ISC Case Study

Perth Airport: Championing Sustainability in Aviation Infrastructure

Overview

Perth Airport's Terminal 2 Apron Expansion and Aviation Support Precinct (ASP) project had a focus on delivering sustainable aviation infrastructure. This notable initiative marks a significant milestone as the first Australian airport project to earn an Infrastructure Sustainability (IS) Essentials Design Rating. The achievement highlights Perth Airport's commitment to sustainability and resource efficiency.

Project at a Glance

- **Name:** Perth Airport Aviation Support Precinct and Terminal 2 Apron Expansion
- **Owner:** Perth Airport Pty Ltd
- **Delivery partners:** GHD Pty Ltd, West Coast Civil
- **Scope:** Expansion of Terminal 2 apron for increased aircraft parking, new gatehouse, associated roads, and Aviation Support Precinct
- **Timeline:** Commenced May 2023, completion expected May 2025
- **IS Rating:** IS Essentials Design Rating (IS v2.1): Bronze

"IS Essentials helped ensure resource efficiency and carbon reduction were front and centre for this project. It lead to smart choices to cut resource use and construction energy. It also opened the door for contractors to gain valuable experience in delivering sustainable outcomes."

Angie Young
Chief People, Safety & Sustainability Officer
Perth Airport

Enhancing the Airport's Capacity and Efficiency

Perth Airport is undergoing a major transformation, consolidating all commercial air services into a unified Central Airport Precinct, enhancing efficiency, reducing costs, and improving the passenger experience. The new Aviation Support Precinct will house essential services like in-flight catering, aircraft and equipment maintenance, and freight facilities. The Terminal 2 apron expansion will also boost aircraft parking capacity to meet growing demand from regional and resource-based charter operations.

Why the IS Ratings Tool?

Using the IS Essentials Rating Tool gave the project team a strong, systematic method for embedding sustainability throughout the project's lifecycle. The tool's structured framework ensured sustainability goals were integrated into the design from the outset. This approach enabled the team to effectively manage environmental impacts, resource use, and carbon emissions, setting a precedent for sustainable practices in Perth Airport's ongoing and future infrastructure projects.

Pioneering Sustainable Practices in Aviation Infrastructure

The IS rating facilitated Perth Airport's proactive approach to sustainability through targeted credit achievements.

Optimising the use of valuable resources

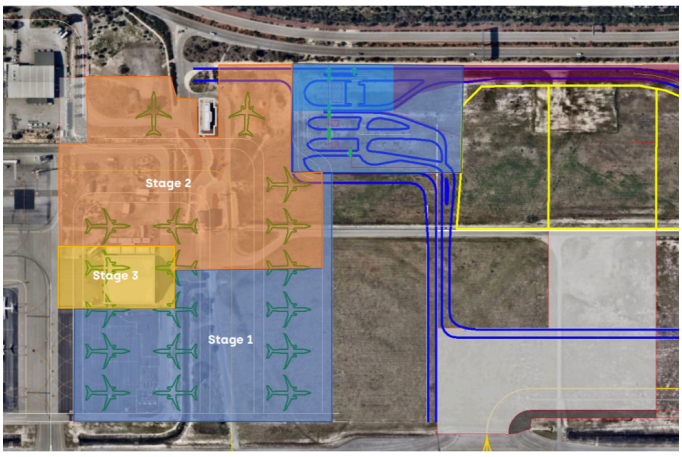
As part of the IS Essentials rating, Perth Airport developed a comprehensive **Resource Efficiency Strategy (RES)** to enhance its sustainability practices under credits **Rso-1, Rso-4, and Rso-6**. This strategy focuses on maximising resource efficiency during construction by reviewing existing practices and identifying new opportunities.

"The use of IS Essentials for this project at Perth Airport has provided tangible emission reductions through the project but also provided solid lessons we can carry over to future projects."

Angie Young
Chief People, Safety & Sustainability Officer
Perth Airport

A multi-criteria assessment (MCA), integral to the **Ecn-1 Options Assessment** credit, along with a Rapid Cost Benefit Analysis, facilitated informed choices with measurable impact, such as:

- Reusing existing surplus fill on the estate to minimise imported materials from offsite
- Retaining the lower pavement of T2 to minimise demolition and construction energy use and materials
- Adopting recycled crumbed rubber for blast pavements in place of virgin asphalt materials



These measures will lead to projected embodied emissions reduction of 15% or 820t of CO2e compared to the base case.

Addressing the **Wat-1 & Wat-2** Water efficiency credits, the project is harnessing several alternative water sources, dramatically cutting reliance on potable water. By using airport estate drainage, and dewatering water for construction activities—including flooding compaction and dust suppression—the project is projected to conserve 57,010kL of water.

Energy efficiency advancements under the **Ene-1 & Ene-2** credits were supported by robust energy and carbon emissions modelling. Using solar energy for powering site offices will substitute 137,500 L of diesel. Additional measures such as motion-sensor lighting in the gatehouse are estimated to reduce operational energy consumption, further highlighting the project's commitment to energy conservation.

Building for long-term resilience

The project demonstrated a proactive approach to managing natural hazard risks under the **Res-1** credit by reviewing past climate events and existing climate change models to identify potential risks to the asset's resilience during its operational lifetime through to 2090. Mitigation measures for risks rated high and above have been identified and implemented in the project design where feasible, ensuring enduring operational viability, safeguarding the infrastructure against emerging climate-related events and enhancing the airport's long-term operational stability.

Industry Impact

The successful implementation of IS Essentials within this project has set a new industry benchmark, demonstrating how airports can proactively integrate sustainability. By working closely with contractors and embedding resource efficiency and sustainability within contractual obligations, this project significantly enhanced the capability of Perth Airport's contractor, West Coast Civil.

"Using IS Essentials provided a clear, structured path for integrating sustainability into every decision. It encouraged collaboration across teams, promoting innovation and smarter choices like reduced pavement thickness and alternative water sourcing. The framework's effectiveness means these sustainable practices will likely influence future projects, ensuring lasting environmental and economic benefits."

Nikita Worthington
Sustainability Consultant
GHD

Future Impact

The success of the Terminal 2 Apron Expansion and ASP project extends beyond immediate outcomes. Policies and practices developed have already begun shaping sustainability frameworks for other initiatives at Perth Airport.

Through effective resource management, water conservation, energy efficiency, and resilient design, this project creates lasting value, delivering tangible benefits for communities and the environment.