MITCHELL DAYSH

WELLINGTON INTERNATIONAL AIRPORT LIMITED

NOTICE OF REQUIREMENT FOR AN AIRPORT PURPOSES DESIGNATION

East Side Area

25 February 2020

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Report Status	FINAL
Our Reference	MDL000258
Author	Kirsty O'Sullivan / Claire Hunter
Review By	John Kyle

PART A

Notice of Requirement

Form 18

FORM 18

NOTICE OF REQUIREMENT BY REQUIRING AUTHORITY FOR DESIGNATION

Sections 168(1), (2), and 181, and clause 4 of Schedule 1, Resource Management Act 1991

To **Wellington City Council (WCC)**

1. **Wellington International Airport Limited (WIAL) gives notice of a requirement for a designation for Airport Purposes.**

2. **The site to which the requirement applies is as follows:**

The site is located to the east of Wellington International Airport (**Wellington Airport or the Airport**) and comprises approximately 15.6 hectares of existing Airport land, and Miramar Golf Club land, which is being acquired by WIAL.

The land within Wellington Airport is legally described as Sections 2-4 Survey Office Plan 37422, Section 3 SO 38205, and Part Lot 1 Deposited Plan 78304.

The Miramar Golf Club land is legally described as Part Lot 1 Deposited Plan 3177, Lot 1 Deposited Plan 51082, Part Lot 1 Deposited Plan 9192, Lot 2 Deposited Plan 80630, Section 1 Survey Office Plan 38205 and Section 4 Survey Office Plan 37422 and is held in Record of Title 17852.

The extent of the proposed designation is provided in **Appendix A** of the attached Assessment of Environmental Effects (**AEE**). Copies of the relevant Record of Titles are attached as **Appendix B** to the AEE.

3. **The nature of the proposed public work (or project or work) is:**

WIAL is seeking an Airport Purposes designation to apply to the land that is identified in **Appendix A** (East Side Area). The designation would enable the following activities to be undertaken (subject, where appropriate, to certain conditions):

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;
- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;

- All demolition (if required) construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above.

4. **The nature of the proposed conditions that would apply are:**

   Refer to the AEE including **Appendix C** which sets out the proposed form and nature of the conditions proposed to attach to the designation.

5. **The effects that the public work (or project or work) will have on the environment, and the ways in which any adverse effects will be mitigated, are:**

   Refer to the AEE including Sections 5 and 6.

6. **Alternative sites, routes, and methods have been considered to the following extent:**

   Refer to the AEE including Section 8.

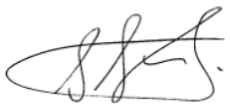
7. **The public work (or project or work) and designation are reasonably necessary for achieving the objectives of the requiring authority because:**

   Refer to the AEE, including Sections 1.3 and 9.

8. **The following consultation (or no consultation) has been undertaken with parties that are likely to be affected:**

   Consultation has been undertaken with the relevant airlines and operators at Wellington Airport. Consultation with key property owners likely to be affected by the notice of requirement has been initiated and will be ongoing as the processing of the Notice occurs.

9. **WIAL attaches an AEE and supporting documentation, which is intended to provide the Council with the ability to make a full assessment as required under the Resource Management Act 1991.**



Signature:

_____

Steve Sanderson – CEO, Wellington International Airport Limited

Date: 25 February 2020

Electronic address for Service:

Telephone: 03 477 7884

Postal address (or alternative method of service under section 352 of the Act):

Mitchell Daysh Limited
PO Box 489
Dunedin

Contact person: John Kyle – john.kyle@mitchelldaysh.co.nz

Attachments:

Appendix A: Proposed Designation
Appendix B: Computer Freehold Registers
Appendix C: Designation Conditions
Appendix D: Wellington International Airport Ltd as Requiring Authority
Appendix E: Conceptual (draft) Master Plan
Appendix F: Landscape and Visual Assessment
Appendix G: Acoustic Assessment
Appendix H: Map of Utilities

You must pay the charge payable to the consent authority for the resource consent application under the Resource Management Act 1991 (if any).

If your application is to the Environmental Protection Agency, you may be required to pay actual and reasonable costs incurred in dealing with this matter (see section 149ZD of the Resource Management Act 1991).

B

PART B

Assessment of Environmental Effects

1. INTRODUCTION

1.1 OVERVIEW

Wellington International Airport Limited (**WIAL**) is the owner and operator of the Wellington International Airport (**Wellington Airport** or **the Airport**) located in the suburb of Rongotai in Wellington. WIAL gives notice of a requirement (**NOR**) for a designation under section 168 of the Resource Management Act 1991 (**RMA** or **the Act**) to designate a portion of the Miramar Golf Club land (**the proposed designation site**) for Airport Purposes (**proposed designation)**.

The proposed designation site contains approximately 15.6 hectares of land which is predominately part of the Miramar Golf Course, which is currently owned by the Miramar Golf Club Incorporated. Other land affected by the NOR is owned by WIAL. Figure 1 below (and **Appendix A** attached) shows the extent of the land subject to this NOR.

The relevant register of titles for the land is attached as **Appendix B** to this NOR.

The proposed designation will set in place an efficient and flexible planning method to allow the use of this land for airport purposes including:

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;
- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;
- All demolition (if required) construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above.

A suite of conditions for the proposed designation is attached as **Appendix C**.

As explained in detail in later sections of this report, airports across Australasia, including Wellington, are continuing to experience sustained visitor growth. Providing the necessary infrastructure to meet this growth requires airport operators to be highly responsive and adaptive, and to undertake long term planning through master planning programmes.

In this regard, WIAL is has recently reviewed its passenger forecasts and has developed a master plan to guide the development and growth of the Airport over the next 20 years. The forecasting results anticipate that Wellington Airport will accommodate up to 12 million passengers per annum by 2040, or approximately 105,000 aircraft movements per year. Based on the master planning work, peak hourly apron, taxiway and aircraft stand demand will exceed existing capacity at the Airport.

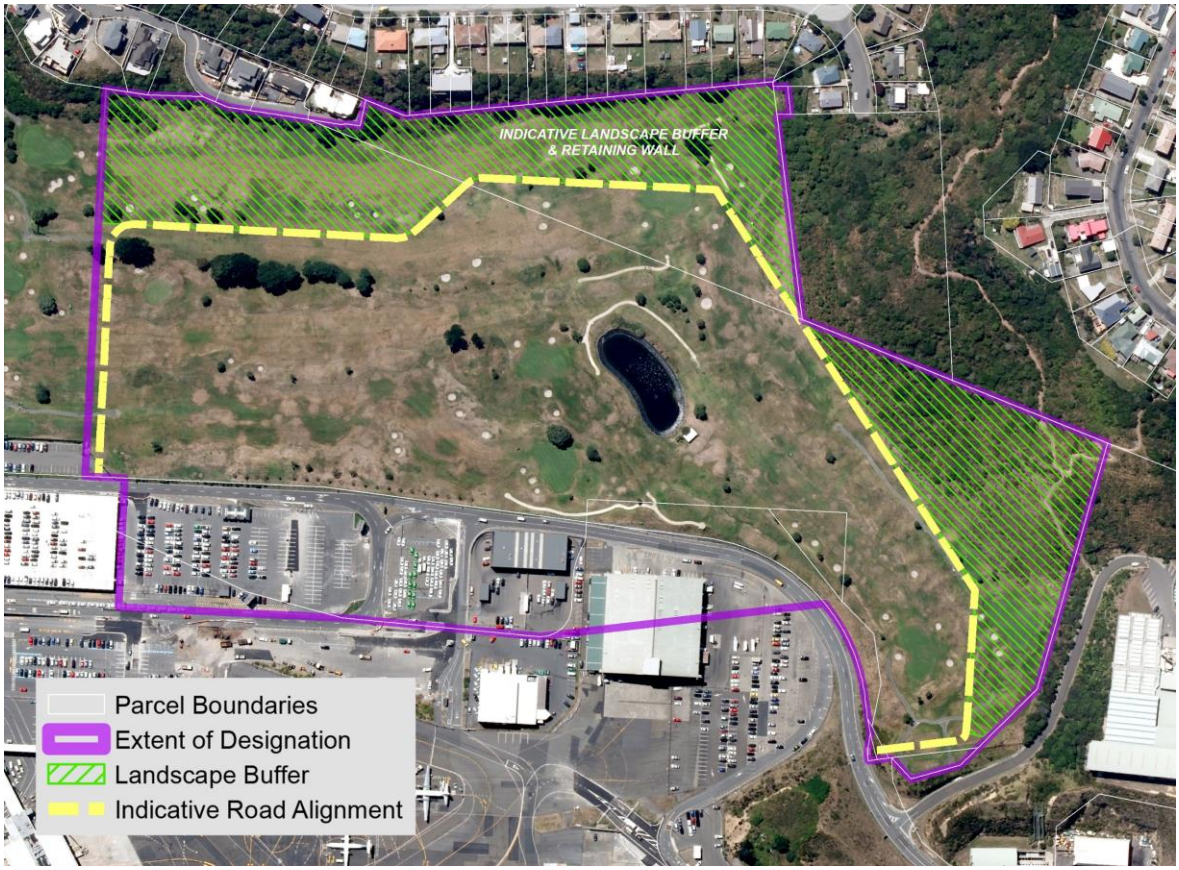


Figure 1: Extent of proposed designation over the Miramar Golf Course and adjacent WIAL Land.

Due to operational requirements, aprons, taxiways and aircraft stands need to be located around terminal buildings. With limited space available surrounding the existing terminal building, and to achieve future compliance with relevant International Civil Aviation requirements (**ICAO**), WIAL seeks to expand the Airport's aircraft operational area (including more specifically taxiway, apron and stand space) over part of the adjacent Miramar Golf Course site. WIAL proposes to establish a new designation over part of the golf course site in order to authorise its proposed land use activities in terms of the Wellington City District Plan.

As WIAL progressively implements the works that are the subject of the designation, a length of Stewart Duff Road (owned by WIAL) will be relocated eastwards. This will ensure that efficient traffic circulation is maintained on-site as well as between Moa Point Road and State highway 1. Due to Civil Aviation regulations, it is also important for the road to be located outside of airside operational areas. An indicative road alignment is shown in Figure 1. The road alignment will be confirmed once detailed design of the site has occurred and will be engineered to ensure it functions effectively and safely.

To provide guidance on how the site could be developed and to assist with the effects assessment and development of appropriate conditions, a detailed conceptual (draft) master plan of this part of the Airport has been prepared which shows how the operational activities proposed might be laid out on the land concerned, and how this could be integrated with the adjacent terminal area. This is shown in Figure 2 below:[1]

[1] It should be noted that this plan indicates additional development opportunities in and around the Airport. These do not form part of this notice of requirement.

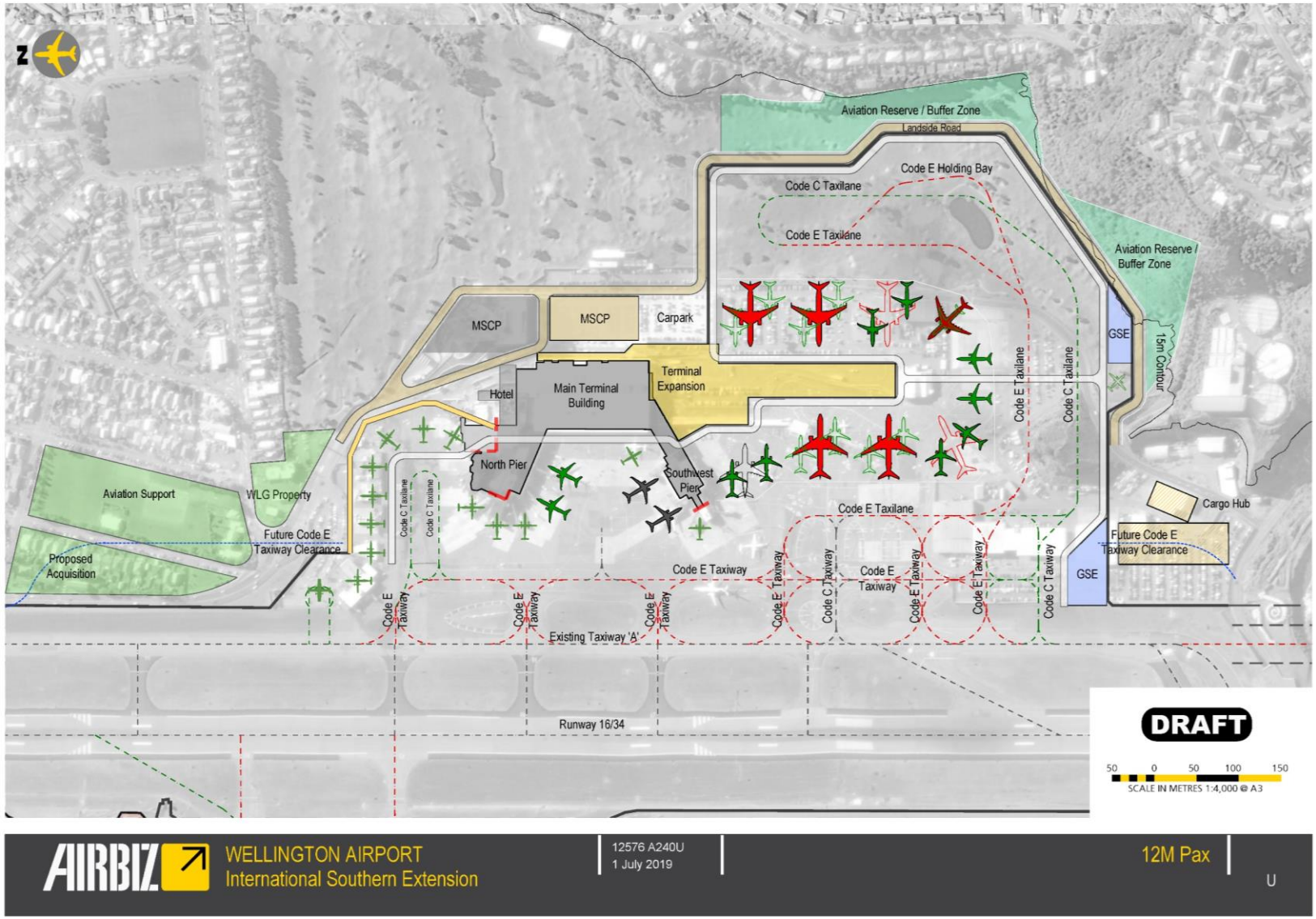


Figure 2: East Side Area Master Plan.

Designation is the logical method under the RMA to achieve the outcomes sought by WIAL. A designation is a type of approval mechanism for infrastructure works and utility operations where these are undertaken by a requiring authority. A designation is a robust planning tool because land under a designation is, in effect, given its own land use planning regime within the District Plan, subject to appropriate controls through conditions and the outline plan process. This is appropriate for an environment such as this where long-term planning is required and sufficient certainty, flexibility and efficiency is necessary to provide for the changing demands of a modern international airport.

1.2 REQUIRING AUTHORITY – WELLINGTON INTERNATIONAL AIRPORT LIMITED

Up until to 1990, the Airport was operated under a joint venture agreement between the Crown and the City of Wellington. The Wellington Airport Act 1990 (**WAA**) provided for the incorporation of an airport company and the vesting of airport assets and liabilities of the Crown and WCC in that company. The WAA declared the company to be an airport company within the meaning, and for the purposes of the Airport Authorities Act 1966 (**AAA**). WIAL was subsequently incorporated in accordance with the WAA and AAA.

In August 1998, the Crown sold its 66% shareholding to a group of investors, comprising New Zealand Airports Limited, a company now wholly owned by Infratil Limited. The other 34% shareholding in WIAL continues to be held by WCC.

As an Airport Authority, WIAL must operate or manage the Airport as a commercial undertaking (section 4(3) of the Airport Authorities Act). WIAL is also a network utility operator under section 166(g) of the RMA.

Additionally, WIAL is an approved Requiring Authority under Resource Management (Approval of Wellington International Airport Limited as Requiring Authority) Order 1992. A copy of this is attached as **Appendix D**. This provides a general approval for the operation, maintenance, expansion and development of the Airport known as the Wellington International Airport. WIAL therefore can seek to designate land as a requiring authority pursuant to section 167 of the RMA. This NOR is in accordance with WIAL's statutory functions as a requiring authority.

WIAL is currently the requiring authority for two designations in the District Plan:

- Designation G2 Wellington International Airport – Airspace Designation.
- Designation G3 Wellington International Airport Ltd - Runway End Safety Area Extension (Southern) (RESA Designation).

Designation G2 applies to the airspace and establishes the obstacle limitation surfaces (**OLS**) in the vicinity of Wellington Airport. The purpose of this designation is to promote the efficient operation of the Airport and planned approach to its future development. The designation takes a conventional approach and applies airspace height restrictions, which

limit the development of any structure including any building, aerial, antenna, or other object which may inhibit the safe and efficient operation of aircraft using the Airport.

Designation G3 relates to the Runway End Safety Area Extension (**RESA**) that exists at the southern end of Wellington Airport. The purpose of this designation is to provide for the safe and efficient functioning of the Airport and is subject to a number of pre-commencement conditions, largely relating to the construction of the RESA, which is now complete.

WIAL has filed a notice of requirement to designate the former Miramar South School site and WIAL's directly adjacent residential land holdings, as well as a notice to designate the main Airport site (**main site**) mostly consistent with the existing Airport Zone area in the District Plan. It is noted that there is some overlap in terms of the land that is subject to this Notice and that of the main site NOR. If this NOR is ultimately confirmed however it will take precedence over that part of the site that is also subject to the main site NOR. This is reflected in the proposed conditions of the designation.

1.3 THE SITE

The majority of the land affected by the NOR is currently utilised as part of an 18 hole private golf course. A key driver for the expansion of the Airport into the golf course area is the current, highly constrained area available at Wellington Airport to accommodate infrastructure and facilities associated with scheduled aircraft operations. The higher volume of passengers anticipated in the future and the need to meet relevant ICAO requirements will require the reconfiguration of airside activities and the corollary expansion of facilities including "parking" space for aircraft, and expansion of the terminal and associated activities on the existing airport site. Although WIAL is also looking at opportunities to optimise its existing land holdings and other available land in its vicinity (e.g. the former Miramar School site), the golf course site represents the only viable option for enabling logical and longer term operational growth for these types of activities. This is further explained in Section 8 of this report relating to alternatives.

WIAL has an established relationship with the Miramar Golf Club Committee as a neighbour and is a significant sponsor of the club. The Miramar Golf Club has recently agreed to sell the land (and a sale and purchase agreement is in place) required to give effect to the proposed designation to WIAL.

2. WELLINGTON INTERNATIONAL AIRPORT – AN OVERVIEW

Wellington International Airport is an important existing strategic asset to Wellington City and surrounding regions. It provides an important national and international transport link for the local, regional and international community and has a major influence on the regional economy. The Airport is a fundamental part of the social and economic wellbeing of the community.

Wellington Airport is one of the busiest airports in New Zealand, operating a mixture of scheduled domestic and international flights, corporate jets, general aviation and helicopters. It is currently the third largest airport in New Zealand in terms of passenger numbers. It is a gateway for millions of residents, visitors and business travellers every year, connecting the capital city to all parts of New Zealand, Australia, the Pacific and onwards, to the rest of the world. The Airport is also a generator of economic growth, providing significant direct business and employment opportunities within the Airport area as well as indirect economic benefits provided to the city and the wider Wellington region.

The Airport has been experiencing significant growth in the use of its facilities and infrastructure over recent years, particularly in international and domestic passengers. This growth is predicted to continue reaching around 12 million passengers per annum over an approximately 20 year planning horizon.

2.1 WIAL'S CURRENT CONFIGURATION AND LAND HOLDINGS

Wellington Airport was established on the Miramar Peninsula in 1908 and has been a constant in the surrounding environs since that date. It operates on a constrained 110ha site in the residential suburb of Rongotai, within 8 kilometres of the centre of Wellington City. The Airport is bounded by the coastal environment of Lyall Bay to the west and south and Evans Bay to the north of the runway. Located on the adjacent site to the east of the Airport terminal area is the 31.2ha Miramar Golf Course.

The Airport and adjacent golf course are surrounded by the residential suburbs of Miramar, Rongotai, and Strathmore Park. Rongotai is located on predominately flat land to the west, while the suburbs of Strathmore Park and Miramar are located both on flat land and the hills to the east and north east.

The Airport has a single 1945m[2] long runway with a full-length parallel taxiway between Evans Bay to the north and Lyall Bay to the south. 150m runway protection areas[3] are provided at each end of the runway.

The Airport landholding is significantly constrained by available land area, its geographic location and surrounding land use. To provide some simple context as to land constraints, Wellington Airport is sited on approximately 110ha, where Auckland Airport is sited on approximately 1,600ha, requiring Wellington to be 460% more efficient, processing 56,000 passengers per hectare of available land against Auckland's 12,000. This presents a significant challenge for WIAL given the growth in passenger numbers anticipated over the coming decades (refer to Section 2.3 below).

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2 TORA (Take Off Runway Available).

3 Made up of 90m Runway End Safety Area (RESA) and 60m Runway Strip.

The extent of the proposed designation required to provide for the future forecast taxiway, apron and stand space is shown in Figure 1. The majority of this land is zoned for Golf Course Recreation purposes, with the exception of a small 136m^2 portion of residentially zoned land that is currently part of the Miramar Golf Course.[4] The NOR also extends into an area currently occupied by Airport activities and is zoned for Airport Purposes. A small portion of the proposed designation area also crosses the Wellington City Council Designation relating to wastewater (Designation 58). This is zoned for Airport Purposes and it is understood that the current WCC Designation covers surplus land and it has been indicated that Wellington Water are likely to relinquish this area from within the designation boundary during the rollover process under the District Plan review. Notwithstanding this WIAL will seek the written approval of the existing designation holder prior to undertaking works on this area of the site. This is shown in the figure below:

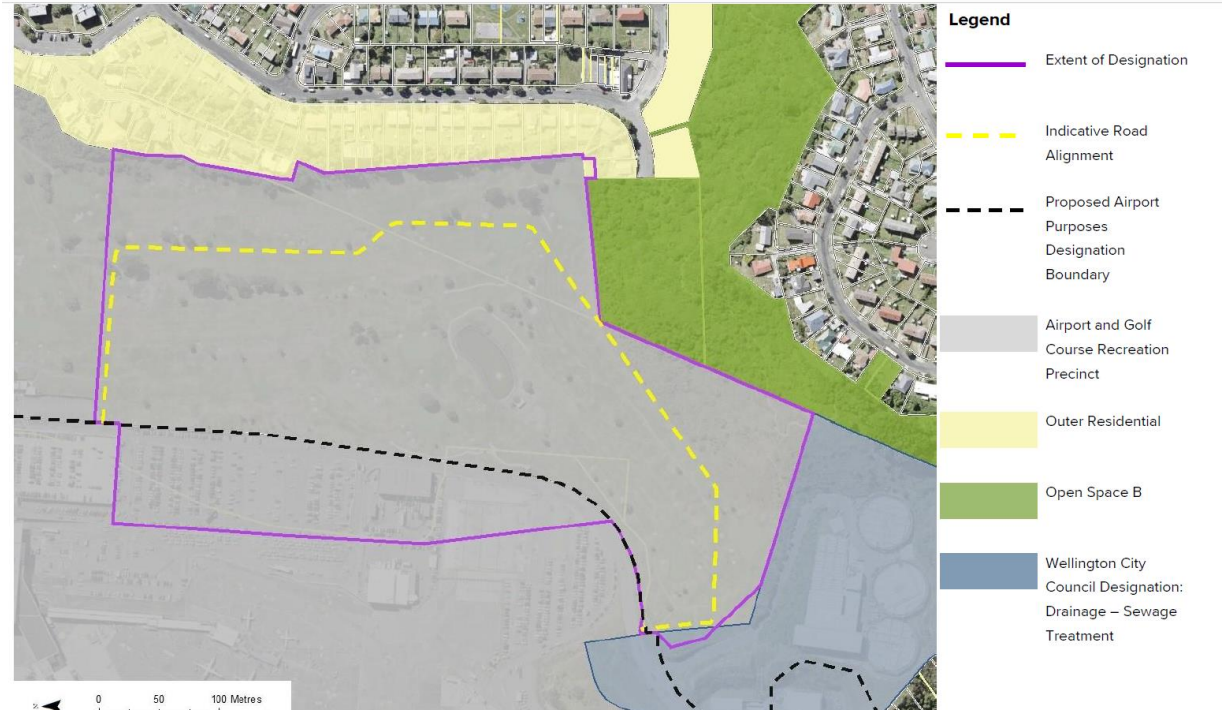

Figure 3: District Plan Zoning and Overlays (note that the black dotted line is the Proposed Airport Purposes Designation Boundary which has been lodged with WCC).

2.2 AIRPORT MASTER PLAN

A major aspect of successfully maintaining and operating an airport is having a robust and appropriate development strategy. Such a strategy generally will include a plan for the airport, the identification and strategies for the protection of land for existing and future

[4] Lot 2 Deposited Plan 80630.

airport development and operations, and if possible, the provision of an aircraft noise buffer for the surrounding community.

Aviation is a long-term growth industry. In the short-term there can be high volatility, marked by the introduction (and occasional withdrawal) of new services, airlines and aircraft types. It is susceptible to fluctuations in the price of fuel, as well as other macro-economic movements, however, over longer periods the growth in air travel is generally consistent. Therefore, and acknowledging the short-term potential volatility, airport planning remains a dynamic and flexible discipline, all the while with a view to ongoing long-term growth.

Accordingly, airport planning requires a long-term view and a commitment to put resources towards planning and protecting for the future.

While not a requirement in the New Zealand legislative context, well managed airports such as Wellington recognise the importance of having a forward-looking master plan in place. A master plan is indicative of potential future development plans at the airport, based on projected airport growth primarily arising from passenger demands and other needs at the time it was prepared.

WIAL has recently released a new master plan. A copy of the master plan is attached as **Appendix E**. Passenger forecasts show that passenger numbers are forecast to reach up to 12 million movements per annum by 2040. In order to accommodate this growth, additional aircraft stands, aprons and taxiways will be required, as well as to address an immediate shortfall in aircraft stands during current peak hour operations. Due to the operational needs for such activities to be located within close proximity to the terminal area of the Airport, and to achieve compliance with aviation regulations, expansion onto part of the Miramar Golf Course is required to accommodate such additional operations.

It is important to note that a master plan is a reasonably high-level document that covers a wide range of spatial scales and timeframes. This type of plan is not intended to be viewed as a rigid blueprint and land uses at an airport inevitably evolve over time. Whilst the master planning exercise is intended to set out indicative development plans or goals, the detail about individual buildings, spaces and infrastructure requirements are not prescribed, and as such it is not considered appropriate, nor is it requested by WIAL to include the conceptual master planning outcomes shown in **Appendix E** into the designation.

2.3 AIRPORT SUSTAINABILITY AND GROWTH

Wellington Airport is experiencing a trend of sustained growth in passenger numbers which in turn has driven the need for growth of the Airport, including the terminal area and the ancillary services which it provides. This is clearly demonstrated through the significant, and ongoing, development occurring at the terminal area, which also

encompasses the development of the surrounding carpark and hotel facilities adjacent to the terminal area. Growth in aviation activity is a continuing trend across the Asia-Pacific region, directly supporting economic growth and mobility. Aviation is particularly critical to New Zealand as an isolated island nation with tourism now ranking as its largest export earner. In order to enable projected growth to occur, WIAL must be proactive in its approach to meet the needs of the traveling public and the airline service providers.

WIAL also seeks to ensure its growth is managed sustainably. Aircraft emissions equate to about 2% of all global carbon emissions. Domestic aviation contributes to about 1% of New Zealand's total carbon emissions. Globally, the International Airport Transport Association (**IATA**) has made a commitment to reduce the carbon emissions of its 290 member airlines by 50% by 2050, relative to 2005 levels. WIAL is also committed to reducing its carbon footprint and is targeting a 30% reduction in emissions it generates by 2030. Achieving this target while expanding operations will require WIAL to adopt energy efficient and sustainable construction into future development.

The following section provides a summary of further investigations undertaken by WIAL to provide a greater understanding of what future growth numbers are forecast to be and, in turn, the nature of the passenger and terminal services required to meet demand. The sub-sections below consider:

- Forecast passenger numbers;
- Terminal requirements;
- Aircraft stand demand;
- Compliance with ICAO standard; and
- Ancillary service requirements.

2.3.1 Forecast Passenger Numbers

InterVISTAS have prepared passenger and aircraft movement forecasts for Wellington Airport. The forecast passenger, aircraft movement and peak hour passenger movements over four time periods is set out in Table 1.

Table 1: Forecast growth in airport usage.

Approximate Year	Annual Passengers (millions)	Annual Aircraft Movements	Busy Hour Passenger (Dep + Arrivals)
Current	6.2	85,000	1,400
2024-2029	8	90,000	1,800
2031-2038	10	100,000	2,300
2038-2050	12	105,000	2,700

As shown in Table 1, it is forecast that:

- Busy Hour and Annual Passenger numbers essentially double over the next 20 to 30 years from 1400 to 2700, and from 6.2 million passengers per annum (mppa) to 12mppa respectively; and
- Annual Aircraft Movements will increase over the next 20 to 30 years from 85,000 to 105,000. Notably, aircraft movements do not similarly double to match that of passenger movements (only an increase of 24%). This is because airlines have signalled their intention to "up gauge" to larger aircraft, thereby resulting in greater passenger capacity aircraft utilising Wellington Airport. WIAL understands, for example, that Code E aircraft could be used on Trunk domestic and trans-Tasman routes within the forecasting period, particularly during peak periods.

This type of growth drives a significant demand for terminal and ancillary services to provide for passengers and other associated users of the Airport and its facilities. These are discussed below.

2.3.2 Aircraft Stands

To facilitate the ability for more passengers to pass through the Airport, there is a need for the provision of more aircraft stands.

Using current aircraft stand data, and forecasts of busy hour passenger numbers, AirBiz[5] has provided estimates of future aircraft stand requirements. They are summarised in Table 2 below.

The greatest need for additional aircraft stands falls with the larger passenger jets (Code E[6] and C). The increase in stands requires additional land area within the Airport apron which needs to be specifically provided for adjacent to the terminal.

Table 2: Forecast aircraft stand needs.

Annual Passengers (millions)	Code E	Code C Jet	Code C Turbo Prop (TP)
Current	1	7	13
8	2	9	14
10	3	11	14
12	5	12	14

[5] An international specialist aviation consultancy with extensive airport and terminal planning experience.

[6] The forecast Code E requirements acknowledge that Code E will be needed for domestic operations, as there are currently between Christchurch and Auckland on occasion. This is not contingent on the runway extension being constructed.

2.3.3 Terminal Requirements

Typical airport terminal needs are primarily focused on the systems and amenities required for the check-in, departure, and arrival of passengers. These standard requirements include:

- Check-in kiosk / counters and bag check facilities;
- Landside common departure lounge;
- Security / Customs and emigration / immigration;
- Airside departure lounge;
- Boarding areas and departure gates;
- Arrivals Hall; and
- Baggage handling / make up / reclaim areas.

Further to meeting the processing requirements for inbound and departing passengers, the future terminal area also, as a minimum, needs to provide a basic range of services to cater for passengers (and other associated visitors and workers). These include:

- Landside and Airside retail and food outlets; and
- Landside and Airside restroom and amenity facilities.

AirBiz has estimated the minimum floor area requirements to provide the basic future terminal needs to cater for the InterVISTAS Airport growth estimates set out in Table 1 (assuming existing Civil Aviation Authority (**CAA**) screening requirements remain in place and do not require additional floorspace). The results are summarised in Table 3.

Table 3: Forecast growth in terminal area requirements.

Annual Passengers (millions)	Terminal Area Requirements (m^2)
6.2	45,000
8	57,000
10	71,000
12.0	85,000

These figures demonstrate that significant expansion of the current terminal will be required over a very short timeframe with an approximate 20% expansion required within the next 10 years, and an approximate 100% increase within 20 to 30 years.

2.3.4 ICAO Compliance[7] – Taxiway Separation, OLS and Wingtip Clearance

Aircraft up-gauging (including the use of Code E aircraft for domestic use which may occur without a runway extension) and volume growth necessitate reconfiguration of the airside activities at Wellington Airport.

The Airport currently operates on a 107.5m separated taxiway and runway. The International Civil Aviation Organisation (**ICAO**) requires a separation distance of 158m for Code C – Code C movements and 172.5m for non-visual Code E – Code E movements.

WIAL currently has approval from the CAA to operate on the existing configuration. However, WIAL is cognisant of future needs to comply with ICAO requirements, and is therefore seeking to move towards ICAO compliance wherever this is practicable.

In order to provide for compliance with the maximum Code E 172.5m taxiway separation, taking into account the geometric limitations of taxiway separations (i.e. aircraft wingtip clearances) and OLS requirements, alterations to the existing configuration of airside facilities is required. This is shown in Figure 2 above.

2.3.5 Ancillary Service Requirements

In addition to meeting the basic requirements for passengers at the terminal, a modern airport also needs to provide a range of ancillary services beyond the terminal to meet the various needs of passengers, and other visitors facilitating travel or passengers e.g. taxi drivers and those picking up and dropping off passengers. These facilities include:

- Pick-up and drop-off areas;
- Public transport and rental car options;
- Short and long-term carparking;
- Hotel/visitor accommodation and associated conference facilities;
- Cargo operations; and
- On-site office and administrative facilities.

It is anticipated that these facilities will need to increase to accommodate the increase in passenger numbers, and for WIAL to provide passengers with an improved airport experience as a result of the reconfigured airside and landside activities.

[7] When using the term "compliant" in relation to the taxiway separation, OLS and wingtip clearance, this is in respect of compliance with international/ICAO aviation material, which is not legally binding in New Zealand.

2.4 SUMMARY

Existing growth and development needs have already put significant pressure on WIAL's constrained 110ha landholding and this has required it to be particularly efficient in its use of space. However, there are limits to this intensification, and it has become clear that the Airport requires additional land to accommodate its activities in the short and longer term.

The data summarised above shows that there will be a significant increase in the number of passengers and aircrafts accessing Wellington Airport, thus placing additional demand pressure on the Airport which cannot be accommodated in the current land area available to WIAL. Apart from the additional manoeuvring/taxiway areas required, the basic service needs of the additional passenger movements will necessitate increasing the frequency of use on the runway, provision for more aircraft stands, more terminal space, and associated service facilities. WIAL also intends to reconfigure the airside activities to achieve compliant taxiway separation distances for current and future aircraft use wherever this can be achieved.

3. EXISTING PLANNING CONTEXT

Wellington Airport is within the *Airport and Golf Course Recreation Precinct* in the District Plan, which itself separates the activities of the Wellington Airport and the Miramar Golf Course into two distinct areas: The Airport Area, and the Golf Course Recreation Area.

The District Plan provisions recognise the strategic importance of the Airport by providing for its continued use and development. The District Plan provisions also provide for activities that are ancillary to this primary function with the Airport Area.

Within the Golf Course Recreation Area, the District Plan provisions provide for the continued use of the golf course and associated recreational activities. As well as providing for recreational uses, this Area is generally intended to provide a buffer between the residential areas to the east and airport activities to the west.

Activities related to the function of the Golf Course Recreation Area, and activities and services ancillary to this function, are permitted subject to a range of conditions which address:

- Noise;
- Dust;
- Parking;
- Site access;
- Lighting;
- Signage;
- Waste management; and,

- Landscaping.

Buildings are also permitted subject to meeting specified height and setback controls. This includes:

- Maximum building height: 12m
- Maximum pole height: 20m
- Maximum height of buildings within 5m of Residential Area: 3m

The upgrading and maintenance of roads, including existing formed roads and public accessways is also permitted in the Golf Course Area, including associated earthworks. This does not extend to the construction of new legal roads.

Permitted activities that cannot meet the above conditions require resource consent for a restricted discretionary activity. Subdivision activity within the golf course precinct is discretionary, with all other activities requiring resource consent for a non-complying activity.

A small 136m^2 portion of the existing golf course landholdings, which is proposed to be part of the landscape buffer area, is located within the Outer Residential Area. Residential and work from home activities, and the creation of open land for recreation or amenity purposes are all permitted within the Outer Residential Area, subject to meeting development standards relating to buildings and structures.

4. PROPOSED DESIGNATION

Designations are a common planning tool used for infrastructure, including airports, in New Zealand, and the Wellington City District Plan identifies many sites in Wellington as being subject to a designation. In a legal sense, a designation serves two separate but related purposes:

- It *protects the opportunity* to use the designated land for a public work, project or work, in that no one can undertake an activity that would prevent or hinder the designated work, without the prior written approval of the requiring authority that holds the designation; and
- It *provides district planning authorisation* for a public work or project or work in place of any rules in the district plan and removes the need for land use consents under the district plan for activities and developments anticipated or provided for by the designation.

Case law has established that designations can be quite specific, identifying particular works on a particular site and containing detailed conditions, whereas others may be more general, simply identifying a site as being used for a certain purpose (i.e. an airport), and

subject to some conditions, with more specific details, where necessary, left to be addressed by an 'outline plan' submitted to the Council prior to construction in accordance with section 176A of the RMA.

An outline plan which a requiring authority is required to submit to the Council must show the bulk and location of the proposed work, the finished contours of the site, access, landscaping, and any other matters to avoid, remedy or mitigate any adverse effects on the environment arising from the work or project.

As set out in section 176(1)(a) of the RMA, section 9(3) of the Act does not apply to a public work, project or work undertaken by a requiring authority under the designation. This means, the designation only serves to benefit the requiring authority when undertaking works expressly enabled by the designation. Other activities undertaken by the requiring authority, or activities undertaken by persons other than the requiring authority will continue to have to comply with the underlying zone rules.

It is noted that any requirements that emanate from National Environmental Standards and Regional Plans must still be met by the requiring authority.

4.1 OBJECTIVES OF THE REQUIRING AUTHORITY

When considering this NOR, one of the matters the consent authority is required to consider is the effects of allowing the NOR, having particular regard to whether it is reasonably necessary for achieving the objectives of the requiring authority. The objectives of WIAL as the requiring authority for this designation are:

- To establish a suitable planning regime that properly recognises the national and regional significance of Wellington International Airport.
- To operate, maintain, upgrade and extend the facilities at Wellington International Airport to continue to provide for the aircraft types currently in use, and likely to be in use in the foreseeable future by New Zealand's major domestic and international airlines in a sustainable manner.
- To ensure the Airport facilities and activities continue to meet the forecast passenger and aircraft demand and provide a quality service to its users through:
    - Providing for facilities and activities which will ensure the safe, effective and efficient operation of the Airport;
    - Providing for non-airport activities and developments within the Airport, provided they do not compromise the ongoing and strategic transport role of the Airport;
    - Allowing the development of additional buildings and activities to ensure the effective and efficient functioning of the Airport.

- To enable an efficient and flexible approach to developing the Airport, while also managing the actual or potential effects of future development particularly at its interface with sensitive land use activities.

4.2 PROPOSED FORM OF THE DESIGNATION

It is proposed that this designation (shown in Figure 1) will provide for the establishment of an "Airport Purposes" Designation, but it will be limited to the following range of activities:

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;
- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;
- All demolition (if required) construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above.

As indicated in Figure 2, the majority of the new designation area will be dedicated to aircraft movement areas, taxiways, the establishment of ground service equipment areas and landscaping.

A number of conditions are also proposed that will ensure the effects of the proposed designation are appropriately managed. A copy of the proposed conditions is attached in **Appendix C**. In summary the proposed conditions:

- Define the design outcomes for the landscape buffer area of the designation and the associated management requirements;
- Put in place a range of controls to manage temporary construction effects, including obligations around construction noise management and accidental discovery protocols;
- Put in place a range of controls to manage the effects of bulk earthworks;
- Define façade treatment requirements for retaining structures;
- Define maximum building height and setback limits (generally consistent with the underlying District Plan rules);

- Generally, impose noise limits consistent with the existing Airport Area District Plan noise rules, with amendments proposed to:
    - Undertake a further construction noise assessment, prepare and implement a Construction Noise Management Plan, before commencing earthwork and construction activities within the designated area;
    - Allow for a localised and defined exceedance of the Air Noise Boundary **(ANB**) shown on Planning Map 35 to allow for taxiing within the designated site;
    - Establish Sunday daytime noise limits for land-based activities which reflect the existing ambient noise levels and airport setting;
    - Restrict the allowable runtime for Auxiliary Power Units (APUs) to 20 minutes;
    - Restrict aircraft operations (excluding aircraft under tow) and APU usage within the proposed designation area between 10pm and 7am to avoid sleep disturbance effects;
    - Undertake continuous monitoring of cumulative noise effects at the interface of the proposed designation site and adjacent Outer Residential area; and,
    - Prevent engine testing within the proposed designation site;
- Impose lighting limits consistent with the existing Golf Course Area District Plan requirements; and,

A 15 year lapse period is also sought for the designation to provide sufficient time for the engineering, design and construction of the proposed aircraft operational area over time.

5. ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

The following is an assessment of the actual or potential environmental effects that are likely to arise from the requirement to designate the land identified in Figure 1 for Airport Purposes. These are identified as including:

- Positive Effects;
- Economic Effects;
- Visual and Amenity Effects;
- Recreation Effects;
- Transportation and Traffic Effects;
- Network Utility Effects;
- Noise Effects; and
- Other effects.

5.1 POSITIVE EFFECTS

The growth in passenger movements at Wellington Airport is placing significant pressure on existing Airport facilities and expansion of these facilities is required to accommodate this growth. It has been identified that the most efficient and effective way of providing for future growth of the terminal area is to focus expansion south and to the east of the existing terminal. Enabling the expansion of the Airport as is proposed, will facilitate the continued growth of scheduled domestic and international services. This will result in significant benefits to the local, regional and national economy as set out in Section 5.2 below.

The proposal will also enable WIAL to work towards the provision of an ICAO compliant taxiway separation distance (and associated features) when compared with the current configuration. Planning for an ICAO compliant separation distance would future proof the concurrent taxiway and runway operations, if and when existing CAA allowances are no longer in place. This means that WIAL is able to ensure future use of its existing runway asset can be undertaken in the most efficient manner and is better able to provide for projected growth. Being able to use this asset in this way has significant benefits to Wellington and the wider region. There are also enhanced safety benefits accruing from an increased separation distance.

5.2 ECONOMIC EFFECTS

Modern and effective airports are essential to a region's economy. They enable a link to the world for people and for trade; provide an important hub for business investment and economic development; and increase business competitiveness and attractiveness. They are also important for quality of life, enabling people to travel and visit family and friends. New Zealand's geography makes this role even more crucial. Air transport is the most efficient passenger transport mode between most domestic destinations and all international destinations.

Airports are widely recognised as having significant strategic implications for the cities and regions they serve. At the most obvious level, airports provide inter-modal facilities for the arrival and departure of international and domestic passengers, and cargo from road, and in some cases, rail and other surface transport modes.

There are also other advantages an airport brings to a community, including improved communication links with other communities and regions within the country and overseas, the provision of medical flight services, and focal points for civil and national defence activities.

Wellington Airport generates or contributes to the creation of 10,984 Full Time Equivalent (**FTE**) jobs (including all associated businesses and services that are only in operation due to the Airport). This also includes 343 FTE directly employed by WIAL. By approximately

2040 (12 million passenger forecast), it is expected that the Airport will create 22,826 FTE's (526 of which will be direct Airport operational employees).

5.2.1 Global Air Demand

Global demand for air service is expected to double in the next 15 years. Asia-Pacific is expected to account for 42% of all air passenger traffic globally by 2034. In response to this global increase in demand, airlines have responded with a high volume of aircraft orders.

The types of aircraft are also changing. Since 2005 there has been a reduction in the use of "extra-large" long haul aircraft types (i.e. Boeing 747) in favour of more efficient "wide body" aircraft such as Boeing 787 and Airbus A350. This newer aircraft technology and other industry advancements allow airlines to expand into new markets.

New Zealand and Australia are growth markets for major airlines, and carriers generally add capacity to regions where growth is predicted, and it fits with their network strategy.

The global tourism market is also set to grow.[8] Over the past 10 years, global wealth has doubled, from US $113 trillion to US $241 trillion. That growth is projected to continue at an annual rate of 6.5%. As the world's wealth increases and the world's economic centre of gravity shifts from west to east and thus closer to New Zealand, very valuable opportunities are emerging for New Zealand and New Zealand tourism.

An increase in wealth is a stimulus for travel, and the outlook for tourism globally is positive. The Asia-Pacific region's share of the global middle class is expected to rise from just over one-quarter today, to two-thirds. New Zealand is already experiencing the benefits: in 2013, China became not only the country to which New Zealand exports more goods than any other, it also moved into second place behind Australia as New Zealand's second largest visitor market. The significance of this is clear when reviewing the State of Tourism Industry Report 2015, which notes that the average Chinese visitor spends $4,265 and stays for 19 nights, whereas the average Australian visitor spends $1,746 and stays for 11 nights.

5.2.2 Wellington Airport Growth and Economic Contribution

Visitor numbers to Wellington are strong both in the domestic and international markets. Tourism generates around $7 million per day in the Wellington region, a total of some $2.6 billion annually. Wellington City saw around 2.8 million commercial guest nights in 2018/2019, and there were 867,484 international guest nights in the same period. Over the last 12 months, passenger movement numbers at Wellington Airport have increased by

[8] Source: Tourism 2025 (www.tourism2025.org.nz).

over 6%. Passenger movement numbers surpassed 6 million in June 2018. Forecast future passenger movements are set out in Table 1 above.

Wellington International Airport plays a vital role to the Wellington region, connecting residents, visitors and businesses to all parts of New Zealand and to Australia, the Pacific, Singapore and on to the rest of the world, significantly contributing to the City and wider region's economy. The Airport is deemed to be regionally significant infrastructure and is a lifeline utility under the Civil Defence Emergency Management Act 2002.

Wellington is the main gateway to the lower North Island and central New Zealand and is New Zealand's second largest city as measured by urban population. As the capital of New Zealand, it is the seat of central Government and the location of the most consular representation in New Zealand, as well as the location of the New Zealand Stock Exchange.

The Wellington Region is the second largest regional contributor to the New Zealand economy, behind Auckland.[9] The area generates $33 billion in GDP, almost 13.7% of New Zealand's total.

The Wellington region has a significant tertiary education and research sector, including four universities and three institutes of technology/polytechnics.

Wellington Airport itself currently generates economic output of $2.3 billion annually, contributing $1.1 billion of GDP. It also supports business and tourism, generating employment for close to 11,000 people in the local economy.

Passenger numbers at Wellington Airport are growing steadily, and WIAL needs to plan for and accommodate this growth including by investing in essential infrastructure. The proposed expansion of airside facilities into the adjacent land will contribute to continued growth and economic wellbeing. Economic impact studies predict that by around 2040, the Airport will double its direct contribution to the region to $4.3 billion per year, generating $2.1 billion of GDP and facilitating more than 22,500 jobs.

The proposal will also enable WIAL to work towards achieving the best practice separation distances for taxiways and structures. This will also allow for concurrent taxiway and runway operations, meaning that Wellington Airport is able to obtain more efficiency from its existing runway in a configuration that is better able to provide for the projected growth in passengers. Being able to use the runway in this way means fewer delays and more capacity for passengers. There are also enhanced safety benefits accruing from an increased separation distance.

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9 Statistics New Zealand.

5.2.3 Economic Costs of the Proposed Designation

The site is zoned for golf course and recreational purposes under the Wellington City District Plan. Within this area, people-intensive activities are non-complying and only activities of a recreational nature are provided for. In addition, the site is affected by existing Airport operational overlays such as the ANB and OLS.

In terms of potential economic costs arising from the proposed designation, the costs of the land will be subject to a private commercial agreement.

The land is currently used as a private golf course facility and the remaining portion of the site will be retained as a 9 hole links golf course. There also does not appear to be any other commercial or business operations who are directly reliant on the existence and continued operation of the 18 hole golf course in this location.

The overall economic costs of the proposed designation are therefore not expected to be significant.

5.3 VISUAL AND AMENITY/URBAN DESIGN EFFECT

The site is located in an urban area on the south coast of Wellington City. The site is currently mostly occupied by part of an 18 hole private golf course, and existing Airport activities. The golf course currently provides a buffer between the existing Airport activities.

Urban design and architecture firm Warren and Mahoney has provided expert urban design input into the development of the proposed designation to ensure it appropriately integrates with the surrounding environment. Landscape and visual expert, Frank Boffa, has assessed the effects of the proposed designation on the built form outcomes from a number of prominent viewpoints surrounding the Airport. A copy of the landscape and visual assessment is attached as **Appendix F**, including visual simulations of the conceptual master plan approach shown in Figure 2.

Urban Design

The Airport and its associated activities have long been part of the environment and has therefore been influential within Wellington City's existing urban form.

The Airport is conveniently close to the City's centre and the catchment of both business-people and residents using it. The Airport's position has long influenced major decisions on the City form and growth. This influence includes planning of transport infrastructure and the way in which land uses have transitioned around the Airport.

The existing environment contains a level of modification that has reduced its visual and urban amenity value considerably. Views of the existing Airport, particularly toward the Terminal Area, are already influenced by permitted and/or consented buildings and

structures, and any future development with the proposed designation would be viewed together with this existing activity from all perspectives and viewing angles.

Notwithstanding this, it is acknowledged that the Airport shares some of its boundaries with more sensitive activities such as residential land uses, open space and recreational areas, and the adjacent Coastal Marine Area. It is therefore proposed that the designation requires a landscape buffer area to be established to the east and south. This buffer is to be planted and new tracks and trails provided to improve the functional use of the area and also to provide a landscaped foreground for the residential properties located along Bunker Way and Kekerenga Streets. The proposed buffer area will be developed and managed in accordance with a Landscape and Visual Amenity Management Plan. This plan will be prepared as a requirement of the conditions of the designation and will set out the details relating to:

- The type and location of plantings within the buffer area in order to achieve suitable screening along the residential edge of the designation area and compatibility with the adjacent Airport activities;
- The location and management of any public access or recreational activities (i.e. bike tracks) through the buffer area. Where practicable, opportunities to connect with existing trails within the adjacent Open Space Zone will be provided, as will the potential for a public viewing platform;
- The façade treatment of any retaining walls proposed on-site, as necessary, to manage the prominence of such features.

Building height and setback restrictions are also proposed as part of the designation. These will generally align with the equivalent height and setback limits of the District Plan.

The proposed conditions (attached as **Appendix C**) are intended to give vent to the methods set out above in order to manage urban design effects.

Landscape and Visual Assessment

To assess the landscape and visual effects of the proposed designation, six viewpoints from publicly accessible locations were identified where the effects were likely to be the most apparent or most sensitive to the proposed changes (i.e. the residential and recreation areas). This included public viewpoints from Strathmore Heights, Seatoun Heights, Lyall Bay Beach and Melrose areas. Views from two residential properties located on Ruakawa Street and Bunker Way were also assessed.

As set out in the Landscape and Visual Assessment Report, preference of views is dependent on personal likes and cultural influences. Notwithstanding this, international research has shown that the following guiding principles are consistently found in scenic preference studies and consultation:

- Water and natural elements are preferred over urban scenes;
- Mountains and hills are preferred over flat land;
- Views which include both mid-ground elements and background are preferred;

In terms of visual and landscape effects, the modifications arising from the proposed designation are within an already highly modified landscape.

The proposed designation will involve significant modifications in the form of earthworks and retaining walls. These are necessary to create flat aircraft taxiways and operational areas to accommodate the Airport's growth and development. The overall visibility and effect on views in most locations assessed will generally not be extensive given the existing character of the area, the context and containment of the modifications envisaged, and the screening effects of intervening landforms, structures and vegetation. Furthermore, conditions are proposed on the designation that require façade treatment of retaining walls and mitigation planting to reduce the visual effects of the development of the proposed designation. Public access and planting are also proposed within the buffer areas to provide a meaningful and useable public amenity.

From the Strathmore Heights area, views are unlikely to be adversely affected or compromised as modifications arising from the proposed designation will occur within the foreground view which tends to be looked over rather than into. Accordingly, the extensive views from this area are unlikely to be adversely affected. Visual effects from this general area are likely to be moderate to low overall.

While views in general from the Bunker Way area will not be screened, there will be a significant change to the foreground views from some locations, particularly those areas with views to the south over this part of the existing golf course. Visual effects from some residential properties may be very high depending on the location and orientation of particular viewpoints. While appropriate mitigation will assist in reducing visual effects, there will be a permanent change to some foreground views. Notwithstanding this, there will be no screening or blocking of views, particularly those more expansive views extending beyond the immediate foreground. Visual effects in general from within this vicinity are likely to be high.

From distant and elevated locations in the Seatoun Heights area, while the change to the southern section of the golf course will be apparent, the visual effect of this change to the view will be relatively low. From this general location, the most apparent change will be the expansion of the main terminal buildings within the existing Airport area. While these structures will be clearly visible, they will not detract from or interfere with the expansive views enjoyed from the general area. Visual effects overall from this area will be in the moderate to low range.

From the Lyall Bay foreshore and Parade area, the taxiways and aircraft operational area will generally not be visible. From these general locations, while the retaining wall will be visible, the change will largely be seen to be consistent with the existing scale and pattern of development and will generally maintain the existing landscape character and visual amenity values of the area. Overall, the visual effects are assessed as being moderate, and while apparent, will not be uncharacteristic with the landscape character of the area.

From the Melrose area, distant views of the expanded Airport facility will be visible in the middle ground view. There will be no changes to the foreground and background views, which are the main features of the expansive views obtained from this area. Overall, the level of visual effect from the Melrose area is assessed as being low.

As noted above, views from two residential properties were also considered, with permission being obtained from the respective homeowners. The properties were located at 17 Bunker Way and 50c Ruakawa Street and were considered to be 'representative' of the effects likely to be experienced from most of the properties along these streets. The assessment found that the main change from these locations will be in the nature and composition of the view, being the loss of the golf course outlook to one of airport and aircraft activities. While lower ground and middle ground views will be directly modified, views to the distant background hills will not be affected. The assessment considers that the visual effects on these properties would be high. Other properties located in these areas would be affected to a similar extent, or in the case of Ruakawa Street, to a less extent. Most other properties on Ruakawa Street are at higher elevations and are likely to look over the designation area, rather than into it.

Prior to submitting the NOR, WIAL prepared a summary AEE and invited feedback on the proposal from owners of properties located along Bunker Way. A number of responses have been received from these homeowners. WIAL is undertaking further individual consultation with these property owners.

5.4 EFFECTS ON OPEN SPACE AND RECREATIONAL VALUES

As discussed in Section 1.3 above, WIAL intends to designate part of the golf course site in order to provide for current and future airport growth and development. WIAL has negotiated the purchase of the land with the Miramar Golf Club.

Although the existing recreational activity could continue on the site until such time as the land is used for airport purposes, the proposed designation will ultimately result in the loss of land available to be utilised as part of the current 18 hole course. This has been discussed with Miramar Golf Club and the viability of converting the remaining land into a 9 hole course has been assessed. A subdivision consent will be prepared and lodged to assist with this.

The designation also seeks to provide for new recreational opportunities within the landscape buffer areas. While this area will primarily serve as a buffer between the operational areas of the Airport and the adjacent residential uses, opportunities to connect with existing trails within the adjacent Open Space Zone will be considered, as will the potential for a public viewing platform. This will alter the nature of the recreational opportunities, from one of a private, fee paying activity to a more publicly assessible activity.

5.5 VEHICULAR TRAFFIC AND TRANSPORTATION EFFECTS

Wellington Airport is well connected and served by the State Highway and local roading network. Access to the Airport is via two main routes – State Highway 1 to the north and Moa Point Road to the south. Stewart Duff Drive (a private road owned by WIAL) connects these two routes and provides access to both Wellington Airport, the Miramar Golf Club and WCC wastewater treatment plant

As WIAL progressively implements its master plan for this part of the Airport, a length of Stewart Duff Road will be relocated eastwards within the designation boundary. This will ensure that efficient traffic circulation is maintained on the Airport site as well as between Moa Point Road and State highway 1. Due to Civil Aviation regulations, it is also important for the road to be located outside of airside operational areas. The relocation of the Stewart Duff Road may occur in stages commensurate with the growth of airside operations onto the golf course site. While the detailed design and formation of the road will be addressed during a later outline plan of works, it is WIAL's intention that the standard of formation will be consistent with the Council's roading standards, with amendments as necessary to the reflect the road's proximity to operational areas of the Airport and any associated Civil Aviation requirements that may impact on detailed design (such as lighting and security).

The generation of airport related road traffic and its effects on the wider transportation network under the master planning growth scenarios have been reviewed in light of the recent public announcements made by the "Let's Get Wellington Moving (LGWM)" initiative. It is evident that there are current issues with Wellington's transportation network and the LGWM is a joint initiative between WCC, Greater Wellington Regional Council and the NZ Transport Agency, working to address the following key problems:

- Growing traffic congestion and unreliable journey times;
- Poor and declining levels of service;
- Safety issues, especially for cycling and walking; and
- Vulnerability to disruption from unplanned events.

As a key stakeholder and contributor to traffic movements in and out of the City, WIAL has engaged directly with LGWM. WIAL has provided its forecast passenger numbers in

anticipation that this growth would be provided for as part of the integrated transport solution to better serve the needs and address the identified key problems.

At a high level, the solution announced in May 2019 includes long term development of:

- High quality walking and cycling accessibility;
- Mass transit from the Railway Station to the Airport on a second spine through the central city;
- State Highway improvements for all modes; and
- A smarter transport network.

A three-phase delivery sequence is planned, involving:

- By 2024, to deliver early improvements including walking, cycling, and public transport while starting investigation and decision of large programme events;
- 2024 to 2029, to deliver a step change in public transport with new mass transit; and
- After 2029, to connect mass transport to the Airport.

With respect to the link between the City and the Airport, the proposed transport works will provide for improved travel reliability and efficiency through the development of an integrated, multimodal transportation solution. WIAL's transportation advisors have reviewed the proposed improvements and it is clear that the proposed approach goes a long way toward addressing existing and foreseeable future constraints in the transportation network between the City and the Airport, regardless of whether the designation proceeds or not. The proposals largely align with WIAL's own thinking that transportation solutions in this regard need to span a range of different modes and be adaptable to changing transportation preferences over time. This ties in with WIAL's own master planning, which is directed at making provision for a multimodal transportation hub, alongside more "traditional" private vehicle focussed infrastructure such as carparking and vehicle access.

In terms of the way that the proposed measures are ultimately developed and sequenced, WIAL acknowledges that it will need to remain an active participant in assisting the relevant transportation authorities with the implementation of the various proposed measures so that they are rolled out in a manner that aligns, as far as can be achieved, with the growth imperatives facing the Airport and the City more generally. WIAL's participation with LGWM should endure and WIAL is committed to that process.

In the longer term (+20 years), it is acknowledged that additional infrastructure or individual improvements to the roading network may also be required in order to provide further infrastructure to account for the anticipated passenger growth utilising the Airport. Again, advice in this regard is that WIAL should remain actively involved with the relevant

transportation authorities so that as time goes by, and additional demands arise, work programmes are planned and sequenced to match these demands, acknowledging of course that travel preferences and requirements will evolve over this planning horizon.

5.6 LIGHTING EFFECTS

Lighting effects will arise from aircraft manoeuvring, taxiway centreline lighting, security lighting, apron edge lighting and illuminated information signs. Lighting is also likely to be required within the road reserve also created as part of this designation (i.e. street lighting).

Beca has assessed the effects of lighting associated with the abovementioned activities, namely on the adjacent residential area, and were asked to identify any controls that might need to be imposed in order to manage any identified adverse effects. The assessment found that cumulative lighting effects on the eastern residential boundary of the site will be less than 10 lux at the boundary or 8 lux at the windows of the relevant dwellings as the sites are above that of the street lights. This will achieve compliance with the current District Plan limits for lighting associated with airport operations, and as such, it is proposed to carry this requirement forward into the designation by way of a compliance limit, imposed as a condition.

5.7 NOISE EFFECTS

The properties surrounding the proposed designation site are currently exposed to noise associated with the operation of Wellington International Airport. The proposed designation will extend ground-based airport operations into an area that is currently used for recreation purposes. Accordingly, there will be an increase in noise effects for the properties located to the east of the designation site, as aircraft operations occur within the proposed designation site and its use gradually intensifies over the next 30 years to accommodate forecast growth (described in Section 2.3 above).

To understand the nature and scale of the increasing noise effects, Marshall Day Acoustics has undertaken a detailed assessment of the existing noise environment and the effects of using the proposed designation site on the noise environment and surrounding noise sensitive receivers. A copy of the Marshall Day Acoustic report is attached as **Appendix G**.

It is important to note that the Marshall Day Acoustic report applies a 30 year horizon when assessing noise effects, and is based on a predicted passenger growth of up to 16 million passengers per annum. This exceeds the 20 year planning period of the conceptual (partial) master plan and therefore represents a conservative noise effects scenario.

For the purposes of the assessment, Marshall Day Acoustics has identified the residential properties located at Raukawa Street, Bunker Way and Kekerenga Street as the most

sensitive noise receivers affected by the proposed NOR. The assessment of noise effects has therefore primarily focused on the effects of the proposed NOR on these receivers.

Based on Marshall Day Acoustic's analysis, there are two key stages where noticeable noise effects will occur as a result of the proposed designation: – during construction and immediately following the commencement of aircraft operations and associated airport activities on the designated site (including noise from aircraft taxiing and land based activities associated with servicing aircraft on the stands, i.e. APUs, GPUs, baggage and cargo handling, refuelling, catering, airbridge use and push back) as well as the relocation and use of the road. In assessing the effects of the proposed designation, Marshall Day Acoustics has also considered these against aircraft noise levels which are permitted under the District Plan.

5.7.1 Construction

Due to the topography of the designation site, a substantial volume of earthworks and general construction activities will likely be required in order to progress the development and use of the site for airport purposes. Such activities can give rise to temporary noise effects associated with the use of heavy plant and machinery. Such activities may also occur in stages.

To mitigate the effects of construction noise, a condition is proposed to be included on the designation that requires all construction works to comply with the requirements of the New Zealand Standard for Construction Noise Management (NZS6805) as far as practicable. The designation also describes potential methods to assist with compliance with the standard, including:

- Identification of mitigation and management measures necessary to assist in reducing the effect of construction noise and vibration on sensitive receptors (such as the selection of construction equipment or methods, hours of operation, screening of the affected area);
- Obligations to consult with the owners or occupiers of the sensitive receptors to provide notice of particularly noisy construction activities and how these will be managed to avoid, as far as practicable the adverse effects of construction noise;
- The establishment of a complaints procedure; and,
- Staff training and induction to implement the methods referred to above.

Marshall Day Acoustic has confirmed that this is an appropriate approach for managing construction noise effects.

5.7.2 Aircraft Operations

The ongoing noise effects on receivers would arise from airport related activities on the proposed new taxiways, aircraft stands and road. These effects would occur over time as the designation site is initially established and then progressively developed in accordance with Airport growth and demand. Marshall Day Acoustics predicts the following:

- As the site is developed and the Airport grows, a progressive increase in aircraft operations noise will occur, and it is predicted that by the year 2050 this will comprise an increase of 1 dB L_{dn} (imperceptible) compared with the levels currently allowed under the current District Plan provisions.
- This increase in aircraft operations noise will likely result in an increase of 5 - 6 dB L_{dn} (noticeable) by 2050 compared with current aircraft noise levels.
- A just perceptible increase (4 dB) in noise from Auxiliary Power Units (**APU**) operating at the new stands compared with APU noise from the current Airport site. The resulting noise levels would be moderately high for a residential area but not uncommon for residents living near transport infrastructure. The effect from this noise source would be appropriately mitigated by applying duration and night-time operating restrictions. A designation condition to this effect is proposed.
- The day-time noise limit on Sundays for land based activities would be aligned with the Monday to Saturday limit in the District Plan that currently applies to Airport activities. This means a 10 dB increase in permitted levels on Sundays (7am – 10pm) which in theory is a significant increase. However, in practice this is considered reasonable and would not have a noticeable effect on receivers. A designation condition to this effect is proposed.
- Wide body aircraft taxiing on the taxiways within the designated area (up to 12 events per day) would cause a significant increase (10 dB L_{AE}) in aircraft single event noise compared with current single event noise from aircraft departures. Night-time restrictions would apply to these activities to avoid sleep disturbance. The predicted single event levels (95 dB L_{AE} and 83 dB L_{Amax}) on adjacent receivers are moderately high but not uncommon for residents living near an airport.
- For the year 2050, cumulative airport noise levels (from all noise sources within the Airport site) of 62 – 63 dB L_{dn} are predicted for adjacent receivers. These are moderately high levels that are generally undesirable for residential activity but not uncommon for properties adjacent to an airport. This is about the same level of noise that can be generated by airport activities in terms of the current District Plan limits. However, this represents an appreciable (7 dB) increase on adjacent receivers compared to the current measured cumulative noise levels.

Marshall Day Acoustics confirms that the noise characteristics described above are all reasonably anticipated adjacent to an existing operational airport. It is acknowledged however that by expanding aircraft operations onto the golf course, it is increasing the intensity and frequency of noise effects experienced for residential neighbours nearby. To manage these effects, conditions are proposed to be imposed on the designation which will:

- Require noise from aircraft operations to be limited to 65 dB Ldn at a new proposed compliance line within the designation area.
- Restrict the time that APUs can operate on parked aircraft to 15 minutes. This is a significant reduction to what is permitted on the main airport site (which is 90 minutes before departure and 60 minutes after departure).
- Install a permanent noise monitor along the eastern boundary of the site to continuously measure noise effects on the adjacent residential properties and to confirm compliance with the relevant noise limits.
- Prevent aircraft taxing (using engine power) and using APUs within the designated land between the hours of 10pm and 7am. This will help ensure that sleep disturbance effects are minimised.
- Require any Ground Service Equipment using the designated land and road traffic on the realigned Stewart Duff Drive to comply with a noise limit of 45dB L_{Aeq} overnight at residential properties.

5.8 EFFECTS ON SERVICES AND UTILITIES

A number of Council services run through the proposed designation site. The location of these services is shown in **Appendix H** attached and includes:

- A 375mm diameter wastewater trunk main, running approximately parallel with the northern boundary of the proposed designation site;
- A network of 750mm stormwater pipes originating from Ruakawa Street and Bunker Way; and
- A 150mm wastewater main originating from Ruakawa Street.

As development occurs within the proposed designation site in the future, WIAL will need to consider the extent to which these services may need to be relocated via the outline plan of works. Such work will be completed in consultation with WCC as the owner of these assets. To assist in the management of this process, WIAL will prepare a Network Utilities Management Plan. This is proposed as a condition of the designation.

Overall, the effects of the proposed designation on the network utilities present on-site can be adequately managed via the management plan that is proposed and subsequent approval processes.

5.9 CONSTRUCTION AND EARTHWORKS EFFECTS

The current undulating nature of the proposed site and escarpment area means that substantial earthworks are required in order to progress development of the land for airport purposes. As the Conceptual (part) master plan for this land is intended to provide only a conceptual development framework for understanding how the relocation and expansion of airport activities might unfold, detailed design and construction methodologies are not yet known.

It is therefore proposed that earthworks and construction activities will be undertaken in accordance with a management plan and specific conditions attaching to the designation. These seek to address:

- The extent of earthworks required and the impacts on the surrounding residential amenity values and any ecological effects;
- The extent to which earthworks will affect the stability and erosion potential of the site and surrounding sites and the measures to mitigate or remedy any potential adverse effects;
- How large-scale earthworks and construction activities will be managed so as to minimise any adverse nuisance effects (such as those arising from dust and construction noise) on adjoining activities.
- The implementation of an accidental discovery protocol should any sites or artefacts of cultural or archaeological significance be discovered during these activities.

6. MANAGEMENT OF EFFECTS

The assessments have concluded that the site is suitable for use for the proposed airport activities and that the effects of those activities can be appropriately managed in light of relevant District Plan expectations by the inclusion of appropriate conditions that would be applicable to the development of the land, and through the RMA s176 outline plan process.

This outline plan process will enable Council input into the management of environmental effects arising from the proposed use of the site, noting that:

- There are several overarching conditions that activities must achieve to be authorised by the designation and outline plan. They are set out in **Appendix C** attached to this AEE and include conditions which:
    - Require WIAL to develop the site in accordance with a Landscape and Visual Amenity Management Plan which achieves the following objectives:

- Establishment of a landscaped buffer area identified on Figure 1 to assist in providing separation and screening along the residential boundaries of the site, and to ensure compatibility with airport activities;
- Provision of appropriate public and recreational access through the buffer area; and
- Façade treatment of retaining features to reduce visual prominence.

- Put in place a range of controls to manage temporary construction effects, including obligations around construction noise management, erosion and sediment controls and accidental discovery protocols;
- Define maximum building height and setback limits (generally consistent with the underlying District Plan rules);
- Require lighting to comply with the current Golf Course Recreation Area District Plan limits;
- Set ongoing consultation requirements with relevant road controlling authorities to facilitate forward planning of roading infrastructure;
- Establish limits on certain activities in order to manage any actual or potential noise effects – including:
  - Allowing an exceedance of the ANB to allow for localised taxiing noise within the designated site;
  - Daytime noise limits for land based airport activities on Sundays;
  - Restrict the operating window of APUs within the designated area;
  - Exclude aircraft taxiing under power in the designated area at night-time (10pm – 7am).
- Establishment of a permanent noise monitor in adjacent residential areas in order to assess compliance with the proposed noise limits;
- Require the preparation of a Network Utilities Management Plan.

- WIAL would need to submit an outline plan for the site development which demonstrates how the designation conditions would be achieved and effects on the environment would be managed. In accordance with section 176A of the RMA, an outline plan would need to show:
  - The height, shape, and bulk of the public work, project, or work; and
  - The location on the site of the public work, project, or work; and
  - The likely finished contour of the site; and
  - The vehicular access, circulation, and the provision for parking; and

- The landscaping proposed; and
- Any other matters to avoid, remedy, or mitigate any adverse effects on the environment.

- Construction activities and earthworks associated with the development of the site will also be subject to a separate outline plan and management plan requirement.
- While the Council cannot decline/approve an outline plan for an activity which will achieve those conditions, it can request that WIAL makes changes and/or seek additional controls *"that will give effect to the purpose of the Act"*.[10] If WIAL does not make the changes requested, the Council can appeal WIAL's decision to the Environment Court.

WIAL is seeking a 15 year lapse period for the designation. The proposed lapse period is required in order to provide WIAL with sufficient time to undertake detailed airside design and obtain the requisite CAA approvals before works commence on-site. The use and development of the site may also occur in stages as the demand for aircraft operations over time increases.

Collectively, the proposed designation conditions and outline plan process will ensure that any adverse effects arising from future development at the Airport are appropriately avoided, remedied or mitigated.

7. SECTION 171 – STATUTORY FRAMEWORK AND PLANNING/ STRATEGY DOCUMENTS

Section 171 of the RMA is the basis by which a NOR is to be considered by a territorial authority.

Section 171(1)(a) requires when considering the Airport's requirement and any submissions received, and subject to Part 2, the consideration of the effects on the environment of allowing the requirement having 'particular regard' to relevant provisions of relevant planning documents. For this NOR, they are the:

- Regional Policy Statement for the Wellington Region (**RPS**); and
- Wellington City District Plan.

These documents are discussed in the context of the NOR below:

[10] RMA s176A(6).

7.1 WELLINGTON REGIONAL POLICY STATEMENT

The relevant provisions are contained in Chapter 3.3. (Energy, Infrastructure and Waste) and Chapter 3.9 (Regional Form Design and Function), as these relate to urban form, regionally significant infrastructure and transport.

Objective 10 requires that the social, economic, cultural and environmental benefits of regionally significant infrastructure are recognised and protected. Policy 39 further requires that particular regard shall be given to the social, economic and environmental benefits generated from regionally significant infrastructure.

Wellington Airport is identified as being regionally significant infrastructure, as well as being a lifeline utility. The explanatory text recognises that one of the benefits of regionally significant infrastructure is the ability for people and goods to move efficiently, and safely within, as well as to and from, the region. Wellington Airport is a significant physical resource for the region and nationally. It currently caters for over 6 million passenger movements per annum and this designation will assist with planning for growth in passenger numbers. It is also recognised as being a key contributor in providing for the economic growth and development of the City. The location of the Airport and its proximity to the CBD also creates efficiencies and benefits for the community.

Significant investment has occurred to develop the Airport to a high standard in order to meet the needs of the modern traveller and other users of the Airport. Ongoing investment is proposed to achieve greater passenger and economic efficiencies and growth. While the Airport intends to maximise its existing landholdings in order to accommodate the anticipated growth, additional land has been identified as being required. This is not only necessary to provide for growth, but also to assist with removing constraints to the achievement of future compliance with ICAO requirements, including for Code E aircraft movements (which will very likely begin to occur on domestic routes in the foreseeable future and which do not rely on an extension to the runway). A logical extension of airport facilities, particularly airside activities, is to expand into part of the golf course area. Enabling the designation to provide for growth and better enabling future compliance suitably recognises and protects the Airport as significant regional infrastructure.

Policy 8 of the RPS directs district and regional plans to include policies and rules to protect regionally significant infrastructure from incompatible new subdivision, use and development occurring under, over or adjacent to the infrastructure. A designation is a planning mechanism which provides this necessary level of protection.

Objective 22 of the RPS seeks to achieve a compact, well designed and sustainable regional form that has an integrated, safe and responsive transport network, and in doing so, efficiently uses existing infrastructure.[11]

Policies 54 and 55 direct particular regard be had to achieving the region's urban design principles contained in Appendix 2 of the RPS, and maintaining a compact, well designed and sustainable regional form. Policy 57 seeks to integrate land use and transportation by having particular regard to the following when considering NORs:

a) *Whether traffic generated by the proposed development can be accommodated within the existing traffic network and the impacts on the efficiency, reliability, or safety of the network;*

b) *Connectivity with, or provision of access to, public services or activities, key centres of employment activity or retail activity, open spaces or recreational activities;*

c) *Whether there is good access to the strategic public transport network;*

d) *Provision of safe and attractive environments for walking and cycling; and*

e) *Whether new, or upgrades to existing, transport network infrastructure have been appropriately recognised and provided for.*

The Airport is influential within the City's urban form. The Airport is conveniently close to the City's centre and the catchment of both business/Government people and residents using it. The Airport's position has long influenced decisions on the City form and growth. This influence includes planning of transport infrastructure and the way in which land uses have transitioned around the Airport. Continuing to develop the Airport in the manner that is proposed is consistent with the planned urban form of the City and its projected growth and the transportation network.

The Airport in its current location is an integral part of the growth plan for Wellington and this is recognised in a number of regional and district strategic documents. Objective 22 of the RPS refers to the development and/or management of the Regional Focus Areas as specified in the Wellington Regional Strategy 2007. The Johnsonville to Airport – Growth Spine is identified as one of these "Focus Areas". The strategy describes this area as being *"critical because it contains a number of key regional facilities including the port, airport, regional hospital and Wellington CBD. Increasing pressure on road, rail and bus transport is resulting from business and apartment growth within the CBD. Planning needs to accommodate further growth pressures, recognising that this area is the economic engine room of the regional economy".*

As discussed earlier in this report, WIAL has provided the LGWM initiative with its projected passenger numbers for the next 20 – 30 years. It is expected that the planned

[11] Objective 22(k).

programme of upgrades to the transportation network announced in May 2019 will assist in addressing current transportation issues to and from the Airport. As a key stakeholder, WIAL will continue to contribute to the LGWM as it progresses its planned roading enhancements, and via this it is anticipated that the overall roading upgrades required will also suitably cater for the anticipated growth of the Airport.

7.2 WELLINGTON CITY DISTRICT PLAN

The most relevant provisions in terms of the District Plan provisions are contained in the Airport and Golf Course Precinct Zone (Chapter 11). Within this chapter the Airport is recognised as being a key air transport hub and busy domestic airport. It recognises that the Airport is a strategic transport mode and it plays an important role in providing for the social and economic wellbeing of the City, the region and the nation. It sets out the District Plan provisions recognising the strategic importance of the Airport by providing for its continued use and development.

Objective 10.2.1 seeks to promote the safe, effective and efficient operation of the Airport. The proposed designation will provide for the efficient and sustainable growth and development of the Airport, an existing and significant infrastructural and transport asset for Wellington City and beyond. The Airport is currently constrained within its existing landholdings, and while development will continue to make the best use of this limited land resource, projected demand means that WIAL has to look at other expansion options and available land in its vicinity in order to continue to adequately provide for the safe, effective and efficient operation of the Airport. This also assists in best providing opportunities to meet relevant ICAO compliance requirements.

Objective 10.2.2 seeks to provide for the continued use and development of Golf Course lands for golf course and recreation purposes. Associated policies identify the Golf Course Recreation Area as having a distinct character and use and seeks to provide for the ongoing use as a buffer of land to the east of the Airport area.

Objective 10.2.5 seeks to protect the amenities of areas surrounding the Airport from adverse environmental effects. Supporting policies seek to exercise an appropriate level of control over the Airport and ancillary activities for the avoidance or mitigation of adverse effects, and to ensure the reasonable protection of residential and school uses from Airport activities by providing controls on bulk and location, ensuring sufficient space is available for landscape design and screening, and by retaining a buffer of land of a recreational nature to the east of the Airport.

The explanatory text associated with these provisions further explains that the existing Golf Course provides a buffer between residential areas and airport operations, and that the environmental results will be the efficient and effective ongoing operation of the Airport within the Precinct, together with the retention and development of the Golf Course and recreation area.

The NOR directly provides for the ongoing safe, effective and efficient operation of the Airport. While part of the golf course site will become available for airport activities, the balance of the golf course site will remain as a significant buffer between the Airport and adjacent residential activities, particularly those toward the north of the site. The proposed buffer areas associated with the NOR will be enhanced through specified plantings and maintenance to assist with screening, while also achieving suitable compatibility with adjacent aircraft operations.

WIAL has also assessed whether the remaining golf course site could be utilised as a 9 hole course. This has been confirmed and it is expected that the land will be developed as such, therefore achieving alignment with Objective 10.2.2 and associated policies.

Policy 10.2.5.4 seeks to manage the noise environment to maintain and where possible enhance community health and welfare. As demonstrated by the Marshall Day Acoustic assessment, the proposed designation will give rise to noticeable noise effects particularly on the closest residential receivers. While these effects will have some immediate impact, for example, when aircraft operations first commence on the site, the remainder of the noise effects are predicted to gradually increase over the next 30 years as aircraft operations develop to meet forecast demand. While an overall increase in noise effects will be noticeable for some, it is not expected that it will result in adverse health and welfare effects. Moreover, such effects are not unexpected or unreasonable next to transportation infrastructure such as major airports.

Chapters 4 and 5 of the District Plan relate to residential areas. Objective 4.2.3 seeks to ensure that new development within the Residential Areas is of a character and scale that is appropriate for the area and neighbourhood in which it is located. Objective 4.4.1 seeks to enhance the City's natural containment, accessibility and residential amenity by promoting the efficient use and development of natural and physical resources in the Residential Area.

A small 136m^2 portion of the proposed designation site is currently zoned Outer Residential Area and currently forms part of the Miramar Golf Course. This area is located within the proposed landscape buffer and will therefore be subject to enhancement planting to ensure residential amenity and screening of airport activities is maintained. This is an efficient use of an under sized residential lot with poor site access and is consistent with the relevant objectives.

It is accepted that views for those properties immediately adjoining the golf course area (i.e. properties along Bunker Way) will be altered from one of current open space, to that of airfield and airport activities. It is noted however that although the immediate views will alter for some, no views will be screened or blocked, and the more distant sea and hill views will remain unaltered.

Once the designation is in place, WIAL proposes to maintain a landscape buffer area that will provide landscaping and recreational opportunities which do not currently exist in this area. Planting where possible will be consistent with the adjacent open space areas. It is not anticipated that there will be any significant loss of natural features or vegetation/fauna that is of any significance as a result of this proposal.

Chapter 24 of the District Plan is specific to designations. Objective 24.2.1 seeks to provide for designations, only where they are necessary, to ensure the efficient functioning and operation of public works. Relevant policies seek to encourage the removal of designations in favour of the management of public works through District Plan rules, and to avoid, remedy or mitigate adverse environmental effects of public works by including management provisions for their operation in the District Plan.

WIAL, as an approved requiring authority pursuant to section 167 of the RMA, considers the designation is necessary to ensure the efficient functioning and operation of the Airport. The RMA provides for land to be designated for use as network utility purposes. It is considered that the use of a designation to provide for the Airport in particular, is appropriate in that it recognises the unique nature and characteristics of airport activities and infrastructure. It is therefore considered that a designation is necessary for WIAL to efficiently respond to the changing needs of a modern international airport and reasonably achieve its objectives and will provide a key mechanism in delivering the short and long-term operations and growth at the Airport.

8. CONSIDERATIONS OF ALTERNATIVES

Section 171(1)(b) specifies that the territorial authority must have particular regard to whether:

> *"adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if –*
>
> *(i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or*
>
> *(ii) it is likely that the work will have a significant adverse effect on the environment"*

WIAL has an unconditional sale and purchase agreement with the Miramar Golf Club to purchase the land that is the subject of this NOR. Settlement, while only subject to obtaining a subdivision consent for the site, is yet to occur. Given this, the requisite consideration of alternatives has been completed by WIAL as part of this NOR.

The Environment Court has summarised the key principles that apply to the interpretation of section 171(1)(b):

- The focus is on the process, not the outcome; whether the requiring authority has made sufficient investigations or alternatives to satisfy itself of the alternatives proposed, rather than acting arbitrarily, or giving only cursory consideration to alternatives. Adequate consideration does not mean exhaustive or meticulous consideration.
- The question is not whether the best route, site or method has been chosen, nor whether there are more appropriate routes, sites or methods.
- That there may be routes, sites or methods which may be considered by some (including submitters) to be more suitable is irrelevant.
- The Act does not entrust to the decision maker the policy function of deciding the most suitable site; the executive responsibility for selecting the site remains with the requiring authority.
- The Act does not require every alternative, however speculative, to have been fully considered; the requiring authority is not required to eliminate speculative alternatives or suppositious options.

The High Court decision of *Queenstown Airport Corporation v Queenstown Lakes District Council [2013]* confirmed the position that suppositious or hypothetical alternatives do not need to be considered.

Against this background, the assessment of alternatives for this NOR is informed by two matters in particular:

- Firstly, that it must occur in the context of an extensive, already authorised and developed asset which, to all intents and purposes, would be impracticable to substantially change or manage on a different basis; and
- Secondly, planning for the Airport is guided by the development of the master plan which is a strategic tool in determining the effective and efficient use of available land in and around the Airport.

As outlined in Section 2.3 above, the Airport is going through a period of substantial growth, and its ability to cater for that growth is constrained by its limited landholdings. WIAL is actively pursuing intensification of land use activities across its current landholdings as well as looking for other suitable developable areas, and this is likely to involve significant development and intensification in appropriate parts of the terminal area. This intensification needs to occur in a way that is complementary to the existing terminal development on-site, meaning that for the most part, it will build upon these existing facilities.

This will also mean that various ancillary activities, which are currently located within the existing Airport footprint, will need to be re-located to accommodate expanded terminal

and apron facilities, including activities like rental car storage, flight catering, freight reception and storage and ground service equipment storage. It is anticipated that some of these activities will be relocated to the Airport owned former Miramar South School Site if and when a designation is confirmed for that land. Airside activities, such as those proposed to be enabled through this NOR (i.e. aircraft taxiing and parking), have a functional need to be contiguous with existing terminal and runway airside facilities at the Airport. This inherently constrains the options available to WIAL to expand onto landholdings that are not directly contiguous to its airside operations.

Other than the proposed site (and the Miramar South School Site), most of the land on the eastern side of the runway is occupied by relatively high-density residential land use on small and / or undulating sites. There is some commercial land located to the west of the runway in Lyall Bay. However, being located on the opposite side of the runway, it is not suitably proximate to the terminal building area of the Airport, and does not lend itself to the further development of airside activities and associated aviation compliance requirements in the way that land on the terminal side of the runway in this location does. The land is also already closely developed. Considered overall, there are no significant environmental effects associated with the proposed site that would suggest the proposed activity would be better located in those other areas.

With respect to alternative sites, WIAL has sought to acquire additional land adjacent to the Airport as and when opportunities arise. However, suitable sites for the proposed activities are scarce, and the proposed site is ideally suited for expanded airside airport activities, as well as retaining a good buffer between the Airport and other land use activities.

Investment and expansion of the Airport at its current location also remains the most logical and efficient outcome. Investigations into alternative airport locations within the Wellington region confirm that retention of the Wellington Airport at its current location remains the most appropriate, due to its close links to the Wellington CBD, and the existing investment and infrastructure already established at the site.

To the extent relevant, with respect to alternative methods for undertaking the work, in addition to a designation, WIAL has considered:

- A private plan change to have the site rezoned Airport Purposes; and
- Obtaining a resource consent.

The proposed designation was preferred as the section 176A outline plan process provides flexibility and more certainty to WIAL in reasonably pursuing its objectives, and it allows WIAL to respond efficiently in its day-to-day operational needs as well as to growth. It protects the land for airport purposes – a nationally and regionally significant resource, while also containing checks and balances to ensure effects are appropriately managed.

These include s171 in terms of establishing the designation, and s176A(3)(f) and s176A(4) in terms of consideration of an outline plan. The designation also provides certainty to both WIAL and the public as to the use of the land into the future.

Neither the plan change nor the resource consent option does this in such an efficient and effective way. A resource consent application could be made to undertake the proposed activities; however, this would be a short-term, inflexible method, in that it would not facilitate long-term flexibility in the use of the site, and the Golf Course Recreation Area provisions attributed to the site would remain out of step with its intended use for airport purposes. The resource consent option would also not protect the use of the site for airport activities. The private plan change option would better address these issues; however, it requires a time and resource intensive Schedule 1 process and does not provide the flexibility of the outline plan process. Furthermore, the Wellington City Council is the process of reviewing its District Plan, with notification likely in late 2021. A private plan change would therefore likely be subject to further review soon after it would be made operative.

In summary, the proposed site is ideally suited, both in terms of its physical features and location adjacent to the Airport, in particular the terminal area, and in terms of managing the effects of the proposed activities on the environment.

9. REASONABLE NECESSITY OF THE DESIGNATION FOR ACHIEVING THE OBJECTIVES OF THE REQUIRING AUTHORITY FOR WHICH THE DESIGNATION IS SOUGHT

Being conveniently located close to the City comes at a price for Wellington Airport, in that there are some legacy issues facing the Airport due to its establishment within existing residential suburbs surrounded by hilly terrain. One of the major constraints is the Airport's limited landholdings.

The land constraint is a well-known and acknowledged issue, and WIAL has been actively working for many years on how it can provide for future airport activities.

Wellington Airport can rightfully claim to be one of the most efficient airports in the world, handling approximately 53,000 passengers per annum, per available hectare, compared to the approximate 9,000 and 12,000 per hectare as handled by Christchurch and Auckland respectively. Intensification of activities on the existing site is obviously one way the Airport can accommodate growth, and a central part of this is Wellington Airport's current master plan described in Section 2.3 above.

However, there are limits to this intensification, and it has become clear via the master planning exercise that the Airport requires additional land to accommodate both its landside and airside activities, as well as remove existing operational constraints

associated with a limited taxiway separation distance and shortage of stands during peak hours. The proposed designation site is contiguous with WIAL's current landholdings and is located directly adjacent to the terminal area of the Airport. The majority of the site will be encapsulated within the airside area of the Airport, where public access is limited.

A designation also provides WIAL with longer term certainty with regard to its future operational capacity. WIAL needs to be proactive in achieving appropriate control over land that is of strategic significance for the long-term safe and efficient operation of the Airport. In this instance, the designation is not only necessary to provide for immediate and future forecasted passenger and/or aircraft demand, but also enable operational constraints to be lessened, and enhance safety by meeting international aviation regulations where this can be practically achieved.

Given WIAL has not yet fully settled the sale and purchase of the land to be designated, it has considered alternative sites for locating these activities, however, the proposed site was preferred (refer to Section 8 above).

Regarding methods to achieve its objectives, a designation is the logical method to provide WIAL, as a requiring authority, the flexibility to quickly respond to forecast growth and changing needs at the Airport site. A designation also provides more certainty to the requiring authority, the Council and the public as to the type of land uses that are anticipated and the methods to be employed to manage the effects of development.

Greater efficiency and flexibility will also be achieved by designating the site because WIAL will not be subsequently required to undertake numerous resource consent processes for land use activities that are core to the future operational functions of the Airport. Where a designation and supporting conditions are in place, the outline plan process generally takes significantly less time than similar resource consent processes and the process incurs lower costs.

Overall, the proposed designation reasonably meets the objectives of WIAL, as set out in Section 4.1.

10. RELEVANT OTHER MATTERS

Ensuring security and investment in high quality infrastructure is facilitated and supports growth of the aviation sector, is consistent with directions set in national documents including Connection New Zealand, the International Air Transport Policy Statement and the Thirty-Year National Infrastructure Plan 2015. These directions provide that:

- Wellington International Airport is a major trade asset for New Zealand;
- An effective, efficient, safe, secure, accessible and resilient transport and infrastructure system will support the growth of New Zealand's economy; and

- Better access to major and developing air travel markets such, as within Asia, presents an opportunity for New Zealand to export goods and services to these markets.

The importance of Wellington Airport as a key contributor to the City and region's economic prosperity and growth is also recognised in several regional and district strategic documents.[12] Designating the proposed site for airport related activities is consistent with these provisions.

11. PART 2 CONSIDERATIONS

A key statutory matter under the RMA of relevance is the purpose and principles of the RMA (Part 2). The NOR meets the purpose of the Act (section 5) by enabling the continued operation and growth of Wellington Airport in a more efficient and sustainable way.

Wellington Airport is a significant existing physical resource that provides for the social and economic wellbeing of the community through direct and indirect employment opportunities and through its role in facilitating the movement of people and goods to the City, wider region and beyond. The Airport is a significant stimulator and contributor to the local, regional and national economy.

The proposed designation will ensure Wellington Airport is able to meet the needs of current and future generations through providing an ability to respond quickly to changes in the aviation sector, and the needs of its passengers and other users of the Airport. The health and safety of the community will also be enhanced via enabling WIAL to remove existing operational constraints and achieve compliance with international aviation regulations where this can be practically achieved.

As an already modified site with largely exotic plants and species, the proposed designation will not affect the life supporting capacity of air, water or soil ecosystems, and through appropriate development controls, coupled with the requirement for an outline plan of works for certain developments (including for establishment earthworks), the adverse effects arising because of the designation can be appropriately avoided, remedied or mitigated.

There are no known treaty issues arising under section 8 of the Act, nor matters of national importance under section 6 as a result of this NOR.

In terms of section 7 "matters to have particular regard to", the following are considered relevant:

[12] Manawatu-Whanganui Regional Growth Study, Wellington Regional Public Transport Plan 2014, Regional Freight Plan 2011.

(b) The efficient use and development of natural and physical resources;

(c) The maintenance and enhancement of amenity values;

(f) Maintenance and enhancement of the quality of the environment;

(g) Any finite characteristics of natural and physical resources…

The Airport is recognised as regionally significant infrastructure in the RPS, and the designation seeks to enable the facilitation of WIAL's objectives as efficiently as possible. The required expansion has been identified through projections for growth of aircraft (and type) and passenger movements at Wellington Airport. Master planning work has been undertaken to provide for this anticipated growth and this has identified that an extension into part of the golf course represents the most logical and efficient option. It will also assist in enabling WIAL to remove existing operational constraints and enhance safety where this can be practically achieved, therefore maximising the efficient operation and development of the Airport.

In terms of residential amenity and quality of the environment, these features will be managed in accordance with a detailed management plan and associated conditions for earthworks and construction activities to avoid nuisance effects on adjoining landowners. Operational lighting will also be suitably controlled so as to not generate an adverse nuisance effect outside the boundary of the designated site.

While the designation will ultimately result in airport activities being closer to existing residential activities, and will increase the level of noise exposure and affect views from some residential properties, the proposed landscaped area will maintain a significant buffer and other visual effects arising from, for example, the retaining structure, will be mitigated by façade treatment. Retention of the remainder of the golf course will also assist with the management of visual effects. The proposal will also not block or screen any residential views, and as such, outlooks towards the bay and adjacent hills will remain unaffected by the proposal. Consultation with the most affected residents will also continue and it may be that some form of compensation or agreement can be reached to further reduce the severity of adverse effects on views.

12. CONCLUSION

This application is for a NOR to designate the land shown in Figure 1 for Airport Purposes to provide for:

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;

- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;
- All demolition (if required) construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above.

This assessment has demonstrated that the NOR is reasonably necessary to achieve WIAL's objectives, in particular it will ensure the safe, effective and efficient operation of the Airport considered on short, medium and long-term basis.

WIAL has received expert technical assessments in relation to urban design, landscape and visual effects, noise, lighting and planning which conclude that the site is suited for the proposed aircraft operations and that the effects of those activities can be appropriately managed by the inclusion of appropriate conditions that any development of the site must achieve, and through the RMA s176 outline plan process.

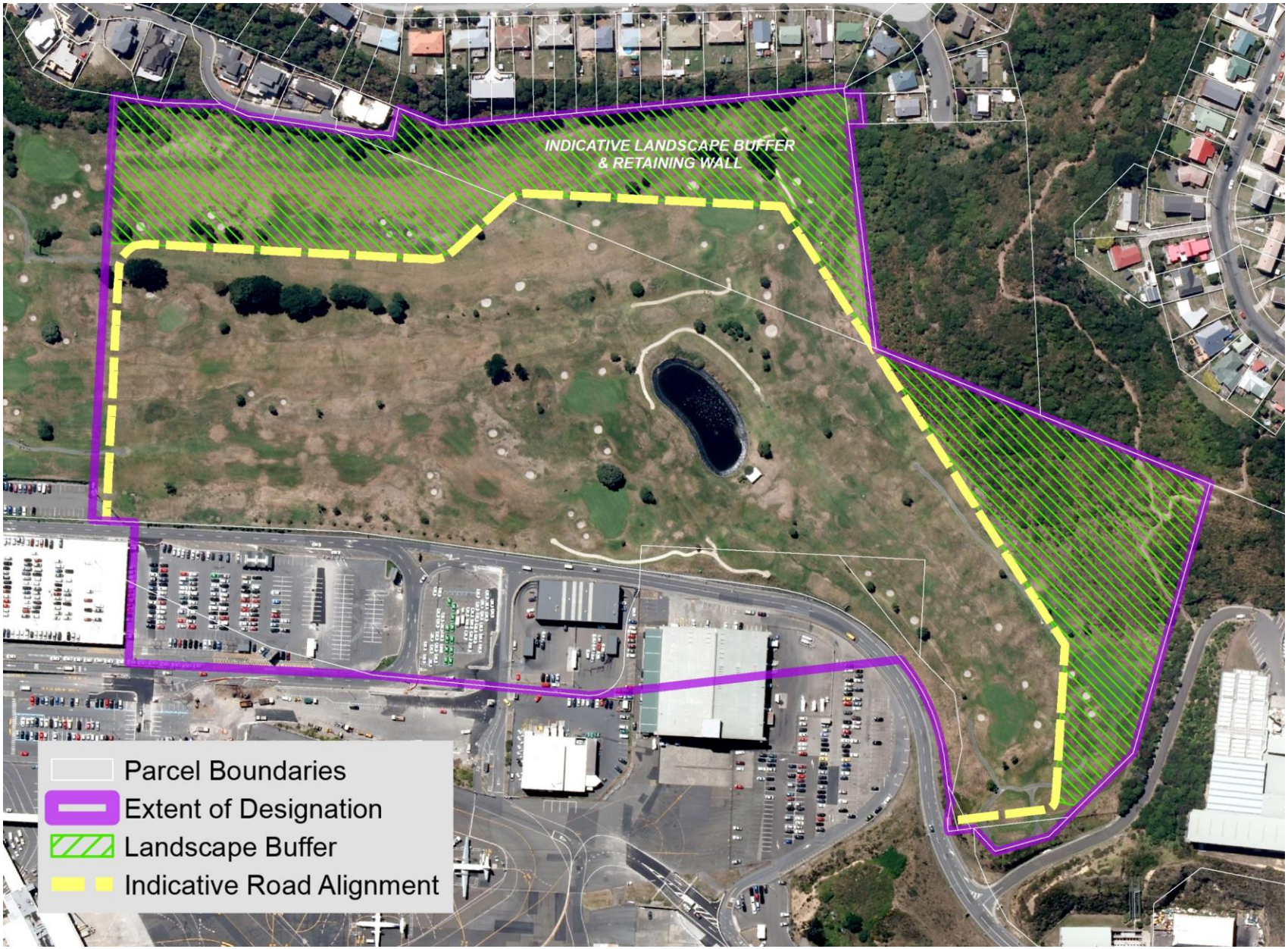
The proposed designation and its potential effects also sit comfortably with the relevant planning documents, including the RPS and the District Plan, and would promote sustainable management of natural and physical resources in an RMA Part 2 context.

WIAL has considered alternative sites, routes, or methods of undertaking the work. Suitably sized sites for the proposed activities located in close proximity to the terminal area are scarce, and the southern part of the Miramar Golf Club is the most suited to locate expanded airside activities. Authorising the proposed activities via a plan change or resource consent application rather than designation was also considered, however, neither option provides the efficient planning solution for development that a designation would afford.

For these reasons the proposed designation option is preferred and confirming the NOR would result in significant economic, social and safety benefits that would not be realised without WIAL being able to expand onto the land subject to the NOR.

APPENDIX A

Proposed Designation Extent


INDICATIVE LANDSCAPE BUFFER
& RETAINING WALL
Parcel Boundaries
Extent of Designation
Landscape Buffer
Indicative Road Alignment

B

APPENDIX B

Certificates of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Part-Cancelled

Identifier **17852**
Land Registration District **Wellington**
Date Issued 08 November 2001

Prior References
WN46C/799 WN55D/655

Estate	Fee Simple
Area	32.2885 hectares more or less
Legal Description	Part Lot 2 Deposited Plan 3166 and Part Lot 1 Deposited Plan 3177 and Part Lot 1 Deposited Plan 9192 and Lot 1 Deposited Plan 51082 and Part Lot 1 Deposited Plan 78363 and Lot 3 Deposited Plan 80623 and Lot 2 Deposited Plan 80630 and Section 4 Survey Office Plan 37422 and Section 1 Survey Office Plan 38205

Registered Owners
Miramar Golf Club Incorporated

Interests

Appurtenant hereto is a right of way and rights to power, gas, telephone & water supply and stormwater and sewage drainage rights created by Transfer B800074.1 (Subject to Section 42 (6) Public Works Act 1981)

Subject to Section 241(2) Resource Management Act 1991 (affects DP 80623 and 80630)

Subject to Section 11 Crown Minerals Act 1991 (affects part Lot 1 DP 78363 and Lot 2 DP 80630)

Subject to Part IV A Conservation Act 1987 (affects Lot 2 DP 80630)

K43703 Compensation Certificate pursuant to Section 17 Public Works Amendment Act 1948 by Her Majesty the Queen - 11.11.1958 at 9.00 am (affects part Lot 2 DP 3166 and part Lot 1 DP 3177)

170809.1 Pipeline Certificate under Section 26 Housing Act 1955 that a pipeline for the passage of sewage passes through the within land - 13.4.1977 at 1.31 pm (affects Part Lot 2 DP 3166)

325869.1 Compensation Certificate pursuant to Section 17 Public Works Amendment Act 1948 by Her Majesty the Queen - 6.4.1979 at 10.59 am (affects part Lot 2 DP 3166, part Lot 1 DP 3177 and part Lot 1 DP 9192)

B456382.1 Compensation Certificate pursuant to Section 19 Public Works Act 1981 by Her Majesty the Queen - 19.9.1995 at 3.37 pm (affects Lot 1 DP 78363)

Appurtenant hereto is a right to sewage drainage and water supply specified in Easement Certificate B473742.9 - 26.10.1995 at 10.17 am (Affects part Lot 2 DP 3166 and Section 1 SO 38205)

Subject to an electricty right (in gross) over part marked A on DP 80623 in favour of (now) Vector Wellington Electricity Network Limited created by Transfer B553874.10 - 18.12.1996 at 3.23 pm (affects Lot 3 DP 80623)

The easements created by Transfer B553874.10 are subject to Section 243 (a) Resource Management Act 1991

Subject to a gas right (in gross) over part marked A on DP 80623 in favour of (now) Powerco Limited created by Transfer B553874.11 - 18.12.1996 at 3.23 pm (affects Lot 3 DP 80623)

The easements created by Transfer B553874.11 are subject to Section 243 (a) Resource Management Act 1991

Subject to a telecommunications right (in gross) over part marked A on DP 80623 in favour of Telecom New

Zealand Limited created by Transfer B553874.12 - 18.12.1996 at 3.23 pm (affects Lot 3 DP 80623)

The easements created by Transfer B553874.12 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right of way and water supply, telephone, electricity and gas rights over part marked A on DP 80623 specified in Easement Certificate B553874.13 - 18.12.1996 at 3.23 pm (affects Lot 3 DP 80623)

The easements specified in Easement Certificate B553874.13 are subject to Section 243 (a) Resource Management Act 1991

Subject to a sewage drainage right over part marked D on DP 80623 created by Transfer B553874.18 - 18.12.1996 at 3.23 pm (affects Part Lot 2 DP 3166)

Subject to a sewage drainage right over part marked D on DP 80623 created by Transfer B553874.20 - 18.12.1996 at 3.23 pm (affects Part Lot 2 DP 3166)

Appurtenant hereto is a right to propel golf balls created by Transfer B765795.2 - 27.1.2000 at 3.10 pm

Appurtenant hereto is a right to propel golf balls created by Transfer B768097.2 - 10.2.2000 at 3.10 pm

Appurtenant hereto is a right to propel golf balls created by Transfer B772337.2 - 7.3.2000 at 2.00 pm

Subject to sewage and water drainage rights (in gross) over part marked X, sewage drainage rights (in gross) over part marked U and water drainage rights (in gross) over part marked AB, Y (affects part Lot 1 DP 3177) and water drainage rights (in gross) over part marked AA, Z (affects part Lot 1 DP 9192) on DP 88470 in favour of The Wellington City Council created by Transfer B784153.12 - 18.5.2000 at 3.35 pm

The easements created by Transfer B784153.12 are subject to Section 243 (a) Resource Management Act 1991

Appurtenant hereto are rights to propel golf balls created by Transfer B790817.3 - 30.6.2000 at 3.46 pm

Appurtenant hereto is a right to propel golf balls created by Transfer B794153.2 - 24.7.2000 at 3.53 pm

Subject to a drainage right over part marked X on DP 88470 created by Transfer B794153.2 - 24.7.2000 at 3.53 pm (affects Part Lot 1 DP 3177)

The easements created by Transfer B794153.2 are subject to Section 243 (a) Resource Management Act 1991

Appurtenant hereto is a right to propel golf balls created by Transfer B794153.4 - 24.7.2000 at 3.53 pm

Subject to rights to water and sewage (in gross) over part marked P, B, C, D, AE, G, H and M on DP 90036 in favour of The Wellington City Council created by Transfer B800603.4 - 5.9.2000 at 3.56 pm (affects Part Lot 1 DP 3177)

Subject to a right to drain water and sewage over part marked N, O, & M on DP 90036 created by Transfer B805461.1 - 6.10.2000 at 3.50 pm (affects Part Lot 1 DP 3177)

Subject to a right to drain water and sewage over part marked C & D on DP 90036 created by Transfer B805461.2 - 6.10.2000 at 3.50 pm (affects Part Lot 1 DP 3177)

Appurtenant hereto is a right to propel golf balls and right to drain water and sewage created by Transfer B808381.2 - 27.10.2000 at 3.50 pm

Subject to a sewage and water drainage right over part marked P and B on DP 90036 created by Transfer B808657.2 - 31.10.2000 at 2.25 pm (affects Part Lot 1 DP 3177)

Appurtenant hereto is a right to propel golf balls created by Transfer B808657.2 - 31.10.2000 at 2.25 pm

Appurtenant hereto is a right to propel Golf Balls created by Transfer B820000.2 - 30.1.2001 at 1.55 pm

Subject to a right to drain water over part marked H on DP 90036 created by Transfer B820000.2 - 30.1.2001 at 1.55 pm (affects Part Lot 1 DP 3177)

Appurtenant hereto is a right to propel golf balls created by Transfer 5067747.1 - 3.8.2001 at 3:34 pm

Fencing Agreement in Transfer 5105494.3 - 8.11.2001 at 1:23 pm (Affects part formerly in CT WN46C/799)

5805896.1 Gazette Notice (2003 p. 4322) declaring (90m²) being part Lot 1 DP 3177 and part Section 4 SO 37422 now known as Section 3 on SO 38205 to be acquired by Wellington International Airport Limited for airport purposes . - 19.11.2003 at 9:00 am

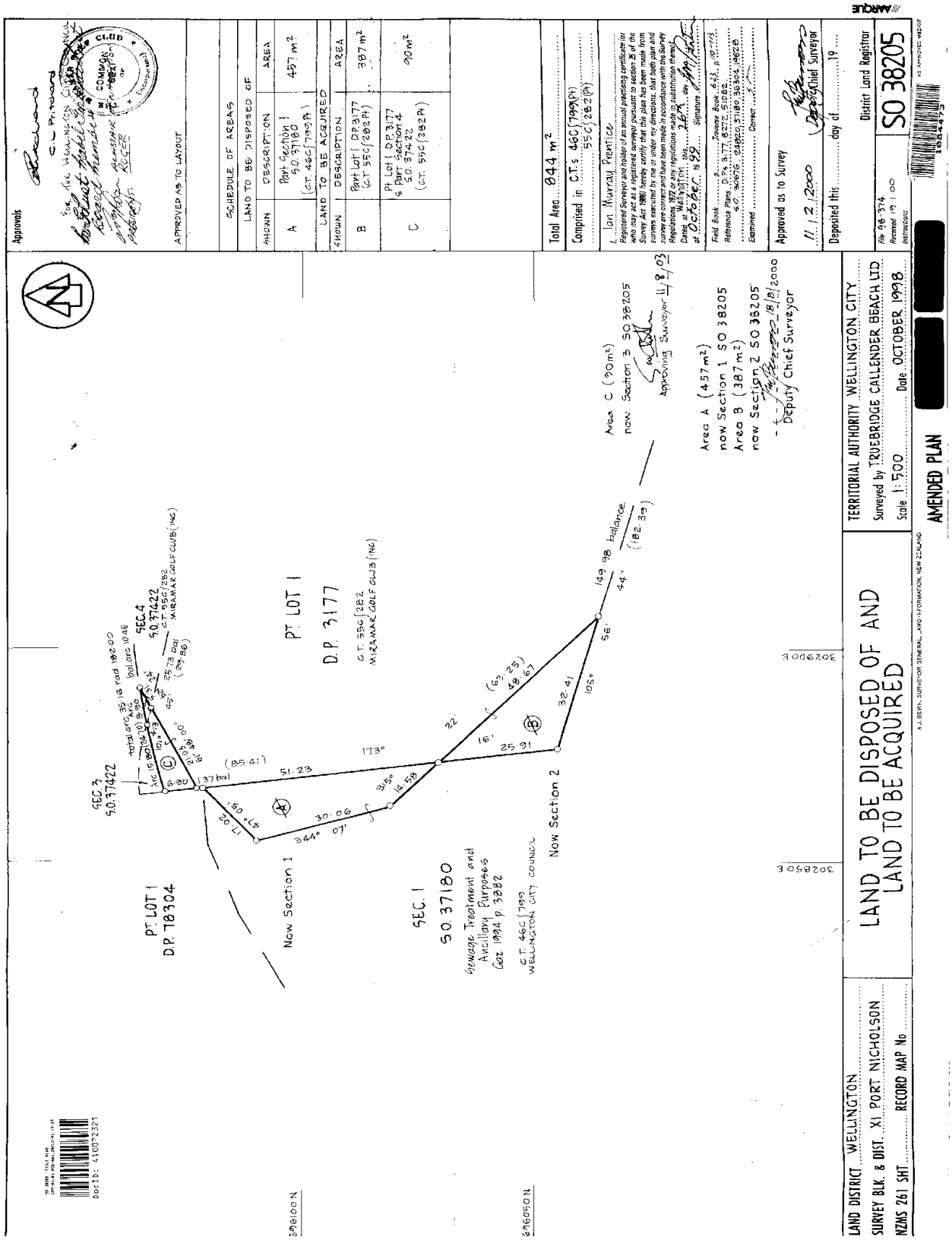
5805896.2 CT 124396 issued for Section 3 SO 38205 - 19.11.2003 at 9:00 am

Subject to a right to drain stormwater over part Lot 2 DP 3166 marked E on DP 408131 created by Easement Instrument 8237386.3 - 18.12.2009 at 12:08 pm

10791954.3 Mortgage to ASB Bank Limited - 18.5.2017 at 10:18 am

11642035.1 CAVEAT BY WELLINGTON INTERNATIONAL AIRPORT LIMITED - 13.12.2019 at 10:03 am

Identifier **17852**



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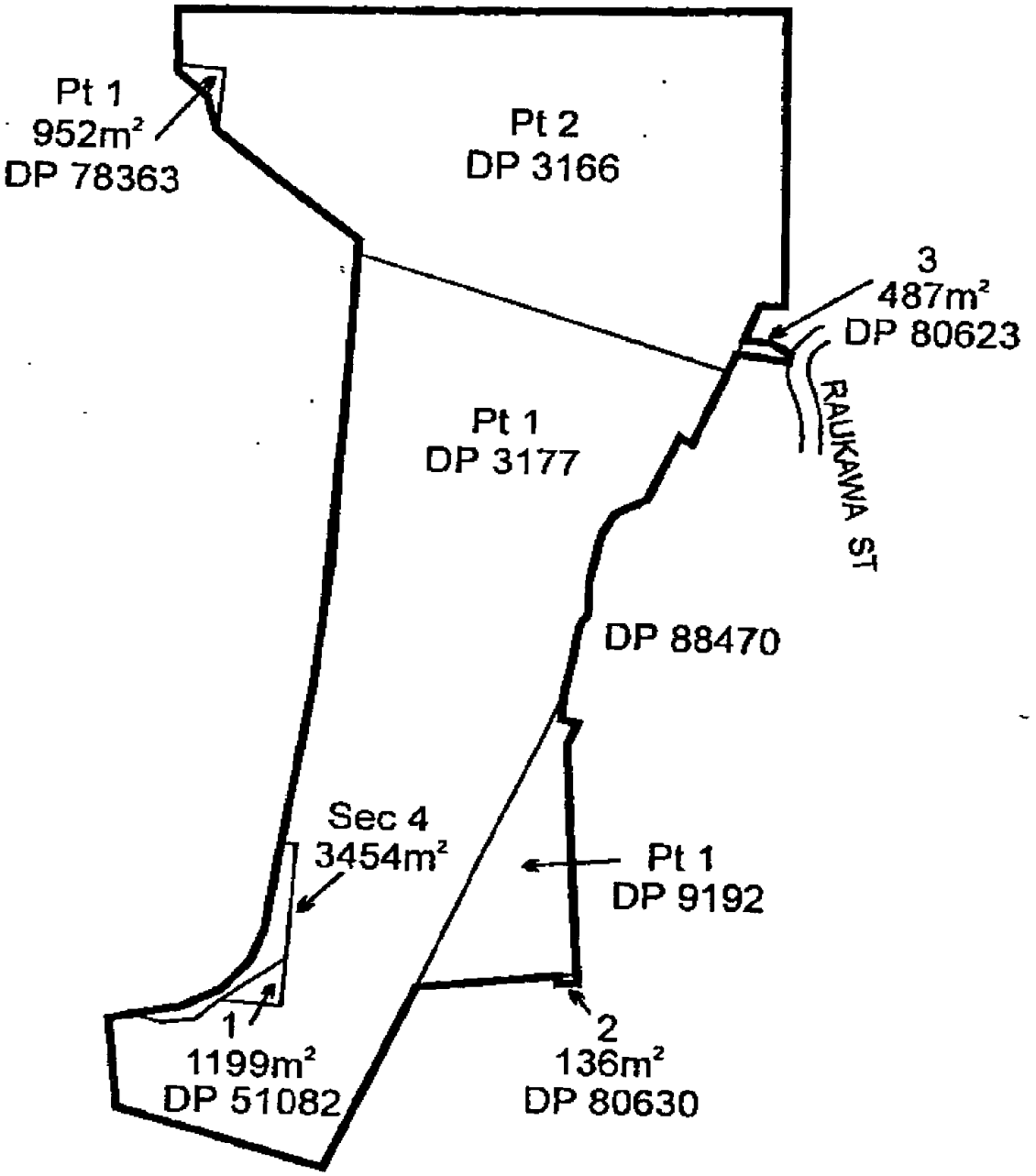


RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **518352**
Land Registration District **Wellington**
Date Issued 26 March 2010

Prior References
124396 GN 8437982.1 WN45A/75

Estate	Fee Simple
Area	97.6943 hectares more or less
Legal Description	Part Lot 1 Deposited Plan 78304 and Part Section 1 Survey Office Plan 37422 and Section 2-3 Survey Office Plan 37422 and Section 3 Survey Office Plan 38205 and Section 1, 5 Survey Office Plan 342914

Registered Owners
Wellington International Airport Limited

Interests

Subject to a right of way and rights to power, gas, telelphone & water supply and stormwater and sewage drainage over part marked A and stormwater and drainage rights over part marked B on SO 37180 created by Transfer B800074.1

Subject to a pedestrian right of way (in gross) over part marked A on DP 80477 in favour of The Wellington City Council created by Transfer B516029.15

Subject to water drainage rights (in gross) over part marked A on DP 80526 in favour of The Wellington City Council created by Transfer B516029.16

Subject to Section 11 Crown Minerals Act 1991(Affects those parts of the within land formerly vested in the Crown) (Affects part formerly in CT WN51A/720)

K38461 Compensation Certificate pursuant to Section 17 Public Works Amendment Act 1948 - 27.4.1956 at 12.30 pm (Affects the land formerly contained in CT WN311/100)

K43703 Compensation Certificate pursuant to Section 17 Public Works Amendment Act 1948 by Her Majesty the Queen - 11.11.1958 at 9.00 am (affects part formerly part Lot 1 DP 3177 & part formerly in CsT WN45A/214 & 215)

325869.1 Compensation Certificate pursuant to Section 17 Public Works Amendment Act 1948 by Her Majesty the Queen - 6.4.1979 at 10.59 am (Affects the land formerly contained in CsT WN45A/214 and 45A/215 and part formerly part Lot 1 DP 3177)

667415.1 Lease of part Lot 1 DP 78304 to Ward Wright Limited Term 21 yearrs computed from 1.12.1983 - 28.1.1985 at 10.40 am (Affects the land formerly contained in CT WN22A/42)

873983.1 Lease of part Lot 1 DP 78304 Term 21 years computed from 1.8.1986 (affects the land formerly in CT WN21D/677) CT 116794 issued - 7.9.1987 at 9:07 am

299440.3 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 9.7.1993 at 3.00 pm (Affects part formerly in CT WN43B/26)

Appurtenant hereto is are sewage drainage and water supply rights specified in Easement Certificate B473742.9 (Affects part Lot 1 DP 78304 and Section 1-3 SO 37422)

Subject to a right to drain sewage (in gross) over part Lot 1 DP 78304 marked A, B, C, D, E, F, G, H, I, J, K, L and

Identifier **518352**

O and over part Section 2 SO 37422 marked P, R & S on DP 83060 in favour of The Wellington City Council created by Transfer B692790.1 - 10.11.1998 at 2.51 pm

Subject to a right to drain water (in gross) over part Lot 1 DP 78304marked F, H, M, N & O and over part Section 2 SO 37422 marked P & Q on DP 83060 in favour of The Wellington City Council created by Transfer B692790.2 - 10.11.1998 at 2.51 pm

B803886.2 Lease of Lot 1 DP 87890 (1.8628 hectares) to Air New Zealand Limited Term 20 years commencing on 1.7.1996 (Right of renewal) - 27.9.2000 at 3.11 pm

Subject to a right (in gross) to convey aviation fuel and petroleum products over parts marked B and C on DP 90872 in favour of Mobil Oil New Zealand Limited and BP Oil New Zealand Limited created by Transfer 5106205.2 - 9.11.2001 at 11:11 am

5742249.1 Variation of Lease 873983.1 - 25.9.2003 at 9:00 am

9161878.1 CERTIFICATE PURSUANT TO SECTION 77 BUILDING ACT 2004 THAT THIS COMPUTER REGISTER IS SUBJECT TO THE CONDITION IMPOSED UNDER SECTION 75(2)(AFFECTS PART SECTION 1 SO 37422) (ALSO AFFECTS WN327/110, WN356/267 and WN357/296) - 27.8.2012 at 9:57 am

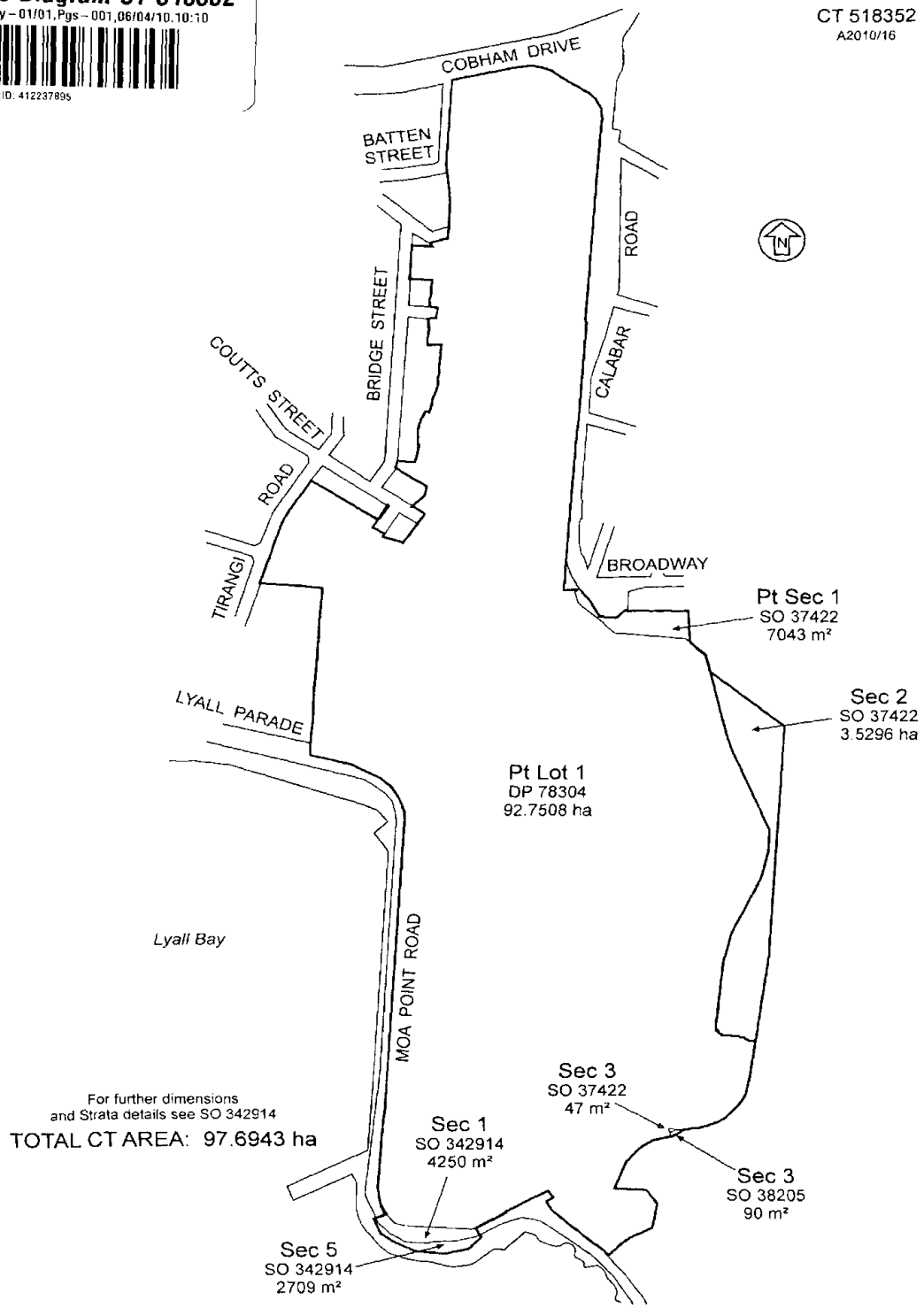
9364821.1 Statutory Land Charge pursuant to Section 208 Local Government Act 2002 - 11.4.2013 at 4:13 pm

10065530.1 CERTIFICATE PURSUANT TO SECTION 77 BUILDING ACT 2004 THAT THIS COMPUTER REGISTER IS SUBJECT TO THE CONDITION IMPOSED UNDER SECTION 75(2) (AFFECTS PART LOT 1 DP 78304) (ALSO AFFECTS WN46C/667) - 20.5.2015 at 2:45 pm

Identifier **518352**

Title Diagram CT 518352
Cpy – 01/01, Pgs – 001, 06/04/10, 10:10
DocID: 412237895

CT 518352
A2010/16



For further dimensions
and Strata details see SO 342914

TOTAL CT AREA: 97.6943 ha

C

APPENDIX C

Designation Conditions

WELLINGTON INTERNATIONAL AIRPORT LIMITED

AIRPORT PURPOSES DESIGNATION – EAST SIDE AREA

Purpose of the Designation

The designation shall cover the area shown in **Attachment 1** ("**the Designated Area**").

Within the Designated Area land may be used for activities for the operation of Wellington International Airport ("**the Airport**"), limited to the following:

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;
- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;
- All demolition (if required), construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above.

Glossary:

Aircraft Operations

Means the engine runup, taxiing, take off or landing at the Airport of an aircraft, and "operate" has a corresponding meaning.

Conditions

Outline Plan and Staging

1. An outline plan of works to be constructed on the Designated Area shall be submitted to the Wellington City Council ("**the Council"**) pursuant to section 176A of Resource Management Act 1991 ("**the RMA"**) unless the works have been otherwise approved under the RMA, or the Council waives the requirement for an outline plan.
2. Works may be undertaken in stages in accordance with the relevant conditions below.

Landscape and Visual

3. Not less than three (3) months prior to the first outline plan being submitted pursuant to section 176A of the RMA, the Requiring Authority shall prepare and submit to the Council for certification a Landscape and Visual Amenity Management Plan. The purpose of the Landscape and Visual Amenity Management Plan shall be to show the mitigation proposed at the boundary interface between the residential zoned land to the east and activities undertaken within the Designated Area. The Landscape and Visual Amenity Management Plan shall demonstrate how the following outcomes will be achieved:

    a. Landscaping within the Landscape Buffer Area is of a nature, scale and extent to provide screening (as far as can practicably be achieved) of the Designated Area for the residential zoned land to the east;

    b. Where appropriate, provision of public recreational (pedestrian and if practicable, cycle) access through the Landscape Buffer Area shall be shown, including connections to existing accessways where practicable; and

    c. Façade treatment of engineered retaining features over 1.5m in height to reduce the visual prominence of such structures and to add visual interest.

4. No outline plan shall be submitted for work within the Designated Area until such time as the Council certifies the Landscape and Visual Amenity Management Plan is consistent with the matters included in condition 3.

5. The Requiring Authority shall subsequently implement the Landscape and Visual Amenity Management Plan as part of any development of the Designated Area provided that:

    a. If the development of the Designated Area is to be developed in stages then the Landscape and Visual Amenity Management Plan may be implemented in stages in a manner that meets the intention of the Landscape and Visual Amenity Management Plan to mitigate the effects of the work within the Designated Area; and if so

    b. The Requiring Authority shall submit to the Council a staging plan showing the likely stages, the likely timing of staged development and the methods that will be applied to ensure that the staging meets the intention of the Landscape and Visual Amenity Management Plan.

6. The Requiring Authority may amend the Landscape and Visual Amenity Management Plan as necessary provided that any amendment is consistent with achieving the purpose and outcomes of the Plan set out in condition 3. Any amendment to this Plan shall be submitted to the Council for certification.

7. All planting and landscaping work carried out to give effect to the Land and Visual Amenity Management Plan shall be maintained by the Requiring Authority to ensure that the outcomes set out within condition 3 continue to be achieved.

Earthworks and Construction Management

8. For any site enabling work involving any earthworks or construction activities within the Designated Area, an outline plan required by section 176A of the RMA shall include an Earthworks and Construction Management Plan. The purpose of the Earthworks and Construction Management Plan shall be to:

    a. Describe the methods proposed for the development of the Designated Area and the programme for earthworks and construction activities, including any staging;

    b. Provide details regarding the quantity of excavated material and the location in which it will be stockpiled, used elsewhere within the Airport, and/or transported from the site;

    c. Describe what actions will be taken to manage the actual or potential effects arising from earthworks and construction activities including, but not limited to:

        i. Specific erosion and sediment control and stability requirements proposed on the site, management and monitoring requirements;

        ii. Construction noise and vibration so that it complies where practicable with the requirements of New Zealand Standard 6803:1999. Where any construction activity or work cannot comply with the New Zealand Standard 6803:1999 an understanding of the extent of the non compliance is required to be detailed in the plan along with fit for purpose mitigation measures to properly manage the effects of any exceedances. Methods employed to assist with this during construction activities shall include, but not be limited to the identification of mitigation and management measures necessary to assist in reducing the effect of construction noise and vibration on sensitive receptors (such as the selection of construction equipment or methods, hours of operation, screening of the affected area, temporary relocation of persons directly affected);

        iii. Waste management;

        iv. Dust control measures to ensure there is no airborne or deposited dust beyond the Designated Area or other Airport land as a result of the earthworks and construction activities that is noxious, offensive or objectionable; and

        v. Traffic related movements and parking.

    d. Provide a list of key personnel and points of contact during earthworks and construction activities;

    e. Describe how adjoining landowners will be kept informed during earthworks and construction activities;

    f. Describe staff training and induction requirements to implement the Earthworks and Construction Management Plan;

    g. The establishment of a complaints procedure;

h. The adherence to an accidental discovery protocol and obligations on the Requiring Authority if taonga is discovered during any earthworks or construction activities.

For the avoidance of doubt this condition does not apply to subsequent earthworks associated with any maintenance or repair work within the Designated site.

9. The Requiring Authority shall submit the Earthworks and Construction Management Plan to the Council for certification that it is consistent with the matters included in condition 8 above.

10. The Requiring Authority may amend the Earthworks and Construction Management Plan as necessary provided that any amendment is consistent with achieving the purpose of the Earthworks and Construction Management Plan set out in condition 8. Any amendment to this Plan shall be submitted to the Council for certification.

11. Within 10 working days following the completion of earthworks within the Designated Area all areas of exposed soil will be permanently stabilised against erosion.

12. As far as practicable all fill extracted from the site shall be stored and/or utilised within land or projects being undertaken by the Requiring Authority. If the material is to be stockpiled for a period of longer than 15 days, the material shall be suitably covered and/or rehabilitated so as to not cause a dust nuisance or generate sediment runoff.

13. The Requiring Authority shall ensure that there is no obstruction of access to public footpaths, public berms, private properties, public services/utilities, or public reserves resulting from the earthworks and/or construction activity unless permission has been granted by the relevant property owner.

14. All construction related plant and equipment shall be stored within the Designated Area or other Airport land.

Building and Structures

15. The Requiring Authority shall ensure that buildings or structures within the Designated Area shall not exceed a height limit of 10m (from finished ground level) and shall be located at least 5m from any adjoining residential area. This condition shall not apply to navigation and safety aids, monitoring stations, lighting and telecommunications facilities, fencing or retaining wall features.

Operational Noise

16. The Requiring Authority shall ensure that aircraft operations within the Designated Area are managed so that the rolling 90 day average 24 hours night-weighted sound exposure does not exceed a Day/Night Level (Ldn) of 65dBA outside of the EEA Compliance Line identified on Figure 1 below.

17. Aircraft noise shall be measured in accordance with NZS6805:1992 and shall include all aircraft operations from the Airport. All terminology shall have the meaning that may be used or defined in the context of NZS:8605

18. The following aircraft operations shall be excluded from the calculation of the rolling 90 day average described in Condition 16:

a. Aircraft landing in an emergency;

b. The operation of emergency flights required to rescue persons from life threatening situations or to transport patients, human vital organs, or medical personnel in a medical emergency;

c. The operation of unscheduled flights required to meet the needs of any state of emergency declared under the Civil Defence Emergency Management Act 2002 or any international civil defence emergency;

d. Aircraft carrying heads of state and/or senior dignitaries acting in their official capacity or other military aircraft operations;

e. No more than 4 aircraft movements per night with noise levels not exceeding 65 dB LAFmax (1 sec) at or beyond the Air Noise Boundary.

19. A continuous noise monitoring station shall be established within the location shown in Figure 1. The purpose of this monitoring station is to collect regular and frequent noise measures that confirm compliance with the limit described in condition 16.

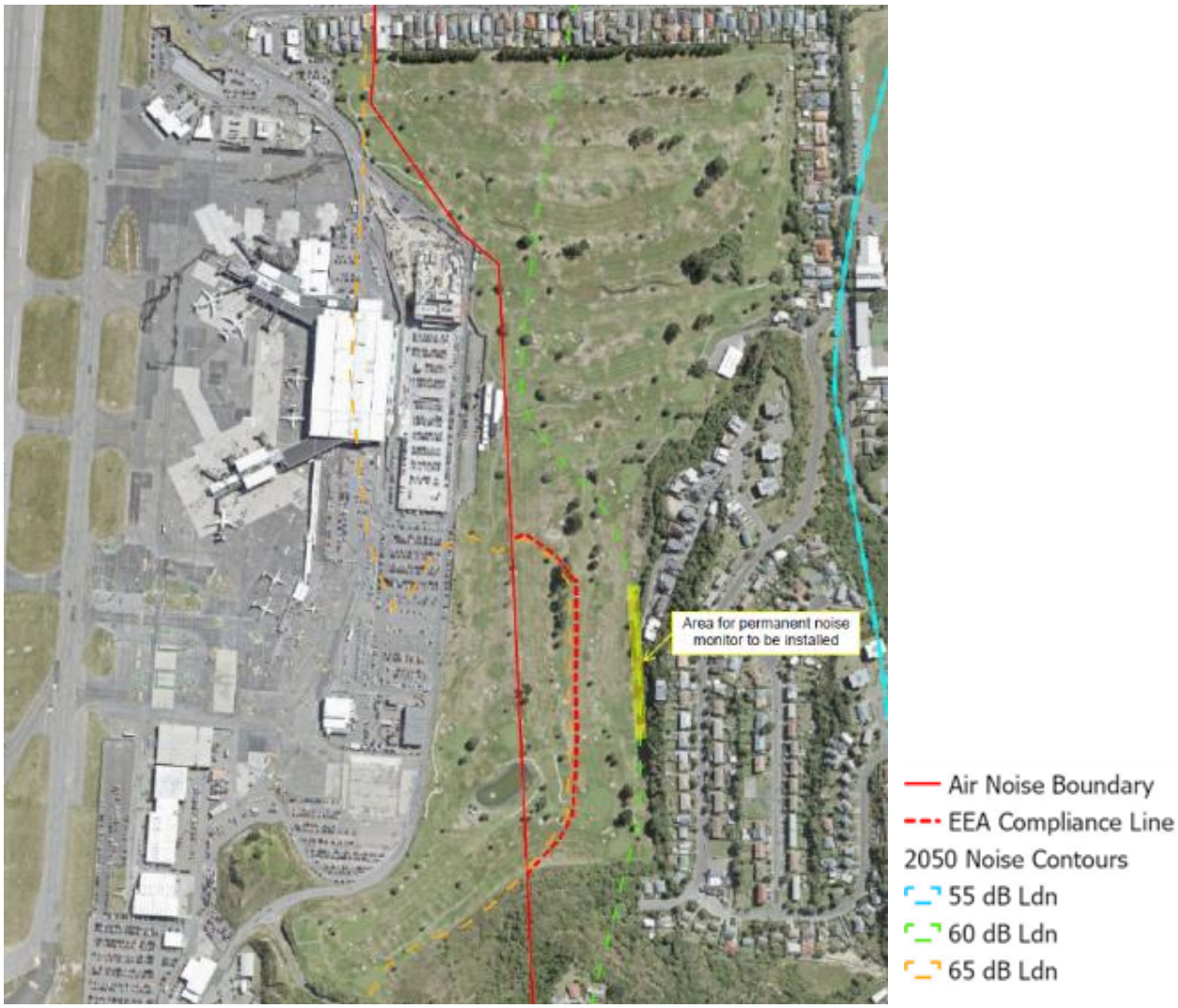


Figure 1: Aircraft operations EEA compliance line.

20. The Requiring Authority shall ensure that the combined noise emission levels from within the Designated Area, from any activity other than aircraft operations when measured from a point within the location shown in Figure 1 shall not exceed the following limits:

    a. All days 7am to 10pm 55 dB $L_{AEQ\ (15\ MIN)}$

    b. At all other times 45 dB $L_{AEQ\ (15\ MIN)}$

    c. All days 10pm to 7am 75 dB L_{AFmax}

21. The operation of Auxiliary Power Units ("APUs") shall be exempt from the noise limits in condition 20 for a period not exceeding 20 minutes after the aircraft has stopped at the gate and 20 minutes prior to the aircraft's scheduled departure.

22. There shall be no aircraft engine testing in the Designated Area.

23. There shall be no operating of APUs in the Designated Area between the hours of 10pm and 7am.

24. Any aircraft stand within the Designated Area shall have a Plug-in Ground Power Unit (GPU) available.

25. The Requiring Authority shall ensure that there are no aircraft operating under its own power within the Designated Area between the hours of 10pm and 7am. For the avoidance of doubt, this condition does not include aircraft under tow or parked on a taxiway.

26. The Requiring Authority shall amend its Airport Noise Management Plan in line with conditions 16 – 24 as soon as the designation is confirmed. Additional operational procedures should be developed and included in the Airport Noise Management Plan once the demand for night-time GSE operations on the eastern stands and the types of equipment are known.

Lighting

27. The Requiring Authority shall ensure that any activity which requires the lighting of outdoor areas that such direct or indirect illumination does not exceed 8 lux at the windows of residential buildings in any adjoining residential area.

28. Subject to condition 22 any development which includes pedestrian routes and carparks available for public use during the hours of darkness shall be lit at a minimum of 10 lux measured in accordance with [AS/NZS1158.3.1:2005] and any subsequent amendment.

Network Utilities

29. Prior to any work or activity which requires an outline plan under Section 176A of the RMA, the Requiring Authority shall prepare or update a Network Utilities Management Plan. The purpose of the Plan shall be to inform the relevant network utility providers that enabling work, design, and construction of any development or construction activity, takes account of (and includes measures to address) the safety, integrity, protection (or where necessary) relocation of exiting network utilities.

Lapse

30. The designation shall have a lapse period of 15 years from [insert the date the designation is confirmed by Wellington International Airport Limited].

Other Designations

31. Upon confirmation of this notice of requirement the Requiring Authority shall uplift that part of designated Airport Land *[main site designation reference once known]* that overlaps with the Designated Area depicted within the hatched area in black in Figure 2 below.

Figure 2: Extent of Designation and Proposed Airport Purposes Designation Boundary Overlaid

Attachment 1 – Extent of the Designation

D

APPENDIX D

Wellington International Airport Ltd as Requiring Authority

Reprint
as at 11 December 1992

Resource Management (Approval of Wellington International Airport Limited as Requiring Authority) Order 1992

(SR 1992/349)

Catherine A Tizard, Governor-General

Order in Council

At Wellington this 7th day of December 1992

Present:
Her Excellency the Governor-General in Council

Pursuant to sections 167 and 420(6) of the Resource Management Act 1991, Her Excellency the Governor-General, acting by and with the advice and consent of the Executive Council, and on the recom-

Note
Changes authorised by section 17C of the Acts and Regulations Publication Act 1989 have been made in this reprint.

A general outline of these changes is set out in the notes at the end of this reprint, together with other explanatory material about this reprint.

This order is administered by the Ministry for the Environment.

mendation of the Minister for the Environment, hereby makes the following order.

Contents

Order

1 Title and commencement

(1) This order may be cited as the Resource Management (Approval of Wellington International Airport Limited as Requiring Authority) Order 1992.

(2) This order shall come into force on the seventh day after the date of its notification in the *Gazette*.

2 Interpretation

In this order, unless the context otherwise requires, **airport** has the meaning given to that term by section 2 of the Airport Authorities Act 1966.

3 General approval

Wellington International Airport Limited is hereby approved as a requiring authority under section 167 of the Resource Management Act 1991 for the operation, maintenance, expansion, and development of the airport known as the Wellington International Airport.

4 Approval in respect of project with existing designation

Wellington International Airport Limited is hereby approved as a requiring authority under section 167 of the Resource Management Act 1991 for the following project (to which an existing designation relates):

Territorial authority	Location	Description of project
Wellington City	Part Miramar Golf Course	Expansion and development of Wellington International Airport

Bob MacFarlane,
Acting for Clerk of the Executive Council.

Explanatory note

This note is not part of the order, but is intended to indicate its general effect.

By this order Wellington International Airport Limited is approved as a requiring authority—

(a) for the operation, maintenance, expansion, and development of Wellington International Airport; and

(b) for a project to which an existing designation relates (which project is the expansion and development, on part of the Miramar Golf Course, of Wellington International Airport).

Issued under the authority of the Acts and Regulations Publication Act 1989.
Date of notification in *Gazette*: 10 December 1992.

Contents

Notes

1 General

This is a reprint of the Resource Management (Approval of Wellington International Airport Limited as Requiring Authority) Order 1992. The reprint incorporates all the amendments to the order as at 11 December 1992, as specified in the list of amendments at the end of these notes.

Relevant provisions of any amending enactments that contain transitional, savings, or application provisions that cannot be compiled in the reprint are also included, after the principal enactment, in chronological order. For more information, *see* http://www.pco.parliament.govt.nz/reprints/.

2 Status of reprints

Under section 16D of the Acts and Regulations Publication Act 1989, reprints are presumed to correctly state, as at the date of the reprint, the law enacted by the principal enactment and by the amendments to that enactment. This presumption applies even though editorial changes authorised by section 17C of the Acts and Regulations Publication Act 1989 have been made in the reprint.

This presumption may be rebutted by producing the official volumes of statutes or statutory regulations in which the principal enactment and its amendments are contained.

3 How reprints are prepared

A number of editorial conventions are followed in the preparation of reprints. For example, the enacting words are not

included in Acts, and provisions that are repealed or revoked are omitted. For a detailed list of the editorial conventions, *see* http://www.pco.parliament.govt.nz/editorial-conventions/ or Part 8 of the *Tables of New Zealand Acts and Ordinances and Statutory Regulations and Deemed Regulations in Force*.

4 Changes made under section 17C of the Acts and Regulations Publication Act 1989

Section 17C of the Acts and Regulations Publication Act 1989 authorises the making of editorial changes in a reprint as set out in sections 17D and 17E of that Act so that, to the extent permitted, the format and style of the reprinted enactment is consistent with current legislative drafting practice. Changes that would alter the effect of the legislation are not permitted.

A new format of legislation was introduced on 1 January 2000. Changes to legislative drafting style have also been made since 1997, and are ongoing. To the extent permitted by section 17C of the Acts and Regulations Publication Act 1989, all legislation reprinted after 1 January 2000 is in the new format for legislation and reflects current drafting practice at the time of the reprint.

In outline, the editorial changes made in reprints under the authority of section 17C of the Acts and Regulations Publication Act 1989 are set out below, and they have been applied, where relevant, in the preparation of this reprint:

- omission of unnecessary referential words (such as "of this section" and "of this Act")
- typeface and type size (Times Roman, generally in 11.5 point)
- layout of provisions, including:
  - indentation
  - position of section headings (eg, the number and heading now appear above the section)
- format of definitions (eg, the defined term now appears in bold type, without quotation marks)
- format of dates (eg, a date formerly expressed as "the 1st day of January 1999" is now expressed as "1 January 1999")

- position of the date of assent (it now appears on the front page of each Act)
- punctuation (eg, colons are not used after definitions)
- Parts numbered with roman numerals are replaced with arabic numerals, and all cross-references are changed accordingly
- case and appearance of letters and words, including:
  - format of headings (eg, headings where each word formerly appeared with an initial capital letter followed by small capital letters are amended so that the heading appears in bold, with only the first word (and any proper nouns) appearing with an initial capital letter)
  - small capital letters in section and subsection references are now capital letters
- schedules are renumbered (eg, Schedule 1 replaces First Schedule), and all cross-references are changed accordingly
- running heads (the information that appears at the top of each page)
- format of two-column schedules of consequential amendments, and schedules of repeals (eg, they are rearranged into alphabetical order, rather than chronological).

5 List of amendments incorporated in this reprint (most recent first)

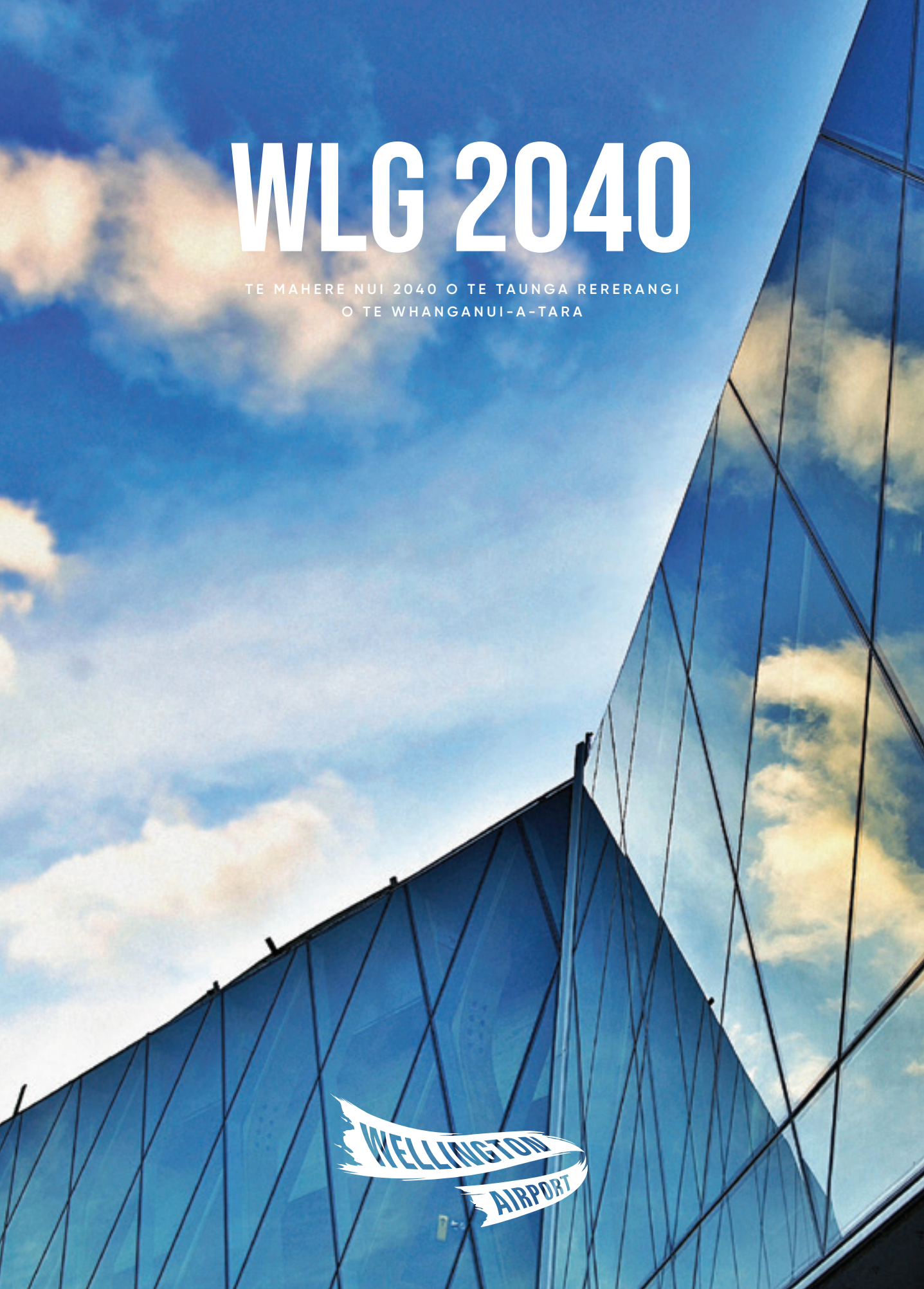
Wellington, New Zealand:
Published under the authority of the New Zealand Government—2011

APPENDIX E

Master Plan

WLG 2040

TE MAHERE NUI 2040 O TE TAUNGA RERERANGI
O TE WHANGANUI-A-TARA



WLG 2040

Left: View of Wellington Airport from above, including suburbs Mirarmar, Strathmore, Kilbirnie and Rongotai.

Welcome

NAU MAI KI TO TATOU HEKE MAI

Sixty years ago, Wellington Airport opened on its present site with thousands of spectators there to witness the event. It was fitting the city chose Rongotai for the location of the airport, as one of New Zealand's first flights occurred almost fifty years earlier in nearby Lyall Bay.

The construction of the airport was a mammoth undertaking with three million cubic metres of earth and rock shifted and significant land reclamation.

The vision to create an airport in close proximity to the city and connecting Wellington to the world was certainly ambitious. However, since the first travellers were welcomed to a corrugated iron hangar that served as the domestic terminal, the airport has grown and evolved to become one of the country's busiest and most popular hubs.

Building upon our founders' original vision has required courage, foresight and a robust plan.

There has been significant capital investment in the airport to accommodate the growth in travellers over the years including world-class terminal re-developments and expansions, airfield technology and safety advances, the country's first fully integrated airport hotel and a number of runway extensions.

The last major extension, which occurred in 1972, enabled direct jet services to Australia and significantly enhanced Wellington's connectivity.

There was plenty of debate at the time as to whether Wellington really needed jet aircraft. Today, we have over 70 international flights a week to six destinations. Wellington would be a different place today without that development and those connections.

Wellington Airport now welcomes 6.4 million passengers every year and the region has better connectivity to the world than ever before but there is still room for improvement.

We're now setting our sights on creating the airport of the future for central New Zealand, using our resources efficiently to create a new era of possibility for travellers, the region and our economy.

The 2040 blueprint would require investment of around $1 billion in infrastructure, including runway improvements, aircraft parking stands and additional terminal space.

Our future airport will reflect New Zealand and Wellington's cultural identity. It will provide visitors with a sense of place, incorporating sustainable principles into design and operation and enabling visitors to experience what we already know, that our corner of New Zealand is something truly special.

Left: Wellington Airport terminal in the '80s. Media articles and cartoons from the 70's when debate raged about whether Wellington needed jet air services to Australia.

3.5M IN 2000
6.4M IN 2019

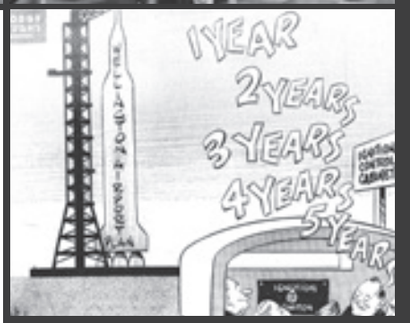
TOTAL PASSENGER NUMBERS

Wellington Has A Hard Fight Ahead To Get Modern Airport

Parliamentary Reporter

JEALOUSY and parochialism in Parliament could well gravely hinder the Capital in getting an upgraded airport at Rongotai capable of taking even the biggest jets.

These feelings among non-Wellington members will in- sufficiently to provide for Tasman jet usage.



UNLOCKING

Our Potential

KO TĀ TĀTOU TŪRANGA I TE WĀHEKE O TE WHANGANUI-A-TARA

Left: Aerial view of Wellington City from the south.

Growing Wellington's global connectivity is critical to the city, region and New Zealand's economic growth.

As the international gateway for central New Zealand, Wellington Airport supports businesses to prosper and tourism to flourish, generating employment for close to 11,000 people in the local economy.

Currently Wellington Airport generates economic output of $2.3 billion annually, contributing $1.1 billion of Gross Domestic Product.

For an international airport catering for 6.4 million passengers per annum, 110 hectares is an extremely small footprint, making Wellington Airport one of the most efficient passenger processing airports in the world. Compared to Auckland Airport's 1500 hectares and Christchurch's 750 hectares, the space limitations mean we must seek innovation at every turn.

Looking forward, an economic impact study undertaken by BERL predicts that by 2040, the airport will make a direct contribution to the region of $4.3 billion per year, generating $2.1 billion of GDP and facilitating more than 22,500 jobs.

The economic benefits outlined exclude the projected benefits of the proposed runway extension. The benefits of direct long haul services were forecast by Sapere to deliver an additional $8 in economic benefit for every single dollar spent lengthening the runway, with a net benefit of $2.3 billion to the national economy over a 40-year period.

Connectivity is vital for a region's livability and socio-economic wellbeing.

SHAMUBEEL EAQUB, ECONOMIST

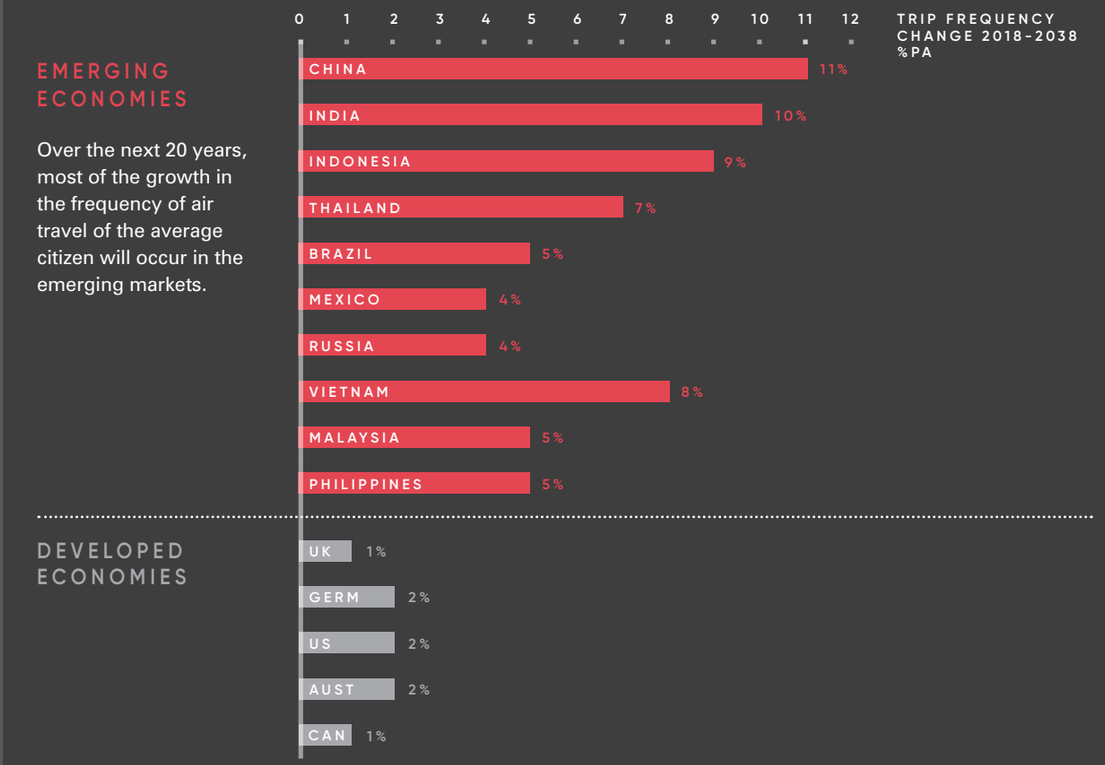
11,000 IN 2019
22,500 BY 2040

JOBS GENERATED

Changes in global air travel frequency over the next 20 years

The number of trips per person is forecast to increase 4-8% per annum for many emerging countries but could be as high as 10-11% per annum in the case of China and India. In contrast, trip frequency is likely to grow much more slowly, at just 1-2% per annum, in developed countries.

AVERAGE ANNUAL CHANGE IN TRIP FREQUENCY 2018-2038



Over the next 20 years, most of the growth in the frequency of air travel of the average citizen will occur in the emerging markets.

TOP 10 LARGEST AIR TRANSPORT MARKETS AMONGST EMERGING COUNTRIES IN 2038

Source: IATA/Tourism Economics Air Passenger Forecasts, April 2019.

THE FUTURE OF

Air Travel

TE RERERANGI I TE WĀHEKE

New generation wide body aircraft, such as the Airbus 350 and Boeing 787, are revolutionising aviation models and opening new markets. They are lighter, more efficient and able to fly further which enables airlines to develop stronger hubs and fly direct to destinations.

Forecasts by manufacturers Boeing and Airbus predict a 4.5% annual growth in global passenger numbers and indicate the world aviation fleet will double from 24,000 to 48,000 aircraft within the next 20 years. The Asia-Pacific fleet is anticipated to grow from 7,000 aircraft to 18,000 aircraft in that time.

In domestic markets, with airport space at a premium and the cost of fuel rising for airlines, growth in travel is being accommodated by narrow body aircraft like the Airbus 321neo which are more fuel efficient and can carry up to 240 people.

Over the past 20 years, the air travel market has proven to be remarkably resilient, with robust growth continuing despite global incidents such as fuel price fluctuations, recessions, incidents of terrorism and pandemics.

Wellington Airport growth has mirrored global aviation trends, with sustained annual passenger growth of 3.5% per annum over the last 20 years and international growth outpacing domestic.

More airlines are flying to and from New Zealand, operating with increased capacity on more routes around the Asia-Pacific region. A more competitive domestic market has also developed. These have provided more choice and fare options for travellers.

Global tourism is expected to increase considerably, especially from Asia over the next 20 years. As disposable income increases so does the propensity to travel.

4.5% ANNUAL GROWTH

IN GLOBAL PASSENGER NUMBERS

$39B IN 2019
$50B IN 2025

TARGETED GROWTH IN INTERNATIONAL TOURISM SPEND IN NEW ZEALAND

Tourism Industry Aotearoa has set a target for international tourism spend in New Zealand, currently $39.1 billion per annum, to exceed $50 billion in 2025.

The tourism industry in New Zealand has a collective strategy to create a more sustainable future for tourism with economic, social and environmental benefits. The focus is shifting from volume, which puts pressure on some regional infrastructure, to prioritising value and dispersal of tourists into regions that have the opportunity and infrastructure to cater for more tourism.

Wellington has a significant role to play as the industry looks to grow more sustainably. Currently 50% of international visitor spend is in Auckland and Queenstown, with a further 10% spent in Christchurch. In central New Zealand, international spend is only 14%.

Wellington is a compact, walkable city surrounded by an adventure wilderness and marine environment with world-class hospitality. Wellington also has the ability to provide accommodation options during peak season when government and corporate travel is low and other regions are near capacity.

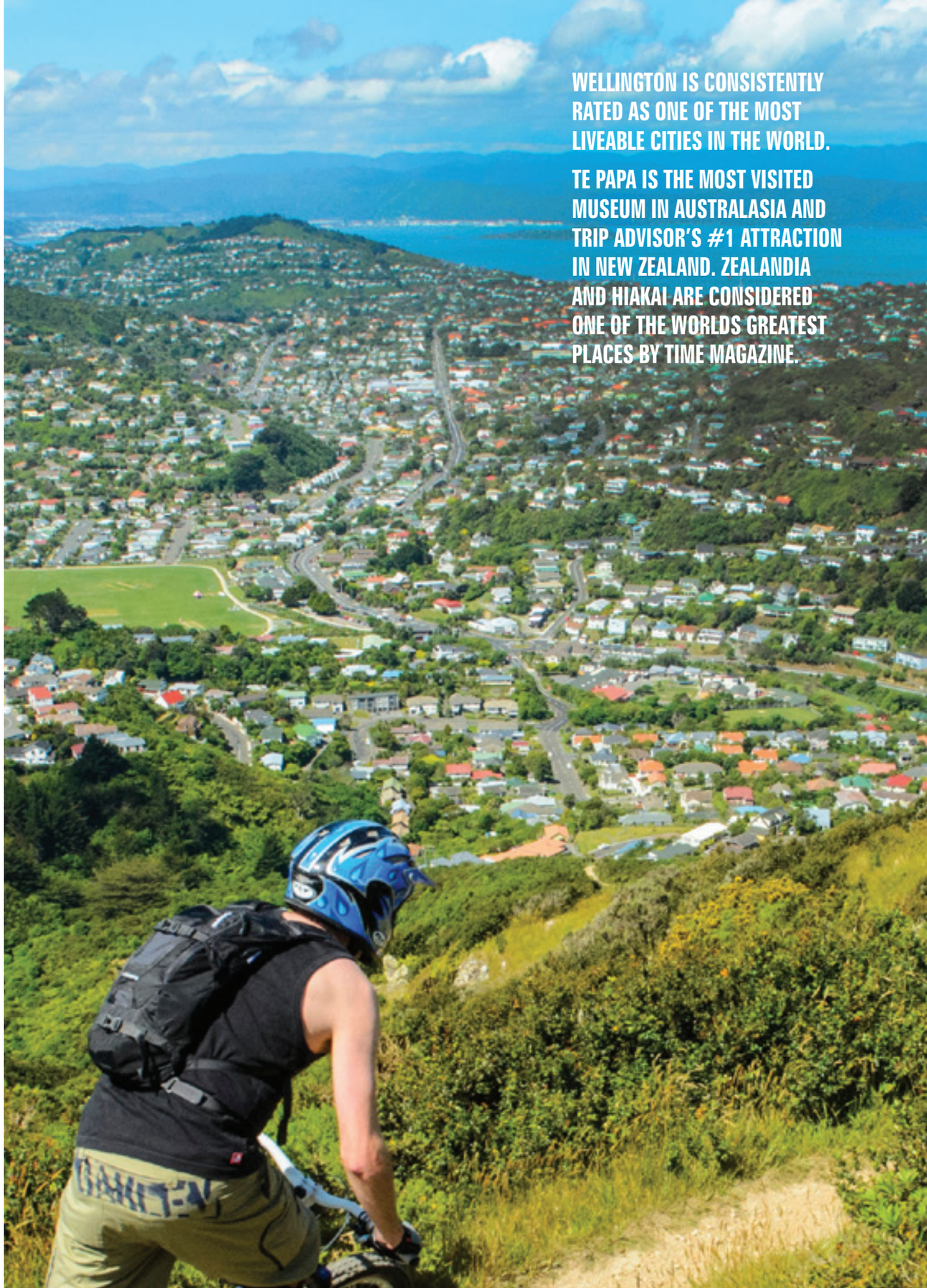
Just as direct services to Australia grew the trans-Tasman market, enhancing how Wellington connects to the rest of world will open up business opportunities, create new jobs, improve our liveability and bring more visitors to the city – encouraging more to explore the surrounding regions of central New Zealand.

In the last three years, Wellington has been at the top of the rankings for most liveable city in the world. It has also been rated by Lonely Planet as the top destination to visit in New Zealand. Te Papa is the most visited museum in Australasia and Trip Advisor's #1 attraction in New Zealand.

On top of what is already on offer, a number of significant visitor attractions are in the pipeline. These are a world class convention centre, outdoor adventure park, indoor arena, continuing to build on the world renowned local film industry and ongoing ecological restoration. It is vital that Wellington's air connectivity supports these projects and enables them to flourish.

If designed and managed well, tourism has the ability to deliver significant social, cultural, environmental and economic benefits. A key part of achieving this is generating and shaping demand with the kind of visitors who deliver the best outcomes for New Zealand. By attracting high-value visitors and influencing their visitation patterns, we spread the benefits tourism delivers across the year and across our communities.

STEPHEN ENGLAND-HALL
CHIEF EXECUTIVE,
TOURISM NEW ZEALAND.



1985

DOMESTIC TERMINAL INTERIOR

2017

EXTENSION OF MAIN TERMINAL

INDICATIVE RENDER OF THE EXPANDED TERMINAL

BLUEPRINT TO

2040

KO TŌ TĀTOU WĀHEKE

Left: Indicative architectural render of the Wellington Airport International Terminal extension project.

Our master plan outlines the vision for the next 20 years, creating a blueprint that leaves the airport well placed for the future.

By 2040, we expect 12 million passengers to fly in and out of the Wellington region every year. This represents a growth rate of 2.9% per year.

This growth will play a pivotal role in shaping Wellington's future. Now more than ever before, growing Wellington's global connectivity is critical to the city, the region and New Zealand's socio-economic wellbeing.

The plan will be implemented as demand increases over time, requiring more than $1 billion in infrastructure. With the airport's constrained site, we need to be smart about how we utilise our infrastructure and implement plans in a staged and flexible manner.

Our development plans and investment will also ensure our airport infrastructure is more resilient to a changing climate.

Despite passenger numbers doubling, annual flight movements are forecast to increase by less than 25% (from 85,000 now to 105,000 by 2040). This is as a result of airlines using larger, but more fuel efficient aircraft over time.

Extending the runway to enable direct long haul flights will actually reduce aircraft movements by 2040. This will also reduce the fuel and time travellers use as they no longer have to take an extra flight or alternative route to get to their destination.

6.4M IN 2019
12M BY 2040

GROWTH IN WELLINGTON PASSENGER NUMBERS

The Terminal

Our first step will be to repurpose the current northern area from international flights to regional flights. Then a new, expanded terminal will be constructed to the south for international and domestic jet aircraft.

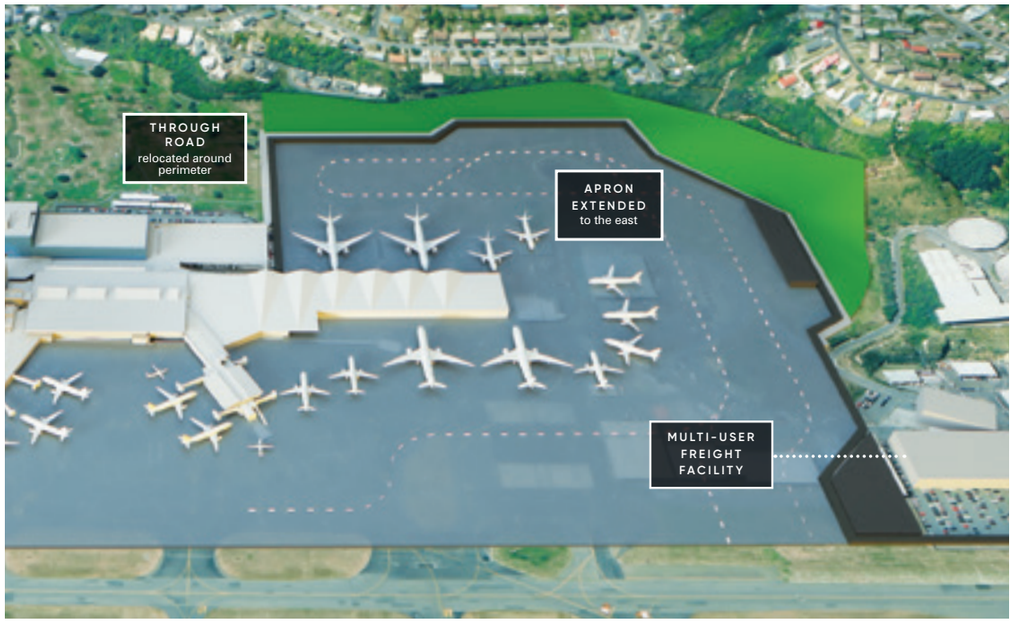
This will mean we will be able to accommodate future growth in both domestic and international travellers. Surrounding the expanded terminal will be a taxiway area that can be configured for a number of alternative aircraft layouts.

KEY FEATURES:

- The airport will 'flip' its terminal, repurposing the northern area for regional traffic and expand the main terminal to the south for international and domestic jet aircraft.
- The smaller aircraft stand footprint requirements and tail heights of regional aircraft can be accommodated within the northern apron, with the north pier re-purposed as a domestic facility.
- A common use, international and domestic terminal will be constructed on available land to the south, with the surrounding apron and at-grade car parking areas repurposed for jets.

KEY AREA AND SERVICE IMPROVEMENTS BY 2040

Eastern Apron



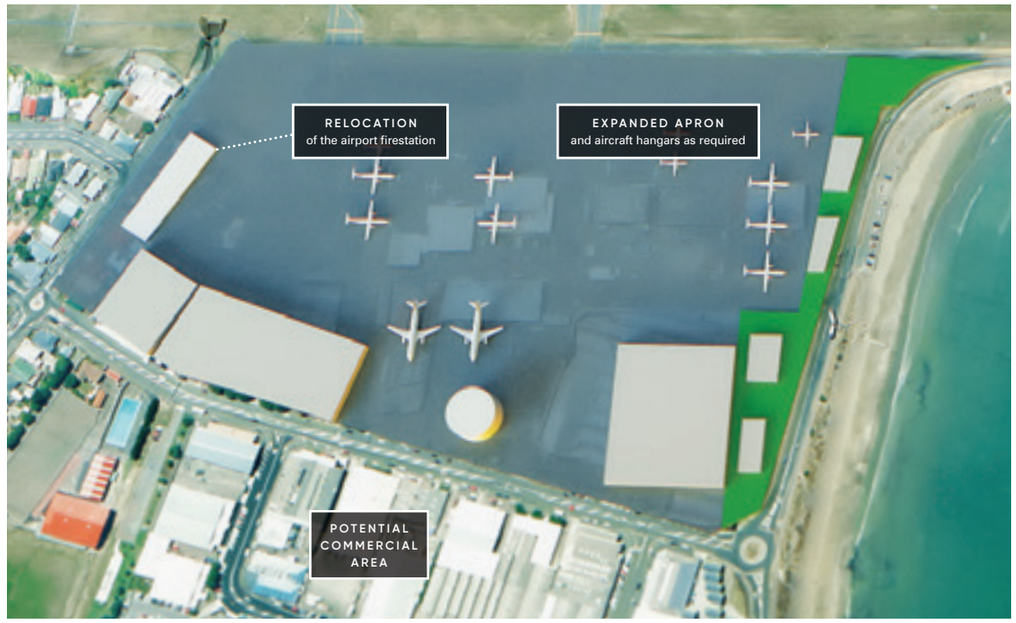
Our terminal buildings, transport hub and New Zealand's first fully-integrated airport hotel all provide a platform for growth. The eastern apron will continue to be the centre of operations for all scheduled passenger movements.

As growth to the north is limited by the suburb of Miramar, our only feasible expansion options lie to the south and east.

KEY FEATURES:

- With a limited ability to grow within our existing footprint, we are engaging with key stakeholders to acquire part of the Miramar golf course to free up space for aircraft movements.
- Re-purpose the southern freight buildings into a more efficient multi-user facility. With growth in online shopping and parcel cargo this facility would be able to efficiently enable the transfer of freight from landside to airside, and vice-versa.
- Flight catering and out-of-terminal rental car facilities will be re-homed in new buildings on vacant land to the north of the airport.
- To accommodate regional growth, we will need to build new aircraft stands on to the north of the current international terminal and move the airport fuel facilities and the airport fire station. Plans for the fire station are well advanced, with construction of new premises on the western apron due to start in 2020. Plans for the fuel facilities are still to be determined in consultation with our providers.
- Continued provision for access road will be made around the perimeter of the apron between Moa Point and Miramar.

Western Apron



As scheduled activities increase on the eastern apron, there may be a future requirement to redevelop the western apron to accommodate non-scheduled movements such as freight, medical, VIP and defence.

Only as required, this need would progressively shift these operations further west, displacing the existing hangars and commercial activities including the retail park.

Infrastructure and Transport

As the airport grows, we will work with our key utility and transport providers to ensure their capacity matches the requirements of a growing airport, and in instances of shared services, a growing community.

Our plans mean that many existing utilities will end up in areas used for aircraft operations and will be difficult to access for maintenance and future renewal.

To address this, we propose relocating the key telecommunications, power, gas, sewer, waste and potable water services to a specially designed corridor, that preserves access and builds resilience as the airport develops.

Future development will also address risks from the effect of climate change, including the capacity of our stormwater network and sea walls.

As we grow, the continued safe and efficient land transport access to and from the airport is fundamental to the customer experience and business and visitor growth.

Despite growing traffic volumes in the eastern suburbs, there has been no increase in the corridor and roading capacity on State Highway 1 between the airport and Wellington CBD. This has led to a lack of reliability and an increase in travel times to and from the airport.

Wellington Airport can and will accommodate any mode of future public transport. However, it is important to note that public transport to and from the airport needs to be direct in order for people to use it. Let's Get Wellington Moving (LGWM), a joint initiative between WCC, Greater Wellington Regional Council and the NZ Transport Agency, is working towards improving traffic congestion and unreliable journey times, seeking to improve service levels, encouraging cycling and walking and limiting the impact of disruptions.


FUTURE TERMINAL & TRANSPORT INTERFACE
THROUGH ROAD
relocated around perimeter
REGIONAL PIER EXPANSION
APRON EXTENDED
to the east
EXTENDED MAIN TERMINAL
for domestic and international flights
MULTI-USER FREIGHT FACILITY
RELOCATION
flight catering and rental car facilities
POTENTIAL RUNWAY EXTENSION
RELOCATION
of the airport firestation
EXPANDED APRON
and aircraft hangars as required
UPGRADED SEA WALLS AND BREAKWATER FOR RESILIENCE
POTENTIAL COMMERCIAL AREA

Kaitiakitanga

Left: Aerial view of Wellington Airport.

Few airports can boast such proximity to a city. As a truly city airport we understand the importance of managing our operations and future growth to deliver excellent connectivity and customer service while caring for our neighbouring community and the environment.

The aviation industry is a recognised contributor to carbon emissions, with aircraft emissions equating to about 2% of all global carbon emissions. Domestic aviation contributes to about 1% of New Zealand's total carbon emissions.

The new generation of aircraft are around 20% more fuel efficient than the model they replace. A Boeing 787-9 uses 2.5L of fuel per seat per 100 kilometres travelled. Given the high number of people in an aircraft this matches or beats the fuel efficiency of modern compact cars.

Globally, the International Airport Transport Association (IATA) has made a commitment to reduce the carbon emissions of its 290 member airlines by 50% by 2050, relative to 2005 levels. The airlines are collectively working hard to develop sustainable alternative fuels and aircraft technologies.

Extending the runway would make it possible for more direct flights to international destinations from Wellington. Direct flights reduce the fuel travellers use as they no longer have to take an extra flight or alternative route to get to their desired destination.

↓50% BY 2050

IATA GLOBAL COMMITMENT TO REDUCE CARBON EMISSIONS

Kaitiakitanga

CONNECTING CENTRAL NZ TO THE WORLD

CONNECTING PEOPLE, THEIR EXPERIENCE & OUR ENVIRONMENT

SUSTAINABLE GROWTH

OUR PEOPLE

- Operate a safe and secure airport
- Care for everyone in the airport community.

OUR COMMUNITY

- Be a good neighbour
- Build meaningful community partnerships.

OUR ENVIRONMENT

- Protection for future generations to enjoy
- Transition to a 1.5°C world.

At Wellington Airport we are supporting our airline partners in their initiatives to reduce fuel consumption and carbon emissions and are committed to reducing our own emissions.

We have established targets for a 30% reduction in our carbon emissions by 2030.

Achieving these targets while expanding our operations will require us to adopt energy efficient and sustainable construction into our projects.

Our sustainability commitment, Kaitiakitanga, includes how we will manage our operations to decouple growth from increased resource consumption and reduce the risk of adverse impacts on our communities and our environment:

- Working with airlines and Airways New Zealand, we aim to improve aircraft emissions and noise. This includes the recently trialled Performance Based Navigation routes to enable quieter and more fuel-efficient arrivals into Wellington Airport, and significant investment in the electrification of aircraft ground power and service equipment.
- Reduce electricity consumption and adopt alternative energy options.
- Targeting a reduction in operational waste by 30% by 2030, and working with our suppliers and tenants to eliminate single use plastics.

CLIMATE CHANGE ADAPTATION AND RESILIENCE

Improving operational resilience is a priority. As the climate continues to change, we expect rising sea levels, more extreme weather and climate-related events to occur which will present a risk to infrastructure and property. The potential impact and future resilience has been considered as follows:

- Establishing targets and taking all practical steps to reduce our operational greenhouse gas emissions.
- Upgrading coastal protection structures so they're able to withstand a rise in sea level, storm frequency and intensity, and seismic activity in forecast earthquake scenarios.
- Continuing to advocate and support the Let's Get Wellington Moving initiative to improve land transport options and resilience to and from the airport – reducing congestion, providing sustainable transport alternatives and limiting disruption from unplanned events.
- Designing airfield and stormwater infrastructure for more intense rainfall events.
- Ensuring buildings exceed the minimum seismic building code requirements.
- Protecting our coastal marine environment by managing all discharges, including stormwater.
- Maintaining and protecting air, water, soil and groundwater quality.
- Improving the environment of the airport precinct and active access to the airport through landscaping and design.


WELLINGTON
AIRPORT

F

APPENDIX F

Landscape and Visual Assessment

Wellington International Airport

Visual Effects of Designation Outcomes

Prepared for Wellington International Airport Ltd

by Frank Boffa in Association with Boffa Miskell Ltd

December 2019

Table of Contents

PART A: Background

1.0 Introduction

1.1 In June 2019, Frank Boffa in association with Boffa Miskell Ltd, were engaged by WIAL to prepare a visual effects assessment of the updated Master Plan. This included an assessment of the expanded terminal buildings, as well as an assessment of the taxiways, aircraft movement and associated activity areas within the southern area of the adjacent Miramar Golf Course as outlined in the AirBiz draft (partial) Master Plan[1].

2.0 Landscape Context

2.1 Wellington International Airport is situated on the Rongotai Isthmus, a tract of low-lying land between the Miramar Peninsular and Kilbirnie. The original development of the airport between 1956 and 1959, and its subsequent further development in 1972, when an area was reclaimed to extend the runway, has had a significant effect on the existing landscape character of the Rongotai Isthmus and Lyall Bay generally.

2.2 In its current landscape setting, the airport and its associated infrastructure, together with the adjoining developments, namely Wellington's Wastewater Treatment Plant and sewer outfall, Miramar Golf Course, adjacent residential development, roads and infrastructure have all contributed to a substantial modification of the landscape, particularly along the eastern side of Lyall Bay. Notwithstanding these changes, there are extensive areas of land zoned Open Space around the surrounding hills as well as the beach itself, and the rocky headlands on the eastern and western shores that define Lyall Bay. In terms of recreational use, the Lyall Bay area maintains a high level of use including the interest generated by the airport and its aviation activities.

[1] Wellington Airport Draft (Partial) Master Plan – 12M Passengers. Prepared by AIRBIZ. Undated Plan 12576 A2405

Figure 1 Wellington International Airport Landscape Context.

3.0 Designation Proposals

3.1 WIAL is proposing to establish a new designation over the Miramar Golf Course. The proposed designation will be established for “Airport Purposes” and will extend onto the southern section of Miramar Golf Course, over an area of approximately 15.6 ha.

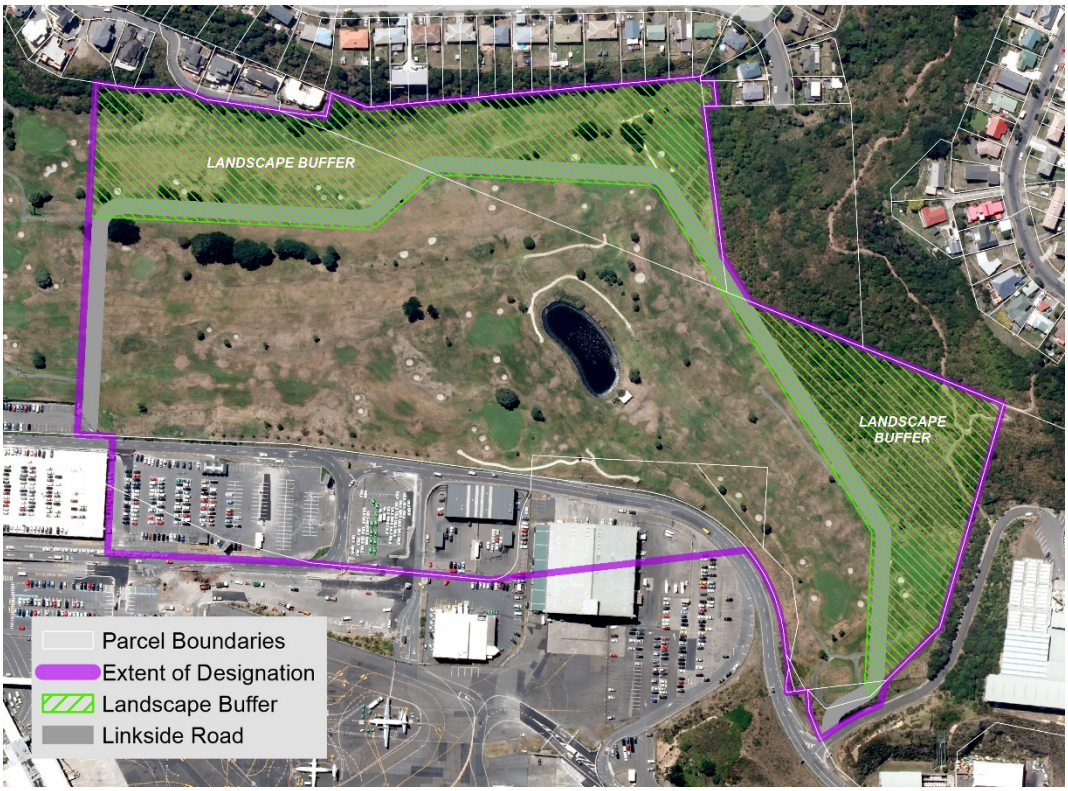


Figure 2 Airport Designation Area

3.2 While the proposed designated area within the Miramar Golf Course will be primarily used for taxiway purposes, the associated activities and structures described in the designation (and as shown in the draft (partial) Master Plan) include the following –

- Aircraft operations including taxiing, aprons and other aircraft movement areas.
- Navigation and safety aids, lighting, maintenance and service facilities.
- Car parking, roads, accessways, stormwater facilities, monitoring activities, infrastructure and utility activities and landscaping.
- Ground service equipment, storage, including related buildings (to a maximum height of 15m).
- All construction and earthworks activities, including associated structures and landscape buffer areas.

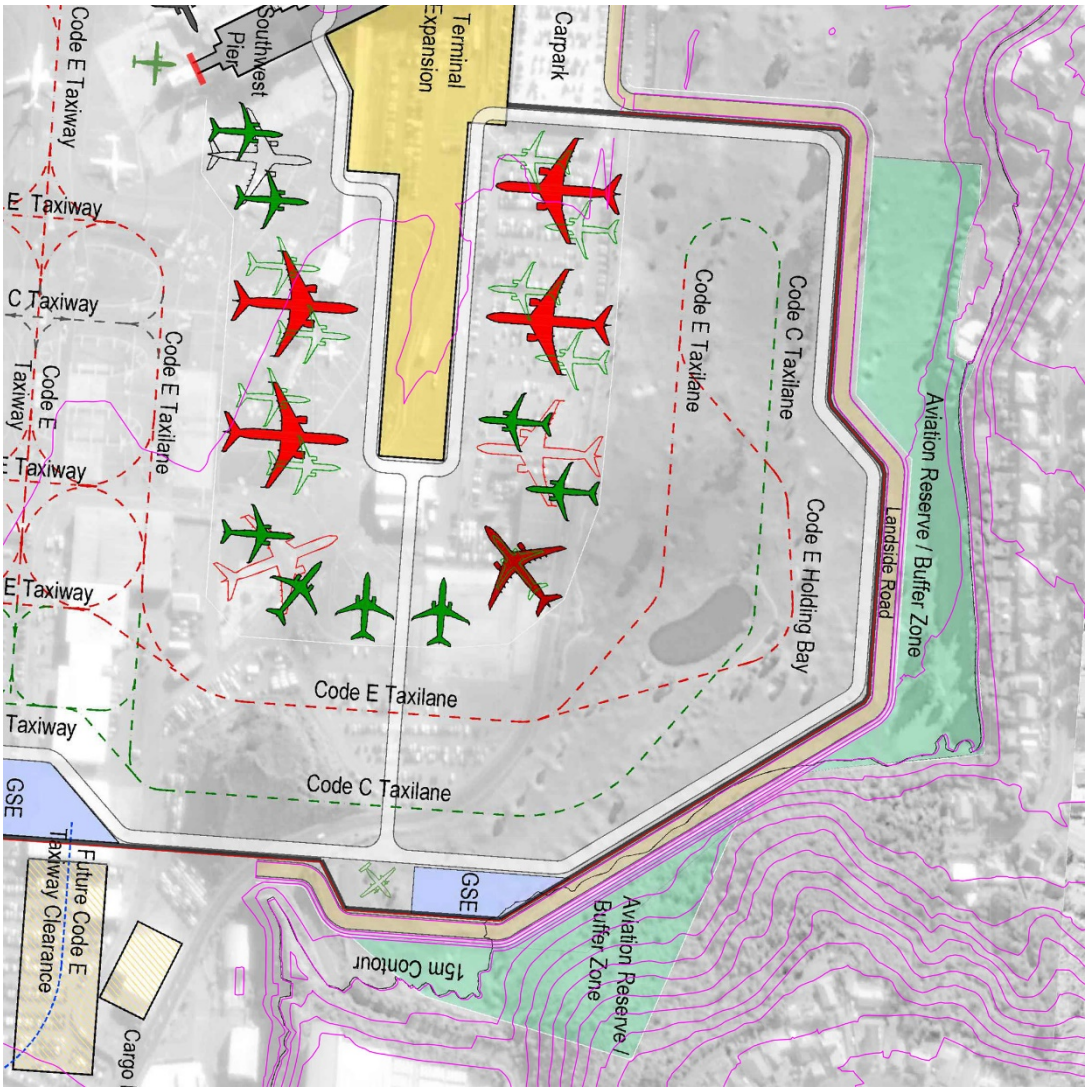


Figure 4 Indicative configuration of the proposed Airport Purposes Designation.

4.0 Statutory Framework

4.1 The relevant statutory provisions with respect to the proposed designation relative to natural features and landscapes and visual amenity are outlined as follows –

Resource Management Act (RMA)

4.2 Section 5 of the Act sets out the purpose of the RMA which is to promote the sustainable management of natural and physical resources, with Section 6 setting out a number of matters of national importance. In this regard Section 6(a) requires the preservation of the

natural character of the coastal environment, with Section 6(b) requiring the protection of outstanding natural features and landscapes.

4.3 In terms of natural character, while the airport is within the coastal environment and subject to the policy provisions of the New Zealand Coastal Policy Statement (NZCPS), there are no areas of high or outstanding natural character within or adjacent to the designation areas that are likely to be affected.

4.4 In terms of outstanding natural features and landscapes, there are no such identified areas or sites classified by Wellington City Council within the proposed designation areas.

4.5 Section 7 of the RMA includes "other matters" where particular regard must be given. These include Section 7(c) the maintenance and enhancement of amenity values, and Section 7(f) which deals with the maintenance and enhancement of the quality of the environment. Both visual amenity and the maintenance and enhancement of the environment in terms of people's enjoyment and appreciation of the pleasantness, attractiveness and coherence of an area, scene or view, are major contributors to amenity values. In this assessment the effects on outlook and views is the prime consideration, given the visual effects will involve changes to the existing elements within the view rather than the introduction of a new activity or use. Accordingly, the nature and extent of the view relative to the particular viewing audience influences the magnitude and significance of visual effects. In determining the likely visual effects, other factors such as distance, elevation, angle of view and its context in terms of the screening effects of intervening elements such as landforms, buildings and trees are also important considerations. These matters will be addressed in terms of visual amenity and in particular the effects on views.

4.6 With respect to the NZCPS and Wellington Regional Council provisions, there are no particular coastal or marine area matters beyond those noted above that are relevant to this visual effect's assessment.

District Plan Provisions

4.7 Wellington International Airport is currently located within the Airport Precinct Area defined in the Wellington City Plan (the District Plan). The District Plan provisions for the Airport Precinct provide for a maximum building height of 25m. The Miramar Golf Course is identified in the District Plan as a Recreational Precinct which forms a buffer zone between the airport and the adjacent residential areas to the east and north.

4.8 In terms of the Wellington City District Plan, there are no specific view protection provisions, such as identified viewshafts or view corridors, within the airport or its immediate surrounds. Notwithstanding this, while no resident has a right to a view,

adverse impacts on private residential views may be relevant in relation to amenity considerations where views may be blocked rather than modified in terms of what is seen. In the context of this assessment, and based on potential viewing areas, there are unlikely to be areas or particular viewpoints beyond the confines of the airport, from where views will be blocked or rendered completely out of character with what currently exists. All affected views will largely be modification to existing views, rather than the screening of views in general. Accordingly, the level of the effects of these modifications will vary according to the particular characterisation of each viewpoint.

5.0 Assessment Approach

5.1 Based on the statutory matters previously outlined, this assessment adopts the following approach -

(i) Review of existing landscape context and setting of the airport and the proposed Designation.

(ii) Site visits to identify likely viewing areas, viewing audiences and the selection of representative viewpoints from publicly accessible locations.

(iii) Analysis of viewpoint characteristics relative to the makeup, configuration and extent of views as illustrated from each of the viewpoints.

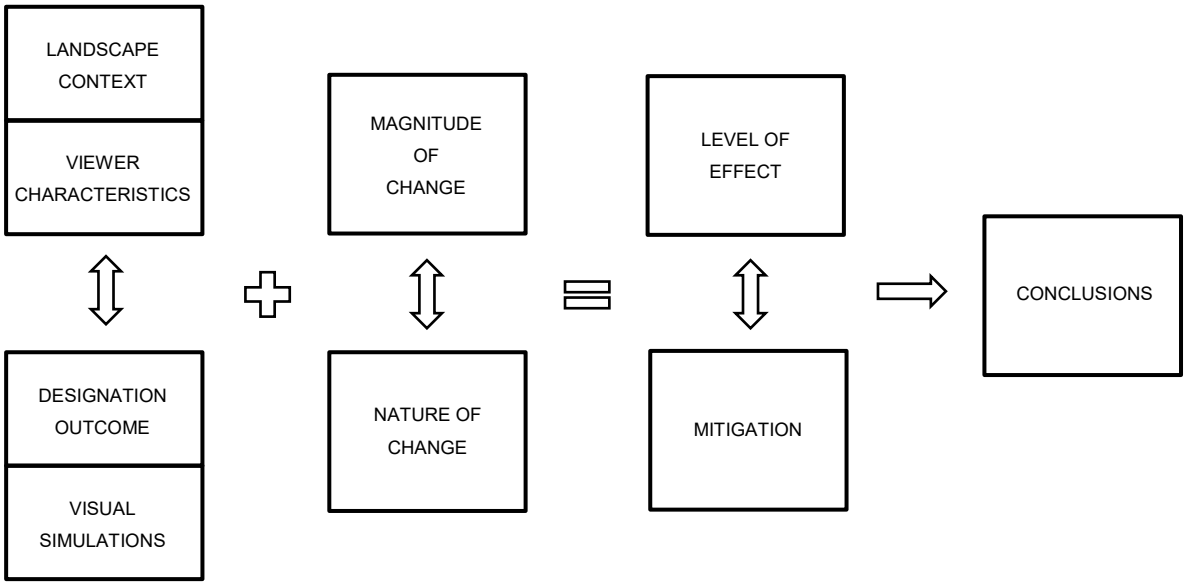
(iv) Preparation of visual simulations as a basis for the identification and assessment of likely visual effects.

(v) Assessment of visual effects based on the magnitude of change, nature of the effects and the level of effect.

(vi) Consideration of cumulative effects as and where appropriate.

(vii) Consideration of possible mitigation measures where appropriate.

5.2 The following diagram illustrates the visual and view effects assessment methodology outlined above.



PART B:

6.0 Landscape and Visual Effects

6.1 While landscape and visual effects assessments are closely related, they are essentially separate procedures. The assessment of potential effects on the physical landscape which is the first step in the process, assesses effects on landscape elements, features and landscapes character overall. The assessment of visual effects essentially considers how changes to the physical landscape are likely to affect views and potential viewing audiences.

6.2 The type of effects can be summarised as follows –

- Landscape Effects – changes to the landscape which may affect its character and/or qualities.
- Visual Effects – changes to views which may affect the visual amenity experienced by people.

Landscape Modification

6.3 The proposed designation will introduce a further modification to an already highly modified landscape in the form of an expansion and modification to the existing airport facilities and operations. The Proposed designation, which takes up approximately 12.6ha of the southern end of the Miramar Golf Course, will involve significant modification in the form of earthworks and retaining walls to create a flat aircraft taxi and operational area to accommodate the airports growth and development.

Visibility

6.4 The most affected views of these modifications will be from within the airport itself, the balance of the golf course and the adjacent elevated residential area to the east. From more distant viewpoints to the west, namely the Lyall Bay and Kilbirnie areas, views will generally be limited to visible modifications within the airports central built core and the large retaining wall to the east of the expanded aircraft operational area. While layout changes to the aircraft taxi and operational areas will occur, these will largely be screened by the terminal building from more distant western viewpoints in the Melrose area.

Viewpoint Selection

6.5 While the Rongotai Isthmus and the surrounding hills provide many theoretical vantage points, views of the designation outcomes will generally be restricted due to the screening effects of intervening landforms, buildings and vegetation. In order to locate a representative range of viewpoints for the preparation of visual simulations to assist with the assessment of visual effects, a survey of the area within the airports viewshed was carried out.

6.6 Based on these field investigations, six representative viewpoints from publicly accessible locations were selected. The viewpoints selected also represent locations from where the effects were likely to be the most apparent and from locations that, given the airport is a major facility in the area, would be the most sensitive such as from residential and recreational areas. During the preparation of the assessment, additional visual simulations were prepared from two residential properties with the consent of the land owners. These two properties in Bunker Way and Ruakawa Street, to the East in the Strathmore area, are directly adjacent to and have relatively clear views to the proposed designation area.

6.7 Transient viewers who visit the area for social employment or recreational purposes, such as surfers, swimmers, fisherman, beachcombers, sightseers, café patrons, picnickers, plane spotters and the like were not considered given the variability of their locations and the likelihood that these activities largely occur at or near sea level and would in most instances experience little or no visual effects of the proposed designation.

6.8 The public viewpoints selected were from the Strathmore Heights area, Seatoun Heights and from Lyall Bay Beach and Melrose. While limited views of elements and components of the designation outcomes were possible from other locations, these were considered to be less significant in terms of visual effects, or out of character or context with the existing landscape character of the Lyall Bay area in general.

6.9 The viewpoints selected for visual simulations purposes are as follows –

VP1 Public Walkway off Kekerenga Street, Strathmore Heights

VP2 Bunker Way, Strathmore Heights

VP3 Townsend Road, Seatoun Heights

VP4 Wilberforce Street, Seatoun Heights

VP5 Beach adjacent to Maranui Surf Club, Lyall Bay

VP6 Hornsey Road, Melrose

VP7 17 Bunker Way

VP8 50c Ruakawa Street

Figure 6 shows the location of these viewpoints[2].

View Preferences

6.10 While people place particular values on views based on their personal likes or cultural background, preference studies and research both within New Zealand and overseas show common similarities. In a recently prepared Guidance Note for Queensland[3], the Australian Institute of Landscape Architects noted that the following general principles were consistently found in scenic preference studies and community consultation.

- Water and natural elements are preferred over urban scenes
- Mountains and hills are preferred over flat land
- Views which include both mid-ground elements (with some discernible detail) and a background are preferred.

[2] Note that VP refers to "Viewing Point". References to VS refer to visual simulations.

[3] Guidance Note for Landscape and Visual Assessment. June 2018. Australian Institute of Landscape Architects.

6.11 While these principles are very general, they are not unexpected and typical of what one might anticipate as being relevant to this assessment. While no specific preference surveys have been carried out relative to this assessment, in the context of views within the Lyall Bay area, water, natural elements, hills, skyline elements and features, focal points and distance grounds are particularly relevant and evident in the context of the viewpoints selected. For example, five of the six viewpoints selected are from elevated locations from where expansive views incorporating sea, hills, skyline features, local points, distance grounds and landscape diversity are a particular feature. In addition, most of the views assessed will largely retain these particular characteristics to a greater or lesser degree. To this extent, this assessment also focuses on the modifications to the viewpoint views relative to the proposed designation outcomes. Based on these specific viewpoint effects an overall judgement on area effects has been considered.

Magnitude of Change

6.12 As a basis for assessing the magnitude of the landscape modifications from specific viewpoints, the nature, extent and relative scale of the changes has been assessed. In addition, the duration (including the construction period) and/or permanence is also considered.

6.13 In summary, the contributing factors to the magnitude of change are as follows –

(i) The ability of the landscape to visually absorb and/or accommodate the physical changes

(ii) The size and scale of the change

(iii) The nature and characteristics of the view

(iv) The value attached to particular views (based on an objective professional assessment)

(v) The nature of the viewing audience and likely number of viewers

(vi) The duration or reversibility of the change

Nature of Change

6.14 The visual effects assessment also considers the nature of the effects in terms of whether these are likely to be adverse (negative), beneficial (positive) or benign (neutral) in the context of the particular view. Change to a landscape and /or a particular view does not of itself necessarily constitute an adverse effect. Landscapes, be they natural, modified or a combination of both, are dynamic and constantly changing over time and both subtle or

more dynamically transformational ways. These changes can be both natural or humanly induced. What is important is managing landscape change so that adverse effects can be avoided where possible, or sufficiently mitigated to ameliorate the adverse visual effects of change. The aim is to maintain or provide a high level of visual amenity through appropriate design and/or mitigation options.

Cumulative Effects

6.15 Cumulative effects can occur in combination (seen together in the same view), in succession (where the viewer needs to turn their head) or sequentially (such as when moving (walking or driving) through a landscape. As appropriate, these effects are illustrated and/or commented upon. In the context of the airport precinct, while the consent application for a runway extension to the south has been withdrawn and the project is currently on hold, consideration as to the likely visual effects of this relative to the selected designation viewpoints has not been considered or assessed.

Level of Visual Effect

6.16 The final step in the visual assessment process involves an overall professional judgement as to the likely overall level of effect generated from each viewpoint. Using a seven-point scale from very high to very low and guidelines for visual effects assessment used by Boffa Miskell [4], an assessment from each of the selected viewpoints has been made.

Mitigation

6.17 Where visual effects are high and where there are opportunities to mitigate these effects, this has been noted and incorporated within the visual simulations.

6.18 Based on a preliminary assessment of visual effects, mitigation focussing on the large retaining wall, to the south-east of the golf course has been considered and incorporated in the simulated views. Further planting within the adjacent buffer area has also been included.

6.19 Where practicable, the large Pohutakawa trees within the designation area will also be relocated within the buffer area as an integral part of the proposed mitigation planting.

6.20 The large retaining wall, which will reach a height of approximately 30m at its highest point, is likely to be the most visible new element within the proposed designation. In

[4] Landscape and Visual Effects Assessment Methodology. Guideline Table, prepared by Boffa Miskell Ltd, February 2019.

order to reduce the visual prominence of this structure, particularly from the Bunker Way area, the western end of Lyall Bay Beach area , the Melrose area, and from within the expanded aircraft operational area, a combination of a sculptured façade treatment on the lower section of the wall and as appropriate, a colour panel add-on to the upper section of the wall has been modelled in the visual simulations. In addition, and while not apparent in the simulations, a public walkway in the vicinity of the mid heights of the wall is proposed, along with a possible lookout area from where views over the aircraft operational area can be gained. This walkway could connect with existing and upgraded walkways through the open space buffer area between the Strathmore Heights area and the airport.

6.21 While the mitigation proposals have not at this stage been designed, images of how the retaining wall façade could be handled are shown in Figure 6. The concrete sculptured wall example uses images of a 14m retaining wall on the Peka Peka to MacKay's Expressway at Waikanae, and the colour panel example is an image of part of the façade of the new multi-story carparking building at Wellington Airport. As previously noted, the illustrations shown, and the images depicted in the simulations are not specific designs for the surface treatment of the retaining wall, they are simply included at this stage to illustrate a possible approach that could be adopted and designed specifically for the retaining wall.

6.22 In visual terms, an outcome along the lines suggested would reduce the visual impact of the retaining wall. In addition, the inclusion of an expanded public walkway and viewing area, and more extensive mitigation planting would significantly enhance the buffer area, provide a meaningful public amenity, reduce the visual effects of the retaining wall and mitigate the overall effects of the proposed extension of the airport taxiway and aircraft operational area.

6.23 The visual simulations illustrate the proposed activities and general layout associated with the proposed new designation over part of the Miramar Golf Course. While the buildings associated with the master plan are yet to be designed, and in order to provide a meaningful context to the proposed designation, the buildings illustrated in the visual simulations are shown as an extension of the existing airport terminal buildings. As such the expanded terminal buildings depicted in the simulations conform to the current building provisions outlined in the Airport Precinct of the District Plan.

PART C:

7.0 Visual Effects Assessment

7.1 The visual effects assessment has been based on the eight representative viewpoints[5] noted in paragraph 6.8. From these locations, photographs depicting the existing view, along with a simulated view incorporating designation layouts, are provided and illustrated in the visual simulations. From each viewpoint an analysis of the view and viewer characteristics has been carried out, along with an assessment of the magnitude and nature of the change in the view followed by an assessment of the level of viewed effects. As appropriate, mitigation measures are also discussed.

Visual Simulations

7.2 Visual simulations are used to accurately portray, in as realistic manner and context as possible, a proposed activity, modification, or change in the viewed landscape. While visual simulations are not "real life views", they are useful tools to assist in the assessment and decision-making process whereby better informed and more transparent judgements on appearance and effects can be made. Visual simulations illustrate a two-dimensional view of a proposed activity of modification from a particular viewpoint depicted on a photograph, not as it would appear as a three-dimensional image seen in the field with the human eye.

Viewpoint Photography

7.3 Site photographs were taken with a Canon digital SLR camera fitted with a 50mm focal length lens, mounted on a tripod and panoramic head. A series of photos were taken at predetermined viewpoints, in portrait mode. The viewpoints were situated on public land and the locations of each were fixed using the GPS unit built in to the camera.

7.4 The visualisations have been produced in accordance with the NZILA Best Practice Guidelines for Visual Simulations (BPG 10.2) [6] and also adhere to Boffa Miskell's internal Visualisation Guidelines. Virtual Camera views were then created using 3D modelling software, and a combination of digital terrain models, engineering drawings and 3D

[5] Viewpoints are referred to in this report as "VP" and refer to the location where the photogphs were taken. References to "VS" refers to "visual simulation.:

[6] NZILA Best Practice Guide, Visual Simulations BPG 10.2. February 2010.

architectural models. Each camera view was then rendered using the correct time, date and lighting parameters. They were then matched to the corresponding photographic panorama, using identifiable features in the landscape and the characteristics of the camera to match the two together. The visualisations were then assembled using graphic design software.

Image Reading Distance

7.5 From each of the viewpoints, photographs utilising a 90° field of vision were taken in order to capture the full extent of the view, particularly from Viewpoints 1 and 2 which are in close proximity to the airport. From more distant locations, namely Viewpoints 3 to 6, the same 90° field of view was adopted for consistency and to capture the wider landscape setting of the view.

In order to provide simulations that reflect what one would see if standing at each viewpoint, 40° field of view images have also been prepared from each of the viewpoints. Compared to a 90° panorama, these 40° field of view single frame images have been produced using a 50mm focal length lens. When printed at A3, these images can be

viewed from a reading distance of 50cm.

Figure 5 Image Reading Distance

VP1 Public Walkway (Off Kekeranga Street) Strathmore Heights[7]

7.6 While both the airport and its associated infrastructure are a dominant element in the view from this elevated viewpoint, the Miramar Golf Course is also a prominent feature in

[7] Refer to visual simulations VS1-1A to 1C and VS1-2A to 2C.

the view. Residential properties to the east of the viewpoint and in particular the more elevated properties in the Kekeranga and Ahuriri Street area, largely appear to be partially screened from the proposed developments and in particular, the proposed aircraft operational and taxi-way areas on the Miramar Golf Course. This is primarily due to their elevation and the screening effects of intervening landforms, buildings and vegetation. Not-withstanding this, it is likely there may be localised views from properties in this general area. Views of and to the expanded terminal are likely to be more visible, however, while they will be seen they will appear to be part of the built fabric of the airport and will not block views to the expansive views obtained from this general area. Being lower in elevation, views from the Tairoa and Ruakawa Street areas are likely to be similar but less extensive. While most affected viewers in the Strathmore Heights area will be residents who currently enjoy open views over the golf course and airport, transient viewers will be few and confined to public open space areas where views are restricted due to the effects of intervening landforms and vegetation.

7.7 The magnitude of change in terms of views will not be extensive nor is it likely to be highly intrusive in that the changes will largely be seen as an extension to the existing airport which is currently a dominant feature in the landscape. While there will be a reduction in the extent of open space relative to the golf course, the effects of this change will not be significant given its context and the number of likely viewpoints from this area in general. In this regard the only location from where a full uninterrupted view of the change will be visible, will be from the public walkway off Kekeranga Street (VP1). Currently this walkway is not well maintained and appears to be used infrequently.

7.8 Residential views to Lyall Bay, Evans Bay and the background hills will not be screened or compromised when viewed from this general area. In this regard, middle ground and background views will not be adversely affected. The main effect on views from this area will be seen as a change to the composition or make-up of the foreground view, which in most cases will be overlooked, rather than looked into. Notwithstanding this, and even though there will be a significant change to part of the Miramar Golf Course, there will not be a loss of key features to views in general from this area.

7.9 While the designations will see an expansion of airport operations and activities, the cumulative effects of this in the context of the area in general will be low.

7.10 In summary, while the sensitivity of the resident viewers may be high and the magnitude of modifications may also be high, the nature and levels of visual effect in the context of VP1 are likely to be moderate to low overall.

VP2 Bunker Way, Strathmore[8]

7.11 Bunker Way was recently developed to take advantage of views over the Miramar Golf Course, the airport, the sea and background hills beyond to the west. The Wellington Wastewater Treatment Plant and the small isolated hillock within the proposed designation ff Stewart Duff Drive are also visible from the Bunker Way area. While this simulation is from the entry to Bunker Way, it is likely that most of the golf course would be visible and provides a prominent foreground view to residents of those properties.

7.12 While the Viewpoint 2 simulation shows the entry to Bunker Way, some residential buildings blocking views to the south and south-west, views from individual properties are likely to be open and uninterrupted. Notwithstanding the loss of golf course views to the south-west, views to the west and north will largely be retained. Expansion of Terminal Area, while visible, is not likely to have a significant effect on distant views to the west and north. In general, the main change to views will be the expansion of the taxiways and aircraft operation areas onto what was golf course, and the large retaining wall constructed at the toe of the excavated hillside to the south which will reach a height of 30m at its highest point. As previously noted, while the retaining wall will be a prominent element in some views from this viewpoint area, mitigation as outlined in paragraph 6.19 and shown on the simulations will assist in reducing visual effects.

7.13 As with views from Viewpoint 1, the main effect will not be their screening, it will be in the magnitude of change, albeit a modification to the existing elements that comprise the foreground components of the view. The loss of part of the golf course and the expansion of the extensive hard surfacing and retaining wall will be significant modifications to existing views. More distant views to the south-west, the background hills and to the South Island will not be affected. From the Bunker Way area, viewer sensitivity is likely to be very high. Given the private nature of the area, transient viewers will be few. Cumulative effects as a consequence of the expansion of activities in the context of the area will be moderate in general with the likelihood of this being perceived as being higher from specific viewpoints within some properties.

7.14 In summary, the sensitivity of viewers, who will essentially be residents, will be very high, the magnitude of change will be high, the nature of change adverse and the level of effect overall to be in the high to very high range depending on individual viewpoint characteristics and outlook. While appropriate mitigation will assist in the amelioration of effects, there will be a permanent change in the composition and outlook of individual views. Not-withstanding this, there will be no screening or blocking of views. The existing views will be different rather than screened or blocked.

[8] Refer to visual simulations VS2-1A to 1C and VS2-2A to 2C.

VP3 Townsend Road, Seatoun Heights[9]

VP4 Wilberforce Street, Seatoun Heights[10]

7.15 From these two elevated viewpoints the main viewing audiences are residents with few transient viewers other than road users and/or sightseers moving through the area. From locations at lower levels, the views become less open and expansive due to elevation and the intervening screening of intervening buildings and vegetation.

7.16 From this location, the loss of the southern section of the Miramar Golf Course will be apparent, however, the closer balance of the course will remain as a feature in the middle ground view. The removal of the small isolated hillock at the southern end of the runway will not detract from the view and in fact, its removal enables a more expansive sea view.

7.17 In visual terms, the most apparent change will be any future expansion of the main terminal with its additional structures. While these newly built forms are clearly visible, they do not detract from or screen background views. In terms of views, the changes are all confined to the middle-ground area with the major feature of the expansive views being Lyall Bay, the background hills to the west, Cook Strait and the distant Kaikoura Ranges of the South Island.

7.18 In summary, viewer sensitivity is rated as being low, with the magnitude of change assessed as being in the moderate to low category and the nature of effect largely being neutral. Cumulative effects in the context of the view are low with the overall visual effects assessed as being in the moderate to low range.

VP5 Lyall Bay Beach (adjacent to Maranui Surf Club)[11]

7.19 Views from Lyall Bay Beach and the adjacent Parade will vary depending on the proximity to the airport and the nature of the activity being enjoyed by transient viewers and visitors to the area. The existing view from the vicinity of the Maranui Surf Club shows the full extent of the airport Terminal Area and the elevated Water Treatment Plant towards the southern end of the runway. While the proposed extension to the taxiways and aircraft operational area will largely be screened by the terminal buildings, the large retaining wall will be visible as shown on Simulation 5c (VP5). Mitigation to reduce the visual effects of this structure has been considered and is shown in the simulations from this viewpoint. As previously noted, the mitigation shown is indicative and subject to

[9] Refer to visual simulations VS 3A to 3C.

[10] Refer to visual simulations VS 4A to 4C.

[11] Refer to visual simulations VS 5A to 5C.

further consideration and design. Notwithstanding this, the approach suggested would be an appropriate response to mitigating the prominence and reducing the visual effects of the large retaining wall.

7.20 In the context of this view the airport is a major element and feature, and while it's expansion will be quite visible the nature of its visual effects while more adverse than benign, will not be highly or significantly adverse. In this regard the activity will be consistent with the scale and pattern of development and it will generally maintain the existing landscape character and visual amenity values of the area.

7.21 In summary, viewer sensitivity is assessed as being moderate to low as in the magnitude of change relative to the landscape character of the area. While the nature of effects may be adverse, there effects would be at the lower end of the scale. The overall level and visual effects are assessed as being moderate in that the changes to the elements and composition with the view, while quite apparent, will not generally be uncharacteristic with the landscape character of the area.

VP6 Hornsey Road, Melrose[12]

7.22 Elevated views looking over Lyall Bay to the east will have a full view of the proposed changes and expansion to the airport. Viewers will generally tend to be residents with transient views being restricted to public roads. From this general location, part of the Miramar Golf Course which is currently visible, will be obscured by the terminal building. With the southern part of the golf course being converted into taxiways and aircraft operation areas, the only remaining visible part of the golf course will be to the north of the terminal buildings. The large retaining wall in the area between the Water Treatment Plant and the Terminal building will be visible as will the expanded area for aircraft operations to the south and east of the Terminal Area. All changes and modifications to the expansive views obtained from this area will occur within the middle-ground. There will be no changes to the foreground or background views.

7.23 Viewer sensitivity is assessed as being moderate to low with the magnitude of change being assessed as most key features and views will be retained, albeit different in composition. In the context of this view, the nature of visual effects are assessed as being neutral and cumulative effects being low. Overall the level of visual effect is assessed as being low.

[12] Refer to visual simulations VS6A to 6C.

VP7 17 Bunker Way

7.24 While VP2 shows the view from the entry to Bunker Way, VP7 shows views from the residence at 17 Bunker Way which is located towards the lower end of this private road. With the co-operation of the owners of the property, three viewpoints were selected with visual simulations prepared from two locations. VP 7A and 7B are from the level 2 deck show both the existing view and the simulated view. While VP 7C does not include a simulated view, it does show the existing view from the living room which is adjacent to the level 2 deck. A simulation from this viewpoint, would be similar and comparable to that illustrated from VP 7A and 7B. The 7D and 7E illustrations show existing and proposed views from the level 3 bedrooms.

7.25 VP 7A and 7B show the expansive view outlined from the level 2 deck of the residence. Clearly the combination of the lower ground and middle-ground of this view will change significantly. While not as open or expansive as the deck view, the VP 7C view shows the same general view, albeit more fragmented than the deck view. The main visual effects of the change in the composition of the view will be the loss of the golf course views to the expansion of the airport and aircraft taxiway activities, along with an extension of the airport terminal building. While views towards Lyall Bay will be modified, views to the distant background hills and towards the South Coast and the South Island will not be affected. As shown from VP 7D and 7E, visual effects from the level 3 bedrooms will be similar to those shown from the level 2 viewpoint.

7.26 From this residential property, the nature and magnitude of change will be high, with the level of visual effect likely to be high to very high, depending on the sensitivity of the owner of the property. While the management of the construction and operation of the activity, and appropriate landscape mitigation will assist in managing the change, the nature and composition of the view will be different to that which currently exists.

VP8 50c Ruakawa Street

7.27 With the co-operation of the land owner, the main outdoor deck was selected as being the most appropriate location for the preparation of a visual simulation from this residential property. VP 8A and VP 8B show the expansive view obtained from the main outdoor deck. Clearly, the composition of the lower ground and middle-ground of this view will change significantly. Notwithstanding this modification, views of the Western edge of Lyall Bay, particularly towards the entry to the bay and to the South Island will largely be unaffected. As with visual effects from 17 Bunker Way, the main change will be in the nature and composition of the view, being the loss of the golf course outlook to one

of airport and aircraft activities including the expansion of the airport terminal building. While lower-ground and middle-ground views will be modified, views to the distant background hills will not be affected.

7.28 From this residential property the nature and magnitude of change will be high, with the level of visual effect likely to be high to very high, depending on the sensitivity of the owner of the property. While the management of the construction and operation of the activity, and appropriate landscape mitigation will assist in managing the change, the nature and composition of the view will be different to that which currently exists.

8.0 Conclusions

8.1 In summary:

8.2 From the Strathmore Heights area views are unlikely to be adversely affected or compromised as any airport modifications will occur within the foreground view which tends to be looked over rather than into. The extensive views residents of this area enjoy are unlikely to be adversely affected. Visual effects from this general area are likely to be moderate to low overall.

8.3 While views in general from the Bunker Way area will not be screened, there will be significant changes to the foreground and middle-ground views from some locations, particularly those areas enjoying views to the south over the existing golf course. Visual effects from some residential properties may likely be very high depending on the location and orientation of particular viewpoints. While appropriate mitigation will assist in reducing visual effects, there will be a permanent change to some foreground and middle-ground views. Notwithstanding this, there will be no screening or blocking of views, particularly those more expansive views extending beyond the immediate foreground. Visual effects in general from this general area are likely to be high to very high.

8.4 From distant and elevated locations in the Seatoun Heights area, while the change to the southern section of the golf course will be apparent, the visual effect of this change to the view will be relatively low. From this general location, the most apparent change will be the expansion of the main terminal buildings. While these structures will be clearly visible, they will not detract from or interfere with the expansive views enjoyed from the general area. Visual effects overall from this area will be in the moderate to low range.

8.5 From the Lyall Bay foreshore and Parade area the taxiways and aircraft operational area will generally not be visible. From these general locations, while the expanded terminal

buildings and the large retaining wall will be visible the change will largely be seen to be consistent with the scale and pattern of development and will generally maintain the existing landscape character and visual amenity values of the area. Overall, the visual effects are assessed as being moderate and while apparent, will not be uncharacteristic with the landscape character of the area.

8.6 From the Melrose area distant views of the expanded airport facility will be visible in the middle ground view. There will be no changes to the foreground and background views which are the main features of the expansive views obtained from this area. Overall, the level of visual effect from the Melrose area is assessed as being low.

8.7 The overall visibility and effect on public views in general will not be extensive given the existing character of the area, the context and containment of the modifications envisaged and the screening effects of intervening landforms, structures and vegetation.

8.8 While this assessment has primarily focused on public views, visual effects from two residential properties were also assessed. The Ruakawa Street property where visual effects were assessed as being high to very high, is unlikely to be typical of other residential properties on Ruakawa Street. Most other properties on this street are at higher elevations and are likely to look over the area, rather than into the proposed aircraft and airport activities area. Properties in this street also appear to be largely screened by intervening vegetation along the hillside face thereby screening most views to the designation area.

8.9 While individual views from other properties on Bunker Way have not been assessed, it is likely there may be other properties where visual effects may be similar to those at 17 Bunker Way. Notwithstanding this, there appear to be other properties on Bunker Way where the effects are likely to be less than the high to very high visual effects from 17 Bunker Way.

Wellington International Airport

Visual Effects of Designation Outcomes
Prepared for Wellington International Airport Ltd

by Frank Boffa in association with Boffa Miskell Ltd
December 2019

Visual Simulations and Photographs

FIGURE 6: Viewpoint Location Map
FIGURE 7: Indicative Mitigation Proposal

VS 1-1A: View looking west from Walkway, Kekerenga St - Panorama (Existing and Proposed Views)
VS 1-1B: View looking northeast from Walkway, Kekerenga St - Single 50mm Frame (Existing View)
VS 1-1C: View looking northeast from Walkway, Kekerenga St - Single 50mm Frame (Proposed View)

VS 1-2A: View looking northeast from Walkway, Kekerenga St - Panorama (Existing and Proposed Views)
VS 1-2B: View northeast from Walkway, Kekerenga St - Single 50mm Frame (Existing View)
VS 1-2C: View northeast from Walkway, Kekerenga St - Single 50mm Frame (Proposed View)

VS 2-1A: View looking south from Bunker Way, Strathmore - Panorama (Existing and Proposed Views)
VS 2-1B: View looking south from Bunker Way, Strathmore - Single 50mm Frame (Existing View)
VS 2-1C: View looking south from Bunker Way, Strathmore - Single 50mm Frame (Proposed View)

VS 2-2A: View looking west from Bunker Way, Strathmore - Panorama (Existing and Proposed Views)
VS 2-2B: View looking west from Bunker Way, Strathmore - Single 50mm Frame (Existing View)
VS 2-2C: View looking west from Bunker Way, Strathmore - Single 50mm Frame (Proposed View)

VS 3A: View from Townsend Road, Strathmore - Panorama (Existing and Proposed Views)
VS 3B: View from Townsend Road, Strathmore - Single 50mm Frame (Existing View)
VS 3C: View from Townsend Road, Strathmore - Single 50mm Frame (Proposed View)

VS 4A: View from Wilberforce St, Strathmore - Panorama (Existing and Proposed Views)
VS 4B: View from Wilberforce St, Strathmore - Single 50mm Frame (Existing View)
VS 4C: View from Wilberforce St, Strathmore - Single 50mm Frame (Proposed View)

VS 5A: View from Maranui Surf Club, Lyall Bay - Panorama (Existing and Proposed Views)
VS 5B: View from Maranui Surf Club, Lyall Bay - Single 50mm Frame (Existing View)
VS 5C: View from Maranui Surf Club, Lyall Bay - Single 50mm Frame (Proposed View)

VS 6A: View from Hornsey Road, Melrose - Panorama (Existing and Proposed Views)
VS 6B: View from Hornsey Road, Melrose - Single 50mm Frame (Existing View)
VS 6C: View from Hornsey Road, Melrose - Single 50mm Frame (Proposed View)

VS 7A: View looking south from 17 Bunker Way - Level 2 Deck (Existing and Proposed Views)
VS 7B: View looking north from 17 Bunker Way - Level 2 Deck (Existing and Proposed Views)
VP 7C: Photograph looking west from Level 2 Lounge (Existing View)
VS 7D: View looking north from 17 Bunker Way - Level 3 Single Bedroom (Existing and Proposed Views)
VP 7E: Photograph looking south from Level 3 Double Bedroom (Existing View)

VS 8A: View looking south from 50c Ruakawa St - Deck (Existing and Proposed Views)
VS 8B: View looking north from 50c Ruakawa St - Deck (Existing and Proposed Views)

File Ref: BM19495_VPs_A3L.mxd

VIEWPOINT LOCATIONS

VS1: Walkway, Kekerenga Street

VS2: Bunker Way

VS3: Townsend Road

VS4: Wilberforce Street

VS5: Maranui Surf Club

VS6: Hornsey Road

VS7: 17 Bunker Way

VS8: 50c Ruakawa St

Boffa Miskell

www.boffamiskell.co.nz

0 250 m

1:10,000 @ A3

Data Sources: Boffa Miskell Limited, Wellington City Council (Imagery, 2017)

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

Viewpoint

Existing Terminal

East side Designation Area

WIAL - DESIGNATION OUTCOMES

Viewpoint Location Map

Date: 09 December 2019 | Revision: 0

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: HHu | Checked: PMo

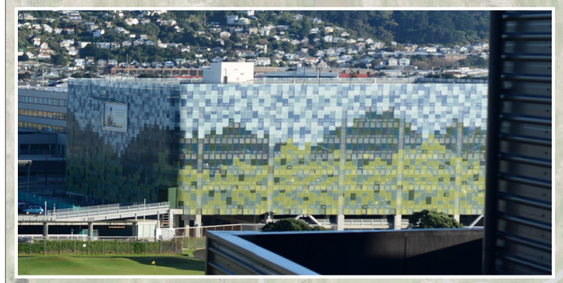
FIGURE

6

File Ref: BM19495_Mitigation Proposal_A3L.mxd

Location of VS7 : 17 Bunker Way

Location of VS8: 50c Ruakawa St



Coloured panels on upper levels of retaining wall

Concrete etched pattern on lower part of retaining wall

Walking access along mid section of retaining wall

Boffa Miskell

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0 100 m

1:2,500 @ A3

Data Sources: Boffa Miskell Limited, Wellington City Council (Imagery, 2017)

Projection: NZGD 2000 New Zealand Transverse Mercator

LEGEND

- Existing Track
- Proposed Footpath
- Proposed Track
- Retaining Wall
- Indicative Building Footprints
- Indicative Airside Roads

WIAL - DESIGNATION OUTCOMES

Viewpoint Locations and Indicative Layout

Date: 12 December 2019 | Revision: 0

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: HHu | Checked: PMo

FIGURE 7

Extent of Single Frame View

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 751 725 mE
NZTM Northing : 5 422 402 mN
Elevation/Eye Height : 69m / 1.7m
Date of Photography : 3:35pm 17 June 2019 NZST

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View looking west from walkway, Kekerenga St

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-1A

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 751 725 mE	Horizontal Field of View	: 40°
NZTM Northing	: 5 422 402 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 69m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:35pm 17 June 2019 NZST	Image Reading Distance @ A3 is 50 cm	

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View looking west from walkway, Kekerenga St - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-1B

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 751 725 mE
NZTM Northing : 5 422 402 mN
Elevation/Eye Height : 69m / 1.7m
Date of Photography : 3:35pm 17 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View looking west from walkway, Kekerenga St - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-1C

Extent of Single Frame View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 751 725 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 422 402 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 69m / 1.7m	Projection	: Rectilinear
Date of Photography	: 3:35pm 17 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View looking northeast from walkway, Kekerenga St

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-2A

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Viewpoint Details

NZTM Easting : 1 751 725 mE
NZTM Northing : 5 422 402 mN
Elevation/Eye Height : 69m / 1.7m
Date of Photography : 3:35pm 17 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View northeast from walkway, Kekerenga St - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-2B

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 751 725 mE
NZTM Northing : 5 422 402 mN
Elevation/Eye Height : 69m / 1.7m
Date of Photography : 3:35pm 17 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 735m

WIAL - DESIGNATION OUTCOMES

View northeast from walkway, Kekerenga St - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

1-2C

Extent of Single Frame View

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Viewpoint Details

NZTM Easting	: 1 752 019 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 423 027 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 40m / 1.7m	Projection	: Rectilinear
Date of Photography	: 9:35am 16 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking south from Bunker Way, Strathmore

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-1A

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 752 019 mE
NZTM Northing : 5 423 027 mN
Elevation/Eye Height : 40m / 1.7m
Date of Photography : 9:35am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking south from Bunker Way, Strathmore - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-1B

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Viewpoint Details

NZTM Easting : 1 752 019 mE
NZTM Northing : 5 423 027 mN
Elevation/Eye Height : 40m / 1.7m
Date of Photography : 9:35am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking south from Bunker Way, Strathmore - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-1C

Extent of Single Frame View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 752 019 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 423 027 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 40m / 1.7m	Projection	: Rectilinear
Date of Photography	: 9:35am 16 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking west from Bunker Way, Strathmore

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-2A

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 752 019 mE
NZTM Northing : 5 423 027 mN
Elevation/Eye Height : 40m / 1.7m
Date of Photography : 9:35am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking west from Bunker Way, Strathmore - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-2B

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 752 019 mE
NZTM Northing : 5 423 027 mN
Elevation/Eye Height : 40m / 1.7m
Date of Photography : 9:35am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 425m

WIAL - DESIGNATION OUTCOMES

View looking west from Bunker Way, Strathmore - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

2-2C

Extent of Single Frame View

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Viewpoint Details

NZTM Easting	: 1 752 659 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 423 959 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 60m / 1.7m	Projection	: Rectilinear
Date of Photography	: 10:20am 16 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 1340m

WIAL - DESIGNATION OUTCOMES

View from Townsend Road, Seatoun Heights

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

3A

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Viewpoint Details

NZTM Easting : 1 752 659 mE
NZTM Northing : 5 423 959 mN
Elevation/Eye Height : 60m / 1.7m
Date of Photography : 10:20am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1340m

WIAL - DESIGNATION OUTCOMES

View from Townsend Road, Seatoun Heights - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

3B

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Viewpoint Details

NZTM Easting : 1 752 659 mE
NZTM Northing : 5 423 959 mN
Elevation/Eye Height : 60m / 1.7m
Date of Photography : 10:20am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1340m

WIAL - DESIGNATION OUTCOMES

View from Townsend Road, Seatoun Heights - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS
3C

Extent of Single Frame View

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Viewpoint Details

NZTM Easting	: 1 752 522 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 424 081 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 54m / 1.7m	Projection	: Rectilinear
Date of Photography	: 10:10am 16 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 1325m

WIAL - DESIGNATION OUTCOMES

View from Wilberforce St, Seatoun Heights

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

4A

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Viewpoint Details

NZTM Easting : 1 752 522 mE
NZTM Northing : 5 424 081 mN
Elevation/Eye Height : 54m / 1.7m
Date of Photography : 10:10am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1325m

WIAL - DESIGNATION OUTCOMES

View from Wilberforce St, Seatoun Heights - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

4B

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 752 522 mE
NZTM Northing : 5 424 081 mN
Elevation/Eye Height : 54m / 1.7m
Date of Photography : 10:10am 16 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1325m

WIAL - DESIGNATION OUTCOMES

View from Wilberforce St, Seatoun Heights - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

4C

Extent of Single Frame View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 750 203 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 423 104 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 3m / 1.7m	Projection	: Rectilinear
Date of Photography	: 2:50pm 17 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 1400m

WIAL - DESIGNATION OUTCOMES

View from Maranui Surf Club, Lyall Bay

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

5A

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Viewpoint Details

NZTM Easting : 1 750 203 mE
NZTM Northing : 5 423 104 mN
Elevation/Eye Height : 3m / 1.7m
Date of Photography : 2:50pm 17 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1400m

WIAL - DESIGNATION OUTCOMES

View from Maranui Surf Club, Lyall Bay - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

5B

Boffa Miskell

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Viewpoint Details

NZTM Easting : 1 750 203 mE
NZTM Northing : 5 423 104 mN
Elevation/Eye Height : 3m / 1.7m
Date of Photography : 2:50pm 17 June 2019 NZST

Horizontal Field of View : 40°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 50 cm

Distance to existing Terminal: 1400m

WIAL - DESIGNATION OUTCOMES

View from Maranui Surf Club, Lyall Bay - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

5C

Extent of Single Frame View

Boffa Miskell

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Viewpoint Details

NZTM Easting	: 1 749 690 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 423 661 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 90m / 1.7m	Projection	: Rectilinear
Date of Photography	: 2:40pm 17 June 2019 NZST	Image Reading Distance @ A3 is 20 cm	

Distance to existing Terminal: 1985m

WIAL - DESIGNATION OUTCOMES

View from Hornsey Road, Melrose

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

6A

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Viewpoint Details

NZTM Easting	: 1 749 690 mE
NZTM Northing	: 5 423 661 mN
Elevation/Eye Height	: 90m / 1.7m
Date of Photography	: 2:40pm 17 June 2019 NZST

Horizontal Field of View	: 40°
Vertical Field of View	: 30°
Projection	: Rectilinear
Image Reading Distance @ A3 is 50 cm	

Distance to existing Terminal: 1985m

WIAL - DESIGNATION OUTCOMES

View from Hornsey Road, Melrose - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

6B

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Viewpoint Details

NZTM Easting	: 1 749 690 mE
NZTM Northing	: 5 423 661 mN
Elevation/Eye Height	: 90m / 1.7m
Date of Photography	: 2:40pm 17 June 2019 NZST

Horizontal Field of View	: 40°
Vertical Field of View	: 30°
Projection	: Rectilinear
Image Reading Distance @ A3 is 50 cm	

Distance to existing Terminal: 1985m

WIAL - DESIGNATION OUTCOMES

View from Hornsey Road, Melrose - Single Frame

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

6C

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Viewpoint Details

NZTM Easting : 1 751 944 mE
NZTM Northing : 5 422 899 mN
Elevation/Eye Height : 19m / 1.5m
Date of Photography : 9:30am 19 Nov 2019 NZDT

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

Nearest distance to existing Terminal: 250m
Nearest distance to proposed Terminal: 320m

WIAL - DESIGNATION OUTCOMES

View looking south from 17 Bunker Way - Level 2 Deck

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

7A

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Viewpoint Details

NZTM Easting	: 1 751 944 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 422 899 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 19m / 1.5m	Projection	: Rectilinear
Date of Photography	: 9:30am 19 Nov 2019 NZDT	Image Reading Distance @ A3 is 20 cm	

Nearest distance to existing Terminal: 250m
Nearest distance to proposed Terminal: 320m

WIAL - DESIGNATION OUTCOMES

View looking north from 17 Bunker Way - Level 2 Deck

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

7B

Photograph looking south and west from Level 2 Lounge

WIAL - DESIGNATION OUTCOMES

Photograph from 17 Bunker Way - Level 2 Lounge

Date: December 2019 Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VP

7C

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Viewpoint Details

NZTM Easting	: 1 751 944 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 422 899 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 19m / 1.5m	Projection	: Rectilinear
Date of Photography	: 9:30am 19 Nov 2019 NZDT	Image Reading Distance @ A3 is 20 cm	

Nearest distance to existing Terminal: 250m
Nearest distance to proposed Terminal: 320m

WIAL - DESIGNATION OUTCOMES

View looking south from 17 Bunker Way - Level 3 Bedroom

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

7D

Photograph looking northwest from Level 3 Bedroom

WIAL - DESIGNATION OUTCOMES

Photograph from 17 Bunker Way - Level 3 Bedroom

Date: December 2019 Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VP

7E

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Viewpoint Details

NZTM Easting	: 1 751 938 mE	Horizontal Field of View	: 90°
NZTM Northing	: 5 422 768 mN	Vertical Field of View	: 30°
Elevation/Eye Height	: 24m / 1.5m	Projection	: Rectilinear
Date of Photography	: 9:30am 19 Nov 2019 NZDT	Image Reading Distance @ A3 is 20 cm	

Nearest distance to existing Terminal: 310m
Nearest distance to proposed Terminal: 320m

WIAL - DESIGNATION OUTCOMES

View looking south from 50c Ruakawa St - Deck

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

8A

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Viewpoint Details

NZTM Easting : 1 751 938 mE
NZTM Northing : 5 422 768 mN
Elevation/Eye Height : 24m / 1.5m
Date of Photography : 9:30am 19 Nov 2019 NZDT

Horizontal Field of View : 90°
Vertical Field of View : 30°
Projection : Rectilinear
Image Reading Distance @ A3 is 20 cm

Nearest distance to existing Terminal: 310m
Nearest distance to proposed Terminal: 320m

WIAL - DESIGNATION OUTCOMES

View looking north from 50c Ruakawa St - Deck

Date: December 2019 | Revision: 3

Plan prepared for WIAL by Boffa Miskell Limited

Project Manager: pen.moore@boffamiskell.co.nz | Drawn: PMo | Checked: FBo

VS

8B

G

APPENDIX G

Acoustic Assessment

(to be provided 26.2.20)

MARSHALL DAY Acoustics

WELLINGTON AIRPORT EAST SIDE AREA ASSESSMENT OF NOISE EFFECTS

Rp 003 r04 20181298 | 26 February 2020

84 Symonds Street
PO Box 5811 Wellesley Street
Auckland 1141 New Zealand
T: +64 9 379 7822 F: +64 9 309 3540
www.marshallday.com

Project: **WELLINGTON AIRPORT EAST SIDE AREA ASSESSMENT OF NOISE EFFECTS**

Prepared for: **Wellington International Airport Ltd**
PO Box 14175
Kilbirnie
Wellington 6241

Attention: **Mr Mike Brown**

Report No.: **Rp 003 r04 20181298**

Document Control

Status:	Rev:	Comments	Date:	Author:	Reviewer:
Draft			12 Sep 2019	L Smith	
Draft	01		24 Sep 2019	L Smith	S Peakall
	02		2 Oct 2019	L Smith	S Peakall
Issued	03		15 Jan 2020	L Smith	S Peakall
Issued	04		26 Feb 2020	L Smith	S Peakall

Cover Photo: Simon Eugster and Sergey Kustov

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

Wellington International Airport Ltd (WIAL) seeks to designate land over the southern part of the existing golf course site,[1] to the east of the Airport, for airport purposes, to enable the extension of the Airport as proposed in the 2040 Airport Masterplan.

The Airport's draft 2040 Masterplan which informs the Notice of Requirement (NoR) includes an expansion of the terminal, airside and landside operational areas. The NoR involves redevelopment of part of the existing golf course site into taxiways, aprons and associated airport activities.

Marshall Day Acoustics (MDA) has been engaged to undertake an assessment of noise effects for the NoR for the East Side Area (ESA) designation. This report includes a description of the existing noise environment, predicted noise levels for the proposed airport activities in the ESA, an assessment of noise effects and recommendations for noise related conditions.

The residential properties most affected by noise from the proposed ESA designation are those on Raukawa Street, Bunker Way and Kekerenga Street. These Strathmore Park properties currently overlook the golf course land area. This assessment pays particular regard to the effects of noise on these properties (ESA receivers).

The initial noise effects from the proposal would occur during the construction phase. Construction noise would be managed to comply with the limits set out in NZS 6803:1999 where practicable. This Standard sets specific limits to manage the effects of construction noise and recognises the specific character of such noise and that such noise is temporary. This report recommends that a specific construction noise assessment be undertaken once further information is available about the construction methodology. It is expected that conditions will be attached to the designation to require such noise to adhere to suitable limits and that construction activities will be managed according to a fit for purpose management plan.

The ongoing noise effects on ESA receivers would arise from airport related activities on the proposed new taxiways, aircraft stands and road within the designated area. These effects would occur over time as the ESA is developed. We predict the following noise effects for the ESA receivers:

- As the ESA is developed and the airport grows, a progressive increase in aircraft operations noise will occur and it is predicted that by the year 2050 this will comprise an increase of 1 dB L_{dn} (imperceptible) compared with the levels currently allowed under the current District Plan provisions. A designation condition to allow for this increase is proposed.
- This increase in aircraft operations noise will likely result in an increase of 5 - 6 dB L_{dn} (noticeable) by 2050 compared with current aircraft noise levels.
- A just perceptible increase (4 dB) in noise from Auxiliary Power Units (APU) operating at the new stands within the Designated Area compared with APU noise from the current Airport site. The resulting noise levels would be moderately high for a residential area but not uncommon for residents living near transport infrastructure. The effect from this noise source would be appropriately mitigated by applying duration and night-time operating restrictions. A designation condition to this effect is proposed.
- The day-time noise limit on Sundays for land based activities would be aligned with the Monday to Saturday limit in the District Plan that currently applies to land based airport activities. This is a theoretical 10 dB increase in permitted levels on Sundays (7am – 10pm). However, in practice this is considered reasonable and would not have a noticeable effect on receivers given existing ambient noise levels on Sundays. A designation condition to this effect is proposed.

[1] Zoned Golf Course Area in the Airport and Golf Course Recreation Precinct in the Wellington City District Plan

- Wide body aircraft taxiing on the ESA taxiways (up to 12 events per day) would cause a significant increase (10 dB L_{AE}) in aircraft single event noise compared with current loudest single event noise which is from aircraft departures. The predicted single event levels (95 dB L_{AE} and 83 dB L_{Amax}) on ESA receivers are moderately high but not uncommon for residents living near an airport. Night-time restrictions would apply to taxiing activities to avoid sleep disturbance. A designation condition to this effect is proposed.
- For the year 2050, cumulative airport noise levels (from all noise sources at the Airport) of 62 – 63 dB L_{dn} are predicted for ESA receivers. These are moderately high levels that are generally undesirable for residential activity but not uncommon for properties adjacent to an airport. This is about the same level of noise that can be generated by airport activities in terms of the current District Plan limits. However, this represents an appreciable (7 dB) increase on ESA receivers compared to the current measured cumulative noise levels.

Our assessment considers the change in noise for some 30 years in the future as a result of gradual growth in airport operations. It is typical to apply a 30 year planning horizon for noise at New Zealand's major airports. The predicted change, compared with current noise, would not occur immediately the ESA becomes operational. We have not prepared predictions for a scenario immediately following the ESA becoming operational, however we estimate a 1 – 2 dB increase initially due to the new taxiways then further increases would occur gradually over many years.

The following measures are proposed to manage the effects of noise arising from the use of the ESA:

Night-time Effects

- No taxiing under engine power will be permitted on ESA taxiways at night (10pm – 7am).
- APUs will be required to meet land based activity noise limits at night (45 dB L_{Aeq} at residential properties 10pm – 7am) which effectively excludes them from running at night.
- Ground support equipment and road traffic will be managed to comply with a night-time limit of 45 dB L_{Aeq} at residential properties (10pm – 7am).

Daytime and Overall

- Noise from aircraft operations will be limited to 65dB L_{dn} at a new proposed Compliance Line within the Designated Area.
- Plug-in Ground Power Units (GPU) will need to be available for use within the ESA and allowable APU runtime will be restricted.
- Continuous noise monitoring will be undertaken near ESA receivers to monitor compliance with the proposed noise limits.
- No engine testing will be allowed in the ESA.

We consider that the recommended operational restrictions on the new taxiways and aircraft stands represent the best practicable option to manage and mitigate the noise effects of the activities that are to occur within the ESA designation. In summary we consider that noise effects would be appropriately controlled and reasonable in the existing Wellington Airport context.

2.0 INTRODUCTION

Wellington International Airport Ltd (WIAL) seeks to designate land on part of the existing golf course site,[2] to the east of the Airport, for airport purposes to enable the extension of the Airport as proposed in the 2040 Masterplan.

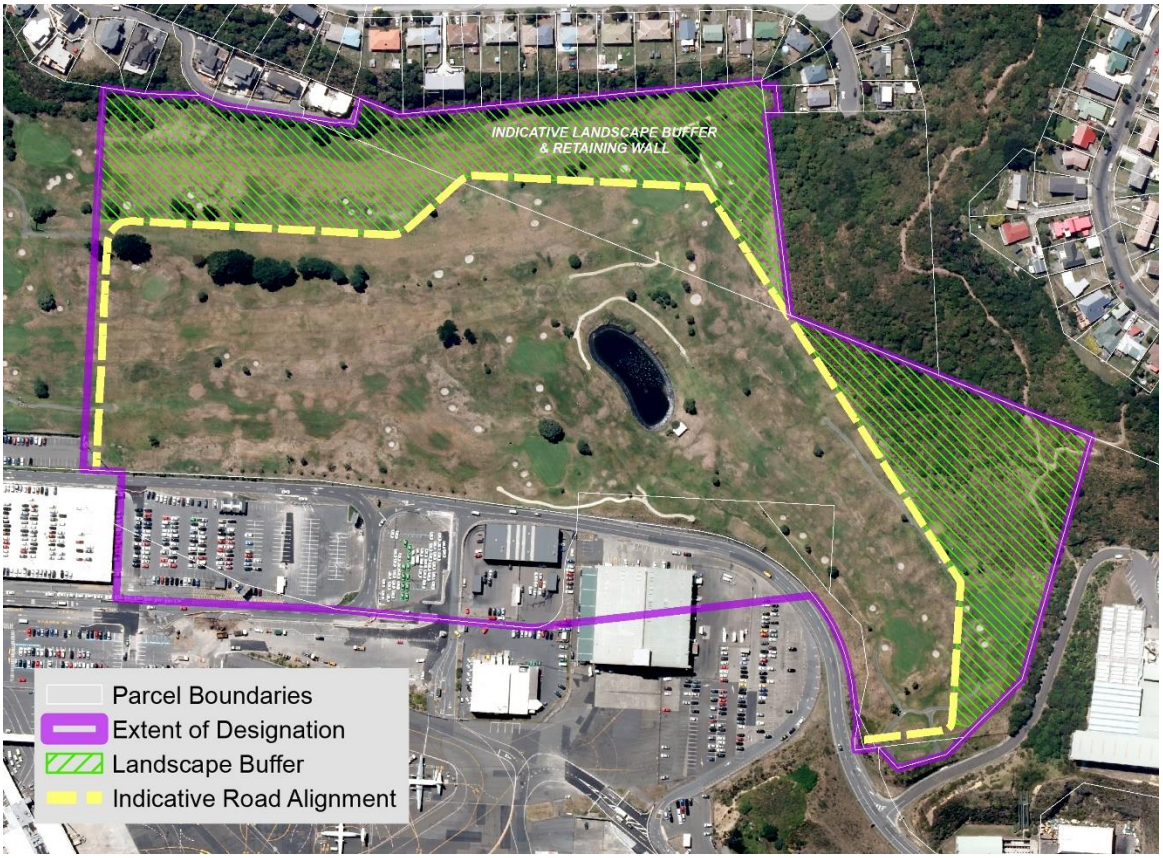
The Airport's 2040 Masterplan, which informs the Notice of Requirement (NoR), includes an expansion of the terminal and airside and landside operational areas. The NoR involves redevelopment of part of the existing golf course site into taxiways, aprons and associated airport activities.

Marshall Day Acoustics (MDA) has been engaged to undertake an assessment of noise effects for the NoR for the East Side Area (ESA) designation. This report includes a description of the existing noise environment, predicted noise levels for the proposed airport activities in the ESA, an assessment of noise effects and recommendations for conditions.

3.0 NOTICE OF REQUIREMENT – EAST SIDE AREA

Figure 1 shows the extent of the proposed designation.

Figure 1: Proposed Extent of East Side Area Designation



Designating the ESA would enable a change in land use from golf course to airport purposes. Currently, airport activities take place in the Airport Area Precinct in the District Plan, and it is proposed to expand the Airport into the adjacent ESA. The proposed Airport development would involve a terminal expansion with new apron and aircraft stands within the existing Airport Area, but

[2] Zoned Golf Course Area in the Airport and Golf Course Recreation Precinct in the Wellington City District Plan

parts of the apron and new taxiways need to be located in the ESA. Appendix C includes the concept airport layout extended into part of the golf course from the 2040 Masterplan.

Activities permitted within the ESA will include:

- Aircraft operations and associated activities, including all ground-based infrastructure, plant and machinery necessary to assist aircraft operations;
- Taxiways, aprons and other aircraft movement areas;
- Navigation and safety aids, monitoring stations, lighting and telecommunications facilities;
- Car parking, roads, accessways, pedestrian ways, stormwater and wastewater infrastructure, utility activities and security fencing;
- All demolition (if required), construction and earthworks activities, including associated structures;
- Landscaping, planting, tracks and trails;
- Ancillary activities, buildings and structures related to the above; and
- Servicing, testing and maintenance activities related to the above

4.0 AIRCRAFT NOISE MANAGEMENT IN NEW ZEALAND

4.1 NZS 6805:1992

NZS 6805:1992 "*Airport Noise Management and Land Use Planning*" (the Standard) is the basis for the management of airport noise effects at the majority of airports in New Zealand. The Standard was published in 1992 with a view to providing a consistent approach to noise planning around New Zealand airports. Since publication, the principles of the Standard have been applied to more than 15 New Zealand airports.

The approach to airport noise management that the Standard provides for is to *"implement practical land use planning controls and airport management techniques to protect and conserve the health of people living near airports without unduly restricting the operation of airports."*

The Standard uses the "Noise Boundary" concept as a mechanism for local authorities to:

- "*establish compatible land use planning*" around an airport; and
- "*set noise limits for the management of aircraft noise at airports*".

Typically, the noise boundary concept involves fixing an Outer Control Boundary (OCB) and a smaller Air Noise Boundary (ANB) around the airport. The OCB is based on a day/night noise exposure level of 55 dB L_{dn} and the ANB is based on 65 dB L_{dn}.

L_{dn} is the day/night weighted average noise exposure level which is the sum of the sound energy from all aircraft noise events averaged over 24 hours with a weighting applied to night-time events. For airport noise boundaries the Standard recommends using the average L_{dn} over a three month period[3]. The L_{dn} night weighting means that aircraft noise events between 10pm and 7am are weighted by an additional 10 decibels to account for the heightened sensitivity to noise at night. International research has found that the L_{dn} metric correlates well with community annoyance to aircraft and other transportation noise.

[3] NZS 6805 recommends averaging over a three month period or agreed alternative period. L_{dn} can be averaged over any period of 24 hour blocks.

Typically noise from aircraft operations (arrivals, departures and taxiing) is considered when setting the boundaries; and other airport activities such as maintenance and engine testing are controlled in other ways.

The noise boundaries are calculated to allow for reasonable future growth of an airport based on a realistic forecast of aircraft types and number of movements. NZS 6805:1992 recommends a minimum 10 year growth period, but due to the length of the planning process to implement noise contours, many New Zealand airports have adopted 20 – 30 year growth periods on which to base the noise boundaries.

The Standard recommends that noise from aircraft operations be restricted to 65 dB L_{dn} at the ANB and land use restrictions apply to noise sensitive activities inside the ANB and OCB. The airport operators are responsible for managing noise from aircraft operations to comply with the limit. The Standard recommends that territorial authorities implement the following land use restrictions:

> Inside the ANB (>65 dB L_{dn}):
>
> New noise sensitive uses (including residential) should be prohibited;
>
> Existing residential buildings and subsequent alterations should have appropriate sound insulation;
>
> Between the ANB and the OCB (55 - 65 dB L_{dn}):
>
> New noise sensitive uses (including residential) should be prohibited unless a District Plan permits such use subject to appropriate sound insulation; and
>
> Alterations or additions to existing noise sensitive uses (including residential) should include appropriate sound insulation.

For the calculation of noise boundaries, the Standard refers to the Federal Aviation Administration (FAA) Integrated Noise Model (INM). The INM is an internationally accepted tool for predicting aircraft noise levels around airports and calculating contours for the purpose of setting noise boundaries. The INM has been replaced by the Aviation Environmental Design Tool (AEDT). While the AEDT is now required in the United States for FAA CFR[4] Part 150 studies, in Australia, the statutory framework is currently transitioning from INM to AEDT. In New Zealand there is no national statutory requirements and for Wellington, the District Plan does not define the software to be used. MDA is transitioning from INM to AEDT for the airport assessments we carry out. During this transition period we consider that applying either the INM or AEDT model is appropriate. Our review of the AEDT shows that predicted noise levels are almost identical to the INM for the same operational scenarios.

Generally, the noise boundaries are based on the day-night sound exposure level (L_{dn}). The Standard does not recommend a noise limit for individual aircraft events however it does recommend that night-time single event noise levels are considered when setting the location of the ANB. This is because for smaller airports the ANB may not be large enough to protect against high single event levels at night causing sleep disturbance. The Standard does not provide limits of acceptability for sleep disturbance, so guidelines from other sources such as the World Health Organisation (WHO) are usually applied.

5.0 BACKGROUND TO AIRCRAFT NOISE MANAGEMENT AT WELLINGTON AIRPORT

Wellington Airport has a unique noise management framework compared to other New Zealand airports, which is largely due to its geographical location and residential surroundings. As for all New Zealand airports, the NZS 6805:1992 recommendations had to be adapted to suit the local situation.

[4] Federal Aviation Administration Code of Federal Regulations

The main differences that set Wellington Airport's noise management framework apart from airports like Auckland and Christchurch, is that Wellington operates with a partial night-time curfew, and the District Plan only controls land use inside the Air Noise Boundary. There is no Outer Control Boundary shown in the District Plan for Wellington Airport.

5.1 Aircraft Noise Controls

Aircraft noise at Wellington Airport is currently controlled by rules in Chapter 11A of the Operative Wellington City District Plan (the District Plan). These rules have been operative since 2000. The rules are summarised in Section 7.0.

As set out above, the noise controls for Wellington Airport are based on the NZS 6805:1992 approach, although there is just an ANB and no OCB at Wellington. In summary, noise from aircraft operations (arrivals, departures and taxiing) is controlled by a 65 dB L_{dn} noise limit at the ANB which is defined on Map 35 of the planning maps (refer Section 7.1).

In addition to the L_{dn} limit which includes a night weighting, operations at Wellington Airport are restricted by a partial night-time curfew as follows:

- Domestic operations must not occur during the hours from midnight to 6am.
- International operations must not occur during the hours of midnight to 6am for departures and 1am to 6am for arrivals.

Some exceptions apply that enable the operating hours to be extended in certain situations (refer complete rules in Section 7.1).

Noise from aircraft operations is measured continuously by noise loggers at three locations near the Air Noise Boundary.

5.2 Land Use Controls

NZS 6805:1992 recommends that residential activity should be prohibited inside the ANB. Wellington Airport has historically had a large number of houses in close proximity to the runway and therefore a large number of houses are inside the ANB. As such residential activity is not prohibited by the District Plan within the ANB, but new and altered noise sensitive activities are required to be acoustically insulated.

The land use restrictions for activities sensitive to aircraft noise inside the ANB were strengthened through District Plan Changes 72 and 73 following the outcome of the LUMIN Study (refer Section 5.3) which found that stronger controls were appropriate to curb residential intensification in this high noise environment. The changes, which became operative in November 2014, include strengthening the acoustic insulation requirements for new and altered noise sensitive activities within the ANB. Nonetheless, new noise sensitive development continues to be permitted inside the ANB in the residential zone.

5.3 Land Use Management and Insulation for Airport Noise Study (LUMINS)

The Land Use Management and Insulation for Airport Noise Study ("LUMINS") was carried out by the Wellington Airport Air Noise Management Committee and was completed in 2009. The purpose of LUMINS was to determine the future management of land use and acoustic insulation for the properties within the ANB.

The study involved an in-depth assessment of the effects of aircraft noise on residents. This led to consideration of mitigation options such as acoustic insulation for existing houses and more stringent land use controls for new noise sensitive activities within the ANB. Recommendations from the study have been implemented through changes to the District Plan to restrict intensification of noise sensitive activities inside the ANB. Furthermore, an acoustic mitigation programme "Quieter Homes"

has been implemented to retro-fit acoustic insulation and ventilation to existing dwellings inside the ANB.

Our assessment of the ESA NoR does not seek to re-examine the LUMINS outcomes. Instead, it is focussed on the change in noise effects resulting from the proposed extension of the Airport into part of the golf course area compared with current and permitted airport noise emissions.

6.0 SCOPE OF THE ASSESSMENT OF NOISE EFFECTS FOR PROPOSED ESA DESIGNATION

Although this NoR relates specifically to activities in the ESA, in practice activities in the ESA would be linked to activities in the existing Airport Area, as the ESA would be used to provide additional taxiway and apron space to support the existing operation. In general, we have looked to work with the existing noise management framework for Wellington Airport which, as described in Section 5.0, is unique and was adapted from NZS 6805:1992 for the local situation.

In assessing the likely noise effects of the proposed activities in the ESA on residents, we have considered the effects from proposed aircraft operations noise against the aircraft operations noise already permitted by the District Plan. In addition, we have assessed the effects from proposed aircraft operations noise against noise levels currently experienced from airport operations.

Currently the District Plan provides for airport noise effects from the Airport Area received in the surrounding communities including the residential areas adjacent to the ESA. We have quantified the existing planning environment for airport noise provided for by the District Plan.

Next, we have quantified the current actual noise generated by airport activities (including aircraft operations, engine testing, land based activities and ground power and auxiliary units).

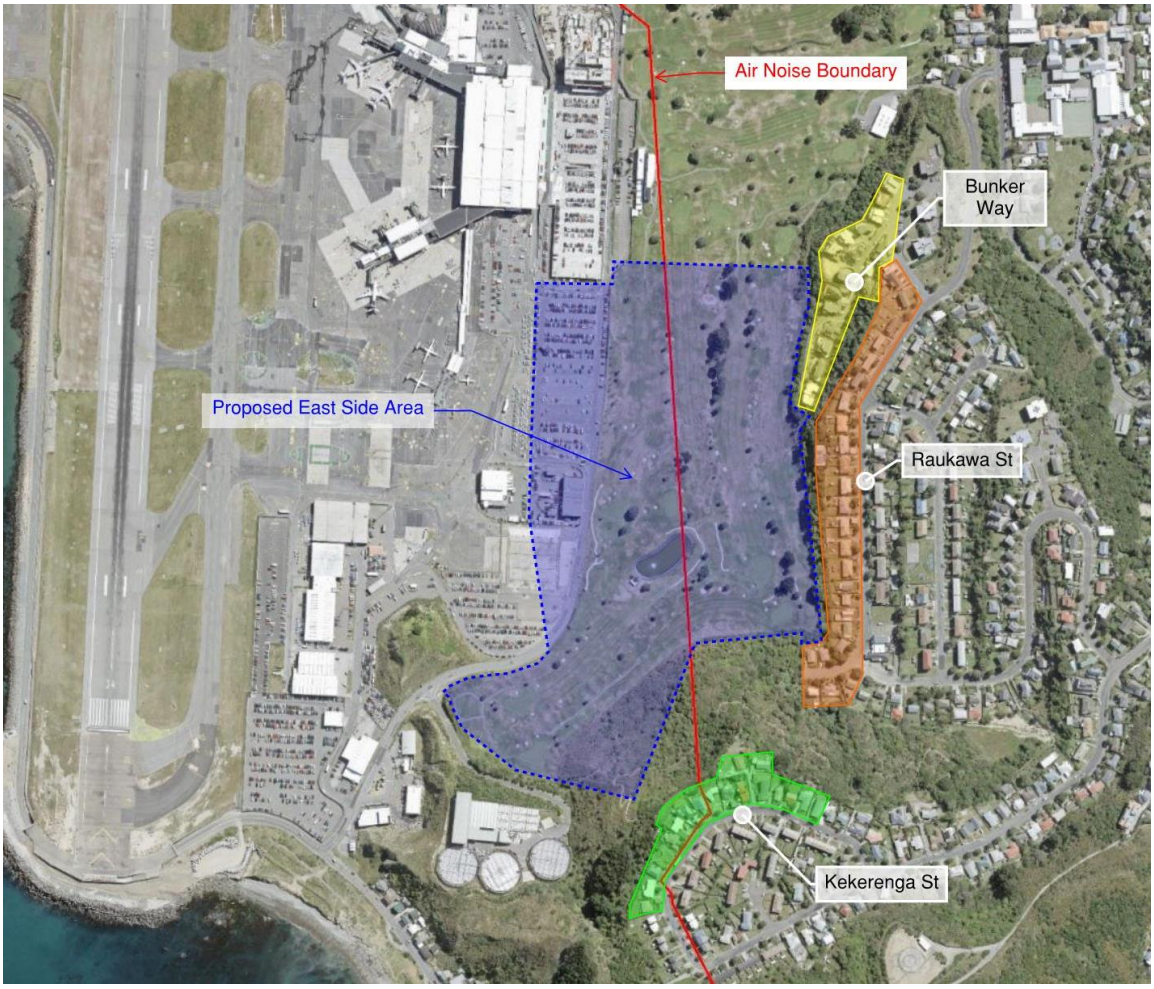
Then, we have predicted the noise emissions from proposed airport activities based on the 2040 Masterplan concept layout which includes the ESA to understand the future noise conditions.

A forecast of aircraft activity for the year 2050 has been used to predict future noise levels from aircraft operations. The year 2050 scenario has been compared with the current noise levels and the permitted noise levels to quantify the likely change in noise for sensitive receivers.

The noise effects of airport activities being extended on to part of the golf course would be received at residential properties in the vicinity of the golf course. For other residents around the airport and in the ANB there would be no appreciable change in noise effects relating directly to activities undertaken within the newly designated area.

The closest noise sensitive receivers affected by the designation are houses in the Outer Residential Zone along Bunker Way, Raukawa Street and Kekerenga Street which currently overlook the golf course. Most of these houses are outside the District Plan ANB. Figure 2 shows the locations of these houses relative to the proposed designation land. Our assessment shows that these properties are most affected by noise from activities within the ESA as they generally have direct line of sight to the area. In our assessment we refer to these properties as “ESA receivers”. Houses one or more rows back would be less affected, as noise from activities in the ESA would be screened by the front row of houses. The effects of noise on these properties have still been predicted and assessed, but in less detail than the ESA receivers.

Figure 2: ESA Receivers



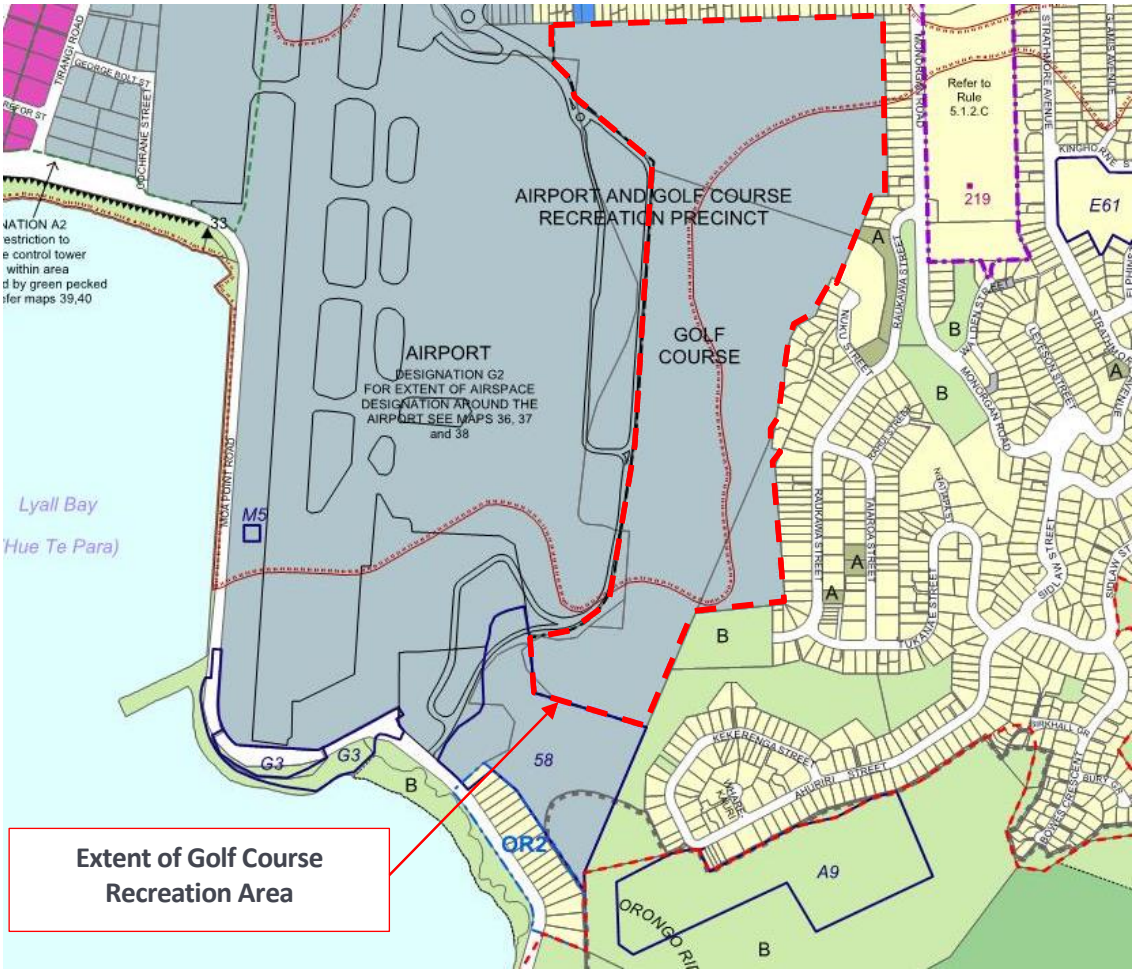
Based on the outcome of our assessment, we have considered what noise controls and mitigation measures are appropriate to control the noise effects from proposed activities within the ESA designation. Our recommendations include operational constraints on some activities and at particular times of the day, and some relaxation of the current noise limits that are set out within the District Plan. The residual noise effects from the proposal have been quantified and assessed.

7.0 EXISTING DISTRICT PLAN PROVISIONS

The Airport and the Golf Course are in the Airport and Golf Course Recreation Precinct in the Wellington City District Plan (District Plan) as shown in Figure 3 below. The Precinct is separated into the Airport Area and the Golf Course Recreation Area with rules set out in Chapters 11A and 11B of the District Plan respectively.

A small 136m^2 area of Outer Residential Zone land is also included in the ESA (refer Figure 1). Despite the land use zoning, this area is currently used for golf purposes. It is proposed that this area will form part of the proposed landscape buffer and will not be occupied. There are no noise related ramifications arising from the proposed use of this parcel of land, and we do not consider it further.

Figure 3: Extent of Golf Course Recreation Area



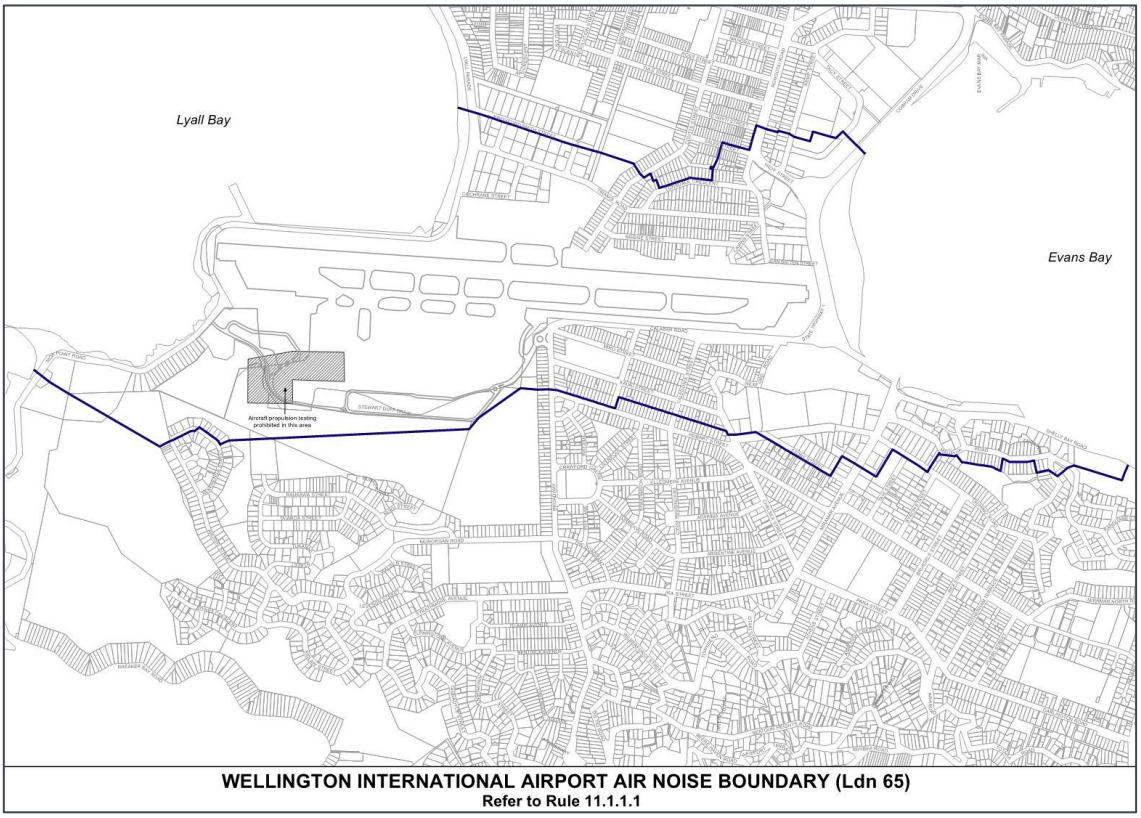
7.1 Airport Area

Activities within the Airport Area (of the Airport and Golf Course Recreation Precinct) are subject to a suite of District Plan noise controls which distinguish between different noise sources as follows:

- Aircraft Operations (taxiing, take-off, landing, engine run-up)
- Engine Testing
- Land Based Activities
- Ground Power and Auxiliary Power Units

Rule 11.1.1.1.1 limits noise from aircraft operations to 65 dB L_{dn} at the Air Noise Boundary shown on Map 35 (Figure 4). The day-night weighted noise exposure (L_{dn}) from aircraft operations is averaged over 90 days. Rules 11.1.1.1.2 to 11.1.1.1.6 set out a range of exclusions from the noise limit and further operational controls.

Figure 4: District Plan Map 35 – Wellington Airport Air Noise Boundary



Noise from the testing of aircraft engines on-wing is controlled by rule 11.1.1.1.7. Engine testing is not a significant contributor to the existing noise environment at Wellington Airport as there is no maintenance facility onsite.

Noise from land based activities is controlled by the following rule:

Rule 11.1.1.1.8

Noise emission levels, from any activity within the Airport area other than aircraft operations, engine testing and the operations of APU's (as provided for in rule 11.1.1.1.9) when measured at any residential site shall not exceed the following limits:

Monday to Saturday 7am to 10pm	*55 dB $L_{AEQ\ (15\ MIN)}$*
At all other times	*45 dB $L_{AEQ\ (15\ MIN)}$*
All days 10pm to 7am	*75 dB L_{AFmax}*

Noise from ground power and auxiliary power units (GPUs/APUs) is controlled by the following rule:

Rule 11.1.1.1.9

a) *GPUs must comply with the noise limits in rule 11.1.1.1.8*

b) *APUs must comply with the noise limits in rule 11.1.1.1.8, with the exception of:*

- *Aircraft under tow*
- *The first 90 minutes after the aircraft has stopped on the gate*
- *60 minutes prior to scheduled departure*
- *The use of APUs to provide for engine testing pursuant to rule 11.1.1.1.7.*

7.2 Golf Course Recreation Area

Chapter 11B of the District Plan contains noise limits for activities in the Golf Course Recreation Area. The rule that applies to noise received in the surrounding Outer Residential Zone is as follows:

> ***Rule 11.5.1.1.2***
>
> *Any activity occurring within the Golf Course recreation area when measured from any land or premises outside the precinct shall comply with the noise limits stated in Appendix 1.*
>
> ***Appendix 1 Noise***
>
> *Residential (Outer)*
>
> *Noise emission levels when measured in any residential site in the Outer Residential Area must not exceed:*
>
> | | |
> |---|---|
> | *Monday to Saturday 7am to 7pm* | *50 dB $L_{AEQ\ (15\ MIN)}$* |
> | *Monday to Saturday 7pm to 10pm* | *45 dB $L_{AEQ\ (15\ MIN)}$* |
> | *At all other times* | *40 dB $L_{AEQ\ (15\ MIN)}$* |
> | *All days 10pm to 7am* | *65 dB L_{AFmax}* |
>
> *Where it is impractical to measure outside a dwelling then measurements shall be made inside (with windows closed). Where indoor measurements are made the noise limits stated above shall be reduced by 15 dB.*

7.3 Construction Noise

The District Plan does not specify noise limits for construction activities associated with the Airport. The definition of "noise emission level' in Chapter 3.10 of the District Plan explicitly excludes work on the Airport from construction noise limits. Despite this, we consider it is appropriate to assess and manage construction noise effects from the proposed ESA development.

New Zealand Standard NZS 6803: 1999 *"Acoustics - Construction Noise"* is the most recent and widely applied construction noise management standard in New Zealand. It is recommended that the noise limits from NZS 6803:1999 are complied with as far as practicable however, for some construction tasks compliance may not be practicable. This is common particularly for large infrastructure projects. The conventional approach in this situation is to prepare a construction noise management plan which identifies activities that might exceed the limits and sets out appropriate measures to manage and mitigate the noise effects from these activities. We recommend this approach for the ESA designation. We have recommended suitable conditions in this regard.

8.0 EXISTING NOISE ENVIRONMENT

The ESA receivers (identified in Section 6.0) are currently exposed to noise from both golf course and airport activities, which is permitted in the District Plan. Noise from airport activities is the most significant influencer of the noise environment for these receivers both with higher permitted noise limits and higher noise emissions in practice. Noise from the golf course is negligible, therefore our description of the existing noise environment focusses on airport activities.

8.1 Existing Noise from Aircraft Operations

Aircraft operations are defined in the District Plan as '*the engine run-up, taxiing, take-off or landing at an airport of an aircraft*".

We have quantified the existing noise environment from aircraft operations in two ways:

- The existing environment for aircraft operations which is defined by the noise levels anticipated and permitted by the District Plan provisions ("plan permitted noise levels")

- Calculated current aircraft operations noise levels based on operations in FY19[5] ("current noise levels").

Figure C1 in Appendix C shows the L_{dn} noise contours in 5 decibel increments (55, 60 and 65) for the operating scenario used to develop the existing District Plan ANB. The 65 dB L_{dn} contour was the basis for the ANB which is included in the District Plan. The 55 and 60 dB L_{dn} noise contours demonstrate what the noise levels would be beyond the ANB when noise generated by airport activities reaches 65 dB L_{dn} at the ANB. As indicated earlier, these contours are not included within the airport noise management regime of the airport, nor in the District Plan.

These noise contours were originally calculated using a much earlier version of the INM model, assuming flat ground and therefore any effects of terrain screening are not shown in the contours. Manual adjustments were made to the ANB to account for terrain screening effects and to align with property boundaries. This is why the ANB does not align exactly with the 65 dB L_{dn} contour shown in Figure C1.

The noise contours in Figure C1 (Appendix C) quantify the level of noise anticipated and permitted by the existing District Plan provisions. In our assessment we refer to these as the "plan permitted contours" and "plan permitted noise levels". Figure 5 below shows plan permitted contours in one decibel increments in the vicinity of residential receivers around the ESA. The plan permitted noise levels from aircraft operations at the receivers overlooking the ESA range from 58 to 63 dB L_{dn}.

[5] The 2019 Financial Year (1 April 2018 to 31 March 2019)

Figure 5: Noise Contours the ANB were Based On ("Plan Permitted Contours")

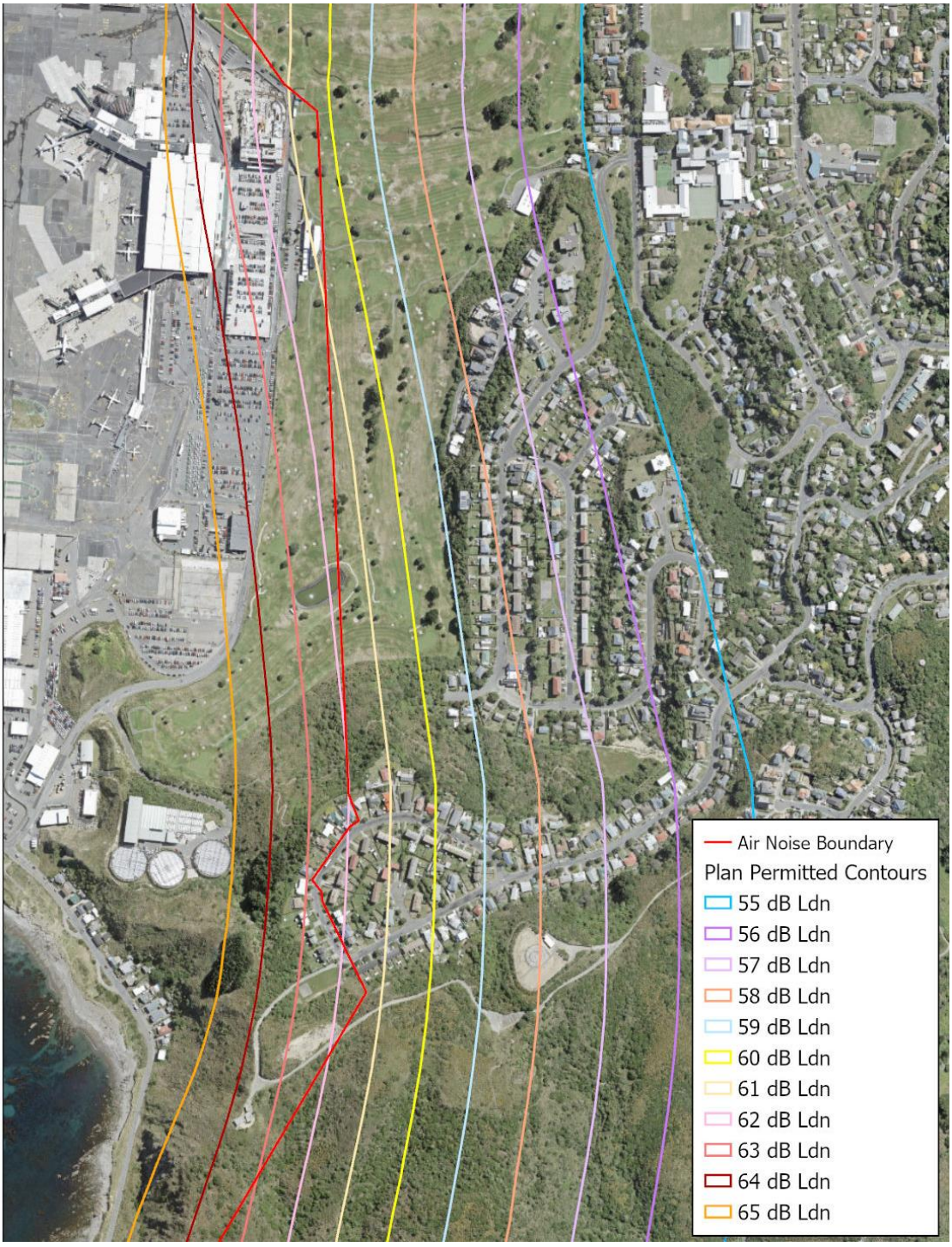
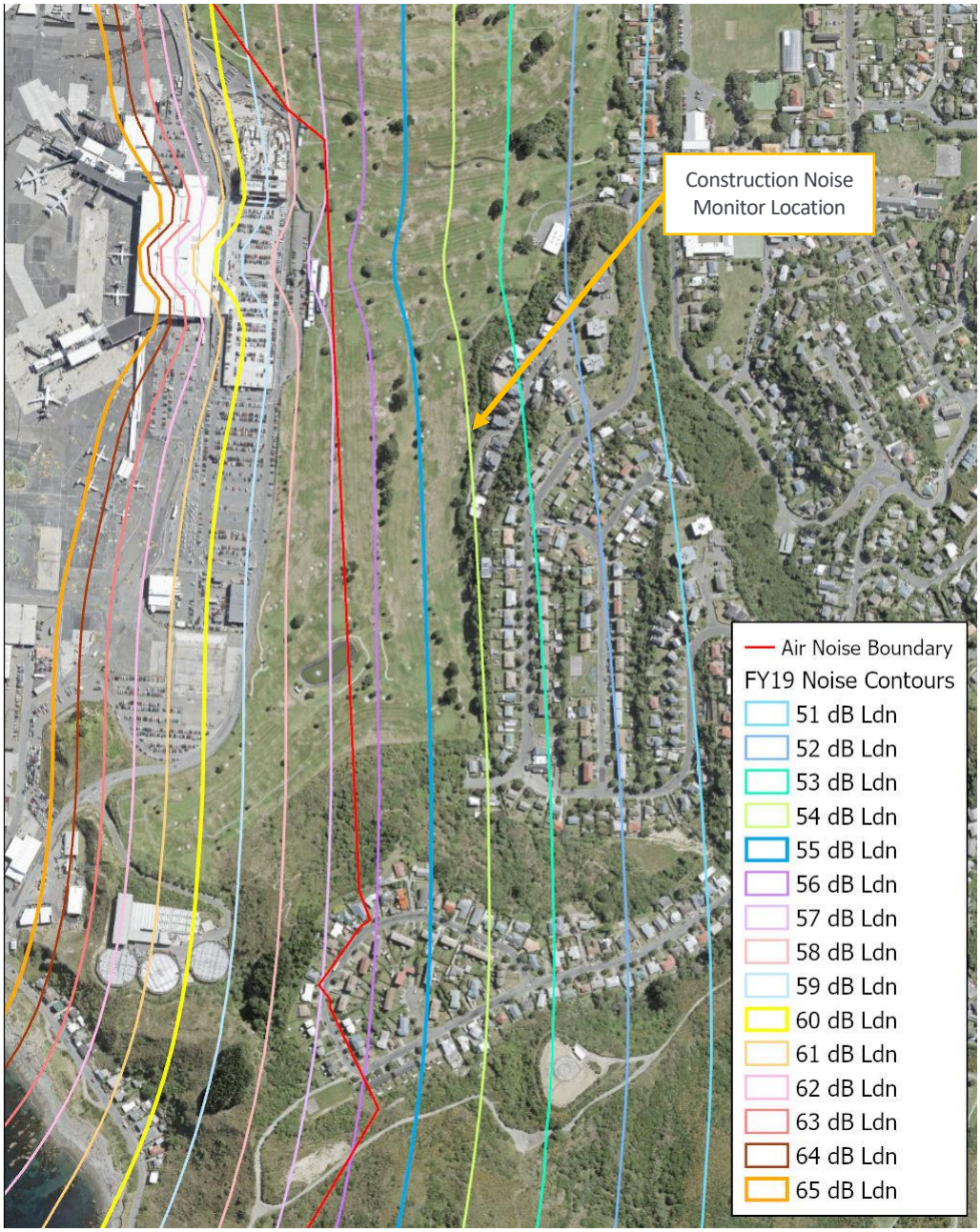


Figure C2 in Appendix C shows the calculated current noise levels from actual aircraft operations during the busiest 3 months in FY19. The calculation methodology is described in Appendix B. The noise contours were calculated assuming flat ground due to limitations of the noise model. Therefore, any effects of terrain screening are not shown in the contours. As noted above, the ANB from District Plan Map 35, also shown in Figure C2, includes adjustments for terrain screening. Despite this difference, Figure C2 shows that current aircraft operations noise levels comfortably comply with the ANB. Current levels at the ANB are approximately 5 decibels below the 65 dB L_{dn}

limit. This recognises that the ANB was put in place to provide for long term growth in aircraft operations at the airport.

Figure 6 below shows the FY19 contours in one decibel increments in the vicinity of residential receivers around the ESA. The current aircraft operations noise levels at the receivers overlooking the ESA range from 53 to 57 dB L_{dn}. Therefore, current levels for ESA receivers are approximately 5 dB below the plan permitted levels. Figure 6 also shows the location of a construction noise monitor which is discussed in Section 8.5.

Figure 6: Current Aircraft Operations Noise Contours (FY19 Operations)



8.2 Existing Noise from Engine Testing

Engine testing is the running of engines on an aircraft while it is stationary for the purpose of carrying out mandatory checks following maintenance work. There is no aircraft maintenance base located at Wellington Airport therefore engine testing only takes place in unplanned break-down situations and is not a prominent feature of the noise environment around the Airport.

The District Plan rule allows engine testing to occur as and when required between 6am and 8pm and essential unscheduled testing until 11pm. However, between 11pm and 6am, noise and duration limits apply to engine testing as well as limitations on frequency (a maximum number of 18 events in 12 months is allowed).

WIAL maintains records of engine testing between 11pm and 6am and in the last 10 years there have been no engine testing events during this period. The noise limits effectively exclude engine testing of most passenger aircraft during this night-time period and therefore aircraft undergoing repairs overnight are tested in the morning after 6am.

8.3 Existing Noise from Land Based Activities

The District Plan controls noise from airport activities that are not aircraft operations, engine testing or APUs in rule 11.1.1.1.8. Land based activities include building services plant, car park activities and activities associated with servicing aircraft on the stands (i.e. baggage and cargo handling, refuelling, water, catering and toilet servicing, airbridge and push back).

The following limits currently apply:

> *Noise emission levels, from any activity within the Airport area, other than aircraft operations, engine testing and the operations of APU's, when measured at any residential site shall not exceed the following limits:*
>
> | | |
> |---|---|
> | *Monday – Saturday 7am to 10pm* | *55 dB $L_{AEQ\ (15\ MIN)}$* |
> | *At all other times* | *45 dB $L_{AEQ\ (15\ MIN)}$* |
> | | *75 dB L_{AFmax}* |

Noise from land based activities at the Airport is not monitored in the same way as aircraft operations therefore it is more difficult to quantify actual current noise levels. If monitoring was carried out, it would be difficult to separate land based activity noise from other airport and local noise sources. For ESA receivers, the noise environment is influenced by other airport noise sources such as aircraft operations more than land based activities. Therefore, rather than attempt to quantify existing land based noise we have relied on the allowable noise limits to define the potential existing land based activities noise levels.

8.4 Existing Noise from Ground Power Units and Auxiliary Power Units

A Ground Power Unit (GPU) provides electricity to an aircraft parked at a stand in order to run the aircraft's essential systems like lighting, air-conditioning etc. An aircraft would otherwise generate its own electricity by running its Auxiliary Power Unit (APU) or main engines. A GPU needs to be manually connected to the aircraft after it parks at a stand. Plug-in type GPUs are connected to a mains power supply and do not emit much noise. Standalone GPUs produce electricity with a diesel generator and can be a contributing noise source at an airport.

Rule 11.1.1.1.9(a) requires that GPUs comply with the land based activities noise limits in rule 11.1.1.1.8. WIAL operates a mix of plug-in and generator type GPUs at different stands. Currently the closest aircraft stands to the ESA receivers are approximately 400 m away. Existing noise from GPUs is estimated to comply with the land based activity noise limits at the ESA receivers.

An aircraft Auxiliary Power Unit (APU) is a small turbine engine usually located in the rear of an aircraft's fuselage. The APU burns aviation fuel to generate electricity to power the aircraft's systems when the main engines are not running or when not connected to a GPU.

Rule 11.1.1.1.9(b) of the District Plan requires that APUs comply with the land based activities noise limits except for:

- aircraft under tow
- the first 90 minutes after an aircraft stops on a gate

- 60 minutes prior to scheduled departure
- the use of APUs to provide for engine testing pursuant to rule 11.1.1.1.7

To calculate the likely current noise emissions from APUs at Wellington Airport we have reviewed a range of manufacturer's data for older and more modern aircraft types. ICAO Annex 16[6] defines a limit for ramp noise for jet aircraft of 90 dBA at a 20 m perimeter around the aircraft. Ramp noise includes the APU running which is likely to be the main noise source. Our review of manufacturers data for older and modern aircraft types shows that ramp noise at 20 m ranges between 80 and 85 dB.

The closest existing aircraft stands to the ESA receivers are at the south end of the terminal building, but these stands are for turbo-prop aircraft rather than jets, and we are informed by WIAL that turbo-prop aircraft do not run APUs while parked at a stand. The closest stands used by jets are 480 m from ESA receivers.

We have prepared a computer noise model[7] to calculate noise contours for APUs operating simultaneously on two of the closest existing jet stands. The source level in the model is 85 dB at 20m with spectral data from APU measurements we have previously undertaken. The calculated contours are included in Figure C6 Appendix C. The calculated level at the most affected properties is 58 dB L_{Aeq} and quieter APU models (80 dB at 20 m) would be 53 dB L_{Aeq} at these properties.

Currently the District Plan allows APUs to run for 90 minutes after an aircraft stops on a gate and 60 minutes before scheduled departure time. We are informed that in general, jet aircraft spend 30 – 45 minutes at a stand unloading and reloading (30 – 45 minute turnaround time) and APUs are often run for these durations.

8.5 Existing Cumulative Noise

The District Plan separates out different types of airport noise and applies appropriate limits depending on the nature of each noise source type. The community experiences the combined noise from all sources, so it is important to consider the cumulative effect from all noise sources on receivers. However, it can be difficult to quantify the cumulative noise, as different sources are assessed using different metrics and time frames. The different types of noise and the metrics used are:

- Aircraft Operations (L_{dn} over 90 days)
- Land Based Activities ($L_{Aeq(15\ min)}$ day and night)
- On-Wing Engine Testing (sporadic and only night-time limits apply)
- APUs ($L_{Aeq(15\ min)}$ day and night when not exempt)

We have quantified the cumulative noise from aircraft operations, land based activities and APUs by converting all of these sources into the L_{dn} metric. The existing land based activity noise limits are 55 dB L_{Aeq} during the day and 45 dB L_{Aeq} at night, which is approximately equivalent to 55 dB L_{dn}. For APUs we have assumed the levels calculated in Figure C6 (Appendix C) for 7.5 hours during the day (i.e. 50% of the time) plus 2 hours at night (10pm to 7am). For the ESA receivers, noise from APUs ranges from 56 to 59 dB L_{dn}.

[6] International Civil Aviation Organisation (ICAO) aircraft certification noise standards are contained in Annex 16 to the Convention on International Civil Aviation

[7] Using SoundPLAN software

Table 1: Permitted Cumulative Noise Levels

	Levels Permitted by District Plan (dB L_{dn})			
Receiver	Aircraft Operations	Land Based Activities	APUs[8]	Cumulative
Raukawa St	58	55	57	62
Bunker Way	58	55	59	62
Kekerenga St	59 – 63	55	56	62 - 64

To quantify the existing cumulative noise, we have used measurement data available from a recent construction project at the Airport. WIAL recently carried out noise monitoring of construction activities at the location indicated in Figure 6 adjacent to Bunker Way dwellings. We understand from WIAL that construction generally did not take place on Saturdays and Sundays (daytime), which means that the data from this noise logger is useful to this assessment in that it can be used to provide an understanding of the typical existing total noise levels received at houses overlooking the golf course.

Table 2 summarises the measured noise data from 17 Saturdays and 18 Sundays between July 2018 and May 2019[9]. Sunday night-time data is not shown as we understand that construction often took place on Sunday nights.

Table 2: Measured Total Noise Levels at Bunker Way (all noise sources)

	Saturdays		Sundays
	Daytime $L_{Aeq(15\ hour)}$	Night-time $L_{Aeq(9\ hour)}$	Daytime $L_{Aeq(15\ hour)}$
Minimum	51 dB	44 dB	52 dB
Maximum	59 dB	50 dB	58 dB
Average	55 dB	46 dB	56 dB

The measurements show that total noise levels at Bunker Way on Saturdays and Sundays typically range from 51 – 59 dB $L_{Aeq(15\ hour)}$. We expect the main contributor to the measured noise would be aircraft operations, predicted to be around 53 dB L_{Aeq} however other unidentified noise sources are also contributing to the total level.

The measurements demonstrate that this location does not enjoy a quieter noise environment on Sundays. Sunday noise levels are the same as Saturdays which is expected for an area adjacent to an international airport.

The data from Saturdays provides further understanding of the ambient noise environment from all noise sources. The average daytime level is 55 dB $L_{Aeq(15\ hour)}$ and the average night-time level is 46 dB $L_{Aeq(9\ hour)}$. This is an average 24 hour L_{dn} of 55 dB. We consider that this is representative of the existing cumulative airport noise at ESA receivers near Bunker Way. Comparing this with the

[8] Based on APUs running continuously all day and two hours at night

[9] We have excluded data for days with strong winds as wind noise on the microphone affects the results.

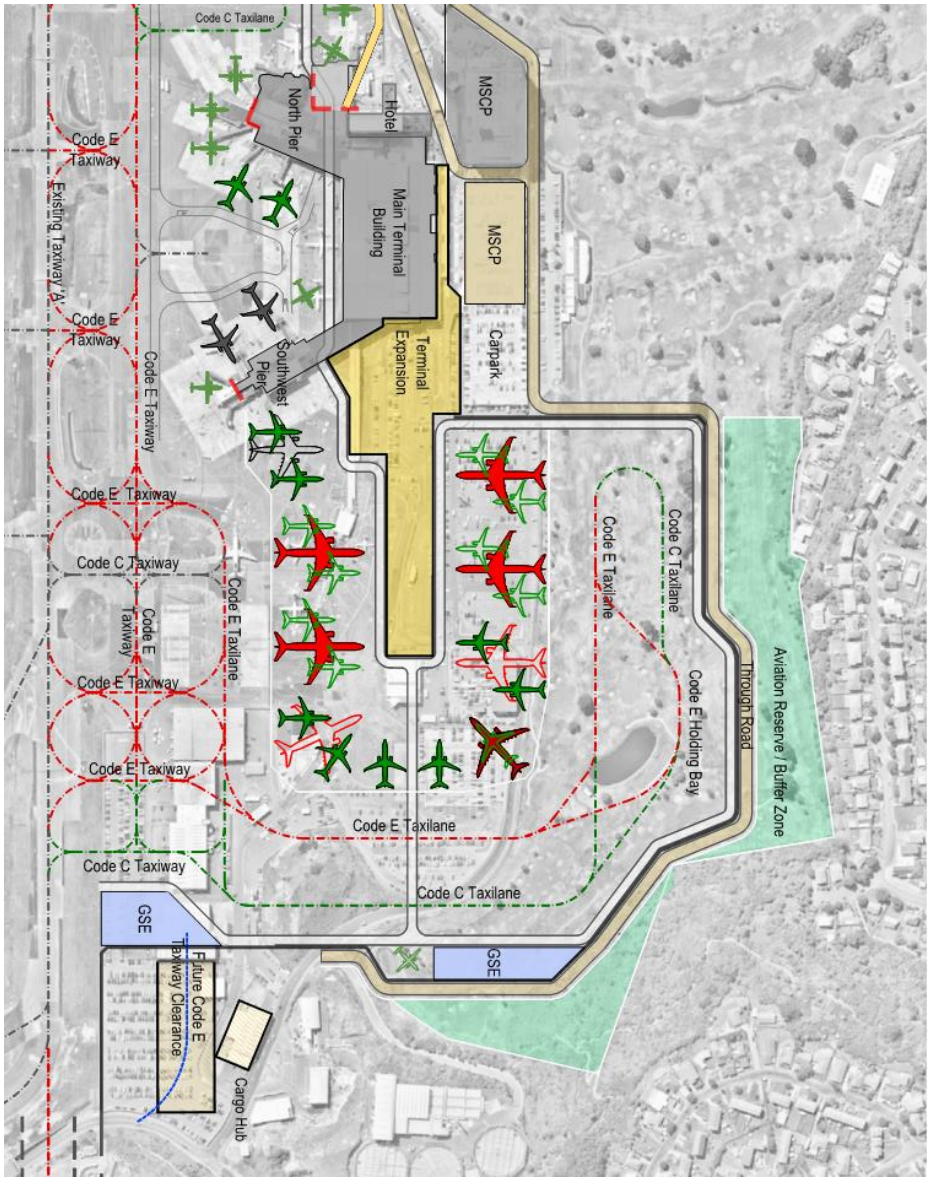
permitted cumulative levels in Table 1 we see that existing cumulative noise is 7 dB below the permitted cumulative level of airport noise.

9.0 PROPOSED NOISE EMISSIONS

9.1 Predicted Noise from Aircraft Operations

Aircraft operations are defined in the District Plan as '*the engine run-up, taxiing, take-off or landing at an airport of an aircraft*". Take-off, landing and taxiing currently takes place within the Airport Area. The only aircraft operations proposed in the ESA is taxiing and engine start up. Figure 7 shows the proposed Concept Code C[10] and Code E[11] aircraft taxiways in the ESA.

Figure 7: Proposed Taxiways in East Side Area



Source: 2040 Masterplan (May 2019)

[10] Code C is the ICAO aircraft classification used in airport geometric design which generally relates to aircraft wingspan and landing gear width. Code C aircraft at Wellington are typically Airbus A320, Boeing 737-800

[11] Code E is the ICAO aircraft classification used in airport geometric design which generally relates to aircraft wingspan and landing gear width. Code E aircraft anticipated for Wellington include Airbus A359, Boeing 777-200, Boeing 787-900

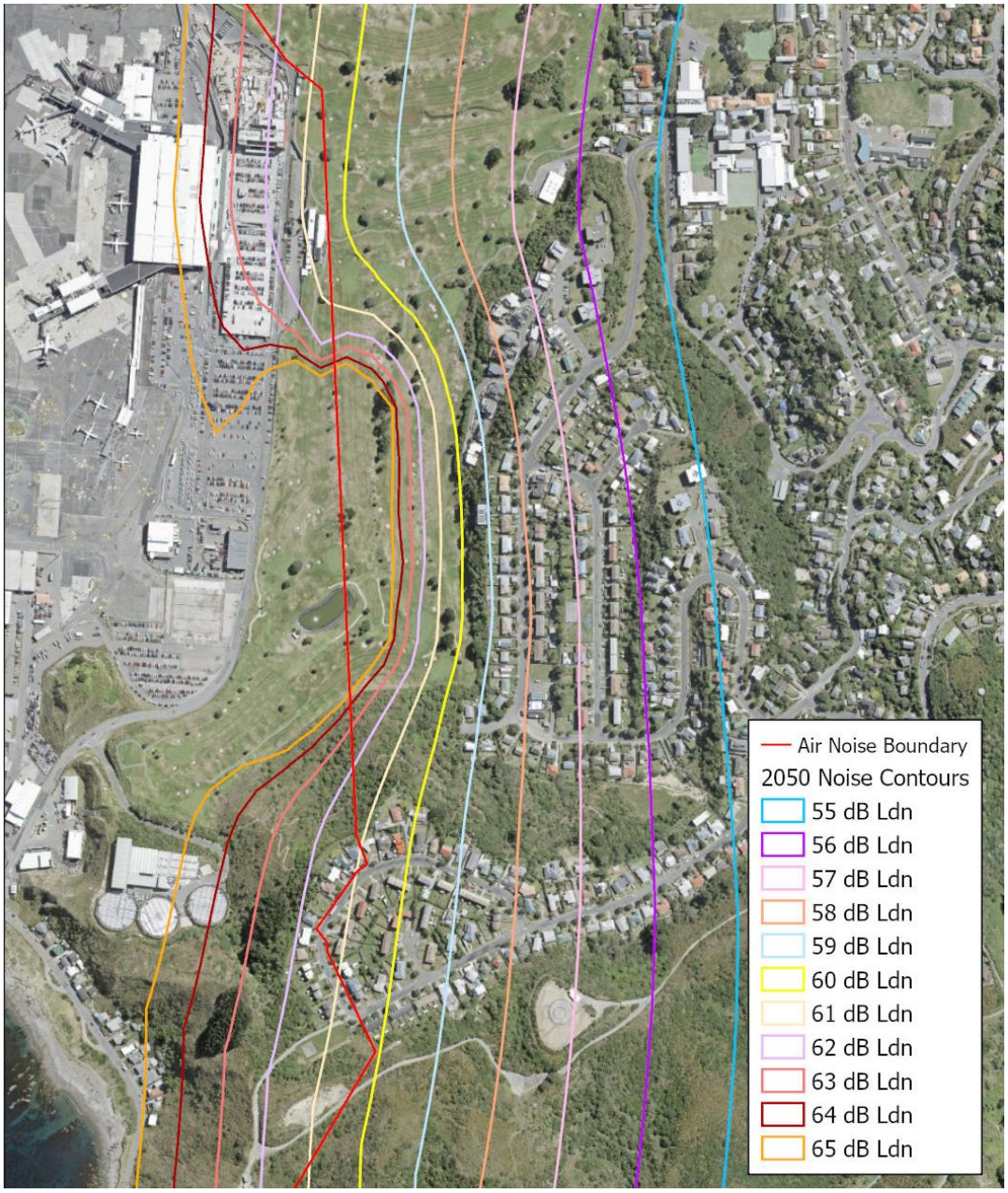
To quantify the noise from aircraft operations once the ESA designation has been implemented and is operational, we have calculated noise contours. These are based on a future forecast of aircraft operations which underpin the 2040 Masterplan. WIAL engaged InterVISTAS to prepare future passenger and aircraft movement forecasts.

The aircraft movements included in the 2050 (95th percentile) forecast allows for approximately 16 million passengers per annum. We understand that the life of the Masterplan is to the year 2040 however we have considered noise effects beyond this horizon using the InterVISTAS 2050 forecasts. A thirty year planning horizon is typical for noise contours at New Zealand's major airports. Utilisation of the 95th percentile 2050 forecast is suitably conservative insofar as noise assessment is concerned as this is effectively "worst case". Details of the calculation methodology are contained in Appendix B.

As a noise management measure, WIAL proposes to exclude aircraft from taxiing under their own power in the ESA at night (between 10pm and 7am). This would avoid sleep disturbance effects for residents in Raukawa Street in particular and reduce the overall noise exposure for these residents. Therefore, the predicted 2050 noise contours include no account for aircraft taxiing under their own power in the ESA at night.

Figure C3 in Appendix C shows the predicted 2050 noise contours. The 2050 65 dB L_{dn} contour extends beyond the existing District Plan ANB within the ESA due to noise from aircraft operating on the proposed taxiways during daytime. The 2050 contours in one decibel increments in the vicinity of the ESA are shown in Figure 8. In summary, noise from aircraft on the proposed ESA taxiways would increase the average L_{dn} noise exposure for ESA receivers. Our assessment in Section 10.1 considers the scale and resulting effects of this increase.

Figure 8: 2050 Aircraft Operations Noise Contours



The L_{dn} noise contours describe the overall noise exposure from aircraft noise events averaged over 3 months in accordance with NZ Standard NZS 6805 and the District Plan. Residents would also notice a change in individual noise events due to aircraft taxiing closer to their homes than they currently do. We have predicted the single event levels from aircraft on the proposed taxiways received at the closest houses on Raukawa Street based on measurements of aircraft taxiing.

The single event levels from a wide body aircraft[12] on the eastern-most taxiway are predicted to be approximately 95 dB L_{AE} and 83 dB L_{Amax} at the Raukawa Street houses[13]. For taxiing narrow body aircraft, noise levels would be approximately 84 dB L_{AE} and 75 dB L_{Amax}. The 2050 operating scenario includes 12 wide body and 12 narrow body jet aircraft movements per day (7am – 10pm) on the taxiways within the ESA.

[12] Based on Boeing 777-200

[13] Based on measurements at 47 m

For comparison the single event levels of jet aircraft taking off or landing on the runway received at these houses are predicted to be approximately 83 – 89 dB L_{AE}. This means that single event noise levels from narrow body aircraft on the new taxiways would be similar to current take-offs on the runway. Wide body aircraft taxiing in the ESA would sound subjectively twice as loud as current take-offs on the runway. Section 10.1 considers the effects of these single event levels on residents.

9.2 Predicted Noise from Engine Testing

It is not proposed to provide for engine testing in the ESA designation.

9.3 Predicted Noise from Land Based Activities

Land based activities include activities associated with servicing aircraft on the stands (i.e. APUs, GPUs, baggage and cargo handling, refuelling, water, catering and toilet servicing, airbridge and push back). The 2040 Airport Masterplan also includes the realignment of part of Stewart Duff Drive. We consider it appropriate for noise from this road to be assessed as a land based activity.

In the following sections we have predicted the likely noise emissions from land based activities in the ESA to assess whether emissions would comply with the recommended noise limits set out below. A discussion on the effects of the recommended noise limits is provided in Section 10.2.

> *Noise emission levels, from any activity within the designation boundary, other than aircraft operations, engine testing and the operations of APUs, when measured at any residential site shall not exceed the following limits:*
>
> | | |
> |---|---|
> | *7am to 10pm* | *55 dB $L_{AEQ\ (15\ MIN)}$* |
> | *At all other times* | *45 dB $L_{AEQ\ (15\ MIN)}$* |
> | | *75 dB L_{AFmax}* |

9.3.1 Predicted Noise from Ground Support Equipment (GSE)

New apron and aircraft stands are proposed to be located largely within the existing Airport Area. Ground support equipment (GSE) such as baggage and cargo handling, refuelling, water, catering and toilet servicing would operate around aircraft parked on the new stands. We have prepared a computer noise model[14] to calculate noise contours for GSE operating simultaneously on three of the proposed new stands which we have assumed is a realistic operating scenario based on the future forecast. The source levels are based on conventional combustion engine GSE with an average sound power of 102 dB L_w. The calculated contours are included in Appendix C.

The contours show that predicted noise from GSE operating at the new stands would comply with the proposed daytime limit of 55 dB L_{Aeq} at relevant receivers but not the night-time limit of 45 dB L_{Aeq}. Some GSE activity could potentially comply at night particularly if electric GSE are used and this could be managed once specific equipment noise levels are established.

Noise from GPUs and APUs is addressed in Section 9.4.

9.3.2 Predicted Noise from Traffic on Realigned Road

The realigned road on the eastern side of the ESA designation would be approximately 45 m from the closest relevant receiver. At this stage we do not know what volume of traffic would use the road. Instead we have calculated the volume of heavy vehicles that could potentially use the road within the land based activity noise limits.

Between 7am and 10pm the proposed limit is 55 dB $L_{Aeq(15\ min)}$, and this decreases to 45 dB $L_{Aeq(15\ mins)}$ at night (10pm – 7am). We have prepared a computer noise model to calculate noise contours for

[14] Using SoundPLAN software

truck movements for the daytime and night-time assessment periods as summarised in Table 3. The resulting contours can be found in Figures C9 and C10 in Appendix C.

Table 3:Number of Truck Movements Predicted to Comply with Land Based Activity Noise Limits

	Number of Truck Movements		
	15 Minutes[15]	Hourly	Daily/Nightly
Daytime (7am – 10pm)	-	45	680
Night-time (10pm – 7am)	1	4	41

We predict the single event noise levels during a truck pass-by would be 74 dB L_{AE} and 72 dB L_{Amax} at the closest ESA receivers. Therefore, the L_{Amax} level is predicted to comply with the proposed limit of 75 dB L_{Amax} at night.

9.3.3 Predicted Combined GSE and Road Noise

The land based activity noise limits apply to the combined noise from all relevant activities. The noise model has been used to calculate combined daytime noise contours for GSE at the new stands and trucks on the road. The contours, in Figure C11 in Appendix C, show that the combined noise can comply with the proposed daytime limit of 55 dB L_{Aeq} at relevant receivers.

To comply with 45 dB L_{Aeq} at night, trucks accessing the proposed cargo hub and GSE activity would need to be carefully managed. If electric GSE are used, then it may be possible to operate these around the new stands and comply with the night-time noise limit.

9.4 Predicted Noise from Ground Power Units and Auxiliary Power Units

We understand that all new aircraft stands adjacent the ESA would include plug-in type GPUs therefore generator type GPUs would not operate in the ESA. Therefore, GPU noise emissions would be negligible.

To predict noise emissions from APUs in the ESA, we have reviewed a range of manufacturer's data for older and more modern aircraft types. ICAO Annex 16[16] defines a limit for ramp noise for jet aircraft of 90 dBA at a 20 m perimeter around the aircraft. Ramp noise includes the APU running which is likely to be the main noise source. Our review of manufacturers data for older and modern aircraft types shows that ramp noise at 20 m ranges between 80 and 85 dB.

The Airport's 2040 Masterplan shows that for the new aircraft stands near the ESA, aircraft APUs could be as close as 230 m from the ESA receivers.

We have prepared a computer noise model[17] to calculate noise contours for APUs operating simultaneously on two of the proposed new stands. As APUs are only used for a short time before leaving and after arriving at a stand, we have assumed that two APUs operating simultaneously is a realistic scenario. The source level in the model is 85 dB at 20m with spectral data from APU measurements we have previously undertaken. The calculated contours are included in Figure C7 Appendix C. The predicted level at the most affected properties is 62 dB L_{Aeq} and quieter APU models (80 dB at 20 m) would be 57 dB L_{Aeq} at these properties. This is an increase of 4 dB compared

[15] A 15 minute assessment period only applies at night when averaging is not provided for in NZS 6802:2008

[16] International Civil Aviation Organisation (ICAO) aircraft certification noise standards are contained in Annex 16 to the Convention on International Civil Aviation

[17] Using SoundPLAN software

with the estimated current APU noise levels (as noted in Section 8.4). Section 0 discusses the effects of APU noise on ESA receivers and our recommended controls.

9.5 Predicted Construction Noise

Construction noise would be predicted and assessed against NZS 6803:1999 when final details relating to construction are known and the Earthworks and Construction Management Plan is prepared (refer to proposed construction noise condition). This Management Plan would be submitted as part of an Outline Plan for Works and a condition in this respect is recommended. At the time an outline plan for works is submitted, it is expected that an accurate assessment of the likely construction noise would be undertaken, based on a detailed construction methodology. Where practicable it is expected that the project would comply with the noise limits in NZS 6803:1999. If there were likely to be any exceedances of these limits it is usual for the Construction Noise Management Plan to identify when and where these might occur and include fit for purpose mitigation measures to properly manage the effects of these exceedances. It is recommended that as part of the outline plan process that the Council should have the opportunity to make comment on the Construction Management Plan prior to commencing works.

10.0 ASSESSMENT OF NOISE EFFECTS

This section considers the noise effects from the various airport noise sources. Part of the effects assessment addresses the change in noise levels resulting from the proposal. The subjective response to a change in noise level is widely variable from individual to individual and is also different for a change that occurs immediately, compared with a change that occurs slowly over many years.

However, the following general response to an immediate change in noise is typical:

- An increase in noise level of 9 to 10 dB sounds subjectively about 'twice as loud';
- A change in noise of 7 to 8 dB is regarded as 'appreciable';
- A change in noise level of 5 to 6 dB is regarded as 'noticeable';
- A change in noise level of 3 to 4 dB is 'just discernible';
- A change in noise level of 1 to 2 dB is 'not discernible'.

10.1 Noise Effects from Aircraft Operations

10.1.1 Change in L_{dn} Average Noise Exposure

We have assessed the change in aircraft operations noise level in the vicinity of the designated area by comparing the 2050 noise contours with:

a) The plan permitted noise contours (the model used to develop the ANB)

b) Current noise contours (FY19) which show the current level of noise exposure experienced by ESA receivers.

This assessment considers the change in noise for some 30 years in the future as a result of gradual growth in airport operations. The predicted change, compared with current noise, would not occur immediately the ESA becomes operational. We have not prepared predictions for a scenario immediately following the ESA becoming operational however we estimate a 1 – 2 dB increase initially due to the new taxiways then further increase would occur gradually over many years.

Figures C4 and C5 in Appendix C show coloured maps that identify the above changes in noise level at properties surrounding the ESA. The assessment extends out generally as far as the 55 dB L_{dn} contours in the vicinity of the ESA. For clarity, some large lots that are industrial or community use rather than residential have not been coloured on the maps.

Figure C4 shows the predicted increase in aircraft operations noise at individual properties by comparing the plan permitted noise exposure levels to the year 2050. Most properties are coloured

pale green which means the 2050 levels are the same or lower than the plan permitted levels. For 16 properties (shaded pale yellow), the 2050 levels are predicted to be 1 dB higher than the plan permitted levels. For the ESA receivers, the change in noise compared with the plan permitted contours is due to a combination of different aircraft types and the additional noise from aircraft taxiing in the ESA during the day, which was not an anticipated part of the District Plan model. Subjectively a change of 1 dB is imperceptible and therefore we consider the change in L_{dn} noise level compared with the levels already provided for by the District Plan is reasonable.

Figure C5 shows the predicted increase in aircraft operations noise at individual properties by comparing current noise exposure levels (FY19) to the year 2050. The predicted increase ranges from 4 – 6 dB L_{dn}. Subjectively an increase of 4 decibels is 'just discernible' and a 5 – 6 dB increase is a 'noticeable' change. An increase of 5 dB is expected as current aircraft operations noise levels are currently around 5 dB below the 65 dB L_{dn} limit at the ANB. The 1 dB greater increase for some ESA receivers is due to additional noise from aircraft taxiing in the ESA which is not part of current operations.

In summary, the predicted change in L_{dn} noise levels compared with current levels for ESA receivers, is a just discernible to noticeable increase. For ESA receivers, L_{dn} noise levels would increase by 1 -2 decibels when operations began in the ESA then the rest of the increase would occur gradually over approximately 30 years.

Figures C4 and C5 show that the ESA receivers most affected by the proposed airport expansion, are the front row of houses on Ruakawa Street and Bunker Way. Aircraft operations noise received at houses on Kekerenga St is largely most affected by runway noise already provided for by the District Plan, and noise from the ESA taxiways is not predicted to contribute significantly to the noise exposure level at these houses.

10.1.2 Annoyance Due to Aircraft Operations Noise

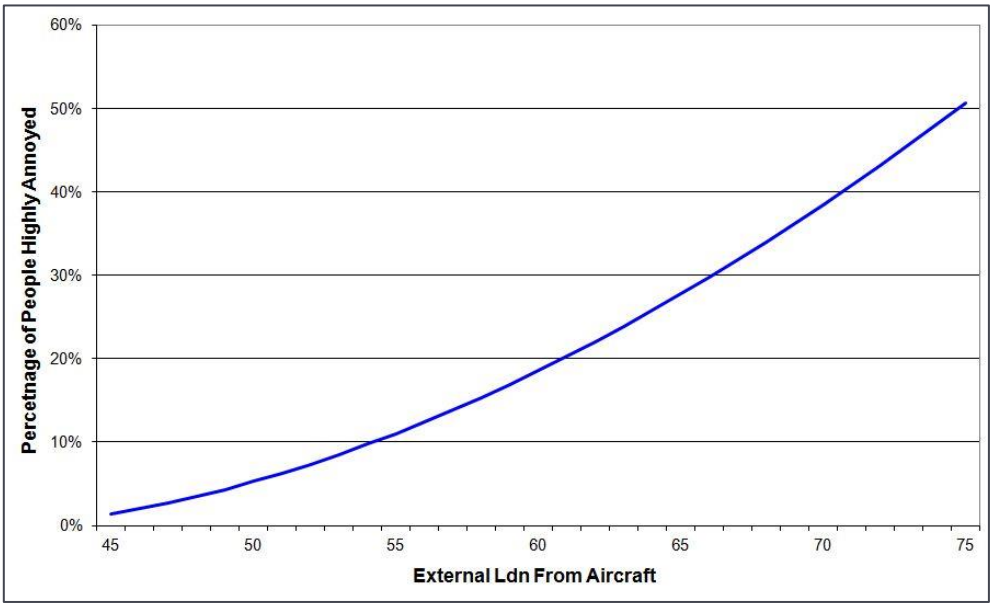
Annoyance due to aircraft noise is influenced by many factors including, but not limited, to:

- How loud the noise is;
- How long the noise lasts for;
- How many times the noise occurs in a day/month/year;
- The time of the noise event (i.e. daytime vs. night-time);
- The frequency (or pitch) of the noise;
- Whether there is a change to the noise source;
- The receiver's attitude to the noise source and the noise producer.

No single noise metric can take into account all of the factors that influence annoyance. A large number of studies have been carried out in an attempt to determine the general relationship between aircraft noise levels and community annoyance. The most comprehensive amalgamation of the various airport noise studies was carried out by Miedema and Oudshoorn in 2001[18]. The Miedema and Oudshoorn relationship is shown in Figure 9.

[18] Miedema and Oudshoorn (2001); "Annoyance from Transportation Noise: Relationships with Exposure Metrics DNL and DENL and Their Confidence Intervals"

Figure 9: Dose Response Curve for Community Annoyance Response to Aircraft Noise



This relationship can be used to estimate the number of people likely to be highly annoyed at various levels of aircraft noise. At an exposure level of 55 dB L_{dn} 11% of residents are likely to be highly annoyed. At 60 and 65 dB L_{dn} 19% and 28% respectively of residents are likely to be highly annoyed.

Acoustic insulation of houses is one method of reducing the annoyance effects on residents however aircraft noise in outdoor living areas would still contribute to annoyance. Therefore, acoustic insulation is not a complete solution.

NZS 6805:1992 recommends that between 55 and 65 dB L_{dn} new houses and additions to existing houses are prohibited or if permitted are fitted with appropriate acoustic insulation. Between 65 and 70 dB L_{dn} NZS 6805:1992 recommends that new houses are prohibited and steps are taken to provide existing houses with acoustic insulation.

For residents inside the ANB, Wellington Airport Noise Treatment Ltd offers an acoustic mitigation program (Quieter Homes) which provides acoustic treatment to residents affected by aircraft noise levels greater than 65 dB L_{dn}. The Quieter Homes indoor design target for habitable rooms is 45 dB L_{dn}. The criteria for the program were developed through the Land Use Management and Insulation for Airport Noise Study (refer Section 5.3). The Quieter Homes offers do not extend beyond the ANB (65 dB L_{dn}).

For ESA receivers, the future noise from aircraft operations is predicted to reach 58 – 61 dB L_{dn} which is outside the eligibility criteria for Quieter Homes. We expect that internal noise levels for ESA receivers would be approximately 45 dB L_{dn} with windows ajar for ventilation therefore these properties would generally achieve the Quieter Homes objective without acoustic treatment.

10.1.3 Single Event Levels from Taxiing Aircraft

In addition to assessing overall noise exposure with the L_{dn} metric, we have considered the effects on receivers during individual noise events such as aircraft taxiing under their own power in the ESA.

The 2050 noise predictions include an average of 12 wide body and 12 narrow body jet aircraft movements per day on the taxiways within the ESA.

The single event levels from a wide body aircraft on the eastern-most taxiway are predicted to be approximately 95 dB L_{AE} and 83 dB L_{Amax} at the Raukawa Street houses. These events would disrupt communication outdoors. Indoors with windows open these levels would be clearly audible and likely to disrupt communication. With windows closed the indoor noise levels would be audible and may disrupt quieter activities.

These levels are 10 decibels higher (subjectively twice as loud) than current jet departures which are the loudest aircraft events these receivers currently experience. This is a significant increase in single event levels but although these levels are undesirable in a conventional setting, they are not excessive or uncommon for residents living near an airport. These elevated noise events are predicted to occur only 12 times a day between 7am and 10pm in the 2050 operating scenario. By comparison the 2050 scenario includes 110 jet departures per day.

For taxiing narrow body aircraft in the ESA, noise levels would be approximately 84 dB L_{AE} and 75 dB L_{Amax} at the Raukawa Street houses. These levels are similar to current single event levels experienced by these receivers from jet departures.

10.2 Noise Effects from Land Based Activities

We recommend land based activities in the ESA are controlled by the following limits at residential receivers:

7am to 10pm	*55 dB $L_{AEQ\ (15\ MIN)}$*
At all other times	*45 dB $L_{AEQ\ (15\ MIN)}$*
	75 dB L_{AFmax}

Currently the limits for land based activities in the Airport Area apply 45 dB $L_{Aeq(15\ min)}$ all day and night on Sundays. We consider this is an overly restrictive and unrealistic limit for Sundays during the day and recommend that 55 dB L_{Aeq} is applied during the day for the following reasons.

The guidelines for setting general environmental noise limits in NZS 6802:2008 recommend a daytime limit of 55 dB $L_{Aeq(15\ min)}$ is appropriate for residential receivers. The standard does not identify Sundays as particularly sensitive or requiring lower limits. We consider a daytime limit of 45 dB L_{Aeq} in a general urban environment is unrealistic and unnecessary. For an urban environment near an international airport this is even more so. The approach of Sunday noise limits being consistent with other days has been adopted by almost all other District Plans in New Zealand.

For an international airport, reduced noise limits on Sundays is not practicable. Wellington Airport operates 7 days a week and land based activities cannot practicably be curtailed on Sundays. Recent measurements show that current total noise levels from all sources during the day on Sundays is around 56 dB L_{Aeq} (refer Table 2). Most of this noise is expected to be from aircraft operations which demonstrates that a lower daytime limit for land based activities on Sundays would provide little benefit to receivers.

In summary we consider that a daytime limit of 45 dB L_{Aeq} on land based activities on Sundays is neither appropriate nor warranted. A limit of 45 dB L_{Aeq} at night (10pm – 7am) is however appropriate for sleep protection. We consider that the proposed limit for the ESA of 55 dB L_{Aeq} during the day on Sundays is appropriate and the effects on receivers would be reasonable.

10.2.1 Recommended Mitigation of Land Based Activity Noise

Our predictions show that land based activities in the ESA would comply with the recommended limits during the day and at night some activities would need to be managed in order to comply (e.g. employing electric ground support equipment).

We recommend that the Airport Noise Management Plan is the appropriate mechanism for managing land based activities to comply with the proposed noise limits in conjunction with designation conditions. Operational procedures should be developed once the demand for night-time GSE operations on the eastern stands and the type of equipment are known.

10.3 Noise Effects from GPUs and APUs

As discussed in Section 9.4, generator type GPUs would not operate in the ESA and noise from plug-in GPUs would be negligible.

For ESA receivers, APU noise levels are predicted to range from 57 – 62 dB while APUs are operating on the eastern stands. This is a 'just perceptible' 4 dB increase on current predicted APU noise levels. The predicted 62 dB L_{Aeq} for the noisier APUs is elevated for a residential environment but not unusual for residential sites near an airport. The following section discusses our recommended mitigation of APU noise effects on ESA receivers.

10.3.1 Recommended Mitigation of APU Noise

We understand it is necessary for APUs to be run for a short time while aircraft are not connected to a GPU either side of departing and arriving at a stand. It is appropriate that airlines should use GPUs for as long as possible when on a stand meaning that APUs are only run for as short a time as necessary reducing fuel burn, noise and emissions.

Aircraft manufacturers continue to innovate ways to reduce ramp noise from aircraft systems while parked on stands. The industry (ICAO) sets minimum ramp noise standards[19] that are reduced as the technology improves. In this way, and by reducing the run time, APU noise is mitigated at the source as much as practicable. It is not practicable to attenuate APU noise by screening or other means at the stands.

To balance the need for APUs to operate for short times at the proposed new eastern stands against managing the noise effects on ESA receivers we recommend that noise from APUs in the ESA complies with the land based activities noise limits except for:

- Aircraft under tow (7am – 10pm)
- 20 minutes after block on time at a stand (7am - 10pm)
- 10 minutes prior to block off time at a stand (7am - 10pm)

These controls would effectively exclude APUs running on the eastern stands between 10pm and 7am. They would also provide certainty to the ESA receivers that they would not be unnecessarily subjected to noise from APUs on the new stands.

Although the noise level received with an APU running would be up to 6 dB higher than the land based activity limit, the duration restrictions would control the overall daily exposure to APU noise for ESA receivers. Based on the 2050 operating scenario we calculate that APUs on the eastern stands could potentially run for an average of 24 minutes per hour during the day (or 364 minutes 7am – 10pm)[20]. This is equivalent to 57 dB $L_{Aeq(15\ hour)}$ and 55 dB L_{dn}.

Considering the predicted APU noise levels in the context of the total noise environment and the recommended mitigation measures, we consider that the effects from APU noise on the ESA receivers would be appropriately managed.

10.4 Cumulative Noise Effects from ESA Site

For residents living adjacent to an airport, the total noise exposure is the combination of all airport noise sources. It is important to consider what the cumulative effect from all noise sources is on receivers. However, it can be difficult to quantify the cumulative noise as different sources are assessed using different metrics and time frames.

[19] ICAO Annex 16 Chapter 9 (90 dBA at 20m)

[20] Based on 24 taxi movements per day in the ESA

The different types of noise we recommend be controlled by way of conditions for the ESA are:

- Aircraft Operations (L_{dn} over 90 days)
- Land Based Activities ($L_{Aeq(15\ min)}$ day and night)
- APUs

We have quantified the cumulative noise from aircraft operations (2050), land based activities and APUs by converting all of these sources into the L_{dn} metric. Table 4 summarises the results.

APUs would need to either comply with the land based activity limits or the duration restrictions. Either way, the equivalent L_{dn} noise exposure would be approximately 55 dB L_{dn}.

The proposed land based activity noise limits are 55 dB L_{Aeq} during the day and 45 dB L_{Aeq} at night which is approximately equivalent to 55 dB L_{dn}.

Table 4: Predicted Cumulative Noise Levels (2050) After Mitigation

	Predicted 2050 Noise Levels (dB L_{dn})			
Receiver	Aircraft Operations*	Land Based Activities	APUs[21]	Cumulative
Raukawa St	59	55	55	62
Bunker Way	59	55	55	62
Kekerenga St	59 – 62	55	55	62 - 63

* Combined aircraft operations noise from Airport Area and ESA

The cumulative noise based on the year 2050 mitigated scenario is predicted to reach 62 – 63 dB L_{dn} at ESA receivers. This is an elevated and undesirable noise level for residential areas but is not unusual for residential properties adjacent to transport infrastructure such as roads and airports. Noise from aircraft operations is the main source contributing to the cumulative noise and this would increase gradually over approximately 30 years.

Comparing the predicted cumulative levels with the permitted cumulative levels (refer Section 8.5) there is no increase in cumulative noise at any of the ESA receiver locations.

The measured current total noise level at Bunker Way was 55 dB L_{dn} (refer Section 8.5). Therefore a 7 dB increase is predicted on current cumulative noise levels. This is subjectively an appreciable increase. Initially when the ESA becomes operational there would be a small (just perceptible) increase in total cumulative noise exposure but much of the 7dB increase would occur gradually over many years as airport operations grew.

10.5 Cumulative Noise from Airport Area and ESA Site

In addition to the cumulative effect from different types of airport noise in the ESA, it is important to consider the impact of noise from activities in the Airport Area combined with noise from activities in the ESA. To avoid allowing twice the noise at receivers through separate provisions in each area, we recommend the conditions for the ESA designation apply limits that properly account for the combined noise from the existing Airport Area and the ESA. This is practicable and appropriate for aircraft operations and land based activities. It would also avoid the need to monitor compliance of these activities in each Airport site separately which would be difficult to achieve in practice. The proposed noise controls in Section 11.0 apply this approach.

[21] Either by complying with land based activity limits, or the duration limits

However, it is not practicable to apply the recommended APU controls for the ESA to the combined noise from APUs in the Airport Area and the ESA as the existing Airport Area rules are more permissive. In theory, with the existing Airport Area APU provisions, the cumulative airport noise from both sites could be 2 dB higher than the levels in Table 4.

11.0 RECOMMENDED NOISE CONTROLS

It is recommended that the designation conditions generally reflect the limits imposed by the existing District Plan Airport Area noise rules but with seven changes to enable the Masterplan and manage the noise effects:

1. Undertake construction noise assessment and prepare construction noise management plan;
2. Allow an exceedance of the ANB within the ESA to allow for localised taxiing noise;
3. Align the daytime noise limits for land based airport activities on Sunday with those for Monday to Saturday;
4. Tighten the allowance for APUs within the ESA to be exempt from noise limits;
5. Exclude taxiing under power within the ESA between 10pm and 7am;
6. Require continuous monitoring of airport noise at the interface between the ESA and the residential zone;
7. Exclude engine testing from the ESA.

The following sections describe these recommendations in more detail.

11.1 Undertake Construction Noise Assessment and Prepare Management Plan

Construction noise should be managed to comply with the limits set out in NZS 6803:1999 where practicable. This Standard sets specific limits to manage the effects of construction noise and recognises the specific character of such noise and that such noise is temporary. We recommend that a specific construction noise assessment be undertaken once further information is available about the construction methodology and construction activities are managed according to a fit for purpose management plan. Suitable conditions should be placed on the designation to achieve this outcome.

11.2 Allow localised exceedance of ANB

Section 9.1 presents the predicted aircraft operations noise contours for the year 2050 with the extension of airport activities onto the ESA. The predictions show that noise from 2050 aircraft operations will exceed the ANB within the ESA. The exceedance is localised around the taxiways within the area.

The effect of the exceedance is mostly contained within the ESA however taxiing noise will contribute to the total operational noise levels at the ESA receivers on Raukawa Street and Bunker Way. This is apparent in the bulge in the shape of the contours over these properties (refer Section 9.1). The outcome for these receivers is that aircraft operations noise at 2050 would be 1 dB higher than the levels permitted by the District Plan. This is because noise from aircraft on the runway is the main contributor to operational noise, rather than taxiing. A one decibel change is imperceptible.

The effect of taxiing activity within the ESA designation necessitates a change to the compliance point of the 65 dB L_{dn} contour at this location. Figure 10 below shows how this differs from the existing ANB in the vicinity of the ESA. This means that compliance with the 65 dB L_{dn} limit would be assessed at the red dashed Compliance Line where it is shown, and elsewhere compliance would be assessed at the existing ANB. A suitable condition to this effect is recommended.

Figure 10: Proposed 65 dB L_{dn} Compliance Line within the ESA designation

11.3 Relax day time noise limit for land based activities on Sundays

The District Plan Airport Area noise limit for land based activities is 55 dB $L_{Aeq(15\ min)}$ (Monday – Saturday 7am – 10pm). At all other times including all day on Sundays, a more restrictive limit of 45 dB $L_{Aeq(15\ min)}$.applies.

As set out in Section 9.3 we consider that a daytime limit of 45 dB L_{Aeq} on land based activities on Sundays is neither appropriate nor warranted and at odds with existing ambient noise levels on Sundays at the Airport. A limit of 45 dB L_{Aeq} at night (10pm – 7am) is however appropriate for sleep protection. We recommend that noise limits for land based activities in the ESA designation are as follows:

> *Combined noise emission levels, from any activity within the Airport Area and East Side Area other than aircraft operations, engine testing and the operations of APUs when measured at any residential site shall not exceed the following limits:*
>
> | | |
> |---|---|
> | *7am to 10pm* | *55 dB $L_{AEQ\ (15\ MIN)}$* |
> | *At all other times* | *45 dB $L_{AEQ\ (15\ MIN)}$* |
> | | *75 dB L_{AFmax}* |

11.4 Tighten controls for APUs

In Section 10.3.1 we recommend that the current District Plan operating window for APUs is reduced in the ESA designation area to mitigate the noise effects from APUs running at the new eastern stands. We recommend that plug-in or battery powered GPUs are provided on all new eastern aircraft stands. Then APUs in the ESA should be required to meet the land based activity noise limits except for:

- Aircraft under tow (7am – 10pm)
- A maximum of 20 minutes after block on time at a stand (7am – 10pm)
- A maximum of 10 minutes prior to block off time at a stand (7am – 10pm)

These controls would effectively exclude APUs being run on the eastern stands between 10pm and 7am and minimise the amount of runtime during the day.

11.5 Exclude aircraft taxiing under power in the ESA at night (10pm – 7am)

WIAL proposes to exclude aircraft taxiing under their own power in the ESA between 10pm and 7am to mitigate the noise effects of this activity. As such we recommend that the designation conditions clearly set out this exclusion but still enable aircraft to be towed on the ESA taxiways at night.

11.6 Monitoring requirement

We recommend that prior to the ESA becoming operational, a permanent noise monitor is installed near the most affected ESA receivers in Bunker Way or Raukawa Street. The monitor would provide data to assess compliance of airport activities including aircraft operations with the proposed noise limits.

The aircraft operations compliance point would be at the proposed 65 dB L_{dn} Compliance Line inside the ESA, however it is not practicable or relevant to measure at this line. It is more relevant to measure noise at the closest receivers and assess compliance from this data.

It is likely to be difficult to distinguish between measured noise from aircraft operations and noise from land based activities but the monitor would at least show the cumulative noise levels which could be used to generally assess compliance. The predicted cumulative level (2050) at the closest Bunker Way and Raukawa Street properties is 62 dB L_{dn}. At night, when aircraft operations have stopped, the monitor would also provide useful data on night-time noise levels from other airport noise sources.

The monitor would also provide reassurance to the ESA receivers that airport noise was continually being monitored and managed to comply with the noise limits.

11.7 Exclude Engine Testing from the East Side Area

Engine testing is not proposed in the ESA designation and should be explicitly excluded.

12.0 SUMMARY OF NOISE EFFECTS

The residential properties most affected by noise from the proposed ESA designation are those on Raukawa Street, Bunker Way and Kekerenga Road that overlook the golf course. These properties have been identified as ESA receivers where noise effects have been assessed.

The initial noise effects from the proposal would occur during the construction phase. This report recommends that a specific construction noise assessment be undertaken once further information is available about the construction methodology. It is expected that conditions will be set in place to require such noise to adhere to suitable limits and that construction activities will be managed according to a fit for purpose management plan.

The ongoing noise effects on ESA receivers would arise from airport related activities on the proposed new taxiways, aircraft stands and road. These effects would occur over time as the ESA is developed. We predict the following noise effects for the ESA receivers:

- As the ESA is developed, a progressive, increase in aircraft operations noise will occur and it is predicted that by the year 2050 this will comprise an increase of 1 dB L_{dn} (imperceptible) compared with the levels currently allowed under the current planning provisions.
- This increase in aircraft operations noise will likely result in an increase of 5 - 6 dB L_{dn} (noticeable) by 2050 compared with currently experienced levels.
- A just perceptible increase (4 dB) in noise from APUs operating at the new stands compared with APU noise from the current Airport site. The resulting levels would be moderately high for a residential area but not uncommon for residents living near transport infrastructure. The effect from this noise source would be appropriately mitigated by applying duration and night-time operating restrictions.
- The day time noise limit on Sundays for land based activities would be aligned with the Monday to Saturday limit. In theory this results in a 10 dB increase in permitted levels on Sundays (7am – 10pm). However, in practice this is considered reasonable as it aligns with current noise levels on Sundays and would not have a noticeable effect on receivers given the effect of other existing noise sources at the Airport.
- Over time wide body aircraft taxiing on the ESA taxiways (up to 12 events per day) would be a significant increase (10 dB L_{AE}) in aircraft single event noise compared with current single event noise from aircraft departures. Night-time restrictions would apply to these activities to avoid sleep disturbance. The predicted single event levels (95 dB L_{AE} and 83 dB L_{Amax}) are moderately high but not uncommon for residents living near an airport.
- For the year 2050, cumulative airport noise levels (from all noise sources) of 62 – 63 dB L_{dn} are predicted. These are moderately high levels that are generally undesirable for residential activity but not uncommon for properties adjacent to an airport. This is an appreciable (7 dB) increase compared to the current measured cumulative noise but no increase compared to cumulative airport noise already permitted by the District Plan at these properties.

The following measures are proposed to manage the noise effects:

Night-time Effects

- No taxiing under engine power will be allowed on ESA taxiways at night (10pm – 7am).
- APUs will be required to meet land based activity noise limits at night (45 dB L_{Aeq}) on the eastern aircraft stands (10pm – 7am) which effectively excludes them from running at night.
- Ground support equipment on eastern aircraft stands and road traffic will be managed to comply with night-time limit of 45 dB $L_{Aeq.}$

Daytime and Overall

- Noise from aircraft operations will be limited to 65dB L_{dn} at the proposed Compliance Line within the ESA.
- Plug-in GPUs to be available at new eastern aircraft stands and allowable APU runtime restricted.
- Continuous noise monitoring will be undertaken near ESA receivers to monitor compliance with the proposed noise limits.
- No engine testing will be allowed in the ESA.

We consider that the recommended operational restrictions on the new taxiways and aircraft stands represent the best practicable option to manage and mitigate the noise effects of the East Side Area designation.

In summary we consider that noise effects would be appropriately controlled and reasonable in the existing Wellington Airport context.

APPENDIX A GLOSSARY OF TECHNICAL TERMS

Ambient	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
SPL or L_P	Sound Pressure Level A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 µPa RMS) and expressed in decibels.
SWL or L_W	Sound Power Level A logarithmic ratio of the acoustic power output of a source relative to 10^{-12} watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
dB	Decibel The unit of sound level. Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 µPa i.e. dB = 20 x log(P/Pr)
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
$L_{Aeq\,(t)}$	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level. The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
L_{Amax}	The A-weighted maximum noise level. The highest noise level which occurs during the measurement period.
L_{dn}	The day night noise level which is calculated from the 24 hour L_{Aeq} with a 10 dB penalty applied to the night-time (2200-0700 hours) L_{Aeq}.
SEL or L_{AE}	Sound Exposure Level The sound level of one second duration which has the same amount of energy as the actual noise event measured. Usually used to measure the sound energy of a particular event, such as a train pass-by or an aircraft flyover
NZS 6801:2008	New Zealand Standard NZS 6801:2008 *"Acoustics – Measurement of environmental sound"*
NZS 6802:2008	New Zealand Standard NZS 6802:2008 *"Acoustics – Environmental Noise"*
NZS 6803:1999	New Zealand Standard NZS 6803: 1999 *"Acoustics - Construction Noise"*
NZS 6805:1992	New Zealand Standard NZS 6805:1992 *"Airport Noise Management and Land Use Planning"*

APPENDIX B AIRCRAFT NOISE CALCULATION METHODOLOGY

Predictions of aircraft noise around Wellington Airport have been calculated using the Integrated Noise Model (INM) software. The INM was developed by the United States Federal Aviation Administration and is used internationally for aircraft noise modelling. NZS 6805 recommends using the INM for calculating airport noise boundaries. Marshall Day Acoustics has used the INM for over 25 years to calculate aircraft noise contours for the majority of New Zealand Airports. The INM has been replaced by the Aviation Environmental Design Tool (AEDT). While the AEDT is now required in the United States for FAA CFR[22] Part 150 studies, in Australia, the statutory framework is currently transitioning from INM to AEDT. In New Zealand there is no national statutory requirements and for Wellington, the District Plan does not define the software to be used. MDA is transitioning from INM to AEDT for the airport assessments we carry out. During this transition period we consider that applying either the INM or AEDT model is appropriate. Our review of the AEDT shows that predicted noise levels are almost identical to the INM for the same operational scenarios.

The original airport noise contours used to develop the District Plan ANB were generated in an early version of the INM. Since this time, there have been a number of upgrades to the software. The latest version used for calculating future and current noise contours is INM v7.0d.

Much of the land surrounding Wellington Airport is hilly and this has an effect on how aircraft noise propagates to different areas in the community. Some areas are elevated and therefore closer to aircraft in flight and other areas are screened from the runway by hills. When the ANB was developed the noise model was not capable of allowing for screening by terrain. Therefore the noise contours were calculated based on flat land then an estimated screening adjustment was made manually to produce the ANB.

The more recent versions of INM can allow for terrain effects, however unfortunately the INM does not facilitate terrain data of a high enough resolution to accurately model the steep terrain around Wellington. Therefore in this analysis we have assumed flat land when calculating noise contours. By not taking into account terrain screening, our predictions may overstate noise levels in some areas. When comparing noise levels of different operating scenarios, it is less important to allow for screening provided the various scenarios are calculated using the same assumptions (in this case, flat ground).

Runway Usage

Historically an average of 60% Runway 34 and 40% Runway 16 has been applied to aircraft operations at Wellington Airport. The Airport's noise and operations monitoring system (ANOMS) data has been analysed to determine the average runway usage from 2010 to 2018. The average 12 month and three month averages over this time were 61% Runway 34 and 39% Runway 16. However during the busiest 3 months each year (October – December) the runway use is generally biased towards Runway 34 even further with an average use of 64% Runway 34 and 36% Runway 16. In FY17 the bias reached 70% Runway 34.

The District Plan and 2050 contours have been calculated based on the average use of 60% Runway 34 and 40% Runway 16. The current (FY 19) contours have been calculated using the actual runway usage during the busy three months which was 55% Runway 34 and 45% Runway 16.

Forecast

The outer envelope L_{dn} contours have been plotted for two forecast scenarios for the year 2050 prepared by InterVISTAS in October 2018. One scenario is the Business as Usual Optimistic (95th percentile) forecast. The second scenario is the Extended Runway Optimistic (95th percentile) forecast. Both forecast approximately 16 Million Passengers Per Annum.

[22] Federal Aviation Administration Code of Federal Regulations

Table 5: Year 2050 Aircraft Movement Forecasts

Aircraft	Business as Usual Annual Movements	Extended Runway Annual Movements
777	1670	1560
787	6600	6200
738/MAX8	470	0
739/MAX9	9070	7560
A220	9120	9150
A320	13720	14470
A321	35930	33320
A330	900	1830
A350	0	940
ATR72	41030	40280
C208	8890	8930
CV5	290	300
PC12	5890	5930
Total	**133580**	**130470**

Both forecasts have been factored up for the noise model by 5% to represent the busy 90 day period which historically has been 5% busier than the annual average.

Distribution of Aircraft at Night (10pm – 7am)

The distribution of aircraft movements to night-time has been applied to each route category as listed in Table 5. These figures are based on a synthetic schedule prepared by aviation experts Airbiz and the historical distribution of night-time activity.

Table 6: Night-time Aircraft Movement Assumptions

Route Category	Percentage of Movements at Night (10pm-7am)	
	Arrivals	Departures
Domestic Regional	2%	2%
Domestic Trunk	5%	5%
International Short Haul	40%	30%
International Long Haul & 5th Freedom	0%	0%
General Aviation	14%	7%

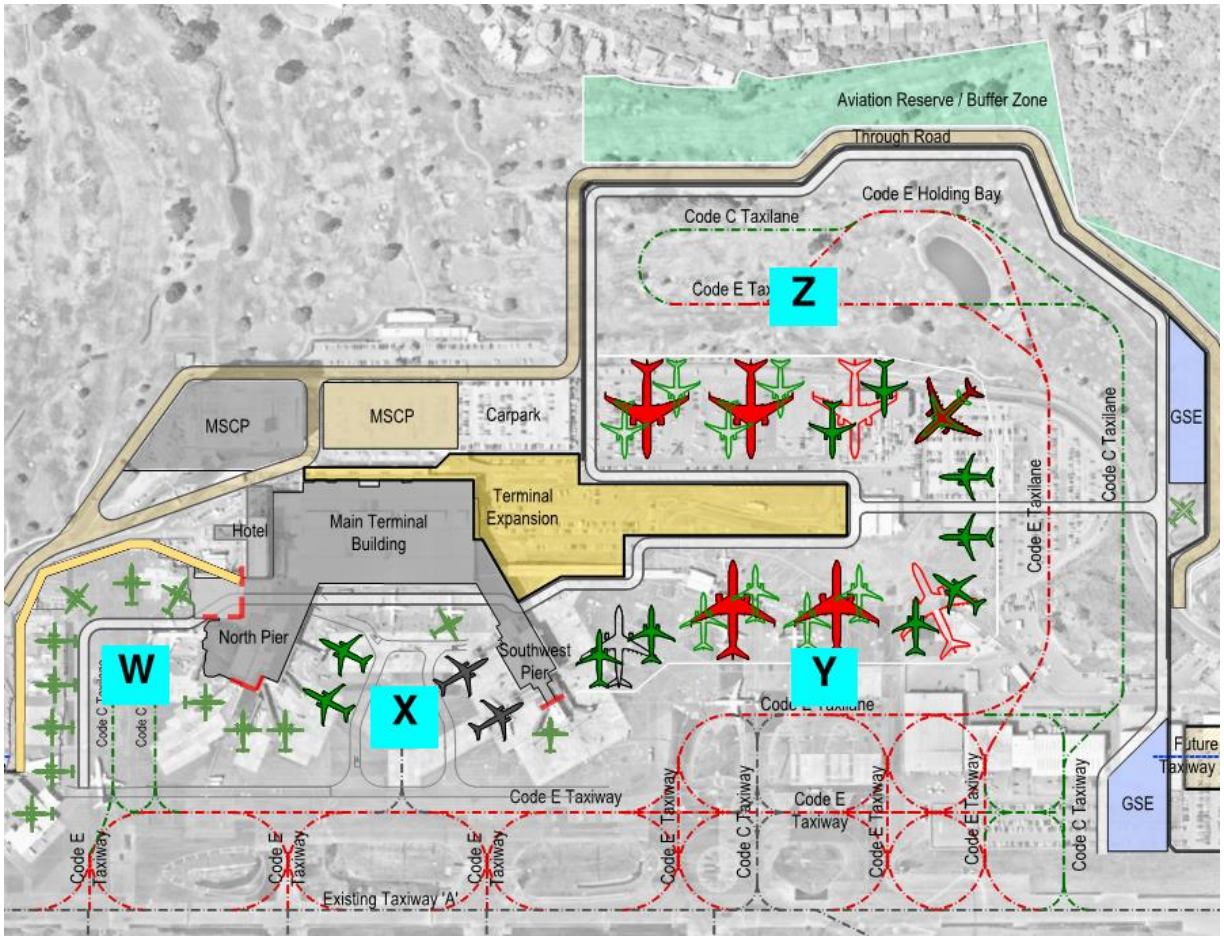
Taxiing

Taxiing aircraft have been included in the calculation of the 2050 and current L_{dn} noise contours. Taxiing was not included in the District Plan noise contours. Despite this taxiing is included in the definition of aircraft operations and is required to comply with the noise limit at the ANB.

For current (FY19) noise contours, taxiing by turbo-prop and jet aircraft are modelled using taxi tracks along the taxiway parallel with the runway.

For the 2050 noise model, the location of taxiways and aircraft stands are based on the 2040 Masterplan concept layout. The taxi tracks in the noise model have been simplified to terminate at four general stand areas W, X, Y and Z as shown in Figure 11.

Figure 11: Consolidated Stand Locations used in Noise Model for Taxi Tracks



The taxiing profiles include a short time (1 minute) with aircraft engines idling during parking or push back from the stand. Four standard aircraft types are used to represent taxiing of turbo-prop, A220, narrow body jets and wide body jets as follows:

Table 7: Distribution of Aircraft Taxiing Across Stand Locations

Aircraft Category	Representative Aircraft for Taxiing	Taxi to Stand Location	Percentage of Taxi Movements
Turbo-Prop	ATR72	W	100%
A220	EMB195	W	50%
		X	50%
Narrow Body Jet	A320-232	X	20%
		Y	40%
		Z	40%
Wide Body Jet	777-200	Y	50%
		Z	50%

Flight Tracks

For the purpose of assessing noise from the proposed East Side Area, jet aircraft have been modelled on straight flight tracks aligned with the extended runway centreline. Turbo-props have been modelled on straight and turning flight tracks based on information available at the time. Aircraft diverging from straight flight tracks in practice does not affect the residential receivers adjacent to the golf course and therefore applying straight flight tracks is reasonable for this assessment.

Aircraft Substitutions and Model Calibration

The InterVISTAS forecast includes modern aircraft types that are not included as standard aircraft in the INM therefore the following aircraft substitutions have been made.

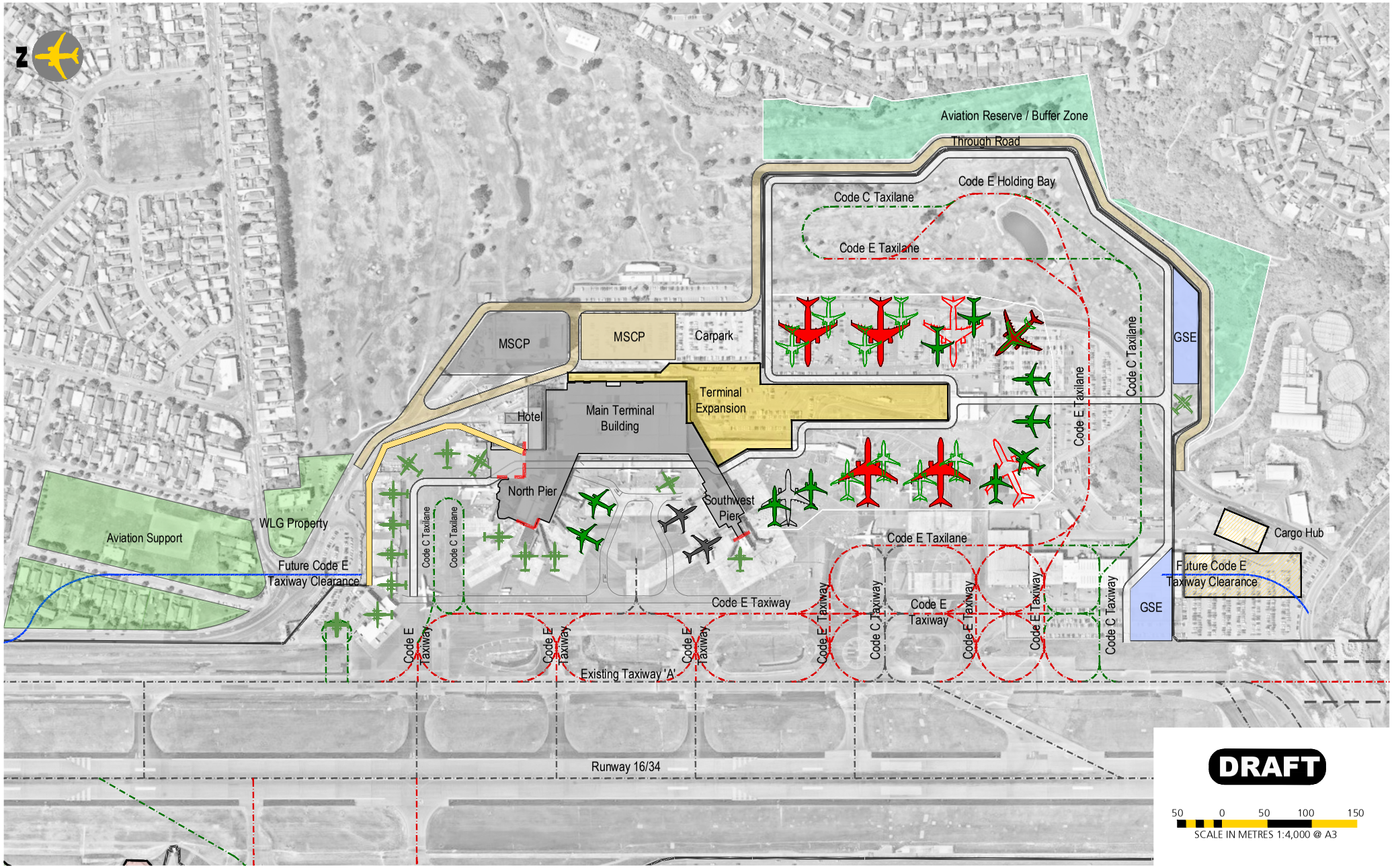
Table 8: Aircraft Substitutions in Noise Model

InterVISTAS Aircraft	INM Aircraft Substitution	Reason for Match
777-200	777-200	INM standard aircraft
A350	777-200 (take-off) A330-343 (landing)	FAA advice
A330	A330-343	INM standard aircraft
738/MAX8	737-800	INM standard aircraft for 738
739/MAX9	737-800	Best available match
A320	A320-232	Best match with local data
A321	A320-232	Best match with local data
ATR72	ATR72 (DO328)	INM standard substitution
A220	EMB195 (Embraer 190-200)	Best available match
PC12	1900D (Beech 1900)	Best available match
C208	CNA208	INM standard aircraft
CV5	CVR580	INM standard aircraft

Terrain Screening

No adjustments for terrain screening have been included at this stage.

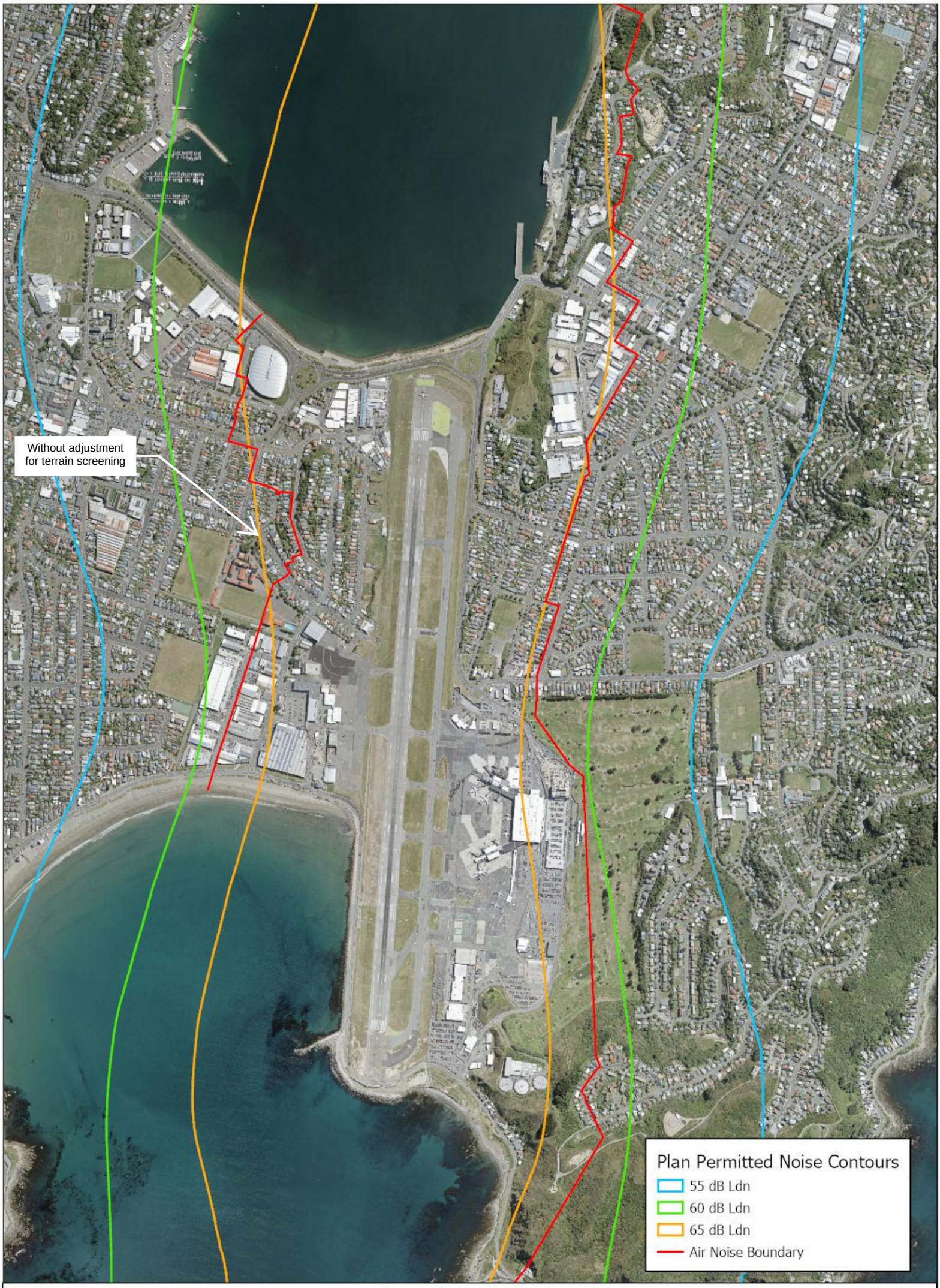
APPENDIX C FIGURES

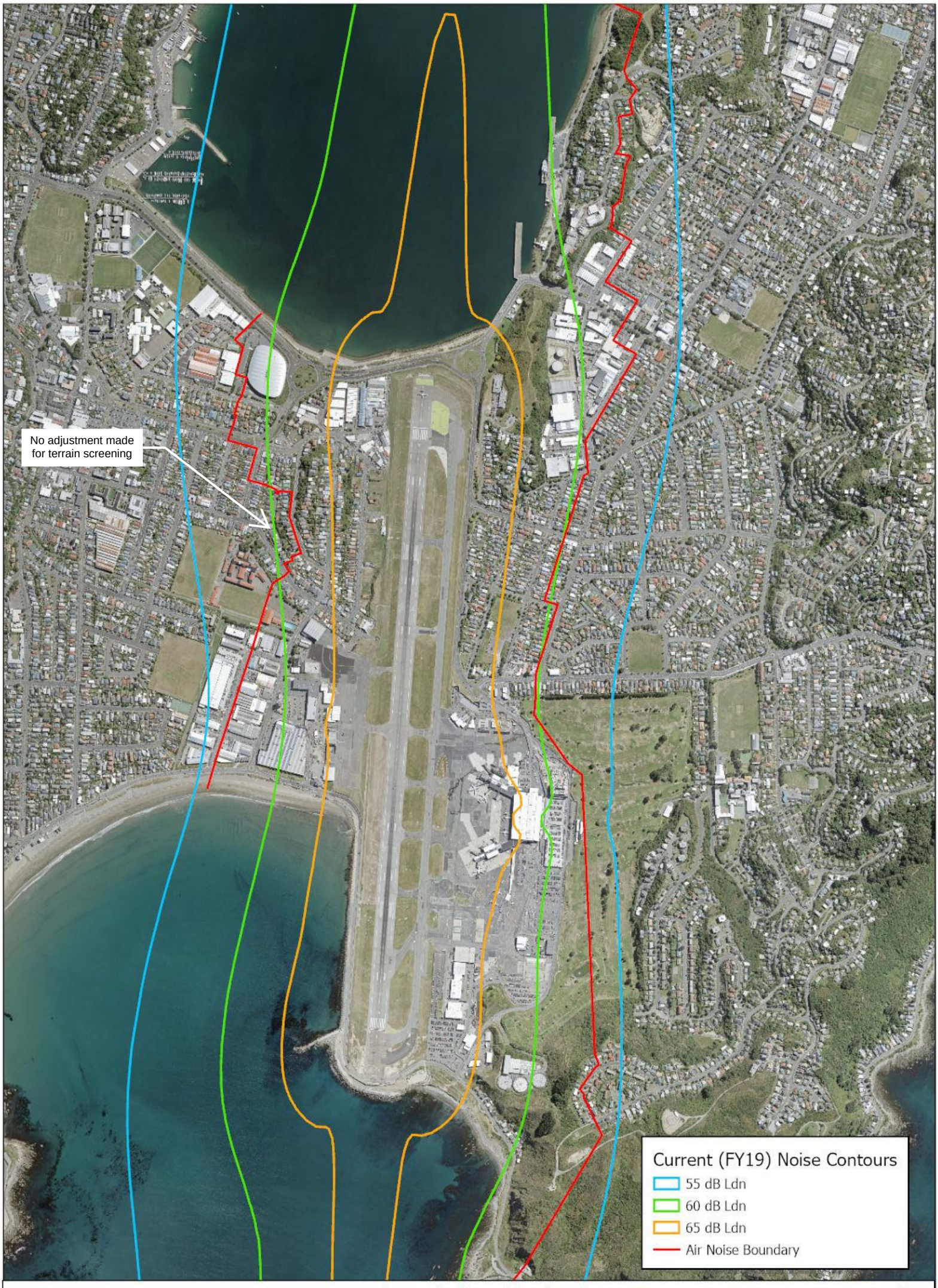


AIRBIZ

WELLINGTON AIRPORT
Draft Master Plan - 12M Passengers

12576 A240S


Without adjustment
for terrain screening
Plan Permitted Noise Contours
55 dB Ldn
60 dB Ldn
65 dB Ldn
Air Noise Boundary
MARSHALL DAY Acoustics
Date: 25/09/2019
Figure C1 Aircraft Operations Noise
Future Operating Scenario the ANB is Based On
0 0.03 0.06 0.12 0.18 0.24
km
N



MARSHALL DAY Acoustics

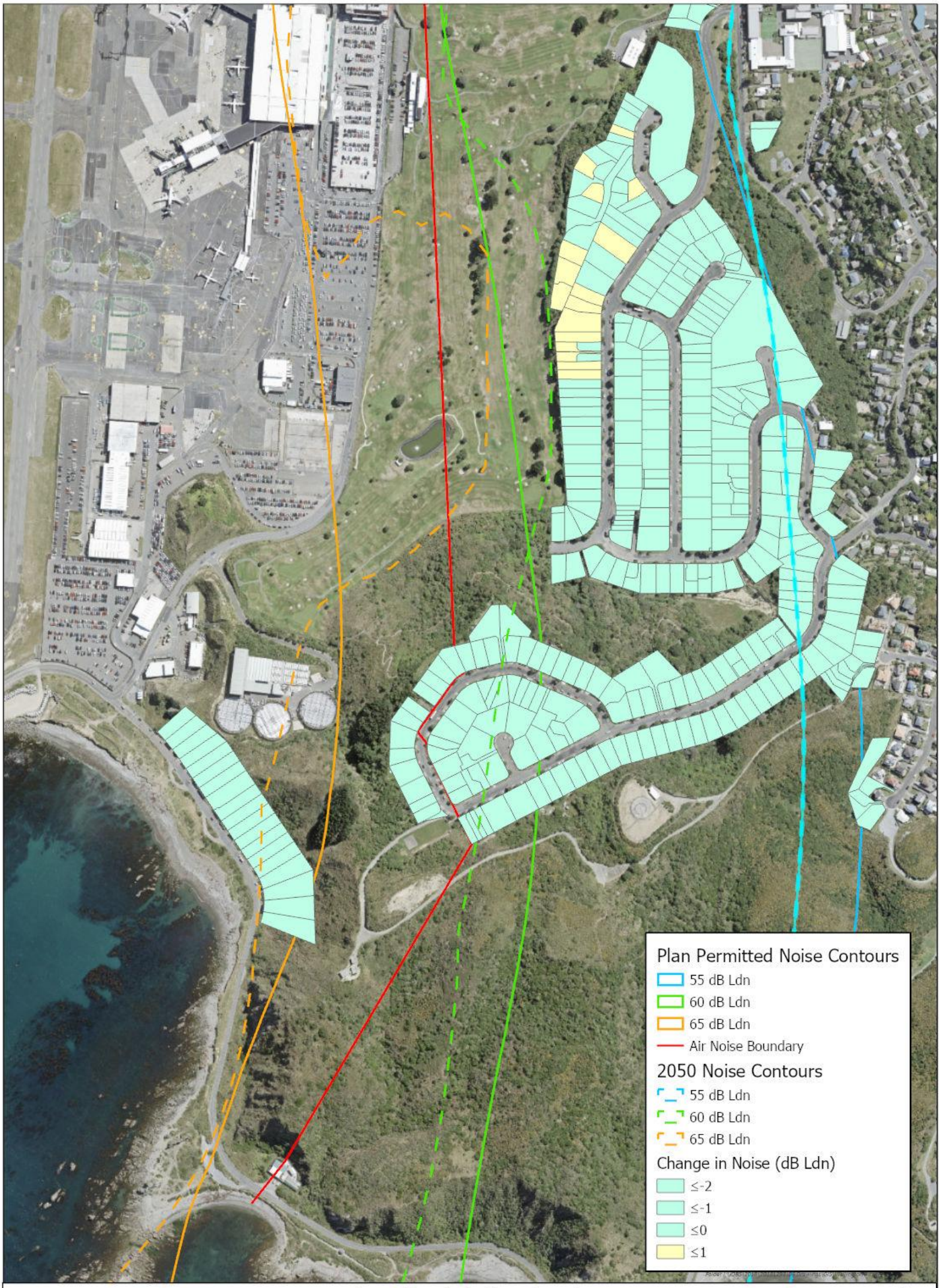
Date: 25/09/2019

Figure C2 Aircraft Operations Noise
Current (FY19)

MARSHALL DAY Acoustics

Date: 25/09/2019

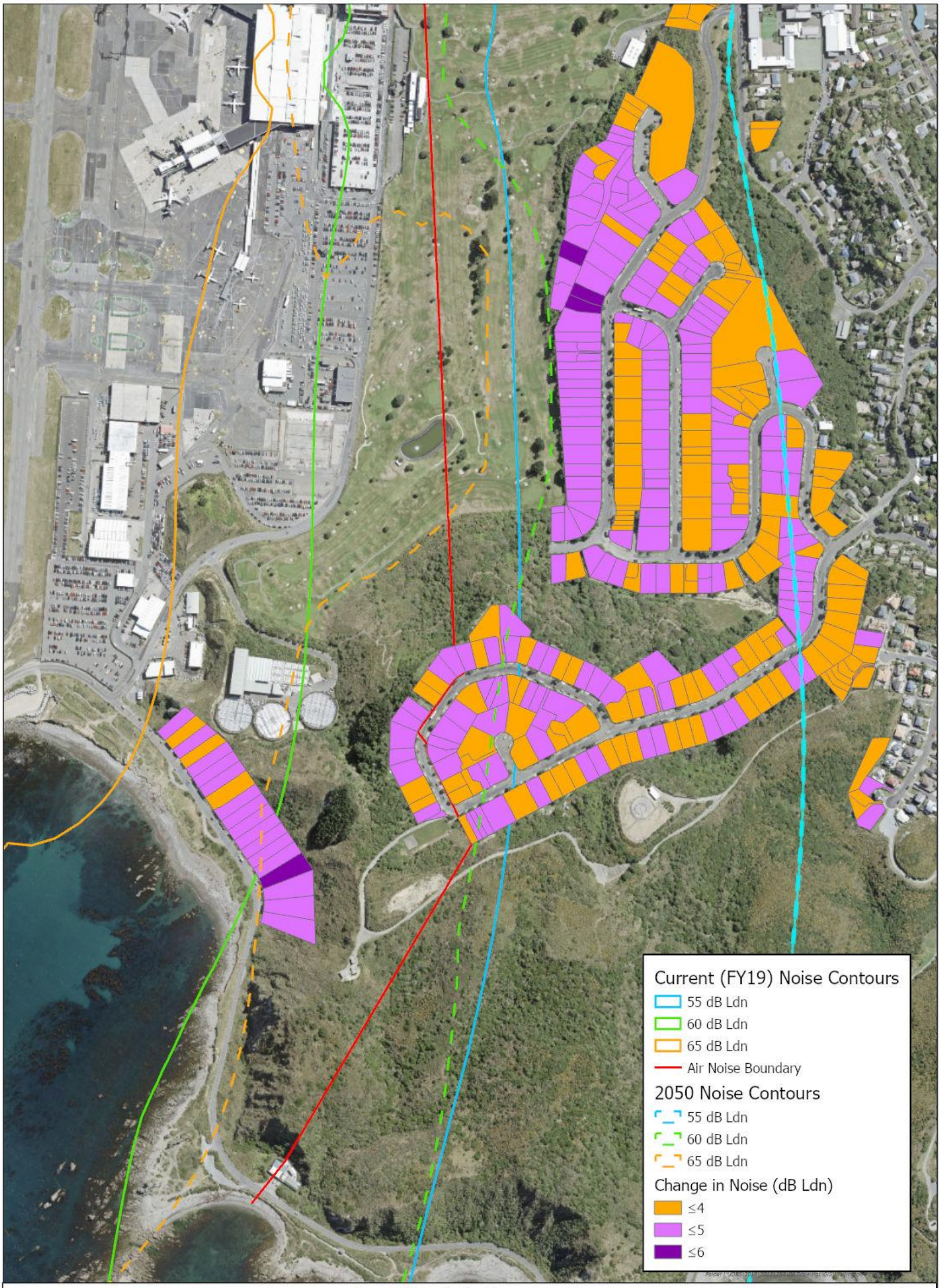
Figure C3 Aircraft Operations Noise
Year 2050



MARSHALL DAY Acoustics

Date: 25/09/2019

Figure C4 Change in Aircraft Operations Noise
2050 vs Plan Permitted Contours



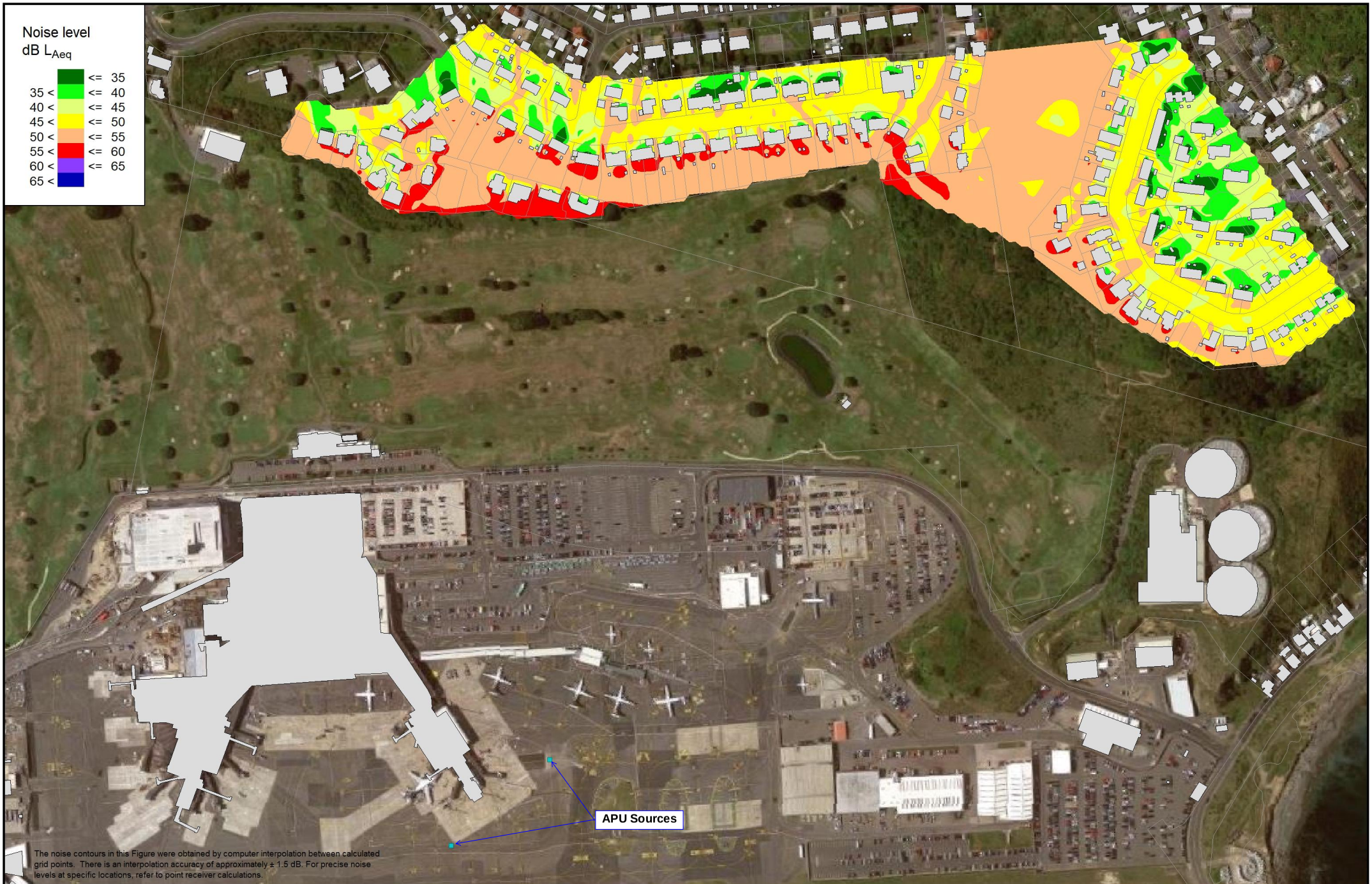
MARSHALL DAY Acoustics

Date: 25/09/2019

Figure C5 Change in Aircraft Operations Noise
2050 vs Current (FY19) Contours

0 0.01 0.03 0.05 0.08 0.1 km

N



MARSHALL DAY Acoustics

Figure C6 Auxiliary Power Units Current Situation

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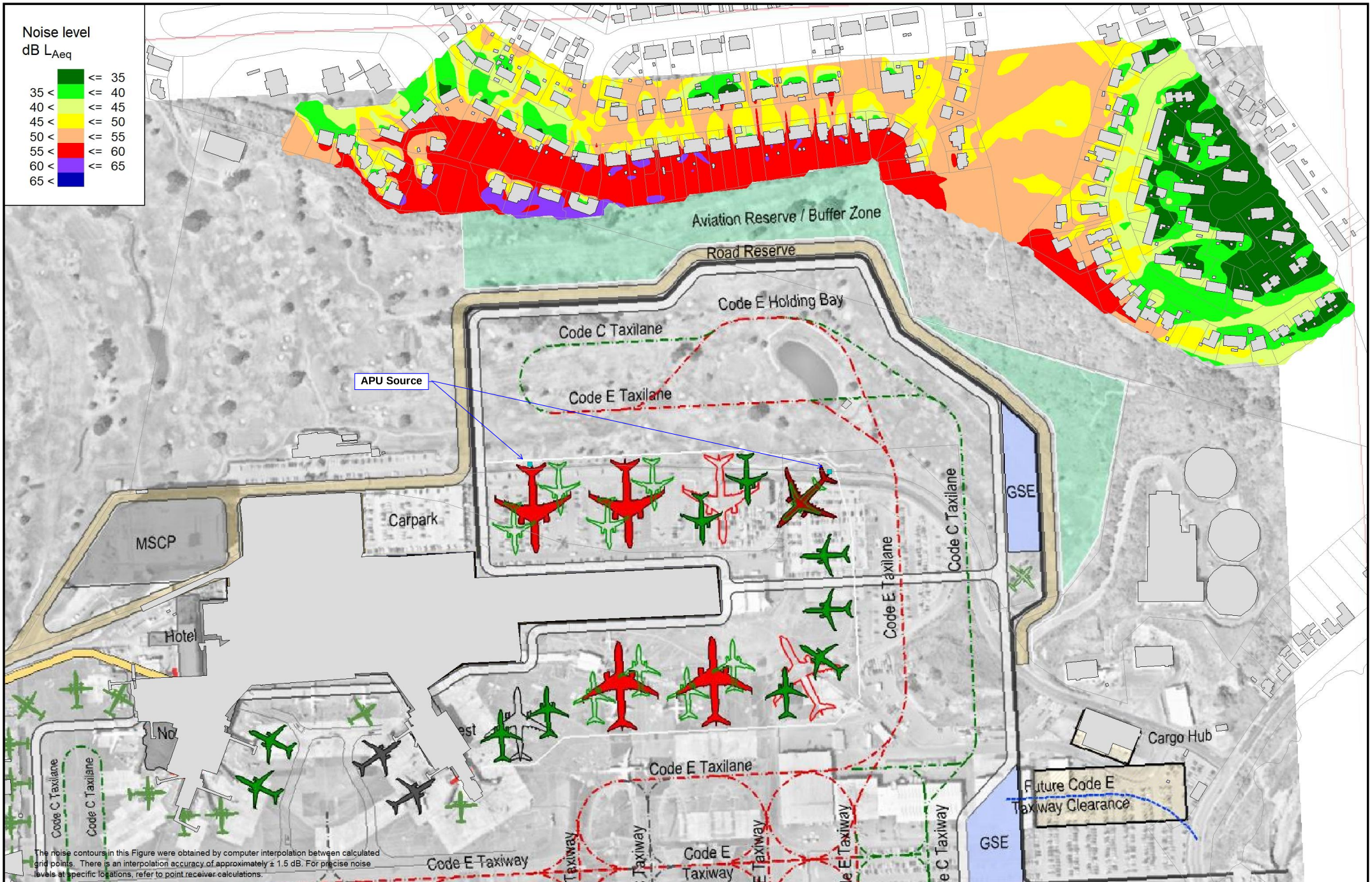
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 27/09/19

Scale 1:3000
0 15 30 60 90 120 m



MARSHALL DAY Acoustics

Figure C7 Auxiliary Power Units Future Situation

Client: WIAL
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 05/09/19

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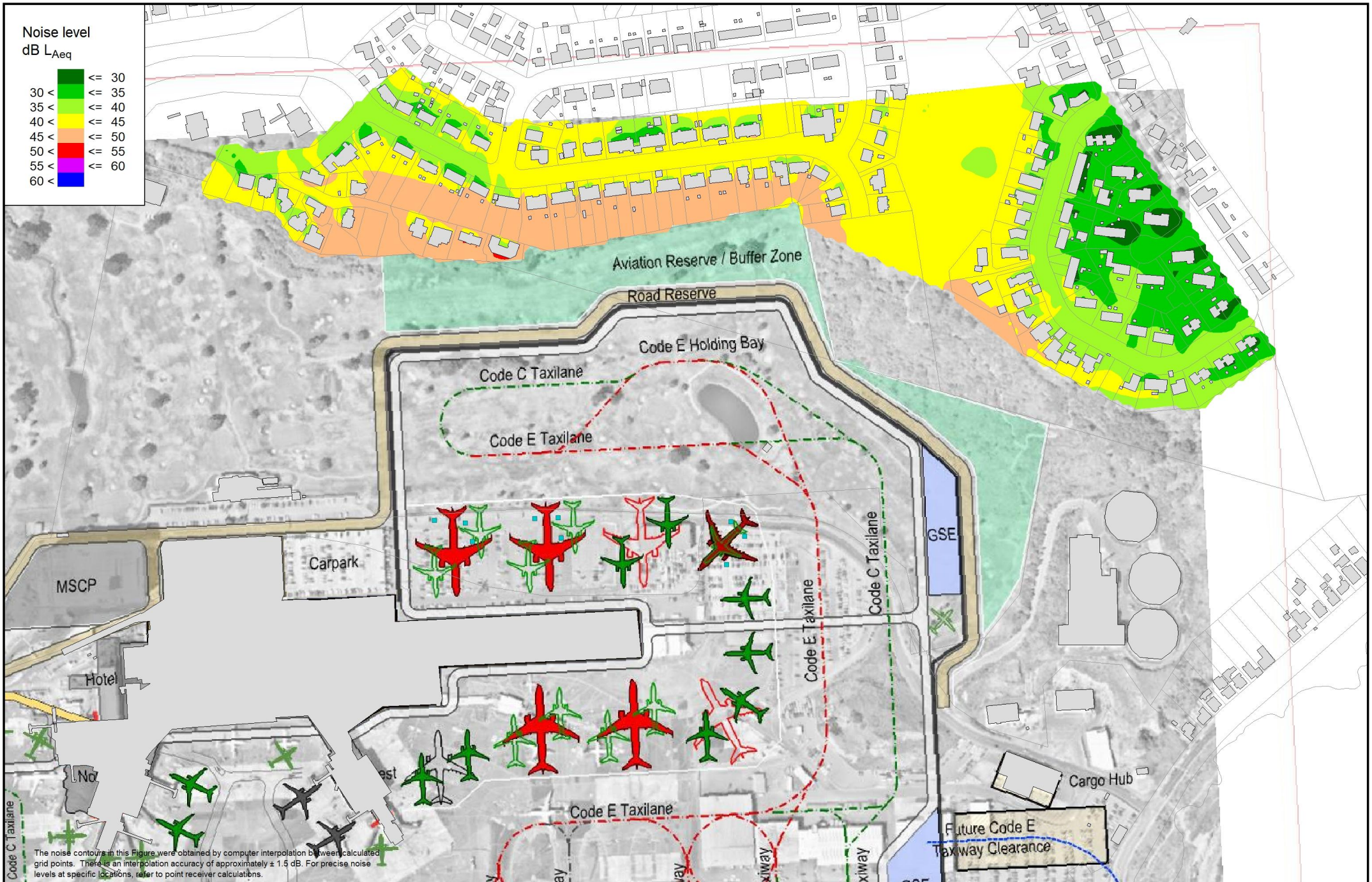
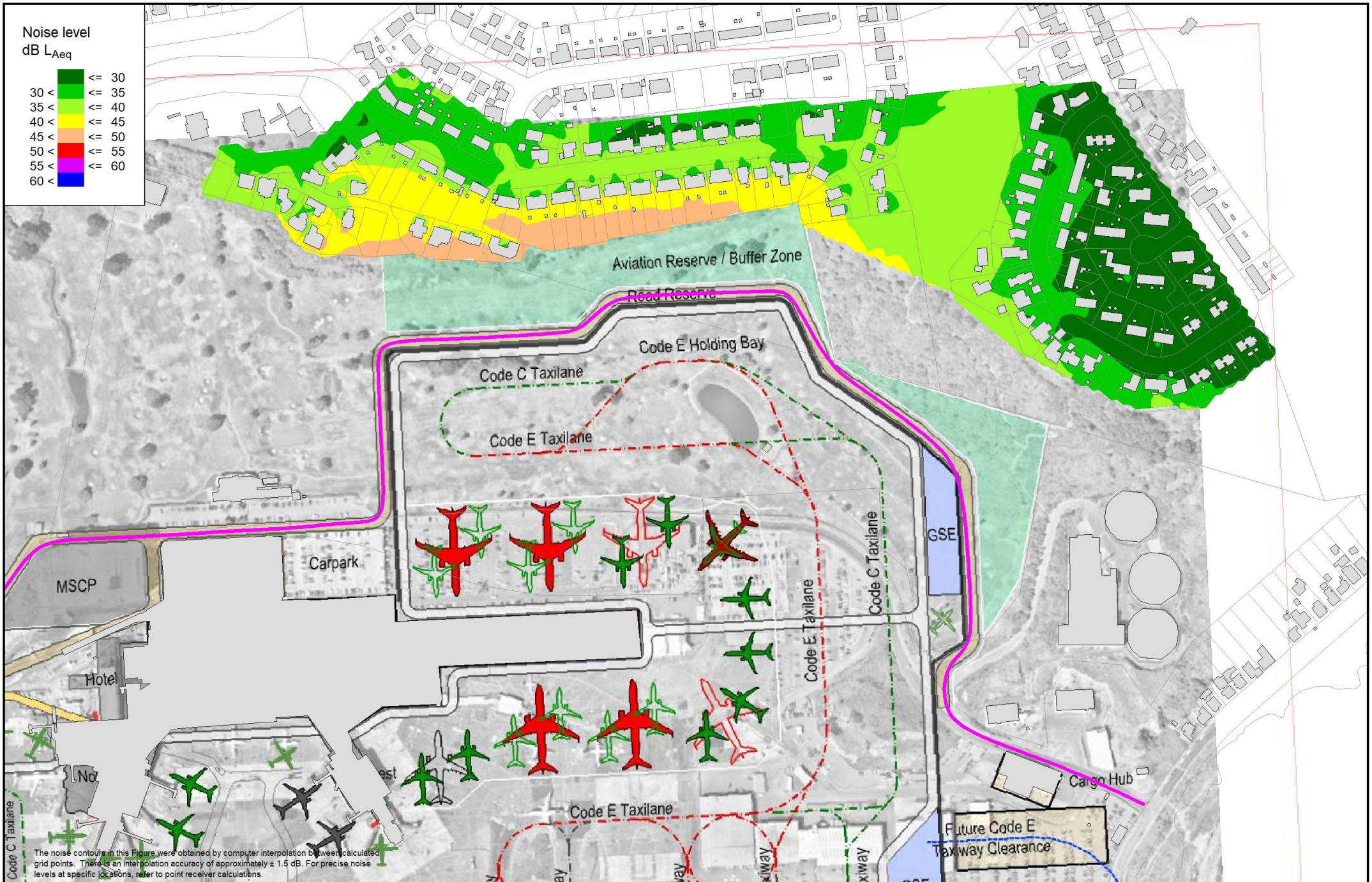


MARSHALL DAY Acoustics

Figure C8 Future Ground Support Equipment Day Time

Client: WIAL
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 27/05/19

Scale 1:3000
0 15 30 60 90 120 m

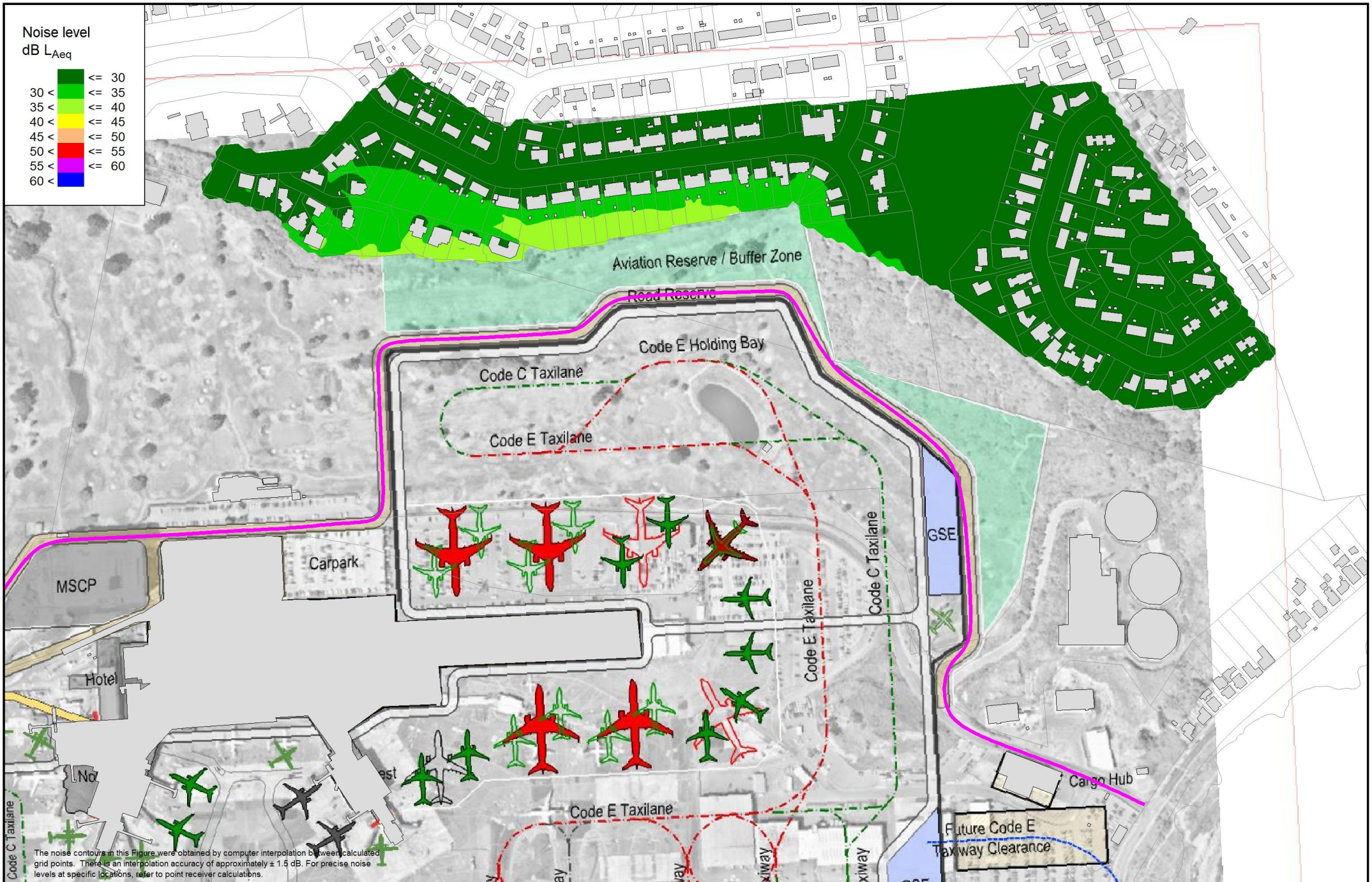


MARSHALL DAY Acoustics

Figure C9 Future Trucks on Road Day Time

Client: WIAL
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 27/05/19

Scale 1:3000
0 15 30 60 90 120 m

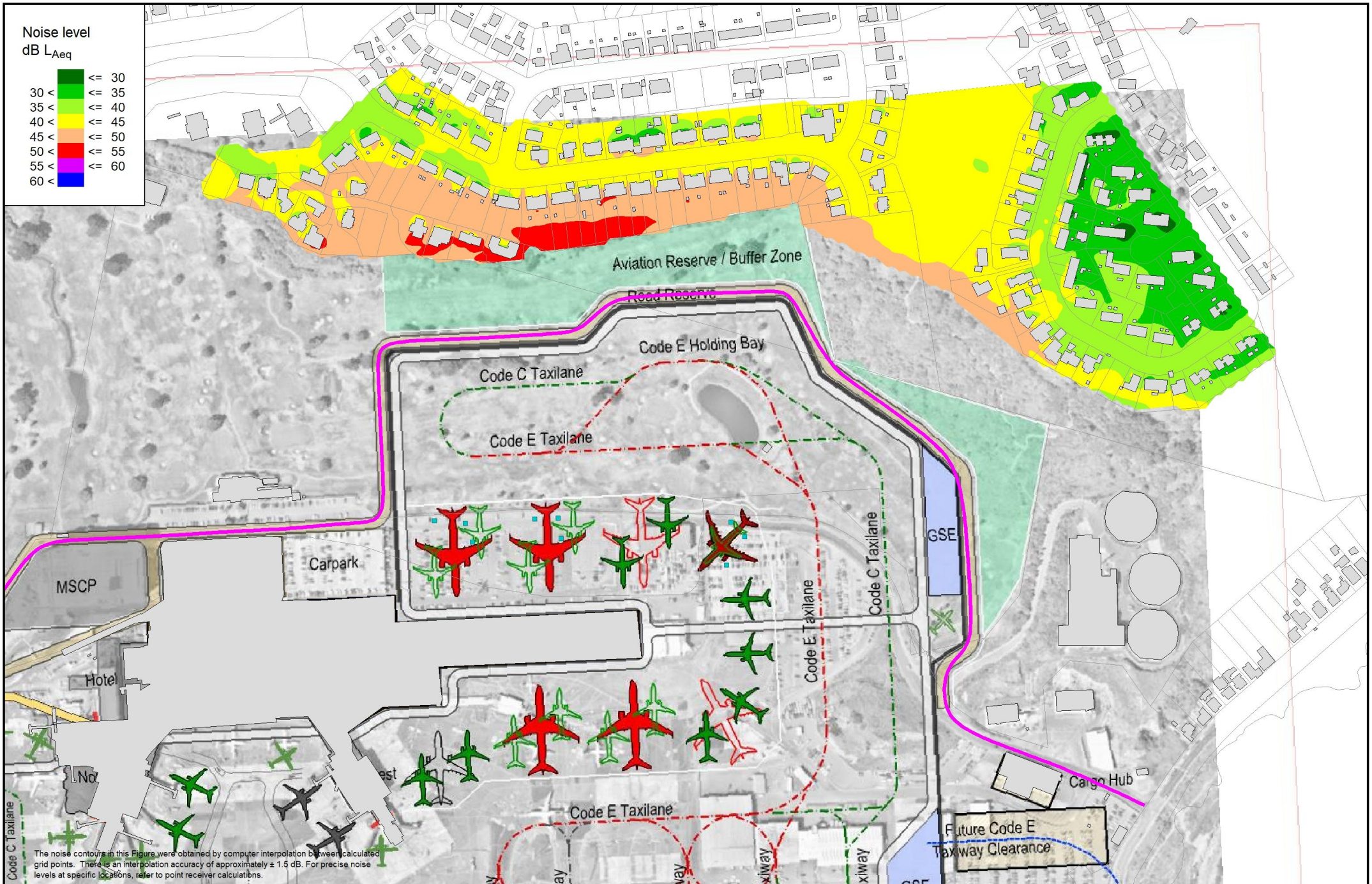


MARSHALL DAY Acoustics

Figure C10 Future Trucks on Road Night Time

Client: WIAL
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 27/05/19

Scale 1:3000
0 15 30 60 90 120 m



MARSHALL DAY Acoustics

Figure C11 Future Ground Support Equipment and Trucks on Road Day Time

Client: WIAL
Path: J:\JOBS\2018\20181298
Prepared by: SW Date: 27/05/19

Scale 1:3000

0 15 30 60 90 120 m

APPENDIX H

Utilities Map

Wellington Maps

Legend

- Reservoirs
- Pump Stations
- Bulk Water Pump Stations

Bulk Water Pipes

- Bulk Water Main
- Bulk Water Private Pipe
- Abandoned Bulk Water Pipe
- Other Bulk Water Pipe
- Trunk Mains
- Pipes
- Pipes
- Private Mains
- Treatment Plants
- Interceptor Mains

Trunk Mains

- Trunk
- Rising
- Overflow
- Pipes
- Private Mains

June 6, 2019

1:9,000

N

0 200 400 Metres

Absolutely Positively **Wellington** City Council
Me Heke Ki Pōneke

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Property boundaries, 20m Contours, road names, rail line, address & title points sourced from Land Information NZ. Assets, contours, water and drainage information shown is approximate and must not be used for detailed engineering design. Other data has been compiled from a variety of sources and its accuracy may vary, but is generally +/- 1m. Crown Copyright reserved.

Property Boundaries Accuracy:
+/-1m in urban areas
+/-30m in rural areas

Data Source:
Census data - Statistics NZ.
Postcodes - NZ Post.