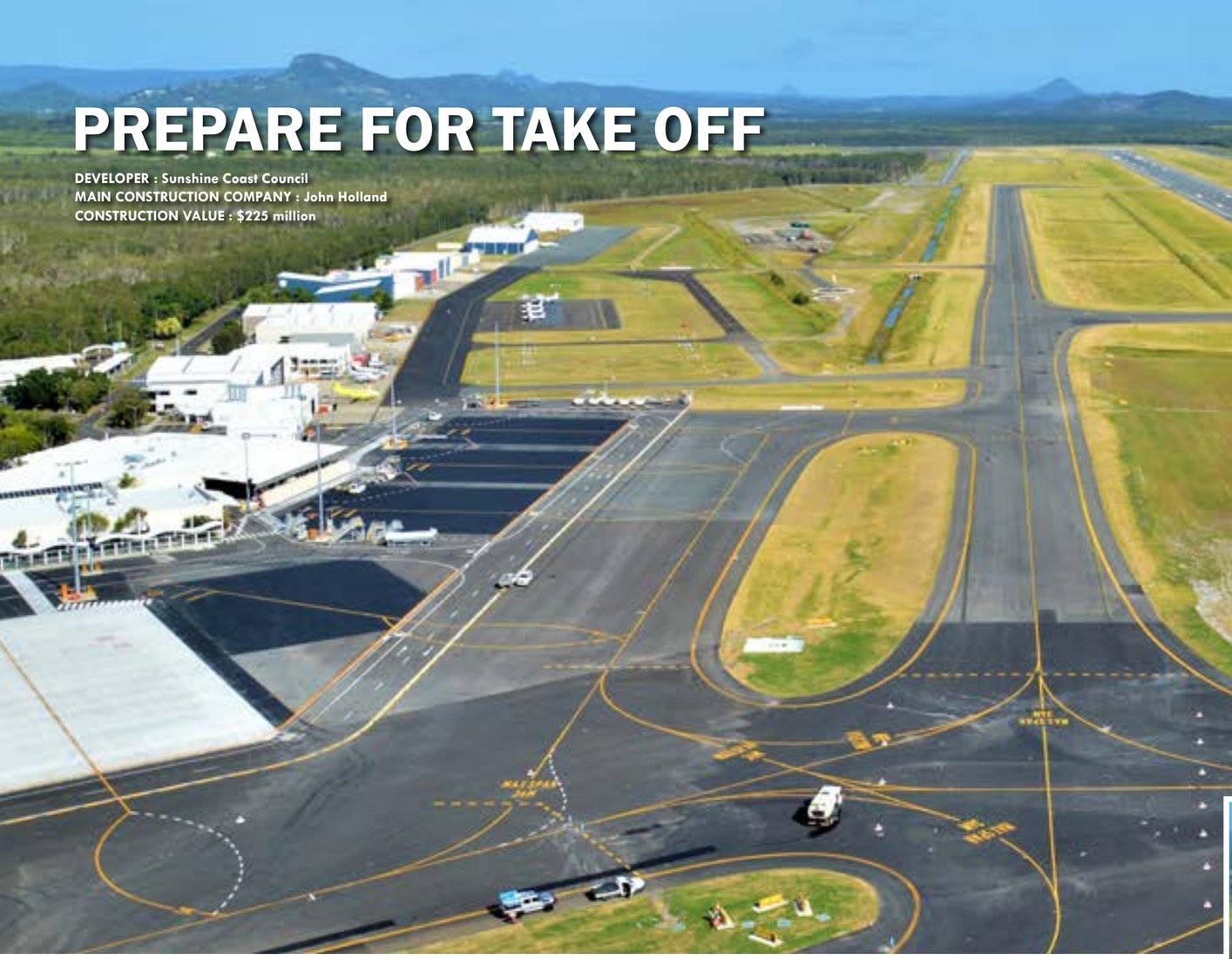
PREPARE FOR TAKE OFF

DEVELOPER : Sunshine Coast Council
MAIN CONSTRUCTION COMPANY : John Holland
CONSTRUCTION VALUE : $225 million



The Sunshine Coast Airport Expansion includes the construction of a new wider and longer runway with better alignment to accommodate larger, more fuel efficient aircraft, an airfield taxiway system, and an expanded apron and conservation corridor to ensure safe passage for wildlife.

An exciting transformation has been undertaken at the Sunshine Coast Airport, with a new runway and associated infrastructure set to unlock international travel destinations and economic opportunities for decades to come.

To address landing challenges associated with the narrow 30m wide, 1,800m north-south runway, a new runway was constructed with a length of 2,450m and width of 45m which will allow most types of aircraft including the Airbus A350 and B787 Dreamliner to operate fully loaded with no constraints. The northwest-southeast orientation will also reduce the effect of crosswinds.

"Maintaining an operating airport throughout the project was a challenge," said Ross Ullman, Project Director. "We did the work in 10 phases to minimise disruption and every issue was thought through, planned and assessed from every angle."

"Most of the early works were completed before COVID-19 affected us," Ross continued. "The lower aircraft traffic helped but labour availability was challenging as the workforce needed to be continuously available onsite."

To raise the runway above the flood risk level a sand embankment was constructed. Marine sand was pumped onshore through a 4.5km long pipe with a delivery capacity of 30,000m^3 of sand per day.

Sand delivery works had to be completed in a narrow window between the sea turtle nesting season which runs from November until March. Environmental regulatory approvals were also required to protect the pristine natural environment of the adjacent national park.

An HDPE liner and bund were installed to prevent sand and salt from entering the surrounding areas. Significant dewatering was required during the works to remove rainwater from the bunded area. A water treatment plant also had to be constructed onsite to remove residual concentrations of PFAS firefighting foam from the soil and prevent it from entering the groundwater.

The runway was designed to accommodate heavy aircraft and comprises a 690mm deep pavement consisting of 105mm asphalt on top of 585mm of fine crushed rock. The runway surface itself is state-of-the-art and is the first in Queensland to incorporate trapezoidal grooving, a new technology to enable material to leave the runway surface smoothly without negative effects from hot weather.

Another key innovation on the project was the fabrication of a new Marco Roller which tests the runway pavement by simulating aircraft movements. The roller was fabricated with higher tyre pressure than any other in Australia in order to provide the most accurate simulation possible.

The airport is one of the few local government owned airports in Australia and to fund the project the Sunshine Coast council negotiated a 99-year lease which is projected to deliver $600 million in funds for a $330 million project cost, achieving a positive outcome for ratepayers.

The project has been completed during an exciting time for the Sunshine Coast which is also being transformed by major investments including a brand new greenfield city centre and incoming submarine cable. "The major infrastructure development underway here meant we really needed an airport with international capability," said Ross. "This is a real landmark project for the Sunshine Coast."

The success of the project has resulted in it being awarded Best Project of the Year for 2020 by the Institute of Public Works Engineering Australasia (Queensland Branch) and it will be up for national consideration in 2021.

For more information contact Sunshine Coast Council, website www.sunshinecoast.qld.gov.au

AT HOME AMONG THE TREES

Biodiverse Environmental is a Queensland based consultancy specialising in environmental and ecological management. With a diverse range of skills in their team, they pride themselves on their ability to innovate and solve challenging problems.

Biodiverse Environmental developed the Flora and Fauna Management Plan for the Sunshine Coast Airport Expansion project. This provided strategies to minimise the impact on flora and fauna of vegetation trimming within the new runway's Obstacle Limitation Surface (OLS).

As part of their works, Biodiverse Environmental conducted pre-trimming ecological surveys to determine the health of the affected vegetation. They conducted onsite monitoring to ensure all requirements were met and adverse impacts on the existing flora and fauna were minimised.

Biodiverse Environmental conducted a Bushfire Hazard Assessment to determine whether any increase in bushfire hazard was expected due to the works. They are also preparing a Regeneration Works Plan to help improve the ecological health of the site in the long term.

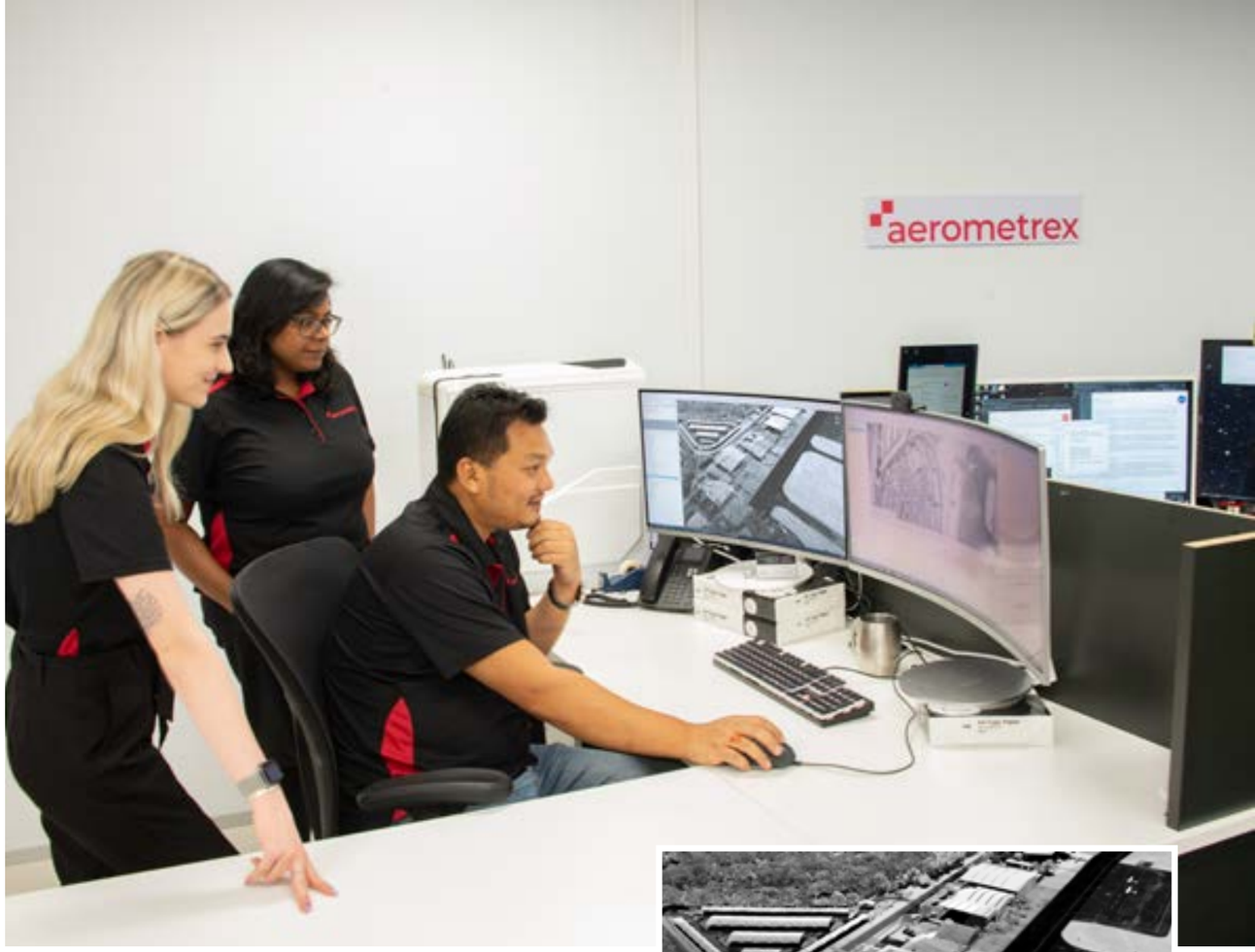
The project was quite unique, involving extensive works over challenging terrain. "We carefully designed the data collection to capture useful information for long term monitoring and analysis over such a large area," said Liam Pratt, Director.

Biodiverse Environmental's services include land management, bushfire hazard assessment and planning, development assessment and planning, erosion and sediment control, bush regeneration and weed management, as well as development of Construction Environmental Management Plans, environmental monitoring and auditing, Fauna Spotter Catching, and threatened species management. Biodiverse Environmental operate under an interactive digital work health and safety management system.

As part of an ongoing commitment to innovation, Biodiverse Environmental have also recently invested in new drone technology to offer thermal image aerial surveys for fauna and environmental surveying and management.

The personal and professional approach offered by Biodiverse Environmental is reflected in the level of repeat business they receive from satisfied clients including energy and infrastructure providers, private clients, local governments, developers and contractors. Their goal is to find solutions that meet their client's needs while conserving and sustaining our natural areas for future generations to enjoy.

For more information contact Biodiverse Environmental, phone 0408 011 584, email admin@biodiverse-environmental.com.au, website www.biodiverse-environmental.



A BIRDS EYE VIEW

Aerometrex specialises in aerial photography, LiDAR (Light Detection and Ranging), and 3D modelling via aircraft and helicopter. Since commencing operation in 1980, the company has grown steadily to employ more than 100 staff and is at the cutting edge of aerial surveying technology.

Aerometrex conducted five LiDAR surveys over Sunshine Coast Airport between 2018 and 2020 to provide an accurate ground surface model supported by high resolution imagery (5cm/pixel) to enable construction progress to be monitored.

In order to achieve a sufficiently high LiDAR point density each survey required eight runs at a height of 450m. Completing the surveys over an operational airport presented some challenges.

"Whenever a commercial aircraft was due to land we had to stay in a holding pattern away from the site until it was safe," said Ralph Lante, General Manager – LiDAR. "The other main challenge is always weather. Despite these challenges, due to the urgency of the surveys we were often able to fly in the morning and deliver data by the afternoon."

With a key office in Buderim, Aerometrex are local to the Sunshine Coast which was an advantage. "While we have been doing LiDAR projects across Australia for more than a decade, this job was only 10km from our office," said Ralph. "This meant we could hold face-to-face meetings with the client which was really great."

The LiDAR services offered by Aerometrex are used extensively by many sectors including forestry, road, rail and powerlines, mining, renewables, urban development and resource management.

Aerometrex have built a strong international reputation based on their ethos of providing exemplary customer service and the best range of products available on the market. Their long operating history and highly experienced workforce are key strengths and has established Aerometrex as a leading supplier to governments and private companies globally.

For more information contact Aerometrex, Unit 4, 99 Burnett Street, Buderim QLD 4556, phone 07 5445 2655, website www.aerometrex.com.au

SOLID FOUNDATIONS

Locally based company Byrne Civil Projects were engaged to provide specialist plant equipment and operators for the ambitious expansion, including the formation of a new 2,450m long runway.

The main focus of Byrne Civil Projects' role was forming a suitable substrate for the runway. Sand was first pumped into place and then compacted by graders. The company provided three graders ranging from 30 to 45 tonnes, as well as several Moxy dump trucks and utes. Using GPS systems the runway substrate was precisely formed to within 1-5mm of the engineer's design.

Photo by Toni Te Amo

Photo by Toni Te Amo

Works onsite proceeded smoothly throughout the project. "We put COVID-19 precautions in place but we were lucky that it didn't really affect us," said Greg Pedersen, Plant Manager. "Mother Nature can also throw curveballs in terms of weather but she was kind to us this time!"

The project was helped by the healthy relationship formed with main contractor John Holland during the works. "John Holland are fantastic to work with," Greg said. "They are efficient and professional which we like because it makes us work efficiently and professionally too!"

Formed in 2013, Byrne Civil Projects specialises in civil construction for roads, utilities and pipelines. They are a proud family business with inhouse heavy haulage and tilt tray operations giving them the ability to service clients nationwide.

"The Byrne family name is treated with respect," said Craig McDougal, WHS Manager. "It helps us deliver every project to the highest quality. As an ISO accredited business we also take safety and sustainability into consideration on every project."

"Everyone in the company strives for the best customer service," added Greg. "With 70 to 75 pieces of plant in stock we aim to be a one-stop-shop that is agile to meet our client's needs."

For more information contact Byrne Civil Projects, 34 Paulger Flat Road, Yandina QLD 4561, phone 07 5446 7610, website www.byrnecivilprojects.com.au

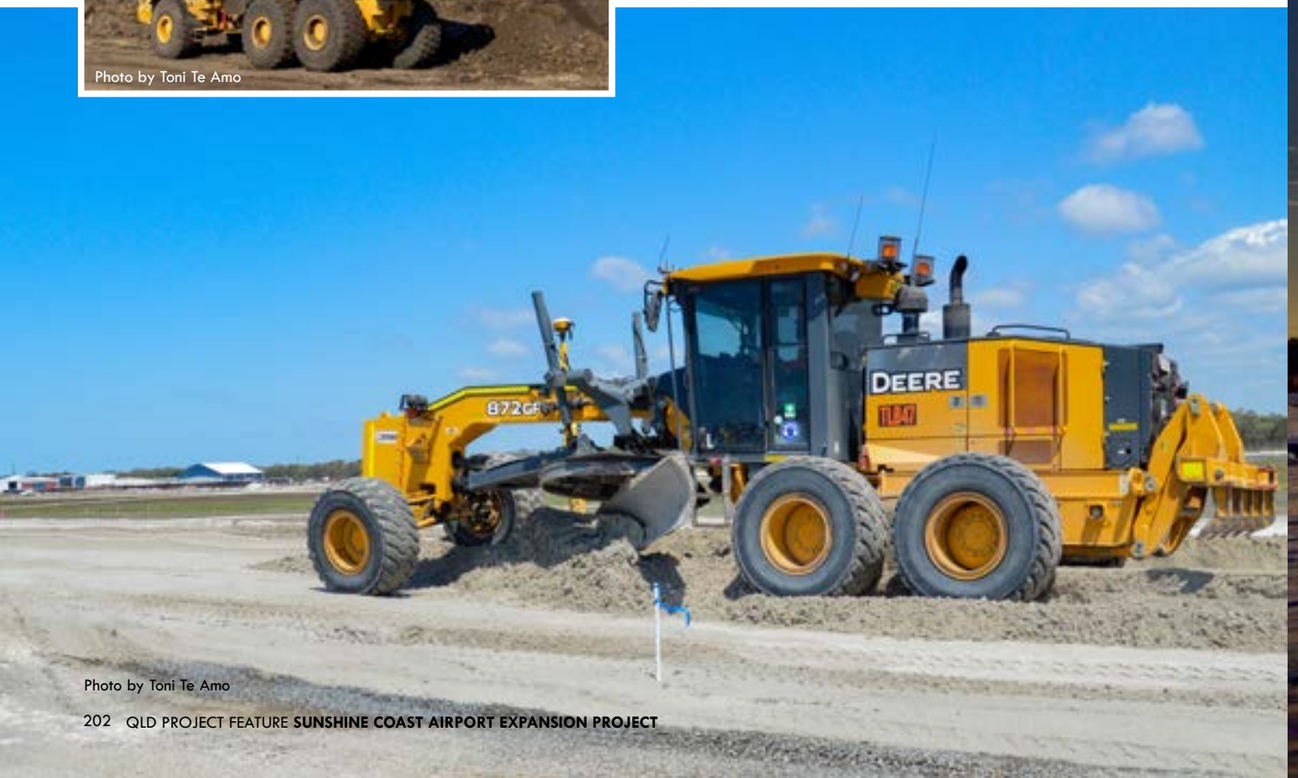


Photo by Toni Te Amo

ROLLING ON OUT

The Sunshine Coast Airport Expansion Project will enable the airport to support the region's growth for generations to come.

The airport runway construction required approximately 1.1 million cubic metres of dredge reclamation from the Moreton Bay region that required containment in a reclamation bund to prevent salt water contaminating the ground water. The bund area was approximately 35 hectare (350,000m^2) in size and was to be lined with a HDPE liner. As a national company with over 20 years experience in large scale geosynthetic installation projects, Jaylon was contracted by John Holland to supply and install the liner.

The 1.0mm thick HDPE liner arrived onsite in large rolls, 8m wide, weighing 1.6 tonnes and when unrolled 210m long. Jaylon's installation team consisting of a crew of 18 unrolled the material and welded the material using electronic wedge welders. The welder's sophisticated electronics monitor the wedge temperature, its speed and roller pressure to ensure optimum welding efficiency. These welders effectively melt and then seal the material, forming a bond as strong as the material itself. The material seal is comprehensively tested onsite with weld samples assessed by an external independent laboratory to ensure compliance with Australian Standards. An independent electronic leak detection survey was also undertaken to ensure the liner was leak free.

To ensure all welds meet the required international standards the HDPE must be dry and welded in conditions free of surface water. The projects close proximity to the water table, required a unique solution. "The main contractor John Holland, had a dewatering programme, and this together with some innovations from Jaylon using geotextiles and manually built up bunds, we were able to manage the water and ensure the HDPE remained dry for the welding operation," said Alan Liebeck, Business Development Manager.

Founded in Western Australia in 1947 as a plastics fabricator, Jaylon has grown to a diversified business with a nationwide presence, including a regional office in Brisbane. The company also fabricate flexible membranes and their wide range of containment materials allows it to supply targeted solutions to meet their clients' needs. They also supply a diverse range of sheet plastics for agriculture, packaging, healthcare and other applications.

With a reputation for innovation and quality forged over decades, Jaylon is the preferred partner to small and large clients in many industries.

For more information contact Jaylon Pacific, phone 07 3881 1904, email jaypac@jaylon.com.au, website www.jaylon.com.au