

# ANCCG Meeting

Monitoring Period

November 2020 – January 2021

Meeting: 8 March 2021



Flight

# Aircraft Operations

Figure 1: Number of Aircraft Operations per Month

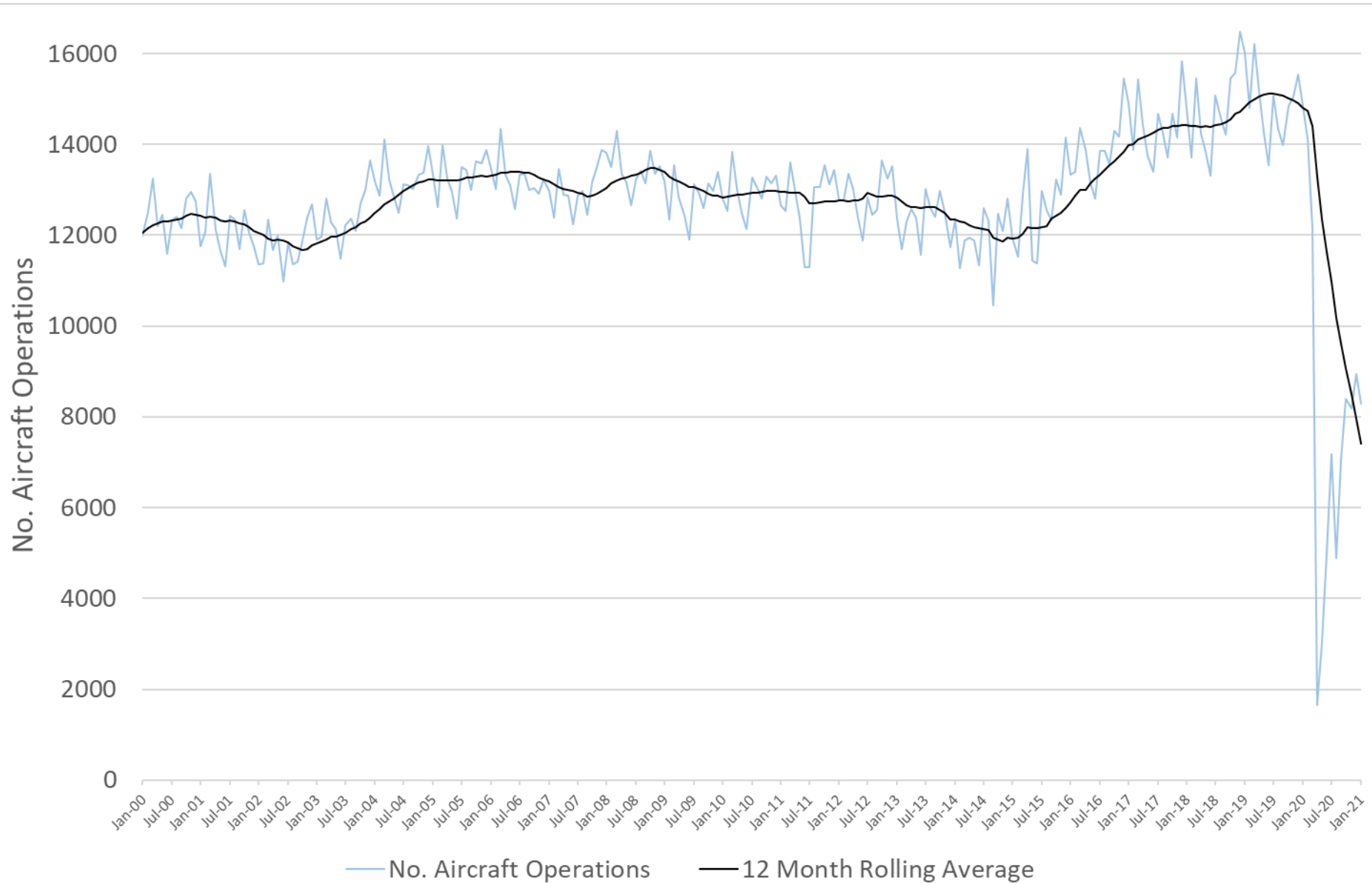


Table 1: Summary of Aircraft Operations

Operation	Total	Day	Night
Arrivals	12,791	11,708	1,083
Departures	12,536	11,612	924
Circuit	82	73	9
<b>Total</b>	25,409	23,393	2,016

Table 2: Average Daily Aircraft Operations

Total	Day	Night
276	254	22

Figure 2: Aircraft Operations by Time

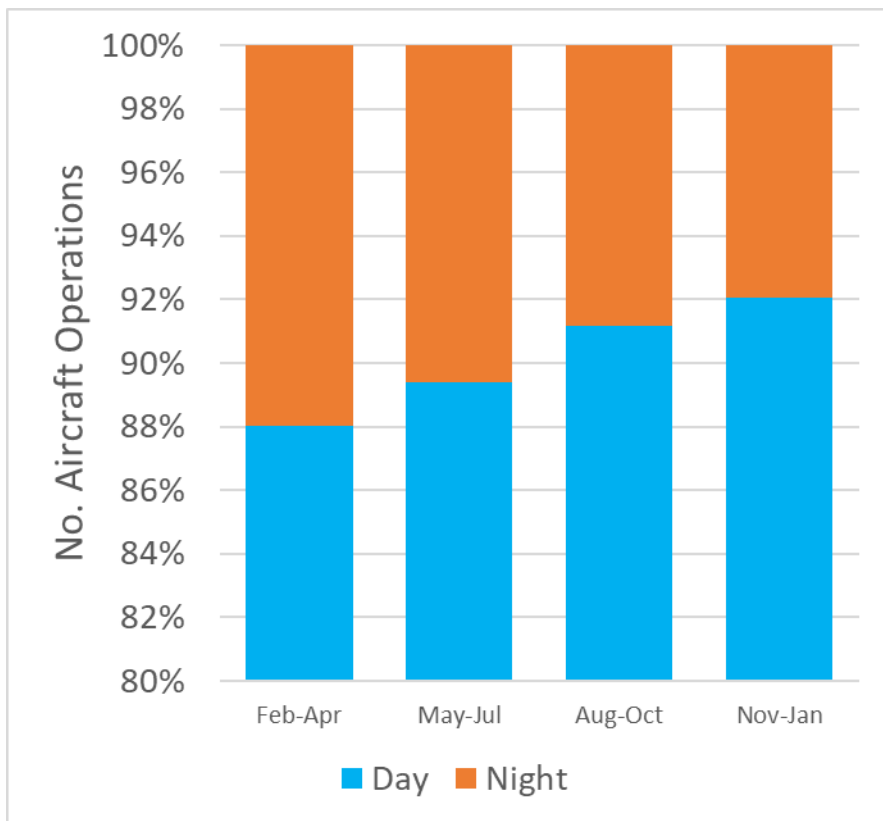


Figure 3: Aircraft Operations by Aircraft Type

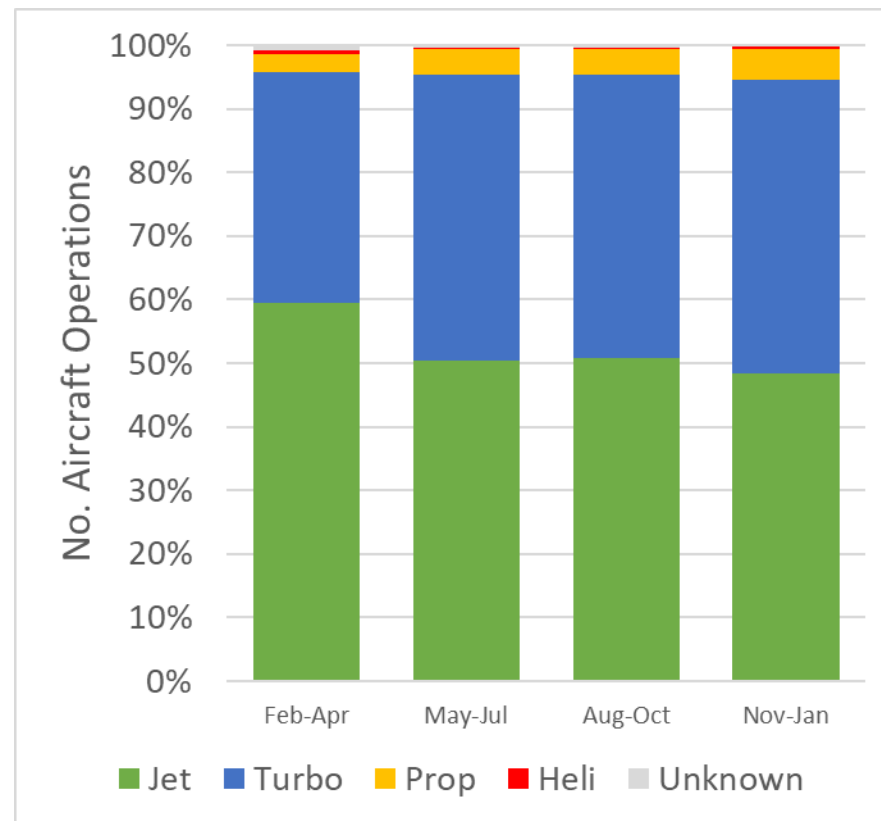


Figure 4: Aircraft Operations by Runway

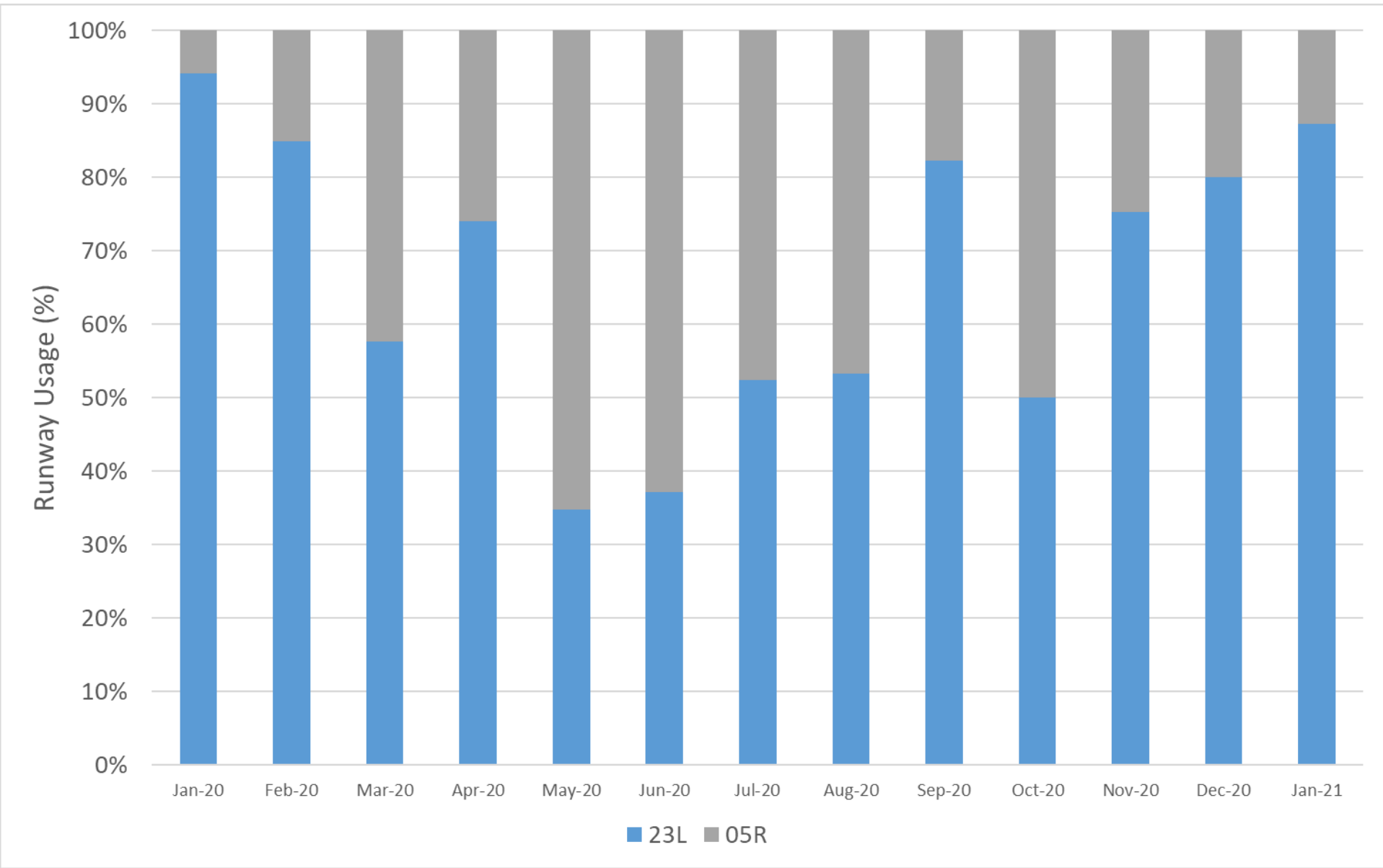


Figure 5: Number of SMART Approaches per week

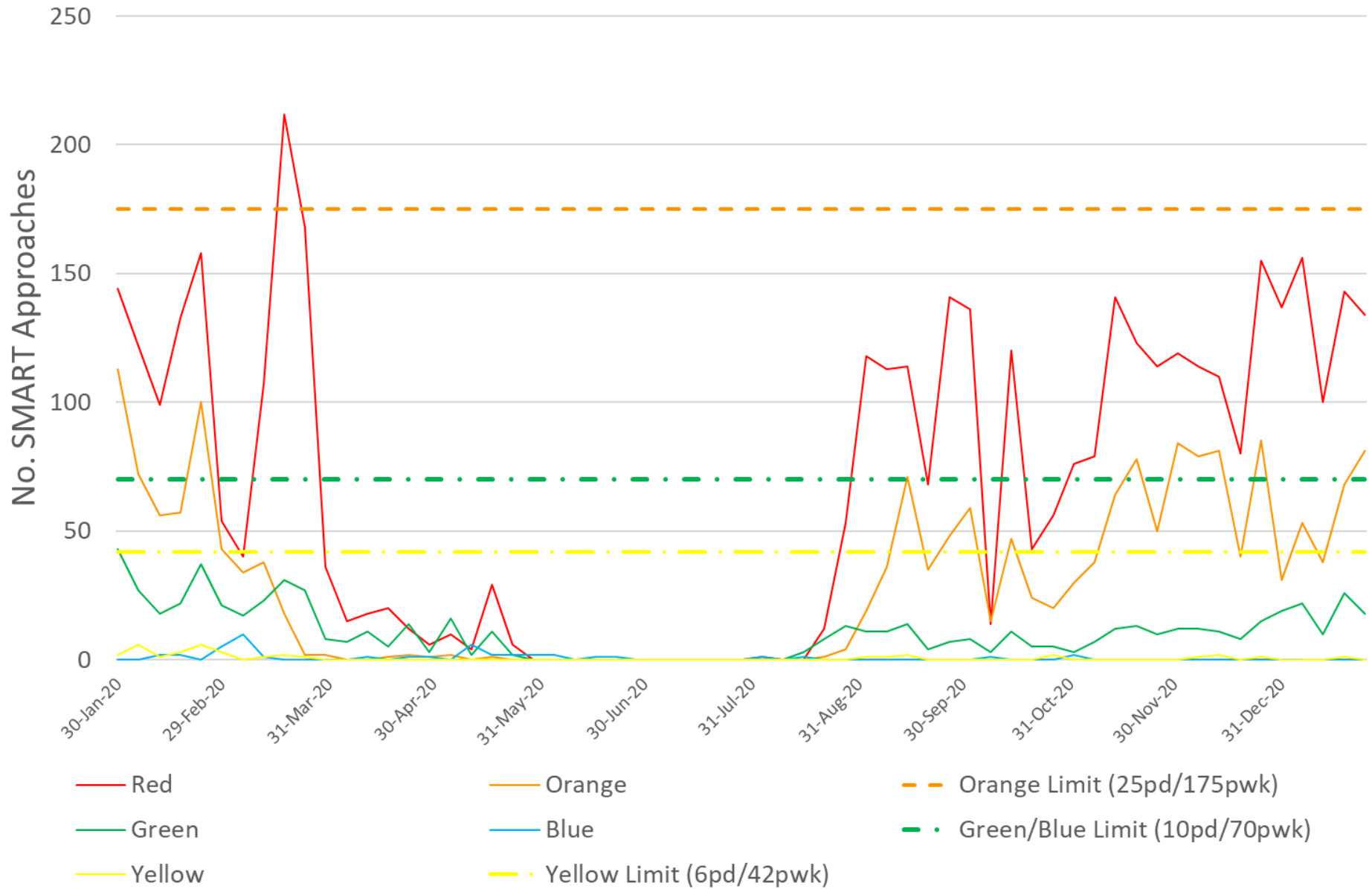
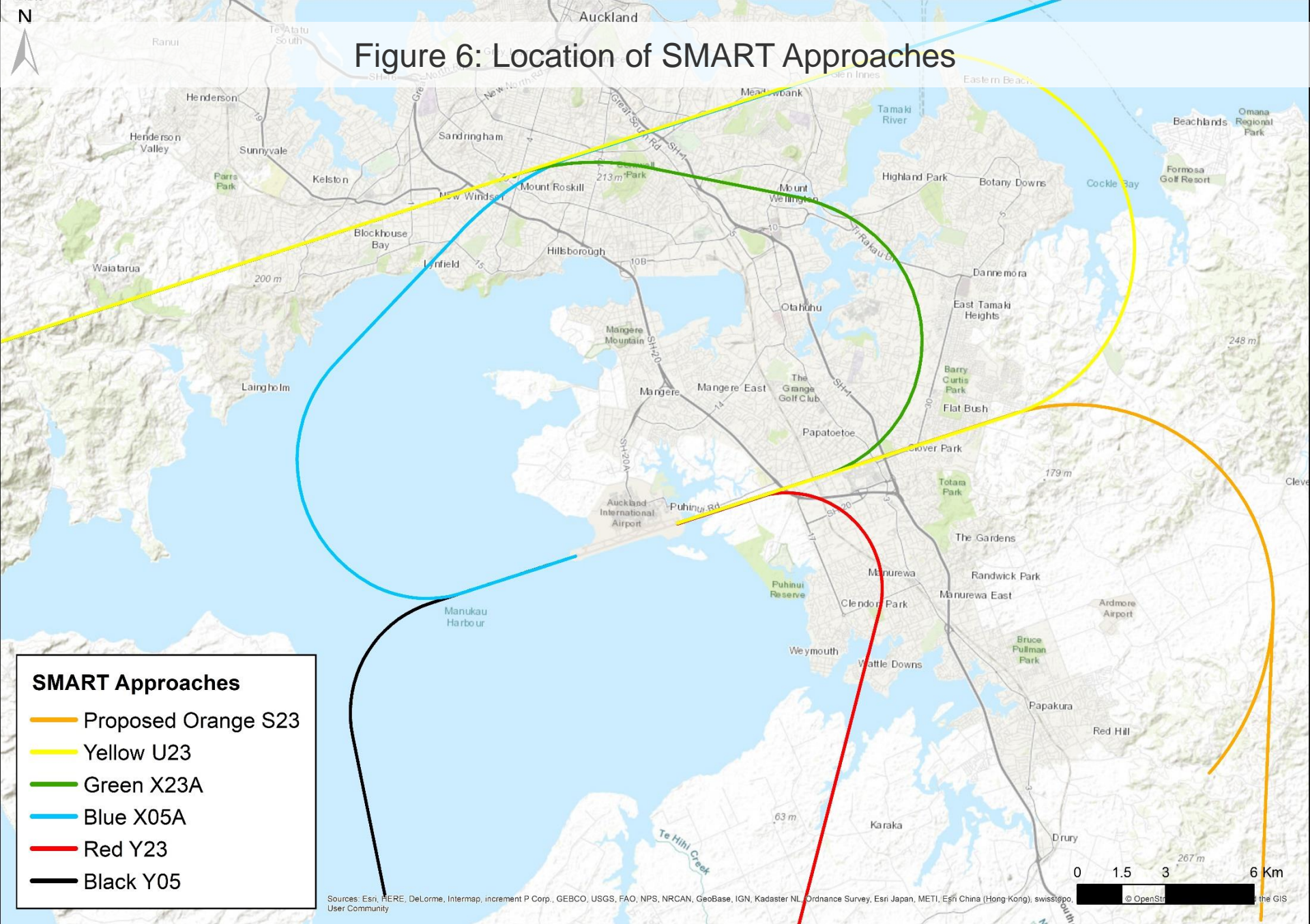




Figure 6: Location of SMART Approaches







# Flight Path Diagrams

Figure 7: Flight Paths for a Busy Runway 23L Day (7am-10pm)  
100% Westerly Winds/Runway 23L

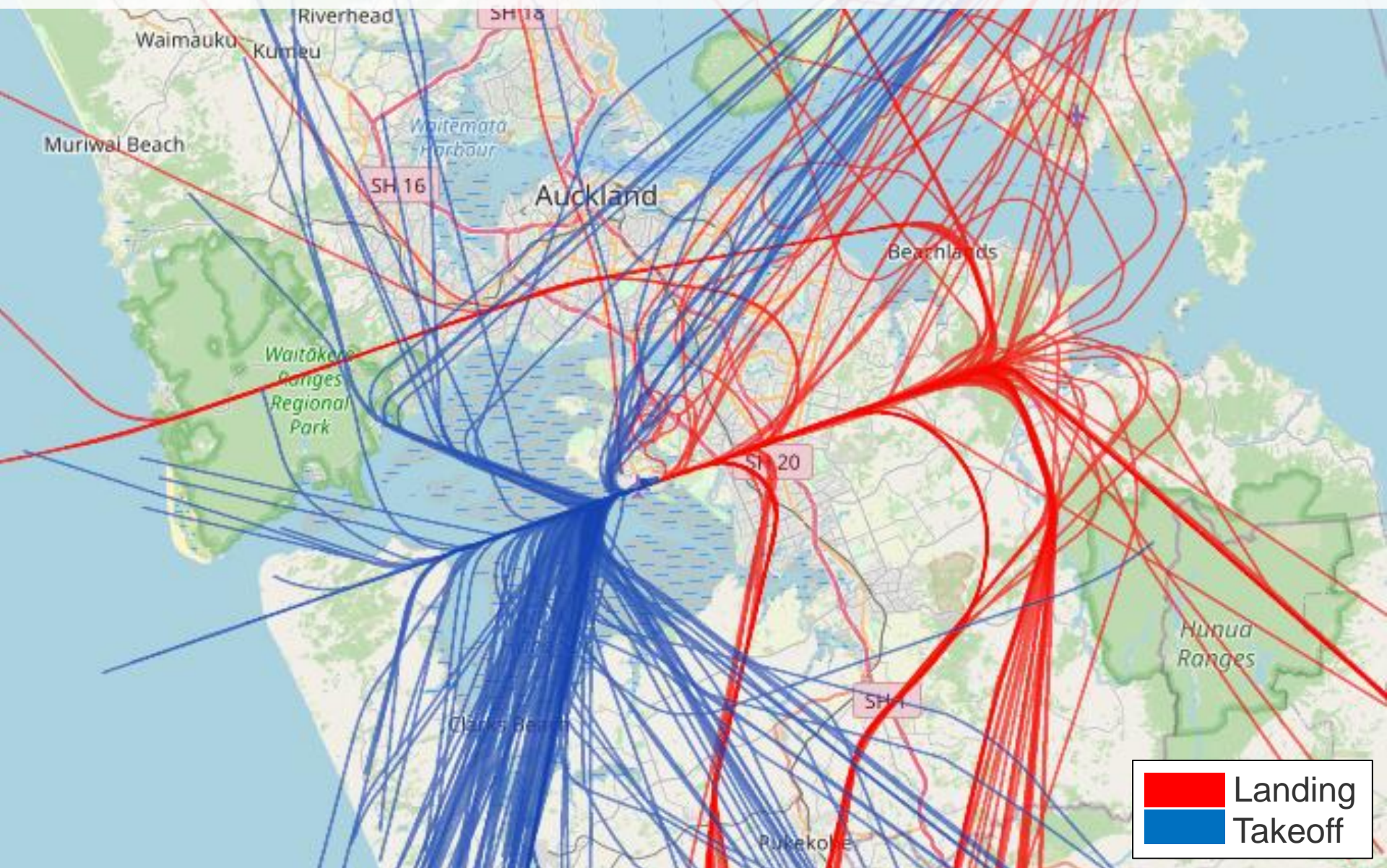




Figure 8: Flight Paths for a Busy Runway 23L Night (10pm-7am)

100% Westerly Winds/Runway 23L

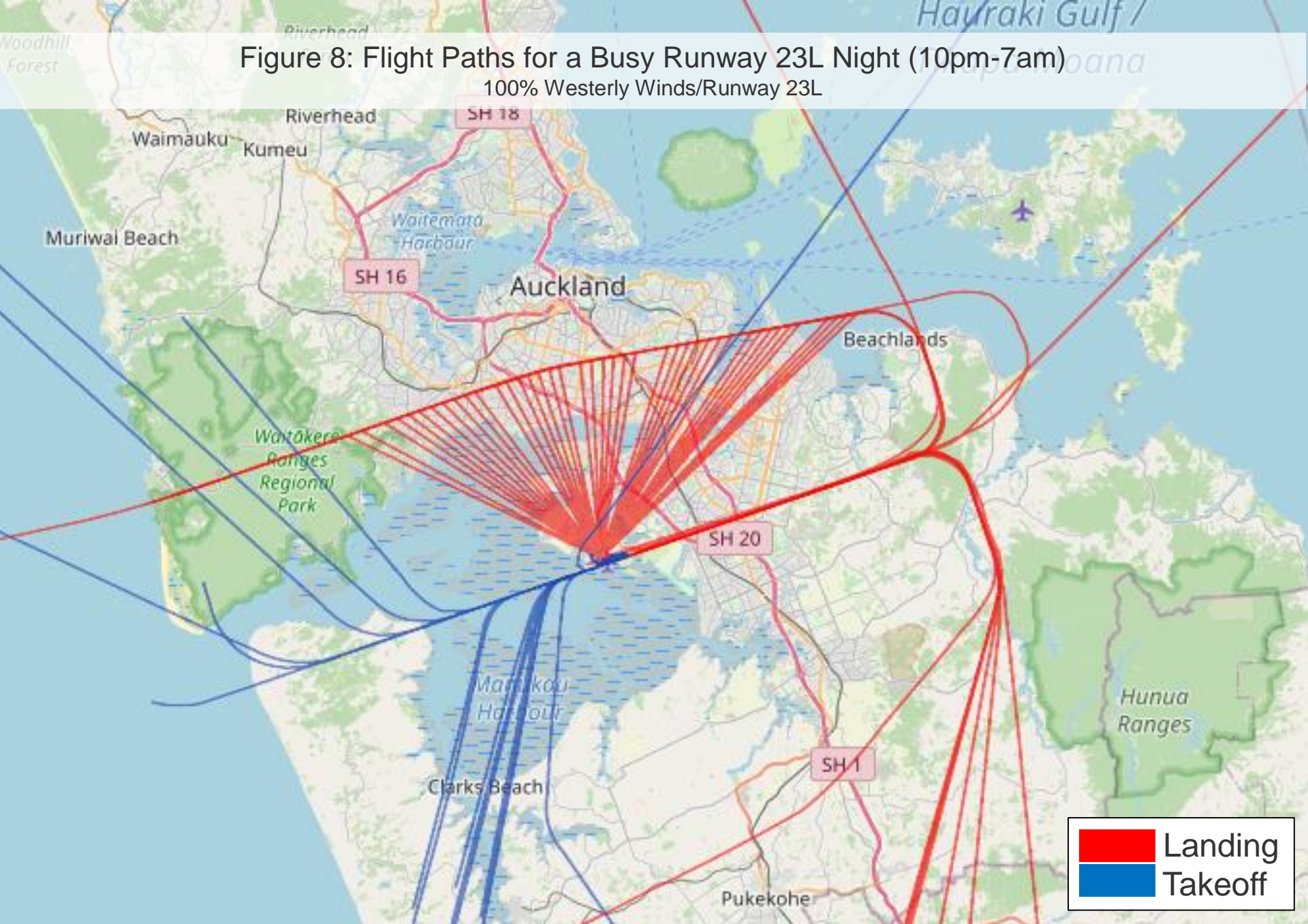




Figure 9: Flight Paths for a Busy Runway 05R Day (7am-10pm)

96% Easterly Winds/Runway 05R

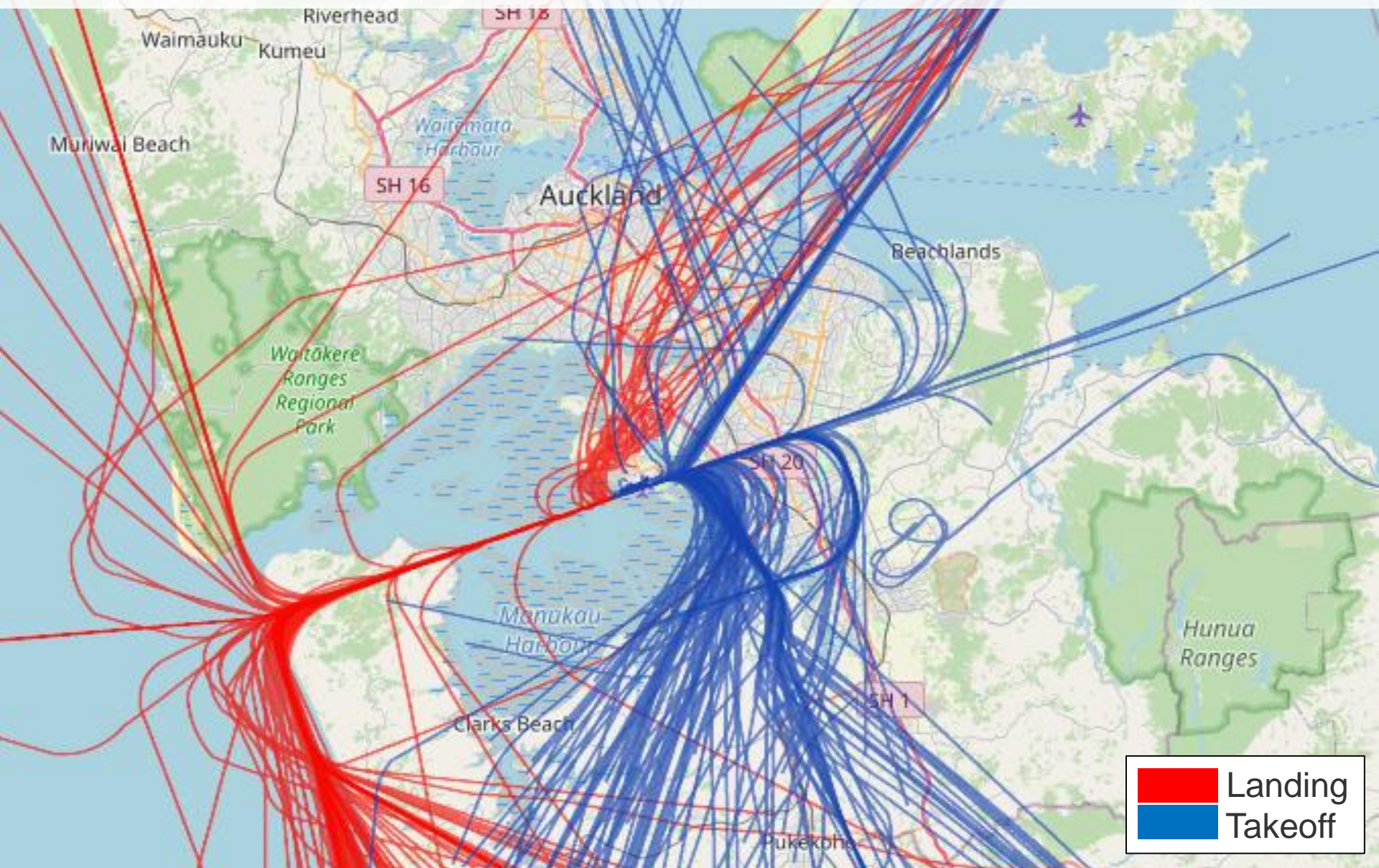
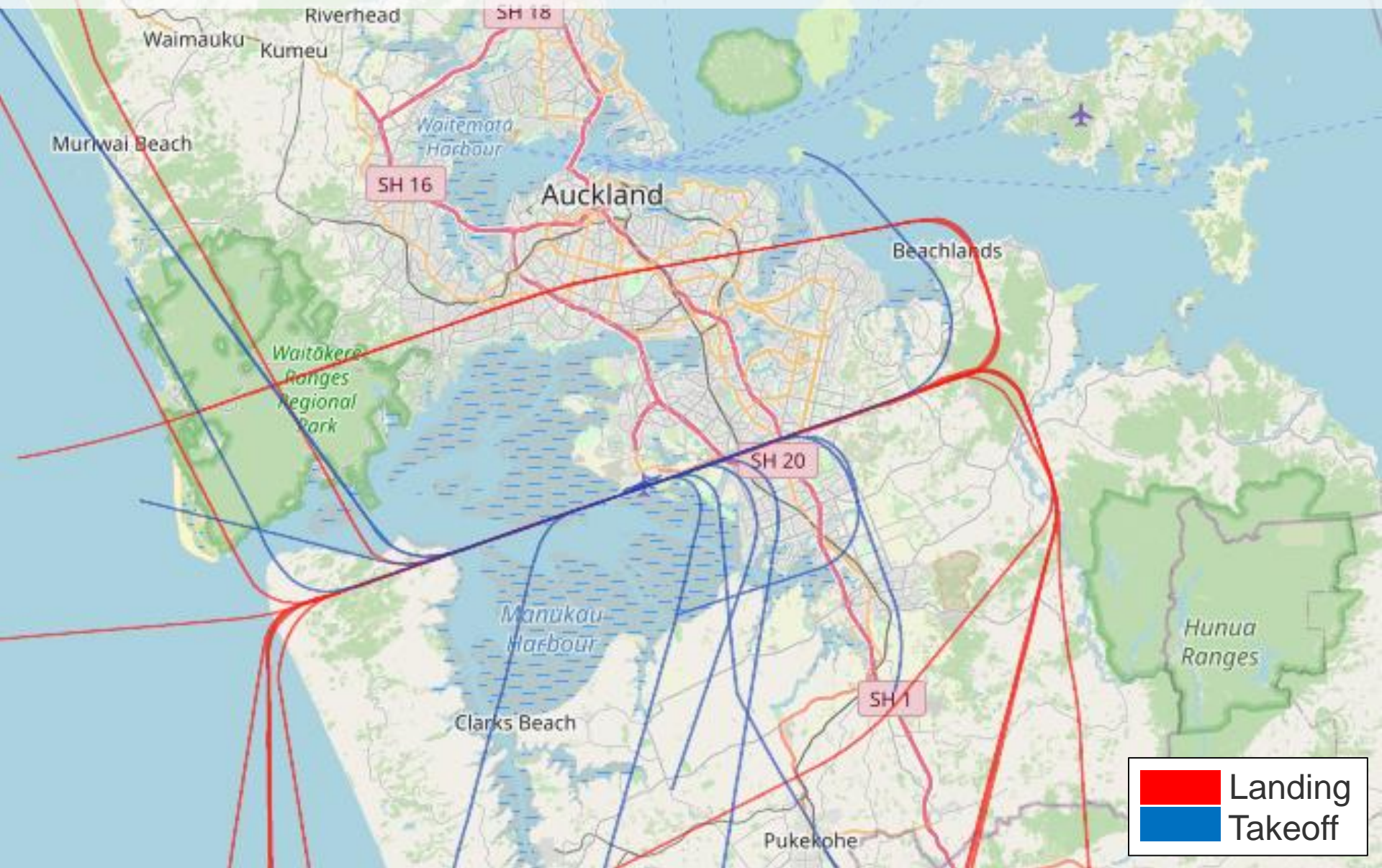




Figure 10: Flight Paths for a Busy Runway 05R Night (10pm-7am)

96% Easterly Winds/Runway 05R



 Landing  
 Takeoff



# Noise Complaints



Figure 11: Number of Aircraft Noise Complaints per Month

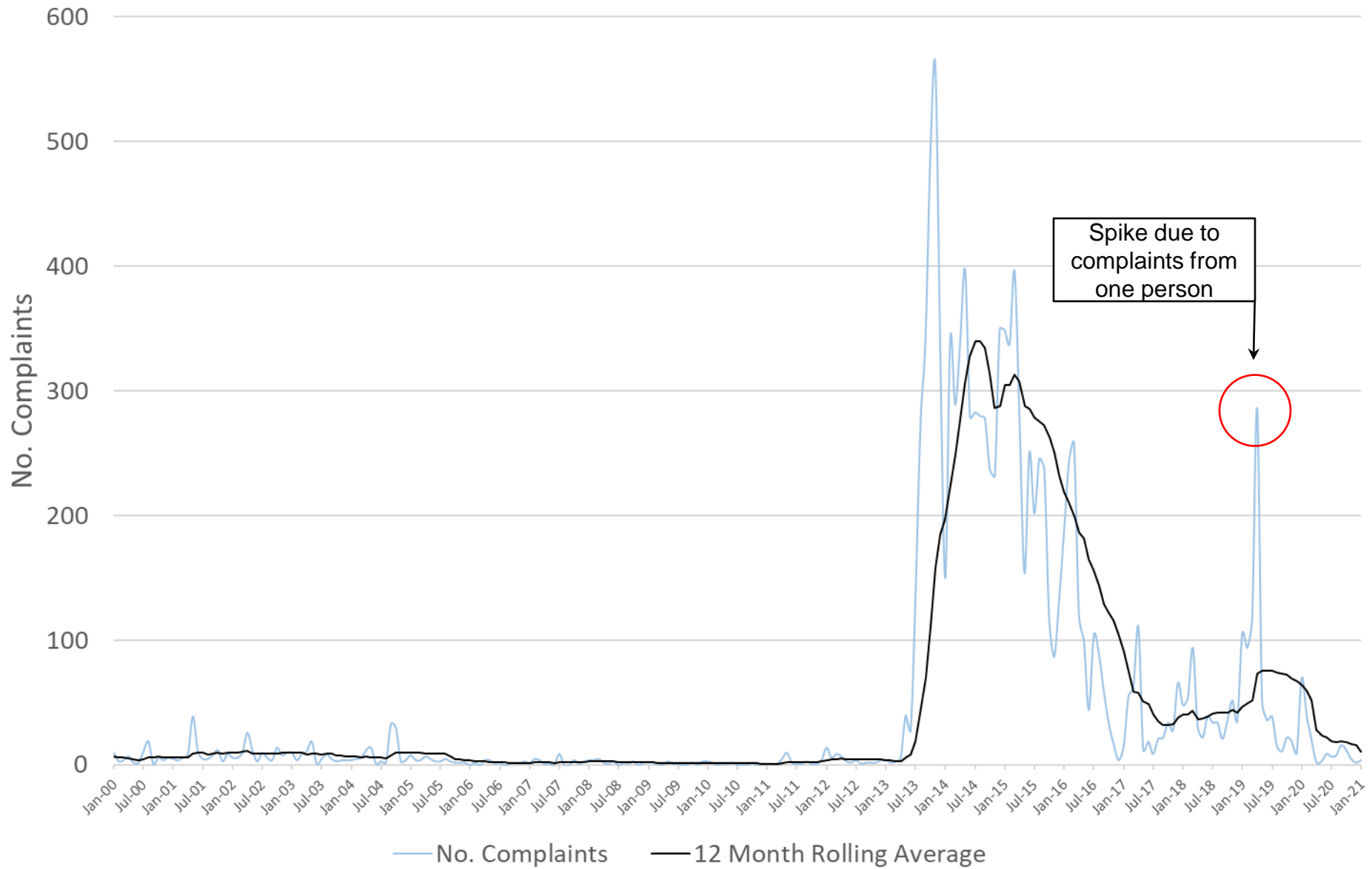
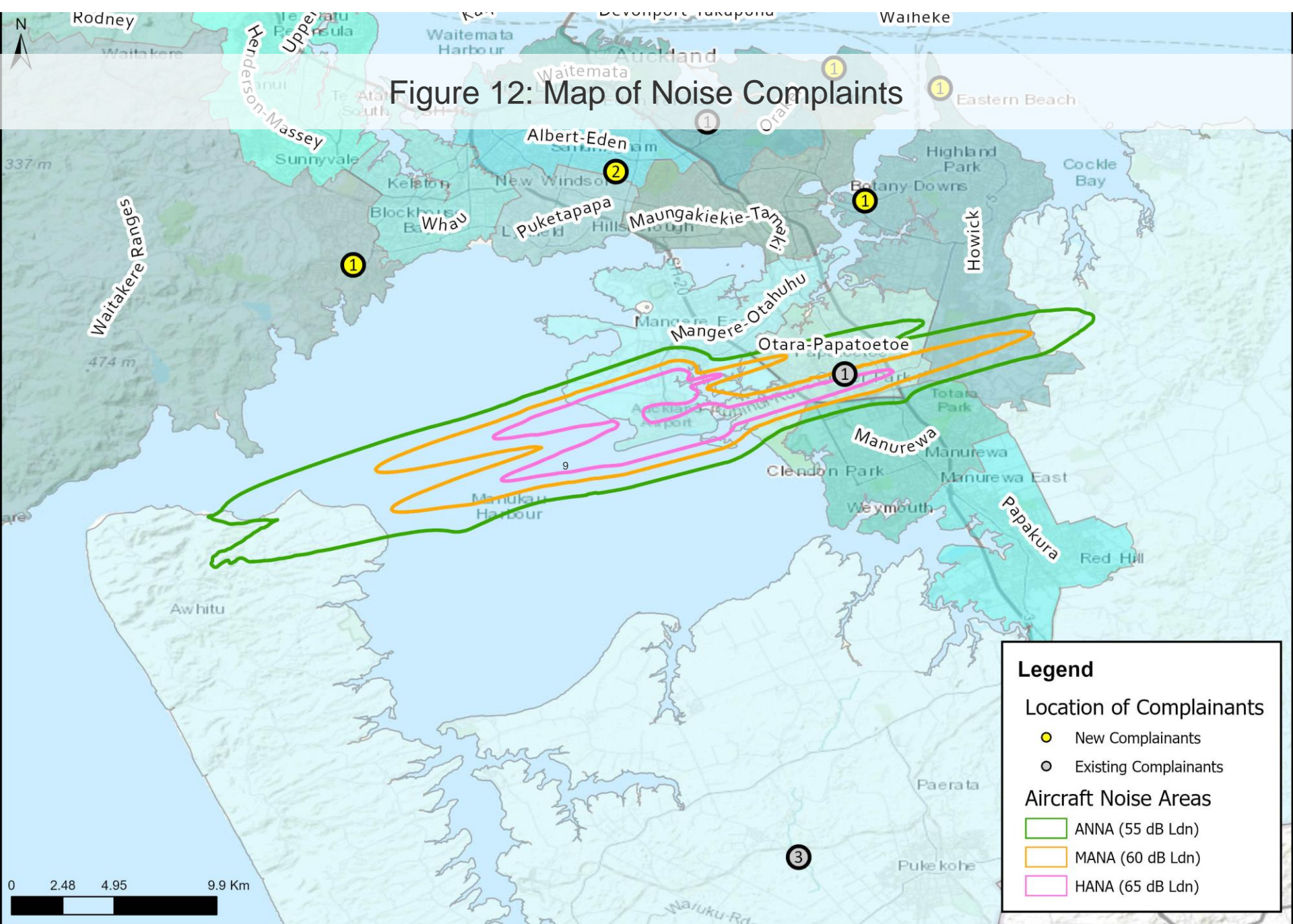
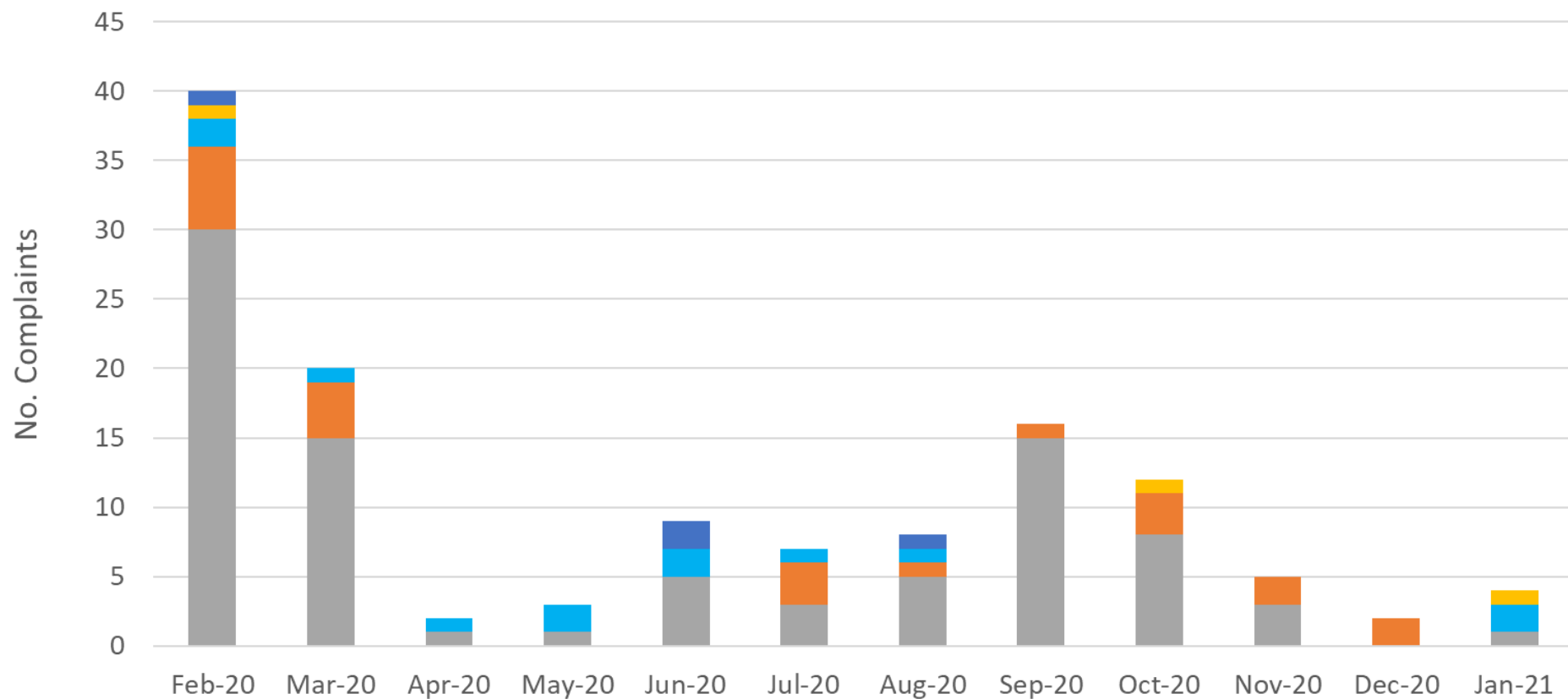


Table 3: Summary of Noise Complaints

	Nov	Dec	Jan	Nov-Jan	Aug-Oct	May-Jul	Feb-Apr
Number of Complaints	5	2	4	11	36	19	62
<i>Specific</i>	4	1	1	6	32	12	55
<i>Generic</i>	1	1	3	5	3	5	5
<i>Question</i>	0	0	0	0	1	2	2
Number of People Complaining	3	2	4	8	15	19	20



# Figure 13: Number of Noise Complaints by Area



	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21
Not in Auckland	0	0	0	0	0	0	0	0	0	0	0	0
North Shore	1	0	0	0	2	0	1	0	0	0	0	0
West Auckland	1	0	0	0	0	0	0	0	1	0	0	1
East Auckland	2	1	1	2	2	1	1	0	0	0	0	2
South Auckland	6	4	0	0	0	3	1	1	3	2	2	0
Central Suburbs	30	15	1	1	5	3	5	15	8	3	0	1

■ Central Suburbs
 ■ South Auckland
 ■ East Auckland
 ■ West Auckland
 ■ North Shore
 ■ Not in Auckland



Figure 14: Noise Complaints by Time

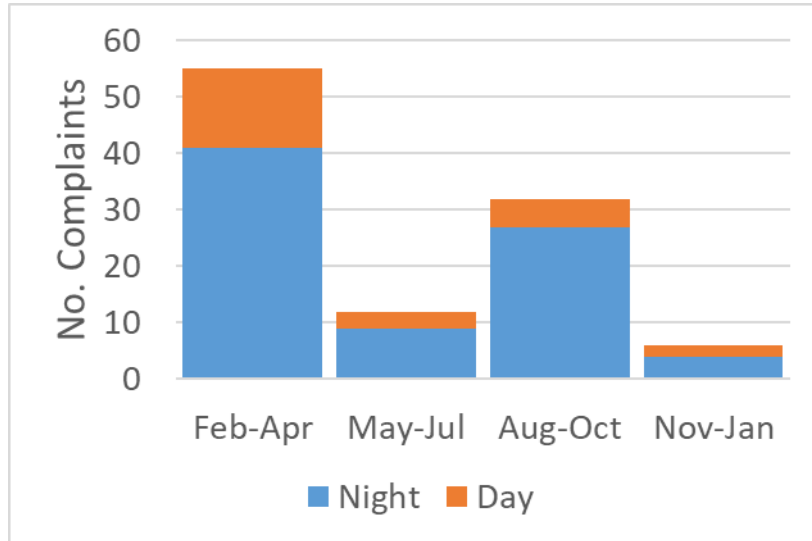


Figure 15: Noise Complaints by Runway

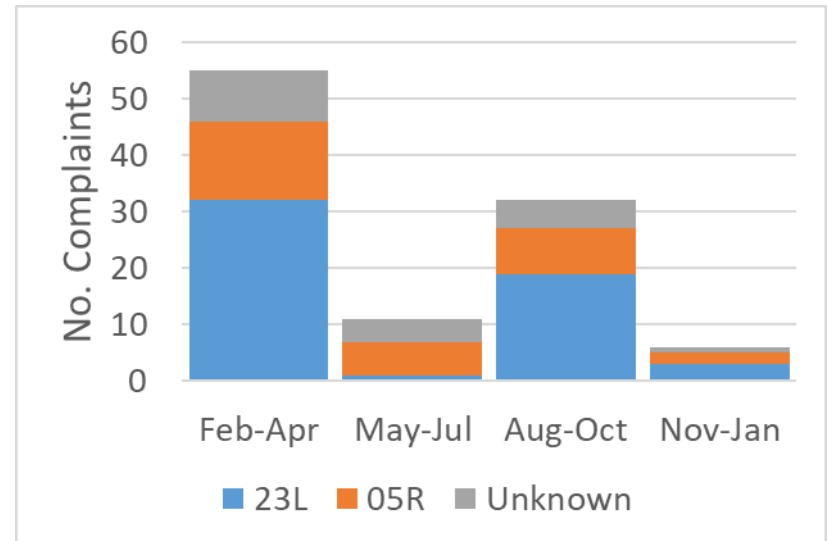


Figure 16: Noise Complaints by Aircraft

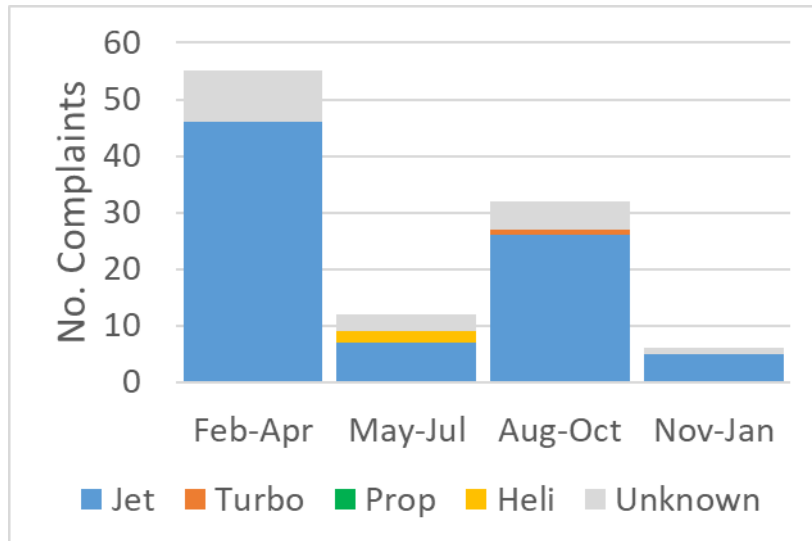


Figure 17: Noise Complaints by Operation

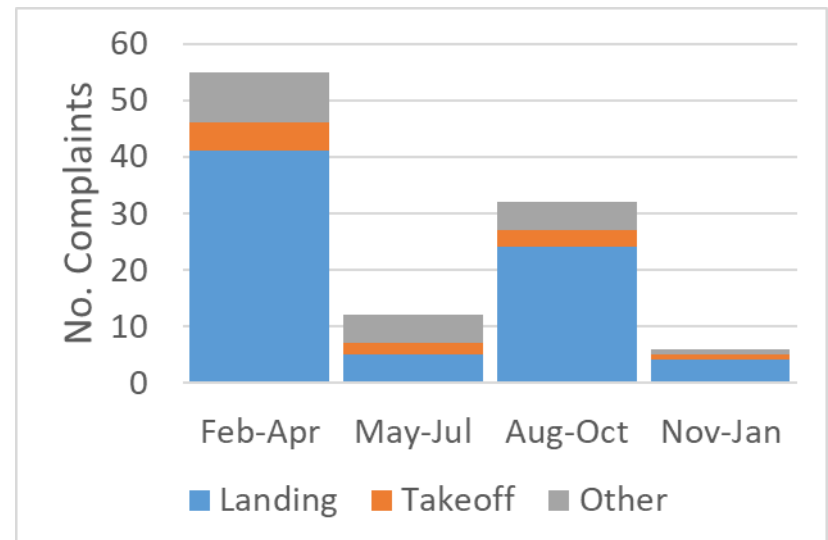


Figure 18: Specific Noise Complaints by Destination

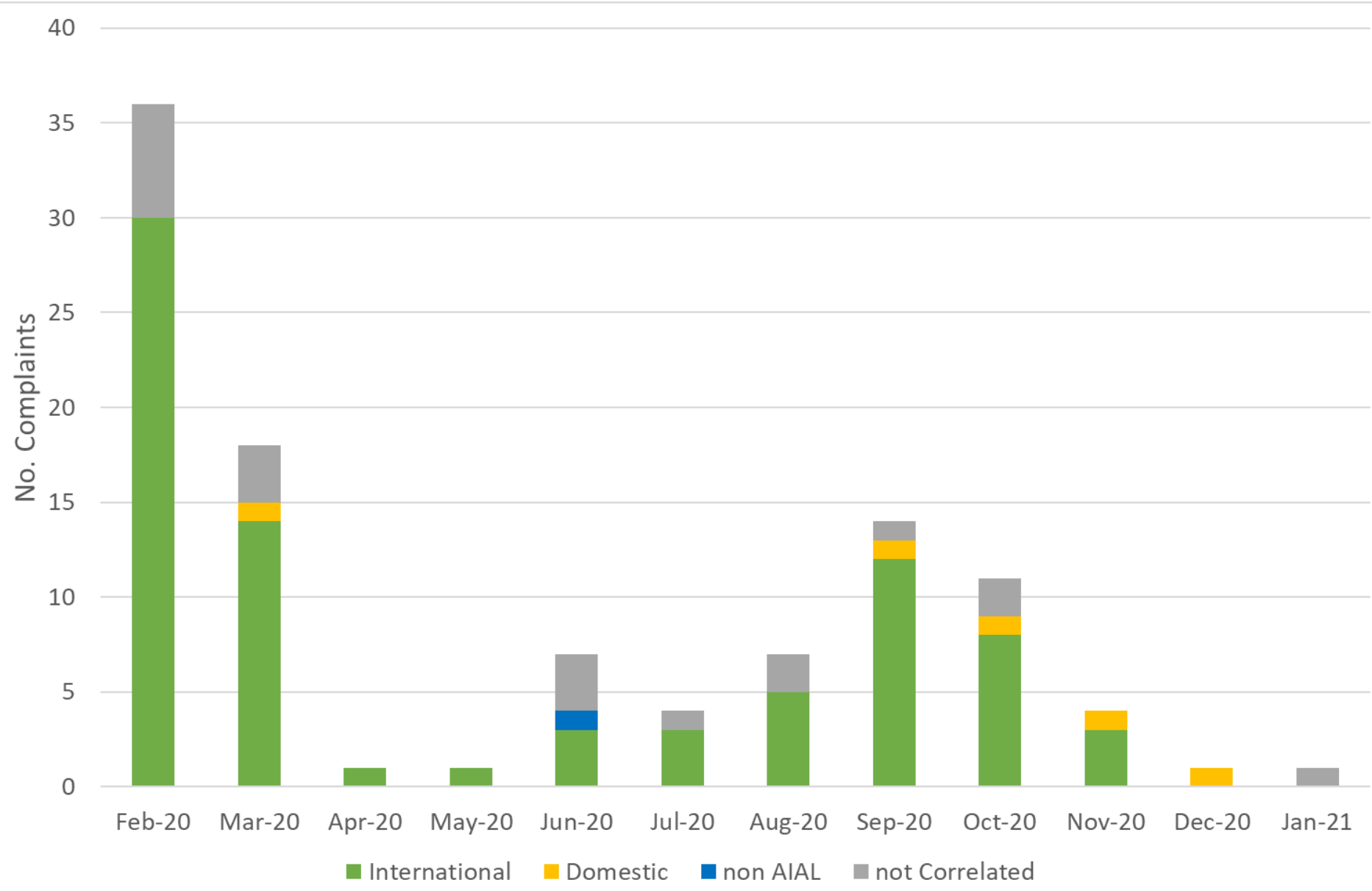


Figure 19: Specific Noise Complaints vs Usage of Runway 05R

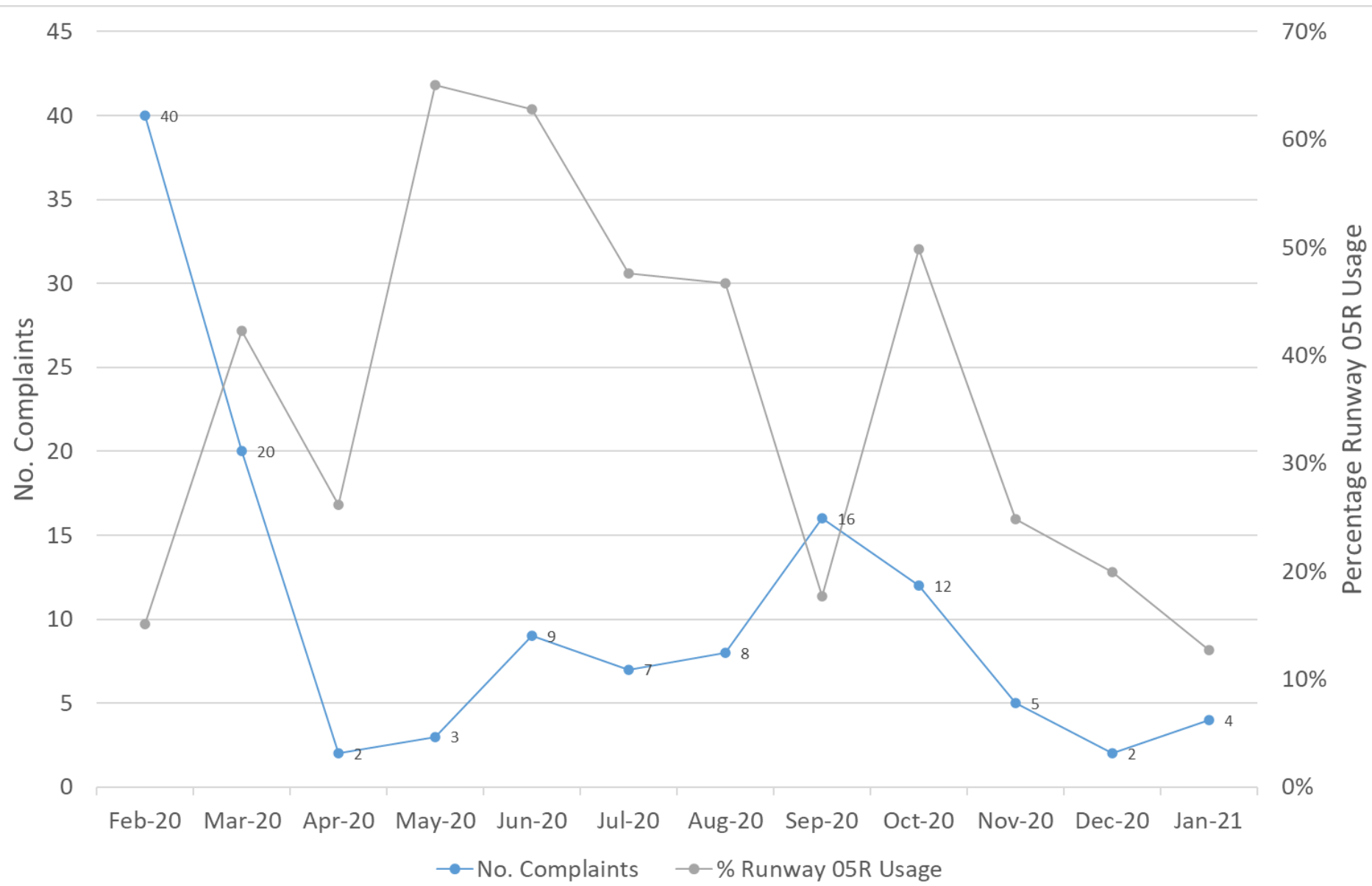


Figure 20: Specific Complaints by Hour vs Aircraft Operations by Hour (Nov - Jan)

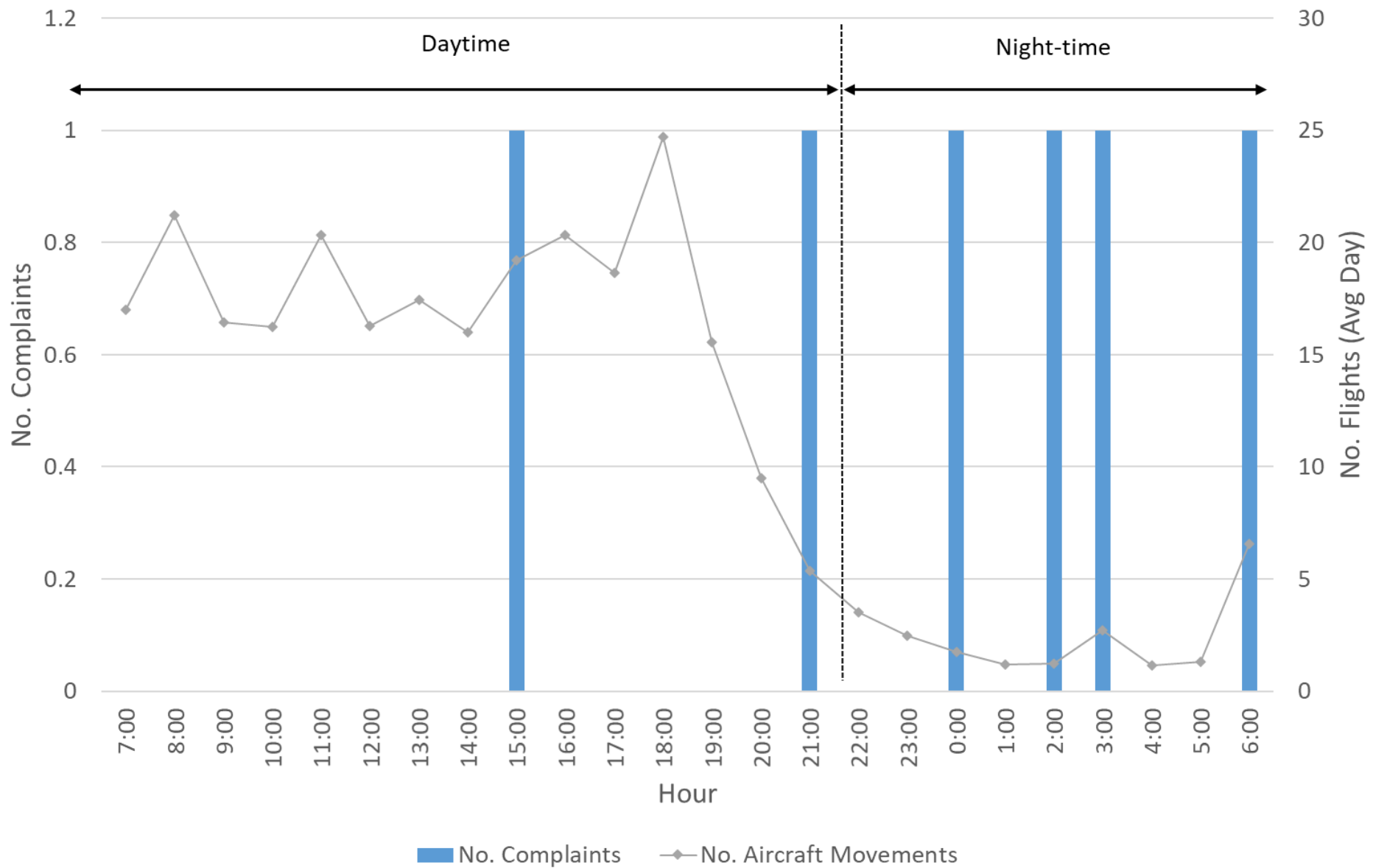


Figure 21: Noise Complaints by Type (Nov - Jan)

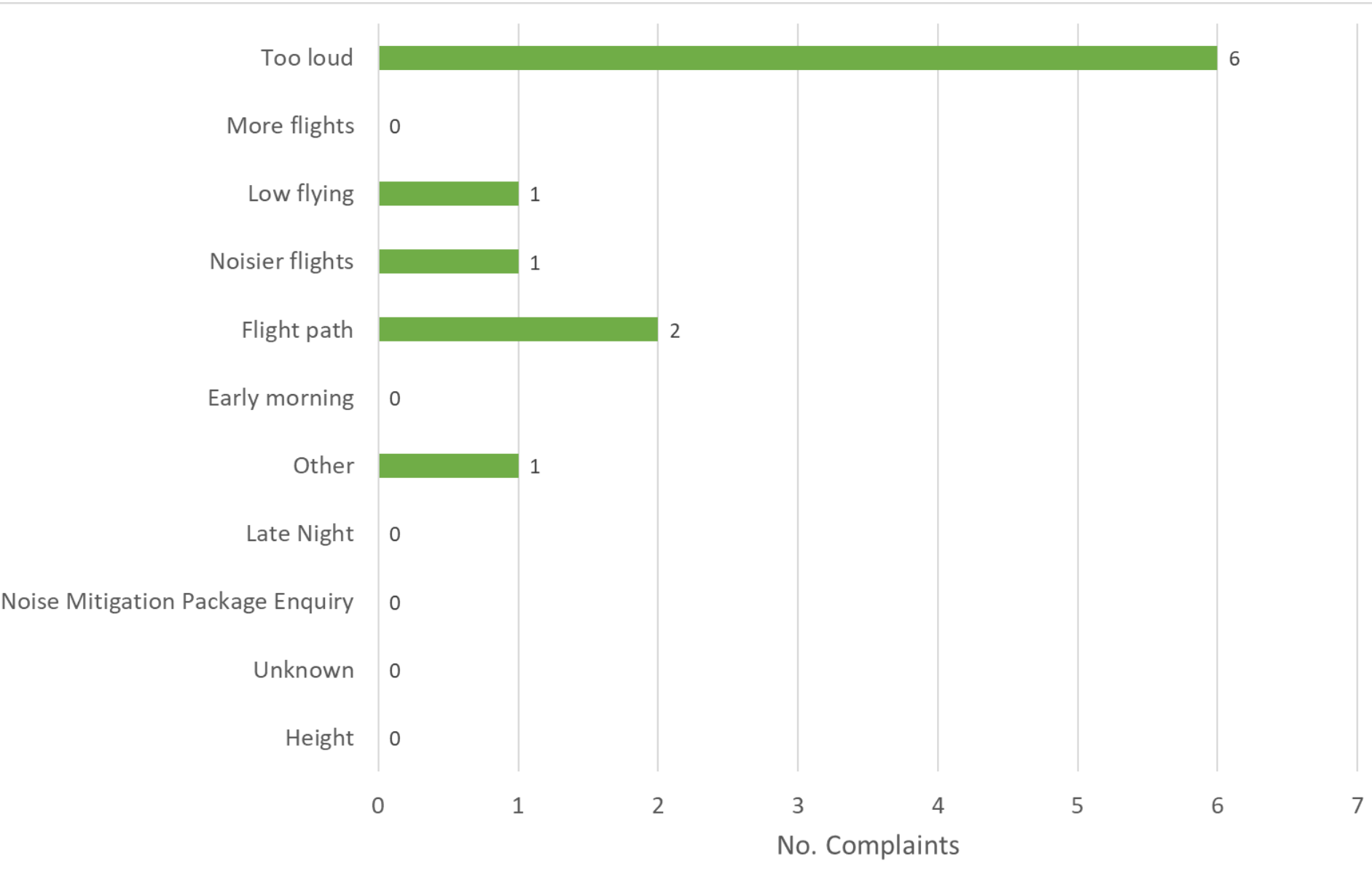




Figure 22: Specific Aircraft Identified in Noise Complaints

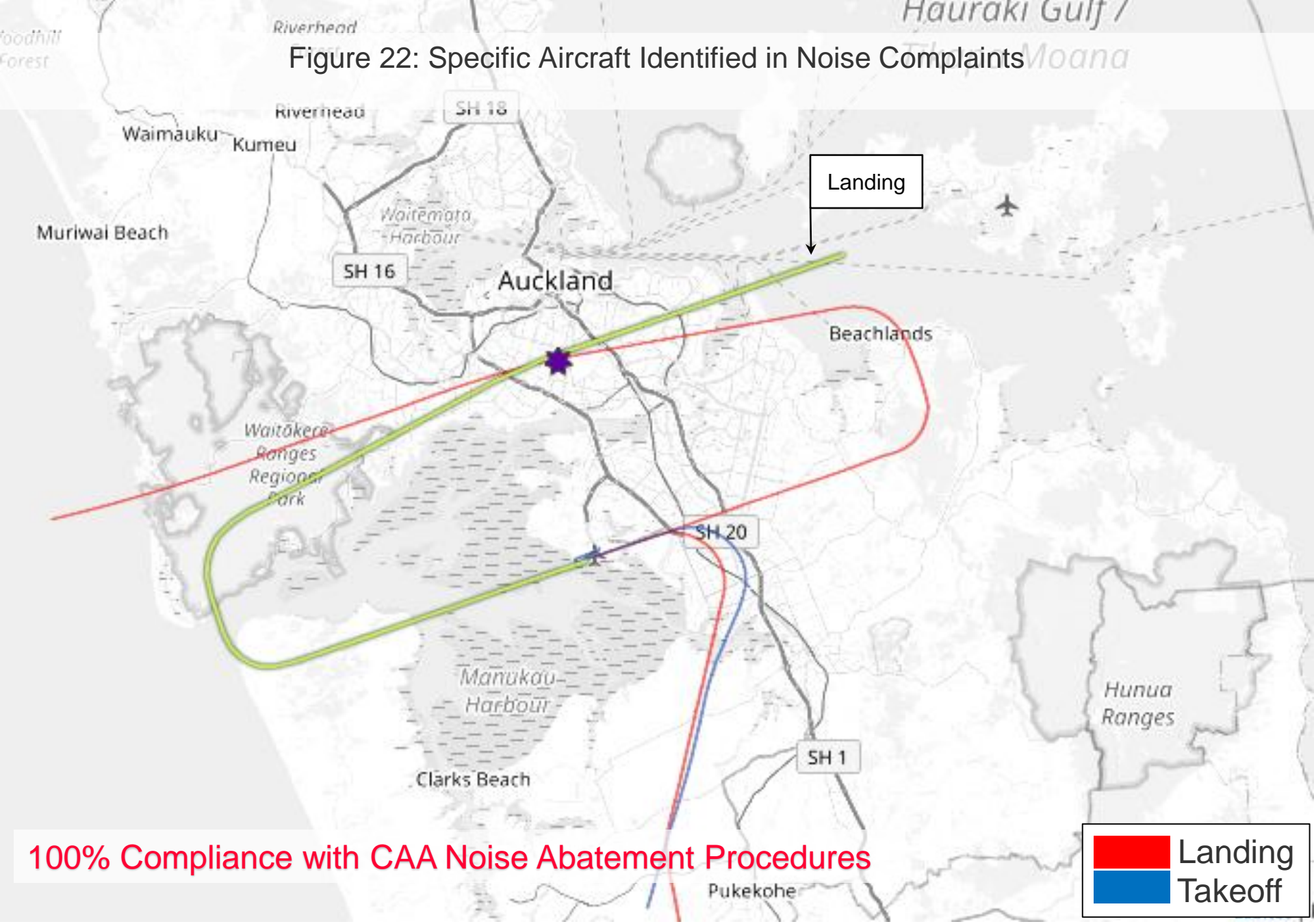
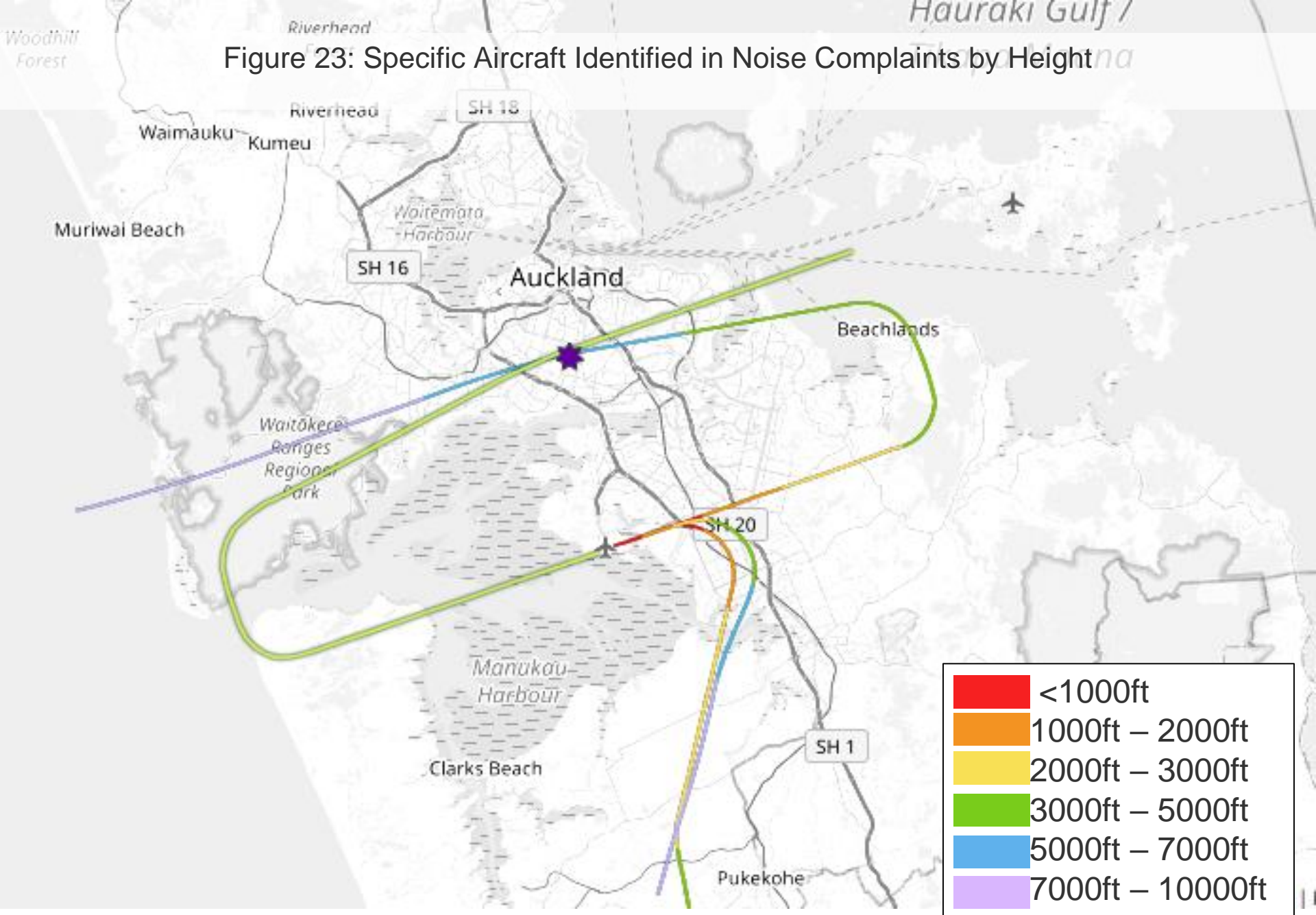


Figure 23: Specific Aircraft Identified in Noise Complaints by Height





# Noise Monitoring



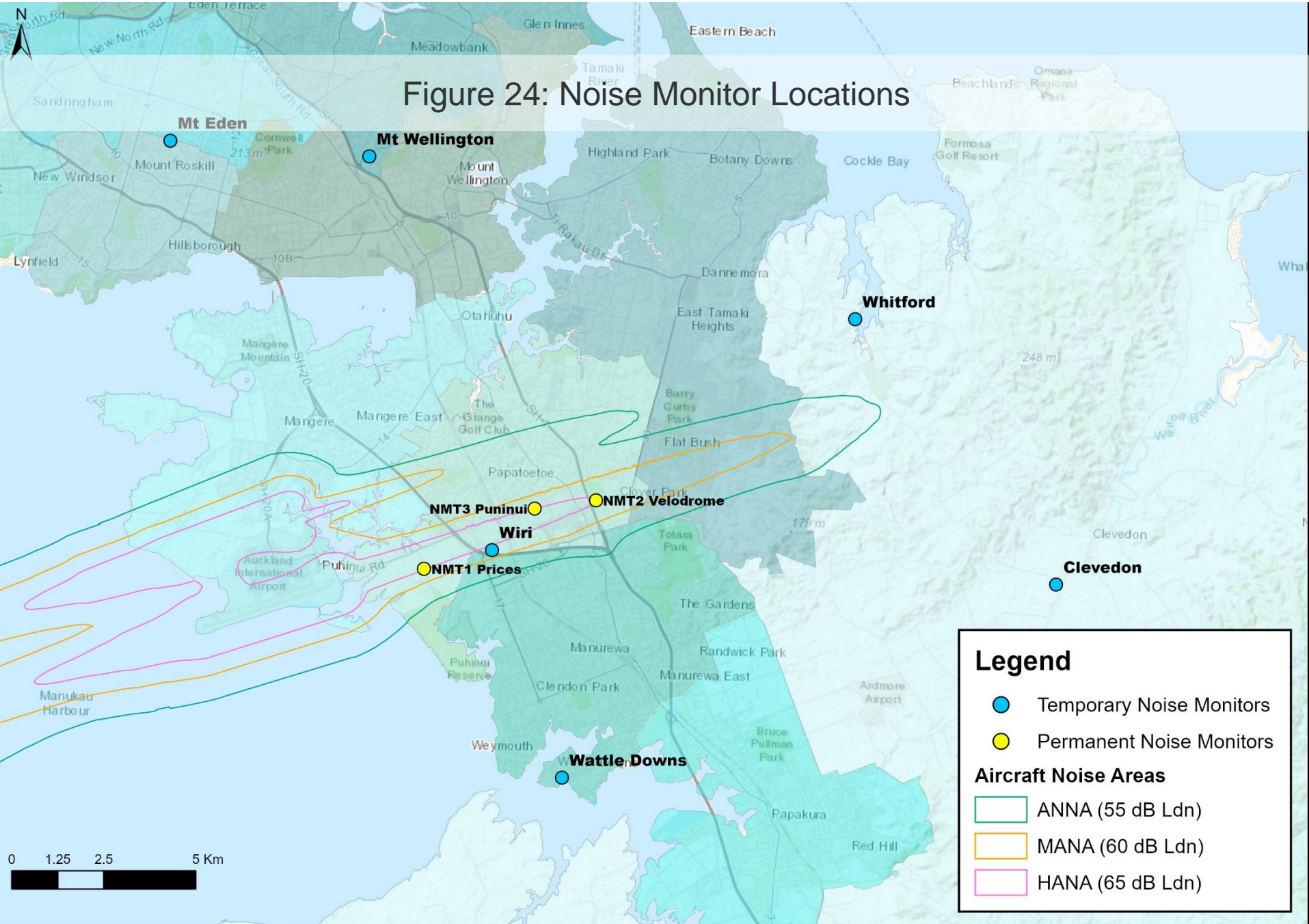


Figure 25: Measured 365 Day Rolling Noise Exposure ( $L_{dn}$ ) – Permanent Monitors

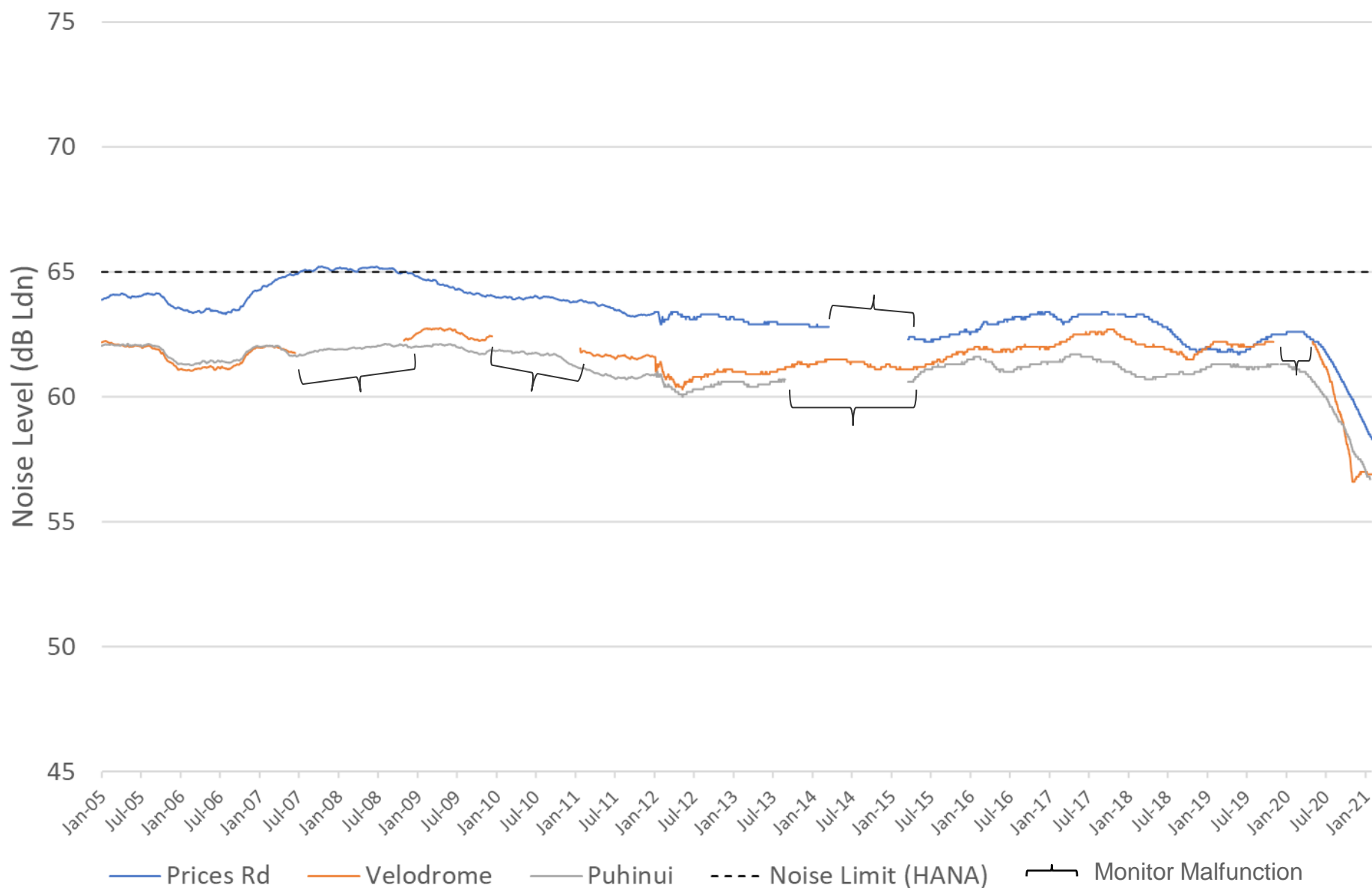
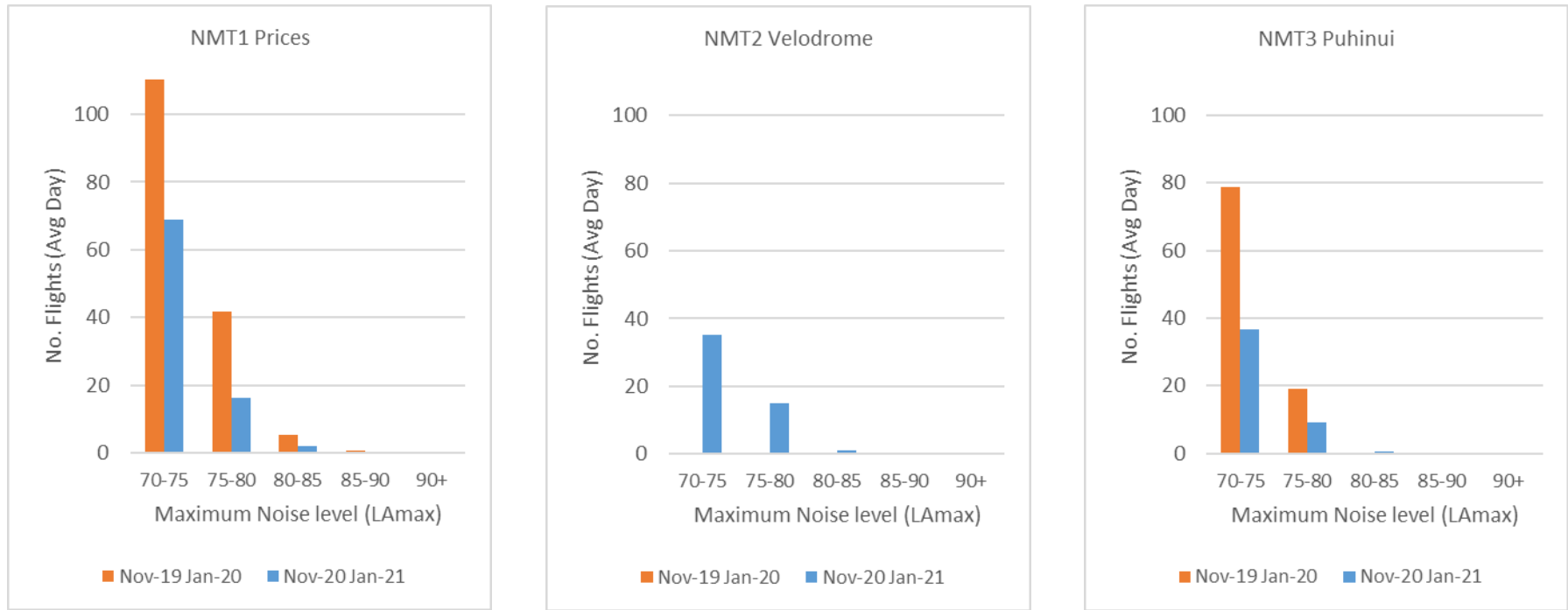




Table 4: Measured Noise Exposure ( $L_{dn}$ ) for each Financial Year – Permanent Monitors

Financial Year	Prices Rd	Velodrome	Puhinui
FY07 (Jul-06 to Jun-07)	65.0	61.8	61.7
FY08 (Jul-07 to Jun-08)	65.2	No Data	62.1
FY09 (Jul-08 to Jun-09)	64.3	62.6	62.0
FY10 (Jul-09 to Jun-10)	64.0	62.4	61.8
FY11 (Jul-10 to Jun-11)	63.5	61.6	60.7
FY12 (Jul-11 to Jun-12)	63.1	60.8	60.3
FY13 (Jul-12 to Jun-13)	63.0	61.0	60.6
FY14 (Jul-13 to Jun-14)	63.6	61.4	60.3
FY15 (Jul-14 to Jun-15)	62.2	61.3	61.1
FY16 (Jul-15 to Jun-16)	63.1	61.9	61.0
FY17 (Jul-16 to Jun-17)	63.3	62.5	61.6
FY18 (Jul-17 to Jun-18)	62.8	61.9	60.9
FY19 (Jul-18 to Jun-19)	61.9	62.0	61.2
FY20 (Jul-19 to Jun-20)	61.8	61.2	60.0

Figure 26: Number of Aircraft Noise Events in Each Noise Band  
Permanent Monitors ( $L_{Amax}$  – Maximum Noise Level)



NB: 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.

Table 5: Correlation of Aircraft Operations with Captured Noise Events  
Permanent Monitors

	NMT1 Prices	NMT2 Velodrome	NMT3 Puhinui
Total Aircraft Operations	11,813	7,395	8,385
No. Aircraft Operations Captured by Monitors	10,024	5,063	7,120
Correlation	85%	68%	85%

NB: Generally a correlation of >80% is considered reasonable. The aircraft that are missed are generally lower noise level events and will not have any effect on the overall noise level.

The lower-than-normal correlation at the Velodrome monitor appears to be due to most arrivals are using the Red SMART track from the south as they are domestic instead of the conventional arrival track used by international flights. The Red SMART track is 1.4km from the Velodrome noise monitor and thus fewer of these flights are picked up by the noise monitor than the conventional arrival track which flies directly overhead.

Table 6: Temporary Noise Monitor Summary of Measured Aircraft Events

	Date Deployed	Days in Field	Measured $L_{dn}$	Average $L_{Amax}$
Mt Eden	1-Apr-15	2133	39	62
Mt Wellington	17-Apr-15	2117	39	65
Wiri	4-Aug-17	1371	59	75
Wattle Downs	23-Dec-17	1136	47	67
Clevedon	10-Mar-18	1060	29	57
Whitford (Trig)	1-Dec-19	511	43	59

Figure 27: Measured Monthly Noise Exposure ( $L_{dn}$ ) – Central Suburbs Temporary Monitors

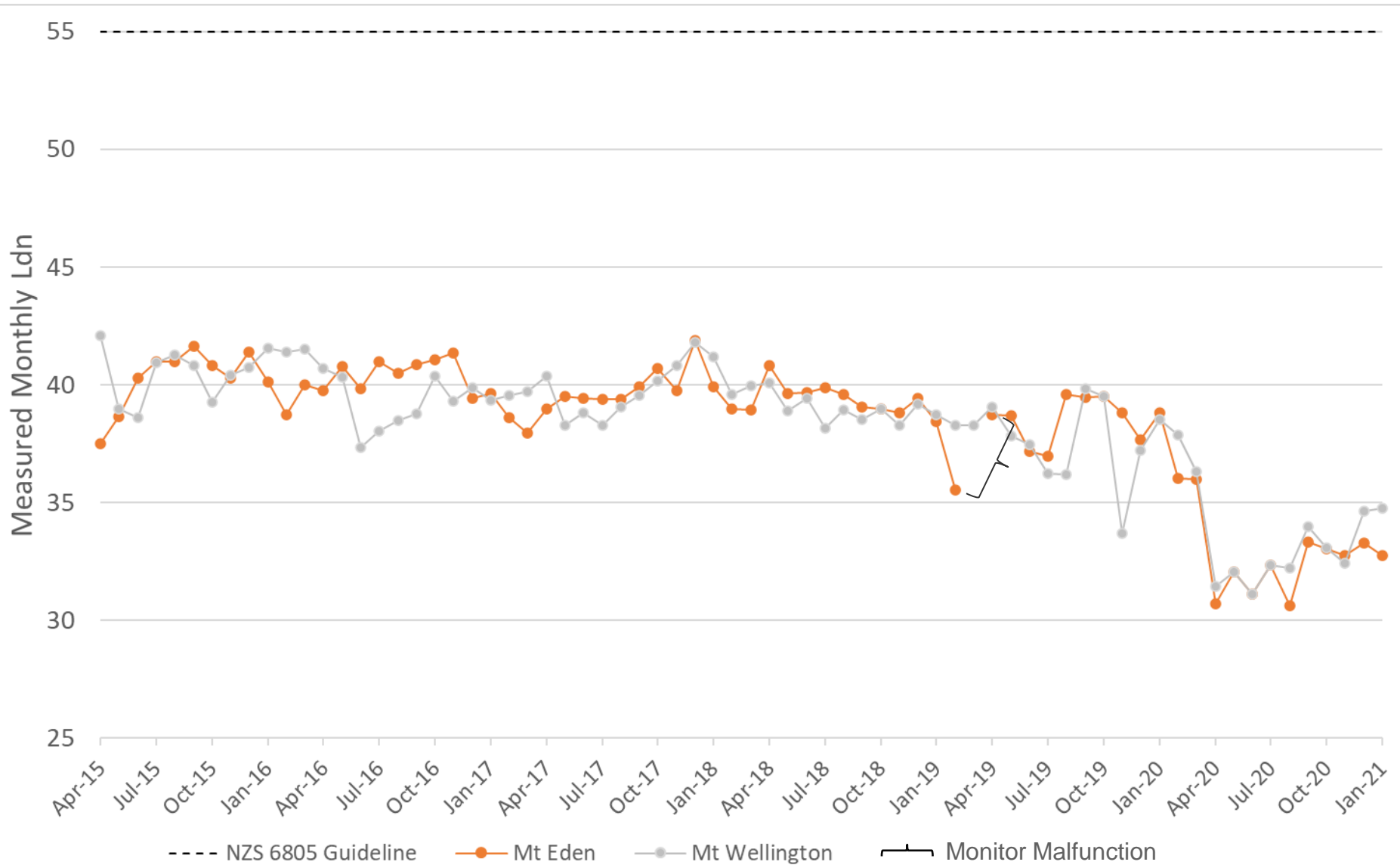


Figure 28: Measured Monthly Noise Exposure ( $L_{dn}$ ) – Eastern Suburbs Temporary Monitors

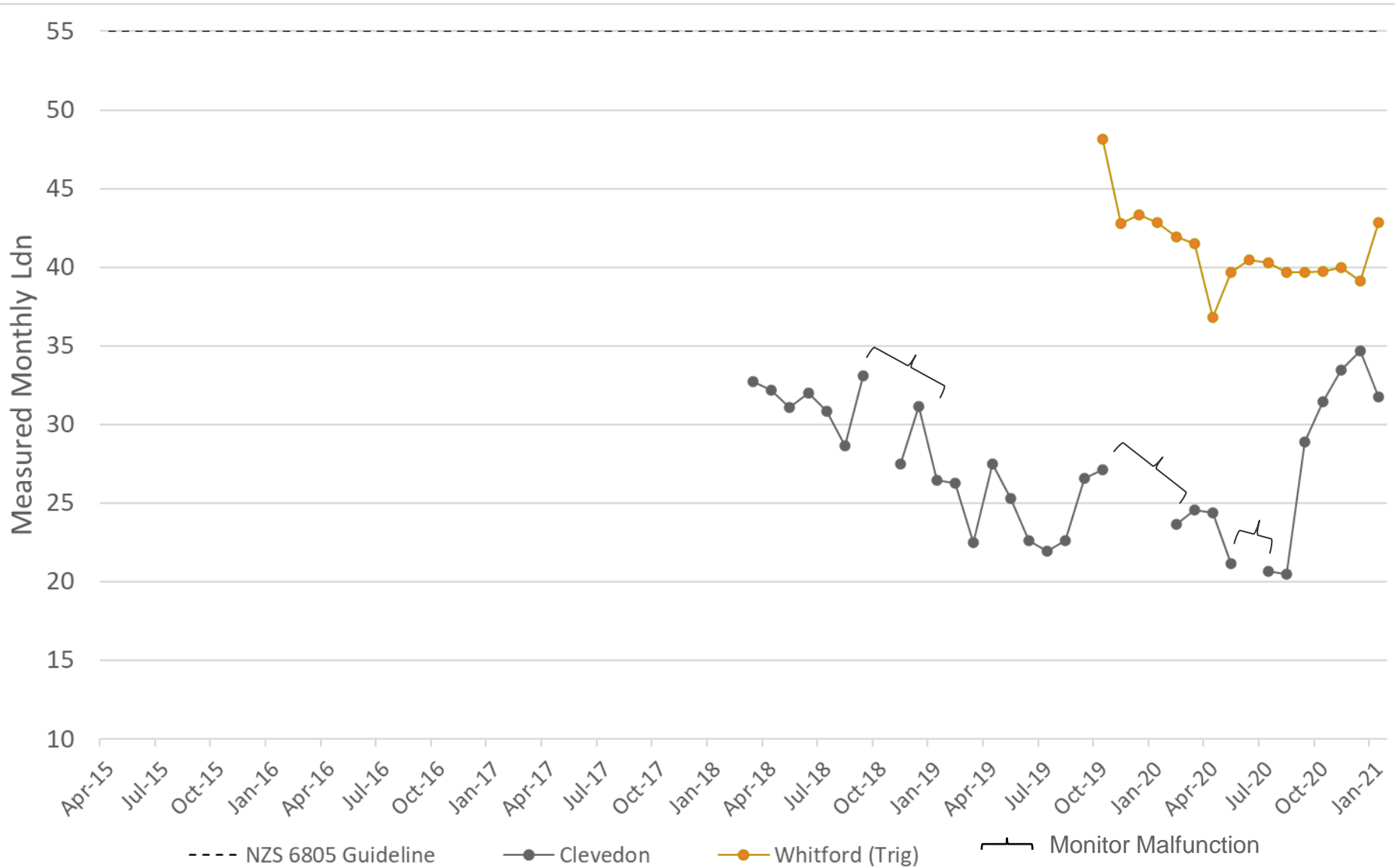


Figure 29: Measured Monthly Noise Exposure ( $L_{dn}$ ) – Southern Suburbs Temporary Monitors

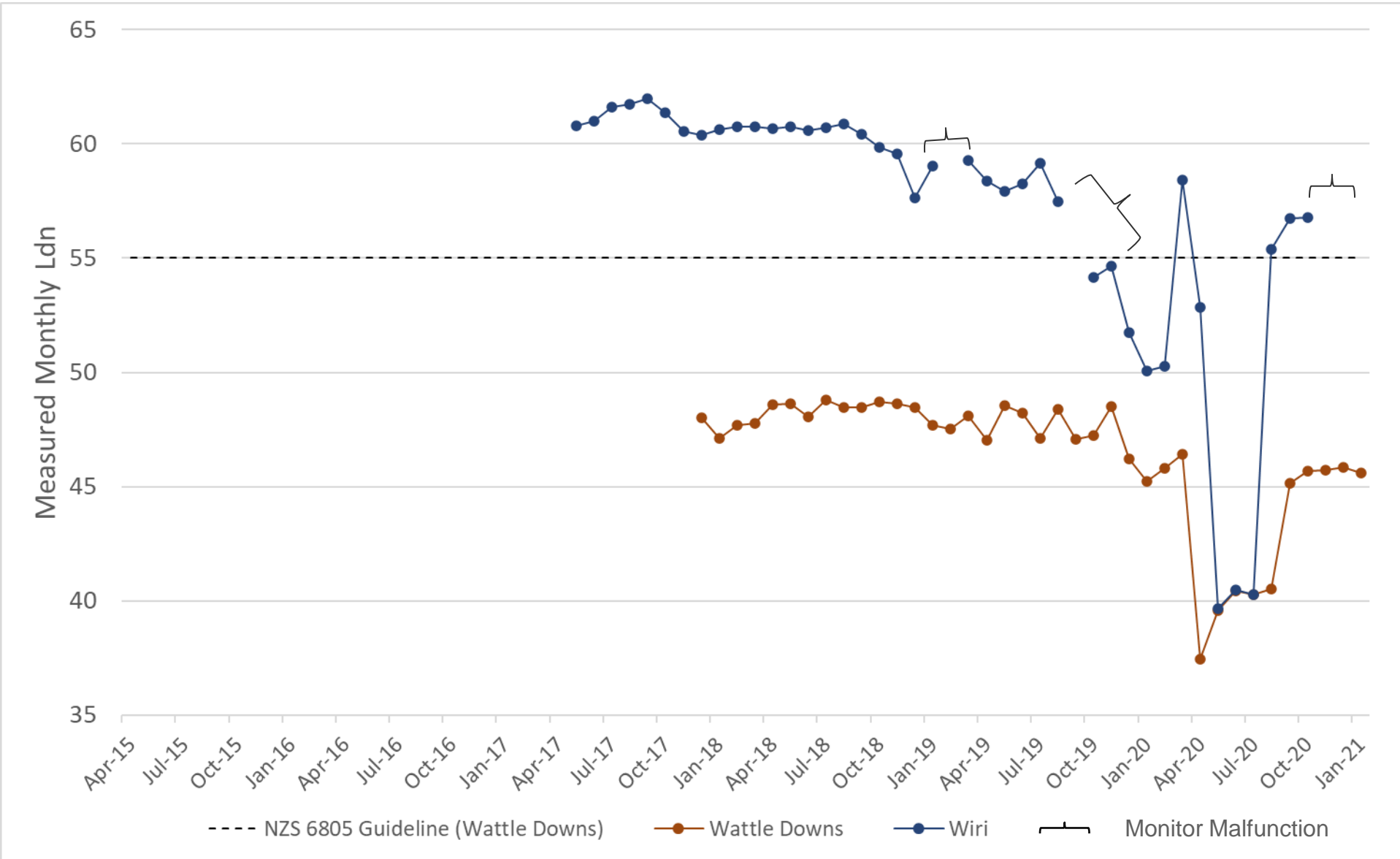
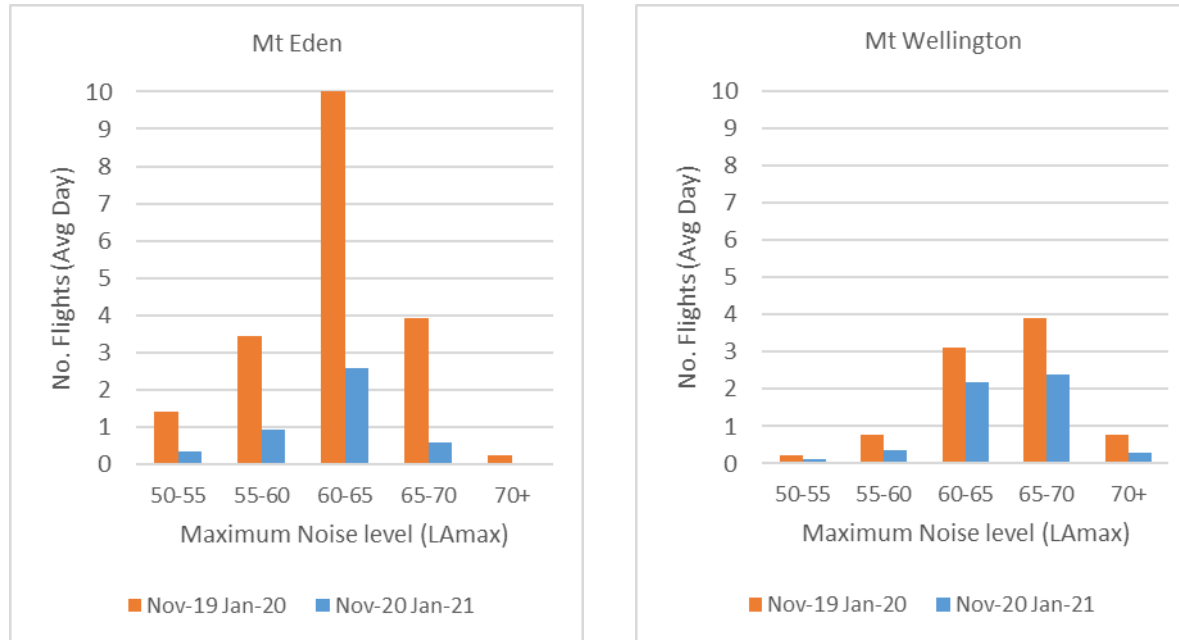


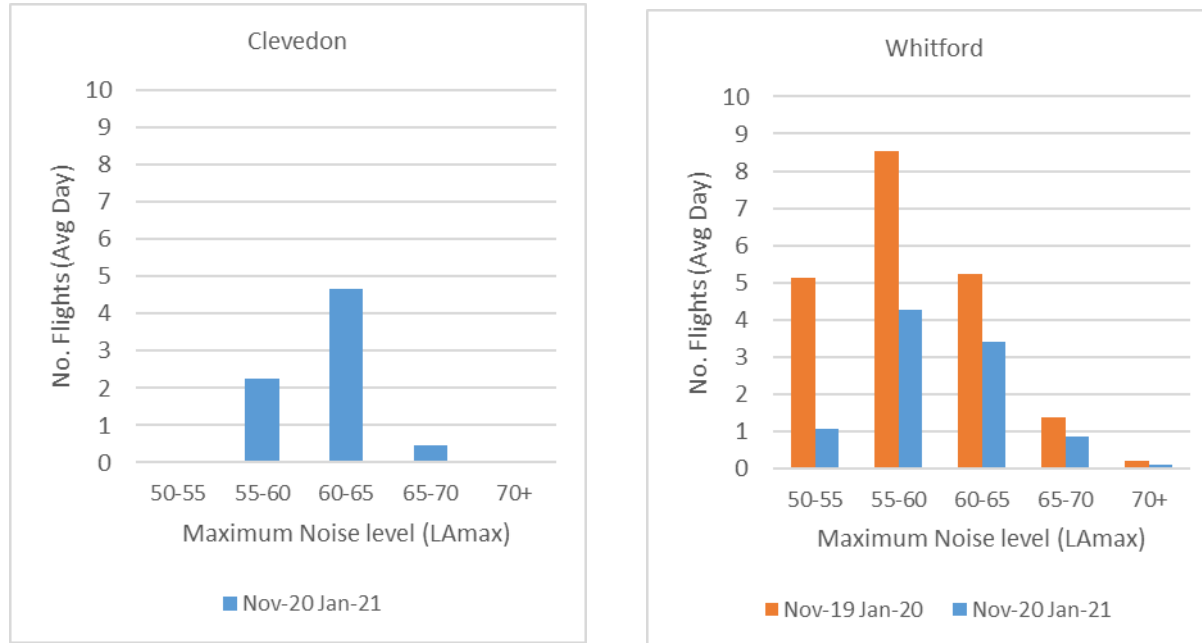


Figure 30: Number of Aircraft Noise Events in Each Noise Band  
Central Suburbs Monitors ( $L_{Amax}$  – Maximum Noise Level)



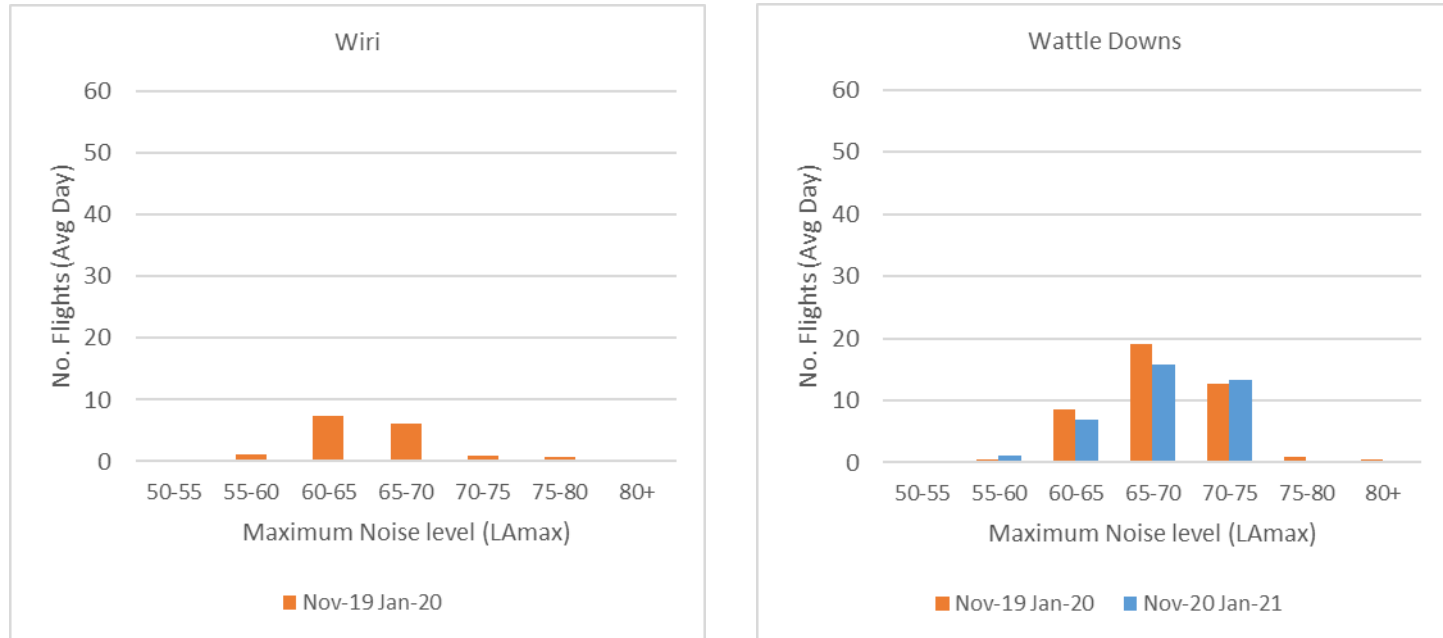
NB: Aircraft noise events over 70-75  $L_{Amax}$  start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

Figure 31: Number of Aircraft Noise Events in Each Noise Band  
Eastern Suburbs Monitors ( $L_{Amax}$  – Maximum Noise Level)



NB: 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.

Figure 32: Number of Aircraft Noise Events in Each Noise Band  
Southern Suburbs Monitors ( $L_{Amax}$  – Maximum Noise Level)



NB: 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.



# Engine Testing

Figure 33: Engine Testing Monitoring Locations

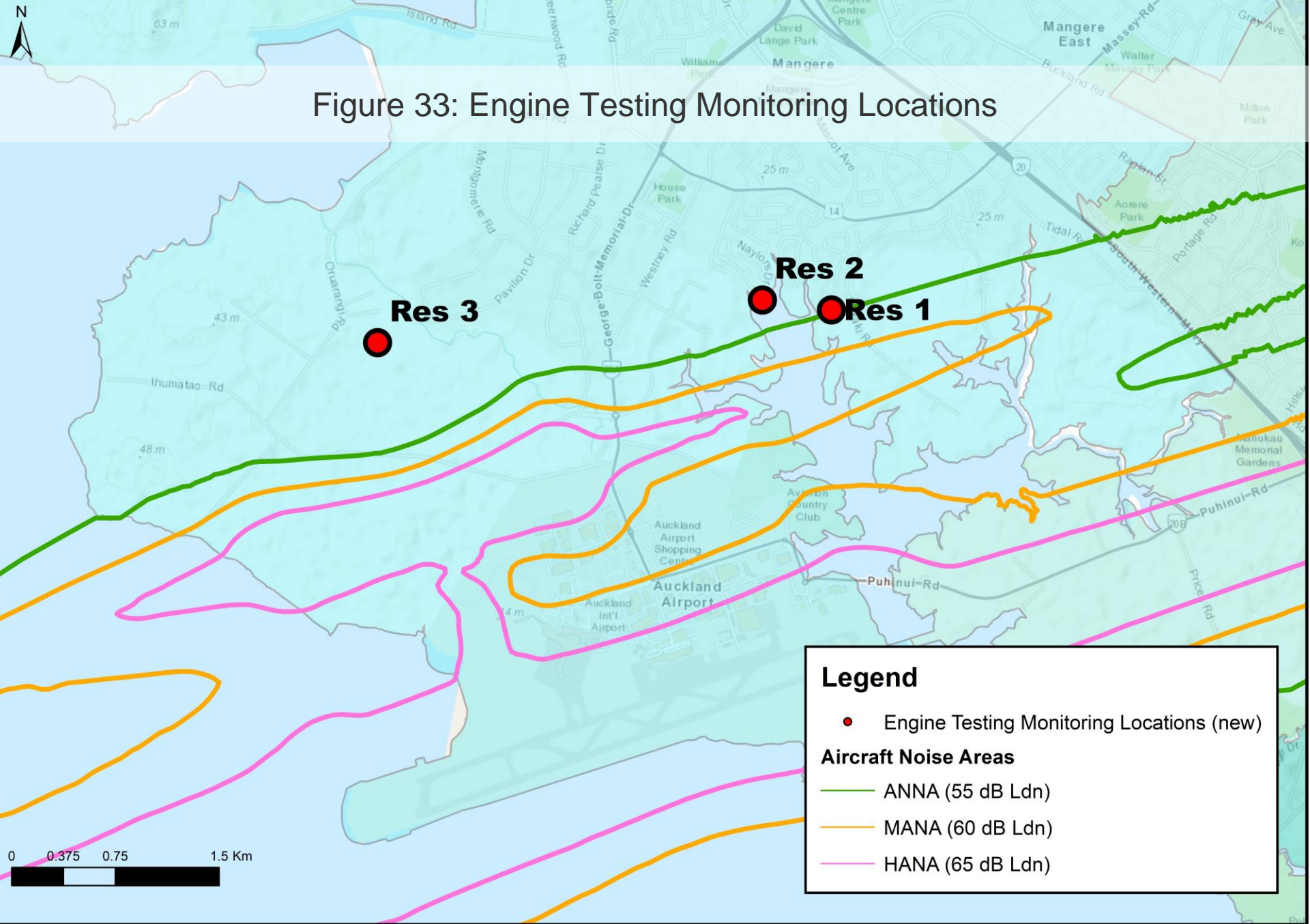
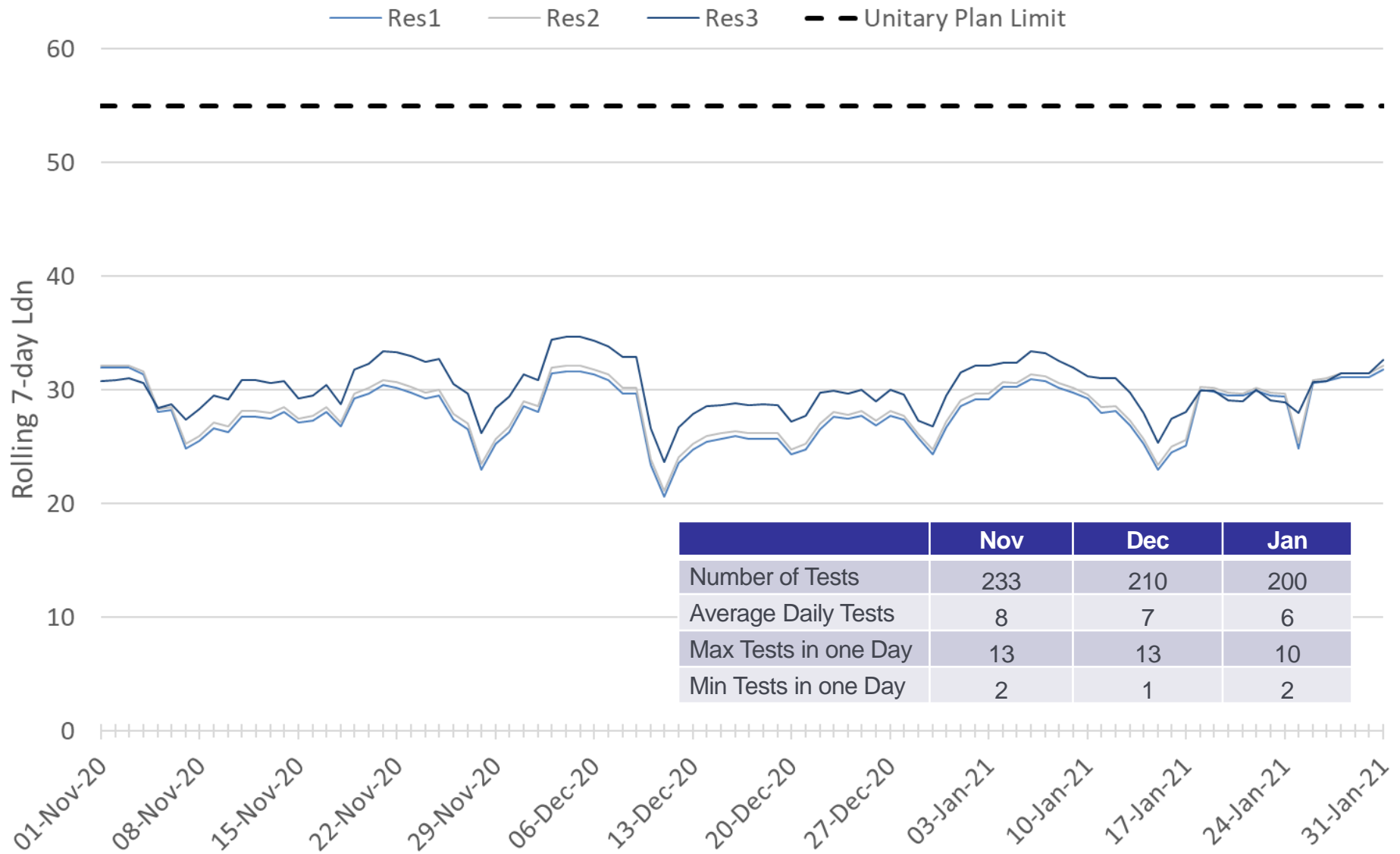
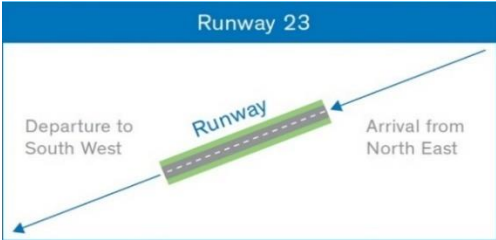
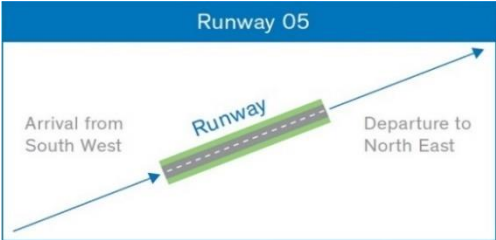


Figure 34: Engine Testing Summary





# 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	<div>Occurs in Westerly Wind Conditions</div> <div>Occurs in Easterly Wind Conditions</div>
	<div>  </div> <div>  </div>
Complaint Type	
“Specific” complaint	Complaints relating to a specific aircraft operation.
“Generic” complaint	Complaints 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	<p>The total noise that is from general ambient noise sources (cars, wind etc.).</p> <p>Includes noise from aircraft operations.</p>
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 55-60 dB $L_{dn}$
MANA	Moderate Aircraft Noise Area – Set at 60-65 dB $L_{dn}$
HANA	High Aircraft Noise Area – Set at 65+ dB $L_{dn}$



## Appendix B: Noise Complaint 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

## Appendix C: Suburbs by Area

Suburb	Area	Suburb	Area	Suburb	Area	Suburb	Area
Alfriston	South Auckland	Half Moon Bay	East Auckland	Onehunga	Central Suburbs	Stanley Point	North Shore
Anawhata	West Auckland	Hauraki	North Shore	Onewhero	Not in Auckland	Sunnyhills	East Auckland
Arkles Bay	North Shore	Henderson Valley	West Auckland	Orakei	East Auckland	Takanini	South Auckland
Auckland	Central Suburbs	Herne Bay	Central Suburbs	Oratia	Central Suburbs	Te Atatu South	West Auckland
Avondale	West Auckland	Howick	East Auckland	Otahuhu	South Auckland	The Gardens	South Auckland
Beachlands	East Auckland	Huntly	Not in Auckland	Otara	South Auckland	Titirangi	West Auckland
Birkdale	North Shore	Hunua	South Auckland	Pakuranga	East Auckland	Totara Heights	South Auckland
Birkenhead	North Shore	Karaka	South Auckland	Pakuranga Heights	East Auckland	Totara Vale	South Auckland
Blockhouse Bay	West Auckland	Laingholm	West Auckland	Panmure	Central Suburbs	Waitakere	West Auckland
Botany Downs	East Auckland	Long Bay	North Shore	Papakura	South Auckland	Waiuku	South Auckland
Bucklands Beach	East Auckland	Lynfield	West Auckland	Papatoetoe	South Auckland	Wattle Downs	South Auckland
Chatswood	North Shore	Mangere	South Auckland	Patumahoe	South Auckland	Westmere	Central Suburbs
Clendon Park	South Auckland	Mangere Bridge	South Auckland	Point Chevalier	Central Suburbs	Weymouth	South Auckland
Clover Park	South Auckland	Mangere East	South Auckland	Point England	Central Suburbs	Whanganui	Not in Auckland
Coatesville	North Shore	Manukau	South Auckland	Pollok	South Auckland	Whangaparaoa	North Shore
Cockle Bay	East Auckland	Manukau Heads	South Auckland	Ponsonby	Central Suburbs	Whangaripo	Not in Auckland
Cornwallis	West Auckland	Manurewa	South Auckland	Randwick Park	South Auckland	Whitford	East Auckland
Drury	South Auckland	Meadowbank	Central Suburbs	Ranui	West Auckland	<u>Wiri</u>	<u>South Auckland</u>
East Tamaki	East Auckland	Mellons Bay	East Auckland	Remuera	Central Suburbs		
East Tamaki Heights	East Auckland	Milford	North Shore	Rothsay Bay	North Shore		
Ellerslie	Central Suburbs	Mount Albert	Central Suburbs	Royal Oak	Central Suburbs		
Epsom	Central Suburbs	Mount Eden	Central Suburbs	Saint Heliers	Central Suburbs		
Farm Cove	East Auckland	Mount Roskill	Central Suburbs	Saint Johns	Central Suburbs		
Flat Bush	East Auckland	Mount Wellington	Central Suburbs	Saint Marys Bay	Central Suburbs		
Forrest Hill	North Shore	Muriwai	West Auckland	Sandringham	Central Suburbs		
Glendowie	Central Suburbs	Newmarket	Central Suburbs	Shamrock Park	East Auckland		
Glenfield	North Shore	Northcote Point	North Shore	Shelly Park	South Auckland		
Goodwood Heights	South Auckland	Northcross	North Shore	Silverdale	North Shore		
Greenlane	Central Suburbs	Northpark	South Auckland	Snells Beach	Not in Auckland		
<u>Grey Lynn</u>	<u>Central Suburbs</u>	<u>One Tree Hill</u>	<u>Central Suburbs</u>	<u>Somerville</u>	<u>South Auckland</u>		