



NORTH SHORE
AIRPORT

MASTER PLAN

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01 WELCOME

“It is not the strongest or the most intelligent who will survive but those who can best manage change.”

- Leon C. Megginson

Here at North Shore Airport (NSA) we are not unique in being surrounded by a rapidly evolving business landscape. As we navigate through the challenges of local area development, technological advancements, population growth, shifting market demands, and global uncertainties, our ability to adapt and respond effectively to change will determine our success and longevity.

Our master plan discusses what we must consider and then outlines a roadmap for our future, focusing on how we can leverage our strengths, embrace innovation, and remain agile in the face of challenges. By fostering a culture of adaptability and continuous improvement, we aim to position ourselves as leaders in our industry, capable of thriving in a dynamic environment.

Our vision extends beyond maintaining our current position; it encompasses anticipating and responding to emerging trends and opportunities, ensuring advantages for all our stakeholders. For members of North Shore Aero Club (NSAC) and our stakeholders, this means top class general aviation airport facilities with ample affordable hangarage and associated benefits. For our passengers, this means enhanced travel experiences through modern, fit for purpose facilities and seamless services. For our business partners, it means fostering strong collaborations and providing a reliable and efficient operational environment. For our employees, it ensures a supportive and progressive workplace where innovation and growth are encouraged. For our community and investors, it translates to sustained economic



growth and responsible environmental stewardship. For our students in resident training organisations, it means access to cutting-edge training programs and facilities that will equip them with the skills and knowledge needed to excel in their aviation careers.

By aligning our strategic goals with the interests of our internal and external stakeholders, we will build a resilient and forward-thinking North Shore Airport. Together, we will face the future with confidence and agility, ensuring that we meet the evolving needs of all those we serve.

Read on to discover how we plan to shape our future.

All the best, from the team at North Shore Airport



NORTH SHORE
AIRPORT



ENHANCE MEMBER EXPERIENCE AND ENGAGEMENT

Develop and maintain state-of-the-art facilities and services tailored to the needs of North Shore Aero Club members.

Foster a community-driven environment where members can connect, share knowledge, and collaborate on aviation initiatives.



PROMOTE EXCELLENCE IN PILOT TRAINING

Invest in cutting-edge facilities and technologies to provide top-tier education for student pilots.

Collaborate with resident training organisations to ensure comprehensive and up-to-date curricula that prepare students for successful aviation careers.



STRENGTHEN BUSINESS PARTNERSHIPS AND COMMUNITY RELATIONS

Build strong, mutually beneficial relationships with business partners, airlines, and aviation-related enterprises.

Engage with the local community through outreach programs, educational initiatives, and events that highlight the airport's role and contributions.



DRIVE ECONOMIC GROWTH AND INNOVATION

Support regional economic development by attracting new businesses and creating job opportunities within the aviation sector.

Foster a culture of innovation by encouraging the adoption of new technologies and practices that enhance airport operations and services.



EXPAND AND MODERNISE AIRPORT INFRASTRUCTURE

Undertake continuous improvement and expansion of airport facilities to support current and future operational needs.

Implement sustainable practices in infrastructure development to minimize environmental impact and promote long-term viability.



ENHANCE PASSENGER AND VISITOR EXPERIENCE

Provide a seamless and enjoyable travel experience through efficient operations and exceptional customer service.

Develop amenities and services that cater to the diverse needs of passengers and visitors, ensuring a welcoming and convenient airport environment.



ENSURE SAFETY AND SECURITY

Prioritise the safety and security of all airport users through rigorous compliance with industry standards and continuous improvement of safety protocols.

Invest in advanced security technologies and training programs to maintain a secure and reliable airport environment.



PROMOTE ENVIRONMENTAL STEWARDSHIP

Implement eco-friendly practices in all aspects of airport operations to reduce our carbon footprint and promote sustainability.

Engage in conservation efforts and initiatives that support environmental preservation and awareness within the aviation community.

PURPOSE OF THE MASTER PLAN

This Master Plan serves as a guide to the strategic, operational, and physical development of North Shore Airport (NSA). It is designed to support the growth and development of the facilities so that future demand can be met in a sustainable, efficient, and economically viable way. Although airports offer significant economic and social benefits, they do come with negative impacts. NSA's aim is to address the balance in favour of a positive outcome for all stakeholders.

Also addressed (and arguably most important) are the significant challenges involved in NSA's enduring presence amidst surrounding urbanisation. The impending urban sprawl in Dairy Flat is driven by numerous policies and strategies, including the Auckland Unitary Plan and Silverdale West Dairy Flat Structure Plan, which signal heavy urbanisation around NSA within the next 30 years and beyond. NSA is largely and immediately surrounded by the urbanisation zone, although not directly contained within it, thereby raising challenges as neighbouring lands evolve and change ownership and use. This reality demands strategic planning for NSA to integrate with its future urban environment while mitigating associated risks and considering the needs of surrounding stakeholders both short and long term. NSA needs to be able to adapt to changes around it, which contrasts with the present neighbouring residents and landowners in the structure planned area, whose properties will statistically and evidentially transfer into developers hands over the next 30 years.

Acknowledging the changing landscape, this masterplan stresses the importance of flexibility, expansion capability, and minimising operational impacts during upgrades. Establishing strong community ties is crucial, ensuring NSA's value is recognised over any adverse effects.

ENVIRONMENTAL VALUES

Air transport, including aircraft and airports are widely recognised as a carbon emitter where it is estimated to produce up to 2% of the total global greenhouse emissions. NSA is committed to becoming carbon neutral by 2050. This will involve participating in a carbon reduction and off-setting scheme. Currently, NSAC is engaged in a voluntary carbon offset programme to neutralise the carbon footprint of our flying operations.

The size of North Shore Airport is well suited to host electric aircraft when the technology becomes commercial in the future. These aircraft are likely to be smaller planes, capable of flying short routes, and therefore ideal for regional air transport and for training. They will also emit less noise compared to standard propulsion systems. This will have the potential to substantially lessen one of the main effects on the surrounding area, being noise. Accordingly, over time the size of the airport noise contours will need to be re-evaluated and potentially reduced.





Methodology and Consultation - This Master Plan has been written in a format aligned to the Airport Master Planning Good Practice Guide 2017, published by the NZ Airports Association. Each major revision of the plan will be made available to all stakeholders, including the wider community, and active consultation will take place with ample opportunity from submissions to be made before any further revision and adoption.



02 OUR AIRPORT

HISTORY & OVERVIEW

The first flights from Dairy Flat Airfield as it was called back then, were in 1957. In those days, it was merely a grass paddock with a runway mown into it. As the ground became sodden in winter, operations relocated to Ardmore during those wet winter months. The first major improvement came with an upgrade to a limestone runway, allowing operations to continue for many more months of the year. The runway was in turn upgraded to asphalt to provide all weather, all season capability. In 1992 the runway was further upgraded to concrete.

Today, North Shore Airport (NSA) is a vibrant regional facility located just 25 minutes north of Auckland CBD by road. It is one of two major general aviation airports in Auckland and is wholly owned and operated by North Shore Aero Club Incorporated (NSAC).



1980's - the rolled limestone taxiway to the southern hangars



1960's - Excavations for main runway 03/21, looking to south-west, courtesy The Auckland Star 19 June 1965



1970's - the first C152s, ZK-NSA and ZK-NSB outside the 'old' clubhouse - I. Prince Collection





1980's - the fuel pumps late 1980's (surrounding area fully concreted)

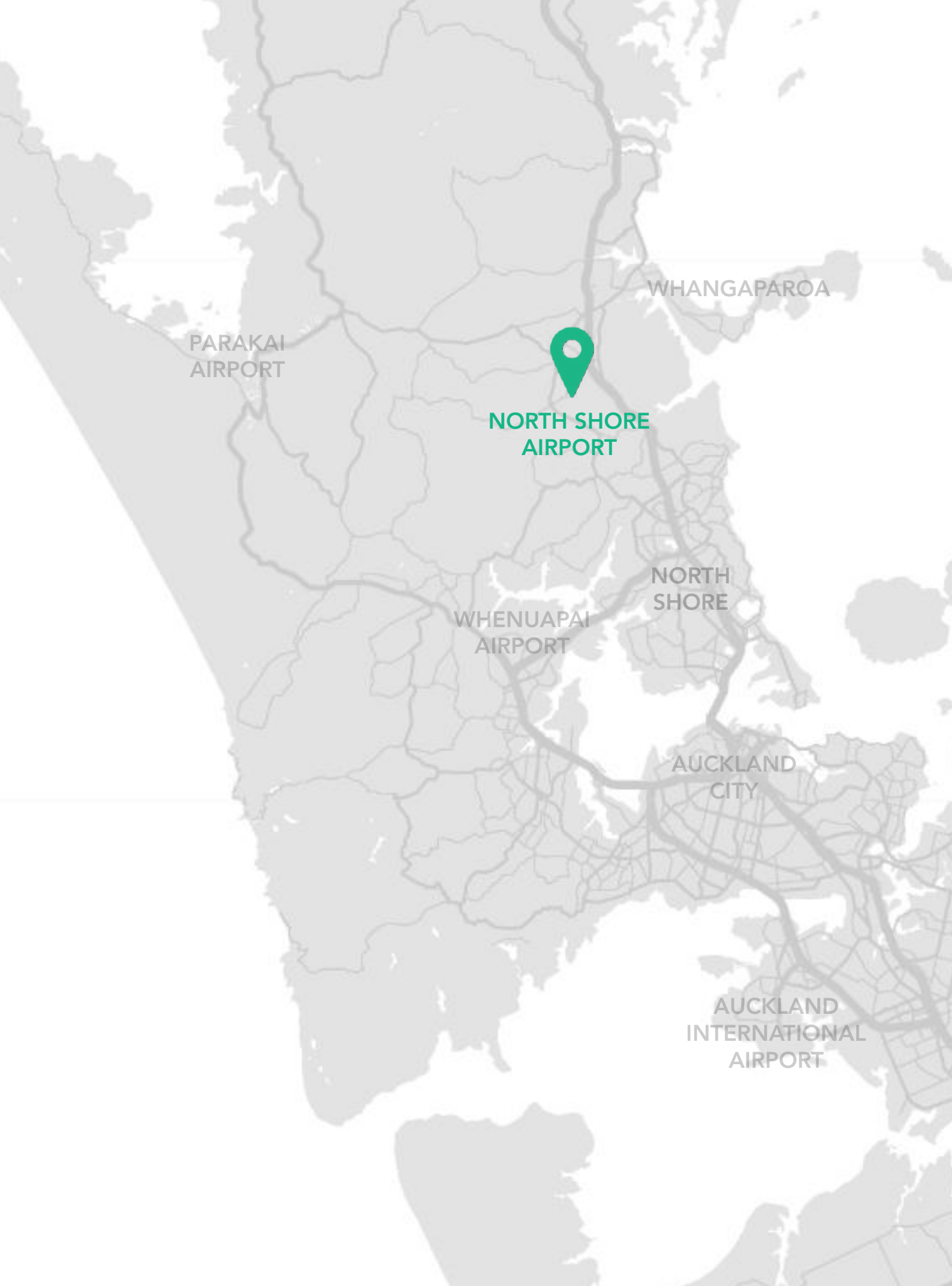


1990's - New concrete runway nearing completion

The predominant activity (approx. 65%) is flight training but NSA also caters to a wide range of other aviation and non-flight activities including scheduled commercial flights, charter flights, tertiary education, emergency medical services, law enforcement, military support, private aviation, engineering facilities, freight distribution, manufacturing and administration.

While the airport was originally established as a facility for the club to operate its aircraft from, it has grown significantly since its inception over than 60 years ago. As of 2024 there are approximately 600 aero club members, 200 resident aircraft, over 100 commercial and private tenants, in excess of 250 students enrolled at the various training organisations, numerous businesses operating accordingly and scores of associated jobs.

NSA is a vital piece of infrastructure providing links to the rest of New Zealand from a strategic location close to State Highway 1 in the northern part of the Auckland metropolitan area. This bolsters trade, tourism, and economic integration across the region. This underscores NSA's essential function in driving forward the economic prosperity and connectivity of Auckland and its surroundings.



PARAKAI
AIRPORT

WHANGAPAROA

NORTH SHORE
AIRPORT

WHENUAPAI
AIRPORT

NORTH
SHORE

AUCKLAND
CITY

AUCKLAND
INTERNATIONAL
AIRPORT



SITE DESCRIPTION

Auckland is currently served by five airports of note. These are Auckland International Airport, Ardmore Airport, Whenuapai, West Auckland Airport Parakai and NSA. NSA is the only commercial and general aviation airport situated to the north of Auckland, servicing one third of the Auckland population.

NSA is located adjacent to the Northern Motorway, just 25 minutes north of Auckland CBD. It can be reached in 4 minutes by road from the Northern Motorway's Silverdale interchange, allowing direct transport links to the Hibiscus Coast, the North Shore, and western suburbs north of Auckland Harbour Bridge.

NSA is built on a large, relatively flat area east of Dairy Flat village. The airport sits between approximately 60m and 70m above sea level and has a 690m of frontage on Postman Road.

There are two operational runways:

- 03/21 – concrete (791m long, by 9m wide), grass (791m long, by 60m wide)
- 09/27 – gravel (560m long, by 9m wide)

Various businesses occupy the buildings and hangars in the commercial north-west corner of the airport. The terminal, located on the west side of the airport, has direct access to Postman Road with approximately 50 parking spaces merely a 150 meter walk away and an extensive aircraft apron area between the terminal and runway. The south-east contains exclusively private hangars. These generally have individual aprons and are accessed by dedicated taxiways from Runway 03/21 and Runway 09/27.

SURROUNDING AREA

The surrounding area is transforming from typically pastoral land and lifestyle blocks to light industrial. The exception is the Aeropark to the east, which comprises a large lot residential subdivision with parking for private aircraft and access via taxiways to North Shore Airport.

Beyond the Aeropark lies the BP motorway service centre and the Northern Motorway (SH1). Further afield to the northeast, the East Coast Bays Road ridgeline extends to 115m above mean sea level. This ridgeline provides a natural topographic constraint for aircraft take offs to, and landings from, the north-east and therefore is a limiting factor in expansion options for NSA.

Extensive development of land for residential, business and industrial use occurs to the north within the Orewa, Silverdale, Millwater, Milldale and Wainui areas.

All immediately adjacent and surrounding land (except for the aeropark) is earmarked for future urban business and light industrial and is to be discussed shortly.



ARDMORE



Airport runways shown on greyscale map



Satellite imagery

POPULATION GROWTH

Auckland Council are planning to accommodate around 1 million extra people in Auckland by 2040. One of the largest rural to urban developments ratified by Auckland Council is occurring in the Dairy Flat region and the population within a reasonable commute to the NSA is expected to grow by approximately 400,000 in the next 20 years.

Statistics NZ has shown a population growth rate 30% faster than the NZ average in the northern Auckland electorates in the five years between the 2019 and 2023. The 2023 statistics show the population of the Hibiscus Coast as 117,000 which is bigger than all but 6 of New Zealand's cities in its own right. New suburbs in the north comprise areas of Wainui, Millwater, Milldale, Silverdale, Long Bay, Albany, Kumeu, Riverhead, Hobsonville and Red Hills. Areas to be developed include parts of Warkworth, Dairy Flat, and new parts of suburbs listed above.

Intensification of existing residential areas will provide similar population increases to those greenfield areas within the NSA's catchment area. Given the current and projected population increase for the north of Auckland, and drawing parallels to provincial towns, this means an airport comparable to Hamilton could be expected in the North of Auckland in the next 20 years.

The net developable area to be re-zoned for business under the Dairy Flat/Silverdale Structure Plan Business is 350ha (floodplains and roads removed). Of this, 294ha is identified for light industry, with 56ha for heavy industry. This amount of land is likely to provide for approximately 18,000 jobs.

As the population of Rodney and North Shore continues to increase the demand for the activities the airport facilitates will increase proportionately. The airport's economic importance will increase, as will its value to the community.

NSA's locational advantage means the population north of the central city can access it far quicker than Auckland International Airport. Currently vehicle commuting times from Orewa to Auckland International Airport range between 45–110 minutes by car, or more depending on the time of day. The journey to NSA is around 10 minutes from Orewa and 25 minutes from the Auckland CBD.

Any population increases in the vicinity of the airport can however, adversely affect its operation. This is widely recognised throughout the world, as detailed by the Australian National Airports Safeguarding Framework.

To be of continued value to the community and the future population of Auckland, the growth of the surrounding area needs to be managed according to such guidelines, with future-proofing of NSA a must.

AUCKLAND'S NORTH SHORE IS GROWING



30% FASTER
THAN THE REST OF
NEW ZEALAND

Data taken by statistics New Zealand in the 5 years from 2019 to 2023

SURROUNDING LAND USE & PLANNED CHANGES

Complicating the Master Planning of NSA are the impending changes of the surrounding land use. At its highest level, the inevitable urban sprawl of Auckland, as evidenced by all other growing cities around the world, will in time, begin to bring intensified urbanisation to the surrounding areas of NSA. The land use and environmental outlook for Dairy Flat is influenced by a comprehensive array of factors, policies, and strategies. These encompass planning frameworks, regulatory controls, and future development visions set forth by local and regional authorities, including but not limited to:



Auckland Unitary Plan (AUP): As the primary planning document that sets out Auckland's approach to managing land use and environmental issues, the AUP dictates zoning regulations, land use permissions, and environmental protections. It determines where and how development can occur, balancing growth with sustainability and heritage preservation. The AUP is the key driver in the earmarking of the land immediately surrounding NSA as future urban.



Future Urban Land Supply Strategy (FULSS): This strategy outlined the sequencing of land for future urban development, ensuring that growth is well-planned and serviced by necessary infrastructure. For areas like Dairy Flat, the FULSS dictated the initial timing and extent to which land is rezoned for urban purposes, influencing both the pace and nature of development.



Silverdale West Dairy Flat Structure Plan (SWDFSP): The primary objective of the SWDFSP is to guide the transformation of the area from its existing uses to a well-planned urban environment that supports residential, commercial, and industrial development. The objectives typically focus on sustainable development practices, enhancing community well-being, providing for economic opportunities, and protecting the natural environment.



Future Development Strategy (FDS): Auckland Council's FDS provides a long-term vision for growth and development in Auckland, identifying where housing, businesses, and infrastructure should be located to support a quality urban environment. It focuses on creating a compact, efficient, and resilient city, which will shape development patterns in Dairy Flat, especially in relation to housing and industrial growth.



The Regional Land Transport Plan and the North Auckland - Strategic Transport Network: These define the most appropriate transport responses to support Auckland growth. The Strategic Transport Network plan for the north is administered by the Supporting Growth Alliance, a coalition of Auckland Transport, the NZ Transport Agency and Auckland Council. Future projects for the surrounding area are outlined by the plan at Figure 4. In the future it is expected the growth of the airport will impact on the design of some of these projects.



Although not a comprehensive list, these interconnected and overlapping policies demonstrate the certainty that the land immediately adjacent to NSA will be heavily urbanised over the next 30 years. These changes mean that the existing land use (generally rural living), residence and ownership of properties will change throughout this period until such time as there are no existing use cases remaining. The reality of the situation is evidenced by all development and urbanisation, whether in New Zealand or internationally.

Although bordered on 3 sides by this urbanisation, NSA is excluded from the area impacted. This means NSA will continue to be here, whereas our neighbours will likely not. It is therefore essential that NSA plans its approach to integrating with this new environment and mitigates the risks and challenges associated with it along the way, of which there are many.



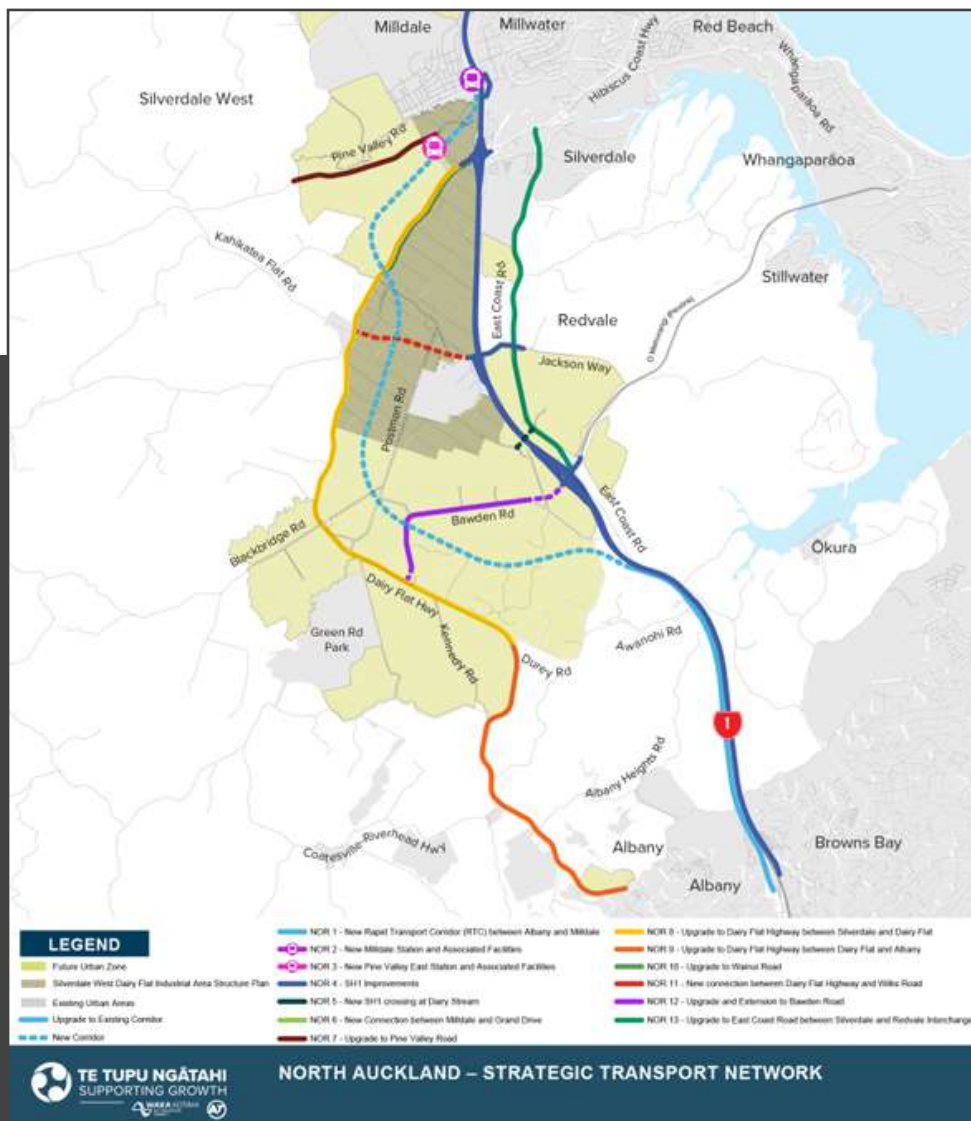
The proposed timing for these changes is 2048 and beyond. However, the impacts of this are being seen already with a number of Notices of Requirement having been placed on neighbouring properties for the protection and development of land transport infrastructure. The predominantly rural lifestyle is giving way to small scale commercial development and industrial yard type use already indicating the beginning of the transition to urban. With this, NSA is seeing a significant increase in resource consent applications being lodged for neighbouring properties.

Although extensively planned through the previously mentioned plans, policies and other such mechanisms, history demonstrates that commercial and market forces will ultimately dictate the timing of development. To that end, NSA needs to anticipate, as evidenced by current

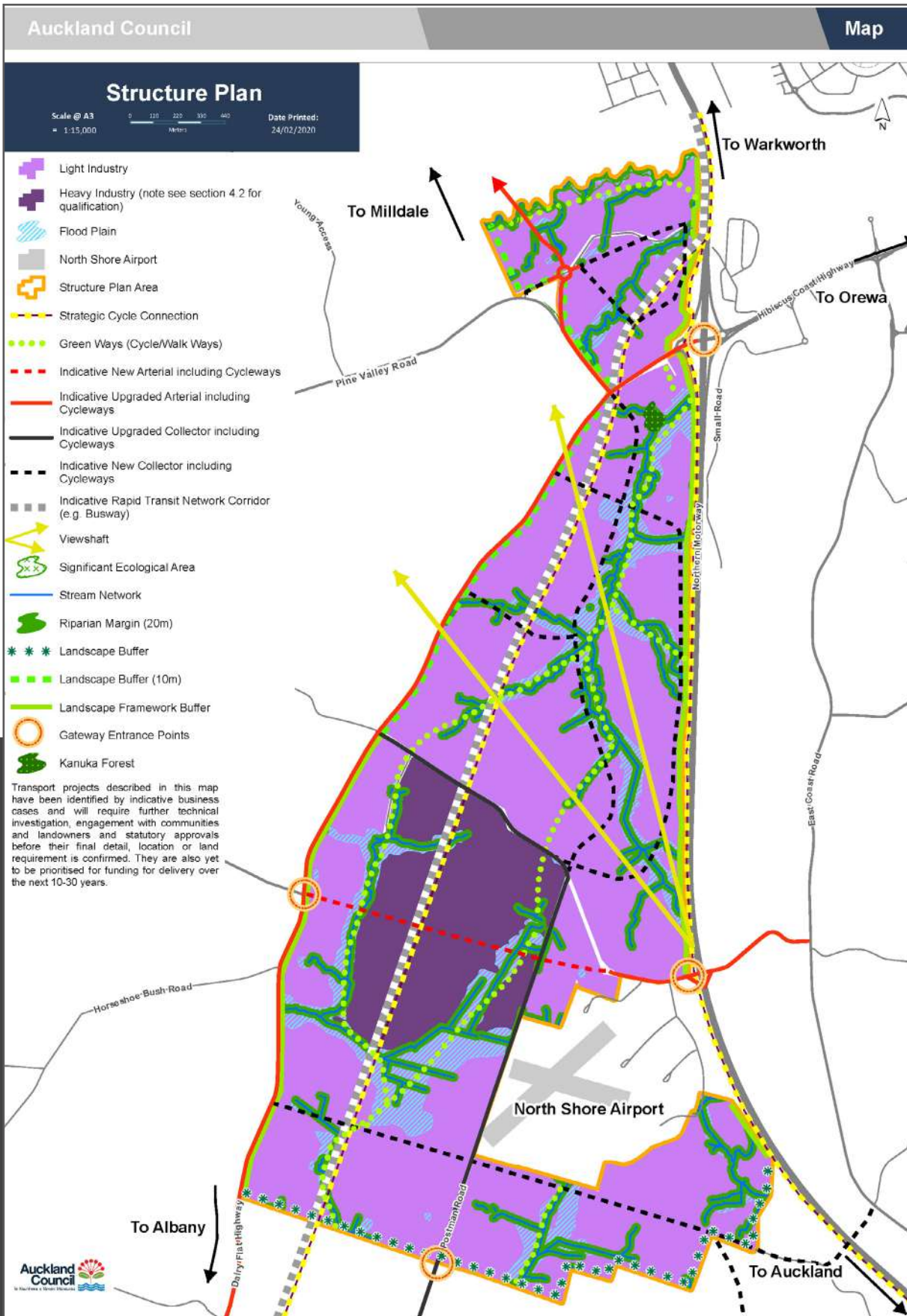
development and resource consent applications, that things could happen a lot sooner.

Changing factors aside, flexibility and provision for expansion is an essential part of airport master planning. While the expansion of some infrastructure means a change in capacity and investment, there can be many operational initiatives and minor investments that progressively enhance capacity of existing infrastructure before the next step of any change is necessary.

In providing for airport upgrades, projects should be designed to minimise the impact on airport operations and the surrounding community, whether present or future. An important part of this is establishing good relationships with the local and wider Auckland community so the value of the airport is visible.



North Auckland - Strategic Transport Network Plan, Supporting Growth



Structure Plan map for the Silverdale West Dairy Flat Industrial Area - Silverdale West Dairy Flat Industrial Area Structure Plan

03 CURRENT USE

EXISTING ACTIVITIES



AERO CLUB ACTIVITY



FLIGHT TRAINING &
TERTIARY EDUCATION



SCHEDULED & CHARTER
FLIGHTS



PRIVATE GENERAL
AVIATION



EMERGENCY MEDICAL
SERVICES & LAW
ENFORCEMENT FLIGHTS



MILITARY FLIGHTS



ENGINEERING FACILITIES



MANUFACTURING FACILITIES



FREIGHT DISTRIBUTION



SUPPORT & ADMINISTRATION SERVICES

NORTH SHORE AERO CLUB

As the parent of NSA, NSAC provides the overall governance of the airport. As the operator of the airport, it is required to cater for the aeronautical needs of its members. In doing this, as well as a flight training school, it provides a range of aircraft available for its members to hire, facilitates social gatherings, flying trips, rallies, and other aviation events. It also runs public open days where the local community can experience the world of flight. NSA also houses members' aircraft via:

- Providing land for lease and building hangars
- Providing leasable and rentable space in existing hangars
- Providing outdoor 'hardstand' parking

The existing leased General Aviation hangar space on the airport is approximately 20,000 m² providing housing for approximately 180 aircraft.

Given the predicted increase in population in the northern Auckland area, membership is expected to continue growing at a steady rate. Accordingly, it is forecast that over the next 20 years, approximately 50 new general aviation hangars will be needed.





FLYING SCHOOLS

NSAC operates a significant flight training operation focused primarily on recreational and private aviation. It also owns the Auckland International Pilot Academy (AIPA), which is focused on commercial pilot training. AIPA is one half of Auckland Pilot Training Group, the largest flight training provider in New Zealand. Also based at NSA is Orbit Helicopters specialising in training private and commercial helicopter pilots.

The flight schools collective activity comprises over 60% of flight movements, equating to over 20,000 movements per annum. The flight schools operate approx. 20 of their aircraft from NSA at any given time with 250+ students engaged in training at some level. There has been unprecedented growth in student numbers over recent years, with the number of movements roughly doubling since 2010.

As Civil Aviation Authority Part 141 certificated organisations and an NZQA accredited private training establishments, these schools have become major players in the New Zealand flight training market, widely recognised as producing the very best standard of pilot.

Operating a modern, well maintained training fleet with a 'no compromises' approach to safety has assisted in developing and maintaining these top tier positions. At NSA, NSAC & AIPA we invest heavily in our instructing staff, constantly helping to upskill them and we are very fortunate to have been able to build a solid platform of experienced and knowledgeable senior staff, a quality unparalleled in comparable organisations.

Overall, the flight training department is going from strength to strength. Countries such as China and India are facing extremely high demand for pilots and the situation grows ever more acute each day. This is driving growth in AIPA particularly.

As the flight training operations continue to grow, so will the demand it places upon NSA. Larger, better maintained and equipped runways mean more movements can be handled without compromising safety, with more instructors, engineers, and administration personnel to support the flight training operation. This will bring economic benefits to the local community.

Given the above, the flying schools currently need additional space to expand their training facilities. This includes new classrooms and educational facilities.





YOUTH DEVELOPMENT, CADETS & YOUNG EAGLES

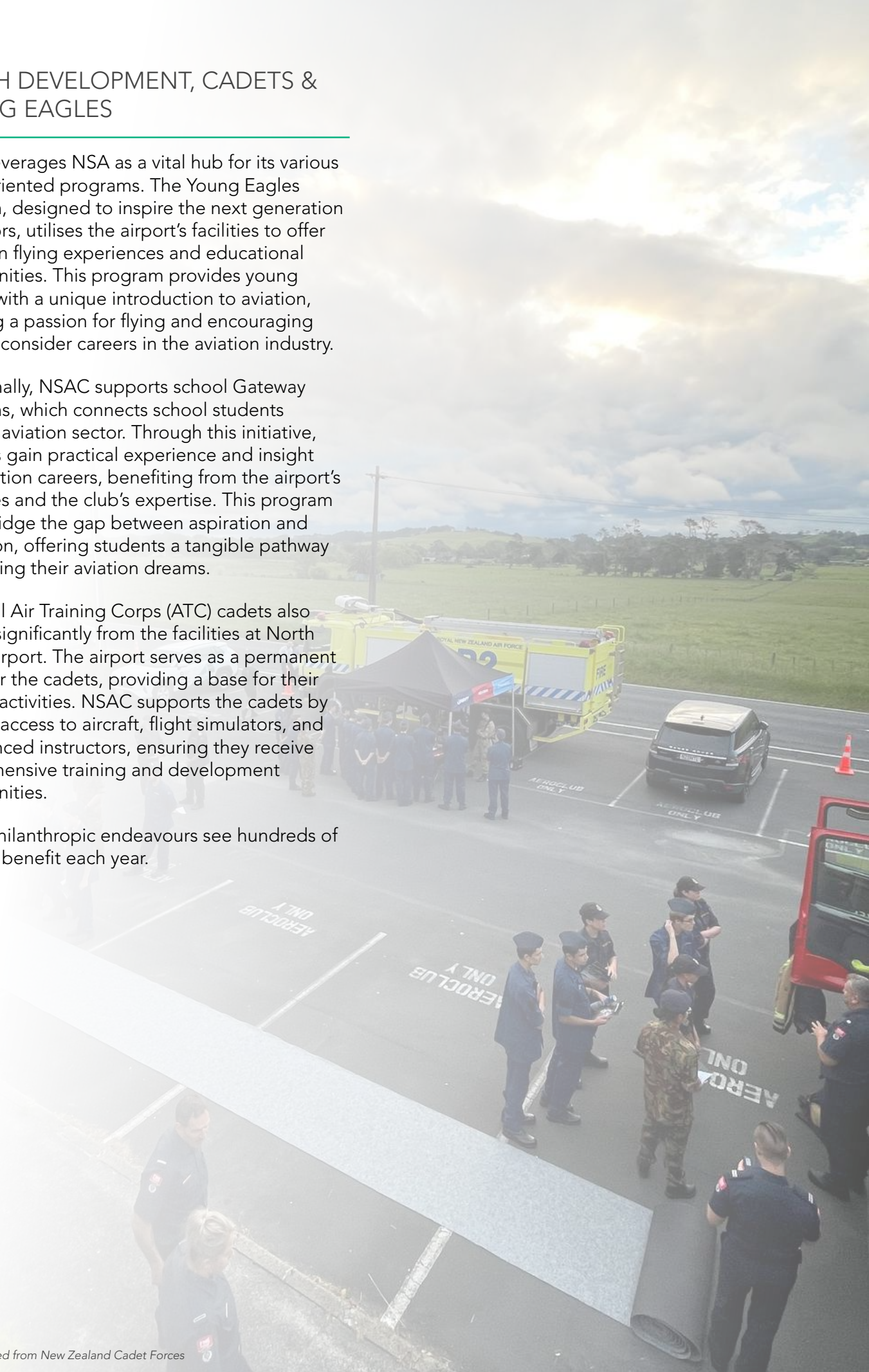
NSAC leverages NSA as a vital hub for its various youth-oriented programs. The Young Eagles program, designed to inspire the next generation of aviators, utilises the airport's facilities to offer hands-on flying experiences and educational opportunities. This program provides young people with a unique introduction to aviation, fostering a passion for flying and encouraging them to consider careers in the aviation industry.

Additionally, NSAC supports school Gateway programs, which connects school students with the aviation sector. Through this initiative, students gain practical experience and insight into aviation careers, benefiting from the airport's resources and the club's expertise. This program helps bridge the gap between aspiration and education, offering students a tangible pathway to pursuing their aviation dreams.

The local Air Training Corps (ATC) cadets also benefit significantly from the facilities at North Shore Airport. The airport serves as a permanent home for the cadets, providing a base for their training activities. NSAC supports the cadets by offering access to aircraft, flight simulators, and experienced instructors, ensuring they receive comprehensive training and development opportunities.

These philanthropic endeavours see hundreds of children benefit each year.

Image sourced from New Zealand Cadet Forces





SCHEDULED & CHARTER SERVICES

Scheduled air operations and air charter services operate to and from North Shore Airport, linking north-Auckland's population with nearby regions including Kerikeri, Whangarei, Great Barrier Island, Waiheke Island, Whitianga, and Tauranga.

North Shore Airport also serves non-resident operators on a commercial basis with flights often landing on charter from other regions. This provides vital and efficient transport links across New Zealand.

Several helicopter companies operate with NSA as their hub including Airlift, North Shore Helicopters, Helicopter Me and Orbit Helicopters.

EMS, EMERGENCY RESPONSE, DEFENCE & LAW ENFORCEMENT SERVICES

Both Auckland Rescue Helicopter Trust (Westpac Rescue) and Northland Emergency Services Trust are reliant on the airport as a critical piece of infrastructure for their operations, including the ability to refuel, up-load or off-load crew, patients or equipment.

NZ Police use the airport often, as it is an ideal location in the north-Auckland area to pick-up, drop-off and refuel.

The Royal New Zealand Air Force uses the airport to assist in pilot training and as an alternate to RNZAF Base Auckland (Whenuapai).

NSA is well-equipped to support emergency response and civil defence situations, providing a reliable base for rapid deployment of emergency personnel and resources. With its strategic location and robust infrastructure, the airport can facilitate quick access to affected areas, ensuring timely delivery of aid and evacuation services. The availability of various facilities and its capacity to accommodate a range of aircraft make North Shore Airport a critical asset in enhancing the region's emergency preparedness and response capabilities.

MAINTENANCE FACILITIES

The Airport has 3 fixed base providers of aircraft maintenance on the site. They are located in the north-west of the airport. These providers are able to service a wide variety of aircraft ranging from the smallest general aviation aircraft to larger air transport aircraft such as the Cessna 208. There is also an extensive amount of helicopter maintenance and servicing conducted for both resident and non-resident operators.

TERMINAL FACILITIES

In 2015 the check in facilities, departure lounge and toilets were refurbished which doubled the customer floor area. The car parking layout has also been improved.

The existing terminal building is large enough to be redeveloped, at relatively low cost, to handle 100 passenger movements at any one time.

ACCESS & PARKING

Car parking is provided for individual tenants at the airport, although it is typically the tenant's responsibility to meet the required number of parks under the Auckland Unitary Plan (AUP).

In terms of passenger parking, it is estimated that 1 parking space is needed for every 500 passenger movements per year.

The sealed car park adjacent to the terminal holds approximately 50 parking spaces, with the road reserve accommodating another 30 parking spaces. This number of parking spaces will be insufficient as the airport grows.

If Auckland Transport upgrades Postman Road in the vicinity of the airport to support growth in the area, the 30 road reserve car parks will be lost.

04 PLANNING CONSIDERATIONS

To develop a meaningful Master Plan for our future, we must understand the tangible and intangible planning and design considerations.

OPPORTUNITIES

Referring back to the population growth and surrounding environmental context discussed earlier, there is a compelling case for the development of further regional air transport services in the north of Auckland.

With Whenuapai Airport dedicated to defence use, North Shore Airport is the only viable option. It is not affected by sea level rise like some other Auckland airports could be, and it is located in one of the few areas of flat land in the north of Auckland. The airport is also in an enviable location adjacent to the northern motorway (SH1) and the proposed rapid transit corridor.

With small extensions and safety improvements of the main runway, larger regional aircraft could be accommodated, with the airport breaking through the 15-seat barrier into regional multi engine aircraft.

Further development as a regional airport would have the benefit of providing relief to large facilities such as Auckland International Airport. These larger airports are expensive, and inconvenient for smaller airlines that use smaller aircraft. The speed and performance differential between bigger jets and smaller aircraft such as the Cessna 208 make operations of smaller aircraft and lower tier airlines into airports like

Auckland inefficient. Larger separation distances are required and as such, the economics, carbon footprint and general efficiency of the operations are negatively affected.

Looking to the matter of integration with the future industrial zoning of land immediately surrounding NSA, commercial activities can be developed further. This includes attracting businesses that can make use of the airport facilities, providing necessary jobs for the north Auckland area. In much the same way that Auckland International Airport has achieved it with their surrounding industrial estate, it is envisaged that tight integration with the local industrial estates be coordinated and achieved.

There is an opportunity to improve aircraft and public safety with regards to the sealed runway width and the location of the runway next to Postman Road. An opportunity to realign Postman Road concurrently with the development of the surrounding area will improve vehicle safety for the increased users of the road, and also aircraft using the airport.



CONSTRAINTS

There is a very high potential for the encroachment of incompatible uses establishing next to the airport and curtailing current operations, unless NSA is active in liaising with Council, adjoining landowners and network utility providers, and commitment remains from all parties to recognise the value of the airport. Future safety improvements and development of the airport may require acquiring neighbouring land which is of high value.

There is a constraint on the amount of land available to accommodate commercial development at the airport. There is a small area available to the north-west of the airport, however this will be insufficient to accommodate the needs of the anticipated future growth, given the forecast population of the catchment area.

The club ownership structure makes it difficult to raise capital for large improvement projects. Some change in this structure may be required to mitigate financial risks for the club members, and to facilitate planning processes.



FORECAST AIRCRAFT MOVEMENTS & GROWTH IMPACT

With an estimated 35,000 movements in 2023 and providing for 3% growth per annum and the addition of further scheduled passenger services, North Shore Airport's aircraft movements are predicted to grow organically to around 58,000 per annum by 2040.

Currently almost 500,000 people within Auckland live closer to North Shore Airport than Auckland International Airport and as mentioned in section 2, the population within a reasonable commute is expected to grow by 400,000 in the next 20 years.

In comparison to the airports of other major cities, Auckland International Airport Ltd (AIAL) handles approximately 21 million passengers per year. AIAL are predicting 40 million passengers per annum by 2040 with their second runway operational.

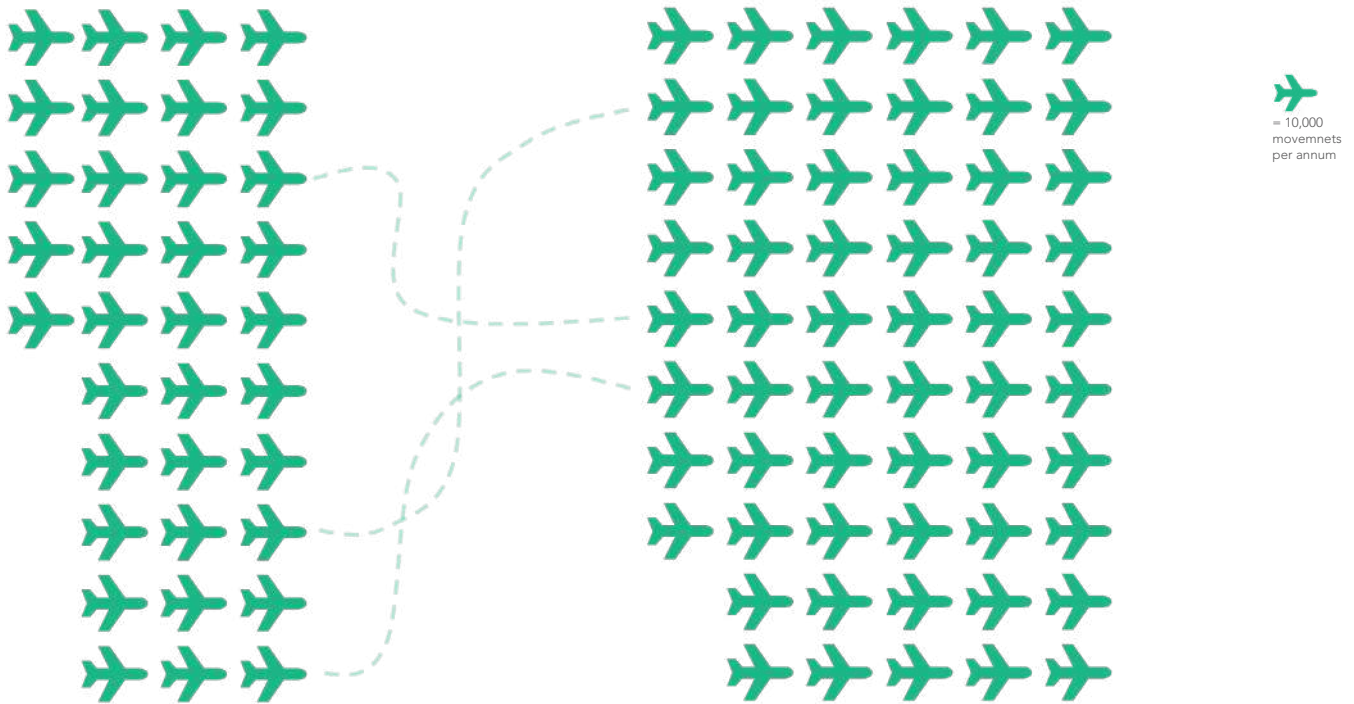
Looking at some other cities around the world:

- Sydney has 1 major Airport with 3 runways collectively handling 42.6 million passengers per annum and is at capacity. A second airport, Western Sydney International is under construction.

- London has 5 major airports with a combined 6 runways collectively handling 153.8 million passengers per annum.
- New York has 3 major airports with a combined 9 runways collectively handling 127 million passengers per annum.

This represents an average of 38.5 million passengers handled per airport and 17.9 million passengers handled per runway. With 40 million passengers per airport and 20 million passengers per runway by 2040, these figures put Auckland in a more heavily restricted position than any of the cities previously mentioned. The absolute need for a regional airport with the capacity to handle passenger volumes will be reaching crisis by the mid to late 2030s and certainly by 2040.

NSA could be the only realistic proposition to relieve this strain. As a consequence of increasing passenger numbers, smaller commercial airline operators serving the smaller regional airports around the country risk being squeezed out of AIAL.



35,000 MOVEMENTS 2023 --- **58,000 MOVEMENTS 2040** ---

AIRCRAFT DESIGN LIMITS FOR FUTURE OPERATIONS

Our planning will consider suitable types of aircraft up to our 'design limit', which will provide more seating capacity. These larger aircraft and are economically feasible operating on most domestic routes that theoretically could be envisaged to and from NSA.

This is not to say that NSA is intending to accommodate these aircraft, merely that the Master Plan will take into account options involving aircraft up to this design limit.

Companies such as Sounds Air are excelling in providing services using aircraft such as Pilatus PC12 type aircraft on regional routes, and other similar operators are using aircraft such as the Cessna C208 Caravan.

All of these aircraft have a Take-off Distance Required (TODR) and Landing Distance Required (LDR) in the region of 650 to 700 meters at Maximum Weight, which is within the current capabilities of NSA to provide.

Jet aircraft (other than potentially small business jets) are not within the design limit. NSA has no intent to expand the design limit of the master plan to include such aircraft.



Barrier Air Cessna C208 Caravan

RUNWAYS, TAXIWAYS & PAVEMENT STRENGTH

Currently Runway 03/21 is a code 1B runway. The runway is less than 800m in length, but it can and does facilitate aircraft with a wingspan of more than 15m (but less than 24m). For a Code 2B runway the runway width must be 23m. For a code 3A/B/C runway the runway width must be 30m.

Currently, NSA limits use of the runway to aircraft with an Equivalent Single Wheel Load (ESWL) of 2,500kg meaning the largest aircraft that can use the runway (if they only have a single wheel per undercarriage leg) is 5,555kg. Aircraft with a larger number of wheels per undercarriage leg are permissible at a higher weight than this and typically use the Aircraft Classification Number (ACN) / Pavement Classification Number (PCN) system. Non-destructive testing has been conducted and shows the runway currently has a PCN between 2 and 4.

To sustain the projected design loads of the latter phases of development in this plan and permit operation of larger aircraft, the runway would need to be significantly stronger.

Current land constraints mean a taxiway the full length of and parallel to Runway 03/21 is not feasible in the immediate future. However, many significant airports such as Hamilton and Queenstown operate without this luxury. A small full-length parallel taxiway could be accommodated within the runway strip which could be used by light, general aviation aircraft when ATOs were not in progress. However, this would require a surface movement control solution at the very least.

The largest aircraft within the design limit suggested in this masterplan require a Code 3C runway.



North Shore Aero Club R2120 Robin

RUNWAY END SAFETY AREA

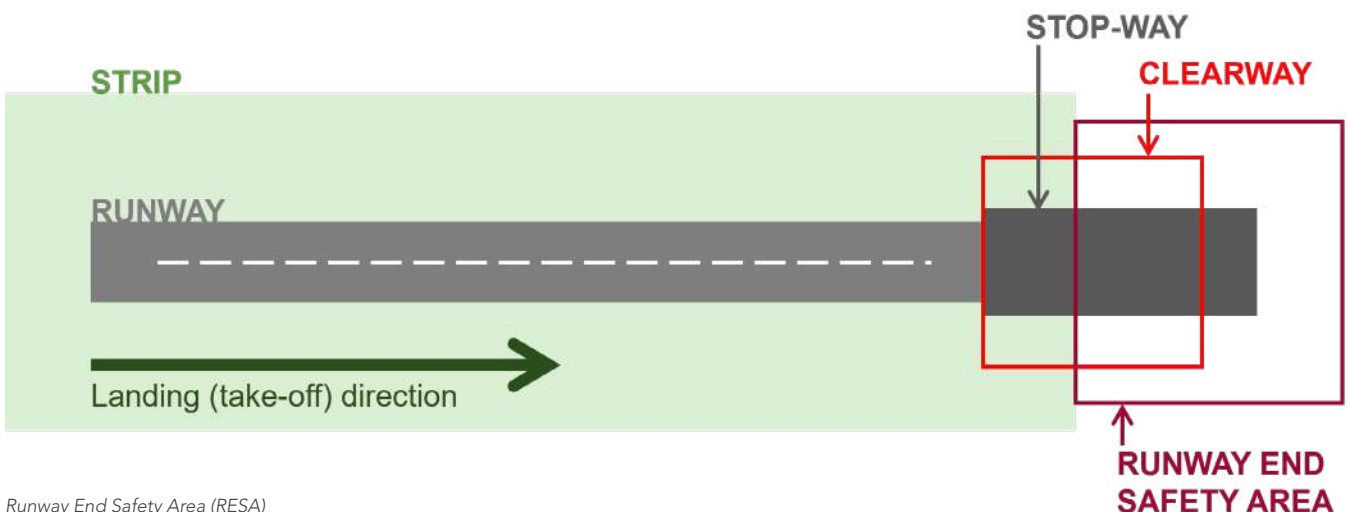
The CAA requires that a Runway End Safety Area (RESA) must extend at least 90m beyond each end of the runway strip and ideally 240m. The width of the RESA must be at least twice the width of the runway (either side of the runway centre line) or the width of the runway strip

At the present time, a 240 meter RESA at the southern end of Runway 03/21 would extend over Postman Road and adjacent land. Given the changing nature of land use in the surrounding area, and the planning for urbanisation taking place, it is imperative a RESA be properly assigned for the airport and such land be safeguarded to reduce the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway.

PUBLIC SAFETY AREA

A Public Safety Area (PSA) is recommended by authorities globally to protect people living and working underneath airport approach and take-off paths. A PSA extends beyond the RESA outwards, and away from the runway. It defines an area within which a person living or working for a period of 1 year has approximately a 1 in 100,000 chance per annum of being fatally injured as a result of an aircraft accident.

The size of the PSA is determined by the size of the airport with consideration given to the number and type of aircraft movements. NSA currently does not have a formal PSA, but with the surrounding urbanisation, it is crucial that a PSA be defined. The Australian National Airports Safeguarding Framework can be used to determine the appropriate land uses within the PSA.



Runway End Safety Area (RESA)



PASSENGER TERMINAL

For any regional air transport growth requiring more than 100 passenger movements to be handled concurrently, the existing terminal building will not be suitable, even if further upgrades were undertaken. Separation of administration areas with passenger handling areas would be required, and increased security systems employed. Baggage handling will be a future requirement when such services are enabled.

A constraint of the terminal is its location in relation to the runway. For any runway upgrade, the terminal will need to be outside the obstacle limitation surfaces. At least a 50m setback to the runway strip width will be required and the current location may not achieve this. Moving the terminal further north would provide adequate separation as outlined later in this document.

Modelling shows that ultimately, an approximate 4,000m² floor area would be required by if passenger numbers reached 650,000 per annum.

Existing parking for the terminal is already inadequate at peak times of year. Modelling shows 1 car parking space is needed for every 50 passenger movements per annum. In the above situation of 650,000 passenger movements, 1,300 car parking spaces would be required in conjunction with public transport access to the airport.

NSA is in consultation with the Supporting Growth Alliance on the development of future public transport options to the airport as development of the business area occurs. These options are dependent on:

- The interchange to SH1 being constructed at Wilks Road
- The rapid transit corridor proposed to the west of the airport (see Figure 4) being constructed

These connections will reduce the number of parks required at the airport when future growth scenarios are realised.

SECURITY REQUIREMENTS

While there are chain mail and post and rail fences around the perimeter of the airport, for certification to a CAA Part 139 standard, the airport several security requirements must be met such as 1.8 metre high fencing.

NAVIGATION SYSTEMS & AIR TRAFFIC CONTROL

North Shore Airport is currently served by a set of single Non-Precision Instrument Approach Procedures to each runway (GNSS).

GNSS procedures are becoming more and more prevalent as conventional ground based navigational aids are slowly retired from service. Although limitations exist around the use of GNSS procedures and the necessity of an airport to have a conventional ground-based navigation aid (in order to be used as a alternate), it is not anticipated that this will be a long-term issue. Accordingly, there will be no need for North Shore Airport to install any form of conventional ground-based navigation aids.

The current GNSS procedures may need to be redesigned to accommodate larger, higher performance aircraft and updated runway threshold locations. This is a standard task and NSA goes through this process every few years.

Air Traffic Control Services are not currently provided at NSA. Air traffic control would be necessary for upgrading to a larger runway (Code 3C, CAR Part 139, Appendix B).

AIRPORT APPROACH SURFACES OR FANS

The runway approach fans rise at a gradient of 1 in 40 and originate 60m beyond the runway threshold (at the edge of the runway strip). The lateral expansion of the fan is 1 in 10. The runway transitional side fan originates from the edge of the runway strip and rises outwards at a 1 in 7 gradient.

To accommodate any increased runway width and transitional side fans, no build zones would need to be established within the existing airport footprint, and possibly beyond. Several buildings may also need to be relocated.

AIRCRAFT NOISE CONTOURS

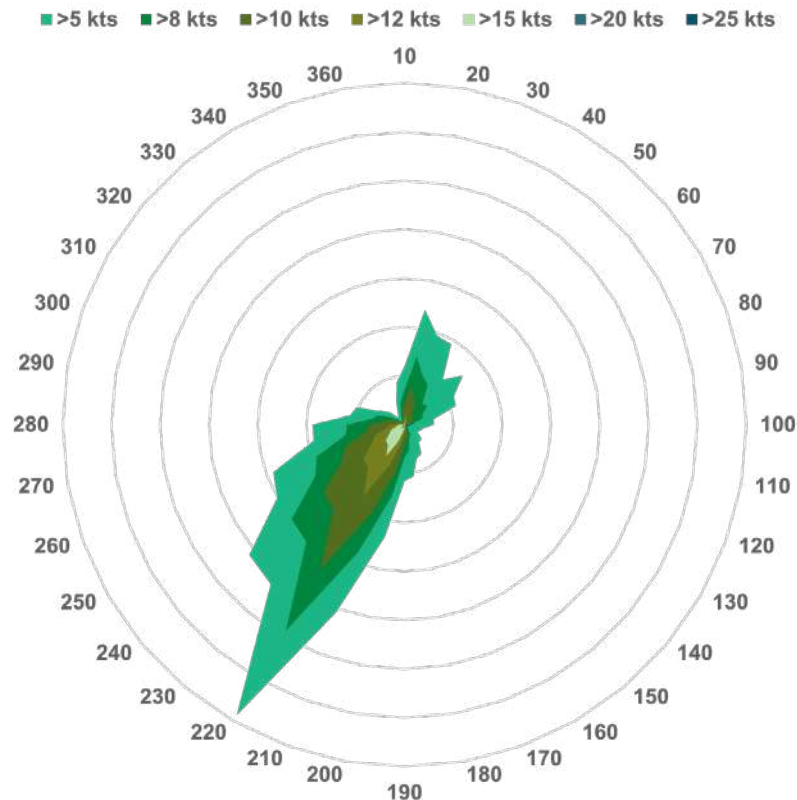
The aircraft noise contours for North Shore Airport are shown at Figure 3. The noise contours signal when to apply rules to limit activities that are sensitive to aircraft noise and when buildings must be built with sound insulation.

A change to runway length or width would necessitate a review of the noise contours. Any change required of the noise contours will require an AUP plan change. It is likely that with new aircraft technology coming into production, future noise contours for North Shore Airport may be somewhat different than today, as testing shows these future aircraft are significantly quieter.

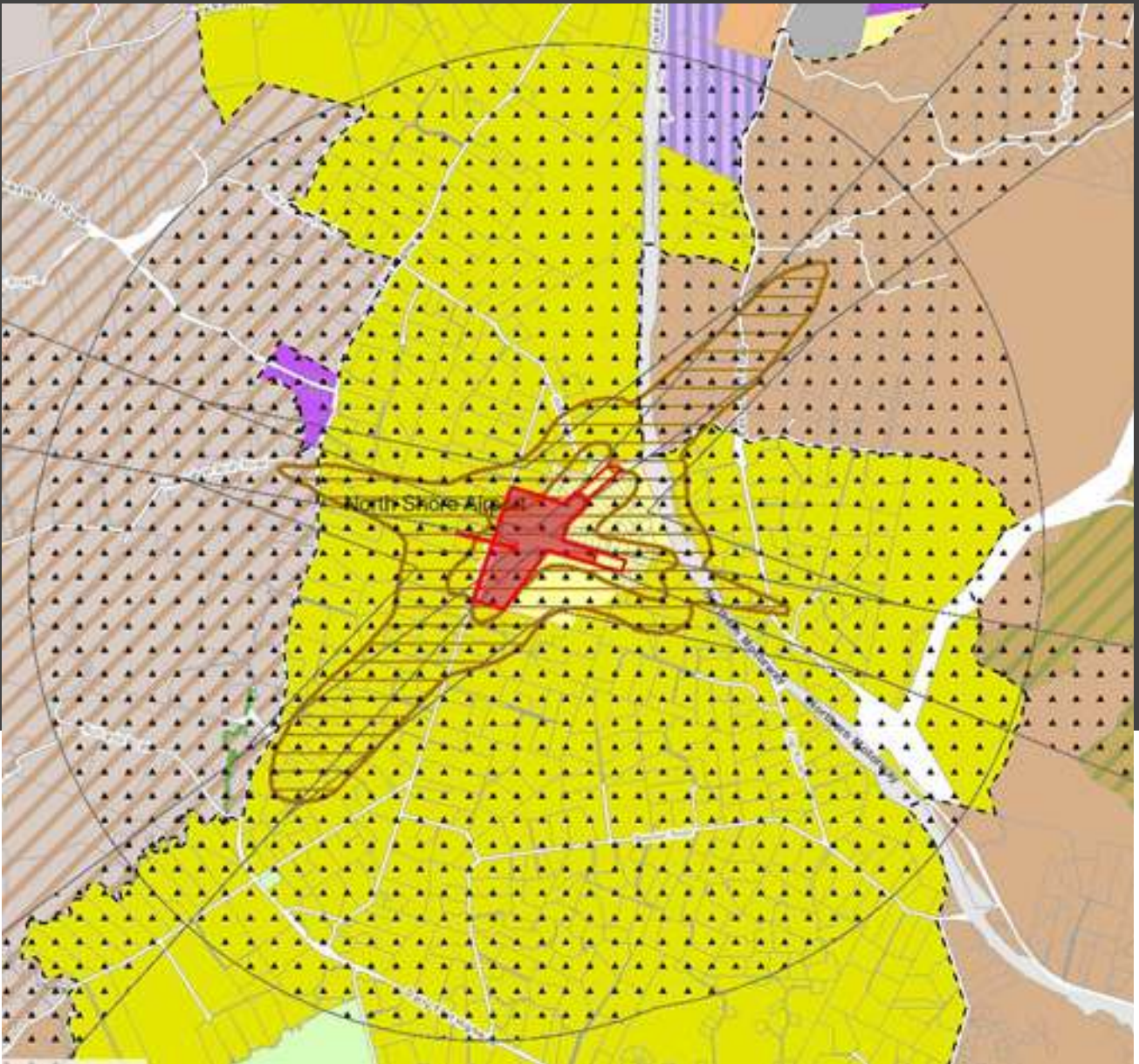
NSA recognises the importance of its role in the local community. It operates a good neighbour policy and provides liaison between airport users and residents to address any noise complaint issues. It is important to note that the airport has no control over the noise of aircraft in flight but investigates and manages all complaints received.

WIND ANALYSIS

A comprehensive study of the wind data over years of operation at NSA has been undertaken to determine the optimum runway alignment. The data clearly demonstrates runway 03/21 to be almost perfectly aligned with prevailing wind conditions.



North Shore Airport Wind Analysis



AUP Overlays (triangles denote the Airport Approach Surface Overlay and brown horizontal lines denotes the Aircraft Noise Overlay)

EMERGENCY RESPONSE & CIVIL DEFENCE

Airports are critical infrastructure in civil defence, playing a pivotal role during emergencies by enabling rapid response, facilitating evacuations, and supporting recovery operations. This role has been evident in several recent civil defence emergencies in New Zealand, including the Canterbury/Timaru floods in 2021 and Cyclone Gabrielle in Napier/Hastings in 2023.

The experiences from the Canterbury/Timaru floods and Cyclone Gabrielle demonstrate the essential role airports play in civil defence. Airports like Timaru and Napier are not just transport hubs; they are critical components of the emergency response infrastructure. Their ability to support rapid deployment, facilitate evacuations, and serve as logistical centres is invaluable in times of crisis.

For North Shore Airport, these examples highlight the importance of maintaining robust infrastructure and operational readiness. Ensuring that the airport is equipped to handle emergency situations can significantly enhance the region's resilience to natural disasters and other emergencies.

CIVIL DEFENCE CASE STUDY: CANTERBURY/TIMARU FLOODS 2021

During the severe weather event in May 2021, Canterbury experienced widespread flooding that significantly impacted the region. Timaru Airport became a crucial hub for coordinating emergency response efforts. The airport facilitated the rapid deployment of emergency personnel, equipment, and supplies to the affected areas. With roads and other infrastructure compromised by flooding, air transport provided a reliable means of reaching isolated communities quickly. Timaru Airport also served as a staging area for rescue operations, enabling helicopters to perform search and rescue missions and deliver essential supplies to stranded residents.

The role of Timaru Airport during the floods highlighted the importance of having a well-maintained and operational airport in times of crisis. The ability to mobilize resources quickly and efficiently can make a significant difference in mitigating the impact of natural disasters and ensuring the safety of affected populations.

CIVIL DEFENCE CASE STUDY: CYCLONE GABRIELLE IN NAPIER/HASTINGS 2023

Cyclone Gabrielle, which struck New Zealand in February 2023, was one of the most devastating weather events in recent history. The cyclone caused extensive flooding, infrastructure damage, and widespread power outages across several regions, including Napier and Hastings. Napier Airport played an indispensable role in the emergency response efforts.

As the cyclone wreaked havoc, Napier Airport became a critical logistics hub, handling the influx of emergency responders, medical teams, and relief supplies. The airport's ability to operate under adverse weather conditions ensured that aid could reach the affected areas without delay. Additionally, the airport facilitated the evacuation of vulnerable individuals, including those requiring medical attention, thereby reducing the potential for casualties.

The swift response enabled by Napier Airport underscored the vital role airports play in supporting civil defence operations. Airports provide a lifeline during emergencies, ensuring that help can reach those in need promptly and efficiently.

SCENARIO: AUCKLAND FLOODING EVENT 2023

In January 2023, Auckland faced severe flooding following an unprecedented heavy rainfall event. The flooding caused extensive damage to infrastructure, homes, and businesses, leading to the declaration of a State of Local Emergency. Although the flood waters subsided quickly, had they not, North Shore Airport would likely have been playing a similar role to that of Timaru and Napier.



FUTURE PROPULSION TECHNOLOGIES FOR AIRCRAFT

ELECTRIC

Electric propulsion uses electric motors powered by batteries, which are advancing in energy density and cost-efficiency. Small aircraft like the Cessna 172 are seeing prototypes and early-stage commercial models, such as Pipistrel's Velis Electro, designed for training. These aircraft are limited by current battery technology in range and payload but are suitable for short flights and flight schools. Medium transport aircraft, require more power and range, making hybrid systems a potential solution. Future battery advancements, such as solid-state batteries, could make fully electric medium-sized aircraft feasible. Electric engines also significantly reduce noise, benefiting airports near urban areas. Infrastructure needs include high-voltage charging stations and upgraded electrical systems.

HYDROGEN PROPULSION TECHNOLOGIES

Hydrogen can power aircraft through combustion in modified gas turbines or fuel cells producing electricity for electric motors. Both methods produce water as a byproduct, eliminating CO2 emissions. Hydrogen technology is still experimental for small aircraft but promising for medium-sized aircraft, potentially offering longer ranges without emissions. Airbus's ZEROe project aims to introduce hydrogen-powered regional aircraft by 2035. Hydrogen infrastructure requires safe storage, handling, and refuelling facilities, involving significant investment and space, posing challenges for smaller airports.

SUSTAINABLE AVIATION FUEL (SAF)

SAF is made from sustainable resources like waste oils and agricultural residues and can be used in existing aircraft engines with minimal modifications. This makes SAF a highly attractive option for immediate carbon emission reductions for small to medium aircraft. The main challenge is scaling up production and reducing costs to compete with conventional jet fuel. Companies like Neste and Fulcrum BioEnergy are working to increase SAF supply and affordability.

NOISE EMISSIONS AND ENVIRONMENTAL ASPECTS

Electric and hydrogen propulsion systems significantly reduce noise compared to traditional engines. Electric motors are particularly quieter due to the lack of combustion noises and fewer moving parts, leading to fewer noise abatement procedures and more flexible flight schedules near urban areas.

AIRPORT INFRASTRUCTURE REQUIREMENTS

Integrating new propulsion technologies requires diverse infrastructure:

- **Electric Charging Stations:** High-power charging systems and local grid upgrades are essential.
- **Hydrogen Fuel Infrastructure:** Requires hydrogen production or delivery sites, storage, and specialized fuelling stations, which are more complex and costly than electric systems.
- **SAF Integration:** Minimal changes are needed, utilizing existing fuel infrastructure but depending on SAF availability and distribution.

Implementing these technologies at North Shore Airport will need careful planning, investment, and collaboration with technology providers and regulatory bodies. Achieving net-zero emissions by 2050 is feasible with early adoption and scaling, supported by regulatory incentives and alignment with environmental targets.

AUTONOMOUS AND SEMI-AUTONOMOUS SYSTEMS

Automation in aviation is advancing swiftly, leading to the development of autonomous and semi-autonomous small aircraft. These systems have the potential to enhance operational efficiency, reduce pilot workload, and improve safety. NSA may need to adapt its procedures, regulations, and infrastructure to support the integration of autonomous and semi-autonomous systems into its operations. This could involve developing protocols for integrating autonomous aircraft into existing airspace, establishing communication networks for remote monitoring and control, and implementing redundant systems to ensure fail-safe operations. Additionally, NSA would collaborate with regulatory authorities and industry stakeholders to address legal and safety considerations associated with autonomous flight.

URBAN AIR MOBILITY (UAM)

UAM is gaining traction as a transformative solution for urban congestion and transportation challenges. Vertical take-off and landing (VTOL) aircraft, including electric-powered eVTOLs, are central to the UAM concept. NSA will be considering the growth of UAM and consider preparation and development of its infrastructure and operations accordingly. This may involve developing dedicated facilities for VTOL aircraft, such as vertiports or helipads, and establishing new flight paths and regulations to integrate UAM operations into existing airspace. Collaborating with local authorities, urban planners, and UAM service providers will be essential to ensure the seamless integration of UAM into the urban environment surrounding NSA.



Air New Zealand has bought its first battery powered-electric aircraft, an Alia CTOL aircraft from US-based company Beta Technologies. Image: Air New Zealand

05 OUR FUTURE

ACHIEVING NET ZERO BY 2050

As we advance into an era of heightened environmental awareness and corporate responsibility, North Shore Airport is committed to contributing significantly to global efforts in mitigating climate change. The airport's future environmental policy will be centred around achieving net-zero carbon emissions by 2050. This ambitious but achievable goal aligns with international climate agreements and demonstrates our commitment to environmental stewardship and sustainable development.

Our commitment is to create a sustainable aviation environment where economic growth and environmental protection go hand in hand. Achieving net-zero by 2050 will involve a comprehensive approach that encompasses all aspects of airport operations, from infrastructure development to daily operational practices.

GUIDING PRINCIPLES

We have the following guiding principles in our journey to meet of net-zero goal by 2050.



SUSTAINABILITY INTEGRATION

Environmental considerations will be integrated into all strategic planning and operational decisions. This means prioritising sustainability in infrastructure investments, operational efficiency, and stakeholder engagement.



STAKEHOLDER COLLABORATION

Achieving net-zero emissions will require collaboration with various stakeholders, including airlines, government agencies, local communities, and environmental organisations. We will work closely with these partners to develop and implement effective strategies.



CONTINUOUS IMPROVEMENT

We will establish a culture of continuous improvement by regularly reviewing and updating our environmental policies and practices. This will ensure we remain aligned with the latest scientific findings and regulatory requirements.



INNOVATION AND TECHNOLOGY

Leveraging cutting-edge technology and innovative practices will be crucial in our journey towards net-zero emissions. This includes adopting renewable energy sources, optimising energy efficiency, and exploring sustainable aviation fuels.

STRATEGIES FOR ACHIEVING NET ZERO

While specific details of the mechanisms to achieve net-zero emissions will be developed over time, several key strategies can be outlined:

- **Renewable Energy Adoption:** Transitioning to renewable energy sources, such as solar and wind power, for airport operations will be a primary focus. This may involve installing solar panels on airport buildings, utilizing wind turbines, and exploring other renewable energy technologies.
- **Energy Efficiency Measures:** Implementing energy-efficient technologies and practices will reduce overall energy consumption. This includes upgrading lighting systems to LED, enhancing insulation in buildings, and optimizing heating, ventilation, and air conditioning (HVAC) systems.
- **Future Propulsion Technologies:** Collaborating with airlines to promote the use of new aircraft propulsion technologies will be a critical component.
- **Green Infrastructure:** Developing green infrastructure, such as green roofs and walls, rain gardens, and sustainable drainage systems, will enhance biodiversity, improve air quality, and reduce the urban heat island effect.
- **Carbon Offsetting:** For emissions that cannot be eliminated, we will invest in high-quality carbon offset projects. These projects could include reforestation, conservation, and renewable energy initiatives that provide verifiable carbon sequestration.
- **Electrification of Ground Operations:** Transitioning to electric vehicles (EVs) for ground support equipment and airport transportation will reduce greenhouse gas emissions. Charging infrastructure for EVs will be expanded to support this transition.
- **Waste Management:** Implementing comprehensive waste reduction, recycling, and composting programs will minimise landfill waste and reduce emissions associated with waste management.
- **Water Conservation:** Employing water-saving technologies and practices will reduce water consumption. This includes installing low-flow fixtures, utilizing reclaimed water for irrigation, and implementing rainwater harvesting systems.

MONITORING AND REPORTING

To ensure transparency and accountability, North Shore Airport will establish robust monitoring and reporting mechanisms. This will involve:

- **Carbon Footprint Assessment:** Conducting regular assessments of the airport's carbon footprint to track progress towards the net-zero goal.
- **Environmental Management System (EMS):** Implementing an EMS to systematically manage environmental impacts, set targets, and measure performance.
- **Annual Sustainability Reports:** Publishing annual sustainability reports to communicate progress, challenges, and achievements to stakeholders

COMMUNITY ENGAGEMENT AND EDUCATION

Engaging with the local community and educating stakeholders about our environmental initiatives will be vital. This includes:

- **Public Awareness Campaigns:** Launching campaigns to raise awareness about the importance of sustainability and the airport's efforts to achieve net-zero emissions.
- **Educational Programs:** Collaborating with schools, colleges, and community organisations to provide educational programs on environmental conservation and sustainable practices.
- **Stakeholder Forums:** Organising regular forums to engage with stakeholders, gather feedback, and foster a collaborative approach to sustainability.

Christchurch International Airport serves as an inspiring example for North Shore Airport. Having already achieved carbon neutrality, Christchurch International Airport has demonstrated that it is possible to balance growth with environmental responsibility. By adopting similar strategies and learning from their experiences, North Shore Airport can expedite its journey towards net-zero emissions.

The journey to net-zero emissions by 2050 will be challenging but achievable. North Shore Airport is committed to leading by example in the aviation industry, demonstrating that sustainable development and operational efficiency can coexist. By integrating sustainability into every

aspect of our operations, collaborating with stakeholders, and continuously innovating, we will create a greener future for our community and contribute meaningfully to global climate action.

In pursuing this ambitious goal, North Shore Airport will not only protect the environment but also enhance its reputation as a forward-thinking and responsible airport. This policy is a testament to our dedication to creating a sustainable legacy for future generations.



ENVIRONMENTAL MANAGEMENT PLAN

Future development needs to consider planning for stormwater treatment of impervious surfaces, while avoiding attracting bird life which can cause bird strikes. As the airport is an Industrial Trade Activity under the AUP, an Environmental Management Plan will be developed to cover environmental issues and management of potential stormwater contaminants.

Matters to be included in the Environmental Management Plan are air emissions, waste management, hazardous substances, stormwater management, wastewater management, noise and wildlife control.

Wastewater management is potentially the biggest perceived obstacle to major development on-site in a ten-year timeframe. However, NSA has an onsite wastewater system with capacity for processing 8,000 litres per day, of which only 25% of this capacity is currently being used. Furthermore, subject to investigation, there is likely to be sufficient land available to permit an increase in capacity of the existing system or installation of a parallel system. Ultimately, wastewater will be integrated into the local infrastructure of the surrounding area.

IWI & HERITAGE MANAGEMENT PLAN

Establishing meaningful engagement with the local iwi will aid the airport in meeting its statutory obligations and to recognise any design issues that have a unique Maori perspective.



AIRPORT AUTHORITY STATUS

There are benefits, advantages, and considerations of North Shore Airport applying for recognition as an Airport Authority under the Airport Authorities Act 1966 and the Civil Aviation Act 2023. While the Airport Authorities Act is being superseded by the new Civil Aviation Act, the foundational principles and benefits of attaining Airport Authority status remain significant.

North Shore Airport has previously applied for Airport Authority status. The Ministry of Transport recommended granting this status, recognising the potential benefits and strategic importance of the airport. However, the minister at the time declined the application against this advice. Despite this setback, the pursuit of Airport Authority status remains a strategic goal due to the advantages it offers.

The Airport Authorities Act 1966 provides a framework for airports in New Zealand to obtain certain powers and responsibilities, enhancing their operational capabilities. This new Civil Aviation Act 2023, modernises and consolidates aviation legislation in New Zealand. The new Act continues to provide mechanisms for airports to gain recognition and authority, ensuring they meet contemporary standards and operational requirements.

Airport Authority status is NOT required to operate an airport and it has no bearing on the type and size of aircraft using the airport, or the nature of operations. However, it does bring some advantages with it.

ADVANTAGES

General: An Airport Authority is empowered to improve, maintain, operate and manage an airport. This is a complimentary privilege to the Airports underlying zoning and reinforces the ability of NSAC to operate NSA.

By-laws: An airport authority can make bylaws in respect of the airport it operates. Bylaws would need to be approved in our case by the Governor-General to be affective. Bylaws could help enforce safety, and implement security measures tailored to its specific needs. Examples include controlling the consumption of alcohol in restricted areas, speed limits on airport roads, parking enforcement and smoking restrictions.

Leasing: An airport authority can enter into leasing arrangements for any purpose that will not interfere with the safe and efficient operation of the airport. This serves to enhance the synergy we can create with the local area as business and industrial development takes hold. Furthermore, leases can be varied (with due compensation) if developing airport operations were to require it.

Rates: Under the Local Government (Rating) Act 2022, land within the movement area of an aerodrome may be non-rateable.

It is important to note that in theory, an Airport Authority may be able to acquire land through the provisions of the Public Works Act 1981. However, this requires approval from the Minister of Lands and the legislation ensures that if enacted, individuals and businesses are adequately compensated for the loss of their property. The misconception in the public arena is that land can be compulsory acquired below market value.



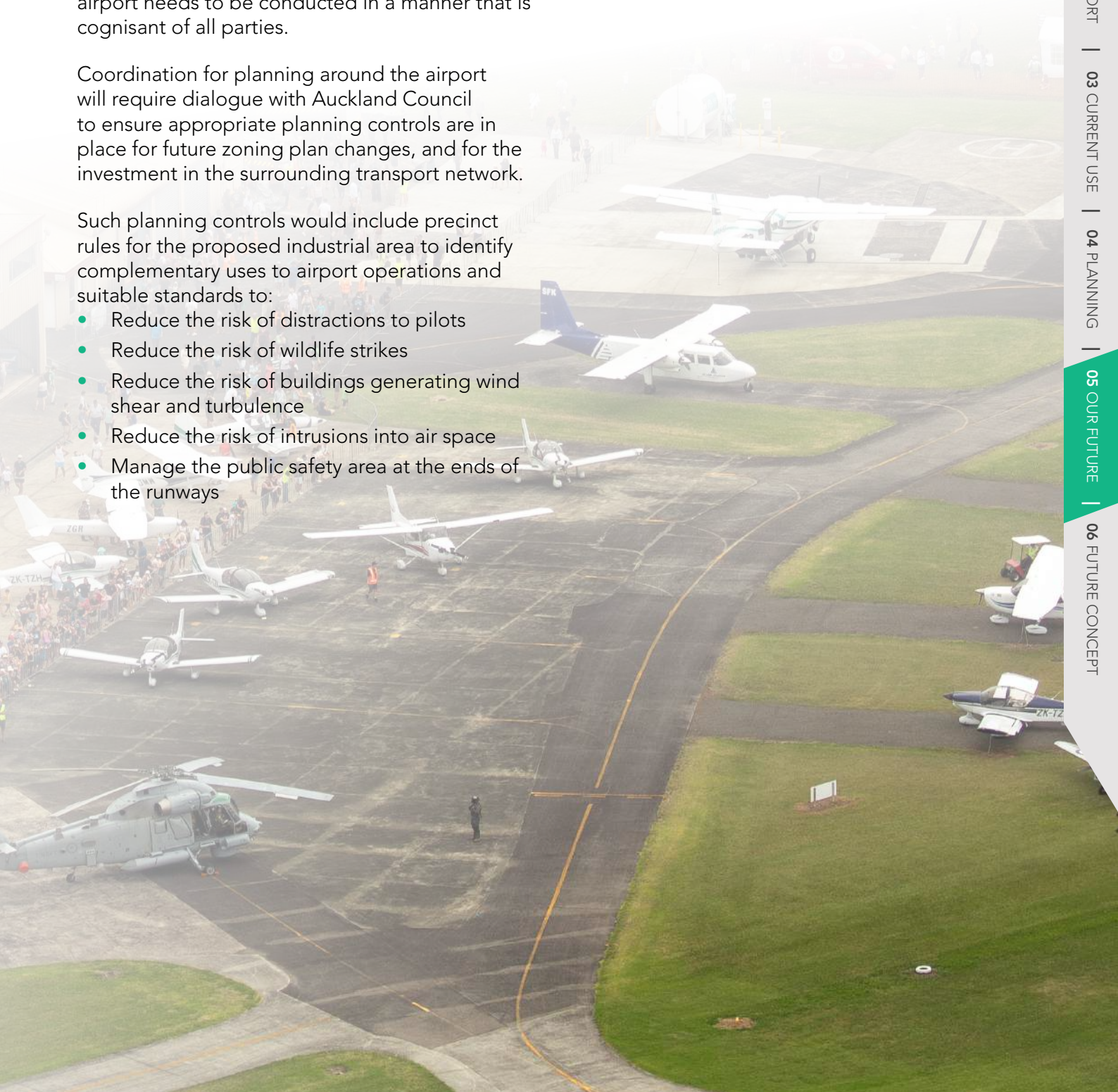
AIRPORT SAFEGUARDING

The land surrounding the airport is planned for comprehensive urbanisation. It is imperative the airport operate a Safeguarding Framework to allow complementary planning of the area with the airport. Without it, tensions between airport operations and industrial and residential development will increase and may hinder airport operations. Accordingly, there is a need to ensure the coordination of on-airport and off-airport planning. Regardless of who owns and operates an airport, planning on or in the vicinity of an airport needs to be conducted in a manner that is cognisant of all parties.

Coordination for planning around the airport will require dialogue with Auckland Council to ensure appropriate planning controls are in place for future zoning plan changes, and for the investment in the surrounding transport network.

Such planning controls would include precinct rules for the proposed industrial area to identify complementary uses to airport operations and suitable standards to:

- Reduce the risk of distractions to pilots
- Reduce the risk of wildlife strikes
- Reduce the risk of buildings generating wind shear and turbulence
- Reduce the risk of intrusions into air space
- Manage the public safety area at the ends of the runways



06 OUR FUTURE CONCEPT

NORTH SHORE AIRPORT PRECINCTS

North Shore Airport is divided into five zones.

Zone Alpha (A): Alpha is predominantly comprised of the Movement Area in accordance with Civil Aviation Rules Part 1.

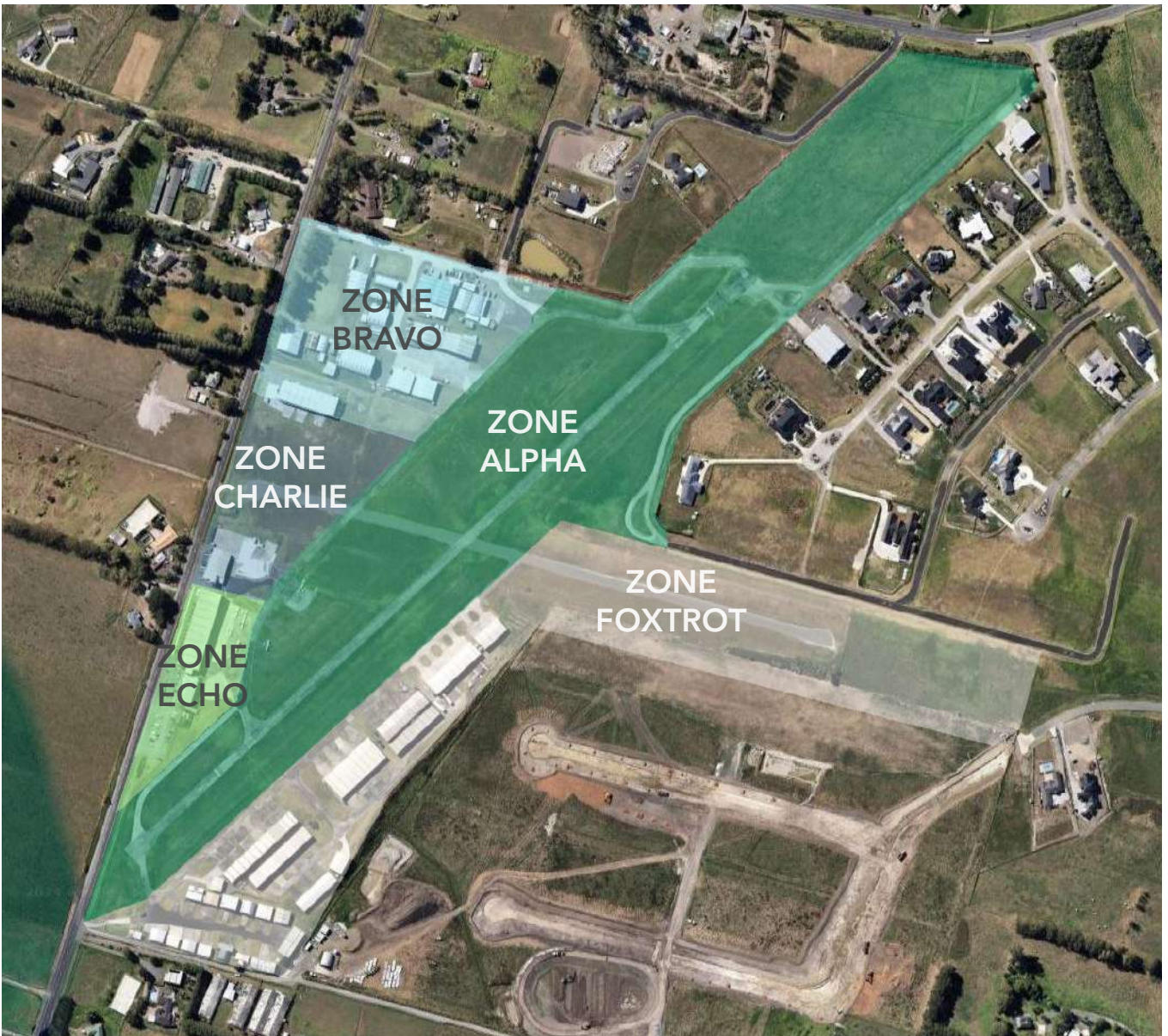
Zone Bravo (B): Zone Bravo is a commercial area.

Zone Charlie (C): Zone Charlie is the airport terminal and apron area. It also includes the western end of Runway 09/27.

Zone Delta (D): Not assigned.

Zone Echo (E): Zone Echo is land used predominantly for the Flying School facilities.

Zone Foxtrot (F): Zone Foxtrot is the non-commercial 'private and club member' hangars and facilities. It also includes the eastern end of Runway 09/27.



Approximate zone boundaries

ZONE ALPHA – RUNWAY 03/21 DEVELOPMENT

We are planning to look at the options for the development of the main runway in four stages.

Stages 1 & 2 are feasible, deliverable and in the process of planning, whereas stages 3 & 4 are concepts for further analysis.

STAGE ONE

As per the New Zealand Aeronautical Information Publication (AIP), the current runway specifications are as follows:

RWY	SFC	Strength	Gp	Slope	ASDA	Take-Off Distance			LDG DIST
						1:20	1:30	1:40	
03	Conc/	ESWL	5	0.3U		738			
03	Grass	2500							681
21	Conc/	ESWL	5	0.3D		681			
21	Grass	2500							738

Runway 03/21 existing specifications

Stage One involves a runway extension which will take the overall length of runway 03/21 to 971 meters.

The additional length will be gained to the north-east of the runway in the form of a 180 metre extension using land already owned by the airport. Due to the topographical limitations, this extension would serve to increase Take-Off Distance Available (TODA) on Runway 21 and Landing Distance Available (LDA) on Runway 03 and Accelerate Stop Distance Available (ASDA) in both directions.

The LDA on Runway 21 and TODA on Runway 03 cannot be increased as the runway threshold at the north-eastern end cannot be easily moved

any further to the north-east due to the elevated terrain approximately 1,200 meters to the north-east at East Coast Road.

However, Accelerate Stop Distance Available (ASDA), which is a key requirement for multi engine Air Transport Operations (ATOs), is significantly increased on both runways for take-off. So, although the Runway 03 TODA will not increase, however the increase in ASDA will permit the safe landing and take-off of larger aircraft such as the 8 to 15 seater Beechcraft King Air multi engine turboprops.

With this, a Runway End Safety Area (RESA) is created by default.



Stage One runway extension

The projected runway specifications following the Stage One development are:

RWY	SFC	Strength	Gp	Slope	ASDA	Take-Off Distance			LDG DIST
						1:20	1:30	1:40	
03	Conc/	ESWL	TBC	TBC	971	738			
03	Grass	2500							861
21	Conc/	ESWL	TBC	TBC	971	861			
21	Grass	2500							738

Runway 03/21 Stage One specifications

The additional length of runway will enable a greater margin of safety to be achieved for all aircraft using the airport, particularly training flights. It will also provide opportunities for third tier commercial airlines to establish further regional services, servicing the smaller airports of the North Island such as Hamilton, Rotorua and Tauranga etc.

STAGE TWO

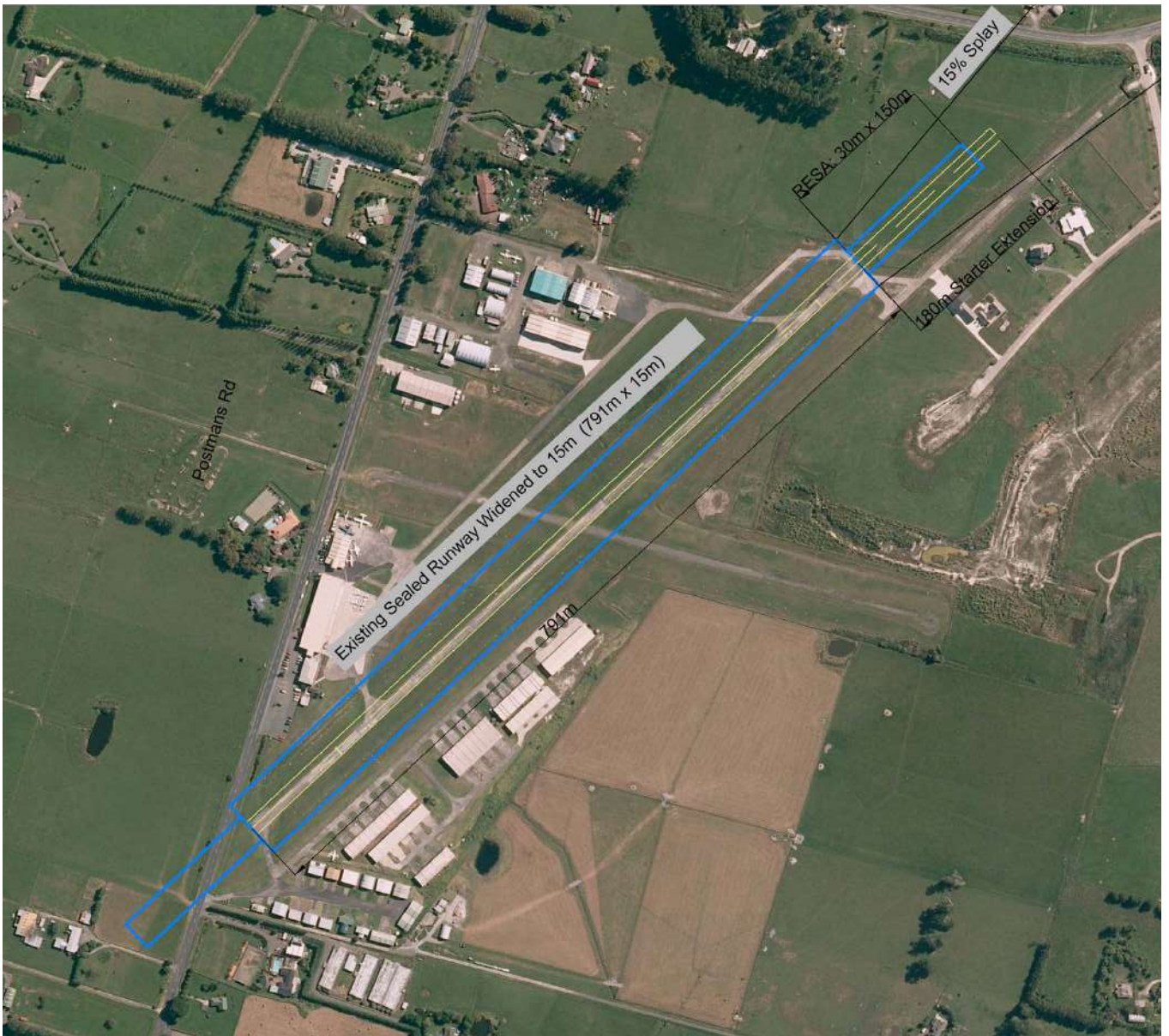
Stage Two involves the sealed (concrete) portion of the runway being widened from the existing 9 metres to 15 metres. This width would all be added on the western side of the existing sealed portion of the runway, primarily to complement stages Three and Four if they were to go ahead.

The increased width achieves 3 primary objectives:

1. Aircraft with a wider wheelbase can use the runway.
2. The increased width potentially permits a redesign of the instrument approach

procedures to allow aircraft to fly to a lower Minimum Descent Altitude (MDA) before needing to establish visual reference with the runway. This will result in fewer missed approaches to landing, which in turn means more reliable Air Transport Operations (ATOs), reduced aircraft noise and a lower carbon footprint.

3. The width enhancement will also vastly improve safety for all landing aircraft.



Stage 2 runway extension



The additional width could be added with the final design specification in mind. This means it would need to be constructed to a Pavement Classification Number (PCN) of 16. The PCN may have to be a higher if there is a lower strength subgrade.

Projected runway specifications following Stage Two development remain the same as Stage One except the additional width permits a greater variety of aircraft to use the runway:

RWY	SFC	Strength	Gp	Slope	ASDA	Take-Off Distance			LDG DIST
						1:20	1:30	1:40	
03	Conc/	ESWL	TBC	TBC	971	738			
03	Gr*	2500							861
21	Conc/	ESWL	TBC	TBC	971	861			
21	Gr*	2500							738

Runway 03/21 Stage Two specifications

STAGE THREE (CONCEPT)

Stage Three development would involve an extension of the runway to the south-west to a total length of 1120 metres, with a 180-metre starter extension at each end. It would also involve further widening of the sealed (concrete) portion of the runway to 30 metres. The extension would accommodate aircraft such as:

- High Performance General Aviation Aircraft
- Smaller Regional Aircraft



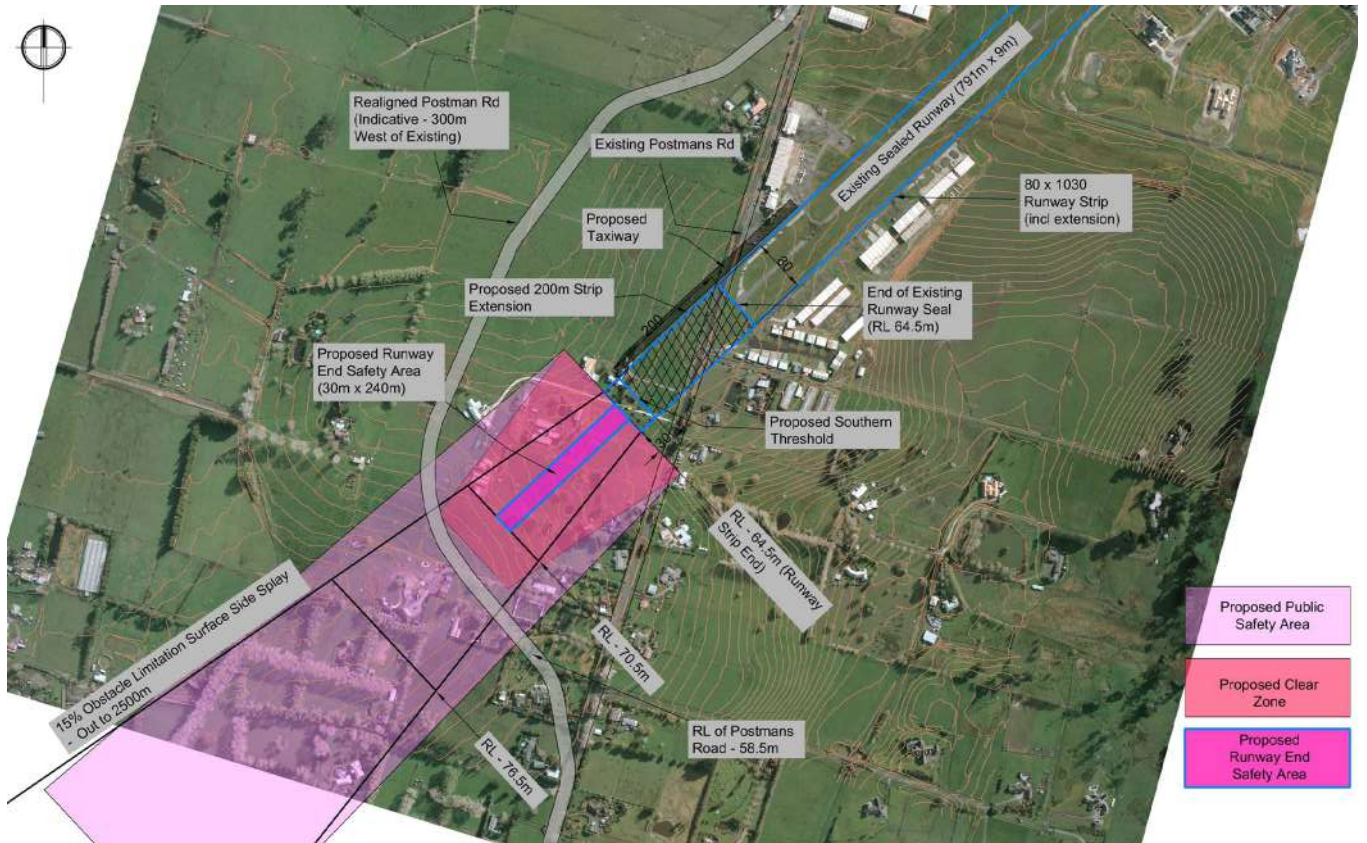
Stage 3 runway extension

This development is a bigger project than Stages One and Two in many respects, particularly as it requires the acquisition of land over and above that which NSA currently owns.

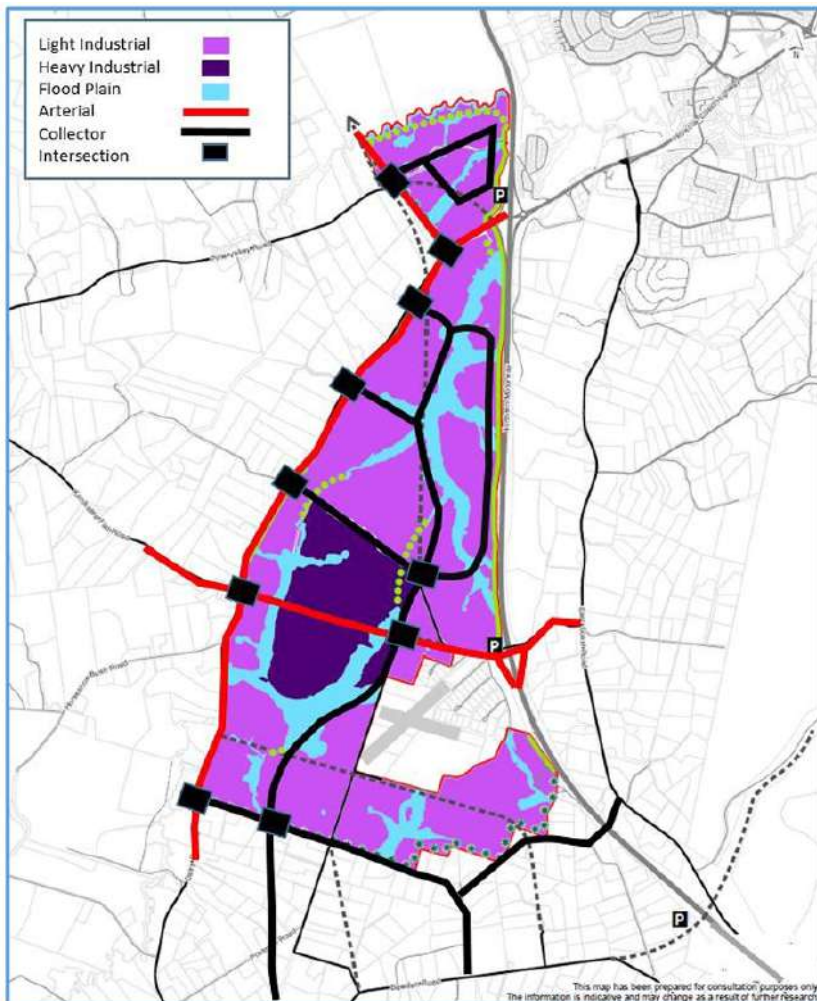
To allow the development of Stage Three and subsequently Stage Four, the relocation or grade separation of Postman Road would need to occur. This is already identified as an option in the Silverdale West Dairy Flat structure plan.

Previous submissions by NSA to Auckland Council and other agencies (Waka Kotahi / New Zealand Transport Agency, and Auckland Transport) have centred on the need to realign Postman Road to provide for the runway extension, and the RESA and PSA required.

A potential realignment to Postman Road for Stage Three is shown in the Airport Spatial Plan. This realignment has also been acknowledged in the Structure Plan which shows a relocated Postman Road to accommodate growth of the airport. As shown in to the left, the possible expansion of the road network in the Structure Plan is more generous than the NSA Spatial Plan, but NSA prefers the more generous approach as this would be necessary for Stage Four. Further consultation is needed with respect to other local roads shown in the figure over page.



The North Shore Airport Spatial Plan



Possible expansion of the road network as per the Structure Plan

The increase in the width of the runway strip to 150 metres overall will make it compliant with CAA CARs Part 139 for a Non-Precision Instrument Approach Runway. In order to accommodate the Transitional Side Surfaces (or Side Fans), the Runway centreline may have to move to the west.

This would be achieved by adding all the width onto the sealed portion of the runway on the western side, in turn pushing the centreline of the runway west.

Because of this, the western limit of the runway and corresponding Transitional Side Surfaces

will need to move approximately 50–60 metres further west. This requires further investigation as to the property implications on site as some existing buildings may need to be relocated or demolished.

The Stage Three runway extension would provide for future larger aircraft operations. It would also provide for a further increase in private aircraft use, enabled by the greater range of aircraft that can be housed at the airport. Additionally, all operations would benefit from the increased safety measures afforded by the larger runway.

Projected runway specifications following Stage Three development:

RWY	SFC	Strength	Gp	Slope	ASDA	Take-Off Distance			LDG DIST
						1:20	1:30	1:40	
03	Conc/	PCN	8	TBC	1300	1300			
03	Gr*	15							1120
21	Conc/	PCN	8	TBC	1300	1300			
21	Gr*	15							1120

Runway 03/21 Stage Three specifications

STAGE FOUR (CONCEPT)

Stage Four development is based around a further extension of the runway to the south-west by 200 metres, and is the final stage of development required to accommodate the design limit specification aircraft. This stage would see NSA able to accommodate larger aircraft with passenger seating capacity of up to 80.

The extension proposed would be to the following specifications:

- 1,500 metres Take-Off Distance Available in both directions
- 1,320 metres Landing Distance available in both directions

- 150 metres RESA to the North East, extendable to 240 meters
- 150 metres RESA to the South West
- 150 metres runway strip width
- 30 metres wide sealed runway
- Provisioning for a Public Safety Area



Stage Four runway extension

The Stage Four development of the main runway means larger regional aircraft could be accommodated. It is considered that this stage of development would be ideal to provide a regional mass transport hub for the north of Auckland.

The projected runway specifications following the Stage Four development:

RWY	SFC	Strength	Gp	Slope	ASDA	Take-Off Distance			LDG DIST
						1:20	1:30	1:40	
03	Conc/	PCN	8	TBC	1500	1500			
03	Gr*	15							1320
21	Conc/	PCN	8	TBC	1500	1500			
21	Gr*	15							1320

Runway 03/21 Stage Four specifications

ZONE ALPHA – RUNWAY 09/27 DISESTABLISHMENT

Runway 09/27 is a lightly used secondary runway with a gravel surface. Its primary use currently is to facilitate the arrival and departure of helicopter traffic without interfering with operations on Runway 03/21, however this is a luxury that has little necessity. Furthermore, wind data analysis shows the frequency with which the cross wind on runway 03/21 exceeds 12 knots is under 1% of the time.

Disestablishing Runway 09/27 would provide several benefits:

- Strategic land is released for repurposing
- The airport noise overlays in the AUP can be amended to reshape the 55db and 65db boundaries reducing their impact on neighbouring properties
- Air traffic patterns around the airport will be simplified
- Improved safety for aircraft transitioning from the Whenuapai Control Zone into North Shore Airspace by having longer transition times allowing more radiotelephony communication and awareness before joining the circuit
- Removal of traffic that potentially conflicts with the Runway 03/21 low level circuit



ZONE BRAVO

NSA plans to create synergies and develop links with the surrounding business and light industrial area created by the AUP. Part of this will require active business development and discussions with Auckland Council as to a possible precinct approach for surrounding business land.

A short-term objective is to develop the business land to the north of the site.

As shown in the top right image, Zone Bravo is heavily fragmented and suffering the consequences of haphazard development over the years, with no strategic plan underpinning the selection of sites for the construction of buildings.

To maximise the potential of this area a comprehensive redevelopment needs to take place. Zone Bravo is intended to become a precinct biased towards aviation related activity where aircraft movements will be protected and controlled by airside-landside gates and fences.

The north-west corner of Zone Bravo contains a square of land approximately one hectare in size with around 90 metres of road frontage. The eastern side of the site has 4 buildings currently situated on it which would need to be demolished

to permit the proposed redevelopment. The development would be designed as a number of available business and warehouse units.

Roads to the north and east will become public access roads with a Landside-Airside Access control point at the airport end of each road respectively (refer to the grey roads in Figure 16). New perimeter fencing will be required.

Wastewater can be accommodated by the existing North Shore Airport wastewater infrastructure. There is likely to be sufficient irrigation land available to permit an increase in capacity of the existing system or installation of a parallel system. Eventually the area can be integrated with the infrastructure that the surrounding urban development will bring. Potable water would initially be tank based.



The style of development planned for Project Bravo One



Zone Bravo, North Shore Airport



Project Bravo One area

ZONE CHARLIE – TERMINAL & APRON

Incremental upgrades are planned to the terminal building facilities, one day culminating in a new building located within Zone Charlie, with the disestablishment of Runway 09/27.

To service both the existing terminal and the proposed new terminal, the main aircraft parking apron will need to be extended. The extension will originate from the Southern end to better serve the existing terminal facility before extending north to serve the proposed new terminal facility.

The apron will ultimately be large enough to comfortably accommodate 3 larger aircraft of the size previously discussed. This new apron would be approximately 11,000 square metres and also provide adequate space and facility for baggage and passenger handling.



Possible terminal design concept

ZONE FOXTROT – GENERAL AVIATION HANGAR FACILITIES

High on the list of NSA's objectives is the accommodation of General Aviation (GA) and providing hangar space is of paramount importance. Development of the block of land immediately south of runway 09/27 and east of 03/21 is about to commence allowing for approximately 40 new hangars.

Further capacity is available by way of disestablishment of runway 09/27, enabling construction of more than 12,000 square metres of hangar space (roughly 60 14x14 meter hangars) and a further 9,000 square metres of apron.



Indicative layout for re-use of eastern end of Runway 09/27



The style of development planned for Project Foxtrot One



NORTH SHORE AIRPORT | MASTER PLAN 2024

For further information: www.northshoreairport.co.nz