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Environment Strategy

14.1. Introduction

Adelaide Airport's vision and ongoing success is founded and maintained through strong governance, innovation and sustainable growth. Integrating current and future environmental and social risks and opportunities through the implementation of a robust environmental management framework is critical in ensuring that the airport business thrives and is managed to meet the needs of future generations. This will allow AAL to positively and innovatively adapt to today's local and global challenges.

AAL's philosophy is to operate and develop Adelaide Airport in accordance with the principles of sustainable development, recognising that the success of the airport can be enhanced by conducting business in a way that is environmentally, socially and economically responsible. AAL's Environment Statement forms the foundation for this Environment Strategy. AAL is committed to ensuring legislative compliance and driven forward by the desire to maintain a leadership position in environmental management.

The Environment Strategy covers ground-based environmental aspects associated with the operation of Adelaide Airport, including:

- Energy and climate change
- Water resources
- Stormwater and aquatic ecology
- Soil and groundwater
- Ground-based noise
- Local air quality
- Waste management
- Land and heritage management

14.2. Overview

- Central to AAL's Environmental Management is the Environmental Management System (EMS). The EMS conforms to the requirements of International Standard ISO 14001:2015 and provides a structure for planning, implementing, monitoring, reporting and reviewing environmental management at Adelaide Airport
- Sustainability is at the core of the way AAL does business and AAL is already realising cost savings through a range of efficiencies initiated through its sustainability focus. AAL's investors are actively tracking environment, social and governance factors through benchmarking standards and are correlating better financial performance with improved environment, social and governance performance
- AAL and its operators, tenants and contractors share responsibility for the environmental management of Adelaide Airport
- AAL is committed to the effective management of environmental impacts across the airport site. Environmental action plans are in place for energy and climate change, water resources, stormwater and aquatic ecology, soil and groundwater, ground-based noise, local air quality, waste management, and land and heritage management

14.3. Key Achievements

AAL has delivered a number of significant environmental achievements since the last Master Plan including:

- In 2017 and 2018, AAL achieved Asset Sector Leader status for Airports in the Global Real Estate Sustainability Benchmark (GRESB) Infrastructure Assessment. The GRESB Asset Sector Leaders Award recognises AAL's outstanding leadership across the environment, social and governance elements of its business
- In recognition of its waste-management program, AAL was awarded the Green Airports Platinum status by the Airports Council International Asia Pacific in 2018
- In December 2018, AAL signed a $50 million seven-year Sustainability Performance Linked Loan with ANZ. This is the first loan in Australia that incentivises the borrower to further improve its performance against a set of environment, social and governance criteria
- In March 2016, a 1.17MW photovoltaics solar system was installed on the rooftop of AAL's multi-level car park
- Four electric-vehicle charging units were installed in the multi-level car park in 2017
- Over 95 per cent of the demolition and construction waste from the Terminal 1 demolition works in 2018 was recovered for recycling
- In 2018, AAL received an Australian Airports Wildlife Hazard Management Award in recognition of AAL's wildlife hazard-management program
- Since 2015, the airport was accredited with Level 3 (Optimisation) of Airport Carbon Accreditation by demonstrating measurable reductions in its carbon footprint as well as seeking to influence and guide its stakeholders to do the same

14.4. Sustainability

Sustainability is at the core of the way AAL does business. Through regular dialogue with stakeholders and routine reviews AAL constantly improves its ability to anticipate and react to economic, social, environmental, and regulatory changes as they arise. AAL is already realising cost savings from a range of efficiencies initiated through its sustainability focus. Its investors are actively tracking environment, social and governance factors through benchmarking standards; and are correlating better financial performance with improved environment, social and governance performance.

AAL strives for sustainability excellence as a global airports sector leader and AAL's people are committed to building sustainability into day-to-day business.

AAL remains on a journey of embedding a common and consistent language of sustainability and efficiency and continuously demonstrating its governance and performance credentials through benchmarking and reporting.

AAL has developed a Corporate Sustainability Strategy, which is underpinned by the Sustainability Policy and provides a framework for integrating sustainability throughout the business and aims to deliver value to all stakeholders.

The AAL Sustainability Policy outlines the following objectives:

- Seek to ensure the safety and security of airport users, employees, data and systems
- Engage the community through a partnership approach, creating community value and connectivity
- Act with integrity and ethics to build and maintain trust with all our stakeholders
- Operate in a fair and inclusive manner, expanding employee diversity and providing a flexible workplace

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- Deliver responsible and sustainable growth, financial resilience and economic viability
- Be an employer of choice to attract and retain the right people and build high staff engagement
- Continuously improve our facilities, services and practices to be supportive of future passenger growth
- Understand and mitigate financial and physical climate risks through active management of our carbon emissions and maintenance of resilient assets and communities
- Embrace innovation as central to operational efficiency, customer service and value chain creation
- Integrate sustainability principles into planning, design, construction, procurement and technology deployment; thereby driving adoption through our supply chain
- Measure and manage energy use, seeking opportunities to source cleaner and cost-effective alternatives
- Conserve water, improve efficiency and maximise opportunities for reuse and recycling
- Minimise pollution and waste from our operations by finding opportunities to recover, reuse and recycle waste
- Support and educate a diverse, inclusive and responsible supply chain that ensures compliance with human-rights regulations, innovative solutions and sustainable sourcing practices

The Corporate Sustainability Strategy articulates the sustainability framework which is a consolidation of AAL's sustainability-related commitments, how it measures and benchmarks its performance and what aspects AAL considers important to report to its shareholders and community.

In 2018, AAL completed an inaugural materiality assessment, following guidance provided by the Global Reporting Initiative Standards introduced in 2016. The assessment is a process to determine the issues that internal and external stakeholders regard as most important for a company. It is used to help shape AAL's Sustainability Policy, guide the Corporate Sustainability Strategy, act as a critical reference for benchmarking (including GRESB) and underpin external reporting. The feedback is also used to identify potential risks and opportunities, particularly around emerging issues that could impact the airport's business success and stakeholder relationships in the future.

Although not a requirement of the Environment Strategy under the Airports Act, AAL is also committed to:

- Continuing to implement and adapt the Corporate Sustainability Strategy
- Continuing to monitor, improve and benchmark sustainability performance through participation in external benchmarking programs
- Continuing to monitor and improve sustainability performance linked to financing through the sustainability performance linked loan
- Publicly disclosing materiality, sustainability objectives and alignment with the United Nation's Sustainable Development Goals through website and/or annual report
- Incorporating sustainable design principles into Adelaide Airport's Design Guidelines where appropriate
- Developing a process for the collection, management and interrogation of non-financial data focusing on a single point of truth, alignment with Global Reporting Initiative Standards and data governance where practicable
- Developing policy and guidelines for sustainable infrastructure development incorporating target planning, design, construction and operational ratings
- Updating the materiality assessment with internal and wider external stakeholder engagement

Further information on AAL's approach to sustainability is available on the Adelaide Airport website at adelaideairport.com.au.

14.5. Environment Strategy Requirements

14.5.1. Legislative Requirements

AAL has developed the Environment Strategy in accordance with the *Airports Act 1996* (Airports Act) and the Airports (Environmental Protection) Regulations 1997 (AEPR). The Airports Act establishes an environmental management regime that focuses on a cooperative approach, supporting and ensuring compliance with environmental standards at federally-leased airports. Section 71 of the Airports Act and regulations 5.02A and 5.02B of the Regulations specifically cover environmental management requirements.

The AEPR outline the major obligations with respect to environmental matters on the airport site. However, these regulations do not apply to pollution and noise generated by aircraft (except engine ground running noise), which are regulated through the Air Navigation (Aircraft Engine Emissions) Regulations 1995 and the Air Navigation (Aircraft Noise) Regulations 1994.

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to actions that have a significant impact on the environment where the actions affect, or are taken on, Commonwealth land. The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places which are defined in the EPBC Act as matters of national environmental significance.

Various industry codes of practice, Australian Standards, Commonwealth and State environment protection measures, and other guidelines are applicable to operators at the airport.

This Environment Strategy includes the following:

- Environmental management objectives for the airport
- Identification of the current environmental status of the airport including areas of environmental significance
- Identification of sources of environmental impact associated with airport operations
- An outline of the proposed environmental studies, reviews and monitoring of current and future activities, and a timeframe for these studies to be conducted and reported on
- Proposed measures to prevent, control or reduce environmental impacts associated with airport operations and the anticipated timeframe for their completion
- Details and outcomes of consultation on the preparation of the strategy with stakeholders

In compliance with the AEPR, the Environment Strategy also covers:

- Sites identified to be of Indigenous significance
- Proposed environmental management for areas of the airport which are not used, or planned to be used, for airport operations, and
- Necessary training for environmental management by persons employed by AAL or other major airport employers, including detail on proposed training

In addition to meeting regulatory obligations, the Environment Strategy sets the strategic direction for environmental management of airport operations for the next eight years. This Environment Strategy also addresses sustainability where it relates to environmental aspects, including details of how AAL manages waste, energy, climate risk and water resources.

14.5.1.1. Environmentally Significant Areas

In consultation with Commonwealth and State conservation bodies, the Airports Act requires the Environment Strategy to identify areas on the airport site that are considered environmentally significant.

There are no threatened ecological communities or species listed under the EPBC Act that are present on the airport site.

There are no sites of Indigenous, historic and natural significance within Adelaide Airport that are listed on the National Heritage List or on the Commonwealth Heritage List.

14.6. Environment Management Framework

Environmental management at Adelaide Airport is guided by the AAL Environmental Management Framework, as shown in Figure 14-1. This Framework incorporates strategic policy and planning documents, as well as measures to comply with Commonwealth regulatory requirements.

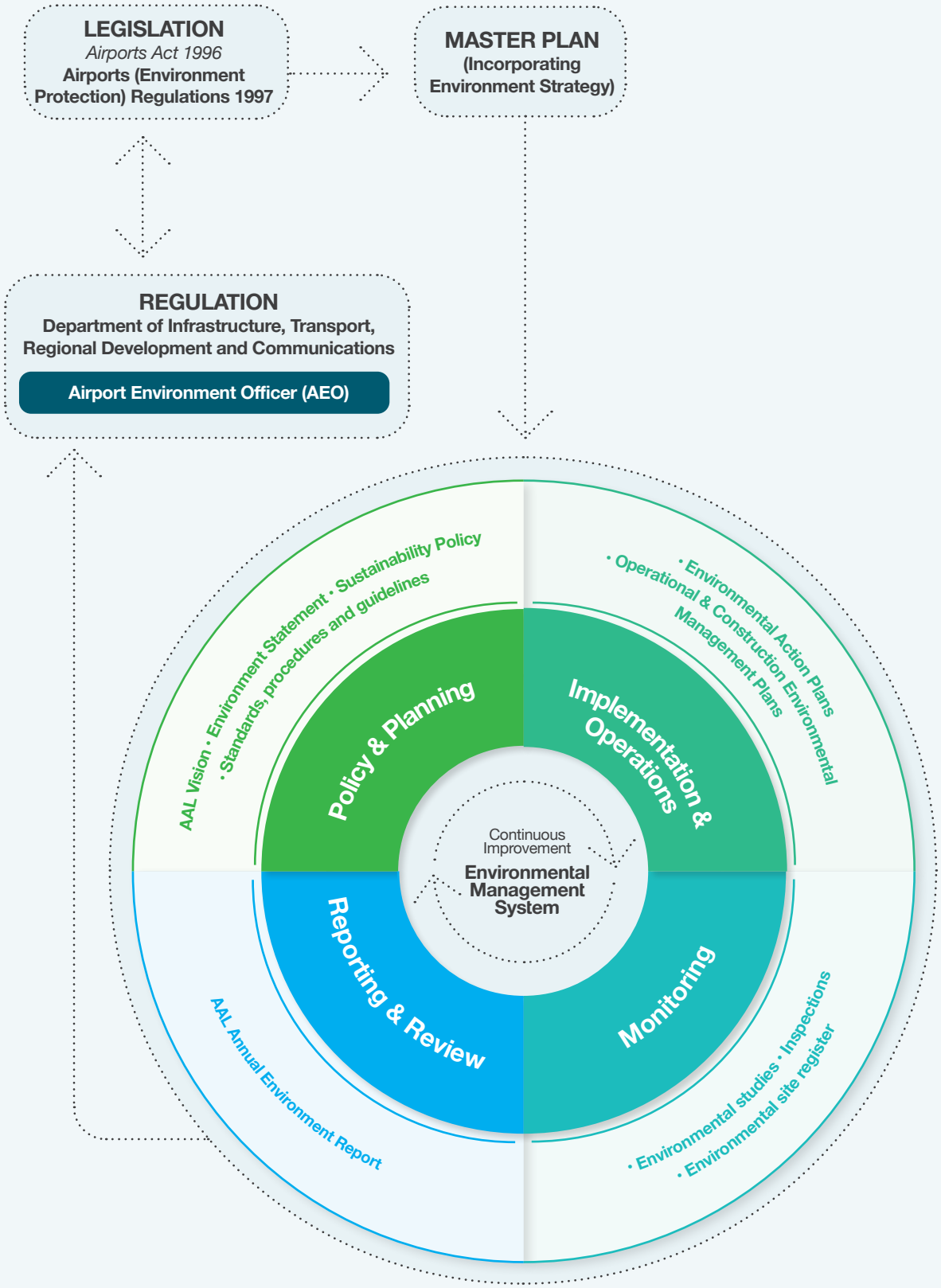

Figure 14-1: Adelaide Airport Environment Management Framework

14.6.1. Responsibilities

AAL and its operators, tenants and contractors share responsibility for the environmental management of Adelaide Airport. Table 14-1 identifies the key environmental management responsibilities for the airport site.

Training and communication processes and systems have been established to ensure AAL staff are aware of their environmental management roles and responsibilities. Training requirements and frequencies are currently managed through the AAL training matrix. Environmental awareness training is currently completed by AAL staff every two years.

AAL's environment staff have relevant tertiary qualifications in science, environmental management and/or engineering and have received training in environmental management-system implementation and auditing.

AREA	RESPONSIBILITIES
AAL Board of Directors	• The environmental performance of AAL • Periodic review of the Environment Statement • Allocation of resources to manage environmental issues
AAL Executive	• Ensure that the roles/responsibilities for environmental management are defined and communicated • Incorporate and manage regulatory and other environmental conditions within leases, other property contracts and construction contracts • Ensure planned development aligns with the approved Master Plan
AAL Environment Staff	• Ensure compliance with regulatory requirements • Ensure the integration of environmental requirements into daily operations • Implement the Environmental Management System • Prepare the Annual Environment Report for DITRDC • Provide advice and specific training to staff, contractors and airport users • Report and investigate environmental hazards, incidents and stakeholder feedback
AAL Staff	• Comply with the AAL Environment Statement, management plans and procedures • Report environmental incidents and emergency events
Airport tenants, aviation operators and major airport contractors	• Comply with applicable environmental legislation and AAL plans, procedures and guidelines • Complete AAL induction • Report environmental hazards, incidents and feedback to AAL • Develop and implement Construction and/or Operational Environmental Management Plans when required
Department of Infrastructure, Transport, Regional Development and Communications (DITRDC)	• Appoint an Airport Environment Officer (AEO) to: – Ensure management of the airport environment is in accordance with the Airports Act and Regulations – Conduct site inspections, monitoring and reporting – Review and comment on development/building applications to ensure that the environment is appropriately managed

Table 14-1: Environmental Management Responsibilities

14.6.2. Sources of Environmental Impact

Adelaide Airport is a dynamic environment, supporting a range of aviation and non-aviation activities that have the potential to impact on the environment. Table 14-2 provides an overview of activities at Adelaide Airport with potential for environmental impact.

AREA	ACTIVITIES
Aviation activities	Fuel storage and supply
	Aircraft operation
	Aircraft maintenance
	Aircraft painting
	Aircraft washing
	Aircraft decommissioning
	Baggage handling
	Engine ground running
	Air traffic control services
	Customs and border control services
	Airline catering
	Medical retrieval services
	Construction and fit out
Non-aviation commercial activities	Fuel storage and supply
	Commercial retailing
	Warehousing and logistics operations
	Steel fabrication
	Recreational facilities
	Medical services
	Office facilities
	Rental car facilities
	Vehicle wash facilities
	Petrol filling stations
	Construction and fit out
Airport management activities	Passenger facilitation
	Terminal operation and maintenance
	Car park operation and maintenance
	Office operation and maintenance
	Road maintenance
	Runway, taxiway and apron maintenance
	Vehicle operation, maintenance and refuelling
	Vehicle washing
	Landscaping
	Sewer network maintenance
	Electricity network maintenance
	Water supply network maintenance
	Wildlife control
	Construction and fit-out
Historic activities	Landfills
	Fuel storage and supply
	Aircraft maintenance
	Herbicide / pesticide application
	Fill importation
	Fire training

Table 14-2: Activities with potential for environmental impact at Adelaide Airport

14.6.3. Environmental Management System

Central to the AAL Environmental Management Framework is the Environmental Management System (EMS). The EMS conforms to the requirements of *International Standard ISO 14001:2015* and provides a structure for planning, implementing, monitoring, reporting and reviewing environmental management at Adelaide Airport.

The EMS comprises four key areas which ensure a continuous improvement approach to environmental performance:

- Policy and planning
- Implementation and operation
- Monitoring
- Reporting and review

14.6.3.1. Policy and Planning

AAL's commitment and approach to environment and sustainability are described in the Environment Statement.

AAL's Environment Statement was endorsed by the Managing Director in 2018 and identifies the key commitments for the protection and improvement of the environment. The commitments include:

- Ensuring compliance with relevant regulatory and other requirements as well as the Environment Strategy
- Implementing and maintaining an EMS to minimise environmental impacts
- Employing a continuous improvement approach to environmental management and sustainability.

The Statement is updated regularly to ensure relevancy to AAL.

14.6.3.2. Implementation and Operation

The implementation and operation of the EMS is achieved through a range of systems, procedures and guidelines. These include business and strategic plans, building approval processes, risk assessments and training processes. The relevant documents, which are reviewed and updated regularly, are outlined in Table 14-3.

To inform tenants and aviation operators of requirements for activities such as construction dewatering, spill response, landscaping and fuel management, guidelines have been developed by AAL and published on the Adelaide Airport website at adelaideairport.com.au.

Adelaide Airport staff and users of the airport must take all reasonable steps to implement and comply with the Environment Strategy. The airport's environment team maintains the EMS, drafts the plans and provides the necessary advice and guidance required for others at the airport to implement measures for controlling or minimising significant environmental risks. Key outputs include standard operating procedures, safe-work instructions, environmental guidelines and training.

AREA	PRINCIPAL DOCUMENTS	SECONDARY DOCUMENTS
Ground-based noise	Noise Management Plan Stakeholder Engagement Strategy and Action Plan	Noise Enquiry and Complaints Handling Procedure Guidelines for Noise Management at Adelaide and Parafield Airports Boundary Noise Monitoring Procedure Policy for the Ground Running of Aircraft Engines at Adelaide Airport
Local air quality	Local Air Quality Management Plan Local Air Quality Monitoring and Action Plan	Tenant Environmental Management Plan Construction Environmental Management Guideline Tenant and Construction Environmental Inspection Procedure Spray Painting Guideline Ozone Depleting Substances Guideline Stakeholder Engagement Strategy and Action Plan
Stormwater	Stormwater Quality Management and Improvement Plan Stormwater Quality Management and Improvement Action Plan Patawalonga Creek Management Plan	Airport Drain Maintenance Guideline Aircraft and Vehicle Washing Guideline Airport Emergency Plan Dangerous Goods and Hazardous Substances Guideline Spill Response Guideline Spray Painting Guideline
Soil and groundwater	Contaminated Site Management Plan Contaminated Site Risk Register Groundwater Monitoring Strategy Irrigation Management Plan PFAS Site Management Plan (Airservices)	Tenant Environmental Management Plan Tenant and Construction Environmental Inspection Procedure Waste Fill Importation and Soil Management Guideline Construction Environmental Management Guideline Environmental Site Assessment Guideline Acid Sulfate Soil Guideline Landscaping Guideline Airport Emergency Plan Trade Waste Management Guideline Hazardous Chemicals and Dangerous Good Guideline Spill Response Guideline Fuel Management Guideline

AREA	PRINCIPAL DOCUMENTS	SECONDARY DOCUMENTS
Energy and climate change	Energy Strategy Carbon Management Plan Climate Change Adaptation Plan Low-Carbon Statement	Energy Conservation Guidelines Integration of Climate-related Risks and Opportunities Report
Water resources	Water Resource Plan	Landscaping Guideline Water Conservation Guideline
Waste	Waste Management Strategy Sustainable Procurement Plan	Terminal 1 Operational Waste Management Plan AAL Operations Waste Management Plan Tenant and Construction Waste Management Guideline Terminal 1 Tenancy Operational Waste Management Plans Dangerous Goods and Hazardous Chemicals Guideline Construction Environmental Management Guideline
Land and Heritage	Wildlife Hazard Management Strategy Heritage Strategy Patawalonga Creek Management Plan	Vickers Vimy Conservation Plan Land Management Plan Wildlife Hazard Management Plan Landscaping Guideline
Tenant and construction management	Tenant Management Plan	Tenant and Construction Environmental Inspection Procedure Tenant Risk Ranking Procedure

Table 14-3: Waste Management 8-Year Supporting documentation

14.6.3.3. Monitoring

A risk-based approach has been adopted for tenant monitoring and inspections. Tenant environmental risk ranking is based on the potential of the tenant's business activities to cause environmental harm, the tenant's previous environmental performance and the quality of risk management controls. Online tenant environmental self-assessments have been introduced to better align the frequency of environmental tenant inspections with the potential risks. The current inspection and self-assessment frequencies are presented in Table 14-6. Any changes to the frequency of inspection and self-assessment are captured in the relevant AAL procedural documents.

An Environmental Site Register is maintained for the airport. The register identifies the locations on-airport that have been a source of environmental impact and/or subject to environmental monitoring, assessment, inspection, incident investigation and/or environmental significance status. The features of each site, including its contamination status, are detailed in the register and the site location identified.

AREA	MONITORING ACTIVITY	FREQUENCY
Ground-based noise	Boundary noise	As required (see Ground Noise EAP)
	Construction noise	As required
Local air quality	Air quality	As required
	National Pollutant Inventory	Annually
	Ozone depleting substances	Annually
	Stack monitoring	Annually
Stormwater	Stormwater quality (Tier 1)	Bi-monthly and as required
	Stormwater quality (Tier 2)	As required
Soil and groundwater	Soil and groundwater contamination (existing sites)	Annually and as required
	Soil and groundwater contamination (new sites)	As required
	Background groundwater quality	Annually
Carbon Emissions	Carbon footprint (Scope 1 and 2)	Annually
Energy	Energy consumption (AAL buildings)	Quarterly
Water resources	Water consumption (AAL buildings)	Annually
Waste	Waste volumes (AAL buildings)	Quarterly
Land and heritage	Flora/fauna surveys	As required
	Indigenous artefact surveys	As required
	Built heritage surveys	As required
Inspections	AAL environmental inspection	As per AAL procedures
	Tenant self-assessment	As per AAL procedures

Table 14-4: Summary of Key Monitoring Activities

Auditing

A robust EMS requires regular review and update. AAL achieves this through regular internal auditing of select system components in accordance with the Internal Environmental Management System Audit Procedure. A detailed external audit by an accredited ISO 14001 auditor of the full EMS is scheduled every three years. Audit results, which are reported to the DITRDC, provide assurance as to the quality and rigour of AAL's environment program.

14.6.3.4. Reporting and Review

Reporting against all goals and management actions in the Environment Strategy is provided regularly to AAL's Executive Committee. Management review of the EMS is a requirement of ISO14001 and is undertaken in accordance with Adelaide Airport's Management System Review Procedure.

AAL reports pollution incidents, environment-related complaints, any exceedances of regulatory criteria, and management of contaminated sites to the DITRDC Airport Environment Officer through monthly meetings and as required under legislation.

A comprehensive report demonstrating the airport's progress against all Environment Strategy goals, management actions and monitoring activities is also provided annually to DITRDC.

AAL continues to engage and communicate environmental information with the City of West Torrens and surrounding community and key stakeholders through various forums. These include the Adelaide Airport Consultative Committee, tenant forums, publications and website.

14.7. Environmental Action Plans

The Environment Strategy covers ground-based environmental aspects associated with the operation of Adelaide Airport, including:

- Energy and climate change
- Water resources
- Stormwater and aquatic ecology
- Soil and groundwater
- Ground-based noise
- Local air quality
- Waste management
- Land and heritage management

The management of these specific environmental aspects are outlined in Environmental Action Plans (EAPs) and each EAP is supported by AAL management plans and guidelines.

Current management practices will evolve or change over time in response to:

- Changes in the relevant legislation
- Best practice – especially improvements in technology and knowledge
- Understanding of the airport and surrounding environment

Given the current eight-year cycle for Master Plan and strategy reviews, current management practices documented in AAL strategy and management documents will inevitably change prior to the next Environment Strategy review. In recognising this, AAL acknowledges that the content presented under 'Current Management Practices' is indicative of current practice only and represents the baseline from which improvements will be continuously made.

The AAL strategy and management documents form the foundation of the environmental management and sustainability programs at AAL. They are referenced under the EAPs in this Environment Strategy to provide a link between the evolving management practices at AAL and the Environment Strategy. This applies equally to both the monitoring and assessment process and frequencies.

As the objectives and management actions/initiatives presented within this strategy are based on the AAL strategy and management documents, they are likely to continuously evolve. To facilitate these improvements, AAL regularly updates the Environment Strategy in collaboration with the AEO via Annual Environment Reporting and annual strategy reviews. All improvements to objectives and management actions/initiatives are documented and agreed to by the AAL and the AEO.

Table 14-5 and Table 14-6 provide an outline of the structure and content for each of the EAPs and clarity on the timeframes for achieving the management actions identified.

Date ranges rather than rigid dates have been used in acknowledgement of variations in available resources and changes in the demands on these resources.

FRAMEWORK	DESCRIPTION
Objectives	Objectives for the long-term operation and development of the airport which align with the overarching vision in AAL's Environment Statement. The objectives set the strategic direction for the environmental management and performance of the airport
Background	Overview of the relevant EAP aspect, how it applies to the airport, and a summary of general background information and existing sources of impact. Recent achievements are also outlined
Current management	This section describes the management practices currently implemented to address identified sources of environmental impact
8-year action plan (2019-2027)	Specific strategic-level management actions and initiatives that AAL intends to carry out to achieve the relevant key objectives during the 8-year period These measures and actions aim to build on the achievements made under the previous Environment Strategies, thereby striving towards continual improvement of the airport's environmental performance. Actions proposed within this strategy include: • New actions developed due to recent studies and plans • New actions required to address potential environmental issues associated with implementation of the Master Plan • Ongoing actions that remain relevant Each action has a defined timeframe for implementation, established having regard to its risk, status of current management and the variability of resources

Table 14-5: Environmental Action Plan Framework

DESCRIPTION	TIMEFRAME
Short-term	1 – 3 years
Medium-term	3 – 5 years
Long-term	5 – 8 years
Ongoing	Determined through regular review
As required	Determined on an as-needs basis

Table 14-6: Timeframe for Management Actions

14.8. Energy and Climate Change

Energy and Climate Change Objectives:

- Achieve emissions reductions in line with AAL's emission reduction targets
- Measure and manage energy use, seeking opportunities to source cleaner and cost-effective, resilient alternatives
- Understand and mitigate physical and transitional climate risks, through active management of the airport's carbon emissions and maintenance of resilient assets and communities

14.8.1. Background

AAL seeks to provide energy that is affordable, reliable and environmentally sustainable. Given that energy accounts for over 90 per cent of the airport's carbon footprint, energy will play a key role in future-proofing growth.

AAL recognises that climate change and carbon-risk management are an essential aspect of operating a sustainable business over the long term. AAL is committed to employing the principles of resource efficiency in its operations, planning and ongoing infrastructure development, and in the procurement of goods and services.

According to CSIRO, the climate in South Australia is predicted to be warmer and drier with changes to seasonal rainfall patterns and greater frequency of drought. The potential operational and economic impacts from climate change include decreased water supply, increased utility prices, infrastructure deterioration and habitat stress.

Recent Achievements

- AAL installed a 1.17MW solar PV system on the multi-level car park roof in 2016. This is the largest airport solar PV installation in Australia and reduces the airport's carbon footprint by approximately 8.5 per cent
- AAL achieved Level 3 (Optimisation) Airport Carbon Accreditation in 2015 by demonstrating measurable reductions in carbon footprint as well as seeking to influence and guide stakeholders to do the same
- As part of the Green Vehicle Program, AAL has purchased four full-electric plug-in Nissan Leaf vehicles as well as investing in more fuel efficient diesel-powered commercial vehicles
- Four electric vehicle charging units were installed in the multi-level car park in 2017
- AAL participated in the Qantas Future Planet Program to purchase verified carbon offsets for three years
- Energy Efficiency Guidelines were developed to provide guidance to tenants on techniques for measuring emissions and reducing energy consumption, including installation of solar PV and LED lighting
- Guidelines for Green Purchasing were developed in 2015 and distributed to AAL staff, tenants and contractors
- Alternative forms of transport have been introduced, including the J1X public bus service in 2016 that operates between the airport and city, and electric vehicle chauffeur service commenced in 2017
- A Climate Adaptation Plan for Adelaide Airport has been developed to improve AAL's preparedness against the likely impacts of climate change on infrastructure and operations

14.8.2. Current Management

14.8.2.1. Energy

The airport has complex energy requirements including the management of an inset (embedded) network across the site, comprising eight main meters and over 300 sub-meters. Total usage for the airport is approximately 43.5 million kWh with 28 million kWh (~64 per cent) used by tenants.

AAL has undertaken a range of energy generation and optimisation projects to date including the installation of two solar photovoltaics systems that generate a total of 1.28MW on-site electricity and the implementation of a SMART building analytics program to optimise HVAC operations.

AAL has also developed an Energy Strategy to provide high-level strategic direction to its energy management activities. An Energy Strategy Committee has been developed to identify, assess and implement energy-related opportunities including, procurement, generation, sustainability initiatives, storage, efficiency and optimisation projects in line with the Energy Strategy.

14.8.2.2. Climate Change

AAL has undertaken a climate-risk review and has an understanding of both the physical and transition risks of a changing climate as well as the shift to a low-carbon economy. AAL is responding to climate change as a business risk through:

- Mitigation: lessening the impact through low-carbon policies and carbon-reduction activities
- Adaptation: planning and action in response to projected changes in climatic conditions and weather events resulting from climate change (i.e. making modifications to adjust to a changing situation)

Mitigation, in the form of carbon reduction, has been ongoing since 2015 when the airport was accredited to Level 3 (Optimisation) of the Airport Carbon Accreditation scheme by demonstrating measurable reductions in its carbon footprint as well as seeking to influence and guide its stakeholders in doing the same.

AAL maintains a Climate Change Adaptation Plan (approved by the AAL Board of Directors) which considers the risks and opportunities associated with future modelled seasonal temperatures, flooding, storms and drought. The Plan identifies appropriate adaptation pathways for airport infrastructure, buildings, services and other key components of airport operations.

Climate modelling for Adelaide Airport is regularly reviewed and the Climate Change Adaptation Plan updated in response to these and other internal and external factors.

14.8.3. 8-Year Action Plan

The Energy and Climate Change 8-Year Action Plan is detailed in Table 14-7.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Continue to implement and review the Energy Strategy	Ongoing
Implement the carbon management plan	Ongoing
Implement Climate Change Adaptation Plan	Ongoing
Continue annual measurement of AAL's carbon footprint	Ongoing
Continue to investigate mitigating impacts of extreme heat on aircraft performance and airport operations through the smart use of irrigation	Short-term
Assess and consider achieving carbon neutrality	Medium-term

Table 14-7: Energy and Climate Change 8-Year Action Plan

14.9. Water Resources

Water Resources Objective:

- Smart use of water, improve efficiency and maximise opportunities for use of non-potable water

14.9.1. Background

Adelaide Airport's operation and future growth are dependent upon the ongoing security of water supply. The key risks relate to water availability, access and cost. There is an opportunity to employ the smart use of water, including recycled water, through Water Sensitive Urban Design (WSUD) and urban greening to both mitigate and adapt to climate change.

AAL is committed, where feasible, to expanding the use of available non-potable water supplies for new and existing developments. There are several options being assessed. However, the highest priorities are tapping into the Adelaide Airport Stormwater Scheme (AASS) and expanding the existing Glenelg Wastewater Treatment Plant (GWTP) recycled-water network.

Developments with a large roof area (such as warehouses and hangars) provide opportunities for rainwater capture and reuse to supplement recycled water supplies from existing networks.

Recent Achievements

- A Water Resources Plan has been developed for Adelaide Airport
- The Airport Stormwater Harvesting Scheme has supplied water for a four hectare irrigated airside vegetation trial that was established in 2015, and in 2018 pipework was completed for the Scheme to supply the Terminal 1 cooling towers
- Public toilets in Terminal 1 have been upgraded with water efficient features
- Smart water meters have been installed for Terminal 1 mains and retail tenants
- Water Conservation Guidelines have been developed for tenants and developers to promote the implementation of water efficiency measures across the airport site. The University of Adelaide turf sports grounds (on the airport site) was connected to the recycled water network in 2017

14.9.2. Current Management

AAL continues to shift from water conservation to smart water use.

Recycled water from the nearby Glenelg Wastewater Treatment Plant has been used to irrigate areas of Adelaide Airport for more than 20 years. As the airport has expanded, so too has the recycled water network. Recycled water is used for toilet flushing in Terminal 1 and for most irrigation across the airport.

AAL harvests and stores up to 570 kilolitres of stormwater from the multi-level car park roof, which is then piped to Terminal 1 for use in the air conditioning system.

The Australian Federal Police building and the Terminal 1 plaza water feature are connected to the recycled water network, thereby reducing the reliance on potable water. Recycled water is also used to manually irrigate the grassed runway strips.

Large areas around the multi-level car park and the Terminals & Business Precinct have been planted with local, drought-tolerant species in accordance with AAL's Landscaping Guidelines.

A managed aquifer-recharge scheme (the Adelaide Airport Stormwater Scheme, AASS, constructed by SA Water and facilitated by AAL) has enabled the opportunity to capture, store and distribute up to 270 million litres of treated stormwater each year from Brown Hill / Keswick Creek for use on and around the airport.

The Torrens Precinct has been reinvigorated by the University of Adelaide's use of the recycled-water network and to irrigate its sports grounds.

AAL has partnered with SA Water to conduct a ground-breaking airside irrigation trial, which has demonstrated the ability to cool the local environment through irrigation with recycled water provided from the AASS. The trial is ongoing, with the second phase aimed at assessing the potential for mitigating the impacts of extreme heat on aircraft performance, reducing energy requirements for cooling within Terminal 1 and improving thermal comfort of airport workers.

AAL intends to undertake a review of all water related activities and develop an Integrated Water Management Strategy. WSUD principles and mitigation of the urban heat-island effect will be incorporated into Design Guidelines.

14.9.3. 8-Year Action Plan

The Water Resource Management 8-Year Action Plan is detailed in Table 14-8.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Seek opportunities for implementing Water-Sensitive Urban Design (WSUD) principles	Ongoing
Update the water-meter network to improve data accuracy, where required	Ongoing
Continue to investigate the benefits and feasibility of irrigating runway strips and the wider airfield	Short-term
Undertake a water infrastructure and use risk and opportunity study	Medium-term
Develop an Integrated Water Management Strategy	Medium-term
Investigate expanding the use of recycled water for irrigation across the airport to facilitate urban greening and urban heat-island mitigation	Medium-term

Table 14-8: Water Resources 8-Year Action Plan

14.10. Stormwater and Aquatic Ecology

Stormwater and Aquatic Ecology Objective:

- Maintain and, where feasible, improve stormwater quality and aquatic ecosystems

14.10.1. Background

Adelaide Airport is bound to the north by the Cowandilla-Mile End Drain, to the west by the Airport Drain, and to the east and south by Brown Hill-Keswick Creek as outlined in Chapter 11. The Cowandilla-Mile End and Brown Hill-Keswick catchments are highly urbanised and drain into the Patawalonga Lake before entering the Gulf St Vincent. An internal drainage network is present and directs the majority of stormwater into the airport drain, which similarly discharges to the Patawalonga Lake.

Sources of stormwater pollution at Adelaide Airport are similar to those in urban catchments, namely vehicles, roads, debris from vegetation, sediment, general commercial activities and hazardous substances storage.

Recent Achievements

- The Australian Water Quality Centre was engaged in 2017 to update the Stormwater Quality Management and Improvement Plan, including a review of water quality data and land use changes
- AAL and the South Australian EPA undertook an extensive drain ecology assessment across the airport site in 2017

14.10.2. Current Management

AAL is committed to improving stormwater quality and consequently the ecological health of the airport's waterways by supporting aquatic ecosystems, as detailed in the Stormwater Quality Management and Improvement Plan. Implementation of this plan, which includes monitoring and assessment of the ecological health of the open drain network, aims to minimise pollutant loads from on-airport activities.

Stormwater sampling principally involves the collection of bi-monthly composite samples via automated samplers at the airport's primary stormwater discharge points. Results are currently compared against Commonwealth and State water-quality criteria.

Potential stormwater pollution risks associated with construction activities are managed via the Building Activity Application process, principally through reviews of Construction Environmental Management Plans (CEMPs). Following the commencement of site works, AAL undertakes construction environmental inspections to ensure potential risks are being managed in the manner described in CEMPs.

AAL is working to establish site-specific water quality trigger levels to assess potential impacts to the aquatic environment. The development of site-specific trigger levels will also provide a baseline to measure the effectiveness of pollution control and stormwater management measures. The South Australian EPA Environment Protection (Water Quality) Policy 2015 references the 'Australian and New Zealand guidelines for fresh and marine water quality' (ANZECC 2000), which provides scope for the development of site-specific water quality trigger levels.

AAL is working with the South Australian EPA to undertake bioassessment work to establish appropriate trigger levels. The first phase to assess drain ecology has been completed, the second phase will involve undertaking ecotoxicology to determine potential impacts to aquatic biota.

Interceptors are specified for installation at the discharge point for all new developments. High-risk tenants are also regularly inspected to check the suitability of hazardous substance stores and management of other potentially polluting activities. Spill response and clean-up in accordance with the Airport Emergency Plan is intended to minimise environmental impacts from fuel incidents. Aviation operations are inspected for conformance to the Aircraft and Vehicle Washing Guidelines.

The land surrounding Adelaide Airport is low-lying and has potential for flooding, with the possible frequency and intensity projected to increase through climate change. In response to this issue, a flood-modelling assessment was undertaken at Adelaide Airport in 2013 to assess flood risk to airport operations and identify key mitigation measures to manage flood events. AAL has pursued improvements in flood mitigation for the local community through collaboration with Government agencies and the licensing of land for the City of West Torrens Stormwater Detention Basin Project at West Beach in 2013. In recent years, continual maintenance works have been undertaken by AAL and other State based entities to increase the capacity of existing infrastructure.

14.10.3. 8-Year Action Plan

The Stormwater and Aquatic Ecology 8-Year Action Plan is detailed in Table 14-9.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Investigate potential sources of pollution based on stormwater quality data reviews	As required
Continue to regularly monitor stormwater quality	Ongoing
Continue to identify sources of pollution as per the Stormwater Quality Management and Improvement Plan and mitigate sources of pollution where identified	Ongoing
Provide guidance to stakeholders on stormwater quality-improvement strategies	Ongoing
Complete risk assessment regarding pollutant potential to receiving waters and develop mitigation measures	Short-term
Incorporate stormwater quality and Water Sensitive Urban Design (WSUD) principles into Adelaide Airport's Design Guidelines where appropriate	Short-term
Assess capacity of current infrastructure to respond to major stormwater pollution events.	Medium-term
Complete bioassessment of airport drains and develop an Aquatic Ecology Management Plan	Medium-term
Develop site-specific water quality criteria in accordance with ANZECC water quality guidelines	Long-term

Table 14-9: Stormwater and Aquatic Ecology 8-Year Action Plan

14.11. Soil and Groundwater

Soil and Groundwater Objective:

- Maintain and, where feasible, improve soil and groundwater quality

14.11.1. Background

Soils across the airport site vary from predominantly heavy clay on the eastern side to deep sand layers, over clay base, on the western side. Upper fill varies significantly, having been deposited over various portions of the site over several decades, from various sources and for various purposes. Groundwater in the surface (superficial) aquifer beneath the airport ranges in depth from four metres below ground level in the east, to less than one metre in the most westerly section of the airport. Groundwater is typically saline and non-potable. Groundwater bulk flow across the airport site is to the west and north-west but localised flow direction may vary. The groundwater gradient is very flat, possibly less than one meter per kilometre.

Most operations at the airport occur on impervious, paved surfaces and involve vessels that greatly reduce the likelihood of contamination (e.g. double-walled fuel tanks).

Recent Achievements

- Contaminant trigger criteria has been incorporated into the Groundwater Monitoring Strategy, which is an integral component of the Contaminated Site Management Plan, and provides for management of a number of high risk sites on the AAL Contaminated Site Risk Register
- New guidelines for Per- and Poly-Fluorinated Alkyl Substances (PFAS) and Acid Sulfate Soils have been developed to provide guidance for AAL and third-party development

14.11.2. Current Management

The AAL Contaminated Site Management Plan (CSMP) and Contaminated Site Risk Register (CSRR) have been developed in line with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and are used to assess and prioritise potential risks associated with contaminated sites and sites where a high risk of contamination exists. Management strategies are assigned in the CSRR based on the level and type of contamination risk.

Regular groundwater monitoring is one of the strategies used to manage contamination risks. The AAL Groundwater Monitoring Strategy establishes the requirements for regular groundwater monitoring activities, with contaminant trigger levels based on AEPR acceptance limits, background concentrations and the purpose of monitoring (e.g. leak detection).

Preventing contamination is an ongoing priority, and all practicable measures are undertaken to minimise the risks of contamination occurring.

Potential contamination risks associated with construction activities are managed via the Building Activity Application process, principally through reviews of CEMPs. Following the commencement of site works, AAL undertakes construction environmental inspections to ensure potential risks are being managed in the manner described in CEMPs.

Operational activities undertaken by AAL and its contractors are managed in accordance with relevant procedures and plans, which include controls to minimise the risk of contamination. Where high-risk site activities (e.g. underground fuel storage) exist, the potential contamination risks are managed in accordance with the CSMP and CSRR.

Hazardous chemicals and wastes stored and used by AAL are included in the hazardous substances register (ChemAlert) and Polychlorinated Biphenyls register and managed in accordance with AAL workplace health and safety policies and procedures. These procedures include regular audits of chemical/waste storage and spill response equipment. Consistent with the Tenant Environmental Management Plan, AAL ensures appropriate management of the hazardous chemicals and wastes stored and used by tenants via regular tenant inspections. AAL also provides a range of guidelines to tenants that provide advice on the appropriate storage and use of hazardous chemicals and waste.

Where contamination does occur or where historical contamination exists, the potential ecological and human health risks are managed in accordance with the CSMP and CSRR. The overall process is shown in Figure 14-2.

In addition to consideration of human health and ecological risks, the CSMP and CSRR consider Master Plan priorities and practicability in assigning risk rankings.

AAL uses recycled water from the nearby Glenelg Wastewater Treatment Plant to irrigate lawn and garden areas within the airport. To prevent potential soil and groundwater contamination arising from the application of recycled water, AAL undertakes soil and groundwater monitoring in irrigated areas.

The interaction between the various principal strategy and management documents is illustrated in Figure 14-3.

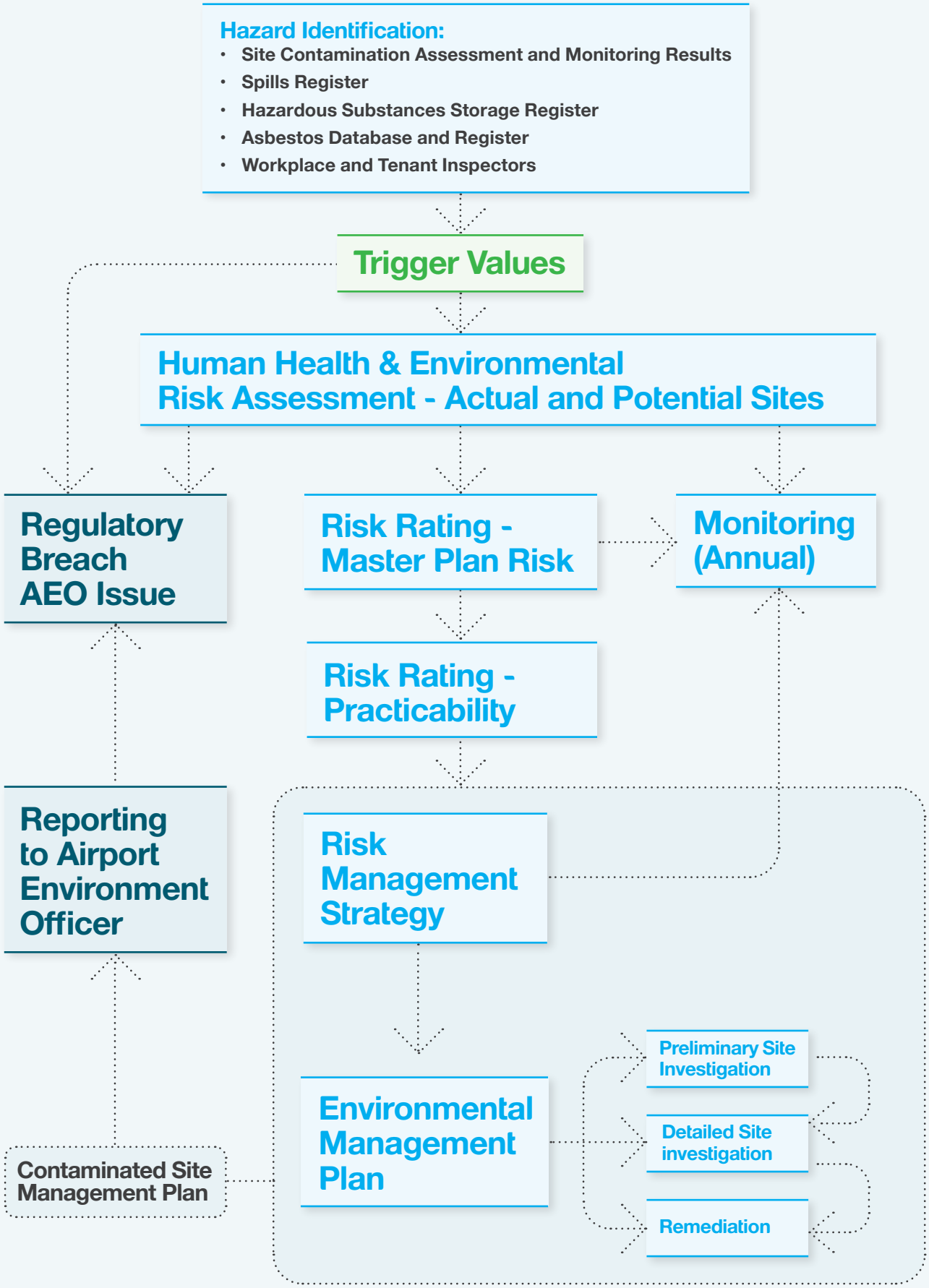

Figure 14-2: Contamination and Spill Management Process

Figure 14-3: Contaminated Sites Environmental Management System Process

14.11.2.1. Per- and Poly-Fluorinated Alkyl Substances (PFAS)

The assessment and management of Per- and Poly-Fluorinated Alkyl Substances (PFAS) contamination on the airport site is undertaken in accordance with the Guideline for Environmental Management issued by DITRDC. This directs airport lessee companies to use the published PFAS National Environmental Management Plan (PFAS NEMP) to meet their 'General duty to avoid pollution' under 4.02 of the Airport (Environment Protection) Regulations.

PFAS is not directly regulated under the Airport (Environment Protection) Regulations.

AAL manages PFAS contamination, and directs its tenants to manage PFAS contamination, in a manner consistent with the PFAS NEMP, with the following qualifications:

- PFAS contaminated material reuse and landfill disposal will be based on guidance and regulation provided by the South Australian EPA
- Precursor analysis will only be used as required to provide additional data for the purpose of assessing potential risks
- Any changes in the PFAS NEMP, guidance and regulation from DITRDC and the South Australian EPA will be captured in the Airservices PFAS Site Management Plan for Adelaide Airport

All known PFAS contaminated sites within the airport, including the Aviation Rescue and Fire Fighting (ARFF) Station and current and former training grounds are being managed by Airservices in accordance with the Airservices PFAS Site Management Plan for Adelaide Airport. Airservices is responsible for remediating these sites as part of a national program.

A Project Control Group has been established by AAL to review and provide input to the management of PFAS at Adelaide Airport, and includes representatives from AAL, Airservices, DITRDC, SA EPA, SA Health and SA Water.

AAL is also working closely with other relevant stakeholders including airport tenants, the City of West Torrens and the community.

14.11.3. 8-Year Action Plan

The Soil and Groundwater 8-Year Action Plan is detailed in Table 14-10.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Continue to review trigger criteria in the Groundwater Monitoring Strategy	Ongoing
Continue to conduct regular groundwater monitoring in accordance with the Groundwater Monitoring Strategy	Ongoing
Continue to implement priority actions on the Contaminated Site Risk Register, in accordance with the Contaminated Site Management Plan	Ongoing
Continue to guide tenants to close out contaminated sites on a risk basis where practicable	Ongoing
Continue to conduct relevant environmental site assessments for new developments and lease terminations in accordance with the Environmental Site Assessment Guideline	Ongoing
Continue to provide guidance to stakeholders on contamination prevention and remediation strategies	Ongoing
Collaborate with Airservices in assessing and managing PFAS in accordance with the Airservices PFAS Site Management Plan	Short-term
Develop a PFAS Management Plan for Adelaide Airport	Short-term
Upload historical and future contamination data to a Geographic Information System platform	Short-term
Restructure the site contamination consultancy panel to improve environmental outcomes	Short-term

Table 14-10: Soil and Groundwater 8-Year Action Plan

14.12. Ground-based Noise

Ground-based Noise Objectives:

- Ensure developments and airport activities comply with relevant ground-based noise regulations
- Proactively assess and manage potential ground-based noise exposure on the local community

14.12.1. Background

The airport is surrounded by high-density urban development, recreational facilities and industrial and commercial development, all of which are potential receptors to ground-based noise generated by airport activities. The major contributors of ground-based noise at the airport include:

- Aircraft engine ground running (i.e. engine testing)
- Parked aircraft with operating engines
- Operation of an auxiliary power unit of an aircraft
- Ground vehicles (i.e. roads, car parks, truck delivery and loading operations)
- Plant and equipment (e.g. mobile diesel generators)
- Construction activities

Recent Achievements

- The Aircraft Ground Running Policy was updated in 2016
- The Ground-based Noise Monitoring Program was extended in 2018 to improve the quality of baseline data

14.12.2. Current Management

Ground running (engine testing) activities undertaken by aircraft operators are strictly controlled through monitoring and enforcement of the Policy for the Ground running of Aircraft Engines at Adelaide Airport. This policy has been ratified by the Adelaide Airport Environment Officer and is subject to periodic review.

The policy directs aircraft owners and maintenance operators as to when and where they may test-run engines, the periods of time and power settings. AAL monitors these events.

Operational and construction activities are controlled through lease agreements and tenant or CEMPs, where applicable and monitored through a program of regular site inspections.

AAL is committed to engaging with the community on potential ground-based noise issues. A proactive engagement and consultation approach is undertaken in conjunction with development programmes which address actual and potential ground-based noise.

AAL undertakes regular boundary noise monitoring at locations of ground-based noise exposure. The results of the boundary noise monitoring undertaken over the last decade suggest that aircraft (in-flight) noise and other off-airport noise sources are greater contributors than ground-based noise in respect to exposure to sensitive noise receptors.

Further development is intended in the Airport East Precinct (adjacent to the eastern airport boundary) which comprises aviation, freight, warehousing and industrial activities. Acoustic modelling and validation may be undertaken as part of an environmental assessment process when planning for future development within the precinct. If required, attenuation measures could be incorporated at the design phase of each development project.

14.12.3. 8-Year Action Plan

The Ground-based Noise 8-Year Action Plan is detailed in Table 14-11.

MANAGE ACTION/ INITIATIVE	TIMEFRAME
Undertake a study to understand relative contributions of on and off-airport noise sources	Short-term
Monitor ground-based noise complaints to inform noise investigations	Short-term
Continue to conduct regular ground-based noise monitoring	Medium-term
Continue assessment of new developments, (e.g. within the Airport East Precinct) and implement noise-attenuation measures if required	As required

Table 14-11: Ground-based Noise 8-Year Action Plan

14.13. Local Air Quality

Local Air Quality Objectives:

- Ensure developments and airport activities comply with the relevant air quality regulations
- Proactively assess and manage potential airport related air quality impacts on the local community

14.13.1. Background

Under the Airport (Environment Protection) Regulations 1997, AAL is responsible for managing air emissions generated by ground-based activities within the airport boundary. Air quality outside the boundary is subject to the provisions of the *South Australian Environment Protection Act 1993.* Air emissions generated by aircraft are regulated under separate legislation and are the responsibility of Airservices.

Adelaide Airport is located within a highly urbanised area surrounded by residential, recreational, industrial and commercial development. Air quality in the western Adelaide airshed has been monitored at a site in Netley by the South Australian EPA for more than 15 years. Monitoring has considered the ambient levels of key pollutants; namely nitrogen dioxide (NO2), nitrogen oxide (NO), total nitrogen oxide (NOx), ozone (O3), , and particles less than 10 micrometres in diameter (PM10) and less than 2.5 micrometres (PM2.5). Data published by the South Australian EPA shows air quality in the airshed that encompasses Adelaide Airport meets the relevant *Environment Protection Act 1993* and National Environment Protection (Ambient Air Quality) Measure 2003 criteria.

Recent Achievements

- The University of Adelaide completed the first phase of an extensive air quality literature review and assessment of Adelaide Airport's air quality data
- Ozone Depleting Substances Guidelines developed in 2017 to guide AAL, tenants and contractors

14.13.2. Current Management

The management of air emissions from ground-based activities covers items such as refuelling, painting, cleaning, machining, mechanical maintenance, generator use, commercial cooking and construction.

AAL has engaged the University of Adelaide to undertake a multi-phased investigation to inform an Air Quality Management Plan and Air Quality Monitoring and Action Plan. The principal components of the air quality investigation are:

- Review of literature regarding airport emissions, their potential impacts on human health, and regulation in Australia and overseas jurisdictions
- Review of historic Adelaide Airport air-quality investigations and data, including gap analysis
- Establish the air-quality concerns of on and off-airport stakeholders through review of the feedback and complaints system and stakeholder consultation
- Air quality assessments based on public health outcomes derived from the process described above
- Human health-risk assessment and investigation of potential mitigation measures where required

Potential construction related air quality issues are managed via:

- The Building Activity Application review process
- AAL's review of required contractor CEMPs
- The Construction Environmental Management Guideline and related Adelaide Airport guidelines
- Construction environmental inspections conducted in accordance with the Tenant and Construction Environmental Inspection Procedure

Potential air-quality issues related to the airport and tenant operational activities are managed through:

- The Building Activity Application review process
- Ozone Depleting Substances Register
- Ozone Depleting Substances Guidelines
- Regular tenant inspections undertaken by AAL in accordance with the Tenant and Environmental Inspection Procedure
- Implementation of the Local Air Quality Management Plan and Local Air Quality Monitoring and Action Plan
- Spray-Painting Guideline

14.13.3. 8-Year Action Plan

The Local Air Quality 8-Year Action Plan is detailed in Table 14-12.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Continue to conduct regular tenant inspections (in accordance with frequencies and processes set out in the Tenant and Construction Environmental Inspection Procedure)	As required
Continue to conduct air-quality monitoring as required (in accordance with Local Air Quality Management Plan)	As required
Continue to collect air-emissions data from point sources as required	As required
Continue to maintain a register of ozone-depleting substances and phase out where feasible	Ongoing
Monitor community air-quality complaints to inform Local Air Quality Management Plan	Short-term
Develop and implement a Local Air Quality Management Plan based on the results of the multi-phase air-quality investigation	Medium-term

Table 14-12: Local Air Quality 8-Year Action Plan

14.14. Waste Management

Waste Management Objectives:

- Reduce waste generation
- Increase reuse and recycling of products and materials
- Increase diversion of airport waste from landfill

14.14.1. Background

Adelaide Airport manages waste and recycling material associated with the operation of the airport except for certain leased areas and waste from aircraft.

AAL provides services for five major waste and recycling streams across Terminal 1, the general-aviation terminal and AAL offices including general waste, cardboard and paper, comingled and organics recycling. Other waste streams generated at the airport include metal, plastics, concrete and masonry, wood, asbestos, oil, tyres, e-waste, batteries (various types) and hard waste - most of which is recycled.

Waste management at Adelaide Airport is driven by the hierarchy of waste management: reduction, reuse, recycle, recovery, treatment and disposal and is underpinned by Adelaide Airport's Waste Management Strategy.

The waste-management hierarchy is a nationally and internationally accepted guide for prioritising waste management practices with the objective of achieving optimal economic, social and environmental outcomes and has been adopted by AAL (Figure 14-4).

Recent Achievements

- AAL was awarded Platinum Green Airport status by ACI Asia Pacific in 2018 for its waste program. Initiatives undertaken as part of AAL's updated Waste Management Strategy and Terminal 1 Waste Management Plan included compostable coffee cup trials in Terminal 1, organics recycling by a number of food and beverage outlets, the introduction of compostable crockery and cutlery in all AAL offices and by some tenants
- Guidelines for Green Purchasing were developed in 2015 and distributed to AAL staff, tenants and contractors
- AAL procurement includes a more prominent weighting of sustainability factors, such as the Terminal 1 cleaning services tender which was developed to align with the Waste Management Plan
- Recycling of demolition and construction waste is being achieved through AAL construction contracts and CEMPs. Over 95 per cent of the demolition and construction waste from the Terminal 1 demolition works in 2018 was recovered for recycling

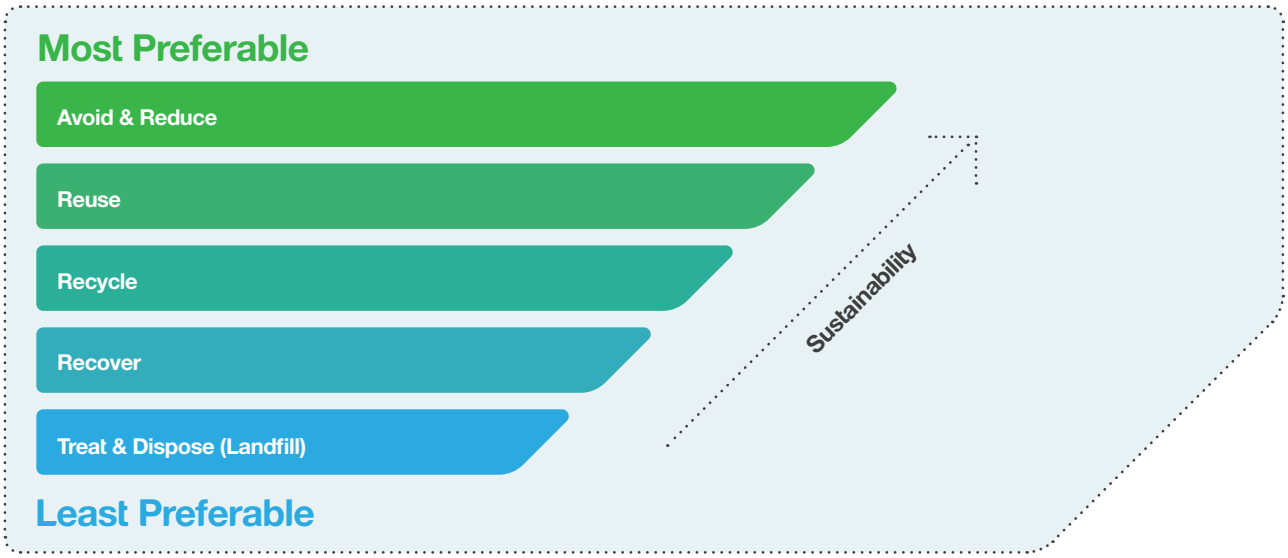

Figure 14-4: Waste-Management Hierarchy

14.14.2. Current Management Practices

AAL recognises the importance of reducing waste generation, maximising reuse and recycling and maximising the diversion of waste from landfill; and is committed to implementing a comprehensive waste-management program.

Adelaide Airport has a mature waste-management program driven by its high-level waste strategy and underpinned by specific operational waste-management plans such as the Terminal Waste Management Plan.

In 2016, AAL undertook a comprehensive waste audit to better understand its waste composition and identify opportunities for diversion of waste from landfill. Following the waste audit, which found 62 per cent of total waste from the Terminal (AAL's primary waste-generating site) was organic material such as food scraps, coffee grinds and uneaten food and drink, AAL has developed a Waste Management Strategy which includes a targeted program aimed at diverting organic material from the general waste stream. There is a tenancy kitchen organic-waste diversion program with a longer term aim to become a fully-compostable food and beverage packaging site.

AAL has undertaken a number of compostable coffee-cup trials to engage with tenants and passengers, and to assess operational implications implementing a wider compostable foodservice-ware program. In 2018, AAL developed a cost analysis tool for tenants to understand the impact of transitioning to compostable foodservice ware and has engaged with Terminal 1 tenants to commence this process.

In 2019, AAL undertook a detailed review of all waste-management practices and revised its Waste Management Strategy. AAL now seeks to move towards maximising waste direct to landfill where practicable.

AAL also manages a range of maintenance and e-waste waste streams (including metals, green waste, plastics, globes, computers and screens). Recycling of these streams is well developed and AAL continues to formalise these processes through an Operational Waste Management Plan.

AAL manages construction waste via the building approval process. This requires contractors to produce CEMPs which include activities related to waste management and recycling. Contractor performance against their CEMP is regularly audited by AAL.

14.14.3. The Waste Management 8-Year Action Plan

The Waste Management 8-Year Action Plan is detailed in Table 14-13.

MANAGEMENT ACTION/ INITIATIVE	TIMEFRAME
Continue to implement the Waste Management Strategy	Ongoing
Continue to implement the Terminal Waste Management Plan	Ongoing
Support airport tenants to investigate and where feasible expand their waste avoidance, reuse and recycling programs	Ongoing
Develop and implement an AAL Operational Waste Management Plan	Short-term
Develop guidelines on recycling of maintenance and construction materials, and the collection and reporting of waste and recycling data	Short-term
Scope and develop a feasibility study for a landside waste station	Medium-term
Support airline programs aimed at recycling on-aircraft waste	Medium-term
Scope and develop a monitoring program for waste management	Medium-term
Investigate upstream waste elimination opportunities in partnership with Terminal 1 tenants, including use of compostable products	Long-term

Table 14-13: *Waste Management 8-Year Action Plan*

14.15. Land and Heritage Management

Land and Heritage Management Objectives:

- Work with the community to manage the Patawalonga Creek Management Zone
- Preserve and display the Vickers Vimy for the community
- Minimising the risks presented by wildlife to aviation safety
- Promote communication and engagement with traditional custodians

14.15.1. Background

14.15.1.1. Biodiversity and Conservation

There are no threatened ecological community or species listed under the EPBC Act present on the airport site.

AAL manages biodiversity at Adelaide Airport including the Patawalonga Creek Management Zone (PCMZ). The PCMZ is located within the West Beach Precinct and the area reserved for a third runway. The creek is recognised for the remnant Swamp Paperbarks *(Melaleuca halmaturorum)* fringing Patawalonga Creek and supports a number of other flora and fauna species.

The broader airport environs provide a limited habitat for birds. There are no birds recorded at Adelaide Airport listed under the EPBC Act. Of those species listed in the State *National Parks and Wildlife Act 1972*, the Little Egret, Peregrine Falcon and Letter Winged Kite have been identified at the airport.

14.15.1.2. Indigenous Cultural Heritage

Ethnographic records indicate that parts of the airport site were once favoured camping places for Kaurna Meyunna, the Aboriginal people of the Adelaide Region. The Kaurna people frequented the Patawalonga, giving it the name that means “boggy and bushy stretch with fish”. The creek and surrounding system of interconnected rivers and wetlands are integral to Kaurna culture.

Reports from early settlers indicated that the local Aboriginal people had camps on the creek’s eastern bank and made rush baskets, bags and mats that were sold to local European settlers.

Large areas of the airport have been surveyed in previous years and to date no Indigenous artefact sites have been recorded, with no sites of heritage significance listed on the Commonwealth, State or Local Indigenous heritage registers.

14.15.1.3. Built Heritage

There are no sites of heritage significance within Adelaide Airport listed on the National Heritage List or on the Commonwealth Heritage List.

Adelaide Airport has had a short yet vibrant history as South Australian’s domestic and international gateway since the 1950s. In that time, the airport has substantially expanded and the infrastructure evolved to service the expanding aviation industry. Adelaide Airport’s buildings tend to be temporary, simple or with a built-in redundancy. There are no buildings considered valued by the community or a cultural group. The current airport buildings and infrastructure are not recognised as having significant heritage value and are not listed on the National Heritage List or the Commonwealth Heritage List.

The Vickers Vimy aircraft, flown by brothers Keith and Ross Smith in the famous London-to-Australia air race of 1919-20, is housed in a purpose-built, climate controlled facility on airport. The Vickers Vimy arrived at Adelaide Airport in 1958 by truck but was damaged in transit and underwent a lengthy reconstruction at that time.

14.15.1.4. South Australian Aviation History

South Australia has a long and prestigious aviation history with many iconic aviation events having a strong connect with Adelaide, including:

- Captain Harry Butler, a World War 1 pilot, who achieved fame in Adelaide after a significant contribution to the war effort where he was awarded the Air Force Cross and trained over 2700 pilots in the Royal Flying Corps and Royal Air Force. At the end of the war, he had a dream of starting up the aviation industry in South Australia and did this by teaming up with the famous engineer Harry Kauper, to form the Butler and Kauper Aviation Company. He brought back to Adelaide two surplus aircraft from the war and founded the beginning of an industry that is now a significant economic contributor to the State.
- Adelaide-born brothers Sir Keith and Sir Ross Smith, along with Sergeant Wally Shiers (Adelaide) and Sergeant James Bennett (St Kilda – Victoria), flew the Vickers Vimy plane 17,950 kilometres across the world as the first official flight from England to Australia – the Air Race of 1991.
- Sir George Hubert Wilkins (1888-1958) was born at Mount Bryan East South Australia and was knighted for making the first ever trans-Arctic flight, soon after he completed the first Antarctic flight. Skilled with a camera, he is also the only Australian official photographer from any war to have received a combat medal (the Military Cross).
- Andrew 'Andy' Thomas AO was born and raised in Adelaide and is an aerospace engineer and NASA astronaut. In May 1996, Andy Thomas flew his first flight in space on Endeavour and was the first Australian born professional astronaut to enter space.

Recent Achievements

- The Patawalonga Creek Management Plan was updated in 2016 to align with works undertaken along the Cowandilla-Mile End drainage network by the City of West Torrens and to incorporate biodiversity, aquatic ecology, weed control, seed collection, native establishment, and monitoring and community engagement
- Volunteers and school children participated in the planting of 2,000 tubestock along Patawalonga Creek in 2016
- The Stormwater Quality Monitoring and Improvement Plan was revised in 2016 in consideration of upgrading the stormwater network with sustainable vegetated filtration systems
- The Adelaide Airport Heritage Management Strategy was developed in 2015 to protect significant heritage values and archaeological artefacts
- AAL received the Australian Airports Wildlife Hazard Management Award at the 2018 Australian Airport's Wildlife Hazard Management Forum in recognition of the transformational change in the AAL Wildlife Hazard Management Program, including implementation of a mobile app-based wildlife hazard reporting system
- AAL completed a detailed vegetation and invertebrate study to inform development of a Land Management Plan, which is now being successfully implemented to reduce potential wildlife risks

14.15.2. Current Management

14.15.2.1. Biodiversity and Conservation

Maintenance and operation activities, development and construction, and inappropriate management of stormwater, waste and pest species have the potential to impact upon biodiversity at Adelaide Airport through the loss, degradation or injury to native flora and fauna.

AAL has dedicated many resources to the Patawalonga Creek, including development and implementation of the Patawalonga Creek Management Plan, provenance guidelines and monitoring surveys. A volunteer organisation oversees the ongoing site maintenance and rehabilitation program.

The Patawalonga Creek is located on land reserved for the future development of a third runway. When the third runway is developed, AAL will consider focusing on offsite rehabilitation projects such as the Landcare rehabilitation project at Brown Hill Creek, and the surrounding area.

The removal of vegetation on airport land is subject to the provisions of S98 (1) (f) of the Airports Act, which defines 'land clearing' (i.e. vegetation clearance) as a Building Activity and thus renders it subject to the provisions of the Airport (Building Control) Regulations.

AAL has documented the processes and guidance in the AAL Landscape Guidelines and/or the AAL Land Management Plan to streamline the approval of Building Activity for land clearing and provide greater certainty and flexibility. These two documents provide details on:

- pest or native species that have been identified as presenting potential wildlife-hazard risks
- the decision-making framework for the retention or offsetting of native species
- land-clearing activities that are considered exempt under the Airport (Building Control) Regulations

Due to the degraded nature of the previous Tapleys South Conservation Zone (TCZ) and the difficulty of maintaining this isolated pocket of native vegetation, an area equal to that currently occupied by the TCZ will be added to the existing Patawalonga Creek Management Zone and managed in accordance with the Patawalonga Creek Management Plan. Seed collection from the native species within the TCZ will be considered for propagation and planting within the Patawalonga Creek.

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14.15.2.2. Wildlife Risk Management

AAL runs a comprehensive wildlife management program, balancing the dual interests of aviation safety and wildlife conservation. In 2018, AAL completed a review of its wildlife hazard-management program. Key initiatives included a detailed vegetation and soil survey providing a high-level understanding of invertebrates (insects), vegetation and soil condition across the airfield; and subsequent wildlife hazard mapping to compare invertebrates, vegetation and soil data with wildlife strike, abundance and location data to identify potentially problematic vegetation/soil conditions. This has resulted in the development of an integrated Land Management Plan based on the detailed vegetation and soil survey and wildlife-hazard mapping results to target removal of problem weed species and promote a more desired ground cover.

Additional innovative projects and program improvements undertaken include:

- Configuration and implementation of a mobile app-based wildlife hazard reporting system
- Development of a Wildlife Hazard Management Strategy focused on reducing interaction between wildlife and aircraft through habitat modification
- Development of a live dashboard enabling transparent and prompt data analysis
- Establishment of an internal cross-functional Wildlife Hazard Management Committee that meets regularly to discuss Wildlife Hazard Management Strategy progress
- Automated reporting of wildlife strikes to the Australian Transport Safety Bureau
- Facilitation of the Adelaide Airport External Land Managers Committee, which meets on an annual basis to discuss wildlife hazard and management initiatives

AAL continues to collaborate with all levels of Government, the Commonwealth Department of Defence and aviation stakeholders to identify high-risk activities across metropolitan Adelaide in three Wildlife Hazard Management Zones (within three-kilometre, eight-kilometre and 13-kilometre radiuses of the Airport) in accordance with the National Airports Safeguarding Framework Guideline on Managing the Risk of Wildlife Strikes near Airport (NASF Guideline C). Further information is provided in Chapter 12.

The location of a commercial waste-transfer station adjacent to the southern airport boundary presents a high risk to aviation safety from wildlife attraction. AAL actively engages with the site operator and the City of West Torrens as owner on management strategies to minimise the risk.

14.15.2.3. Indigenous Cultural Heritage

Previous recordings of Aboriginal artefacts have been focused on the sand dunes, which were once prolific across this area prior to European occupation and used in the original construction of the airport. In collaboration with Kaurna representatives, AAL has surveyed areas of the airport and identified archaeological sites in the Environmental Site Register (Archaeological sites are not recognised as culturally significant and thereby not listed on the National or Commonwealth Heritage Lists).

While the landscape has been dramatically altered, there is the potential for further Aboriginal cultural material to be unearthed during future developments. These will be updated in the Environmental Site Register if discovered. There are procedures in place to ensure that known archaeological sites are appropriately and sensitively managed.

14.15.2.4. Built Heritage

A Heritage Management and Strategy was developed in 2016 which included an overarching framework for treatment decisions to manage the Vickers Vimy.

AAL will continue to ensure the Vickers Vimy is routinely monitored, maintained and restored in accordance with Commonwealth requirements to protect its heritage values.

Adelaide Airport has welcomed both the Commonwealth and State Governments commitment to provide funding to relocate the Vickers Vimy. The Vickers Vimy aircraft will be relocated in 2021 as part of the Terminal Expansion Project, with a purpose-built exhibition space planned to be located on the ground floor. The exhibtion space of the Vickers Vimy aircraft will require a suitable environmentally controlled facility to control light, humidity and temperature as a pre-requisite and be undertaken in accordance with specialist engineering advice.

14.15.2.5. South Australian Aviation History

AAL is committed to ensuring that great South Australian aviators and their stories are afforded appropriate recognition at Adelaide Airport.

Throughout Adelaide Airport these great stories and people are recognised including:

- Andy Thomas AO attended the Terminal 1 opening celebrations as a special guest with a plaque in the terminal commemorating this and Andy Thomas Circuit was named in his honour.
- Captain Harry Butler, Nancy-Bird Walton and Sir George Hubert are acknowledged in various ways across the airport including naming of airport boulevards and artwork in the terminal.
- The Vickers Vimy aircraft and statue of the crew are on public display in a memorial building on airport grounds. AAL, with the support of the State and Federal Governments has recently announced that the Vickers Vimy will be relocated as part of the Terminal Expansion Project. AAL is currently working with the History Trust of South Australia on this relocation which is planned to occur in 2021. AAL has also developed the Vickers Vimy Walk, which stretches from the Terminal to the current memorial building, commemorating each stopping point that the Vickers Vimy made on its journey to Australia.

In addition to the development of a Vickers Vimy exhibition space, AAL will continue to work with the community to develop initiatives for Adelaide Airport to further recognise significant aviators and to add prominence to our State's aviation history.

14.15.3. 8-Year Action Plan

The Land and Heritage 8-Year Action Plan is detailed in Table 14-14.

MANAGEMENT ACTION/INITIATIVE	TIMEFRAME
Implement the Patawalonga Creek Management Plan	Ongoing
Research and develop a long-term strategy to assess and mitigate development and operational impacts on native habitats in accordance with regulation 4.02 of the AEPR	Ongoing
Continue to implement the Land Management Plan	Ongoing
Continue to implement Wildlife Hazard Management Strategy and Management Plan	Ongoing
Continue to implement the Heritage Strategy and Management Plan	Ongoing
Implement procedures for identifying and protecting archaeological artefacts	Ongoing
Develop and implement a strategy for communications and engagement with traditional custodians	Short-term
Work with Commonwealth and State Governments to relocate the Vickers Vimy subject to funding	Short-term
Identify alternative options to mitigate the impact of future clearing of Patawalonga Creek associated with future aviation developments	Long-term

Table 14-14: Land and Heritage 8-Year Action Plan

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