

10 Climate Change and Resource Use



Climate-related risks and opportunities are considered as part of Perth Airport's strategic planning, including its short-term asset management plans and medium-term infrastructure projects.

10.1 Introduction

As operators of critical infrastructure, Perth Airport recognises that climate change has the potential to affect its business through physical and transitional risks, impacting the high levels of availability, reliability, and resilience Perth Airport aims to deliver.

Climate-related risks and opportunities are considered as part of Perth Airport's strategic planning, including its short-term asset management plans and medium-term infrastructure projects.

10.2 Climate Change Mitigation and Adaptation

10.2.1 Objectives



Avoid and reduce carbon emissions to achieve net zero emissions by 2032.

Understand and continually assess the short-, medium- and long-term climate change risks and opportunities.

Adapt to the direct and indirect impacts of climate change, and enhance and maintain resilience to these climate impacts.

10.2.2 Overview

Climate change is a global challenge. There is a wide body of evidence to suggest that Australia's climate has already changed significantly, particularly over the last 50 years. Climate change is projected to increase the severity and frequency of extreme weather events, increase hot weather and heat waves, extend periods of drought conditions, and increase sea levels, which will impact aviation and transport in its ability to provide critical services. In addition, policy, market and legal shifts are causing disruption to the products, services and systems fundamentally relied on by infrastructure assets, brought about by a global transition to low carbon.

In 2016, the Australian Government committed to the Paris Agreement, a legally binding international treaty on climate change. Australia has committed to reducing its emissions to 43 per cent below 2005 levels by 2030 and net zero emissions by 2050.

10.2.3 Carbon Emission Reductions

Greenhouse gas emissions are categorised as Scope 1, 2, and 3 emissions by the Greenhouse Gas Protocol.

Scope 1 emissions are direct emissions made by sources a company owns or controls, such as fuel for Perth Airport's vehicle fleet and the terminal transfer buses, and natural gas for the Cogeneration Plant, which is used for lighting and heating and cooling of buildings, including airport terminals.

Scope 2 emissions are indirect emissions that result from a company's energy purchases from utility providers. Perth Airport purchases electricity from the South-west Interconnected System grid to power terminals, car parks, runway and taxiway lighting, and Perth Airport owned buildings and infrastructure.

Scope 3 emissions are all other indirect emissions that result from a company's activities, such as aircraft emissions during take-off, in-flight, landing and engine ground runs; the use of aircraft auxiliary power units and ground support equipment, emissions from tenant electricity consumption and fuel use, and the use of fuel by passengers and visitors to the airport estate. It is not possible for Perth Airport to reduce direct aircraft emissions because fuel and combustion are required for flight and are beyond Perth Airport's direct control. As a result, Perth Airport concentrates reduction and efficiency efforts on its own energy emissions and indirect emissions associated with airport operations.

2032

Perth Airport has committed to Net Zero emission by 2032 (PAPL-only Scope 1 and Scope 2 emissions).

50%

By 2030, Perth Airport aims to source 50% of its energy from renewable sources across the estate.

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In FY25, approximately 10 per cent of Perth Airport’s total energy supply was provided by the co-generation facility, and the remaining 90 per cent by the WA state grid. Perth Airport is implementing measures to decommission the co-generation facility and increase the proportion of renewable energy and low emission energy sources in its energy mix, to reduce the environmental impacts of energy use and emissions which contribute to climate change. Through investigation of opportunities for renewable energy supply on the estate, Perth Airport will continue to focus on clean energy supply and energy efficiency increases in the development of the estate.

Perth Airport has an Energy Strategy that outlines the potential pathway to develop commercial, economic energy systems that support sustainable growth with outcomes that meet social, environmental expectations, delivering customer satisfaction. Each activity contained within the Energy Strategy is developed through investment appraisal and strategic assessment to ensure alignment with evolving strategies and the statewide energy transformation pathway.

Development of the first 5MW (Megawatt) solar farm, located on a portion of land to the east of the General Aviation Area, commenced in 2025 with generation anticipated in 2026. The solar farm will produce an annual energy yield of 10GWhr (Gigawatt-hour) and is planned to be complemented by other energy systems, including:

- electrification of vehicle and equipment fleets
- additional solar farms and the expansion of roof top solar systems
- battery energy storage systems supporting the solar farm and rooftop solar systems, and
- pyrolysis generation from wood waste.

To support future energy transition, Perth Airport has set a target of 50 per cent renewable energy across the airport estate by 2030. This will significantly contribute towards reducing Scope 2 emissions from Perth Airport owned buildings and infrastructure, as well as reducing emissions from tenant electricity usage.

Fossil fuel combustion is the largest contributor to air pollution in the world. In 2024, road transport accounted for 16 per cent of Australia’s total greenhouse gas emissions; furthermore, transport emissions have the highest rate of growth of any sector. Trends and travel patterns in Perth indicate that vehicle travel is a preferred method of transport. As Perth Airport continues development of the estate, there is an opportunity to integrate other modes of transport, including the new Forrestfield-Airport rail link and other forms of public transport, walkable catchments and the possible future introduction of an automated people mover. The planning for alternative transport is discussed in Section 15.

10.2.4 Targets



10.2.5 Climate Change Adaptation

Perth Airport recognises the impacts of climate change and its ability to have long-term direct effects on airport infrastructure, aviation network performance and natural habitats on the airport estate, as well as the wider community beyond the airport boundary.

Perth Airport partnered with climate change experts to conduct scenario analysis to understand the physical and transition risks, and to identify emerging opportunities, that may arise from a changing climate. The climate scenario adopted for the physical risk assessment used the Representative Concentration Pathway 8.5 developed by the Intergovernmental Panel on Climate Change. This scenario represents a continued trend towards high rates of carbon emissions, with failure to reduce global emissions meaningfully and adequately by the end of the century.

The primary climate hazards identified for the Perth region include increasing average temperatures, more extreme heat days, severe rainfall resulting in flooding, extreme storms, wind, drought, and bushfires. The increasing frequency and intensity of these events, as well as their occurrence ‘out of season’, could place additional strain on airport operations, particularly where systems are not optimised to manage such conditions.

The key climate change physical risks that Perth Airport is responding to in the planning and operation of the estate are:

- health and safety—extreme weather events and rising temperatures posing health and safety risks for staff and passengers, including biosecurity concerns, heatstroke, and elevated tarmac temperatures
- operational disruptions—extreme weather, flooding, power outages, changes to aircraft performance, and storm debris leading to operational delays or disruptions and resulting in passenger delays and reputational damage
- flooding risks—extreme rainfall and flooding are highlighted as specific risks due to past incidents at the airport, including flooded walkways, power outages, and safety concerns

- asset damage—climate hazards such as heat, intense rainfall, windblown debris and inundation that damage or degrade assets leading to increased repair costs, runway maintenance, and asset replacement, and
- indirect impacts—including power loss, weather events in another location or changes in aircraft performance leading to disruption, delays and revenue loss.

10.2.6 Current Management

Perth Airport’s management of climate change mitigation and adaptation is addressed through plans, strategies and initiatives outlined below.

10.2.7 Climate Adaptation Planning

Perth Airport aims to embed climate considerations into strategic planning, focusing on building climate resilience through asset management and infrastructure projects. Climate risk assessments and the associated controls inform Perth Airport’s project management framework.

Operational contingency plans are also in place to ensure business continuity and passenger safety during climate-related disruptions.

10.2.8 Airport Carbon Accreditation Program

Airport Carbon Accreditation (ACA) is the only industrially endorsed, global carbon management certification program for airports. It independently assesses and recognises the efforts of airports to manage and reduce their carbon emissions through six levels of certification. Perth Airport achieved ACA Level 3 (Optimisation) in 2024 and has set a target to achieve ACA Level 4 (Transformation) certification by 2026. Level 4 requires Perth Airport to achieve absolute emissions reductions while also actively driving stakeholder engagement towards delivering emissions reductions.

10.2.9 Carbon Management Plan

In 2018, Perth Airport developed a Carbon Management Plan as part of the ACA certification process. It outlines Perth Airport’s goals and performance objectives for renewable energy uptake, emissions reductions targets, and implementation plan for achieving these goals. The plan is reviewed annually as part of the ACA accreditation process and is subject to third-party approval by the certifying body.

10.2.10 Monitoring and Reporting

Energy management in Perth Airport operated terminals is undertaken through a Building Management System (BMS). The BMS controls lighting, ventilation, heating and cooling, with ability to sense and respond to changes in temperature. This system enables Perth Airport to continually identify and implement energy efficiency measures. The BMS is subject to consistent review and upgrades.

Perth Airport has committed to making transparent disclosures in accordance with Australia’s climate-related financial disclosure regime, addressing both transition risks associated with the shift to a low-carbon economy and physical risks that could impact airport assets or operations, like prolonged periods of precipitation causing shutdowns. Data about Perth Airport’s energy and gas consumption, greenhouse gas emissions, fuel use and waste are reported to various national and international sustainability surveys and reporting schemes (see Section 7.3).



Artist's impression of future commercial development at Perth Airport

10.2.11 Project Design and Assessment

Perth Airport’s design standards and building and development approvals process aim to ensure that the climate adaptation is considered in the design of all new developments.

Project design is required to demonstrate alignment with the carbon management hierarchy of avoid, reduce, replace and offset and to prioritise energy efficient solutions with LED lighting a minimum requirement for car park, street and airfield lighting.

Designs also consider low-carbon transport options by prioritising public transport links, electric vehicle infrastructure, walkability, and active transport.

Perth Airport requires environmental accreditation for certain types of new developments and has set minimum targets of:

- 4-Star (Best Practice) Green Star target for the design of new buildings and major refurbishments
- Infrastructure Sustainability (IS) Silver target for engineering-oriented infrastructure projects
- 5-Star National Australian Built Environment Rating System (NABERS) energy rating for commercial office building projects, and
- International WELL Building Institute standard considered on a case-by-case basis for new and significant building projects, including offices, hotels and terminal expansion projects.

Development proposals are required to demonstrate understanding of, and adaptation to, the risks and physical impacts of climate change. Design requirements seek to reduce the heat island effect through a combination of suitable strategies (such as tree retention and landscaping, cool pavements, light roofing colour, and paint systems with high solar reflectance) while also incorporating permeable and porous surfaces to allow for stormwater infiltration, and providing shade through vegetation or structures, pedestrian pathways, and areas where people might gather outside.

All new developments must align with the carbon management hierarchy: avoid, reduce, replace, offset.

10.2.12 Environment Management Plans

Tenants and contractors are required to address carbon and energy in construction and in tenant EMPs. This includes details of energy resource use and efficiency measures, carbon footprint management, and carbon emissions and greenhouse gas accounting.

10.2.13 Recent Achievements

Recent achievements in carbon and energy management include:

- Perth Airport achieved ACA Level 3 (Optimisation) certification in 2024, which required the demonstration of genuine emission reductions alongside engagement with third parties on the estate and expansion of the carbon footprint scope to include third party emissions.
- Perth Airport became the first Australian airport to offer a voluntary carbon offsetting program for car park customers to offset emissions from their journey to and from the airport, with offset purchases going towards replanting and preserving biodiversity in regional Western Australia.
- An energy audit was conducted for the passenger terminals and Perth Airport’s Alpha office building in 2021 to identify energy efficiency and small-scale renewable energy opportunities to reduce emissions. Projects implemented include an LED lighting upgrade program, additional energy monitoring and an air handling unit motor replacement program.
- Climate change scenario analysis was undertaken in 2024 to understand the strategic implications of climate-related physical and transition risks and opportunities, and to explore potential ways in which Perth Airport can respond.
- Perth Airport entered into an agreement for the purchase of renewable energy to assist with reduction of a portion of Scope 2 emissions.
- An Environmental Requirements Manual was developed in 2022 to outline environmental requirements for tenants and contractors, including carbon and energy management.
- A Sustainability Design and Technical Requirements guidance document was published in 2023 to outline Perth Airport’s requirements for sustainability matters that need to be identified and assessed in the design of new developments, including climate change risk, adaptation and resilience, emissions, energy, transport and surface access, material selection and project certification.
- Perth Airport executed a contracted energy service agreement to enable future procurement of renewable energy via the grid network.



10.2.14 Five-year Action Plan


Initiatives to be undertaken between 2026 and 2030 as part of Perth Airport’s five-year action program for climate change mitigation and adaptation are shown in Table 10-1 below:

Initiatives	Completion Timeframe
Implement the Climate Change Adaptation Plan for the airport estate	Ongoing
Undertake thermal heat mapping of the estate to inform strategies and opportunities for projects to reduce heat island effect	Ongoing
Complete a climate change risk assessment for major projects and developments over a specified capital expenditure threshold	Ongoing
Achieve and maintain accreditation Level 4 (Transformation) under the Airport Carbon Accreditation initiative	Short-term
Refresh the Perth Airport Master Drainage Strategy to reflect latest Australian Rainfall and Runoff (ARR) guidelines, including updated rainfall intensities and temporal patterns	Short-term
Develop, build and operate a 5MW solar farm	Short-term
Develop strategy to purchase green energy	Short-term
Develop an electrification strategy for landside and airside fleet vehicles	Short-term
Implement a smart metering upgrade to better account for energy use and emissions across the estate	Short-term
Develop a battery strategy for the estate to support the implementation of renewable energy sources	Short-term
Investigate the photovoltaics (solar) potential for existing rooftops and future development	Short-term
Replacement of gas-fired cogeneration plant with emission reducing technology	Long - term
Investigate opportunities to accelerate sustainable aviation fuel usage with stakeholders, in line with global trends and standards	Long-term

Table 10-1 Climate change mitigation and adaptation five-year action program
Source: Perth Airport

10.3 Water Resource Management

10.3.1 Objectives



Increase water efficiency of non-aviation operations and ground-based aviation operations across the estate.

Manage operational and development activities such that groundwater levels are maintained.

10.3.2 Overview

Perth and the greater south of Western Australia experience a dry Mediterranean climate with extended periods of low rainfall. The effects of climate change on water supply and annual rainfall reductions are being felt across all Western Australia, with Perth having experienced extended dry periods since 1975. Resulting water shortages have caused Western Australian water suppliers to launch initiatives and campaigns to reduce water use across the State.

The Perth Airport estate is one of the largest private water users in the metropolitan area. Between 2020 and 2024, scheme water-use across the estate averaged approximately 640,000 kilolitres per year for the terminals and tenant buildings. Additionally, approximately 335,000 kilolitres of groundwater have been used annually for irrigation and non-potable purposes.

The continued development at the airport is expected to lead to higher demand for scheme water, resulting from more users on the airport estate: passengers, construction staff, airport staff, contract staff and tenants.

In line with the Western Australian Government’s recommended water targets for industrial users, Perth Airport’s Social Value Strategy has a target of no net increase in potable water use from 2019 levels through to 2030 for Perth Airport controlled facilities and operations, including the terminals, landscaping and construction. Perth Airport’s management of water is discussed in Section 9.4.

Development at the airport has the potential to impact groundwater levels through use and abstraction of groundwater and dewatering activities. Changes to groundwater levels have the potential to impact on flora and fauna within the estate through inundation and/or reduced access to water.

Monitoring indicates that superficial groundwater levels on the estate have not declined over the last 10 years, despite a continued decline in rainfall during this period. Superficial groundwater levels appear to be maintained by inter-aquifer relationships, whereby deeper aquifers are partially recharging the superficial aquifer.

On-site investigations into contamination on the estate has indicated the presence of per-and polyfluoroalkyl substances (PFAS) on airport in soil, surface water and groundwater. PFAS contamination on the Perth Airport estate is largely attributable to the historical use of aqueous film-forming foams from aviation firefighting activities by Airservices Australia and its predecessor, the Civil Aviation Authority. Refer to Section 11.2.6 for more information.

10.3.3 Target



Total scheme water use to remain below 2019 levels for Perth Airport controlled facilities and operations in 2030.

10.3.4 Current Management

Water consumption across the airport estate is managed through the plans, strategies and initiatives outlined below. Although located on Commonwealth land and subject to Commonwealth legislation, Perth Airport adheres to the principles of State-mandated limits on sprinkler use, and limits watering in winter, and only on allocated days where applicable.

10.3.5 Monitoring

Scheme water-use is monitored by smart water meters on-airport, tenant buildings and facilities. The data from smart meters is automatically transmitted to a central database for analysis and reporting.

Water flow meters are required to be installed for construction projects to monitor and record water use.

Groundwater abstraction and use is monitored across the estate. The network of production bores is managed to ensure that groundwater abstraction is not concentrated in any area, avoiding heavy drawdown and spreading the abstraction load across the estate.

10.3.6 Water Efficiency Management Plan

The Western Australian Government requires businesses using more than 20,000 kilolitres of scheme water per annum to participate in the Water Corporation’s Waterwise Business Program, which includes the production of a Water Efficiency Management Plan (WEMP). Perth Airport’s WEMP improves water efficiency by:

- assessing current water use on site
- identifying inefficiencies and potential water savings, and
- identifying opportunities where other sources of water could potentially be used to substitute current scheme water use.

Perth Airport has adopted a reporting framework based on the water management and reporting model used by local government authorities. As part of annual WEMP reporting to the Water Corporation, Perth Airport identifies the largest water consuming tenants on the airport estate. This facilitates collaboration between tenants and the Water Corporation to help reduce water consumption as part of the Waterwise program and contributes to broader efforts to decrease water consumption across the airport.

10.3.7 Project Design and Assessment

Project proposals are assessed through Perth Airport’s building activity and development application process to ensure appropriate consideration and sustainable management of water resources.

Perth Airport requires water efficiency to be incorporated into the design of all new infrastructure and developments. This includes measures such as water-sensitive urban design features for all landside facilities to enhance local water quality, identifying opportunities for water re-use and reducing potable water consumption, selecting flora species that require minimal or no irrigation after establishment, and using water-efficient fittings and fixtures with specified efficiency ratings.

10.3.8 Environment Management Plans

Tenants and contractors are required to detail water use and water efficiency measures within construction and tenant EMPs.

10.3.9 Recent Achievements

Recent achievements in water management include:

- A Water Management Plan was developed to outline management strategies for surface water and groundwater across the estate.
- Perth Airport engaged with the 10 largest water users on the estate to develop and implement tenant-specific water efficiency plans.
- A Groundwater Extraction Management Plan (including surface water where appropriate) was implemented in 2022 to guide the monitoring and management of groundwater extraction.
- Design and Technical Requirements guidance documents were published in 2023 to outline Perth Airport’s requirements for environmental and sustainability matters that need to be identified and assessed in the design of new infrastructure and developments, including efficient water use.
- A water audit was conducted for all of the terminal buildings and the Alpha office building to identify water saving opportunities. Projects implemented include the upgrade of tapware in Terminal 1 and the Alpha office building.
- Perth Airport worked closely with its cleaning contractor to trial a new water saving cleaning system throughout Terminal 1. The system recycled and filtered water, as well as applied artificial intelligence to map out the terminal space and provide a more efficient cleaning process, resulting in a reduction from around 300 litres of water to 100 litres of water to clean the ground floor.

10.3.10 Five-year Action Plan

Initiatives to be undertaken between 2026 and 2030 as part of Perth Airport’s five-year action program for water management are shown in Table 10-2 below:

Initiatives	Completion Timeframe
Investigate opportunities for alternative sources of water, such as recycled water use	Short-term
Implement smart metering upgrade for monitoring, control, and real-time management of water consumption to support the water efficiency target	Long-term
Investigate use of a water saving cleaning system throughout all terminals	Long-term

Table 10-2 Water Management five-year action program
Source: Perth Airport



10.4 Waste Management

10.4.1 Objectives



Reduce waste, increase reuse and recycling through Perth Airport's operations and manage the remainder in the most sustainable way.

Decrease waste generation and increase efficiency in waste stream processing across the estate.

10.4.2 Overview

Around 40,000 people move through the airport every day, generating around three tonnes of non-hazardous, operational waste across the estate. Approximately 80 per cent of this waste is currently sent to landfill.

Development and related activities have the potential to increase the amount of waste generated across the estate. The anticipated increase is related to waste products generated by increasing passenger numbers, aircraft movements and construction activities across the estate.

Perth Airport is responsible for waste generated from Perth Airport owned and operated buildings and from estate management. Waste management extends across the built environment, operations and the supply chain, and is driven by the nationally and internationally accepted hierarchy of waste management: prevent and reduce (waste reduction), reuse, recycle, recover, treat, with disposal as the least preferred option.

In line with State Government aspirations, Perth Airport's Social Value Strategy has set a target to recover 75 per cent of waste from landfill by 2030 and divert it to more sustainable waste streams. To achieve this target, Perth Airport has developed a Waste Strategy and is implementing several key initiatives to align with our sustainability targets in the short-, mid- to long-term. This includes installing upgraded bins in passenger areas of the terminals and expanding the number of Containers for Change bins throughout Terminals 1 and 2. Perth Airport is also targeting 80 per cent resource recovery of construction and demolition waste by 2030.

Disposal of waste is a material cost in the operation of the airport, particularly with the current and future increases in the State's waste to landfill levy. Adopting waste reduction and circular initiatives presents a cost-reduction opportunity for Perth Airport. Additionally, waste generation and disposal have indirect links to climate change, such as increased methane and landfill by-products, and increased emissions from manufacturing.

10.4.3 Targets



75 per cent resource recovery rate of operational waste by 2030.



80 per cent resource recovery of construction and demolition waste by 2030.

10.4.4 Current Management

Perth Airport's management of waste is achieved through a range of plans, strategies and initiatives.

10.4.5 Recycling

Recycling is undertaken in airport terminals as well as in Perth Airport office buildings. Materials recycled include cardboard, paper, glass, aluminium and plastic drink containers (co-mingled waste).

Perth Airport introduced Containers for Change collection bins in each of the terminals in 2021, collecting suitable recyclable drink containers for a 10-cent refund through the State Government's Containers for Change scheme. Perth Airport makes donations to its charity partners from the monies earned through this scheme (see Section 3.4).

Organics collection bins and paper towel composting bins have also been introduced in several office buildings and retail tenancies to divert previously deemed landfill waste to an organics stream.

In addition to recycling of general waste, Perth Airport reuses road and other construction related materials for pavements and other airfield and estate purposes.

10.4.6 Project Design and Assessment

Through the Perth Airport building activity and development application process, project proposals are assessed to ensure appropriate consideration and management of waste.

All projects are to identify and address risks associated with waste generation and storage so that mitigations can be identified at the design stage to eliminate or otherwise minimise the risk of harm to human health and the environment.

Operational waste management must be considered in the early phases of design and reviewed in subsequent phases. Perth Airport requires the design of all new infrastructure to apply the design principles of the waste and resource management hierarchy: reduce waste generation at the source, re-use of materials, recycle and recover, with the last resort being landfill.

Where it has been identified through the project's risk and opportunities assessment that waste will be a key aspect of the operation that requires ongoing management, Perth Airport requires the preparation of a Waste Management Plan to document the proposed waste management system, ensuring all critical elements are reflected in the architectural layout and engineering design, as well as the logistical operational functionality requirements.

10.4.7 Environment Management Plans

Tenants and contractors are required to address waste management in construction and tenant EMPs. This includes their measures for external storage of waste, recycling and diversion from landfill, and waste handling. Waste must be appropriately segregated by waste stream and reused and recycled where possible.

Tenants who have an increased environmental risk associated with their waste management are required to prepare a separate Waste Management Plan.

10.4.8 Recent Achievements

Recent achievements in waste management include:

- Since the introduction of Containers for Change collection bins in the terminals in 2021, Perth Airport has diverted more than 450,000 recyclable drink containers from landfill and raised \$45,000 for local charity partners.
- An Environmental Design and Technical Requirements guidance document was published in 2023 to outline Perth Airport's requirements for environmental matters that need to be identified and assessed in the design of new infrastructure and developments, such as waste generation and storage.
- Development and implementation of a Waste Strategy and Action Plan in 2024, which included waste education initiatives with estate tenants and stakeholders, upgrades of terminal service yards, and expansion of the collection services for the organics and Containers for Change recycling programs.

10.4.9 Five-year Action Plan

Initiatives to be undertaken between 2026 and 2030 as part of Perth Airport's five-year action program for waste management are shown in Table 10-3 below:

Initiatives	Completion Timeframe
Collaborate with airlines to review all waste reduction opportunities, including aircraft waste	Ongoing
Investigate opportunities to eliminate waste generation and transition towards a circular economy	Short-term
Implement and improve the use of organic waste streams in terminal buildings	Short-term
Update relevant Perth Airport policies and plans to align with current (and any future) State Government targets for waste reduction and recycling goals	Short-term
Develop a monitoring program for waste management for Perth Airport managed facilities	Short-term

Table 10-3 Waste Management five-year action program
Source: Perth Airport