CHAPTER

15

Services and Utilities

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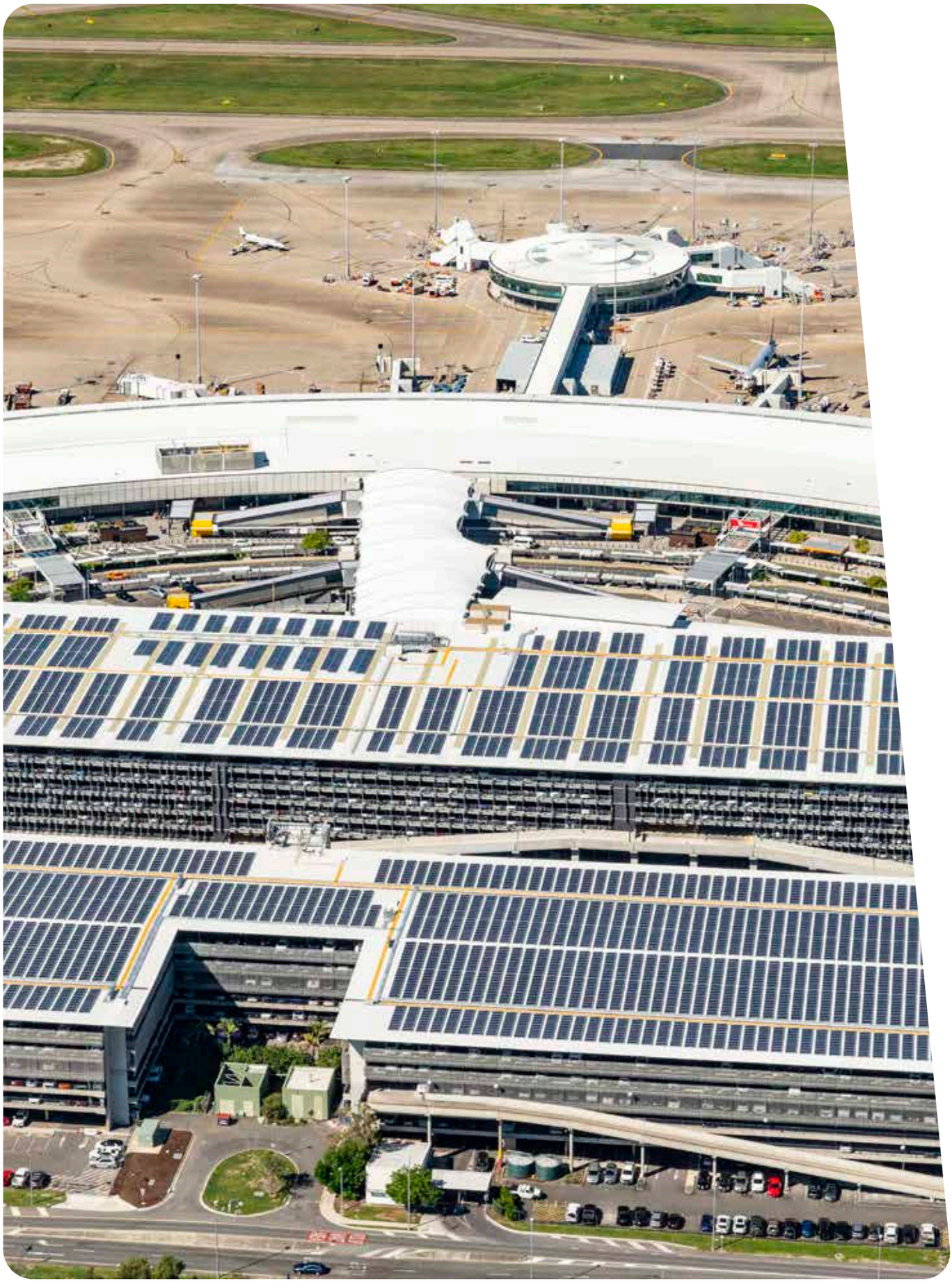


Services and Utilities

Overview

BAC owns, operates and develops the utility distribution networks at Brisbane Airport. While primarily supported by external service providers, these networks also rely on Brisbane Airport resources to meet demand effectively.

BAC's utility planning focuses on future-proofing Brisbane Airport's infrastructure by embedding sustainability and responding to key transformation drivers such as climate change, electrification and the rapid adoption of emerging technologies.

Network modelling and utility demand forecasts have been developed through a comprehensive, data-driven approach that considers a range of key factors:

- **Aeronautical and non-aeronautical growth:** Forecasts account for the expected increase in aviation activity, planned commercial and retail development over the next 5 years, and the broader potential for development over the next 20 years.
- **Decarbonisation goals:** Projections consider BAC's commitment to carbon neutrality, including increased renewable energy use, energy efficiency initiatives and greater reliance on recycled water.
- **Electrification:** The rising use of electric systems—such as ground transport and GSE—has been factored into future demand planning.

This analysis draws on historical consumption data, current usage patterns and strategic growth forecasts. The result is a clear and realistic picture of future utility needs that not only supports operations but also aligns with BAC's long-term sustainability objectives.

Electricity

Energy Queensland serves as the Distribution Network Service Provider for Brisbane Airport, delivering electricity via three 33/11kV main intake substations. Brisbane Airport manages the distribution of this power across the site through an 11kV network, which includes three zone substations, approximately 140 distribution substations, and over 50 km of high-voltage (HV) cable.

To support Brisbane Airport's projected growth and long-term sustainability goals, BAC has established an Electrical Network Development Plan. The Plan is focused on ensuring a reliable, efficient, and future-ready electrical network that can meet increasing demand while integrating sustainable energy solutions.

Forecasts show that the airport's peak energy demand is expected to grow by 20 per cent over the next five years and double by 2045, compared to 2025 levels. Around 40 per cent of this increase is projected to come from non-aeronautical developments.

To address this, a staged program of network upgrades is planned, split across two key phases:

2025–2030: Modernisation and Capacity Building

Goal: Support electrification, improve resilience and expand distribution capacity.

Planned projects:

- Replace ageing critical assets (e.g. T2 high-voltage network upgrades)
- Resolve key contingency constraints (CPA Ring, D20, T1 Southern Concourse, AIP Ring)
- Install 16 new distribution substations to support commercial development
- Trial smart grid and microgrid technologies.

2030–2045: Expansion and Smart Integration

Goal: Increase supply capacity, expand the network, and enhance smart energy management.

Potential projects:

- Establish a new T3 intake substation and upgrade the existing Airport Drive Intake Substation intake
- Install 30 additional distribution substations
- Investigate the deployment of advanced microgrid systems, including 18 MW of solar PV and 12 MW of battery storage (BESS).

This forward-looking approach ensures the electrical network is ready to support Brisbane Airport's growing operations while contributing to its broader sustainability and innovation ambitions.

Services and Utilities

Renewable energy

BAC is progressing a long-term, strategic approach to renewable energy as part of its broader sustainability commitments, outlined in Chapter 4 of this Master Plan. Central to this is a coordinated Solar Strategy, which guides the integration of solar generation within the airport's electrical network. The strategy supports reliable, clean power for airport operations and provides a framework for tenants to adopt their own solar systems in alignment with network planning.

To achieve net zero emissions targets, strengthen energy resilience and ensure sustainable growth, BAC has developed a phased roadmap for renewable energy integration. This plan is underpinned by detailed technical and financial assessments, which inform infrastructure upgrades, ensure network reliability, and support the seamless deployment of large-scale renewable systems.

2025–2030: Accelerating Decarbonisation and Electrification

Goal: Speed up emissions reductions and support electrification in line with net zero goals.

Planned projects:

- Rollout of electric GSE and EV charging stations
- Launch of microgrid pilot programs for localised energy management
- Installation of 10 MW of solar PV and 6 MW of BESS.

2030–2035: Smart Infrastructure and Enhanced Energy Resilience

Goal: Leverage smart technologies and expand energy storage to improve network reliability and flexibility.

Planned projects:

- Installation of an additional 18 MW of solar PV and 12 MW of BESS
- Full integration of resilient, AI-optimised microgrids across key airport precincts.

Beyond 2035: Transformation and Innovation

Goal: Prepare for the next wave of energy technologies to future-proof the airport's energy ecosystem.

Potential projects:

- Integration of hydrogen and sustainable waste-to-energy systems
- Full electrification of aircraft support infrastructure
- Airport-wide rollout of advanced smart grids and microgrids
- Trials of emerging technologies to support long-term innovation.

This energy roadmap positions Brisbane Airport at the forefront of sustainable energy transformation—ensuring it remains a leader in decarbonisation and energy innovation well into the future.

Telecommunications

Brisbane Airport has a complex telecommunications network which services a variety of functions including telephony and data transfer. It also assists in aviation management systems via relationship agreements with Airservices Australia. Brisbane Airport owns and manages an optical fibre infrastructure network to service its own requirements, as well as an extensive duct and access pit network to allow for telecommunications carriers to provide for the needs of their customers.

Telecommunication carriers including Telstra, Optus and Vodafone own and maintain an array of telecommunication towers and antennae and maintain in-ground cables ducts and pits, providing services direct to their business connections.

In addition to the above service providers, NBN operates its own infrastructure. Over time, the goal is for NBN to evolve into the primary wholesale provider. This transition aims to enhance efficiency by significantly reducing the need for other carriers to own their own infrastructure.

To support long-term growth and evolving operational requirements, BAC has completed a telecommunications demand assessment. As major developments progress across terminals, precincts and logistics hubs, demand for high-capacity, low-latency digital connectivity is expected to grow significantly. This demand is being driven by the adoption of smart airport technologies, increased use of data analytics, autonomous systems and enhanced cybersecurity needs. The assessment also considered the future digital requirements of tenants and the broader shift toward a digitally integrated airport environment.

In response, BAC is implementing a Telecommunications Strategy focused on expanding optical fibre capacity and upgrading duct infrastructure to deliver a scalable, resilient and future-ready network.

2025–2030: Strengthening Resilience and Expanding Coverage

Planned projects:

- Migration of substations and pump stations from legacy systems to the upgraded BAC optical fibre network
- Creation of alternative network pathways to improve redundancy (e.g., Pandanus and Aerotech Park corridors)
- Expansion of telecommunications infrastructure across Airport Central and the Airport Industrial Park precincts.

2030–2045: Enabling Major Expansion and Digital Integration

Potential projects:

- Network upgrades to support future terminal development and associated precinct developments
- Continued rollout of telecommunications infrastructure across Aerotech Park and Airport Industrial Park precincts
- This staged approach ensures Brisbane Airport remains digitally capable and adaptable—supporting operational efficiency, future innovation, and enhanced service delivery as the airport continues to grow.

Water supply

Brisbane Airport's potable water network, supplied by Urban Utilities, consists of an extensive system of pipes, valves and a water quality management facility. Network development efforts prioritise effectively managing demand, maintaining high water quality standards, and ensuring sufficient fire flow capacities throughout the system.

Aiming to reduce potable water consumption, Brisbane Airport has established and continues to expand a recycled water network. This network primarily serves irrigation, cooling towers, and construction activities. The recycled water is sourced mainly from Urban Utilities, supplemented by airport rainwater harvesting systems, including the Skygate lakes. These lakes enhance the recycled water supply, supporting on-airport projects and further reducing reliance on potable water.

To support Brisbane Airport's long-term growth and maintain the resilience of its potable water network, a comprehensive demand forecasting process has been completed. This process analysed historical water usage patterns and applied standard unit demand rates (L/m^2/day) across different land uses to project water needs through to 2045.

The forecast considered both aeronautical and non-aeronautical developments, projected passenger growth, and the dual role of the potable water network in supplying general use and firefighting systems. Climate change factors were also incorporated to ensure the network is future-proofed and resilient under changing conditions.

Potable water demand is projected to increase from 2.3 ML/day in 2025 to 3.6 ML/day by 2030, reaching 7 ML/day by 2045. Currently, non-aeronautical developments account for 65 per cent of water consumption, but this proportion is expected to decline to below 60 per cent by 2045 as aeronautical activity increases.

To meet this growing demand and maintain service reliability and emergency response capabilities, BAC has developed a staged infrastructure augmentation plan.

2025–2030: Enhancing Resilience and Firefighting Capacity

Planned projects:

- Upgrades to key mains to increase network redundancy and support firefighting systems
- Planned works include:
- Pandanus Drive main upgrade
- Perimeter Road to Qantas Drive main
- Chloris Street & Hibiscus Street main upgrade along Airport Drive.

2030–2035: Expanding Capacity and Extending the Network

Potential projects:

- Increasing supply capacity and extending distribution to support new development and improve water quality
- Sugarmill Road supply upgrade
- New main along Boronia Road (corner of Lomandra Drive & Boronia Road)
- Connection from Perimeter Road to Boronia Drive
- Connection from Nancy Bird Way to Moreton Drive.

This staged approach ensures Brisbane Airport's potable water network remains robust, capable of supporting future growth and compliant with safety and operational standards well into the future.

Services and Utilities

Sewerage

As part of the sewerage services, Brisbane Airport oversees both the on-airport sewerage system and the discharge of trade waste from airport businesses to the off-airport sewerage network.

The on-airport system combines gravity sewers and rising mains, supported by a network of pump stations, with connections to the off-airport system at four key locations:

- Airport Drive (via Nudgee Road)
- Viola Place
- Lomandra Drive (via Serpentine Road)
- Pandanus Avenue (via Luggage Point).

This multi-connection strategy ensures operational redundancy, allowing sewer flows to be rerouted in the event of line or pump station failure.

Future sewage flows were forecast by applying a Return to Sewer rate to projected potable and recycled water demand. Average Dry Weather Flow (ADWF) is expected to increase from 1.9 ML/day in 2025 to 2.9 ML/day in 2030 and reach 5.7 ML/day by 2045. While non-aeronautical users currently account for 62 per cent of total discharge, their share is projected to decrease to 55 per cent by 2045, reflecting the growth of aeronautical activity.

To accommodate future growth and enhance system reliability, a staged sewer network upgrade plan has been developed. The strategy focuses on extending the collection system, replacing aging infrastructure, improving trade waste compliance, and increasing discharge capacity.

2025–2030: Collection System Expansion & Trade Waste Compliance

Planned projects:

- Pandanus catchment upgrade
- Expansion of Aerotech Park network (Airport Industrial Park precinct pump stations and collection system)
- Airport Central collection system improvements.

2030–2045: Discharge Capacity Augmentation & Aeronautical Support

Potential projects:

- Upgrades to discharge points with Urban Utilities
- Replacement of the SPS A rising main to Luggage Point
- Upgrade of SPS A pump station.

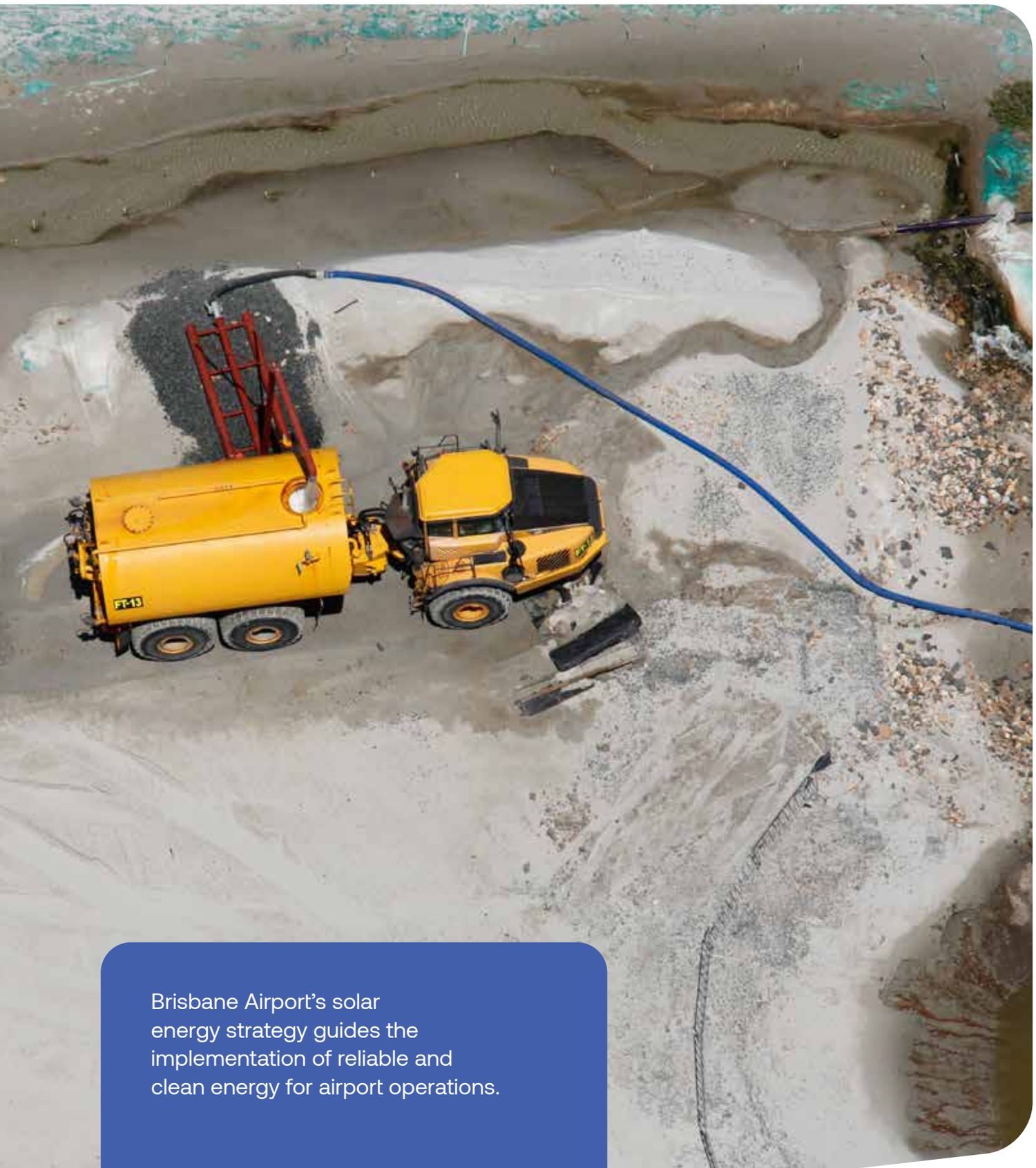
This forward-looking approach ensures Brisbane Airport's sewerage infrastructure will continue to meet operational needs, environmental standards, and the demands of future development.

Gas

Liquid petroleum gas (LPG) is delivered to Brisbane Airport by tanker and stored in strategically located tanks across the airport. It is primarily used to support catering/food retail facilities and with ownership of the tanks shared between Brisbane Airport and tenants.

LPG supply is managed through regular refill scheduling based on usage patterns. To accommodate future developments and ensure continued reliability, Brisbane Airport is proactively planning and implementing additional storage capacities, where required.

As part of its commitment to achieving zero emissions targets, BAC is planning a phased transition from gas to electricity across its operations. While a short-term increase in gas usage may occur due to interim operational requirements, the long-term strategy is to progressively reduce gas consumption to zero, replacing it entirely with electric alternatives.



Brisbane Airport's solar energy strategy guides the implementation of reliable and clean energy for airport operations.