Bay of Islands Airport
Apron and Taxiway Upgrade
Construction Constraints and Challenges

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Downer Graduate Engineer
Facts about Kerikeri

- Part of the Bay of Islands
- Near Waitangi
- Tourist attraction
- Commuters from Auckland Airport
- Local Airport – 4 to 5 flights per day

Airport upgrade - Increase in air traffic growth
Bay of Islands Airport: Apron and Taxiway Upgrade

Construction dates: October 2014 – March 2015
Client: Far North Holding Limited
Contract value: $1.9M (measure and value)
Position: Graduate Site Engineer

Project objectives:

- Increase space for aircraft and helicopter parking
- Increase strength of pavement to withstand larger aircraft
- Upgrade and future-proof underground utilities to handle aircraft loading
Existing Airport Layout

- Terminal Building
- Existing Apron: Area = 3000m²
- Existing Taxiway: Area = 1500m²
- Runway
Project Scope

Main scope of work:
- Construct a new apron stand and temporary taxiway
- Upgrade of the existing apron stand and taxiway
- Upgrade the refuelling apron

Other works:
- Upgrade existing stormwater systems
- Upgrade existing underground electrical ducting
- Realignment of a new access road to hangers
New Airport Layout

Terminal building

Area = 2000m²

New Area = 6000m²

Area = 1200m²

Runway
Key Challenges and Constraints

Construction around a live operational airport
- Minimise disruption to airport operations
- Follow airport Health and Safety protocols

Scope change and programme risk
- Scope of work was continuously changing
- Strong focus to complete construction of the apron and taxiway by Waitangi Day
Construction Methodology

Construction around a live operational airport

- Staging the works to allow the airport to remain operational
- Day and night shift operations
Stage 1 (Day Shift)

Scope of work
- Construct a new apron stand
- Upgrade existing stormwater pipes

Health and Safety
- Maintain a 75m safety zone from runway

Airport operations
- Used existing apron and taxiway for normal operations
Subgrade Stabilisation

Asphaltic Concrete

Granular Subbase and Basecourse

Lime and Cement Stabilised Subgrade

50mm

300mm

200mm
Stage 2 (Night Shift)

Scope of work
- Construct a temporary taxiway
- Upgrade existing stormwater pipes

Health and Safety
- Night shift operation
- Working within the 75m safety zone

Pavement Profile:

<table>
<thead>
<tr>
<th>Chipseal</th>
<th>250mm</th>
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<tbody>
<tr>
<td>Granular Subbase and Basecourse</td>
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</tbody>
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Existing apron and taxiway

Stage 2

Runway

75m safety zone
Planning Meeting
Stage 3 (Day Shift)

Scope of work
- Full demolition of existing pavement
- Reconstruct a new apron stand and refuelling apron

Airport operations
- Used existing apron and taxiway for normal operations

Pavement Profile:

<table>
<thead>
<tr>
<th>Layer</th>
<th>Depth</th>
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<td>Asphalitic Concrete</td>
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</tbody>
</table>
Stage 4 (Night Shift)

Scope of work
- Full demolition of existing pavement
- Reconstruct a new taxiway
- Upgrade existing stormwater pipes

Health and Safety
- Night shift operation
- Working within the 75m Safety zone
Scope Change

Additional works

- New power ducting
- Increase in earthworks quantity
- Increase in taxiway size

Risk to programme

- Deadline to complete construction by Waitangi Day
Project Success

- Completed construction of the apron and taxiway by Waitangi Day
- Maintained airport operations with minimal disruptions
- Zero Lost Time Injuries
Learning Outcomes

- Understanding the clients requirements
- Planning and contingencies
- Communication and Teamwork
Thank you