

# WDC ALOS Shortlist Analysis

Peer Review



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Peer Review

Client: Whangarei District Council

Co No.: 001

Prepared by

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**DRAFT****Quality Information**

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Prepared by Tim Booth / Craig Ridgley / Duncan Whyte

Reviewed by Chris Ballantyne

## Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	29-Sep-2017	Draft for client review	Chris Ballantyne Director	

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## 1.0 Introduction

### 1.1 Background

AECOM has been appointed by Whangarei District Council (WDC) to undertake a peer review of the Airport Location Option Study, short list site evaluation prepared by Beca - July 2017/Revision 2.

It is our understanding Beca was commissioned WDC to undertake Phase 1 of the Whangarei District Airport Strategic Review (WDASR) in September 2014. In summary, this review examined the existing site and evaluated the potential site at Port Nikau. This report was completed in December 2014 and concluded that neither sites adequately met the long term needs of users and the District and alternatives should be investigated.

Beca was subsequently commissioned to undertake Phase 2 of the study in May 2015, which was split into two stages. Stage 1 was to identify a 'Long List' of sites and undertake a Multi-Criteria Analysis (MCA) to identify a manageable 'Short List' of further investigation. Stage 2 focuses on further evaluation of the 'Short List' of sites in consideration of additional investigations and identifies two or three possible development site options.

This peer review focuses on 'Short List' study (Stage 2) of the second phase. The peer review does however give some consideration of the 'Long List' study due to the nature in which it is referenced within the 'Short List' study.

### 1.2 Peer Review Procedure

The Peer Review is a high level review of the work completed to date and the Peer Review team has considered the process, methodology and assumptions that have led to the options evaluation of alternative airport locations.

The Peer Review is intended to provide constructive feedback on the robustness and accuracy of process and assumptions relating to option development, analysis and evaluation.

The Peer Review report will be submitted to the Whangarei District Council to consider each of the concerns identified, and to provide their recommendation to either accept or reject the Peer Review report recommendation.

### 1.3 The Peer Review Team

This Peer Review has been undertaken in accordance with the IPENZ Practice Note 2 Peer Review – reviewing the work of another Engineer, June 2003. The Peer Review Team comprised of:

Tim Booth, Associate Director – Transportation, AECOM – Peer Review Team Leader

Craig Ridgley, Technical Director - Aviation, AECOM – Peer Review Aviation Lead

Duncan Whyte, Team Leader – Planning, AECOM – Peer Review Planning Lead

### 1.4 Reviewed Documents

The documents provided to the RSA Team are listed below:

- Whangarei District Council – Airport Locations Option Study, Short List Evaluation, July 2017
- Whangarei District Council Airport Locations Option Study – Long List Site Evaluation, November 2016

### 1.5 Peer Review Findings

The peer review findings are included in Table 1 overleaf.

**DRAFT****2.0 Peer Review Findings****Table 1: Peer Review Findings**

Subject	Peer Review Finding	Consultants Response / Comment
Long List Methodology	<p>The long list study follows a logical process of elimination of sites based on the initial fatal flaws (such as slope, direction of prevailing wind and proximity to major rivers) to generate a long list, the MCA criteria and key questions it seeks to determine and peer review process. Potentially some high level discussion on preferred site location could be useful. For example:</p> <ul style="list-style-type: none"> <li>- Reference to any data on the catchment of the existing airport (OD Survey data)</li> <li>- Discussion on the location of existing catchment and the key growth areas – i.e. is there a clear case for locating the airport to the north, south, east or west of the existing airport for ease of access?</li> </ul>	
Long List Site Evaluation criteria – ownership and zoning assessment	Please clarify how was it concluded that ‘more than 25 individual owners across the site’ would determine a fail? Presumably this is a proxy measure of potential legal / land purchase complications but could run the risk of excluding potential sites that could be viable? Could a measure of landuse type / value be a more appropriate measure?	
Long List Site Evaluation criteria – Infrastructure clash assessment	Could the criteria be more specific/quantify what ‘excessive’ engineering works would constitute a fail? This could be included in an Appendix as a description, algorithm or combination.	
Short List document structure	<p>This document cannot be easily understood in isolation of other documents that precede it.</p> <p>It highlights that the existing airport location and Port Nikau have been discounted from the short list evaluation but it doesn’t provide enough rationale as to why.</p> <p>The document could benefit from an Executive Summary and a more detailed summary of the key analysis and outcomes of previous reports.</p>	
Shortlist site evaluation results	It is unclear why the criteria weightings (shown in yellow) differ for each category. The document could benefit with a rationale as to how each criteria has been weighted.	
Appendix F - Economic Contribution Report	<p>The study aim is to examine Whangarei Airports economic role and contribution in the context of Whangarei District and Northland Region and the information will be used to as part of the wider assessment of location options for the airport.</p> <p>It is unclear how this study relates to the shortlisting study is and whether / how it has been considered in the evaluation..</p>	
ALOS Site evaluation sheet - accessibility	<p>The accessibility criteria gives consideration to the proximity to Whangarei, proximity to significant potential future development areas and site accessibility. The site accessibility provides comments and observations the proposed strategic and local access.</p> <p>This section could provide more discussion on land transport aspects such as likely impacts of airport traffic (cars &amp; freight) on the existing road network. The comments section raises a number of issues around safety, which could be evaluated in its own category.</p> <p>Proximity and ease of access to strategic roads (kms) could have also been calculated and provided in the commentary. It is unclear how the access road type / construction is evaluated – clearly it is a cost, however in many cases this could be add value in terms of increased land value for the client surrounding the airport.</p> <p>There are also differing levels of land transport interventions proposed however there is no indication of the cost as they are combined within the overall rough order cost estimated.</p>	

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Subject	Peer Review Finding	Consultants Response / Comment
Noise contours for approach paths and airport surfaces	The impact on property owners has largely focussed on the acquisition of property to establish the aerodrome (runways, taxiways, aprons, and terminal buildings) and on the nearby land use (existing and proposed). It has not sought to consider the noise impacts of aircraft on the wider area for approach paths and circulation of aircraft for affected populations. For example, flight paths and aircraft over rural areas or open water are likely to affect considerably less residents and businesses than if over a built-up urban area.	
Site 22: Rosythe Road zone information	<p>The summary planning information on page A13 is incorrectly identified as Open Space and Coastal Countryside. A plan change for the Coastal Countryside was withdrawn, and the current zoning is Rural Production.</p> <p>The Beca GIS identifies Site 22 as being within Plan Change 87 which relates to coastal areas drawing on information from the Northland Regional Policy Statement 2016 (RPS), but the RPS only includes land to the east of SH1 in the coastal area and not the proposed location of the aerodrome for Site 22 itself.</p>	
Resource consent requirements – district plan and regional plans	<p>While the short-list report discusses consentability, it is not possible to determine how conclusions were made in the report without providing a list of the resource consents required under regional plans and the district plan and their activity status to accurately measure and define the relative complexity of each site. That work may have been done to guide the rating assessment from a consentability perspective, and if it has, it should be set out in the report. An adjustment has been made to the ratings from the Long List Report but it is unclear how the value of those changes to scores and rankings were derived.</p> <p>Without this level of detail, the accuracy of the rating assessment for planning is unclear. How the ratings were derived, and whether full account has been taken of all of the requirements of the district plan and regional plans for each site would be beneficial</p> <p>It is also unclear in which of the criteria has consentability been taken into account within the sub-categories, i.e.:</p> <ul style="list-style-type: none"> <li>- Ownership/Zoning</li> <li>- Cultural</li> <li>- Heritage</li> <li>- Environmental</li> <li>- Protected</li> </ul>	
Road closure, designation, alteration to designation, resource consents	<p>Impact on roads is dealt with in the Engineering section of the MCA. This appears to focusing solely on the engineering task and the capital cost of construction of new roads or diverted roads.</p> <p>It is not clear that / how the consequences of legal closure of existing roads in terms of process, and the requirements to either alter designations or declaring new roads have been taken into account. There may also be resource consents required for culverts, bridges, and stormwater management associated with these changes in most cases. Those processes should be itemised when responding to the finding above.</p> <p>An exception appears for the rating of environmental sensitivity for Site 24A and Site 24B (rating 1) describing the impacts on One Tree Point Road.</p>	
Impact on Mine Road for Site 2 not assessed	The impact of road closure and establishing a diverted road across the Waiaraki River has not been taken into account.	
Site 2: Gibbs Road Waiaraki River and stream impacts	While a number of the short-listed sites have impacts on waterways that would trigger resource consents (e.g. culverts, diversion), the scale of potential impacts on Waiaraki River and adjoining streams for Site 2 appears to be significantly greater when compared to other sites. Those impacts appear to have taken into account as a cultural impact rating of 1, but we would suggest that an environmental sensitivity rating of 2 is appropriate. The assessment only appears to have considered a cultural impact (rating 1), when the environmental sensitivity rating should also be a rating of 1.	

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Subject	Peer Review Finding	Consultants Response / Comment
Section 2 - Regional Location plan	It would be really beneficial to have a larger scale site map, as per the long list evaluation report, showing the 6 sites in there regional context relative to the City and Onerahi airport. This could be presented at the end of section 2.1.	
Section 3 Table 3.1 – Evaluation Criteria	Estimation of relative travel times from the Whangarei CBD to the current Onerahi site as a bench mark for comparison purposes for the short listed sites would be beneficial and possibly then reported also in the relative Appendix A section on accessibility as the current bench mark value.	
Section 4, Figure 4.1	It would be beneficial to refer to and present the 3D type view / earthworks models developed for each site, or at least the Ruatangata and Gibbs Road sites for visual comparison.  Possibly also include these figures / 3D Views in the Appendix A as part of the ALOS evaluation process.	
Section 5.4 Evaluation of Existing Kerikeri Aerodrome	The comparison with Kerikeri provides an interesting bench mark and would highlight the fact that sites with lesser scores are clearly not desirable and possibly there could be a statement or guidance note that the cut off score should be set at 70%.	
Section 6 Comparative Development Costs	Recommend that an additional commentary be added as a section <b>6.2.1 Site Geological Considerations</b> , specifically around the site specific geology conditions and in general noting that development of a site based on peaty soils types does have an additional risk with extensive undercutting to remove potentially unsuitable materials and or additional potential costs when founding pavements on lower strength in-situ materials. This would then also strengthen the case in section 7 for exclusion of these sites from the evaluation moving forward.  For example:  Noting three sites with underlying peat formations, these will pose significant construction risks not only for the runway strip platform but will also have a significant impact on the pavement design costs with significantly deeper pavement profiles required (easily plus 50% compared to the volcanic sites) and potential issues with longer term settlement if the larger area is actively being drained.  <b>Gibbs Rd site</b> , the bouldery ground condition would preclude the use of motorscaper bulk earthworking and would likely require extensive use of large excavators and off road dump truck with higher bulk earthwork costs and a slower overall construction. This would make the bulk earthworks more difficult than the volcanic sites and maybe worthy of an additional comment to this effect.	
Section 6	Has the variance in pavement profile cost between peat and volcanic site been allowed for ? or is the overall earthworks component a far greater cost vs a differential cost for the pavement on say CBR 2% peat vs CBR10% on the volcanic soils.?  Noting table 6.1, please clarify whether the stated undercut just under the pavement footprint or across the entire runway strip footprint. Possibly an added sensitivity analysis to highlight the risks around a peat based site if the entire runway strip is a cut to waste and imported fill is needed as well.  It is our opinion that the underlying ground conditions at the “peat” sites is a far larger “potential” risk than sites which need a high volume of cut to fill work to produce the runway strip platform.	

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Subject	Peer Review Finding	Consultants Response / Comment
Section 6 and Appendix A ALOS Evaluation Sheet	<p>In the wider puhipuhi area there are concerns around past contaminants from the mining activities in the early 1900's and further investigations would be required if this site was to short listed for further consideration.</p> <p>Gibbs Road Site, there is potential for mercury (Hg) contamination as noted in the general advisement for the Puhipuhi area:</p> <p>1/ that the site proximity to the historic Puhipuhi mercury and gold mine sites is determined and shown relative to the Gibb Road site.</p> <p>2/ consider inclusion of a covering statement acknowledging that possible ground contamination from past puhipuhi mining activities would need to be investigated if this site was to be shortlisted</p> <p>The following references might be helpful</p> <p><a href="http://www.doc.govt.nz/parks-and-recreation/places-to-go/northland/places/whangarei-area/puhipuhi-mercury-mines/">http://www.doc.govt.nz/parks-and-recreation/places-to-go/northland/places/whangarei-area/puhipuhi-mercury-mines/</a></p> <p><a href="https://www.researchgate.net/figure/273960761_fig3_Figure-3-Map-of-the-Puhipuhi-Mine-site-with-sampling-locations-Arrow-is-pointing-north">https://www.researchgate.net/figure/273960761_fig3_Figure-3-Map-of-the-Puhipuhi-Mine-site-with-sampling-locations-Arrow-is-pointing-north</a></p> <p>A summary statement of the sites position relative to the puhipuhi mercury mine site would be beneficial, and pending relative locations could be a strong reason for exclusion for further consideration.</p>	
Appendix A OLS considerations	<p>Site 9 – Ruatangata</p> <p>There is a note stating</p> <ul style="list-style-type: none"> <li>- Approach OLS 10m penetration from threshold to 0.5km to north east (assumption is this will be engineered out)</li> </ul> <p>Please explain in more detail; does this mean that a local section of elevated ground will be cut down to form the final runway strip thereby removing this possible OLS obstruction ? More definition around this is required.</p> <p>Noting both Ruatangata and Hodges road sites have some intrusions through the wider out OLS horizontal and conical surfaces, accordingly further commentary is required around this aspect to confirm this is not a critical operational issue for selection of this site, (noting numerous airfield in New Zealand have similar horizontal and conical surface intrusion issues) before concluding these two sites move forward.</p> <p>Other Items to consider:</p> <p>It would be beneficial to produce a combined site location and OLS maps showing both the Hodges and Ruatangata sites on the same drawing given they are relatively close to each other.</p>	

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## 3.0 Conclusions

Overall, the report is thorough and a large volume of work and analysis has clearly gone into the assessment.

It is recommended in our findings that some of the detailed background work supporting the option selection and evaluation is referred to in more detail in the report, so that the reader can clearly follow the evaluation as a transparent process.

The report would also benefit from a clear and concise Executive Summary for the benefit of both technical and non-technical readers.

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