10

ENVIRONMENT STRATEGY

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10.1 Introduction

Adelaide Airport Limited's (AAL) vision and ongoing success is founded on building and maintaining the three pillars of responsible business practice – financial, environmental and social sustainability. To ensure that its business thrives and is managed in a manner that promises to meet the needs of future generations, AAL must respond positively and innovatively to today's local and global challenges.

The central focus of this Airport Environment Strategy is minimisation of AAL's environmental footprint in balance with the other pillars of sustainable business. The Environment Strategy is underpinned by a commitment to legislative compliance and driven forward by the desire to maintain a leadership position in environmental sustainability.

The environmental compliance and sustainability goals outlined here can be achieved by effecting change of activities under the direct control of AAL, influencing change through collaboration and negotiation with key stakeholders, and guiding others to realise change through awareness and education.

10.1.1 Purpose

The purpose of this Chapter is to:

- fulfil AAL's vision for sustainable airport growth and development;
- ensure all identified environmental sustainability risks are appropriately managed;
- facilitate AAL's objective of remaining an airport industry leader;
- realise continuous improvement in environmental sustainability performance; and
- build upon the achievements of the 2009 Sustainability Plan (Environment Strategy).

AAL's Sustainability Policy forms the foundation for this Environment Strategy, which in turn is implemented through the Environment Management System (EMS). An EMS, conforming to the requirements of ISO 14001, provides the framework linking environmental impacts, legal obligations, objectives and goals within this Chapter, and day-to-day management actions. Further detail on the EMS is provided in Section 10.3.

The AAL Sustainability Policy is provided in Figure 10.1.

10.1.2 Achievements

AAL achieved a number of significant environmental achievements in the period of 2009 to 2014. These achievements include:

- International recognition of AAL's Carbon Program when, in 2013, Adelaide Airport became the first airport in Australia to receive Airport Carbon Accreditation under the independently assessed global program run by Airports Council International (ACI) (refer to Figure 10.2).
- Completion of a three-year Clean Energy Partnership with the University of Adelaide's Centre for Energy Technology to fund local research and identify energy reduction opportunities. From this partnership, a lighting and air conditioning efficiency program netted over 4% reduction in electricity within the terminal building in a period when passenger growth was 5%.
- Construction of the Australian Federal Police 4-star Green Star / NABERS building.
- Major refurbishment of the runway and taxiway network with zero environmental incidents and zero complaints.
- Facilitation of SA Water's 270 million litre Adelaide Airport Stormwater Scheme and facilitation of a major flood detention basin by the City of West Torrens to minimise the risk of flooding to West Beach residents.
- Incorporation of a number of leading green design elements into AAL's new multi-level car park and plaza, such as way-finding technology and fast circulation ramps to improve efficiency and reduce vehicle idling time, the capture of roof stormwater to supply the T1 cooling towers, and the use of recycled water in the plaza water feature.
- Working with the West Torrens Council and the local community and environment groups in the delivery of the environmental achievements during the period.

Further detail on these, and other achievements realised over the past five years are provided in Appendix D – Adelaide Airport Sustainability Past Achievements (2009-2014).

SUSTAINABILITY POLICY

Our vision is to be a top tier Airport Business Centre in Asia Pacific, recognised for delivering exceptional outcomes to our customers, partners, shareholders and community.

We strive to deliver high quality facilities and services that are regarded as best in class, safe, secure and sustainable. As such Adelaide Airport Limited (AAL) is committed to managing and developing Adelaide and Parafield Airports in a sustainable manner. We are already a leader in Airports Carbon Accreditation in Australia and our goal is to be Australia's most sustainable airport operator.

Our philosophy is to act in accordance with sustainable business principles and practices. In doing so we recognise that conducting business in a way that is environmentally, socially and economically responsible can enhance the success of our organisation. We believe that in choosing this path we can improve outcomes for our business, our stakeholders and the wider community for generations to come.

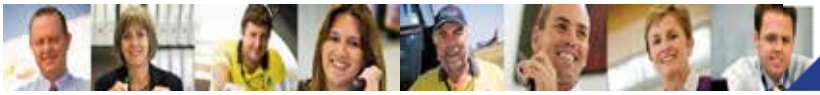
Our objectives are to:

- Integrate the principles of sustainable development and sustainable business practices into our planning, design, construction and procurement
- Apply a stewardship approach throughout our supply chain by encouraging and facilitating the adoption of sustainability principles and practices by our customers, partners, tenants, contractors and suppliers
- Minimise the environmental impact of our operations through a program of continuous improvement, always striving for innovative solutions to meet our goals
- Measure, reduce and manage our carbon emissions on an ongoing basis with a strong focus on energy and fuel efficiency
- Optimise community outcomes by engaging with and supporting our local community in a positive and constructive manner and being a valued member of the community
- Ensure we provide a positive and safe work environment, where individuals are valued and equipped with the skills to effectively carry out their work
- Ensure compliance with all relevant regulatory and other requirements

We undertake to clearly communicate this policy to our stakeholders and to rigorously monitor our progress against meaningful indicators.

Mark Young
Managing Director
June 2014

Revision Date June 2016



Adelaide Airport

Figure 10.1 Adelaide Airport Limited Sustainability Policy

Figure 10.2 ACI Accreditation Certificate

10.2 Legislative and Policy Framework

Under the *Airports Act 1996*, and with further reference to the *Airports Regulations 1997,* AAL is to develop and implement an Airport Environment Strategy that comprehensively sets out how environmental impacts associated with both airport operations and other undertakings onsite are to be prevented, controlled or mitigated.

The 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 1996* specifically covers environmental management requirements, amplified under Regulation S.5.02A and 5.02B of the *Airports Regulations 1997*.

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 timeframe for their completion; and
- details and outcomes of consultation on the preparation of the strategy with stakeholders.

In compliance with the *Airports Regulations 1997*, the Environment Strategy is to cover:

- sites identified to be of indigenous significance after consultation with relevant indigenous communities and organisations and Commonwealth or State bodies;
- proposed environmental management for areas of the airport which are not used, or planned to be used, for airport operations; and
- necessary training for environment management by persons employed by AAL or other major airport employers, including detail on proposed training.

The *Airports (Environment Protection) Regulations 1997* outline the major obligations with respect to environmental matters on the airport site. The Regulations do not, however, apply to pollution or noise generated by aircraft (except ground running noise). The Commonwealth regulates these matters through the Air *Navigation (Aircraft Engine Emissions) Regulations 1995* and the *Air Navigation (Aircraft Noise) Regulations 1994* respectively.

In addition, various industry codes of practice, Australian Standards, relevant national and state environment protection measures, and other guidelines are applicable to operators at the airport. As outlined in Chapter 7, there are a number of strategic and statutory documents prepared by the Commonwealth, State and Local Governments that have been considered toward the Master Plan and which may have relevance to the Environment Strategy. Further documents include:

- National Strategy for Ecologically Sustainable Development 1992 (Commonwealth);
- The Clean Energy Future Plan 2011 (Commonwealth);
- The National Water Initiative 2004 (Commonwealth);
- Australia's Biodiversity Conservation Strategy 2010–2030 (Commonwealth);
- Water for Good 2009 (State);
- Tackling Climate Change – South Australia's Greenhouse Strategy 2007–2020 (State);
- Brownhill Keswick Creek Stormwater Project – Stormwater Management Plan 2012 (Local);
- Brownhill Keswick Creeks Flood Mitigation Study: Flood Management Master Plan 2006 (Local);
- City of West Torrens Towards 2025 Community Plan 2009-2014 (Local); and
- City of Adelaide Environmental Sustainability Strategy 2009-2012 (Local).

The environmental requirements of the *Airport Act 1996* and *Airports Regulations 1997* against the contents of this chapter are included at Appendix A.

10.3 Environmental Management System

The EMS maintained by AAL conforms to the requirements of ISO 14001 and provides a structure for managing environmental impacts at Adelaide Airport. By design, the EMS ensures a continuous improvement approach to environmental performance, as committed to by AAL in its Sustainability Policy and subsequently reflected in each revision of the Airport Environment Strategy.

The EMS will be audited regularly by a third party against the requirements of ISO 14001 and the results reported to DIRD provide assurance as to the quality and rigour of AAL's environment program.

Core elements of the EMS, and how they support the implementation of this Environment Strategy, are described in the following sections.

The continuous improvement cycle of AAL's EMS is represented in Figure 10.3.

10.3.1 Policy

AAL's Sustainability Policy (Figure 10.1) was recently endorsed by the Managing Director in June 2014.

All new airport employees, tenants and major contractors are introduced to the Sustainability Policy through inductions, newsletters and airport forums. The Sustainability Policy is also presented to AAL employees as part of inductions and periodic environmental awareness training programs. The current policy is prominently displayed at AAL offices and is also available on the AAL website (www.adelaideairport.com.au).

10.3.2 Planning

Objectives, goals and management actions are detailed in each section of the Airport Environment Strategy (and collated in Appendix E) that, once implemented, ensure AAL meets the commitments stated in the Sustainability Policy. Objectives and goals were developed in accordance with AAL's Planning Procedure, with consideration given to the following:

- Company Vision;
- Sustainability Policy;
- legal requirements;
- significant environmental risks;
- views of stakeholders and the community;
- prevention of pollution;
- broader business objectives; and
- availability of resources.

An Environmental Management Plan (EMP) provides further detail to the Airport Environment Strategy and is reviewed at least annually. It is the central planning tool for implementing the Strategy goals and objectives detailing management actions, studies, routine tasks and monitoring activities with timeframes for their completion. The EMP addresses management of sites used for both airport and non-airport operations.

Additional plans are developed and regularly revised to provide the necessary framework for more complex areas of environmental management. These are referenced in the relevant sections of the Environment Strategy and summarised in Appendix F.

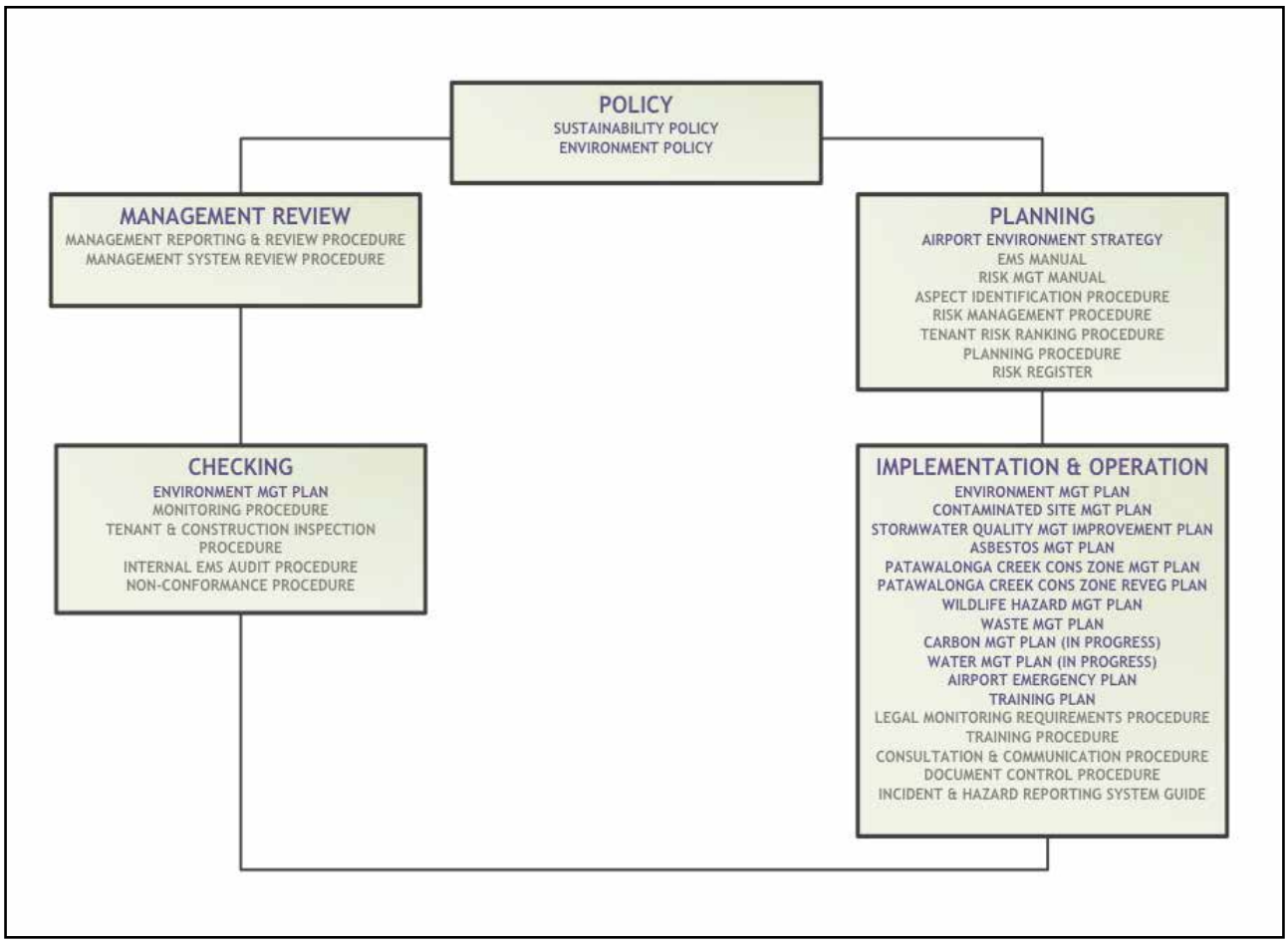


 Figure 10.3 Adelaide Airport Limited Environmental Management System

10.3.3 Implementation

AAL staff and other airport operators and occupiers (including tenants) must take all reasonable steps to ensure that the Airport Environment Strategy is complied with. AAL's Environment Department maintains the system, drafts the plans and provides the necessary advice and guidance required for others at Adelaide Airport to implement measures for controlling or minimising significant environmental risks. Key outputs include standard operating procedures, safe work instructions, environmental guidelines, and training. AAL Environment staff possess tertiary qualifications in science, environmental management or engineering and have received training in environmental management system implementation and auditing.

10.3.4 Checking and Monitoring

Tenant Risk Ranking and Inspections

All tenants are assigned an environmental risk ranking (Category 1, 2, 3 or 4) based on the potential of their business activities to cause harm, as defined in the *Airports Act 1996*. Each Category is outlined below.

Category 1 tenants have the greatest potential for environmental impact, or causing serious environmental harm, through the nature and size of their operations.

Category 2 tenants have the potential to cause material environmental harm.

Tenants in both Categories 1 and 2 are therefore required to implement an EMP, and are inspected annually against regulatory requirements and their own EMP. This process requires them to review their environmental risks regularly and set improvement actions as appropriate.

Category 3 tenants are those with less potential to impact upon the environment, and are encouraged to carry out their operations in accordance with industry best practice and regulatory requirements.

Category 3 tenants are considered to only have the potential to cause environmental nuisance and are inspected every three years, or when their work activities change requiring a re-categorisation.

Category 4 tenants perform activities that are considered to pose a negligible risk to the environment, and are inspected only as required. These categories are summarised in Table 10.1 below.

Airport Operator Inspections

In recognition that not every airport operator is a tenant, an assessment is undertaken of those individual operators' activities consistent with the categorisation of airport tenants, wherever practical. In addition, large construction projects are subject to environmental inspections by AAL. Contractors directly engaged by AAL for maintenance and capital works are included in the inspection schedule to be assessed for compliance with environmental standards.

Environmental Monitoring

AAL operates a broad monitoring program that collects data across those numerous areas, as listed in Table 10.2. Monitoring activities are detailed and scheduled within the EMP and other specific area plans (e.g. Stormwater Quality Management and Improvement Plan). Those who carry out environmental monitoring must hold the appropriate professional qualifications relevant for the area of monitoring activity and demonstrate the processes and systems used conform to relevant Commonwealth criteria and industry standards.

EMS Auditing

A robust EMS requires regular checking. AAL achieves this through regular internal auditing of select system components by trained Lead Auditors in accordance with the Internal EMS Audit Procedure. A detailed external audit by an accredited ISO 14001 auditor of the full EMS is scheduled every three years.

Table 10.1 Tenant Environmental Risk Ranking Categories for Adelaide Airport

Tenant Risk Ranking	Definition	EMP Mandatory	Inspection Frequency
Category 1	Potential to cause serious environmental harm	Yes	Annual
Category 2	Potential to cause material environmental harm	Yes	Annual
Category 3	Potential to cause environmental nuisance	No	Three-yearly
Category 4	Operations pose negligible environmental risk	No	As required

10.3.5 Reporting and Review

Detailed written reporting against all goals and management actions in the Airport 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 AAL's Management System Review Procedure.

A comprehensive report demonstrating AAL's progress against all Strategy goals, management actions and monitoring activities is provided annually to DIRD, as detailed in AAL's Management Reporting and Review Procedure. Further, AAL reports pollution incidents, environment-related complaints, the exceeding of regulatory criteria, and management of contaminated sites to the Airport Environment Officer (AEO) through monthly meetings and as required under legislation. AAL is cognisant of the regulatory requirement to report incidents and the exceeding of pollution criteria within 14 days.

Table 10.2 Summary of Key Monitoring Activities

Stream	Area	Monitoring Activity	Frequency
Compliance	Ground Noise	Boundary noise Construction noise	Annually and as required As required
	Local Air Quality	Air quality National Pollutant Inventory Ozone depletion substances Stack monitoring	Annually and as required Annually Annually As required
	Stormwater	Stormwater quality (Tier 1) Stormwater quality (Tier 2)	Monthly (Apr-Oct) and as required As required
	Soil and Groundwater	Soil and groundwater contamination (existing sites) Soil and groundwater contamination (new sites) Background groundwater quality	Annually and as required As required Annually
	Hazardous Substances	Asbestos volumes Hazardous substances storage Safety data sheets Polychlorinated biphenyls	Annually Annually and as required Annually and as required Annually
Sustainability	Sustainable Buildings	Sustainability Performance Indicators (AAL buildings)	Quarterly
	Climate Change	Carbon Footprint (Scope 1 & 2)	Annually
	Energy	Energy consumption (AAL buildings)	Annually
	Water Resources	Water consumption (AAL buildings)	Annually
	Waste	Waste volumes (AAL buildings)	Quarterly
	Land and Heritage	Conservation zone flora/fauna survey Other flora/fauna surveys Indigenous artefact surveys Built heritage surveys	Annually As required As required As required

10.4 Responsibilities

10.4.1 Adelaide Airport Limited

As the airport-lessee company, AAL has a range of duties under the *Airports Act 1996* and its Regulations and is required to identify sources of impact on the environment from airport operations and then manage programs to control, limit or prevent these impacts. Annual reporting to DIRD, in this respect, along with progress on specific goals is required to ensure compliance. AAL has established a robust internal management structure as outlined in Table 10.3 below.

10.4.2 Airport Environment Officer

The Airport Environment Officer is appointed by the Secretary of DIRD, and is authorised under the Act to exercise powers regarding environmental issues conveyed through the legislation. Focusing on strategic environmental goals, the AEO liaises with AAL, to ensure management of the airport environment is in accordance with the Act and Regulations. This occurs through regular monthly meetings, site inspections, monitoring and reporting. In addition to this, the AEO may comment on Building Applications and suggest that the Airport Building Controller (ABC) apply conditions to ensure that the environment is appropriately protected.

Table 10.3 Structure and Responsibilities for Implementation of the Sustainability Plan

Party	Responsibilities
Board of Directors (including Managing Director)	• The environmental performance of AAL • Periodic review of the AAL Sustainability Policy • Allocation of resources to manage environmental sustainability issues
Executive General Manager Corporate Affairs	• Ensuring that the roles/responsibilities for environmental sustainability management are defined and communicated • Implementing communication plans
Executive General Manager Property	• Incorporating and managing regulatory and other environmental conditions within leases and other property contracts • Consideration of development against the Master Plan Principles of Development Control
Executive General Manager Operations and Infrastructure	• Incorporating sustainability principles in project planning, design and construction • Incorporating and managing regulatory and other environmental conditions within construction contracts
Environment Manager	• Preparing the Environment Strategy • Monitoring implementation of the Environment Strategy and Sustainability Program • Ensuring compliance with regulatory requirements • Preparation of the Annual Environment Report • Providing advice and specific training to staff, contractors and airport users
Managers	• Daily management of environmental sustainability issues • Ensuring that operations comply with applicable legislation • Identification of staff training needs • Integration of environmental requirements into daily operations • Staff environmental awareness
Staff	• Reporting environmental hazards, incidents and stakeholder feedback • Adhering to relevant EMS procedures • Undertaking work in compliance with applicable environmental legislation • Participation in training sessions
Airport Contractors / Other Airport Users	• Reporting environmental hazards, incidents and stakeholder feedback • Adhering to relevant EMS procedures • Undertaking work in compliance with applicable environmental legislation • Participation in induction sessions • Reporting environmental data and information to AAL

10.4.3 Airport Tenants and Operators

Adelaide Airport hosts a wide variety of tenants and operators including airlines, aircraft maintenance and avionics facilities, private charters, retail, freight warehousing, catering and aircraft refuelling. Airport operators, such as taxi drivers, aircraft operators and contractors, use the airport regularly as part of their business operations. A range of contractors operate on-airport participating in large-scale construction projects as well as conducting routine maintenance.

These stakeholders are the key to environmental compliance and sustainability performance at the airport. AAL oversees their regulatory obligations and influences and guides their adoption of sustainable business practices through negotiation, co-operation and education. For example, tenants and contractors undertaking high risk activities are required to develop and implement EMPs.

10.5 Sources of Environmental Impact

Adelaide Airport is a dynamic environment supporting a range of aviation and non-aviation activities that can pose risk to the environment of varying degree, as outlined above. These activities impact, or have the potential to impact, the environment and are the primary basis for the objectives and goals described in this Environment Strategy.

Airport activities that act as sources of environmental impact are listed in Table 10.4.

In addition to these activities, if a change of land use is proposed, consideration must be given to any potential environmental impacts from the past use and associated plans prepared for dealing with such environmental impacts. This may also need to be listed on the Airport Environment Site Information Register.

Table 10.4 Sources of Environmental Impact at Adelaide Airport

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 • Paver manufacture • 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

10.6 Environmental Site Register

In accordance with the *Airport Regulations 1997*, an Environment Site Register is maintained for Adelaide Airport. The register identifies (by assigning a unique Site Number) the location of every site around the airport that has been a source of environmental impact and/or subject to environmental monitoring, assessment, inspection, incident investigation and/or has been given Environmental Significance status. The features of each site, including its contamination status, are detailed in the register and the site location drawn onto an aerial map using GIS software.

A comprehensive data management tool has been developed using SharePoint as the platform to display Adelaide Airport's Environment Site Register. This allows integration with other software as well as storing historical data. The tool is intranet-based and therefore available to all AAL staff to be used for strategic and operational purposes. Data stored includes tenant risk ranking, nature of operational activity, contamination status (past and current land uses) and environmental documentation.

10.7 Communication and Consultation

Adelaide Airport is primarily located within the City of West Torrens and surrounded by residential, recreational and industrial zones. AAL has continued to communicate and share environmental information with the community and key stakeholders through various forums including the Adelaide Airport Consultative Committee, tenant forums, publications and Adelaide Airport Limited's website.

Quarterly Adelaide Airport Consultative Committee meetings are held involving Commonwealth and State Government, local Councils, airlines, resident groups and other stakeholders to discuss a range of topics including noise management, community issues and environmental compliance. Regulatory issues are discussed between AAL and the AEO at regular monthly meetings.

Incident reporting forms part of the EMS and is incorporated into the regular duties of AAL staff. Tenant and community feedback on environmental issues such as ground-based noise, odour and dust, as well as general comments and compliments, are recorded in the company's dedicated intranet database and addressed as appropriate.

Known and potential occurrences of pollution, such as a hazardous substance spills, are reported in accordance with the Airport Emergency Plan, recorded in the AAL Incident Register and, if required, reflected in the Environment Site Register. An incident investigation process is used to identify the causes and guide future management practices to prevent their recurrence and reduce the risk of environmental pollution.

AAL staff are provided with a general environmental management induction, supplemented by targeted in-house training in areas such as spill response, incident reporting and hazardous substances management. Other methods used to communicate environment-related information to staff include intranet announcements, workshops, presentations, toolbox talks, and notice boards.

Other airport users are required to undertake general induction training prior to gaining their Australian Security Identification Cards that includes environmental content.

Consultation with State Government, local Councils, tenants and neighbours occurred through the principal airport consultative forums – namely the Airport Planning Coordination Forum and Adelaide Airport Consultative Committee – in preparation of this Environment Strategy.

Regular meetings with other stakeholder groups such as community groups, peak industry associations, Adelaide Airport Wildlife Management Committee, Terminal 1 Retailers Group and Terminal 1 Ramp Meetings also provided a platform for exchanging ideas on environmental issues that have informed the development of this Strategy. AAL's community feedback system provides critical information on the public's perception of environmental performance and assists in validating AAL's goals and actions.

10.8 Strategy Objectives

The Environment Strategy, as part of the Adelaide Airport Master Plan, adopts a 20-year planning horizon that in turn offers greater transparency as well as improved continuity between each 5-year Master Plan.

Long-term objectives for each area of environmental compliance and sustainability are set out in Table 10.6 below. They provide the focus of the Environment Program over the next 20-years and are aligned with AAL's vision and Sustainability Policy. AAL has identified specific and, where possible, measurable 5-year goals and supporting management actions, to meet these objectives, which are tabulated under each of the areas addressed in the following sections.

Table 10.5 Summary of Strategy Objectives

Stream	Area	Objectives (to 2034)
Compliance	Ground Noise	Operate and develop Adelaide Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement
	Local Air Quality	
	Stormwater	
	Soil and Groundwater	
	Hazardous Substances	
Sustainability	Sustainable Buildings	Develop Adelaide Airport through quality buildings of contemporary, sustainable design
	Energy and Climate Change	Minimise future electricity load growth through energy conservation measures and renewable energy Minimise AAL's carbon footprint Influence and guide other airport users to reduce their carbon footprint Adapt to future climate change impacts
	Water Resources	Minimise the proportion of potable water consumption at Adelaide Airport
	Waste	Increase the proportion of Adelaide Airport waste diverted from landfill
	Land and Heritage	Enhance biodiversity Conserve places of significant natural, indigenous and heritage value Minimise the risks presented by wildlife to aviation safety

10.9 Compliance Program

Compliance activities provide the foundation to AAL's Environment Program. The following risk areas including ground noise, local air quality, stormwater, soil and groundwater, and hazardous substances, are core areas of compliance management and apply to all activities on airport land.

Compliance is not, however, a static goal and is viewed through the lens of continuous improvement. Goals and management actions are provided in Table 10.7 and build upon the achievements of previous Environment Strategies.

10.9.1 Ground Noise

AAL has a critical role to play in managing noise impacts on the local community and on-airport users from ground-based activities, whilst also being an active and influential stakeholder in addressing noise impacts from aircraft in flight. Issues relating to aircraft noise are detailed in Chapter 5 – Aircraft Noise.

The major contributors of noise and vibration arising from airport ground-based activities include aircraft ground-running (engine testing), operating parked aircraft, ground vehicles, plant and equipment, and construction activities.

Ongoing acoustic surveys focussing on the residential zone adjacent the eastern airport boundary have shown noise levels from ground-based operations meet all relevant regulatory criteria. Nonetheless, AAL continues to implement controls to minimise potential off-airport impacts.

Ground running (engine testing) activities undertaken by aircraft operators are strictly controlled through monitoring and enforcement of AAL's Engine Ground Running of Aircraft Engines and Engine Ground Running Policy. 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, and the periods of time at what power settings in which they can be tested. AAL staff monitor these events against the *Airports (Environment Protection) Regulations 1997* in the event of any breaches. Similarly, operations and construction activities are controlled through Tenant or Construction Environmental Management Plans (CEMP) and leases, where applicable, and monitored through a program of regular site inspections.

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

Further development is intended in the Airport East Precinct, which lies adjacent to the eastern airport boundary. To limit residential impacts generated from proposed aviation, freight, warehousing and industrial activities that may contribute to the airport noise profile, acoustic modelling has previously been undertaken and further validation modelling may be conducted as part of an environmental assessment process when planning for future development. If required, attenuation measures can then be incorporated at the design phase of each project to ensure that operations comply with regulatory noise criteria. Once a development is operational, regular checks of precincts can occur in the form of tenant inspections and if required, noise monitoring.

10.9.2 Local Air Quality

Under the Regulations, 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 Australia.

Adelaide Airport is situated within a highly urbanised area surrounded by residential, recreational and industrial zones. Air quality in the western Adelaide airshed has been monitored by the South Australian Environment Protection Authority (EPA) for more than a decade at a site in Netley for ambient levels of key pollutants; namely carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), sulphur dioxide (SO2) and particles less than 10 micrometres in diameter (PM10). Data published to-date by the SA 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.

In 2013, AAL engaged air quality specialists to conduct a local air quality modelling assessment of emissions from airport operations including aircraft emissions and ground-based activities. Findings of this assessment will be used to assess ongoing monitoring requirements and develop appropriate strategies to suitably manage airport air emissions. AAL will nevertheless continue to analyse

relevant EPA air quality data for possible trends relating to airport activity. Where relevant and appropriate AAL will also consult with the EPA in updating the airport air pollutant dispersion model to reassess the potential future impact of aviation and induced traffic on local air quality.

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. The most significant emissions evident at Adelaide Airport from time-to-time are dust from earthworks; which AAL controls through the dust mitigation activities as detailed in CEMPs and monitors compliance during construction inspections. Emissions from minor point sources, such as paint shops, machine shops and commercial kitchens, are extracted and filtered prior to discharge.

Aviation and industrial developments proposed for the Airport East, Terminals & Business, and Morphett Precincts may incorporate paint and/or machine shops in their design. Extraction systems will be reviewed against EPA requirements and relevant criteria during the Building Application process and, if necessary, modelled for pollutant contribution to local ambient air quality.

10.9.3 Stormwater

Adelaide Airport is bounded to the north by the Cowandilla-Mile End Drain, to the west by the Airport Drain and to the east and south by Brownhill-Keswick Creek. The Cowandilla-Mile End and Brownhill-Keswick catchments are highly urbanised and all drain into the Patawalonga Lake before entering 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. A map depicting the major stormwater catchments is provided at Figure 8.5 (Chapter 8).

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 storages. To mitigate these impacts, 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 other potentially polluting activities. New aprons may pose an increased risk of impacting quality of stormwater runoff from refuelling and aircraft washing. Spill response and clean-up in accordance with the Airport Emergency Plan is intended to minimise environmental impacts from fuel incidents, and aviation operations are inspected for conformance to the Airport Aircraft Washing Guidelines.

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 (SQMIP). Implementation of this plan, which includes: monitoring and assessment of the ecological health of the open drain network, installation of gross pollutant traps, drain revegetation and adoption of water sensitive urban design principles; will mitigate any possible pollutant loads from on-airport activities.

A two-tier structure is applied to stormwater monitoring as detailed in the SQMIP. Tier 1 sampling involves the collection of monthly composite samples from April through October at the airport's primary stormwater discharge points, and results compared against Commonwealth and State water quality criteria. An annual summer event between November and March is also captured, subject to rainfall. Tier 2 sampling is only triggered when the criteria are exceeded, with the aim of identifying the pollution source(s). Stormwater within the airport boundary and exiting the airport site generally meets all quality criteria, with the exception of slightly elevated concentrations of nutrients and heavy metals, which are commensurate with levels reported for the wider urban catchment.

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 positively aimed to improve flood mitigation for the local community through collaboration with government agencies; an example of which is through the licencing of land for the City of West Torrens Stormwater Detention Basin Project at West Beach in 2013.

10.9.4 Soil and Groundwater

Adelaide Airport is situated in a sub-coastal environment on low-lying land with sandy to clayey soils – overlain at various depths by imported fill – and shallow groundwater of non-potable quality.

The majority of operations that take place at the airport are on impervious surfaces and in vessels that greatly reduce the likelihood of contamination. Above ground hazardous substance stores are required to comply with relevant standards and are regularly inspected. There is a requirement for integrity testing to be undertaken for underground fuel storage, including the installation of monitoring wells.

Managing contamination is an ongoing priority, and all practicable measures are undertaken to minimise the environmental and health risks posed by soil and groundwater contamination. High risk sources include hazardous substance leaks and spills – principally those associated with aviation fuel storage and transport – and imported fill material. A comprehensive Airport Emergency Plan is in place that is routinely practiced and reviewed.

New aviation-support facilities, aprons and taxiway extensions will expand the range and/or intensity of aircraft movements, which brings an increased risk of fuel spills. Spill response and clean-up forms an integral part of the Airport Emergency Plan, which is in place to minimise environmental impacts from such events. New hazardous substances tank stores will be assessed during the Building Application process and then regularly inspected to ensure compliance with regulatory requirements. Furthermore, new developments often require excavation works that may reveal existing unknown contamination; whether from hazardous substances or asbestos-containing materials. In this situation, contamination will be managed through implementation of CEMPs. Imported fill must also be certified clean in accordance with the Adelaide Airport Waste Fill Importation Guidelines.

AAL's Building Application process captures the requirement for an Environmental Site Assessment (ESA) to be undertaken prior to construction, or a possible change in leasing arrangements or a change in land use. Guidelines on the requirements for undertaking an ESA, importing clean fill onto airport land and fuel management are available to all airport operators and contractors.

AAL oversees a mature Contaminated Site Management Plan involving regular monitoring in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999* and liaison occurs with airport operators on the progress of soil and groundwater monitoring programs and remediation action plans. Groundwater wells have been placed at identified high-risk locations for the purpose of monitoring contamination levels. Additional wells have been placed at sites suited to providing baseline groundwater quality data for comparison against known contaminated sites.

The coastal/estuarine location of the airport presents the risk of encountering acid sulphate soils, particularly in the western precincts. The risks and management strategies for these are detailed in the Contaminated Site Management Plan of any project where ASS are deemed likely to be encountered.

From any instances of newly identified contamination, AAL undertakes liaison with airport operators to provide education on the various components of contaminated site management, such as monitoring, environmental and/or health risk assessments and remediation action plans, and tracking progress and implementation. The status of relevant sites is maintained in the airport's Contaminated Site Register.

Former JOSF – Terminals & Aviation Policy Area

The former JOSF is located at the current site of the long-term car park, with groundwater monitoring revealing the presence of a small free-phase hydrocarbon plume and a more extensive dissolved-phase plume, resulting from an historic spill event. The plume is stable beneath the hardstand, but with the prospect of future remediation involving soil and/or groundwater removal and treatment depending upon the results of ongoing groundwater monitoring or future site development toward an alternate use. Surrounding soil and groundwater in the vicinity of an unused in situ underground fuel hydrant is also to be assessed for potential historic contamination.

ARFF Fire Fighting Training Grounds – Morphett Precinct

The ARFF current and former Fire-Fighting Training Grounds are known to be impacted with PFOS/PFOA (Perfluorooctane Sulfonate/Perfluoroocatnoic Acid), being active constituents of past fire-fighting foam products. Airservices Australia is responsible for remediating these and, as part of a national program, is initially seeking to collaborate with State and Commonwealth environmental agencies to determine the risk criteria of these unique contaminants and gain consensus on suitable remediation methodologies.

Groundwater monitoring is now occurring on the existing Fire-Fighting Training Ground, with Airservices Australia now approached by AAL to do similarly for the former Fire-Fighting Training ground as a priority, noting that the site is available for redevelopment toward aviation-related support industry.

10.9.5 Hazardous Substances

Hazardous substances, primarily aviation fuels and oils, are used across the airport on a daily basis and have the potential to cause significant environmental and health impacts if they are not appropriately stored and managed.

Any hazardous substances stores and tanks, and associated spill response equipment, are regularly inspected for compliance with relevant standards and integrity testing. Records are maintained in the airport's Hazardous Substances Register.

Spills are routinely reported with every clean-up and are the responsibility of the polluter. AAL staff and airport operators receive spill response training, and spill response equipment is kept in designated airside and landside locations. The Airport Emergency Plan includes action for large spill incidents.

Asbestos-containing materials are recorded, inspected and managed in accordance with State regulations and AAL's Asbestos Management Plan. An Asbestos Register is held for all AAL-owned buildings and selected materials are removed on a risk basis. Any demolition works proposed are checked against the Asbestos Register, and removal is required by qualified contractors in compliance with State regulatory standards.

Records of all Ozone Depleting Substances (ODS) on-airport are maintained by AAL, and staff hold the relevant licences for handling refrigerants.

Electrical equipment containing Polychlorinated Biphenyls (PCB) have been tested or identified by AAL and further assessments will be undertaken in preparation for plant decommissioning and disposal, or as required.

Table 10.6 Compliance and Continuous Improvement Goals and Management Actions

Objective (by 2034)		
Operate and develop Adelaide Airport in a manner that complies with relevant regulatory and other standards whilst striving for continuous improvement.		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Strive for 100% compliance for developments and airport activities with relevant noise regulations	Assess ground power units usage by airlines and develop strategy to improve usage rates	**2015**
	Install ground power units on all future aerobridges and pre-conditioned air on all future international bay aerobridges	**2019**
	Assess feasibility of installing pre-conditioned air on domestic aerobridges	**2019**
	Continue to conduct regular boundary noise monitoring	**Ongoing**
	Continue to model noise impacts for proposed new developments and implement mitigation strategies where necessary	**Ongoing**
	Continue to include relevant noise mitigation in Construction Environmental Management Plans and conduct inspections	**Ongoing**
	Continue to enforce the AAL Ground Running Policy	**Ongoing**
	Continue to engage with the local community on noise issues	**Ongoing**
	Continue to provide guidance to stakeholders on noise mitigation strategies	**Ongoing**
	Continue to investigate noise abatement measures and where feasible, integrate into airport operations	**Ongoing**
Strive for 100% compliance for developments and airport activities with relevant air quality regulations	Develop and implement a Local Air Quality Management Plan based on the results of the air quality modelling study	**2019**
	Continue to conduct air quality monitoring as required	**Ongoing**
	Continue to collect air emissions data from point sources as required	**Ongoing**
	Continue to maintain a register of ozone depleting substances and phase out where feasible	**Ongoing**
	Continue to provide guidance to stakeholders on air quality improvement strategies	**Ongoing**

Goal (2014-2019)	Management Actions (2014-2019)	Timeframe
Maintain and, where feasible, improve stormwater quality and aquatic ecosystems	Review drainage infrastructure, maintenance and vegetation of the airport's internal drainage network	**2015**
	Incorproate outcomes of drainage review into the SQMIP	**2016**
	Assess drain ecology and develop an Aquatic Ecology Management Plan for the airport	**2019**
	Continue to regularly monitor stormwater quality	**Ongoing**
	Continue to identify sources of pollution as per the SQMIP and mitigate/ remediate sources of pollution where identified	
	Continue to undertake siltation surveys in the Patawalonga Creek Conservation Zone (PCCZ)	**Ongoing**
	Continue to monitor success of revegetation using the Index of Stream Condition	**Ongoing**
	Continue to provide guidance to stakeholders on stormwater quality improvement strategies	**Ongoing**
Maintain and, where feasible, improve soil and groundwater quality	Integrate contaminant trigger criteria into the Contaminated Site Management Plan	**2015**
	Conduct a thorough review of all Underground Storage Tank integrity testing programs against national standards	**2016**
	Continue to conduct regular groundwater monitoring	**Ongoing**
	Continue to implement priority actions from 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 AAL Environmental Site Assessment Guidelines	**Ongoing**
	Continue to provide guidance to stakeholders on contamination prevention and remediation strategies	**Ongoing**
Strive for 100% compliance for hazardous substance storages, handling and disposal	Conduct a feasibility study on phase out of ODS	**2017**
	Continue to store and manage hazardous substances and dangerous goods in accordance with regulatory requirements	**Ongoing**
	Continue the environmental inspection program of tenants and construction sites	**Ongoing**
Remove asbestos from AAL owned and / or operated infrastructure where feasible.	Continue to implement emergency response plans for hazardous substances spills	**Ongoing**
	Continue annual asbestos audit and removal program and maintenance of the Asbestos Register	**Ongoing**
	Continue to maintain the Hazardous Substances Register, ODS Register and PCB Register	**Ongoing**
	Continue to provide guidance to stakeholders on hazardous substances management	**Ongoing**

10.10 Sustainable Development

Environmentally sustainable development is at the core of the vision for Adelaide Airport and a central focus of this Environment Strategy. The impact that we have on the environment can have local, regional or even global consequences. Excess resource consumption, waste generation, degradation of biodiversity and heritage values, and pollution of land, air and waterways are all potential impacts that thoughtful, planned infrastructure design, construction and operation can minimise or eliminate.

Fortunately, many of these impacts are quantifiable. AAL's commitment to sustainable development and performance at Adelaide Airport is to be facilitated via the ongoing implementation of Sustainable Performance Indicators (SPIs) and future reporting against Sustainable Performance Targets (SPTs). These established metrics will help to assess future infrastructure developments and review and refine the efficiency of existing infrastructure, plant and operations, providing the foundation for quality asset design and investment decisions and more efficient operations.

For individual precincts, AAL will continue to refine the Development Design Guidelines to include environmental sustainability principles directed at energy efficiency, such as building orientation and configuration that is appropriate for the type of development and location.

Table 10.7 Sustainable Development Goals and Management Actions

Objective (by 2034)		
Develop Adelaide Airport through quality buildings of contemporary, sustainable design Manage AAL facilities in a manner that minimises cost and natural resource use.		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Design, construct and manage AAL assets to meet targets aligned to key Sustainability Performance Indicators	Participate in ISCA Infrastructure Sustainability Rating Scheme	**2017**
	Continue to measure AAL's asset operation in alignment with SPI	**Ongoing**
	Regularly review progress of operational performance against SPT	**2015**
	Conduct annual environmental awareness training for all AAL staff	**2015**
	Create a reporting tool to convey asset management results	**2016**
	Assess the feasibility of conforming to Global Reporting Initiative standards	**2017**
	Continue to improve building performance through cost-effective improvements to operation and maintenance practices	**Ongoing**
Implementation of sustainable design principles	Continue to incorporate sustainable design principles into Development Design Guidelines, encouraging adoption of energy efficiency measures consistent with the Building Code of Australia	**Ongoing**
	Continue to identify sustainable development opportunities	**Ongoing**
	Encourage the adoption of external performance metrics	**Ongoing**
Embed principles of stewardship into corporate processes and through the supply chain	Expand set of Airport environmental guidelines for use by tenants, contractors, and AAL staff	**2016**
	Continue to encourage customers, partners and suppliers to adopt sustainability principles and practices	**Ongoing**
	Promote stewardship initiatives throughout the AAL supply chain through preferred 'suppliers of choice'	**Ongoing**

AAL has demonstrated its keen interest in sustainable development through the construction of a multi-level car park in 2012 that incorporated energy efficiency features, including a rooftop stormwater harvesting scheme. The Australian Federal Police facility, which opened in 2013, boasts 4-star Green Star and 4.5-star NABERS ratings. In addition, sustainable development principles have been incorporated into the Principles of Development Control in Chapter 7 of this Master Plan, as well as individual precinct and policy area Development Design Guidelines to encourage sustainable development of the Adelaide Airport site.

As the airport expands, significant opportunities will occur to demonstrate environmental sustainability initiatives. Over the next five years, AAL will adopt, encourage and influence the use of sustainable standards where practical for new developments, such as NABERS or those generated by the Green Building Council of Australia (GBCA) and the Infrastructure Sustainability Council of Australia (ISCA).

10.11 Energy and Climate Change

The global trend is towards a carbon constrained future, which demands that businesses address the various risks associated with climate change. A prudent carbon management program addresses (a) carbon risk (the potential financial and business impact associated with a carbon constrained economy) and (b) climate risk (the potential impact on assets and operations associated with more variable climate).

10.11.1 Carbon Risk

AAL is committed to tackling carbon risk through measuring and reducing its carbon footprint associated with infrastructure and activities under its operational control. This is to be achieved through implementation of a comprehensive Carbon Management Plan.

The expansion of aviation and non-aviation development has the potential to influence the environment, as well as the operational cost of doing business. Adelaide Airport's challenge is to guide stakeholders on strategies that support the dual aims of reducing energy consumption and realising commercial growth. AAL will continue to engage with airport businesses on cost-effective opportunities for improved carbon management.

A mature greenhouse gas accounting system underpins AAL's carbon management program and is essential in measuring progress against reduction targets. The system was verified by Airports Council International (ACI) in 2013, and Adelaide Airport was the first in Australia to be awarded certification to Level 1 of the ACI Airport Carbon Accreditation program. Airport operators are currently below the corporate greenhouse reporting threshold under the *National Greenhouse and Energy Reporting Act 2007*. However, AAL is conforming to, and reporting against, ACI's more rigorous accounting standards.

AAL's carbon footprint is being reduced through various initiatives, one example being the implementation of clean energy measures. Collaboration is occurring with tenants to employ green leases for 'green' infrastructure, such as the new Australian Federal Police facility which is rated to 4-star Green Star and 4.5-star NABERS. A further carbon reduction was achieved in 2010 when AAL entered into an electricity contract that included the purchase of 10% renewable green energy.

AAL's greenhouse gas emissions (Scope 1 and 2) have decreased between 2008/09 and 2012/13 financial years from around 2.0kg CO2e/pax to 1.7kg CO2e/pax, being a 17% reduction and meeting the desired Adelaide Airport benchmark.

On airport, electricity under AAL operational control includes street lighting, airfield lighting and sewer pump stations along with the majority of the energy consumed within Terminal 1; being the single largest energy requirement on-airport. AAL is adopting energy efficient measures, such as LED lighting usage to decrease electricity consumption as one example.

AAL electricity consumption within Terminal 1 between the 2008/09 and 2012/13 financial years has fallen by 10% from 1.74kWh/pax to 1.57kWh/pax, exceeding the AAL previous target of 5%.

In an ongoing effort to minimise energy consumption, AAL will continue to identify and implement cost-effective energy reduction projects, expand the preventative maintenance program in alignment with development; educate employees on energy efficiency practices; and identify opportunities to generate renewable energy onsite. As a significant quantity of energy consumption is under the direct control of various airport businesses, AAL will continue to guide and influence stakeholders on energy efficient practices and encourage the adoption of clean energy principles.

10.11.2 Climate Risk

According to the 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 changes range from decreased water supply, increased utility prices, infrastructure deterioration, and habitat stress. A climate adaptation study is currently underway to assess the impacts of future climate risk scenarios on aviation, infrastructure and habitat with the outcomes to be considered in future airport planning.

Table 10.8 Reduced Energy Consumption Goals and Management Actions

Objectives (to 2034)		
• Minimise future electricity load growth through energy conservation measures and renewable energy • Minimise AAL's carbon footprint • Influence and guide other airport users to reduce their carbon footprint • Adapt to future climate change impacts		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Reduce AAL's per passenger electricity consumption (10% of 2013 levels by 2019)	Develop and implement a carbon reduction plan	**2015**
	Continue to investigate possible locations for renewable energy installations	**2016**
	Assess the economic feasibility of a renewable energy power station	**2019**
Reduce AAL's per passenger greenhouse gas emissions (5% of 2013 levels by 2019)	Continue annual measurement of the company carbon footprint	**Ongoing**
	Continue certification to Level 1 of ACI's Airport Carbon Accreditation scheme	**Ongoing**
	Seek certification to Level 2 of ACI's Airport Carbon Accreditation scheme	**2015**
	Assess feasibility of achieving Level 3 certification	**2015**
	Develop and implement a Green Vehicle Program	**2015**
	Detail and enforce minimum energy efficiency standards for plant and equipment, including motor vehicles, in the company purchasing policy	**2017**
	Assess voluntary carbon offset options	**2017**
Strive to realise reductions in tenant energy consumption	Develop and implement an Airport Stakeholder Engagement Plan for carbon management	**2015**
	Support and facilitate fuel reduction initiatives by aircraft operators where possible	**Ongoing**
	Assess the feasibility of introducing biofuels for Ground Service Equipment in partnership with airlines	**2017**
	Continue to provide guidance to tenants on techniques for measuring emissions and reducing energy consumption	**Ongoing**
Strive to increase the proportion of airport visitors and tenants using alternative forms of transport or changing their transport habits	Install electric vehicle recharge points in the short-stay car park	**2016**
	Encourage an increase in the scope of service provided by public buses to the airport	**2019**
	Assess the feasibility of an electric taxi trial	**2019**
Improve AAL's preparedness against the likely impacts of climate change on infrastructure and operations	Complete a climate vulnerability and adaptation study	**2015**
	Conduct detailed infrastructure review against climate adaptation study outcomes	**2016**
	Incorporate, where required, new pavement and building standards into development and construction guidelines	**2019**
	Accommodate, where required, extreme weather events into the Airport Emergency Plan	**2016**
	Continue to participate in State and Local adaptive planning processes	**Ongoing**

As part of AAL's commitment to managing climate risk, a flood modelling study was undertaken in 2012 to assess the potential impacts of future flooding scenarios on airport operations and infrastructure. The outcomes of this study are to be used in the holistic assessment of climate adaptation and readiness. In addition, it has been noted the City of West Torrens has introduced a "Western Adelaide Region Climate Change Adaption Plan" and AAL will work closely with Council to expand this project to airport land.

10.12 Water Resources

Climatic trends, uncertainty with respect to South Australia's long-term water availability, increasing demand linked to airport growth, and rising supply costs have led to water emerging as an Airport priority. Security of water supply and best practice water conservation are critical goals, building on the solid track record of leadership in water sensitive urban design and water conservation.

Recycled water from the nearby Glenelg Wastewater Treatment Plant (GWTP) has been used to irrigate areas of Adelaide Airport for more than 15-years. As the airport has expanded, so too has the recycled water network. In 2012/13, construction of Terminal 1 was completed with the toilet and irrigation systems connected to the GWTP network. In 2012/13 recycled water comprised 42% of all water consumed within the Terminals & Business Precinct, being an increase in usage of around 36% (compared with potable water at 14%) over that consumed in 2008/09, allowing for expanded development and significant increased passengers during that time.

AAL realised further water savings in 2012 by constructing a facility that harvests and stores up to 570 kilolitres of stormwater from the short-term car park roof and pipes it to Terminal 1 for use in the air conditioning system. The Australian Federal Police building, AAL's plant nursery and the terminal plaza water feature were all connected to the recycled water network which is also used to manually irrigate runway verges. Large areas around the car park and the wider Terminals & Business Precinct have been planted with local, drought-tolerant species in accordance with the airport's Landscape Guidelines.

Table 10.9 Reduced Water Consumption Goals and Management Actions

Objectives (to 2034)		
Minimise the proportion of potable water consumption at Adelaide Airport		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Reduce AAL's per passenger potable mains water consumption (10% of 2013 levels by 2019)	Investigate opportunities to utilise stormwater harvested from the car park scheme and Adelaide Airport Stormwater Scheme	**2015**
	Assess opportunities for introducing more water efficient management of Terminal 1 cooling towers and other infrastructure, and assess end-of-life replacement options	**2016**
	Continue to seek opportunities for implementing water sensitive urban design principles	**Ongoing**
	Continue to update the water meter network to improve data accuracy, where required	**2015**
Increase the number of connections made to non-potable water sources, where practicable	Encourage new developments to connect to the recycled water network	**Ongoing**
	New developments to incorporate water sensitive urban design features such as rainwater tanks or other water harvesting systems	**Ongoing**
Increase the number of tenants implementing water efficiency measures, where possible	Provide tenants with water efficiency awareness raising tools and materials to use in their workplaces	**2019**

A major achievement was realised in 2013 with the construction of a managed aquifer recharge scheme by local utility provider, SA Water. Facilitated by AAL, the Adelaide Airport Stormwater Scheme (AASS) will have the capacity to capture, store and distribute up to 270-million litres of treated stormwater each year from Brownhill-Keswick Creek for use on, and around, Adelaide Airport. Once the scheme is fully operational it will offer an alternative non-potable water source to which AAL and other airport users will be able to connect.

AAL is committed, where feasible, to expanding the use of available non-potable water supplies for new and existing developments as per AAL's Water Management Plan. Of the various options being assessed, tapping into the AASS and expanding the existing GWTP recycled water network are the highest priorities. In line with development opportunities, supply points are available in all airport precincts as included in Figure 8.3 of Chapter 8. Developments with a large roof area, such as warehouses and hangars, provide opportunity for rainwater capture and reuse, supplementing recycled water supplies from existing networks. The integration of water sensitive urban design principles, new development design and adoption of the airport's Landscape Guidelines will also be promoted.

10.13 Waste

The waste streams generated on-airport include organics (e.g. food), paper and cardboard (e.g. newspapers), aluminium cans, plastics, electronic, construction, hazardous (e.g. waste oil, fluorescent tubes) and green waste.

AAL embraces the waste management hierarchy espoused by Zero Waste SA – in order of highest to lowest efficacy, and therefore prioritisation is afforded to reduction, reuse, recycle, recovery, treatment and disposal – which is reflected in its Waste Management Plan.

Waste reduction has been realised through numerous initiatives such as the phased elimination of paper-based forms and record keeping, distribution of reusable coffee cups, replacement of halogen light globes with LED technology, replacement of bulk liquid herbicides with a granular equivalent, and transition to an alternative asphalt patching mix.

Most significantly, recycling rates increased with the implementation in 2010 of a three-bin public space recycling system in Terminal 1. The scheme captures three waste streams – general, comingled recyclable and paper/cardboard

Table 10.10 Reduced Waste Consumption Goals and Management Actions

Objectives (to 2034)		
Increase the proportion of airport waste diverted from landfill		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Increase the per passenger volume of waste recycling from AAL facilities (10% of 2013 levels by 2019)	Revise and implement the Waste Management Strategy for T1	**2014**
	Establish a T1 food organics recycling scheme	**2015**
	Investigate upstream waste elimination opportunities in partnership with T1 tenants, including use of compostable products	**2016**
	Develop and implement an updated Waste Management Strategy for AAL operations	**2016**
Implement a green purchasing program	Develop and implement a Green Purchasing Policy focusing on waste reduction	**2015**
	Run a staff education campaign on the Green Purchasing Policy	**2016**
Facilitate waste reuse and recycling by tenants, where feasible	Develop and communicate guidelines on recyclable construction materials	**2017**
	Encourage airport food and beverage tenants to compost food waste	**2019**
	Continue to support airline programs aimed at recycling on-aircraft waste	**Ongoing**
	Continue to support airport tenants to expand their waste avoidance, reuse and recycling programs	**Ongoing**
	Continue to encourage recycling and rejuvenation of demolition and construction waste	**Ongoing**

which complements the existing recycling system available to retail and airline tenants. The volume of Terminal 1 waste recycled per passenger has decreased between 2007/08 and 2012/13 by around 22% broadly in line with set targets. Further, a food organics recycling trial was commenced by two food and beverage retailers within Terminal 1 in 2013 with a view to expanding the scheme to other relevant businesses from 2014.

Surplus plant and equipment is sold for reuse, demolition waste reused as road base and green waste composted for use on airport. Mature recycling programs exist in AAL offices and many tenancies for paper and cardboard, printer cartridges, waste oil, batteries, drink containers, construction waste and food waste. Further reduction of waste to landfill will be achieved through the development and implementation of a revised Waste Management Strategy for T1 and planned introduction of a green purchasing policy.

AAL works collaboratively with tenants to reduce waste and seeks to positively influence their environmental performance. Similarly, tenants posing a high risk of wildlife attraction are provided with guidance in developing Waste Management Plans, with the aim of reducing Foreign Object Debris and the likelihood of attracting wildlife to the airport environs.

10.14 Land and Heritage

10.14.1 Sites of Significance

Conservation

There are two sites of environmental interest on Adelaide Airport: the Patawalonga Creek Conservation Zone (PCCZ) and the Tapleys Conservation Zone (TCZ) – providing habitat that is host to vegetation communities, isolated flora, and uncommon fauna. Those sites of significance on airport are included at Figure 10.4.

Indigenous

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.

Heritage

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

10.14.2 Biodiversity and Conservation

AAL is responsible for the management of all vegetation at Adelaide Airport through designation of conservation areas and the implementation of Vegetation Clearing and Landscaping Guidelines.

No threatened ecological community or species listed under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are present on the airport grounds. However, AAL manages biodiversity at Adelaide Airport including the Patawalonga Creek Conservation Zone and the Tapleys Conservation Zone discussed previously.

Maintenance and operation activities, development and construction, and also 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 PCCZ, including development and implementation of the PCCZ Management Plan and Revegetation Plan, provenance guidelines, and monitoring surveys. A semi-commercial volunteer base oversees the ongoing site maintenance and rehabilitation program.

A second site, the Tapleys South Conservation Zone, has been set aside as a native plant nursery, where AAL actively transplants endangered and vulnerable species for future seed collection and propagation in the future.

Figure 10.4 Sites of Significant Conservation

AAL judiciously manages all vegetation across the airport, including any areas of remnant vegetation located outside of the specified Conservation Zones. The updated Landscape Guidelines set criteria for vegetation planting and modification by all airport users. Any vegetation removal, whether for regulatory, development, safety or security reasons, is conducted strictly in alignment with DIRD's Land Clearing Guidelines.

The broader airport environs provide a limited habitat for birds. There are no birds recorded at Adelaide Airport listed under the *Environment Protection and Biodiversity Conservation Act 1999*. 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 on airport lands.

10.14.3 Wildlife Risk Management

AAL runs a comprehensive wildlife management program, balancing the dual interests of aviation safety and wildlife conservation. In 2007 the program was augmented by a bird risk assessment, using more than 20-years of census data, which identified birds that pose the highest risk to aviation safety at Adelaide Airport. A wildlife mapping tool was then developed in 2008 utilising Geographic Information System (GIS) technology. Both these tools underpinned Adelaide Airport being awarded 'Capital City Airport of the Year' in 2009.

Further improvements were made in 2012 to the data management and mapping processes allowing simple, effective and streamlined reporting of wildlife risk to airport stakeholders. The formal establishment of the Adelaide Airport Wildlife Hazard Management Committee has further strengthened these relationships and information channels on this important area of safety management.

The wildlife strike rate at Adelaide Airport has reduced by 20% from 0.50/1000 aircraft movements to 0.40/1000 aircraft movement between 2008 and 2013, consistent with AAL's objectives.

AAL is in the process of collaborating with government, the Commonwealth Department of Defence and aviation stakeholders to identify high risk activities across metropolitan Adelaide within three Wildlife Hazard Management Zones (at 3-kilometre, 8-kilometre and 13-kilometre radius of the airport) in accordance with the National Airports Safeguarding Framework Guideline on Managing the Risk of Wildlife Strikes in the Vicinity of Airport (NASF Guideline C).

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 West Torrens Council as owner on management strategies to minimise the risk.

10.14.4 Archaeology

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, which 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.

10.14.5 Built Heritage

Adelaide Airport has had a short yet vibrant history as South Australia's domestic and international gateway for nearly 60-years. In that time, the airport has substantially expanded and the infrastructure evolved to service the rapidly expanding aviation industry. The current airport buildings and infrastructure are not recognised as having significant heritage value and thereby are not listed on the National Heritage List or the Commonwealth Heritage List.

The Vickers Vimy aircraft, flown by brothers Sir 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. AAL will continue to ensure it is routinely monitored, maintained and restored in accordance with Commonwealth requirements to protect its heritage values, with its relocation elsewhere on the airport site under consideration.

10.14.6 Heritage Management

To meet its obligations under the Regulations, AAL will continue the rigorous process of managing all aspects of natural, indigenous and built heritage, aligned to the broad requirements of the *Environment Protection and Biodiversity Conservation Act 1999*.

Thorough assessments of heritage values at Adelaide Airport have been undertaken, the outcome of which will inform the airport's Heritage Management Strategy in balance with future aviation related development growth. The Strategy will align with the objectives of this Master Plan and its implementation driven through AAL's environmental management system. The Airport Building Approval process, regulated under the *Airports Act 1996*, will provide the mechanism for development control and trigger any approval management actions relating to heritage.

Table 10.11 Land and Heritage Goals and Management Actions

Objectives (to 2034)		
• Enhance biodiversity • Conserve places of significant natural, indigenous and heritage value • Minimise the risks presented by wildlife to aviation safety		
Goal (2014-2019)	**Management Actions (2014-2019)**	**Timeframe**
Improve native biodiversity of target zones within the airport	Develop an Aquatic Ecology Management Plan for the PCCZ	**2015**
	Review detailed flora and fauna surveys of the PCCZ	**2016**
	Continue to implement the Conservation Zone Management Plans	**Ongoing**
	Research and develop a long term strategy to assess and mitigate impact on native habitats	**2018**
	Partner with external stakeholders to support a biodiversity program in State-controlled easements or drains	**2015**
	Implement the SQMIP, in particular, upgrade the stormwater network with sustainable vegetated filtration systems	**2016**
	Continue to monitor the open stormwater network using the Index of Stream Condition	**Ongoing**
	Continue to implement the AAL Landscape Guidelines	**Ongoing**
	Continue to apply biodiversity no net loss policy	**Ongoing**
Protect significant heritage values	Finalise a Heritage Management Strategy	**2015**
	Develop Heritage Management Plans, where required	**2019**
	Continue to implement procedures for identifying and protecting archaeological artefacts	**Ongoing**
	Continue to promote communication between AAL and traditional custodians	**Ongoing**
Strive to reduce wildlife strike rates involving higher risk species	Implement Wildlife Hazard Management Plan, in particular, complete airside vegetation mapping and conduct a grass trial for runway strips	**2015**
	Undertake comprehensive on-airport wildlife hazard mapping linked to vegetation	**2016**
	Develop and integrate Wildlife Hazard Management Zone mapping into the Building Application process	**2016**
	Use Wildlife Hazard Management Zone mapping as a tool to educate off-airport stakeholders on minimising strike risk	**Ongoing**
	Continue to collaborate with airport neighbours on fox control	**Ongoing**
	Continue to review and implement the Wildlife Hazard Management Plan	**Ongoing**