne Airport land within the Steele Creek North catchment area to meet both the airport’s and community water requirements, including the Essendon Football Club’s training ground. Importantly, this project also improves water quality, leaving the catchment.</p>
	<p>A Stormwater Quality Improvement Device (Stormceptor SPEL) unit was installed in the airport drainage network, which has resulted in better quality stormwater that discharges to Moonee Ponds Creek. Results have also shown downstream improvements in water quality and aquatic habitat (i.e. an increase in native aquatic vegetation).</p>
	<p>Melbourne Airport, in collaboration with Melbourne Water, has improved the riparian habitat along the reaches of Moonee Ponds Creek and Deep Creek through weed control and planting of native vegetation. The works have resulted in the extensive clearing of weeds, particularly the large patches of African boxthorn, and the establishment of native plants.</p>
	<p>Environmental assessments undertaken identified contaminant sources in the stormwater catchment of Arundel Creek. The assessment findings have provided a better understanding of where contaminants are entering the river system, and have driven the implementation of adaptive management actions to eliminate or reduce the ability of contaminants to enter the drainage network. For example, sediment control measures have been installed at stormwater pits to eliminate or reduce the ability of contaminants to enter the drainage network.</p>
Water quality – groundwater	<p>Melbourne Airport completed a detailed site assessment to inform a high-level conceptual site model. The model was used to augment the understanding of the regional hydrogeology and groundwater occurrence at the airport. The conceptual site model informs the groundwater monitoring program and the development of a risk-based approach for ongoing groundwater.</p>

Aspect	Achievement
Biodiversity and conservation management	Melbourne Airport finalised the Biodiversity Conservation Management Plan, which consolidates available ecological information for Melbourne Airport site and provides detailed guidance for ongoing biodiversity conservation management activities.
	Ecological investigations have been conducted over more than half of Melbourne Airport's Commonwealth-owned land and have included targeted surveys for at least 12 threatened species or ecological communities. These ongoing investigations are important in identifying areas of ecological significance for future management.
	A 10-year Ecological Management Plan was prepared for the Grey Box Woodland. Annual ongoing management activities have included revegetation, pest species eradication, fire management and targeted surveys for threatened species. Regular ecological monitoring provides the information required to ensure management of the woodland is able to adapt to new issues as they arise.
Biodiversity and cultural heritage	Melbourne Airport has developed a web application tool that records and identifies all biodiversity and heritage values, reports and risks. As a live application, the tool is updated as activities are undertaken to allow for sensitive and adaptive management of these values.
Cultural heritage	Melbourne Airport commissioned investigative heritage works for development programs over the majority of airport land, which has significantly increased understanding of Aboriginal and European historical heritage values within the local region. The scale of investigations has also significantly contributed to developing better archaeological investigation strategies, particularly for the Victorian Volcanic Plains geographic region.
	Melbourne Airport has established the Annandale Grassland Reserve. As well as protecting important grasslands, the airport has worked with Aboriginal Traditional Owners to conserve and manage Aboriginal heritage values in this reserve over the long term.
Air quality	Two new air quality monitoring stations were commissioned. Continual monitoring is important for providing long-term air quality trends for future planning and decision making.
	An air emissions inventory and air-quality impact assessment was undertaken to improve our understanding of local air quality and provide a baseline to measure future changes.
	Melbourne Airport purchased (and where possible, continues to purchase) low-emission vehicles and provides regular maintenance to assist in reducing the airport's carbon footprint.

Aspect	Achievement
Land management	Melbourne Airport removed or decommissioned non-essential underground storage tanks, including the redundant tank located at the Long Term Car Park, to reduce the residual contamination within soils and surrounding ecosystems.
	The airport completed construction of the retarding basin – ‘Rain Garden’ as part of the Steele Creek North Strategy. The project ensures the effective management of stormwater from the Business Park by reducing surface water run-off, containing sediments within the retarding basin and reducing soil erosion.
	Melbourne Airport developed a working group with representation from relevant business units to coordinate appropriate management of the potential issues associated with per- and poly-fluorinated alkyl substances (PFAS) contamination resulting from the use of aqueous film-forming foams in firefighting training and activities on the airport. Melbourne Airport continues to engage with DIRDC, the Airport Environment Officer and EPA Victoria in relation to setting guidelines and future regulations relation to PFAS contamination. To understand the extent of PFAS contamination, a site-wide investigation of soil, sediment, groundwater and surface water was undertaken. The outcomes of this investigation are a key input to the risk assessment, which forms the basis of an airport-wide PFAS management strategy.
	Melbourne Airport continued the annual auditing of hazardous materials and management practices and procedures for tenants, in accordance with Operational Environment Management Plans (OEMPs), to assess compliance across the business.
Hazardous materials	Monthly assessments at Melbourne Airport recorded a notable decrease in reportable environmental spill incidents and a significant decrease in the proportion of spills reaching the stormwater system. The results indicate that preventative measures to reduce the impact of spills are effective.
	Spill response training continued to be carried out regularly for operational staff to reduce the impact of spills. Business Partner Environment Forums are held to further educate airport tenants about spill response preparedness.
	Fuel tank testing and monitoring inspections continues to be carried out every two years to ensure the ongoing storage of hazardous materials is reliable and safe.

Appendix E:

Environmental Legislation

Environmental legislation

Aspect	Relevant legislation and policies
Ecologically sustainable development	National Strategy for Ecologically Sustainable Development 1992 (Cwlth)
Energy and climate change	<p><i>National Greenhouse and Energy Reporting Act 2007 (Cwlth)</i></p> <p>National Greenhouse and Energy Reporting Regulations 2008 (Cwlth)</p> <p><i>Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 (Cwlth)</i></p> <p><i>Ozone Protection and Synthetic Greenhouse Gas (Import Levy) Act 1995 (Cwlth)</i></p> <p>Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 (Cwlth)</p>
Waste and resource management	<p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p>Applying the Environment Protection Principles in Waste Management Regulation 2010 (EPA Victoria) (Vic)</p> <p>Asbestos Transport and Disposal 2009 (EPA Victoria) (Vic)</p> <p>Classification for Contaminated Soil – Industrial Waste Management Policy 2002 (EPA Victoria) (Vic)</p> <p>Environment Protection (Industrial Waste Resource) Regulations 2009 (Vic)</p> <p>Industrial Waste Resource Guidelines 2009 (EPA Victoria) (Vic)</p> <p>National Environment Protection (Used Packaging Materials) Measure 2011 (Cwlth)</p> <p>National Environment Protection (Movement of Controlled Waste between States and Territories) Measure, as varied in 2004</p> <p><i>Occupational Health and Safety Act 2004 (Vic)</i></p> <p>Occupational Health and Safety Regulations 2007 (Vic)</p> <p>Waste Management Policy (Used Packaging Materials) 2012 (Vic)</p> <p>Waste Management Policy (National Pollutant Inventory) 2012 (Vic)</p> <p>Waste Management Policy (Movement of Controlled Waste between States and Territories) 2012 (Vic)</p> <p><i>Water Act 1989 (Vic)</i></p>

Aspect	Relevant legislation and policies
Water quality – stormwater	<p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p>Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2002 (Environment Australia) (Cwlth)</p> <p><i>Catchment and Land Protection Act 1994</i> (Vic)</p> <p>National Environment Protection Council (2013), National Environment Protection Measure – Site Contamination</p> <p>State Environment Protection Policy (Waters of Victoria) 2003 and Schedules (Vic)</p> <p>Variation to the National Environment Protection (National Pollutant Inventory) Measure 2008 (No. 1) (Cwlth)</p> <p><i>Water Act 1989</i> (Vic)</p>
Water quality – groundwater	<p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)</p> <p>EPA Publication IWRG701 – Sampling and Analysis of Waters, Wastewaters, Soils and Wastes 2009 (EPA Victoria)</p> <p>NEPC (2013) National Environment Protection Council (NEPC) (1999) National Environment Protection (Assessment of Site Contamination) Measure, as amended (registered on 15 May 2013)</p> <p>State Environment Protection Policy (Groundwaters of Victoria) 1997 (note variation in 2002) (Vic)</p> <p><i>Water Act 1989</i> (Vic)</p>
Biodiversity and conservation management	<p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p><i>Australian Heritage Council Act 2003</i> (Cwlth)</p> <p>Australian Natural Heritage Charter for the Conservation of Places of Natural Heritage Significance (2002) (Cwlth)</p> <p><i>Catchment and Land Protection Act 1994</i> (Vic)</p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)</p> <p>Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth)</p> <p>Significant Impact Guidelines 1.1: Matters of Environmental Significance 2013 (Cwlth)</p> <p>Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land and actions by Commonwealth Agencies 2013 (Cwlth)</p>

Aspect	Relevant legislation and policies
Cultural heritage	<p><i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i> (Cwlth)</p> <p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p><i>Australian Heritage Commission Act 1975</i> (Cwlth)</p> <p><i>Australian Heritage Council Act 2003</i> (Cwlth)</p> <p><i>Australian Heritage Commission Amendment Act 1991 No. 17</i> (Cwlth)</p> <p><i>Australian Heritage Commission Amendment Act 1976</i> (Cwlth)</p> <p>Australian Heritage Commission – Ask First: A guide to respecting Indigenous heritage places and values 2002 (Department of Environment and Energy) (Cwlth)</p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)</p> <p>Environment Protection and Biodiversity Conservation Regulations 2000 (Cwlth)</p>
Air quality	<p>A Guide to the Sampling and Analysis of Air Emissions and Air Quality, Publication 440.1, December 2002 (EPA Victoria)</p> <p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p>Air Navigation (Aircraft Engine Emissions) Regulations 1997 (Cwlth)</p> <p>Air Navigation (Fuel Spillage) Regulations 1999 (Cwlth)</p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)</p> <p>Environment Protection (Industrial Waste Resource) Regulations 2009 (Vic)</p> <p><i>Fuel Quality Standards Act 2000</i> (Cwlth)</p> <p>National Environment Protection (Ambient Air Quality) Measure, as amended February 2016 (Cwlth)</p> <p>National Environment Protection (Air Toxics) Measure, as amended October 2011 (Cwlth)</p> <p><i>National Environment Protection Council Act 1994</i> (Cwlth)</p> <p>National Environment Protection (Diesel Vehicle Emissions) Measure 2001, as varied June 2001 (Cwlth)</p> <p>National Pollutant Inventory Guide 2015 (Cwlth)</p> <p>Variation to the National Environment Protection (National Pollutant Inventory) Measure 1998, as varied, compilation prepared November 2008, taking into account amendments up to Variation 2008 (No. 1) (Cwlth)</p>

Aspect	Relevant legislation and policies
Ground-based noise	<p>Air Navigation (Aircraft Noise) Regulations 1984 (Cwlth)</p> <p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p><i>Occupational Health and Safety Act 2004</i> (Vic)</p> <p>Occupational Health and Safety Regulations 2007 (Vic)</p>
Land management	<p><i>Airports Act 1996</i> (Cwlth)</p> <p>Airports (Environment Protection) Regulations 1997 (Cwlth)</p> <p><i>Catchment and Land Protection Act 1994</i> (Vic)</p> <p>Classification for Contaminated Soil – Industrial Waste Management Policy 2002 (EPA Victoria)</p> <p>Contaminated Soil – Organic Compounds – Classification for Reuse 2009 (EPA Victoria)</p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cwlth)</p> <p>NEPC (2013) National Environment Protection Council (NEPC) (1999) National Environment Protection (Assessment of Site Contamination) Measure, as amended (registered on 15 May 2013)</p> <p>PFAS National Environmental Management Plan, The Heads of Environmental Protection Authorities, Australia and New Zealand, January 2018</p>
Hazardous materials	<p><i>Asbestos Safety and Eradication Agency Act 2013</i></p> <p>Asbestos Transport and Disposal 2009 (EPA Victoria)</p> <p>Australian Dangerous Goods Code 2010 (7th edition) (Cwlth)</p> <p>Australian Explosives Code (3rd edition) 2009 (Cwlth)</p> <p>Australian Standard 1940 The Storage and Handling of Flammable and Combustible Liquids 2004 (Standards Australia) (Cwlth)</p> <p>Australian Standard 4977, Australian Standard 4897 and Australian Standard 4976 (Cwlth)</p> <p>Environment Protection (Industrial Waste Resource) Regulations 2009 (Vic)</p>

Aspect	Relevant legislation and policies
Hazardous materials (cont)	<p>EPC (2013) National Environment Protection Council (NEPC) (1999) National Environment Protection (Assessment of Site Contamination) Measure, as amended (registered on 15 May 2013)</p> <p><i>Civil Aviation Act 1988</i> (Cwlth)</p> <p>Classification for Contaminated Soil – Industrial Waste Management Policy 2002 (EPA Victoria)</p> <p><i>Dangerous Goods Act 1985</i> (Vic)</p> <p>Dangerous Goods (Storage and Handling) Interim Regulations 2011 (Vic)</p> <p>Dangerous Goods (HCDG) Regulations 2005 (Vic)</p> <p>National Strategic Plan for Asbestos Management and Awareness 2014–18 (Cwlth)</p> <p><i>Occupational Health and Safety Act 2004</i> (Vic)</p> <p>Occupational Health and Safety Regulations 2007 (Vic)</p> <p><i>Public Health and Wellbeing Act 2008</i> (Vic)</p> <p>Public Health and Wellbeing Regulations 2009 (Vic)</p> <p><i>Work, Health and Safety Act 2011</i> (Cwlth)</p> <p>Work Health and Safety (How to Manage and Control Asbestos in the Workplace) Code of Practice 2016 (Cwlth)</p> <p>Work Health and Safety (How to Safely Remove Asbestos) Code of Practice 2016 (Cwlth)</p> <p>Work, Health and Safety Regulations 2011 (Cwlth)</p>

Appendix H:

Abbreviations and Glossary

Abbreviations

ANEC	Australian Noise Exposure Concept
ANEF	Australian Noise Exposure Forecast
ANEI	Australian Noise Exposure Index
APAM	Australia Pacific Airports (Melbourne) Pty Ltd
AS2021	Australian Standard 2021:2015 Acoustic Aircraft Noise Intrusion
CASA	Civil Aviation Safety Authority
CEMP	Construction Environmental Management Plan
DIRDC	Department of Infrastructure, Regional Development and Cities (Commonwealth)
EMS	Environmental Management System
ESD	Ecologically sustainable development
FTE	Full-time equivalent
GSE	Ground support equipment
ISO	International Standards Organisation
LED	Light-emitting diode
LEED	Leadership in Energy and Environmental Design
MAEO	Melbourne Airport Environs Overlay
MAESP	Melbourne Airport Environs Strategy Plan
MDP	Major Development Plan
MNES	Matters of National Environmental Significance
NASF	National Airports Safeguarding Framework
OLS	Obstacle Limitation Surfaces
OEMP	Operational Environmental Management Plan
PANS-OPS	Procedures for Air Navigation Services – Aircraft Operations
PTV	Public Transport Victoria
RET	Rapid Exit Taxiway
T1	Terminal 1
T2	Terminal 2
T3	Terminal 3
T4	Terminal 4
The airport	Melbourne Airport
Airports Act	<i>Airports Act 1996 (Cwlth)</i>
Environment Strategy	The Melbourne Airport Environment Strategy 2018
Master Plan	Melbourne Airport Master Plan 2018
VPP	Victoria Planning Provisions

Glossary

Aerobridge	An enclosed, movable connector that extends from an airport terminal gate to an aircraft.
Airport Master Plan	The principal planning document required under the <i>Airports Act 1996</i> that sets out a 20-year plan for each leased federal airport.
Aircraft noise contours	Contours that display the existing or forecast aircraft noise exposure patterns around an airport. These contours help land-use planning authorities decide on acceptable development in close proximity to the airport.
Aircraft throughput	Equals aircraft demand.
Airservices Australia	The Australian Government agency providing air traffic control management and related airside services to the aviation industry.
Airservices Noise Complaints and Information Service	A toll-free enquiry line operated by Airservices to provide the public with information on noise levels at major airports.
Airside	The aircraft movement area of an airport and adjacent land and buildings that are access-controlled.
Aircraft apron	The part of an airport where aircraft are parked and serviced, enabling passengers to board and disembark and freight to be loaded and unloaded.
Australian Noise Exposure Concept (ANEC)	A set of contours based on hypothetical aircraft operations at an airport in the future. As ANEC maps are based on hypothetical assumptions and may not have been subject to review or endorsement, they have no official status and cannot be used for land-use planning. However, an ANEC can be turned into an ANEF.
Australian Noise Exposure Forecast (ANEF)	<p>A system developed as a land-use planning tool aimed at controlling encroachment on airports by noise-sensitive buildings. The system underpins Australian Standard AS2021 'Acoustics – Aircraft noise intrusion – Building siting and construction'.</p> <p>The standard contains advice on the acceptability of building sites based on ANEF zones. ANEFs are the official forecasts of future noise exposure patterns around an airport because they constitute the contours on which land-use planning authorities base their controls.</p>
Australian Noise Exposure Index (ANEI)	Contours developed under the ANEF framework showing historic noise exposure patterns used in environmental reporting and benchmarking.
Busy day	The representative 'busy day' is based on International Air Transport Association methodology and is defined as the second busiest day of the average week in the peak month. The methodology considers both domestic and international activity separately and in combination to ensure that both are properly represented.
Civil Aviation Safety Authority (CASA)	An independent statutory body responsible for regulating aviation safety in Australia and the safety of Australian aircraft overseas.
Code C aircraft	An aircraft that has a wingspan of between 24 metres and up to but not including 36 metres. Examples are the Airbus A320 series and Boeing 737-700/800 series.
Code D aircraft	An aircraft that has a wingspan of between 36 metres and up to but not including 52 metres. An example is the B767-300.
Code E aircraft	An aircraft that has a wingspan of between 52 metres and up to but not including 65 metres. Examples are the Airbus A330 or A340 and Boeing 747 or 777/787.

Code F aircraft	An aircraft that has a wingspan of between 65 metres and up to but not including 80 metres. An example is the Airbus A380.
Contact bay, contact gate, contact stand	An aircraft stand with direct access to and from the terminal building, typically via an aerobridge.
Prescribed Airspace	Airspace of defined dimensions within which air traffic control services are provided in accordance with airspace classifications.
Curfew	A restriction on certain flights taking off or landing from specified airports at designated times.
Green Wedge Zone	A land use zone to control use of the land and to recognise, protect and conserve green wedge land for its agricultural, environmental, historic, landscape, recreational and tourism opportunities, and mineral and stone resources.
Ground-Based Augmentation System	A satellite-based precision landing system recognised by the International Civil Aviation Organization as a replacement for current instrument landing systems.
Ground support equipment (GSE)	Airport support equipment – for example, aircraft pushback tractors, baggage tugs, ground power units and engine air start units.
Instrument landing system	Instruments capable of providing both directional and glide slope guidance.
International Air Transport Association (IATA)	An international organisation representing and serving the airline industry worldwide.
International Civil Aviation Organization	A specialised United Nations agency that brings together key industry organisations to determine areas of strategic priority; develops policies and standards; coordinates global monitoring, analysis and reporting initiatives; and delivers targeted assistance and capacity building.
Joint user hydrant installation	Provides critical aviation support infrastructure in the form of a jet fuel storage facility and the Jet Fuel Hydrant Pipeline Network Facility.
Landside	The area of an airport and buildings to which the public normally has free access.
Leased federal airports	The 21 airports privatised under the Airports Act, where the airport operators lease the airport land from the Australian Government.
Major Development Plan	A requirement under the Airports Act for airport-lessee companies to provide information to the Australian Government and the public about significant planned development on leased federal airport sites.
Multiple-Aircraft Ramp System	This system allows two smaller aircraft to be parked on a single large aircraft stand.
Non-aviation development	Non-aviation commercial developments, such as retail outlets and office buildings, on airport sites.
Obstacle Limitation Surfaces (OLS)	A series of surfaces that define the volume of airspace at and around an aerodrome to be kept free of obstacles in order to permit the intended aircraft operations to be conducted safely and to prevent the aerodrome from becoming unusable by the growth of obstacles.
Precision Approach Path Indicator	A visual aid that provides guidance information to help a pilot acquire and maintain the correct approach (in the vertical plane) to an airport.
Procedures for Air Navigation Services – Aircraft Operations (PAN-OPS)	A set of International Civil Aviation Organization rules for designing instrument approach and departure procedures at aerodromes.
Rapid Exit Taxiway (RET)	Taxiways linked to runways at an angle that permit aircraft to exit the runway at high speeds.

Specialised Activity Centre	Important economic precincts that provide a mix of economic activities and generate high numbers of work and visitor trips.
Taxiway	A path on an airport connecting runways with ramps, hangars, terminals and other facilities.
Trunk infrastructure	Key infrastructure such as water, electricity and sewerage.
Urban Growth Boundary	A regional boundary set to control urban sprawl by mandating that the area inside the boundary be used for higher density urban development, and the area outside be used for lower density development.
Walk-out pier	Aircraft stand without direct access to and from the terminal building, typically via a short apron walk or bus trip.

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