ANCCG Meeting

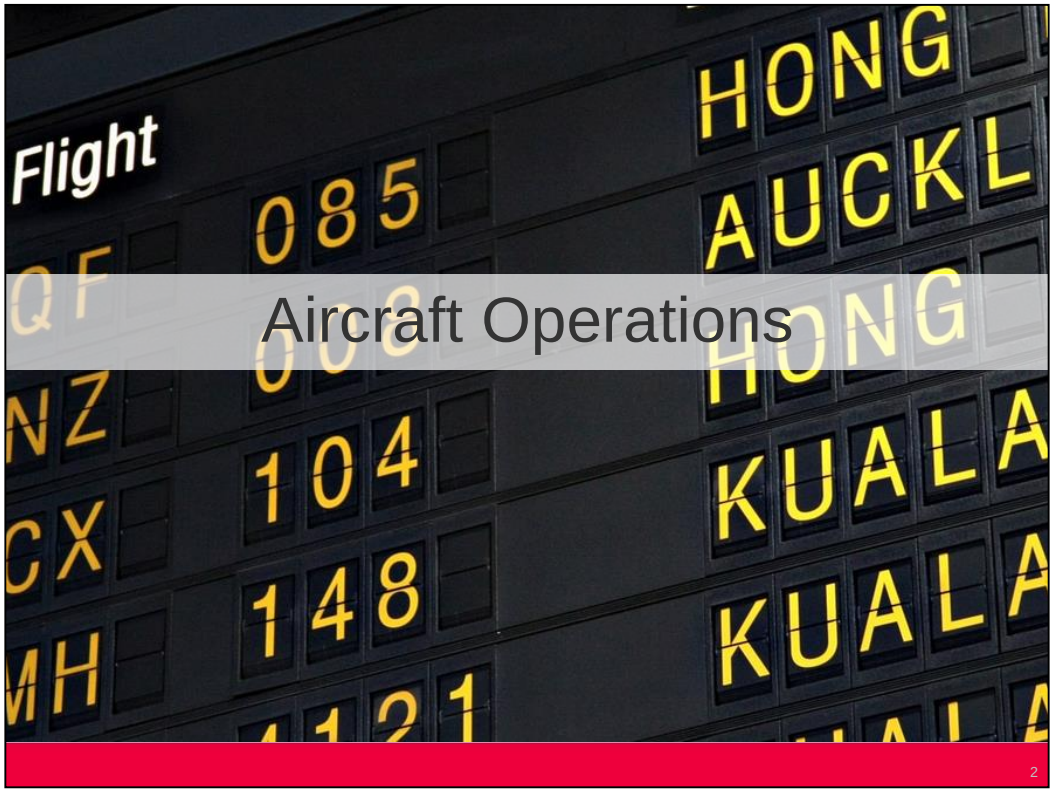
Monitoring Period

November 2017 – January 2018

Meeting: 6 March 2018

MARSHALL DAY Acoustics

NB: Glossary of terminology given in Appendix A



Aircraft Operations

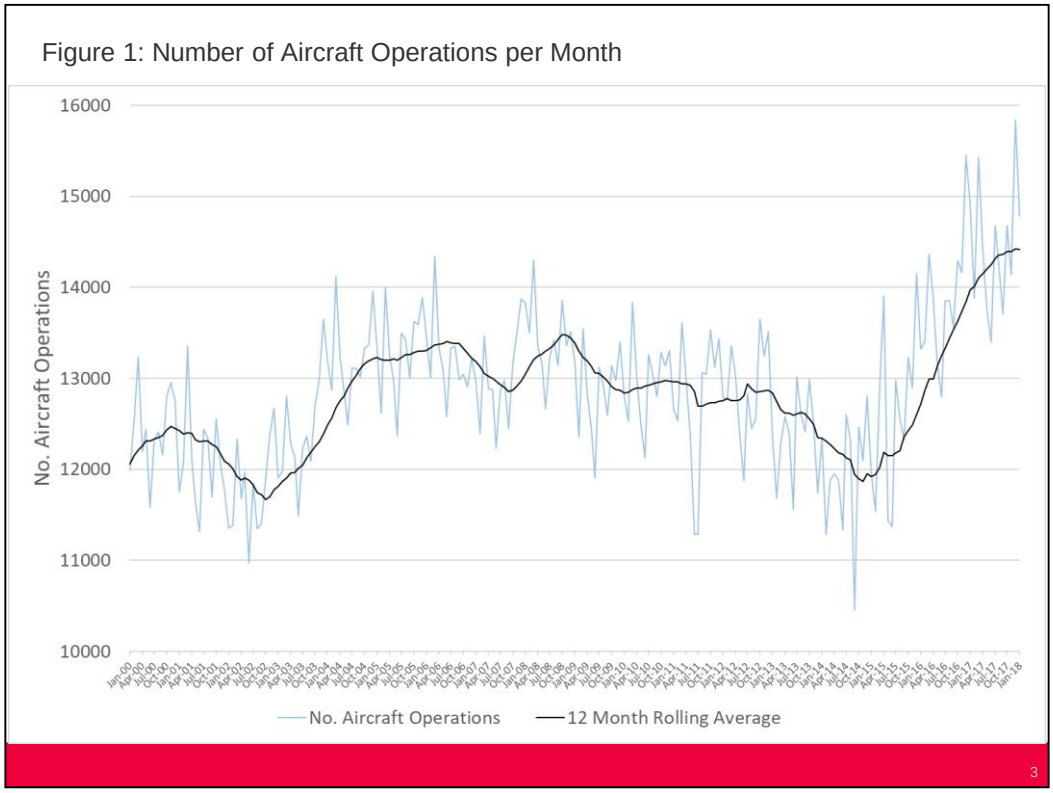


Figure 1 shows the number of aircraft operations per month since the year 2000 (blue line) and the 12 month rolling average (black line).

Aircraft operations have fluctuated over the years with a dip in 2002 and 2014.

Since 2015 aircraft operations have increased steadily.

The number of aircraft operations in the three month period November 2017 to January 2018 has increased by 1% when compared to the same period last year.

Daytime operations have increased by 1% and night-time operations have decreased by 2% when compared to the same period last year.

Table 1: Summary of Aircraft Operations

Operation	Total	Day	Night
Arrivals	22,923	19,872	3,051
Departures	21,783	19,782	2,001
Circuit	59	56	3
Total	**44,765**	**39,710**	**5,055**

Table 2: Average Daily Aircraft Operations

Total	Day	Night
487	432	55

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Table 1 shows a breakdown of aircraft operations in the three month period November 2017 to January 2018.

Table 2 shows that there were on average 487 aircraft operations that occurred per day (24 hour period), 55 of these were at night-time.

Figure 2: Aircraft Operations by Time

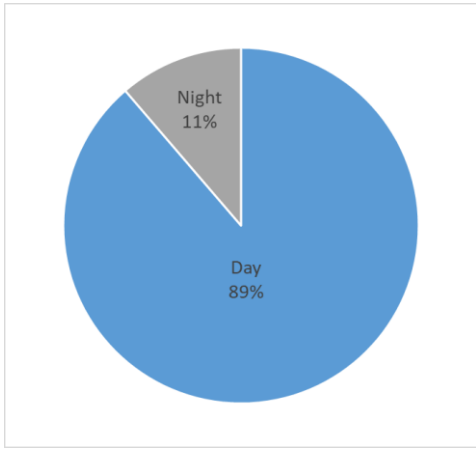

Figure 3: Aircraft Operations by Aircraft Type

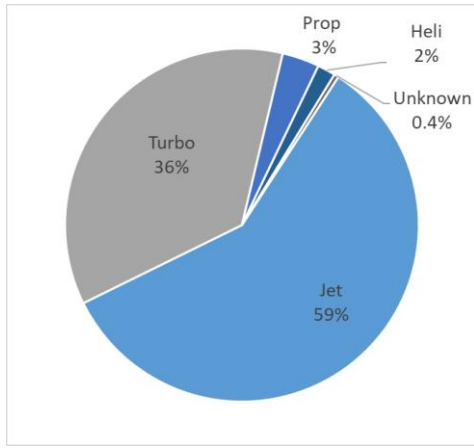

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Figure 2 shows the breakdown of aircraft operations by time of day in the three month period November 2017 to January 2018.

The majority (89%) of aircraft operations occurred in the daytime between 7am and 10pm and the remainder (11%) occurred at night-time.

Figure 3 shows the breakdown of aircraft operations by aircraft type in the three month period November 2017 to January 2018.

The majority (59%) of aircraft operations were jets with 36% being turboprops.

Propeller and helicopter aircraft made up less than 6% of the total aircraft operations during this period.

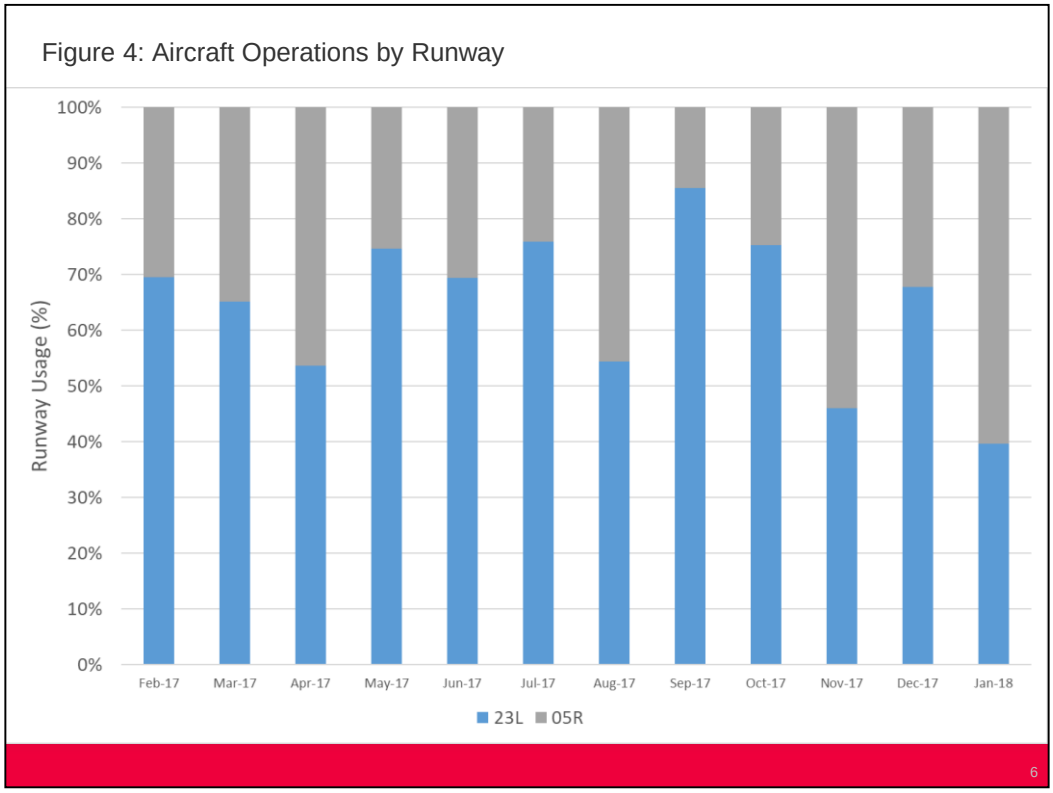

Figure 4 shows the percentage of aircraft operations that used each runway (23L and 05R) over the past 12 months.

Runway 23L is used when westerly winds prevail and Runway 05R is used when easterly winds prevail (refer glossary for explanation)

The historical average runway usage is RW23L 70%/RW05R 30%

The runway usage in the three month period November 2017 to January 2018 was RW23L 52%/RW05R 48% which is due to more easterly winds than usual.

The runway use in the same quarter last year was RW23L 87%/RW05R 13%


Flight Path Diagrams
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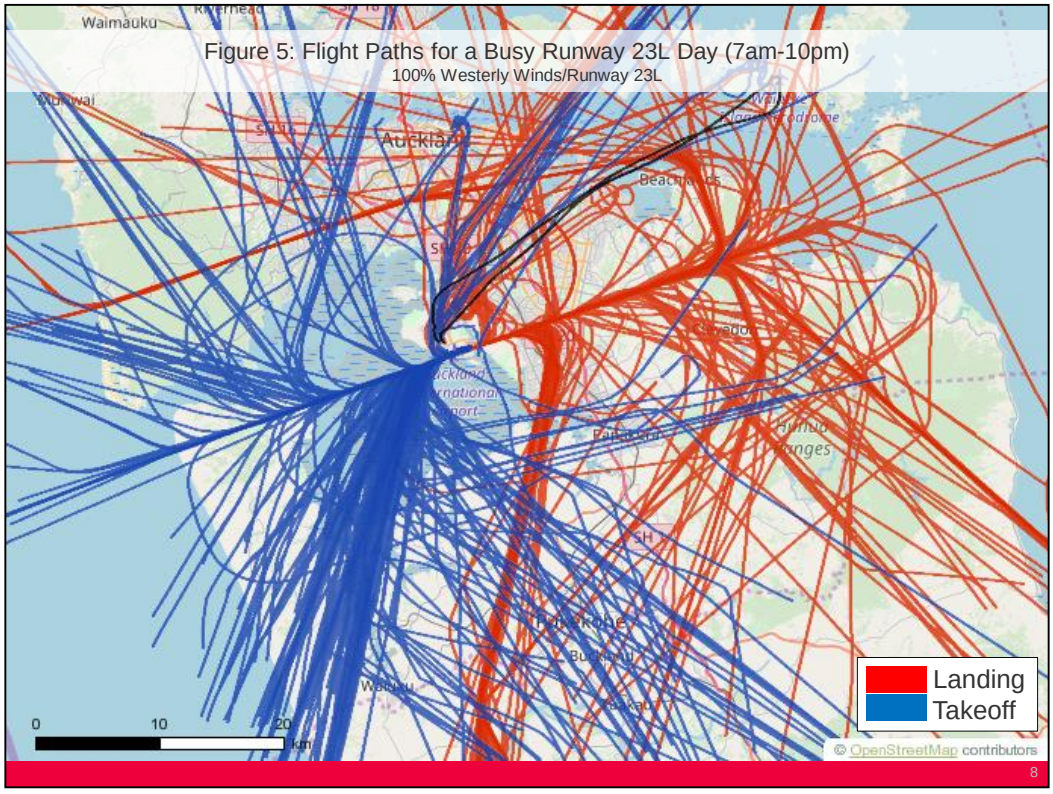

Figure 5 shows the daytime (7am-10pm) flight paths for Thursday 21 December 2017, the busiest day in the three month period November 2017 to January 2018 when Runway 23L was primarily in use.

The red lines indicate arrivals and the blue lines indicate departures.

The runway usage during this day was Runway 23L (westerly) 100%.

There were 505 daytime flights on this day.

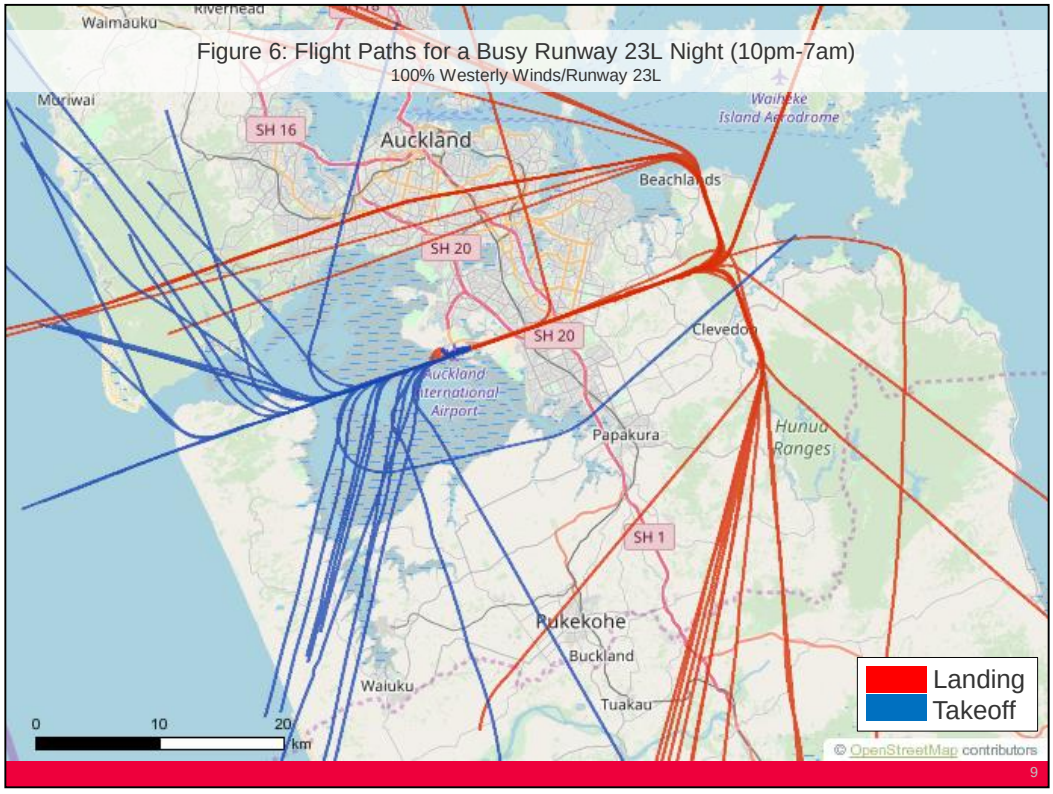

Figure 6 shows the night-time (10pm-7am) flight paths for Thursday 21 December 2017, the busiest night in the three month period November 2017 to January 2018 when Runway 23L was primarily in use.

The red lines indicate arrivals and the blue lines indicate departures.

The runway usage during this night was Runway 23L (westerly) 100%.

There were 66 night-time flights on this night.

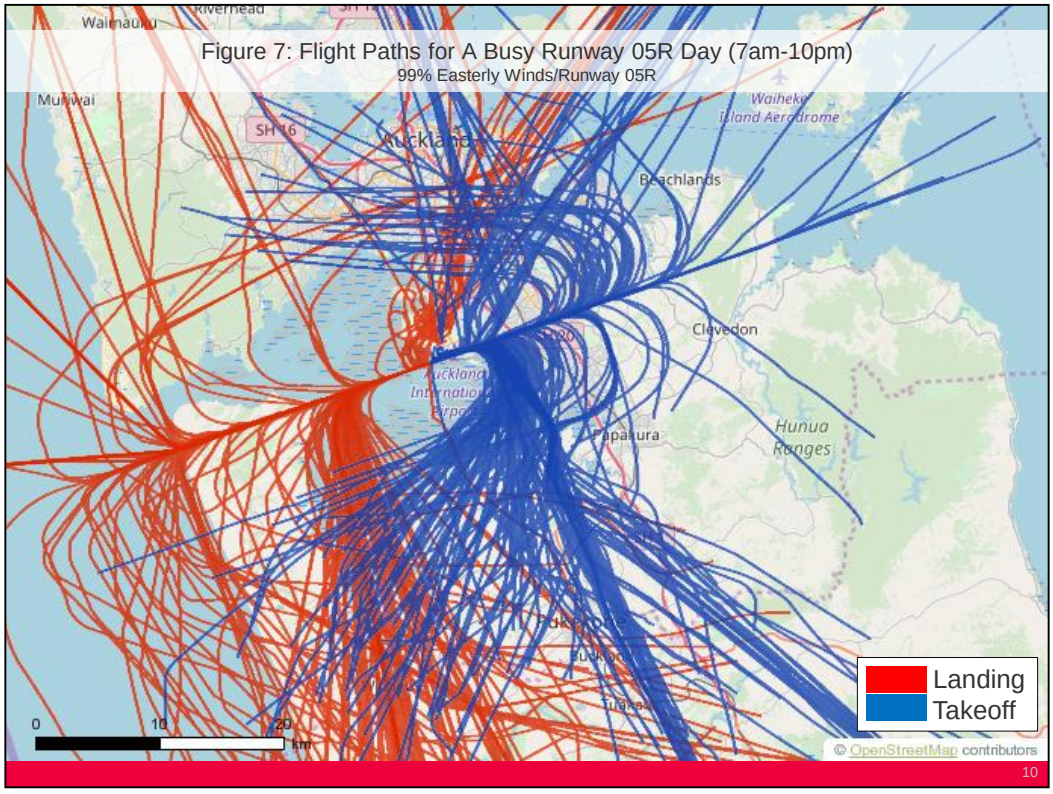

Figure 7 shows the daytime (7am-10pm) flight paths for Friday 1 December 2017, the busiest day in the three month period November 2017 to January 2018 when Runway 05R was primarily in use.

The red lines indicate arrivals and the blue lines indicate departures.

The runway usage during this day was Runway 05R (easterly) 99%.

There were 486 daytime flights on this day.

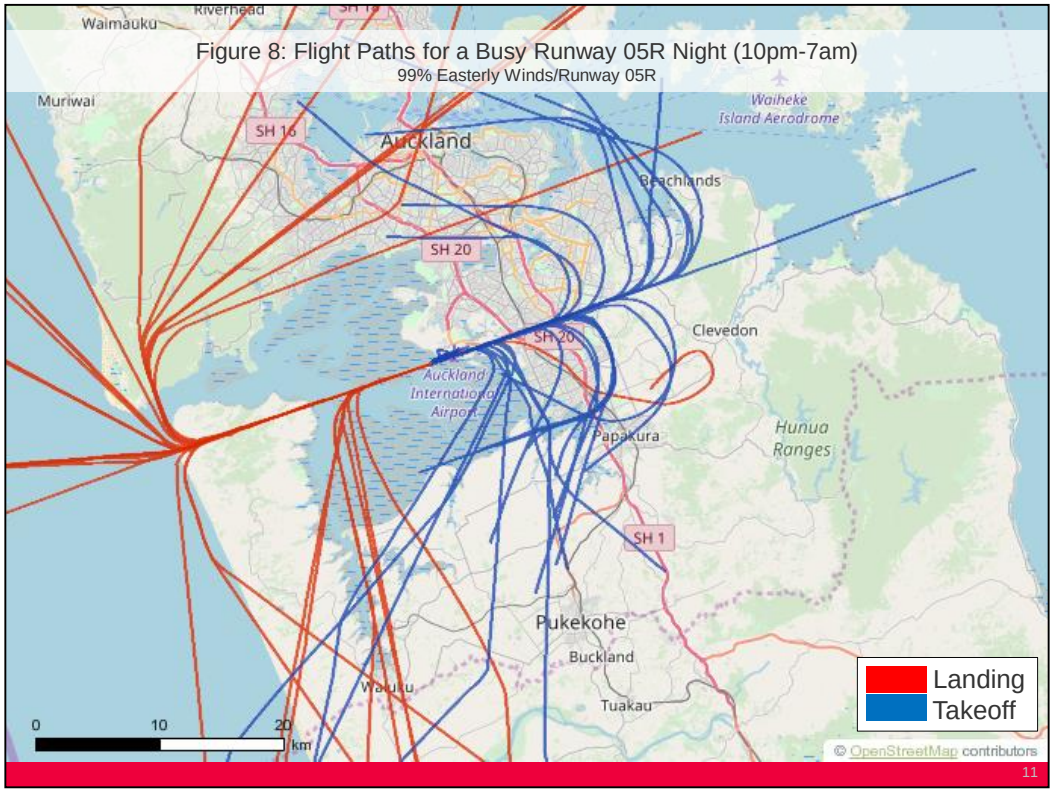

Figure 8 shows the night-time (10pm-7am) flight paths for Friday 1 December 2017, the busiest night in the three month period November 2017 to January 2018 when Runway 05R was primarily in use.

The red lines indicate arrivals and the blue lines indicate departures.

The runway usage during this night was Runway 05R (easterly) 99%.

There were 67 night-time flights on this night.

Noise Enquiries

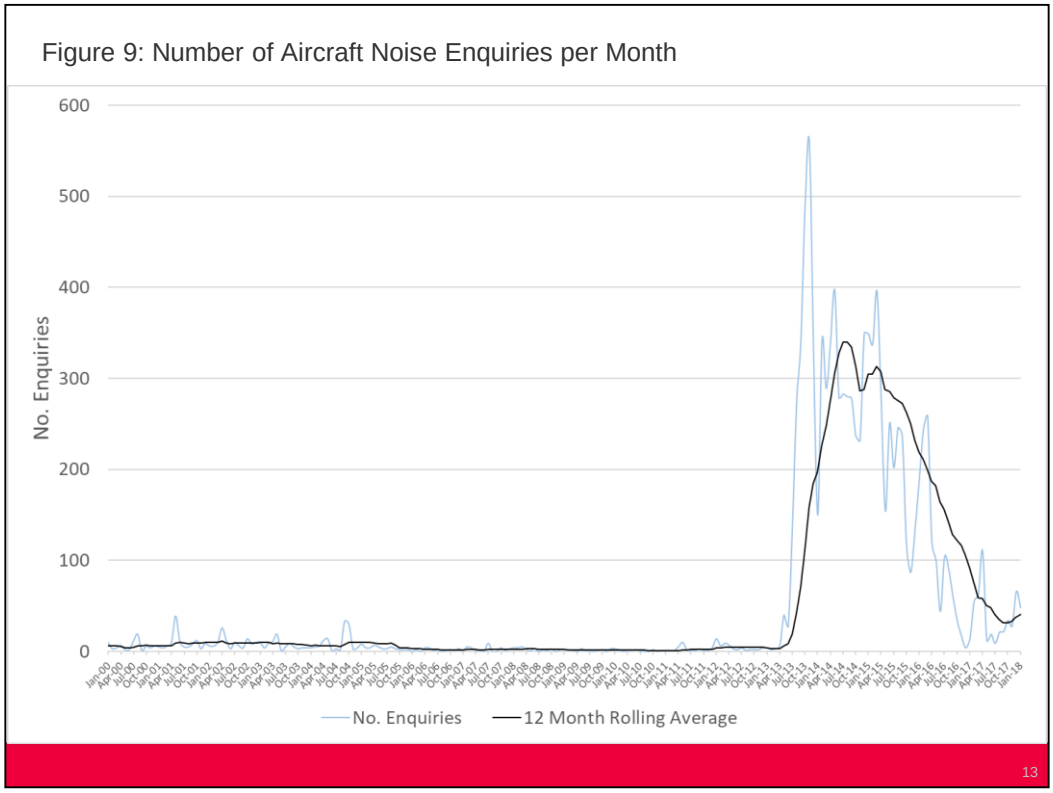

Figure 9 shows the total number of aircraft noise enquiries made per month since the year 2000 (blue line) and the 12 month rolling average (black line).

Aircraft noise enquiries were low up until 2013 when the number of enquiries increased from about 2 per month to a peak of 560 in November 2013 and have decreased steadily since then.

This increase in enquiries coincided with the 2012/13 SMART trials where community awareness to noise was heightened.

The number of noise enquiries in the three month period November 2017 to January 2018 has increased from 35 to 141 when compared to the same period last year.

Table 3: Summary of Noise Enquiries

	Total	November	December	January
Number of Enquiries	141	27	66	48
Specific	*82*	*16*	*44*	*22*
Generic	*49*	*8*	*21*	*20*
Question	*10*	*3*	*1*	*6*
Number of People Enquiring	57	16	23	29

Note: Two people made 33% (46) of the total number of noise enquiries for the three month period. These people were located in Remuera and One Tree Hill.

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Table 3 shows a breakdown of the noise enquiries in the three month period November 2017 to January 2018.

A particular person, may have made several enquiries over time. These individual enquiries could have been regarding one specific aircraft operation or a more general enquiry which does not reference a specific aircraft operation.

There are two types of general enquiries, 'generic' and 'question'. The first relates to people lodging a general enquiry about aircraft noise rather than a specific event, the second relates to people enquiring to ask for information about aircraft noise or management of noise. We therefore refer to:

- The number of 'enquirers' (no. of people who enquire),
- The number of 'generic' noise enquiries (e.g. " there was more aircraft noise last night")
- The number of 'question' noise enquiries (e.g. "can you tell me more about how noise is managed at the airport")
- The number of 'specific' event enquiries (e.g. "the 6:25pm flight was noisy")

There were a total of 141 enquiries in the three month period November 2017 to January 2018, 58% related to specific aircraft events, 35% were generic enquiries and 7% were question enquiries. Two people, one in Remuera and one in One Tree Hill, made 33%(46) of the enquiries for the three month period.

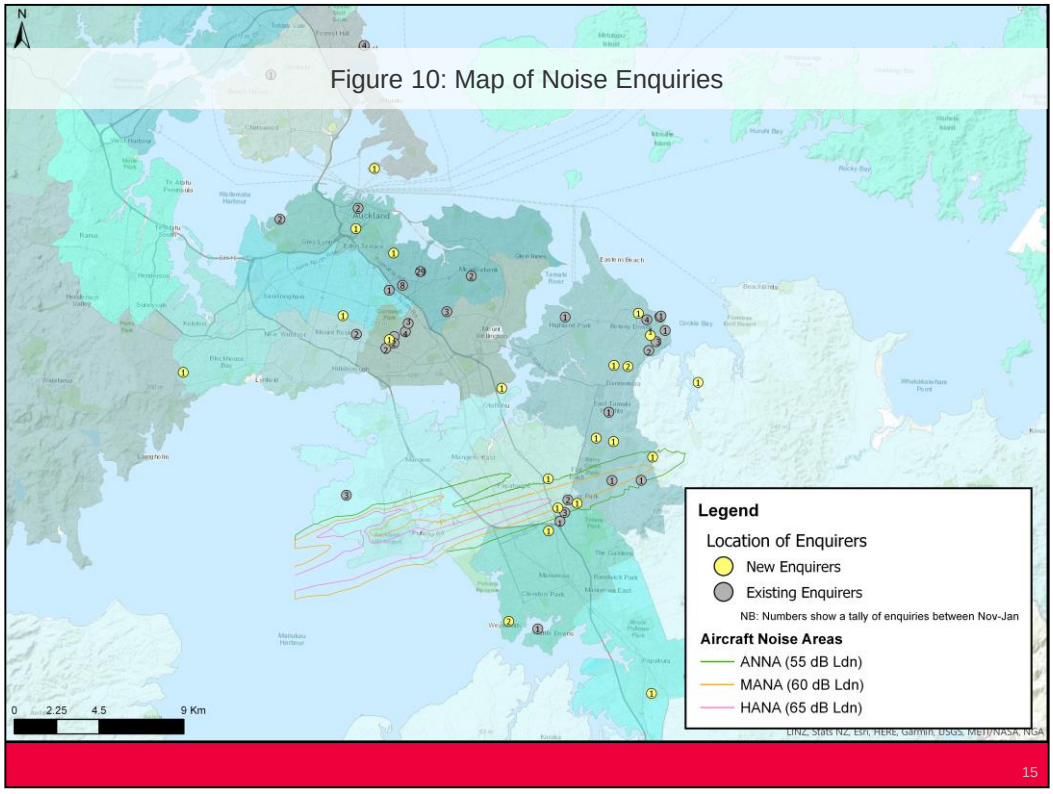


Figure 10 shows a map with the location of each enquirer.

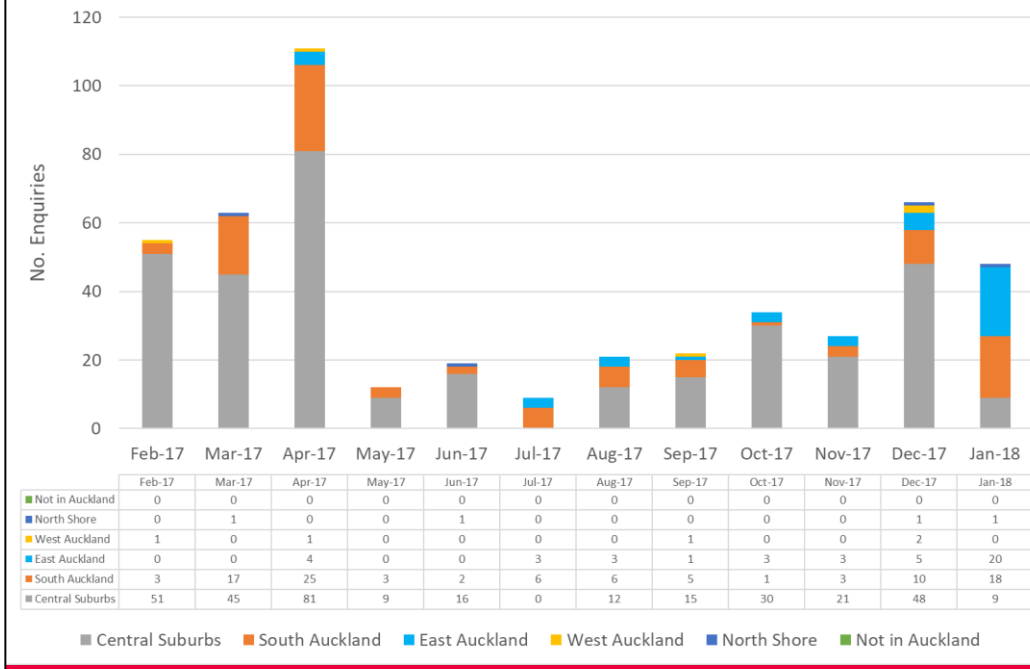
Each point represents the location of a person who enquired in the three month period November 2017 to January 2018.

The colour of the point represents whether it was an existing enquirer (grey - someone who has enquired before) or a new enquirer (yellow - someone who hasn't enquired before).

The numbers on top of each point give the number of enquiries made by each person in the three month period November 2017 to January 2018.

There is a cluster of enquiries in Cockle Bay and a number of enquiries spread throughout the Central Suburbs. There is also a cluster inside the Aircraft Noise Areas.

Figure 11: Number of Noise Enquiries by Area



	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18
Not in Auckland	0	0	0	0	0	0	0	0	0	0	0	0
North Shore	0	1	0	0	1	0	0	0	0	0	1	1
West Auckland	1	0	1	0	0	0	0	1	0	0	2	0
East Auckland	0	0	4	0	0	3	3	1	3	3	5	20
South Auckland	3	17	25	3	2	6	6	5	1	3	10	18
Central Suburbs	51	45	81	9	16	0	12	15	30	21	48	9

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Figure 11 shows the number of enquiries made by people residing in different areas of Auckland over the past 12 months.

In November and December 2017 most of the enquiries were made by people residing in the Central Suburbs with the remainder made by people residing in South and East Auckland. This is similar to previous months.

In January 2018 the enquiries were mainly from South and East Auckland with a smaller number from the Central Suburbs. This is likely due to a high prevalence of Runway 05R usage in January.

A list of which suburbs fall into each area is provided in Appendix C.

Figure 12: Noise Enquiries by Time

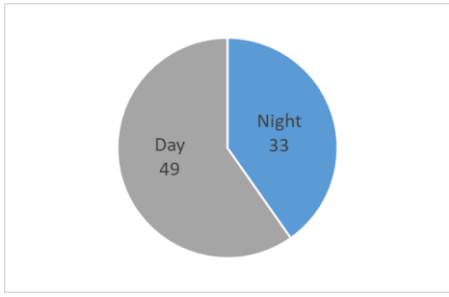


Figure 13: Noise Enquiries by Runway

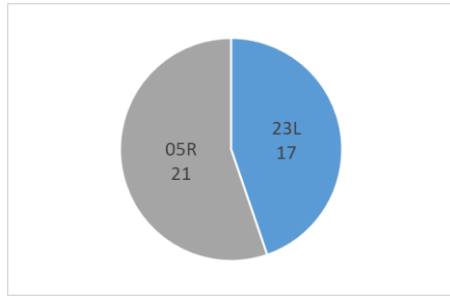


Figure 14: Noise Enquiries by Aircraft

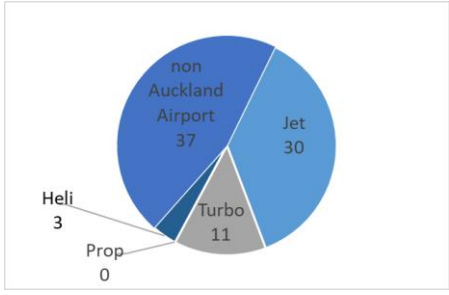
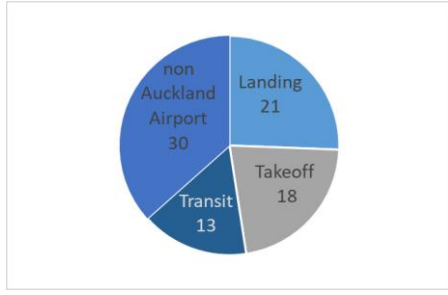


Figure 15: Noise Enquiries by Operation



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Figures 12-15 show a breakdown of the ‘specific’ aircraft noise enquiries made in the three month period November 2017 to January 2018.

Night-time flights made up 40% of the enquiries. The majority of enquiries related to non-Auckland Airport flights which were likely to have been aircraft operating out of other aerodromes and heliports across Auckland.

In January the number enquiries relating to helicopters and other small aircraft not associated with Auckland Airport increased markedly, it appears people noticed these flights and incorrectly associated them with Auckland Airport air traffic.

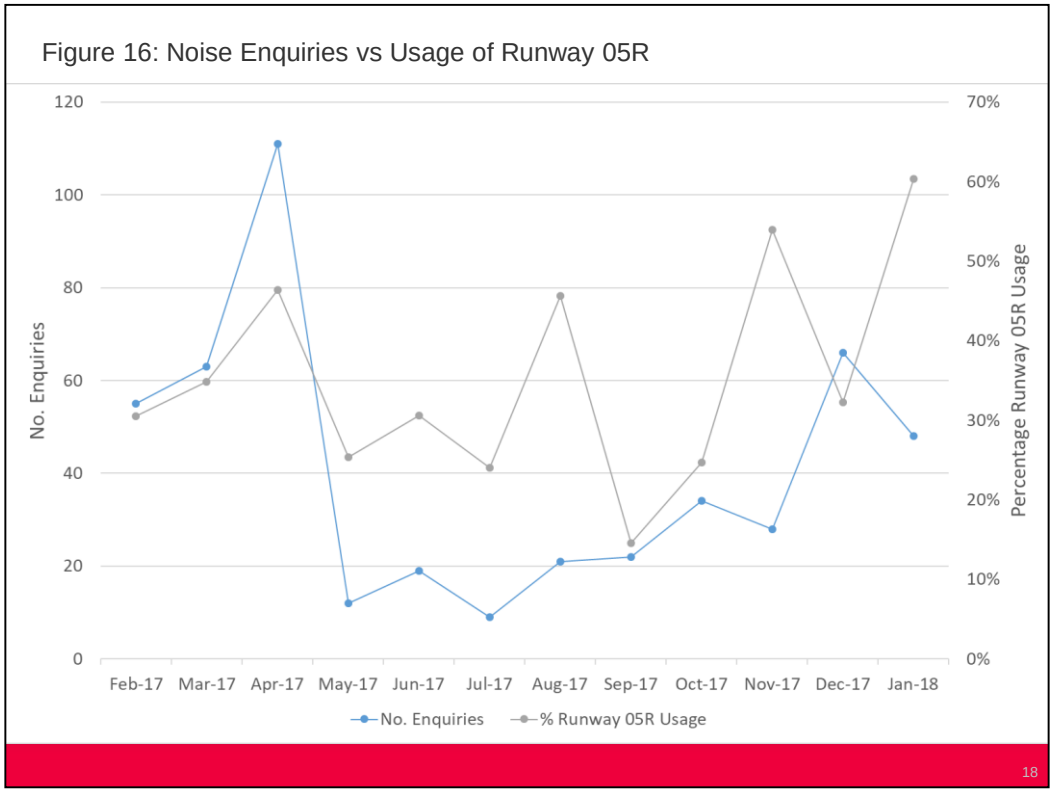

Figure 16 shows the number of noise enquiries received in the past 12 months compared to the usage of Runway 05R.

There is a correlation between the usage of Runway 05R and the number of enquiries.

Usage of Runway 05R is associated with easterly winds which cause departing aircraft to depart to the east over populated areas instead of over the Manukau Harbour (as occurs in the predominant westerly winds).

Departing aircraft are generally louder than arriving aircraft.

In the three month period November 2017 to January 2018 there was no correlation between noise enquiries and the usage of Runway 05R, because the majority of enquiries related to non Auckland Airport aircraft.

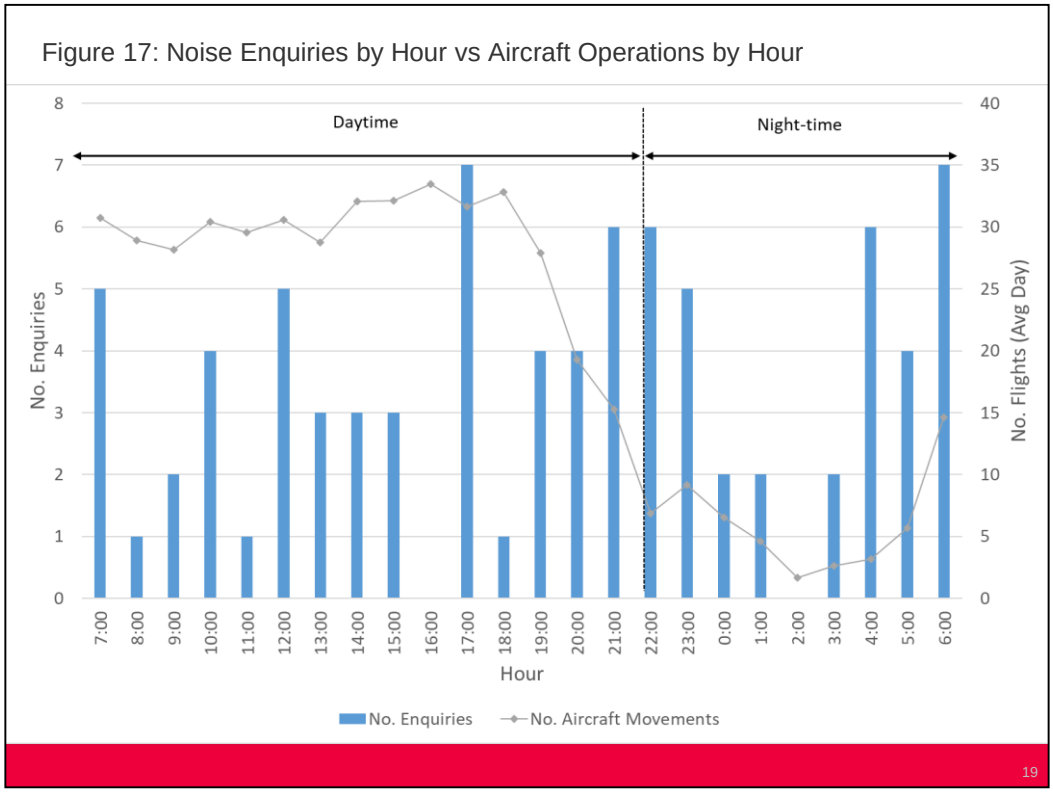

Figure 17 shows the number of specific aircraft noise enquiries and the number of aircraft operations per hour.

The blue bars show the number of enquiries that related to an aircraft operation in each hour of the day in the three month period November 2017 to January 2018.

The gray line shows the average daily aircraft operations that occurred in each hour of the day during this period.

The enquiries were spread throughout the day and night with peaks between 4pm-7am, at 5pm and between 9pm-10pm.

There is little correlation between the number of aircraft operations and the number of enquiries.

Figure 18: Noise Enquiries by Type

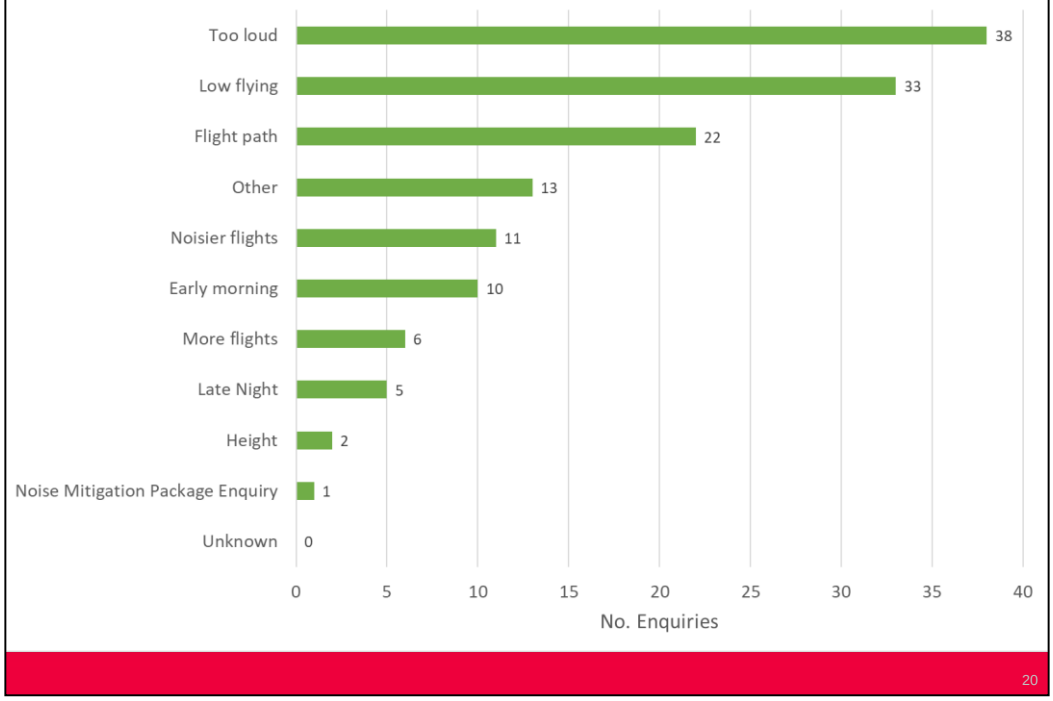

Figure 18 shows the reason for each noise enquiry. This includes generic and specific enquiries.

Aircraft operations being too loud was the main reason for the enquiry (27%) in the three month period November 2017 to January 2018.

Low flying aircraft and changes to the flight paths were the second and third most prevalent reason.

A full description of each cause is given in Appendix B.

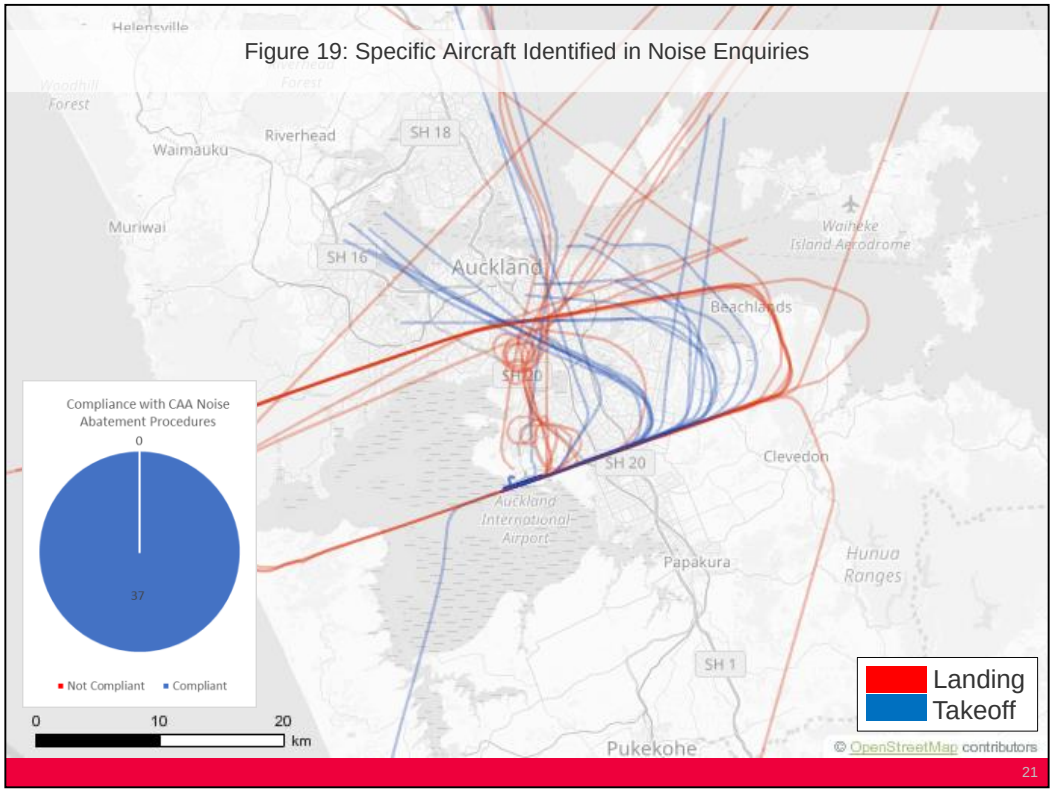

Figure 19 shows the flight paths for specific aircraft from Auckland Airport identified in noise enquiries for the three month period November 2017 to January 2018.

The red lines indicate arrivals, the blue lines indicate departures.

There were 82 noise enquiries that related to specific aircraft during this period. Only 37 (45%) of these operated out of Auckland Airport – the 37 Auckland Airport aircraft events have been reviewed and all of them complied with the Civil Aviation Authority Noise Abatement Procedures.

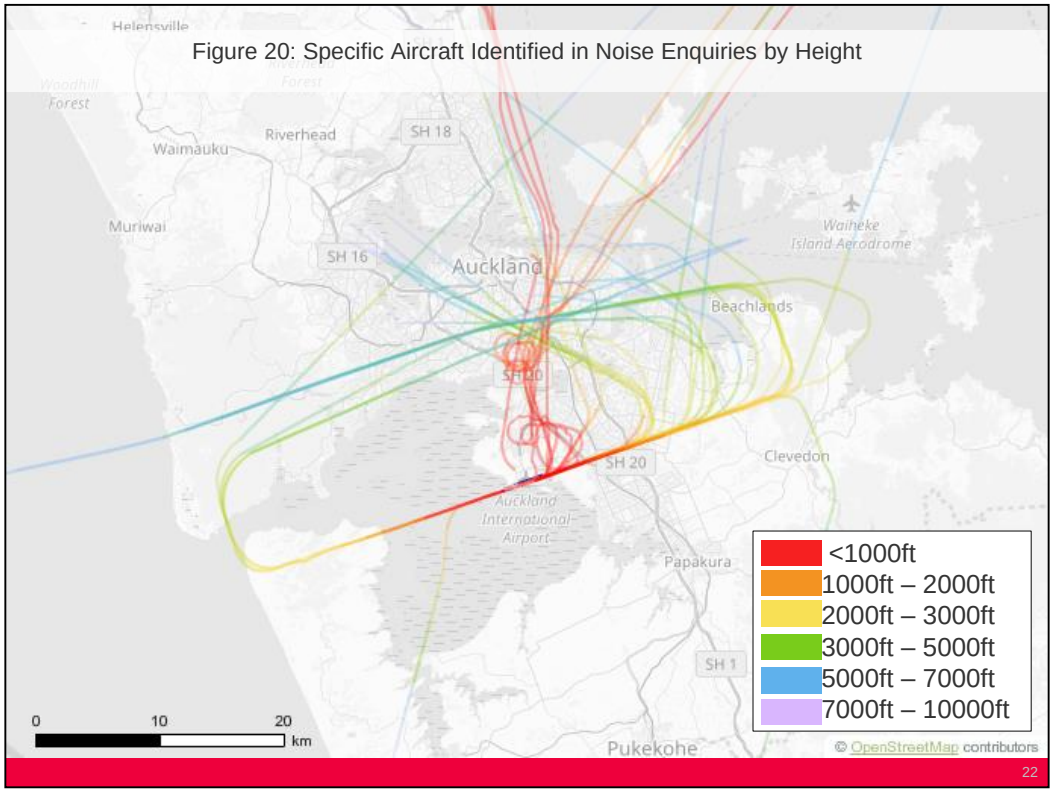

Figure 20 shows the flight paths for the 37 specific aircraft identified from Auckland Airport in noise enquiries for the three month period November 2017 to January 2018.

The flights paths are shown in terms of altitude.


Noise Monitoring
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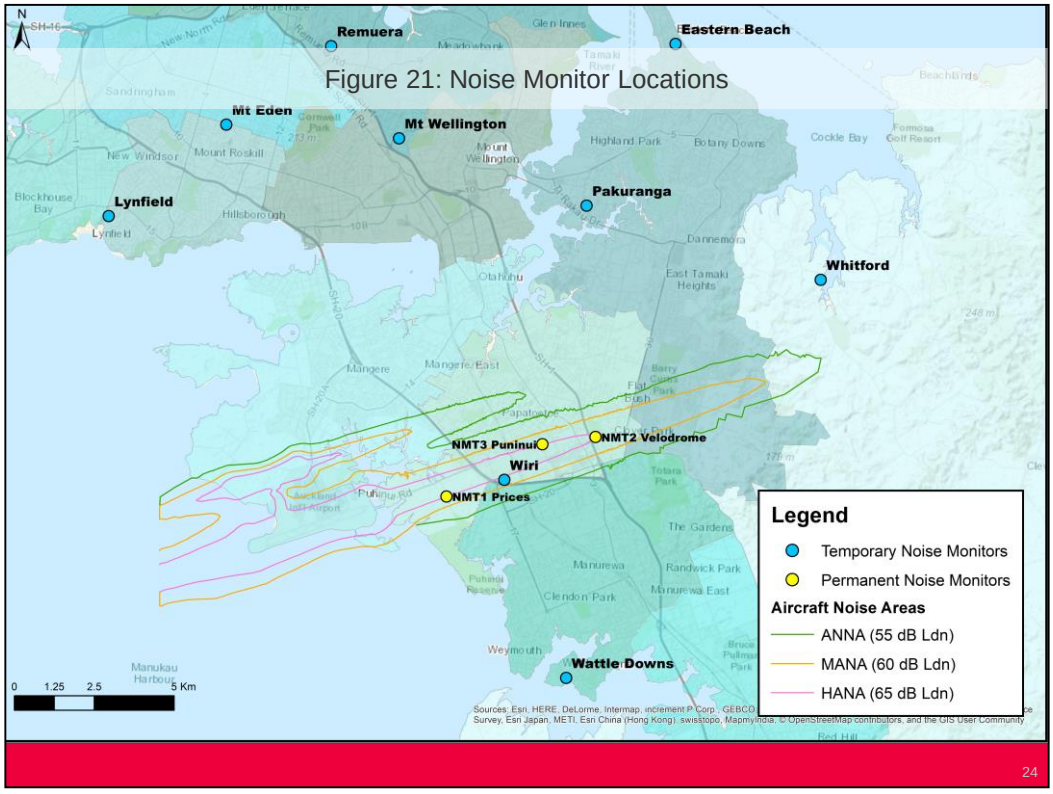

Figure 21 shows the location of Auckland Airport's three permanent and eight temporary noise monitors.

All of the permanent noise monitors are located on the outer boundary of the HANA which is set at 65 dB L_{dn} for future aircraft operations.

The Remuera noise monitor was brought in on 5 December 17 and redeployed to Wattle Downs on 23 December 17

The Lynfield noise monitor was brought in on 5 December 17 and will be re-deployed to Clevedon in early March 2018.

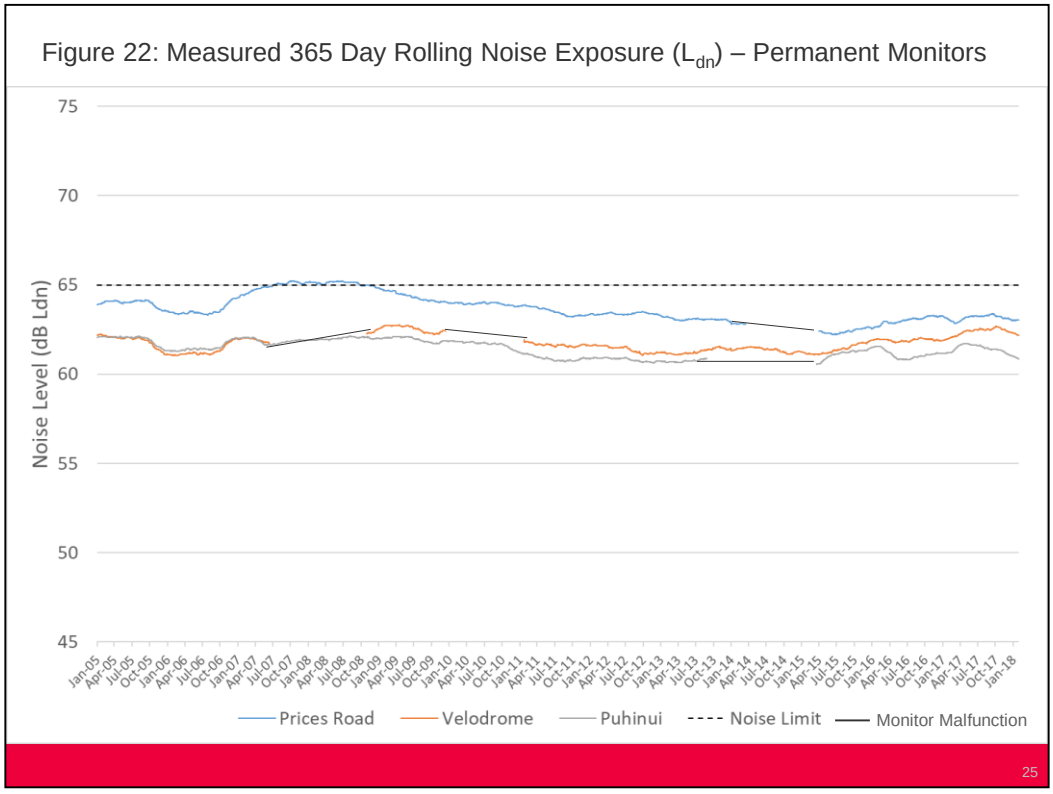

Figure 22 shows the rolling 365 day Noise Exposure (L_{dn}) at the permanent noise monitors since January 2005.

The noise limit in the District Plan is 65 dB L_{dn} (rolling 365 day) at the boundary of the HANA.

The rolling 365 day L_{dn} is the average L_{dn} noise level over 365 days calculated each day and is the overall average L_{dn} for the 365 days preceding and including the day of the calculation.

For example the point for 31 December 2005 represents the average L_{dn} noise level from 1 January 2005 to 31 December 2005.

The rolling 365-day L_{dn} was below the 65 dB L_{dn} noise limit in the three month period November 2017 to January 2018.

The noise levels in the three month period November 2017 to January 2018 have decreased by 1.6 dB at Puhinui School and the Velodrome and by 1.3 dB at Prices Rd compared to the same quarter last year.

The noise levels in the three month period November 2017 to January 2018 are 1 to 2 dB lower than in 2007/2008 when noise levels were highest.

A change in noise level of 1 to 2 dB is not generally perceptible to the human ear.

Figure 23: Number of Aircraft Noise Events in Each Noise Band - Permanent Monitors

(L_{Amax} – Maximum Noise Level)

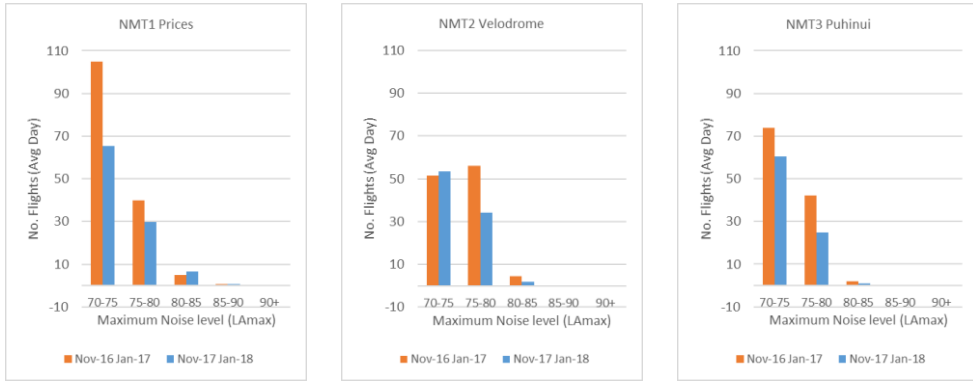

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Figure 23 shows the average daily number of aircraft that overflew each permanent noise monitor in each noise band in the three month period November to January in 2016/17 (Orange bars) and 2017/18 (Blue bars).

L_{Amax} is the maximum noise level experienced as an aircraft overflies a monitor.

Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

The permanent noise monitors receive 86-102 events above 70 L_{Amax} per day.

Table 4: Correlation of Aircraft Operations with Noise Events – Permanent Monitors

	NMT1 Prices	NMT2 Velodrome	NMT3 Puhinui
No. Aircraft Operations	20,050	11,603	12,867
No. Noise Events	15,521	9,098	12,112
Correlation	77%	78%	94%

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Table 4 shows the number of aircraft that flew in the vicinity of each permanent noise monitor and the number of aircraft noise events that were correlated with an aircraft flyover in the three month period November 2017 to January 2018.

Generally a noise monitor is unable to pick up each and every noise event due to ambient noise, inclement weather or other factors.

This table shows how well each noise monitor is performing in correlating aircraft noise events.

In terms of noise compliance, the aircraft that are missed are the lower noise level events and will not have any effect on the overall noise level.

The Velodrome monitor correlated a lower number of the aircraft flyovers. This is due to higher ambient noise levels in this area from State Highway 1 which mean quieter aircraft noise events are not captured.

The Prices Road monitor also correlated a lower number of aircraft flyovers in this three month period which is due to a monitor malfunction for two weeks at the start of November where the noise monitor was not operational.

Table 5: Temporary Noise Monitor Summary of Measured Aircraft Events

	Date Deployed	Days in Field	Measured L_{dn}	Average L_{Amax}
Mt Eden	1-Apr-15	1036	40	62
Lynfield	2-Apr-15	978	36	59
Pakuranga	9-Apr-15	1028	41	66
Mt Wellington	17-Apr-15	1020	40	65
Whitford	10-Jun-15	942	40	60
Eastern Beach	11-Jun-15	965	42	61
Remuera	19-Apr-16	595	35	59
Wiri	2-May-17	274	61	77
Wattle Downs	23-Dec-17	39	47	66

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Table 5 gives a summary of the measured noise levels at each temporary noise monitor since deployment (up until 31 January 2018).

Most of the temporary noise monitors have been deployed for around two and a half years.

The noise monitor in Remuera was deployed in mid 2016, the noise monitor in Wiri was deployed in mid 2017 and the noise monitor in Wattle Downs was deployed in late 2017.

The measured L_{dn} for aircraft noise ranges from 35-47 dB L_{dn} across the various temporary monitor locations, with the exception of the noise monitor in Wiri where noise levels were 61 dB L_{dn}.

New Zealand Standard NZS 6805 states that areas exposed to noise levels below 55 dB L_{dn} are suitable for residential development. The noise levels measured at the temporary noise monitors are 8-20 dB below the 55 dB L_{dn} New Zealand Standard, with the exception of the noise monitor in Wiri.

The noise levels measured at the Wiri noise monitor are 6 dB above the NZS 6805 guideline which is why this location is within the Moderate Aircraft Noise Area.

The average L_{Amax} ranges from 59-66 dB L_{Amax} across the various monitors with the exception of the noise monitor in Wiri where noise levels were 77 dB

L_{Amax}.

The average L_{Amax} is calculated by averaging the maximum level from all of the individual aircraft noise events during the monitoring period.

The L_{Amax} differs for each aircraft operation depending on the aircraft type, type of operation etc.

Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

There were less than two flyovers recorded at the temporary monitors above 70 dB L_{Amax} apart from the noise monitors in Wiri and Wattle Downs which had 85 & 12 noise events above 70 dB L_{amax} respectively.

Figure 24: Measured Monthly Noise Exposure (L_{dn}) – Central Suburbs Temporary Monitors

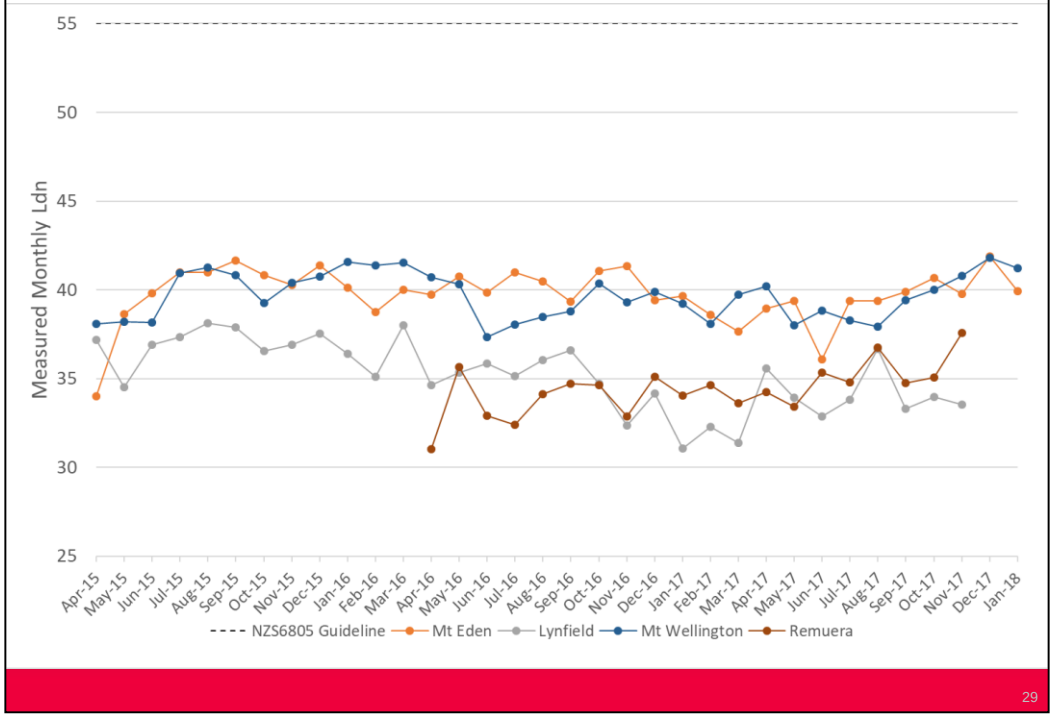

Figure 24 shows the monthly Noise Exposure (L_{dn}) trends for aircraft noise at the temporary noise monitors in the Central Suburbs since their deployment.

The L_{dn} fluctuates month on month by 4-8 dB at each noise monitor depending on aircraft operations, wind direction and other factors.

There are no significant trends in the data.

The measured L_{dn} for aircraft noise ranges from 35-40 dB L_{dn} across the Central Suburb monitor locations.

New Zealand Standard NZS 6805 states that areas exposed to noise levels below 55 dB L_{dn} are suitable for residential development.

The noise levels measured at the temporary noise monitors in the Central Suburbs are 15-20 dB below this level.

Figure 25: Measured Monthly Noise Exposure (L_{dn}) – Eastern Suburbs Temporary Monitors

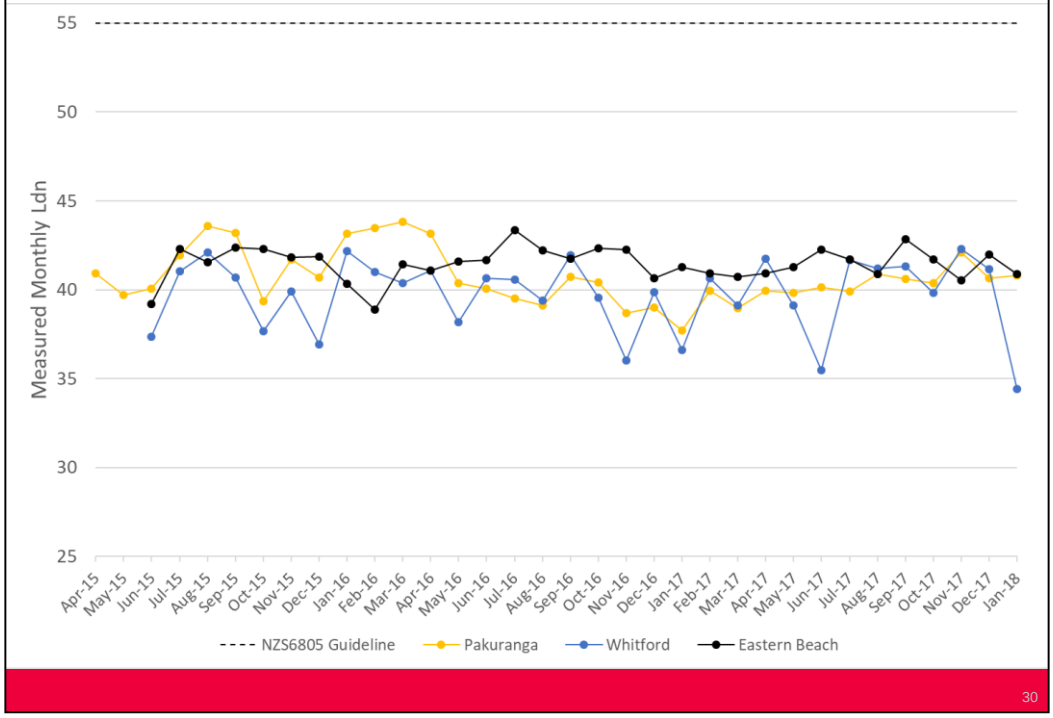

Figure 25 shows the monthly Noise Exposure (L_{dn}) trends for aircraft noise at the temporary noise monitors in East Auckland since their deployment.

The L_{dn} fluctuates month on month by 4-8 dB at each noise monitor depending on aircraft operations, wind direction and other factors.

There are no significant trends in the data.

The measured L_{dn} for aircraft noise ranges from 40-42 dB L_{dn} across the Eastern Suburb monitor locations.

New Zealand Standard NZS 6805 states that areas exposed to noise levels below 55 dB L_{dn} are suitable for residential development.

The noise levels measured at the temporary noise monitors are 13-15 dB below this level.

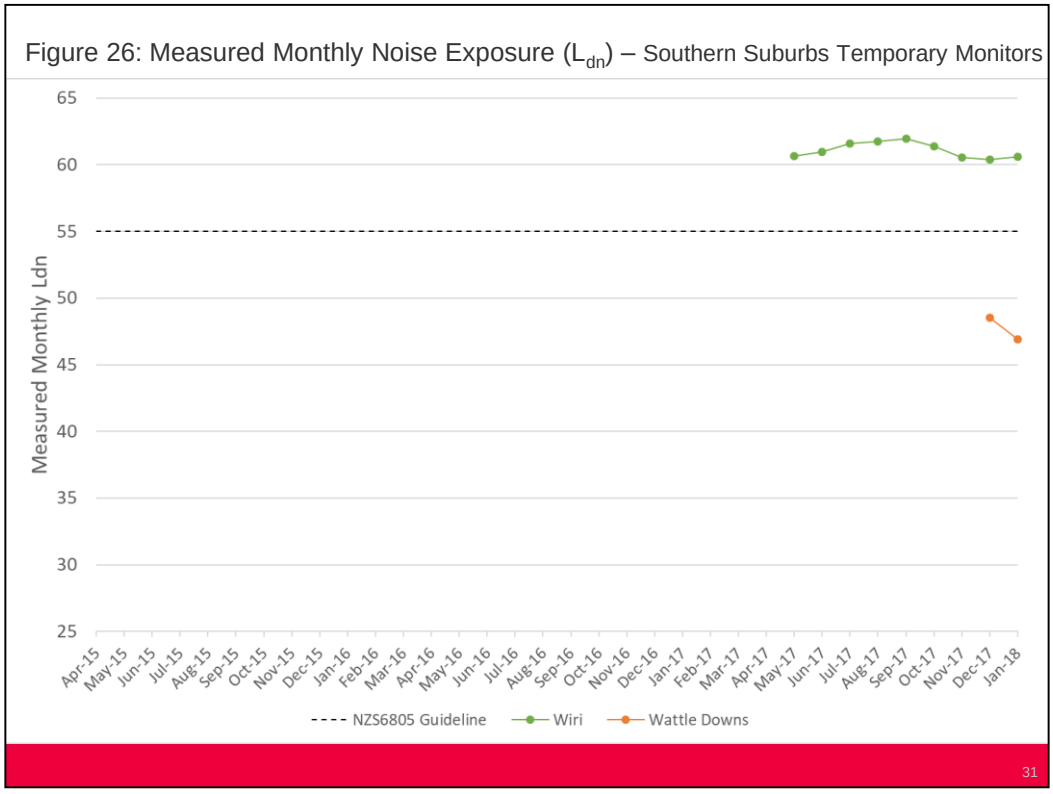

Figure 26 shows the monthly Noise Exposure (L_{dn}) trends for aircraft noise at the temporary noise monitors in South Auckland since their deployment.

The L_{dn} fluctuates month on month by around 2 dB at each noise monitor depending on aircraft operations, wind direction and other factors.

There are no significant trends in the data.

The measured L_{dn} for aircraft noise ranges from 47-61 dB L_{dn} across the Southern Suburb monitor locations.

New Zealand Standard NZS 6805 states that areas exposed to noise levels below 55 dB L_{dn} are suitable for residential development.

The noise level measured at the Wattle Downs noise monitor is 8 dB below this level.

This noise level measured at the Wiri noise monitor is 6 dB above the NZS 6805 guideline which is why this location is within the Moderate Aircraft Noise Area.

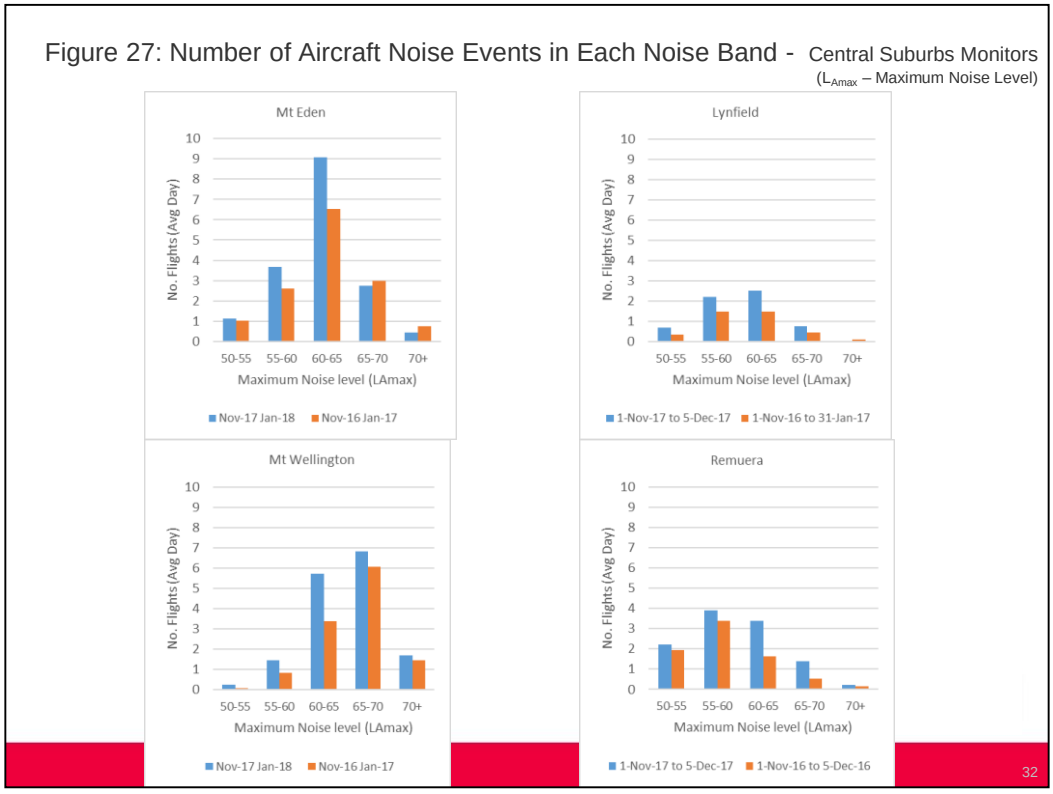

Figure 27 shows the average daily number of aircraft that overflew each of the Central Suburbs temporary noise monitors in each noise band in the three month period November to January in 2016/17 (Orange bars) and 2017/18 (Blue bars).

L_{Amax} is the maximum noise level experienced as an aircraft overflies a monitor.

Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

These temporary noise monitors received less than two events above 70 L_{Amax} per day.

Figure 28: Number of Aircraft Noise Events in Each Noise Band - Eastern Suburbs Monitors (L_{Amax} – Maximum Noise Level)

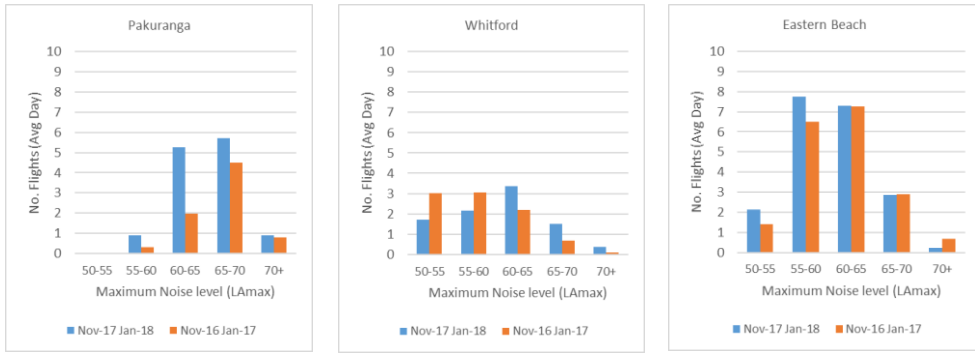

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Figure 28 shows the average daily number of aircraft that overflew each of the Eastern Suburbs temporary noise monitors in each noise band in the three month period November to January in 2016/17 (Orange bars) and 2017/18 (Blue bars).

L_{Amax} is the maximum noise level experienced as an aircraft overflies a monitor.

Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

These temporary noise monitors received less than one event above 70 L_{Amax} per day.

Figure 29: Number of Aircraft Noise Events in Each Noise Band - Southern Suburbs Monitors (L_{Amax} – Maximum Noise Level)

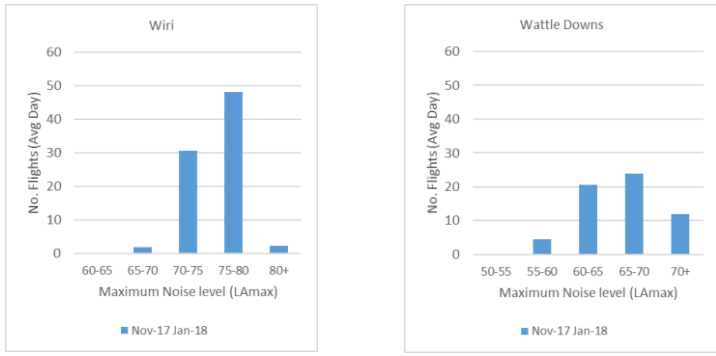

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Figure 29 shows the average daily number of aircraft that overflew the Southern Suburbs temporary noise monitors in each noise band in the three month period November to January 2017/18 (Blue bars).

L_{Amax} is the maximum noise level experienced as an aircraft overflies a monitor.

Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

The Wiri noise monitor receives approximately 85 events above 70 L_{Amax} per day.

The Wattle Downs noise monitor receives approximately 12 events above 70 L_{Amax} per day.


Engine Testing
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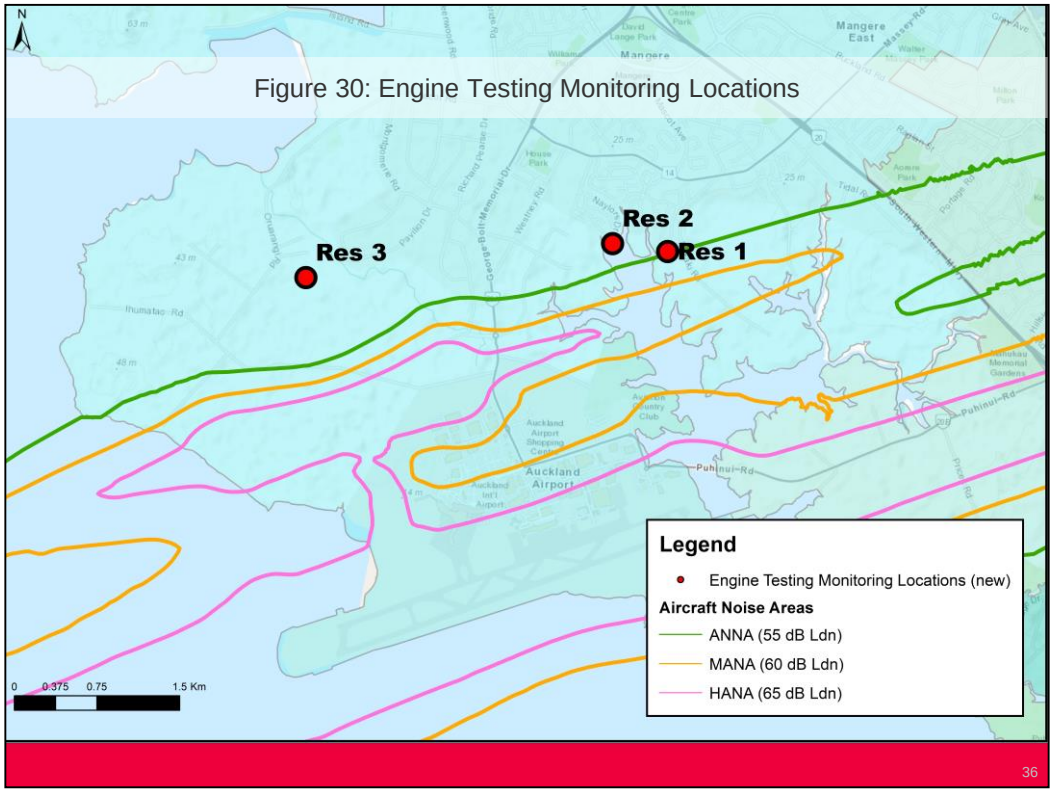

Figure 30 shows the three locations where compliance with the engine testing noise rule is calculated.

Figure 31: Engine Testing Summary

	November	December	January
Number of Tests	211	275	263
Average Daily Tests	7	9	8
Max Tests in one Day	15	22	17
Min Tests in one Day	0	2	1

Figure 31 shows the rolling 7 day average noise level for engine testing activity at the airport in the three month period November 2017 to January 2018.

The District Plan noise limit for engine testing activity is 55 dB L_{dn} (7 day rolling).

The engine testing noise levels were compliant with the 55 L_{dn} noise limit.

The Table insert shows the maximum, minimum and average number of engine tests performed on an average day in each month along with the total number of tests completed in each month.

Appendix A: Glossary of Terminology

Term	Definition
Daytime	The period from 7:00am to 10:00pm
Night-time	The Period from 10:00pm to 7:00am
Runway 23L/Runway 05R	Occurs in Westerly Wind Conditions  Occurs in Easterly Wind Conditions 
Enquiry Type	
"Specific" enquiry	Enquiries relating to a specific aircraft operation.
"Generic" enquiry	Enquiries that don't relate to a specific aircraft operation but relate to noise in general.
"Question" enquiry	An enquiry to find out more information about noise related topics.
"Aircraft" Noise	Noise that is from aircraft operations only.
"Ambient" Noise	Noise that is from general ambient noise sources (cars, wind etc.). Excludes noise from aircraft operations.
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
L_{dn} – Noise Exposure	The average A-weighted noise level over a day/month/year with a 10 dB penalty applied to the night-time (10pm – 7am).
L_{Amax} – Maximum Noise Level	The highest A-weighted noise level which occurs during an aircraft operation.
ANNA	Aircraft Noise Notification Area – Set at 55 dB L_{dn}
MANA	Moderate Aircraft Noise Area – Set at 60 dB L_{dn}
HANA	High Aircraft Noise Area – Set at 65 dB L_{dn}

Appendix B: Noise Enquiry Type

Cause	Description
Low flying	Aircraft flying at a low altitude
Too loud	Aircraft making too much noise
Early morning	Aircraft flying in the early morning
Late night	Aircraft flying late at night or overnight
Height	Aircraft flying higher or lower than usual
More flights	More aircraft operations than usual
Noisier flights	Aircraft are noisier than usual
Flight path	Aircraft flying on a different flight path than usual
Other	The disturbance is different from those listed
Unknown	Cause not stated
Noise Mitigation Package Enquiry	Enquiry relating to the Noise Mitigation Packages

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Appendix C: Suburbs by Area

Suburb	Area	Suburb	Area	Suburb	Area
Alfriston	South Auckland	Manurewa	South Auckland	Randwick Park	South Auckland
Anawhata	West Auckland	Meadowbank	Central Suburbs	Remuera	Central Suburbs
Beachlands	East Auckland	Mellons Bay	East Auckland	Saint Heliers	Central Suburbs
Bucklands Beach	East Auckland	Milford	North Shore	Sandringham	Central Suburbs
Clover Park	South Auckland	Mount Eden	Central Suburbs	Shelly Park	South Auckland
Cockle Bay	East Auckland	Mount Roskill	Central Suburbs	Somerville	South Auckland
Cornwallis	West Auckland	Mount Wellington	Central Suburbs	Takanini	West Auckland
East Tamaki Heights	East Auckland	Muriwai	West Auckland	Te Atatu South	West Auckland
Ellerslie	Central Suburbs	Northpark	South Auckland	The Gardens	South Auckland
Epsom	Central Suburbs	One Tree Hill	Central Suburbs	Titirangi	West Auckland
Flat Bush	East Auckland	Onehunga	Central Suburbs	Totara Heights	South Auckland
Glendowie	Central Suburbs	Onewhero	South Auckland	Totara Vale	South Auckland
Greenlane	Central Suburbs	Otahuhu	South Auckland	Waitakere	West Auckland
Grey Lynn	Central Suburbs	Otara	South Auckland	Waiuku	South Auckland
Half Moon Bay	East Auckland	Pakuranga Heights	East Auckland	Wattle Downs	South Auckland
Herne Bay	Central Suburbs	Panmure	Central Suburbs	Westmere	Central Suburbs
Howick	East Auckland	Papatoetoe	South Auckland	Weymouth	South Auckland
Karaka	South Auckland	Point Chevalier	Central Suburbs	Whanganui	Not in Auckland
Mangere	South Auckland	Point England	East Auckland	Whangaparaoa	Not in Auckland
Mangere Bridge	South Auckland	Pollok	South Auckland		
Manukau	South Auckland				