

Report

# Whangarei District Airport Strategic Review Phase PN1 – Port Nikau Assessment

**Prepared for Whangarei District Council (Client)**

**By Beca Ltd (Beca)**

08 December 2014



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## Revision History

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A	Rick Pemberton	Rev A - Draft Document	14 Nov 2014
1	Rick Pemberton	Rev 1 - Final	1 Dec 2014
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## Document Acceptance

Action	Name	Signed	Date
Prepared by	Rick Pemberton		14 Nov 2014
Reviewed by	Dennis Hoskin Tristan Hughes		14 Nov 2014
Approved by	Graeme Roberts		08 Dec 2014
on behalf of	Beca Ltd		

## Executive Summary

The overall objective the Whangarei District Airport Strategic Review is to ensure that the District has an aerodrome facility that is capable of meeting the long term needs (30 to 50 years) of its users.

The objective of this phase of the Strategic Review (Phase PN1) is to evaluate the potential of the Port Nikau site to provide an alternative location for an aerodrome. A decision before the WDC, which this study is to inform, is whether or not to take positive steps to secure the Port Nikau site for possible development as an aerodrome.

There are several factors which make the Port Nikau site an attractive location for the establishment of a new aerodrome including:

- proximity to the Whangarei CBD;
- the undeveloped and/or industrial nature of the existing site and immediately adjacent areas; and,
- a potential reclamation area for the construction of a 1,800m long runway with associated compliant runway strip and RESA areas.

With respect to obtaining a designation (in the District Plan) and the necessary regional consents for the construction of an aerodrome in this area there are some significant issues which would require addressing. In particular the potential:

- effects on the coastal marine area from reclamation;
- effects on mana whenua and mana moana values and sites; and
- noise effects on existing residential areas and/ or areas proposed for urban growth.

Based on the findings of this study, we do not believe that these planning and consenting issues present 'fatal flaws' which would prevent further investigation of the Port Nikau site as an option for a new airport.

However, assessment of this site has also indicated that there are significant issues relating to:

- the cost to develop the site; and,
- terrain penetrations of the obstacle surfaces.

With respect to the total rough order cost estimate of **\$148 Million** to develop this site to accommodate an 1,800m runway (Refer to Figure ES1 and Drawing 3232530-CE-K013 in Section 5.4 of this report), the component cost of reclamation is **\$46 Million** that would not be incurred on a site where sufficient land exists for the full runway platform.

In assessing the obstacle surfaces it is apparent that the surrounding terrain places significant constraints on the ability to develop the Port Nikau Site into an airport with an acceptable operational availability. Aircraft operations, particularly landing on what would be the predominant runway direction, Runway 22, would not be permitted during night time and subject to restrictions during low-visibility (IFR<sup>1</sup>) daytime conditions (ie heavy rain and/or low cloud).

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<sup>1</sup> IFR = Instrument Flight Rules

As noted in this report RNP(AR)<sup>2</sup> approach procedures could facilitate greater operational availability, however existing turboprop aircraft including the new ATR 72-600 do not currently have this capability. Additional more detailed assessments would be required to determine an exact usability factor of the site however we are confident that it would be less than the recommended ICAO<sup>3</sup> figure of 95% given that landing operations to the South-West on Runway 22 are the most effected operations and this coincides with the prevailing wind direction.

The suitability of other potential aerodrome sites in the district will be evaluated in future phases of the Strategic Review. It is therefore not immediately apparent at this time if more suitable site(s) are available. It is however evident that this site is flawed from an operational point of view and that the bar for finding a more operationally suitable site is relatively low in consideration of this single issue.

## Recommendation

The establishment of a new aerodrome at the Port Nikau site has serious flaws, due to the terrain penetrations of the obstacle surfaces and the costs associated with land reclamation which should preclude it from being considered in the next stage of the Whangarei District Airport Review. However, if other sites also have similar flaws and there are no clearly superior options identified during the future phases of the Strategic Review, then the Port Nikau option should be re-evaluated against the alternative site(s).



Figure ES1 – Proposed Port Nikau Site with an 1800m runway

<sup>2</sup> RNP(AR) = Required Navigation Performance (Authorisation Required)

<sup>3</sup> ICAO = International Civil Aviation Authority

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## Appendices

### Appendix A - Acronyms

# 1 Background

## 1.1 Introduction

The existing Whangarei District Airport is located on the Onerahi peninsula some 9 kilometres from the Whangarei central business district (CBD). It is a domestic airport used for both private and commercial flights and accommodates daily scheduled flights by Air New Zealand Link and occasional flights by smaller operators. There are also training facilities, a heliport and a range of private hangars and buildings.

The ownership and operation of Whangarei Airport (WA) is currently undertaken as a joint venture between the New Zealand Government and the Whangarei District Council (WDC). The joint venture is a Council Controlled Organisation with WDC fulfilling both the board and shareholder roles. This covers the provision, maintenance, and operation of the land and facilities, including the runway and terminal buildings. WDC owns the terminal facilities, the runways are in joint ownership (50% WDC and 50% Crown) and the Crown retains ultimate ownership of the underlying land.

The provision of airport infrastructure is essential to support the growth and economic development of the Whangarei District and the wider Northland Region. Master Planning provides the necessary framework to ensure that infrastructure development is undertaken in a timely and considered manner without compromising future development of essential airport facilities. The last Master Plan update was prepared in 1999 and included a desktop analysis of possible alternative airport locations.

The recommendations of 1999 report included that *“The primary air transport facility for the Whangarei District should remain at the existing Onerahi Peninsula site for the foreseeable future”*. Since the 1999 Master Plan was prepared there have been a number of developments that make it appropriate to undertake a review of the airport operation to re-validate, or otherwise, this recommendation. In particular the sustainability of the Onerahi airport site needs to be evaluated in consideration of recent and pending changes to the Civil Aviation Authority (CAA) Rules, the current regional airline operating environment and the anticipated development of the Air New Zealand regional aircraft fleet.

WDC commissioned Beca in early September 2014 to undertake the “Whangarei District Airport Strategic Review” to be delivered in a series of phased studies to provide advice to “ensure that the Whangarei District has an airport that is capable of meeting the long term needs (30 to 50 years) of its users and the District.” The Phase 1 report “Whangarei Airport (Onerahi) Assessment” was completed in mid-November 2014. This report is the second of the Strategic Review and is designated “Phase PN1”.

As part of this commission, it will be necessary to investigate aircraft performance and navigational procedural design issues and Beca has retained the services of Dennis Hoskin of Hoskin Consulting Ltd. to provide this specialist input.

## 1.2 Phase PN1 Study Objectives

This is the second stage of Phase 1 of the Whangarei District Airport Strategic Review and was preceded by the Phase 1 study. Phase 1 of the Strategic Study examined the existing aerodrome infrastructure and operations at the current Onerahi site and the potential of this site to expand to meet future aviation requirements. The Phase 1 Study was submitted in October 2014 and concluded that

*“.....the prohibitive costs and risks noted above outweigh any benefit to remaining at the current Onerahi site beyond a 15 years period.”*

The objective of Phase PN1 is to establish the feasibility of Port Nikau as a potential site for inclusion in the next phase "Alternative Airport Site Identification". This will enable the WDC to make an informed decision as to the requirement to negotiate an agreement with the current Port Nikau land owner to secure the option of relocating the aerodrome to the Port Nikau site.

More specifically this study will investigate the suitability of the Port Nikau Site by:

- Outlining the requirements of “green-field” aerodrome facilities to services the Whangarei District for the next 30-50 years.
- Assessing the existing physical and likely operational restrictions at the site.
- Assessing the environmental and planning constraints associated with developing the site.
- Assess the engineering potential to establish aerodrome facilities at the site and identify major areas of cost and risks.

## 1.3 Northland Regional Development Context

The Northland Region includes three regional airports that are serviced by Air New Zealand – Whangarei, Kerikeri and Kaitiā<sup>4</sup>. There are also airfields located at Dargaville and Kaikohe.

The region is currently served by a regional council and three district councils. The Local Government Commission is currently considering a proposal to reform the existing structure of Councils in Northland. The Commission’s draft proposal, which was issued in November 2013, was for the formation of one local authority for Northland, to be known as the “Northland Council”<sup>5</sup>. The hearings on this proposal were held in April 2014 and the Commission is now analysing the information received.

The 30 Year Transport Strategy for Northland provides the current direction from the Northland Regional Council on air travel. More discussion on this strategy document is contained in Section 3.2 of this report.

The potential amalgamation of the Northland region’s local authorities may affect the provision and funding of the airports in the region in the future and would logically raise the question of the suitability of one of the existing airports, or a new airport to serve as a “Regional Airport”.

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<sup>4</sup> Air New Zealand announced on 12 November 2014 that services to Kaitiā would cease in April 2015.

<sup>5</sup> It would be a unitary authority combining the functions of district councils and the regional council.

The consideration of the location and facility requirements for a Regional Airport is outside of the current Strategic Study scope. Nonetheless many of the infrastructure elements discussed in this report will find similar application in a regional airport facility.

## 1.4 ICAO Aircraft Reference Code

The International Civil Aviation Organisation (ICAO) aircraft reference code classification system, which is referenced throughout this report, is shown in Table 1.1. The reference code groups aircraft by wingspan and main gear span, and runway by field length for the purpose of specifying required and recommended aerodrome infrastructure characteristics (ie. runway and strip configuration, aircraft manoeuvring clearances etc.) for safe operations.

**Table 1-1. Aerodrome reference code**  
(see 1.7.2 to 1.7.4)

Code number (1)	Code element 1		Code element 2	
	Aeroplane reference field length (2)	Code letter (3)	Wingspan (4)	Outer main gear wheel span* (5)
1	Less than 800 m	A	Up to but not including 15 m	Up to but not including 4.5 m
2	800 m up to but not including 1 200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1 200 m up to but not including 1 800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1 800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m
		F	65 m up to but not including 80 m	14 m up to but not including 16 m

a. Distance between the outside edges of the main gear wheels.

**Table 1.1 - ICAO Aircraft Reference Codes**

Typical aircraft types currently operated in New Zealand classified by the ICAO aeroplane code are shown in Table 1.2 below.

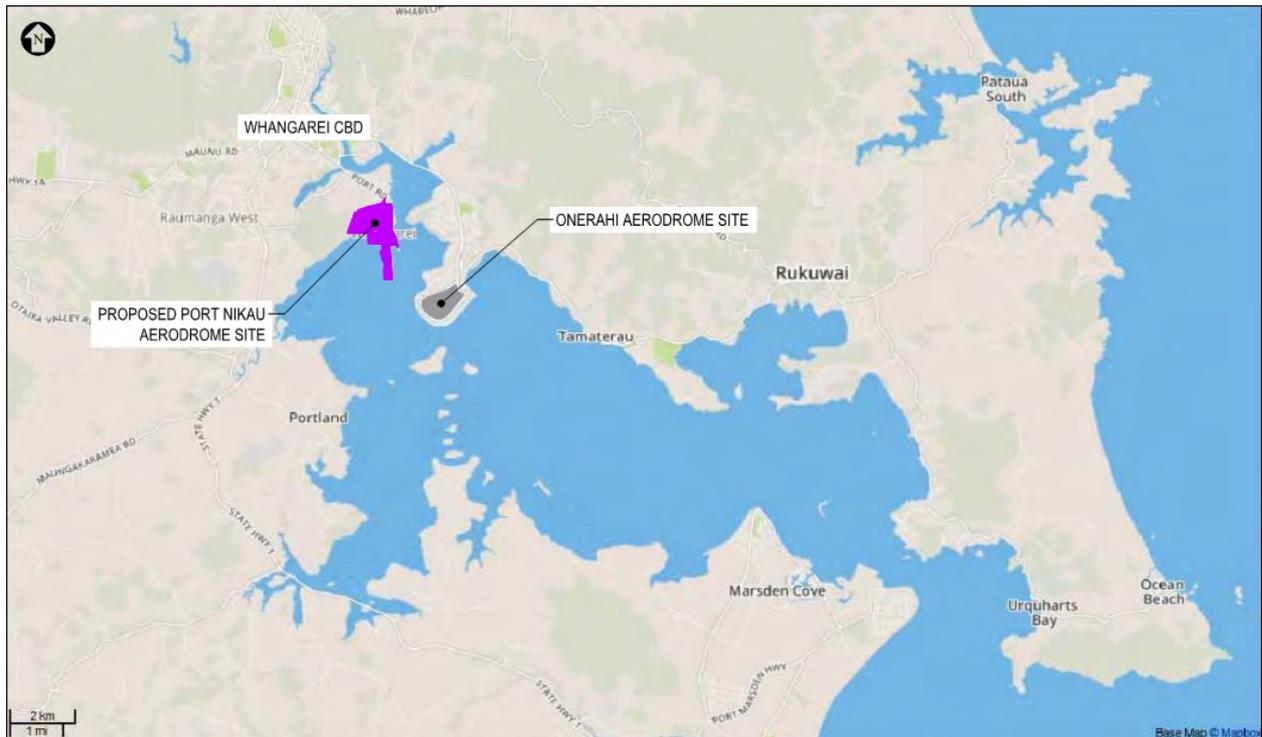
Aircraft Reference Code	Wing Span (m)	Aircraft Types
<b>A</b>	Up to but not including 15m	Cessna 172, Piper Tomahawk Beechcraft Baron
<b>B</b>	15m up to but not included 24m	Cessna Caravan, Beech 1900D Fairchild Metro III, Jetstream J32
<b>C</b>	24m up to but not included 36m	Dash-8 Q300/Q400, ATR 72, B737 series A320/A321 series, CV-580, Future 90 seat turboprop
<b>D</b>	36m up to but not included 52m	B757 series, B767 series, C130 Hercules

**Table 1.2 - ICAO Aircraft Reference Codes**

## 2 Site Description

### 2.1 Location

The “Port Nikau” site is a reclamation adjacent to the Hatea River channel, the main channel into Whangarei township. The site is conveniently located approximately 4.5km from the Whangarei central business district as shown in Figure 2.1 and is bounded to the North-West by the North Auckland Rail Line and to the South and East by tidal mangrove mudflats and shallow harbour waters. The site is located immediately to the North-West of the location of the existing aerodrome at Onerahi. Figure 2.2 on the following page illustrates the location of the site in relation to the state highway system.



**Figure 2.1 – Proposed Port Nikau Site**

The site was previously used as a commercial port until Northport moved its operations to Marsden Point several years ago. Several shipbuilding and ship maintenance facilities including slipways still operate on the channel side of the reclamation.

The existing reclamation comprises an area of approximately 115 hectares which is mostly undeveloped, although subdivision for industrial lots including a new road has commenced at the northern end. The reclamation area includes a “finger” of about 180m x 850m aligned in a north-south direction at the south end of the site. Some areas of the reclamation are relatively recently formed from placement of harbour dredgings and are accordingly still soft and wet.

It is interesting to note the site has previously been considered for aerodrome use as shown in the Proposed Waterfront Development Scheme Plan in Figure 2.3 provided by WDC. The plan is dated 1946 and shows two areas labelled “Reserve for future commercial Airways”. The runway reserve areas are 10,000ft (3,050m) long on a North West – South East alignment and 8,500ft (2,600m) and a North-South alignment. The implementation of this plan would have required the reclamation of the entire area between the existing finger of land and the existing shoreline to the West.

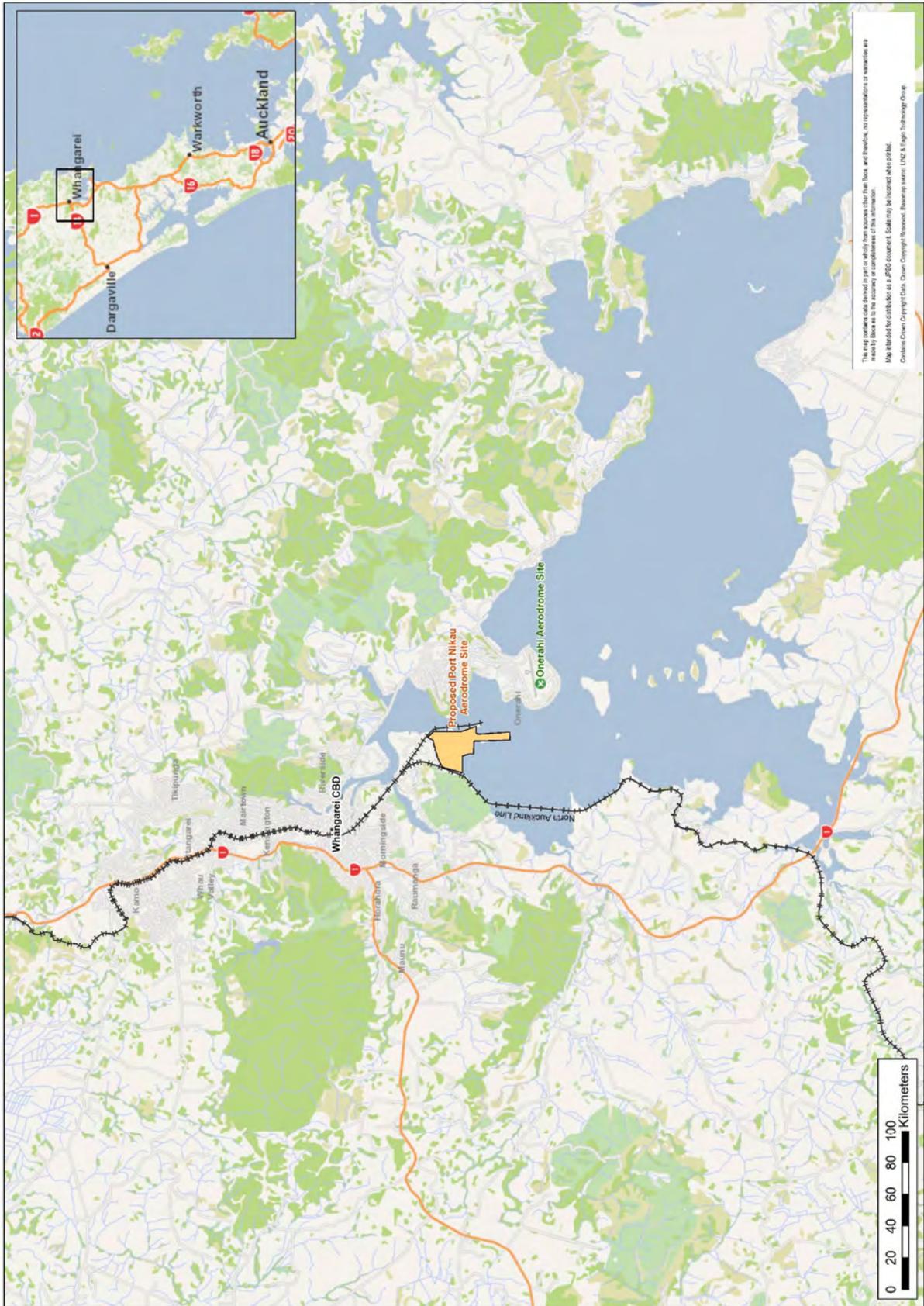


Figure 2.2 – Port Nikau Site Location.

