CASE STUDY: Aviation

Key Project Elements

- High-speed laser & visual survey
- Heavy weight deflectometer
- Geotechnical investigation
- Ground penetrating radar

Client Requirements

Moree Plains Shire Council (MPSC) needed a functional and structural evaluation of the Moree Runway pavement, to satisfy safety CASA requirements regarding the condition of the pavement. CASA had issued findings regarding pavement irregularities and settlement deformation, loss of frictional characteristics of the pavement and poor ride quality. The pavement area is 97,000 sqm.

Objectives

- Assess the functional and structural condition of runway 01/19.
- Identify areas of poor performance.
- Recommend rehabilitation/treatment options to rectify.
- Provide a provisional pavement design considering the possibilities of a future expansion of the airport to carry the larger Dash 8 series 400.

Photo by Aviation Projects

MOREE PLAINS SHIRE COUNCIL MOREE RUNWAY

Jul –Dec 2018

Methodology

- Heavy Weight Deflectometer (HWD) testing.
- High-speed laser and visual surveying.
- Ground Penetrating Radar (GPR) surveying.
- Geotechnical investigation including laboratory testing.

Outputs

- Pavement Condition Index (PCI).
- Quantification of pavement cracking and subsurface crack sealing.
- Indication of extent and severity of environmental movements.
- Locations and extents of areas susceptible to subgrade movements.
- Estimations of remaining life for each area of the runway.
- Pavement designs for rectification works and potential expansion of runway.

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Recommendations Provided

PMS provided the Client with a set of clear options for pavement rectification, allowing them to select which suited their business parameters for implementation.

- Option 1 – Minimum requirements – heavy patching.
- Option 2 – Address functional issues – in situ milling and reforming.
- Option 3 – Fixing seal/surface anomalies – mill and reseal.
- Option 4 – Structural improvement – asphalt overlay.
- Option 5 – New granular pavement on natural subgrade – airport expansion/upgrade

Asphalt overlays were also considered to rectify pavement surface irregularities in lieu of milling and reforming with added benefit of strength and maximum allowable tyre pressure improvements.

Benefits to Client

- Surface irregularities which were caused by crack sealing, were corrected, which then reduced the instances of water ponding. Hence potential for aircraft to 'aqua plane' is reduced.
- CASA requirements for serviceability were met.
- Ability to forward plan pavement replacement based on calculations of remaining pavement life.
- Clear options to consider for rectification of specific defects, with options allowing staged repairs to suit business parameters.
- A clear comparison of asset specifications versus the performance requirements, to feed into the development of a forward programme of works.

Risk Management

Our assessment assisted Moree Plains Shire Council to reduce the risk of unexpected repair costs, by identifying the asset areas most likely to require attention in the near future – which could then be taken into account in any maintenance activities.

Future Runways

- The detailed analysis performed by PMS allows us to provide the Client with recommendations for pavement materials, treatment options and future airport pavement expansions.
- PMS prepared a detailed asset depiction, which can be fed into asset management and maintenance plans for the Client.
- Note that PMS undertook this assessment using Aircraft Classification Rating (ACR) and Pavement Classification Rating (PCR) techniques, in anticipation of and in accordance with, the changes to Annex 14 – Aerodromes, Volume I – Aerodrome Design and Operations and Procedures for Air Navigation Services (PANS) - Aerodromes (Doc 9981).