

ANCCG Meeting

Monitoring Period

August 2020 – October 2020

Meeting: 14 December 2020

MARSHALL DAY
Acoustics 

Flight

Aircraft Operations

Figure 1: Number of Aircraft Operations per Month

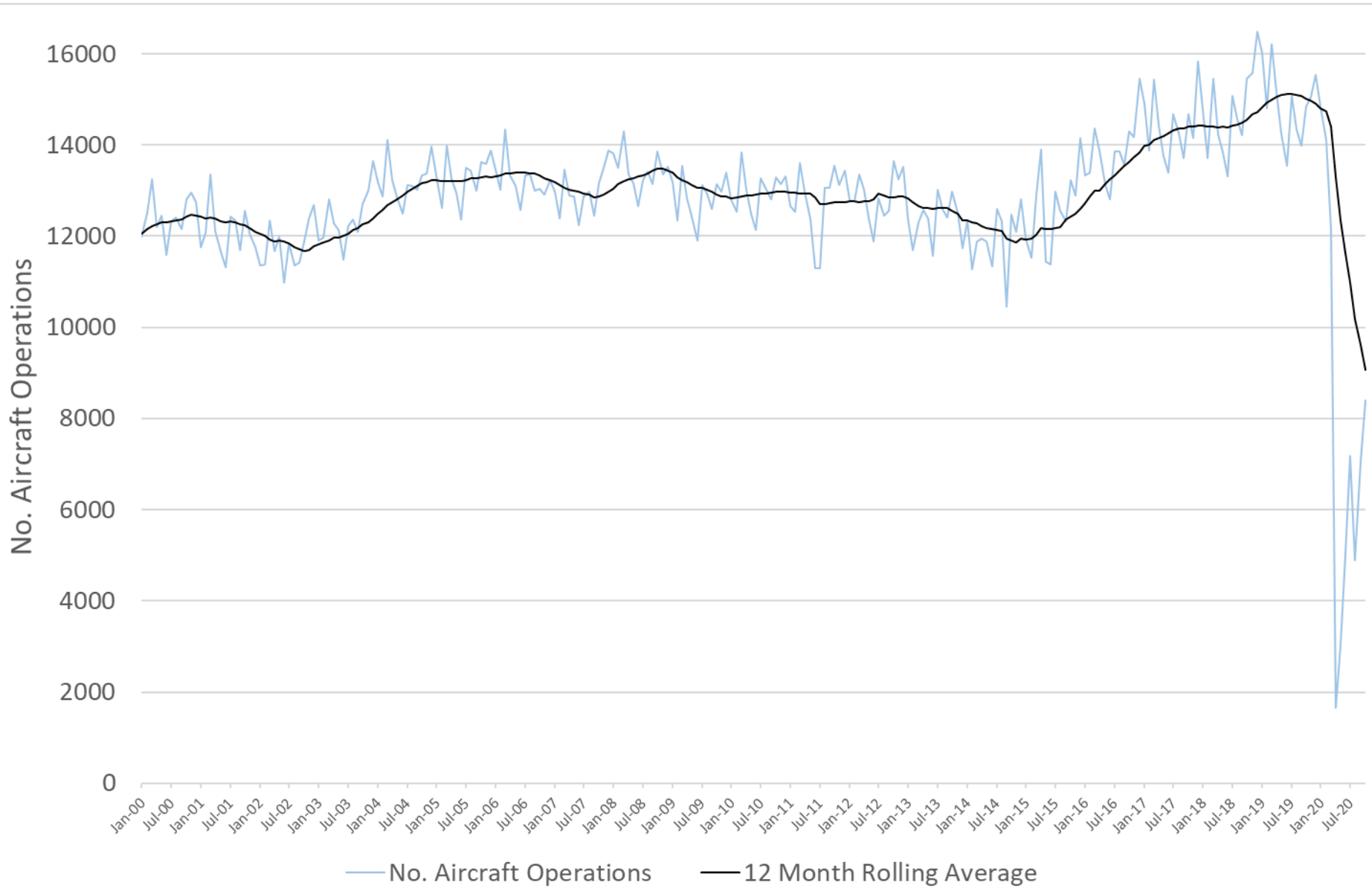


Table 1: Summary of Aircraft Operations

Operation	Total	Day	Night
Arrivals	10,115	9,110	1,005
Departures	10,155	9,363	792
Circuit	62	61	1
Total	20,332	18,534	1,798

Table 2: Average Daily Aircraft Operations

Total	Day	Night
221	201	20

Figure 2: Aircraft Operations by Time

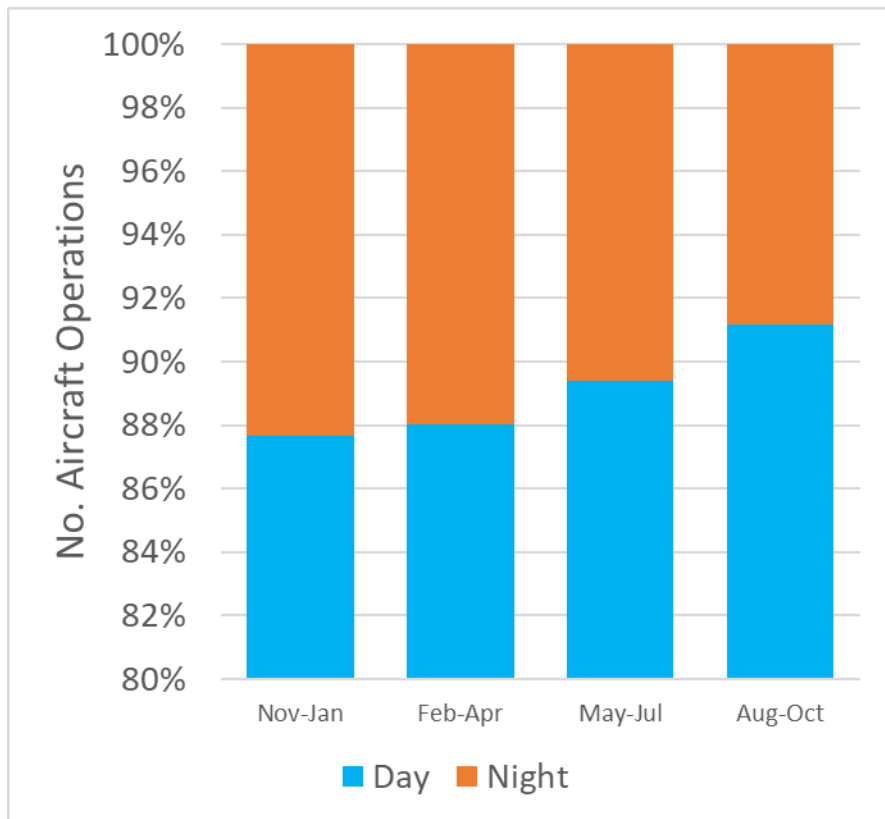


Figure 3: Aircraft Operations by Aircraft Type

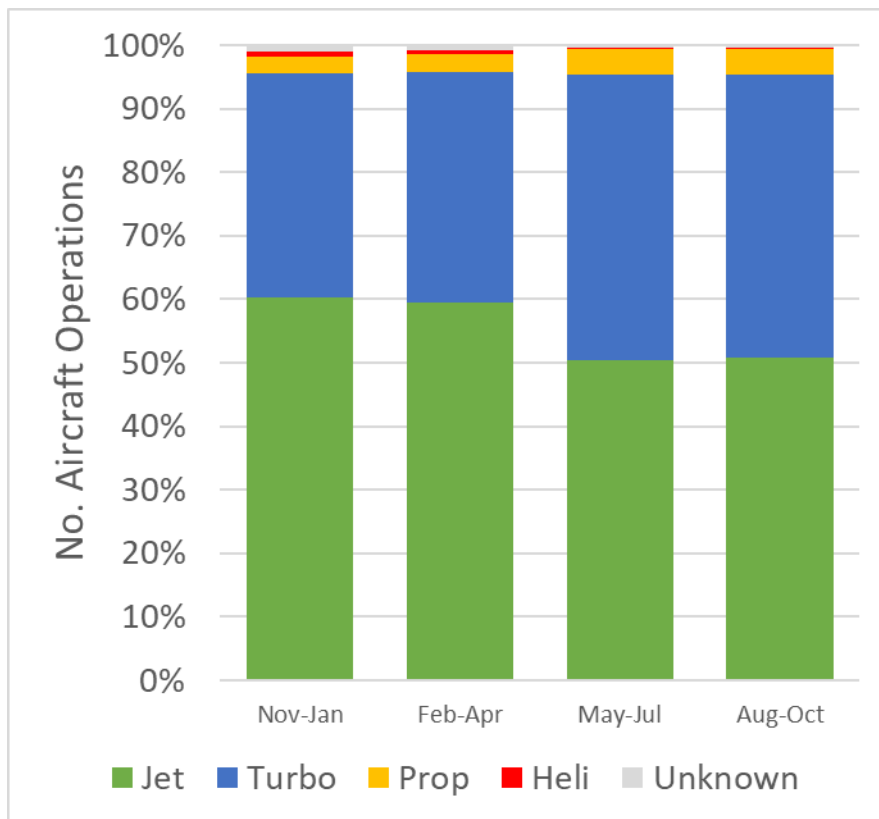


Figure 4: Aircraft Operations by Runway

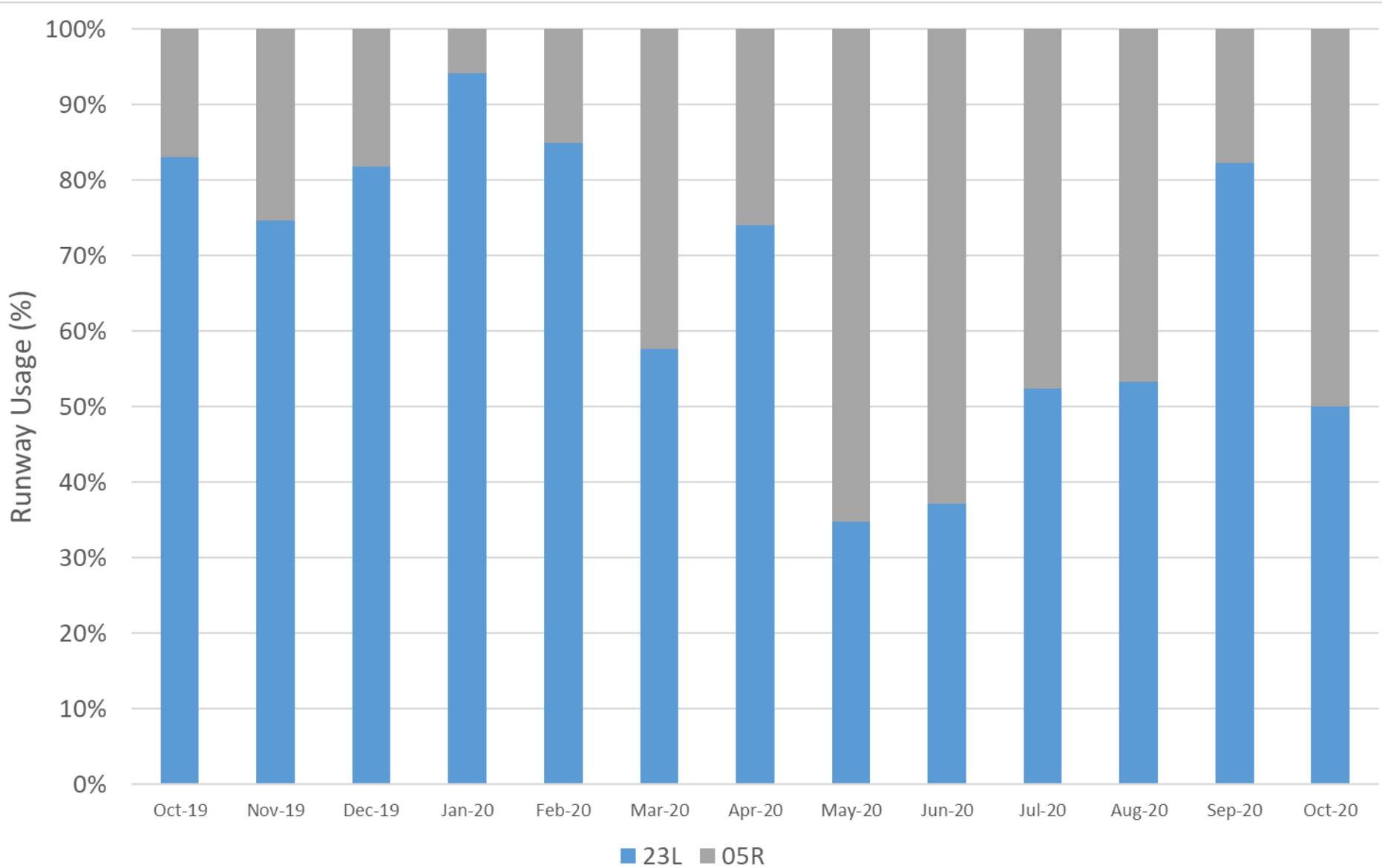


Figure 5: Number of SMART Approaches per week

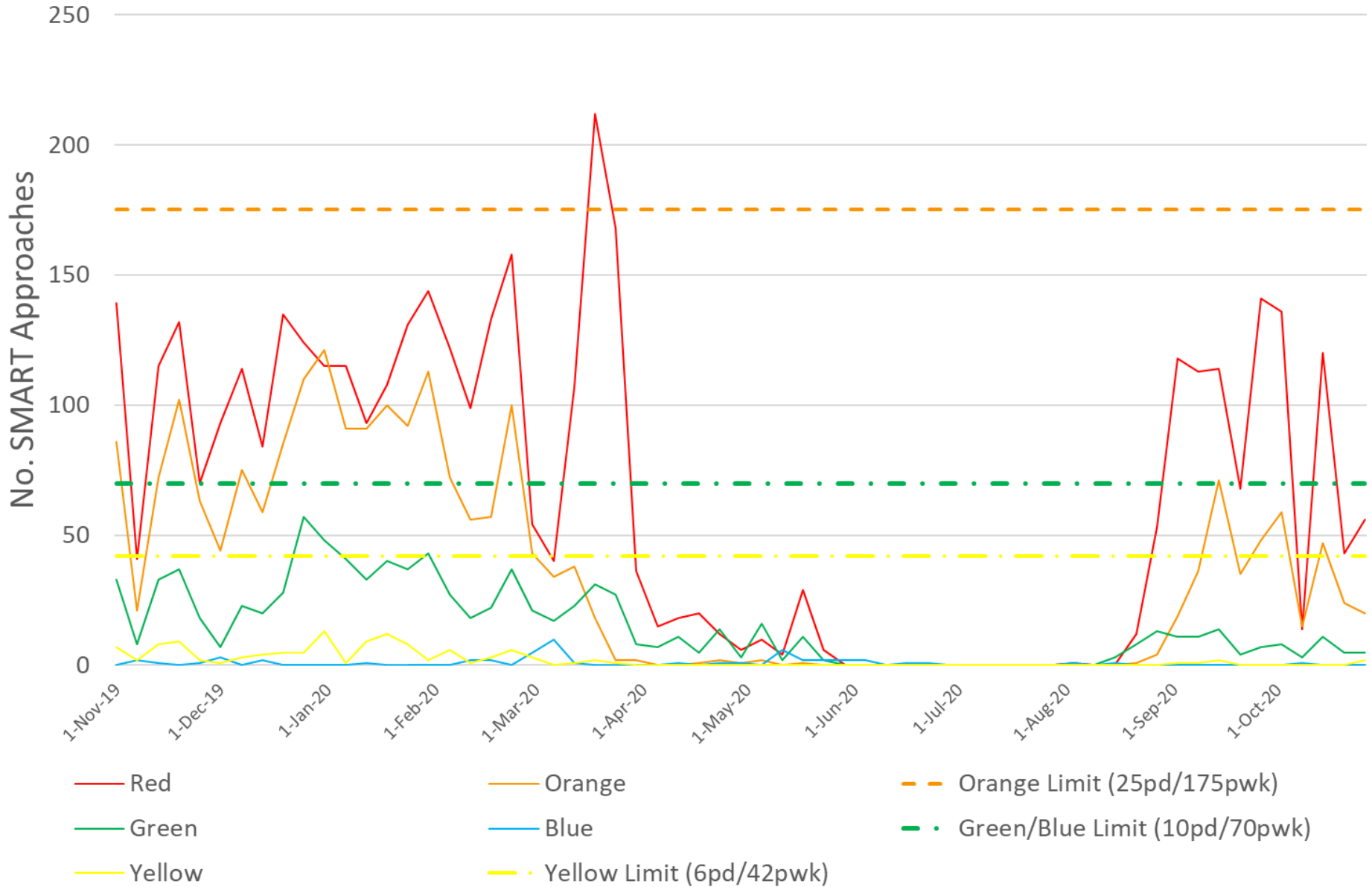
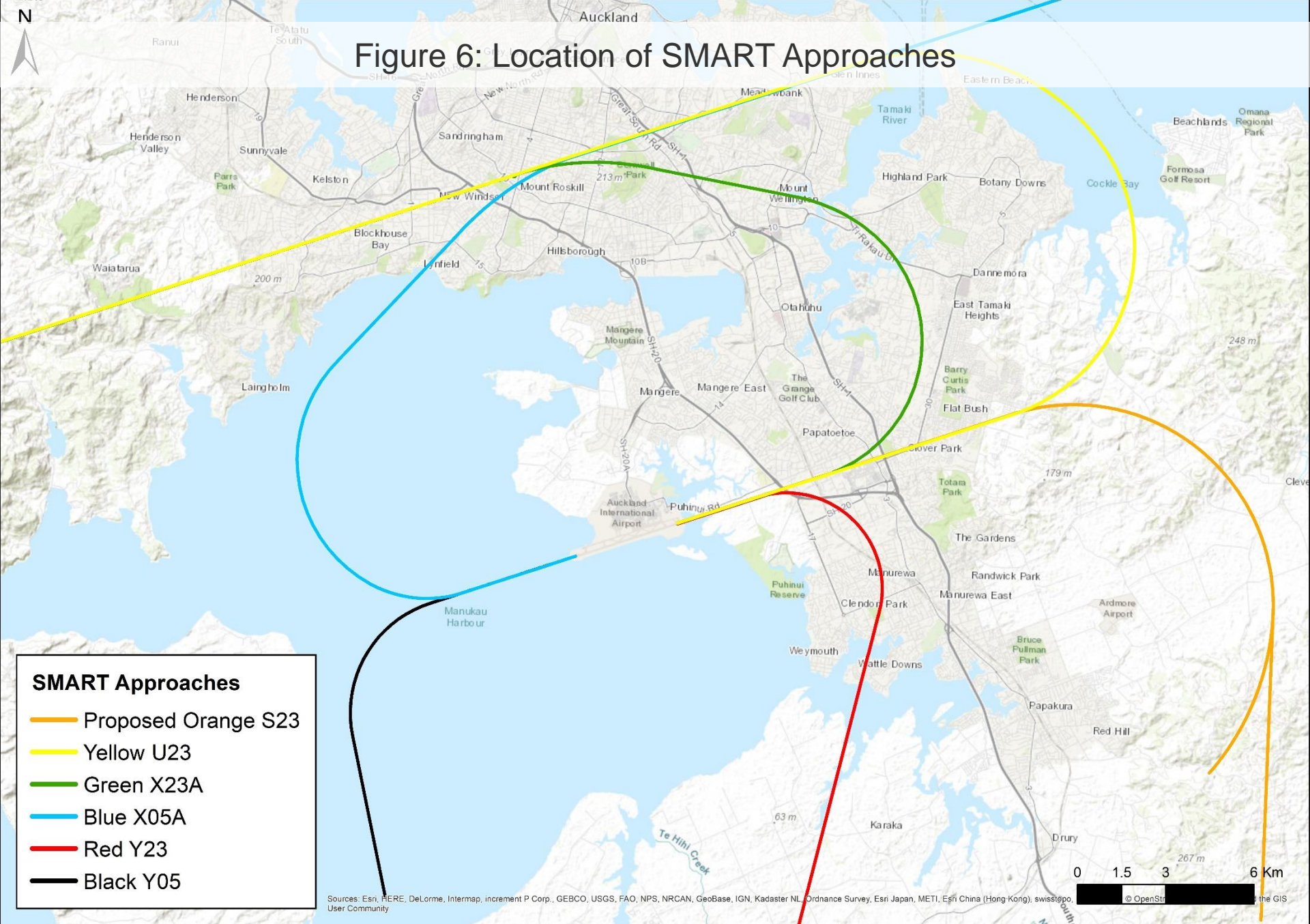


Figure 6: Location of SMART Approaches



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community



Flight Path Diagrams

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

99% Westerly Winds/Runway 23L



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

99% Westerly Winds/Runway 23L

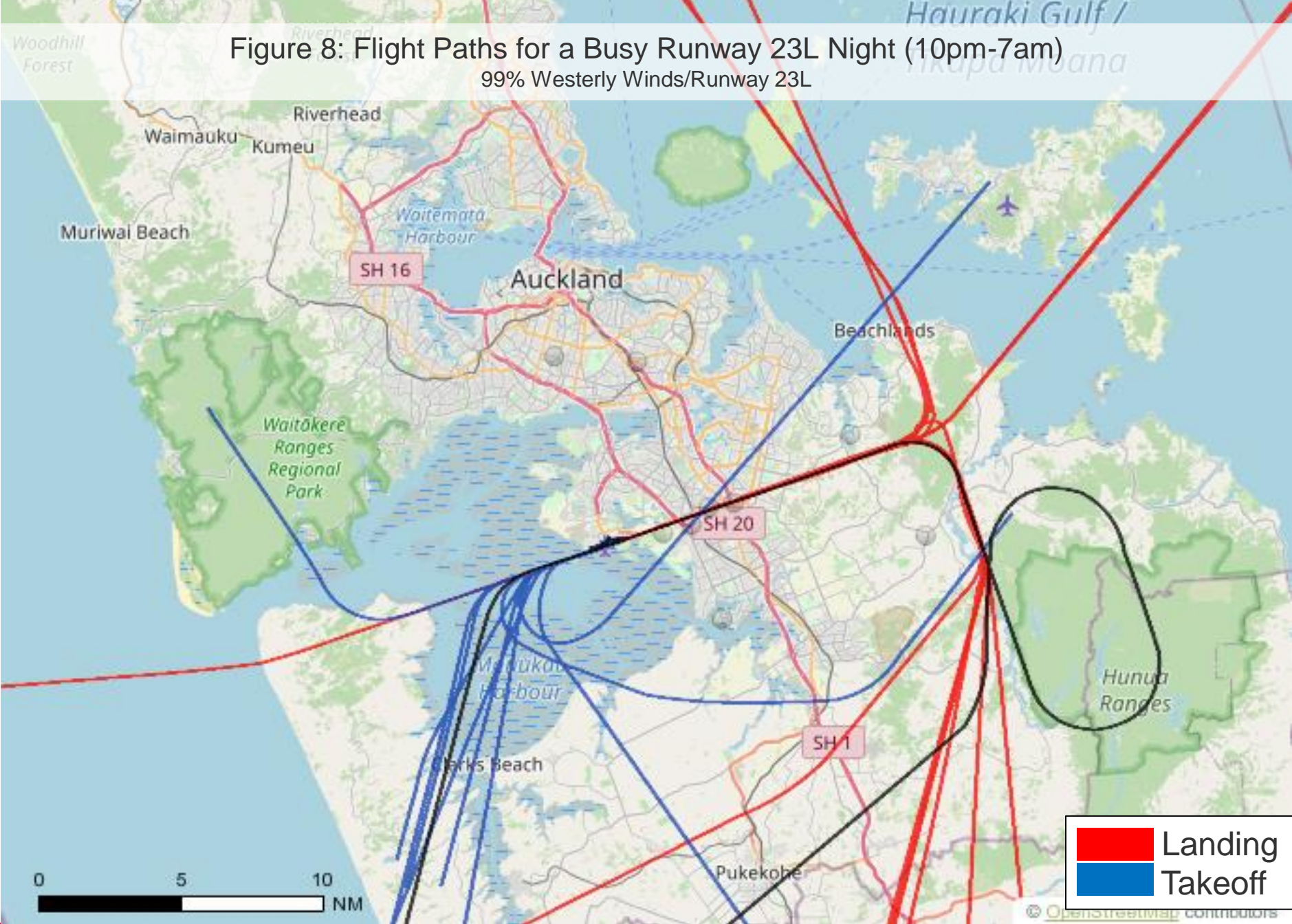


Figure 9: Flight Paths for a Busy Runway 05R Day (7am-10pm)
100% Easterly Winds/Runway 05R

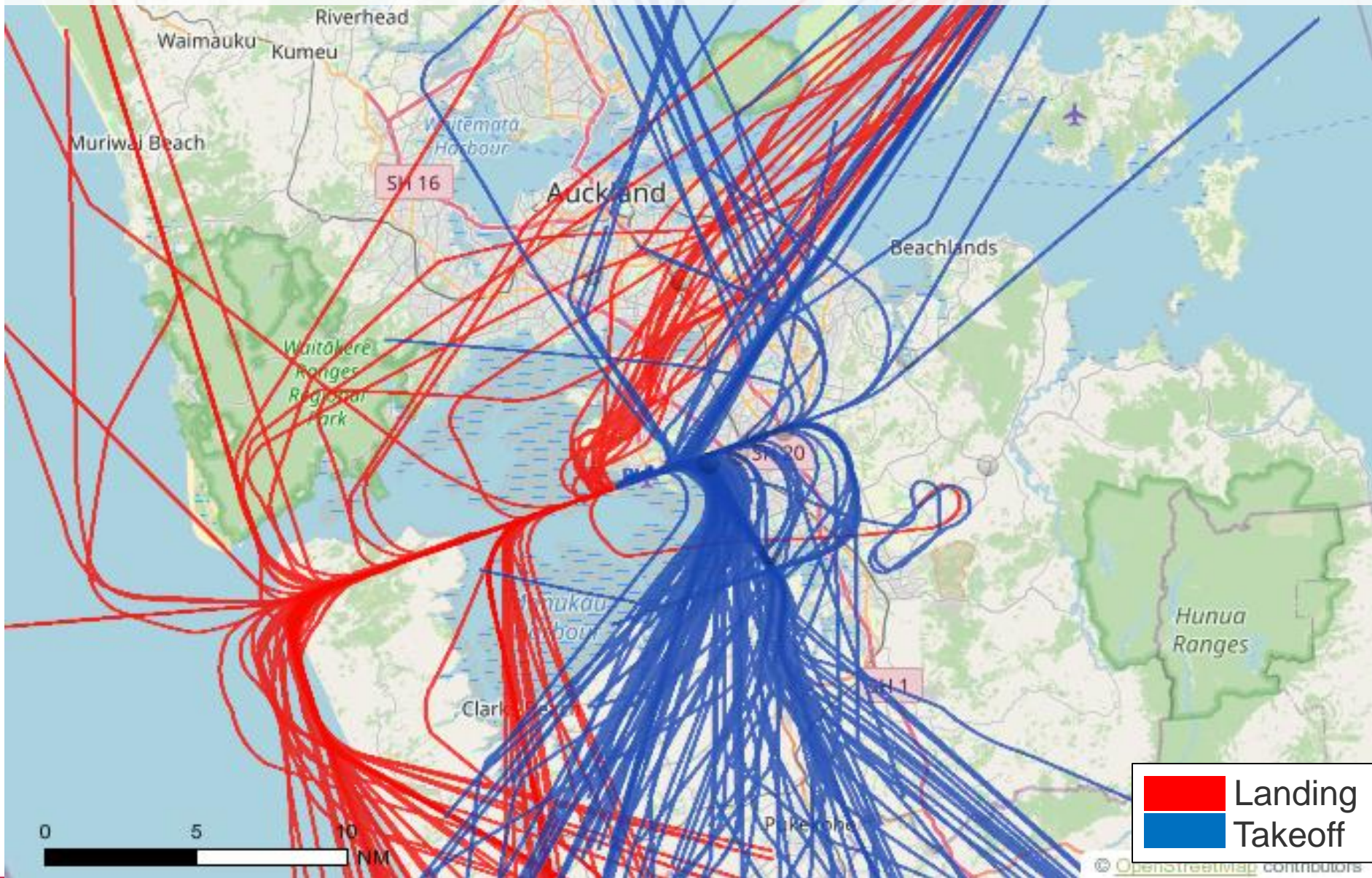
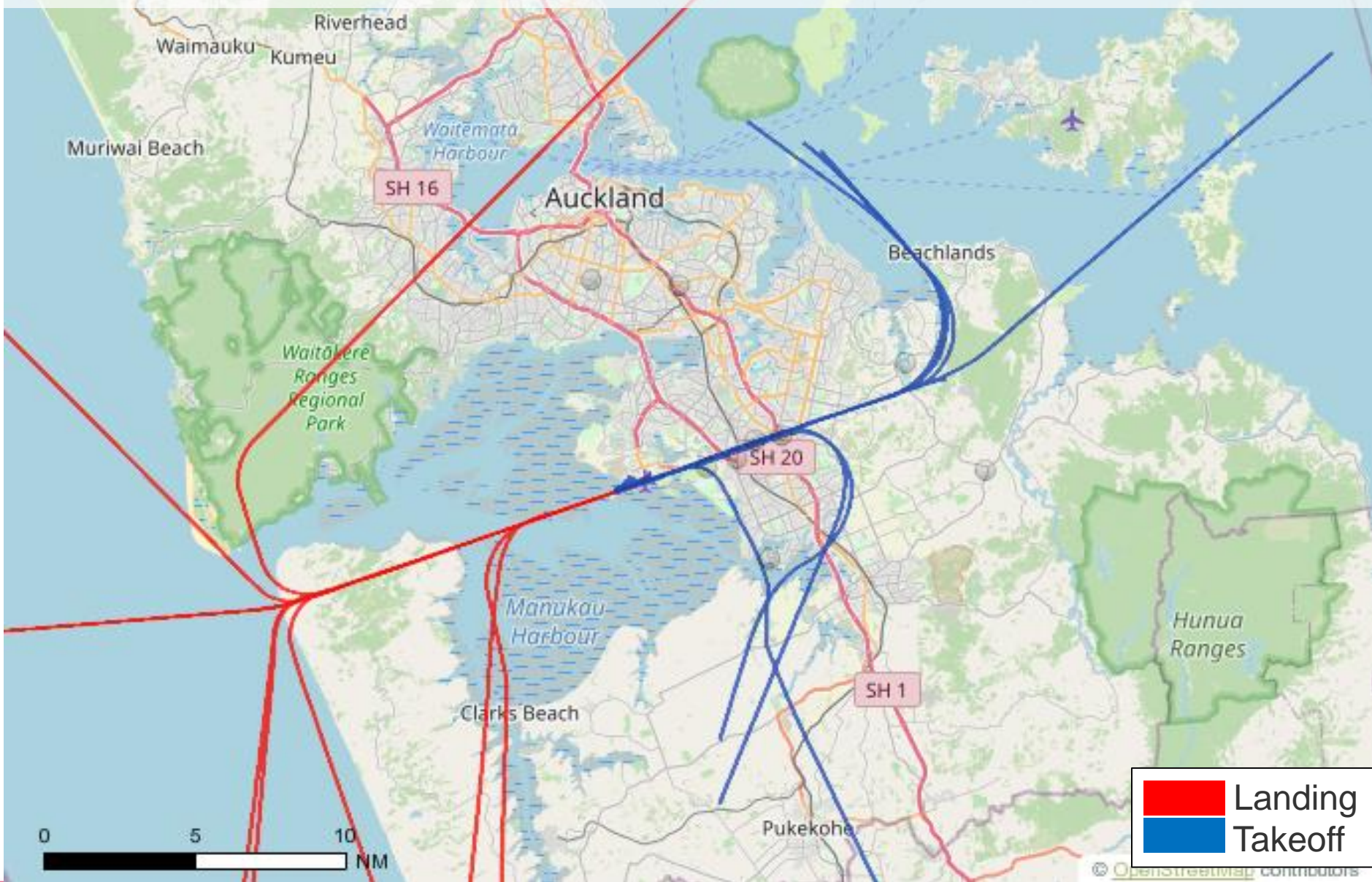


Figure 10: Flight Paths for a Busy Runway 05R Night (10pm-7am)

100% Easterly Winds/Runway 05R



Noise Complaints



Figure 11: Number of Aircraft Noise Complaints per Month

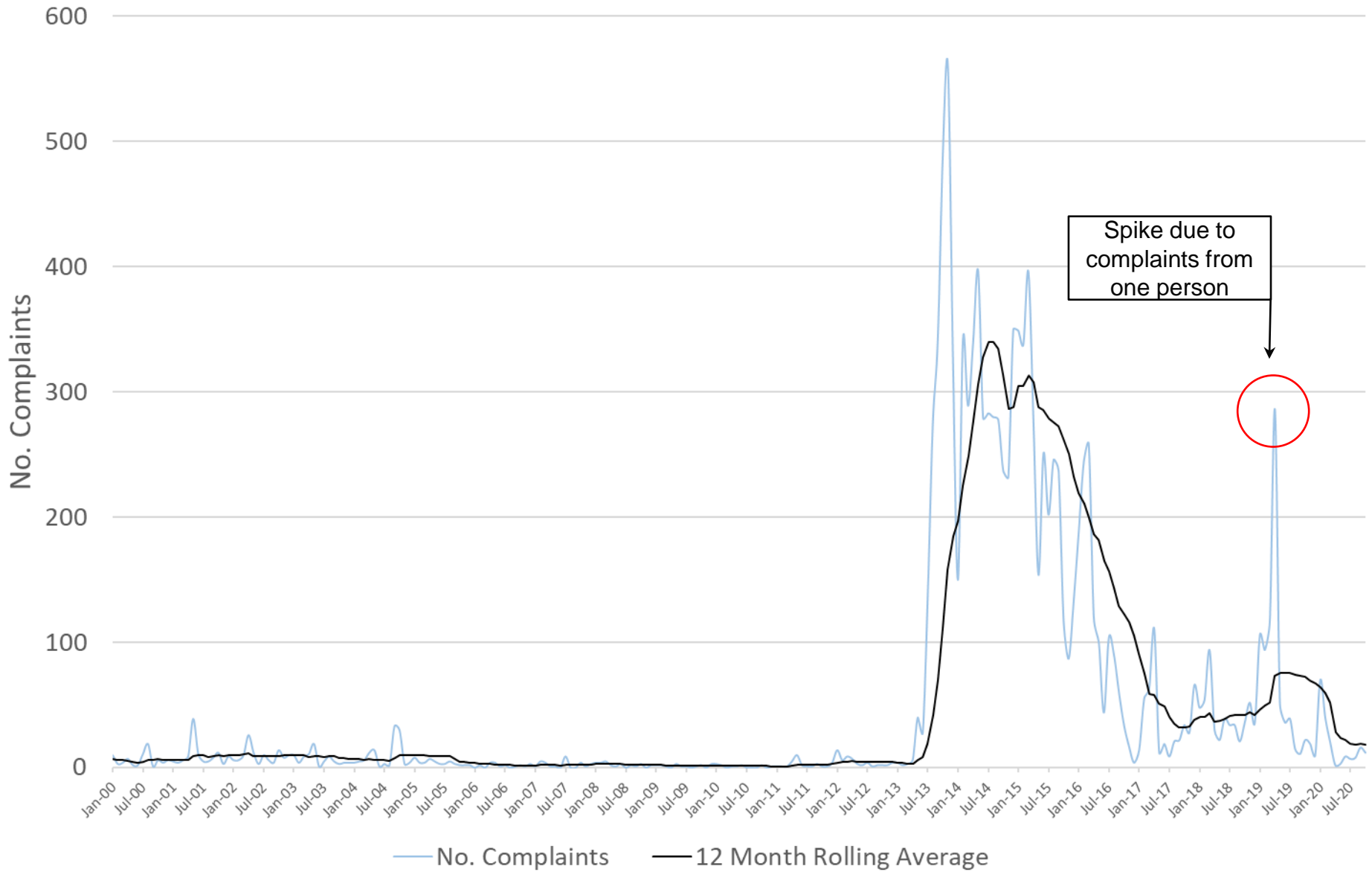
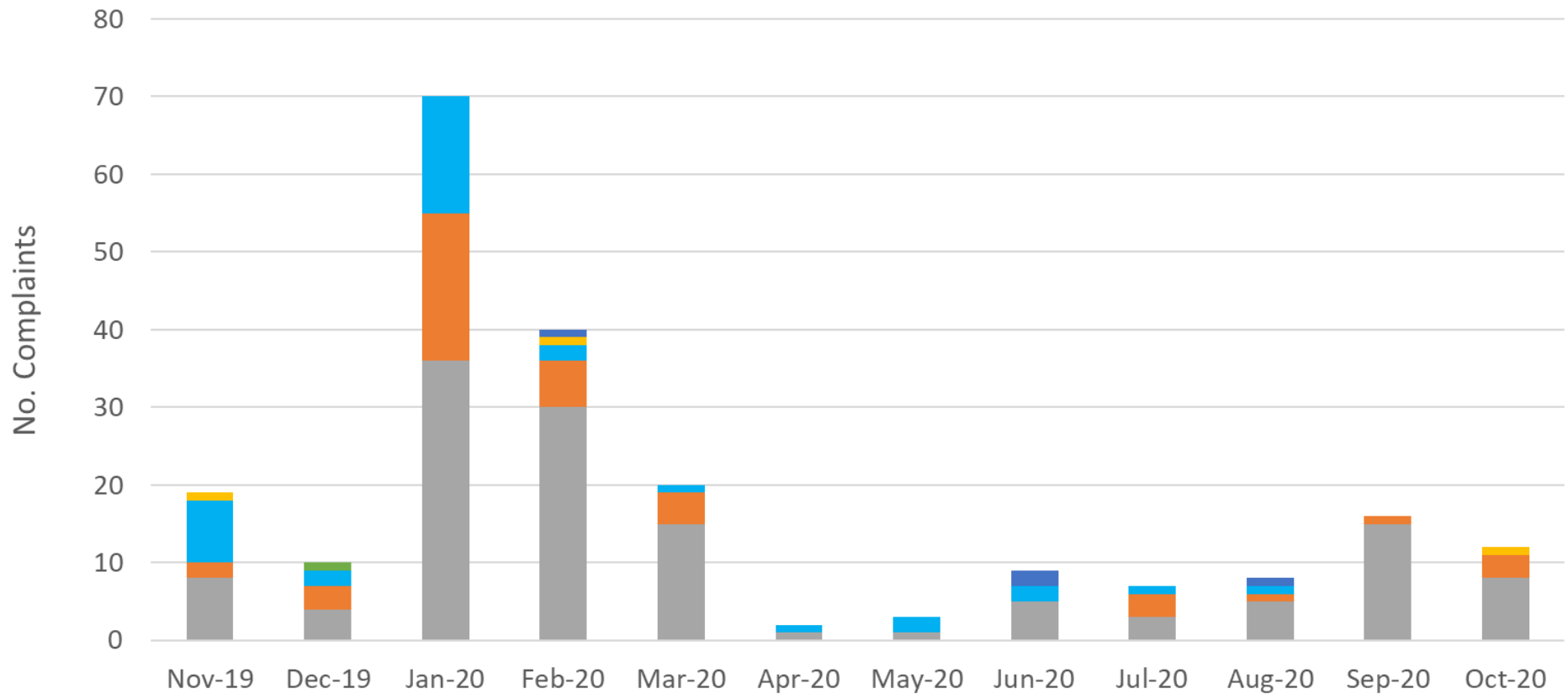


Table 3: Summary of Noise Complaints

	Aug	Sep	Oct	Aug-Oct	May-Jul	Feb-Apr	Nov-Jan
Number of Complaints	8	16	12	36	19	62	99
<i>Specific</i>	7	14	11	32	12	55	87
<i>Generic</i>	1	2	0	3	5	5	9
<i>Question</i>	0	0	1	1	2	2	3
Number of People Complaining	5	6	6	15	19	20	22

Note: One person made 58% (21) of the complaints for the three-month period. They were located in Remuera

Figure 13: Number of Noise Complaints by Area



	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20
Not in Auckland	0	1	0	0	0	0	0	0	0	0	0	0
North Shore	0	0	0	1	0	0	0	2	0	1	0	0
West Auckland	1	0	0	1	0	0	0	0	0	0	0	1
East Auckland	8	2	15	2	1	1	2	2	1	1	0	0
South Auckland	2	3	19	6	4	0	0	0	3	1	1	3
Central Suburbs	8	4	36	30	15	1	1	5	3	5	15	8

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

Figure 14: Noise Complaints by Time

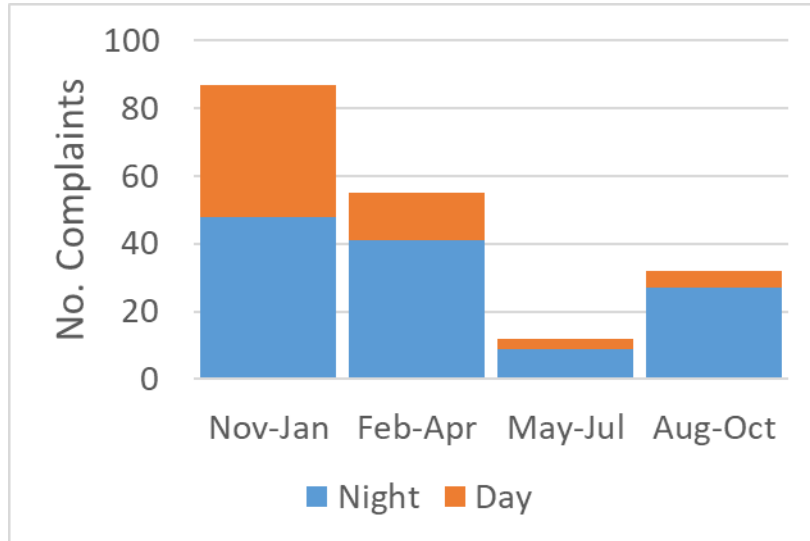


Figure 15: Noise Complaints by Runway

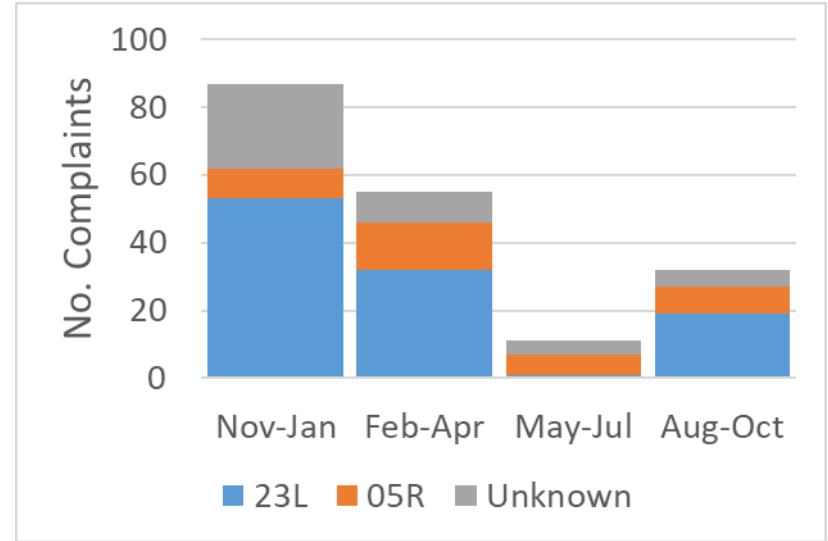


Figure 16: Noise Complaints by Aircraft

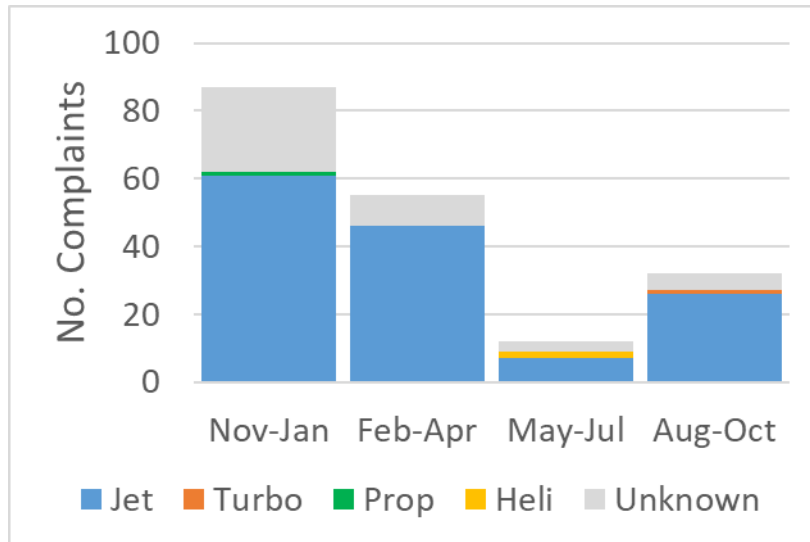


Figure 17: Noise Complaints by Operation

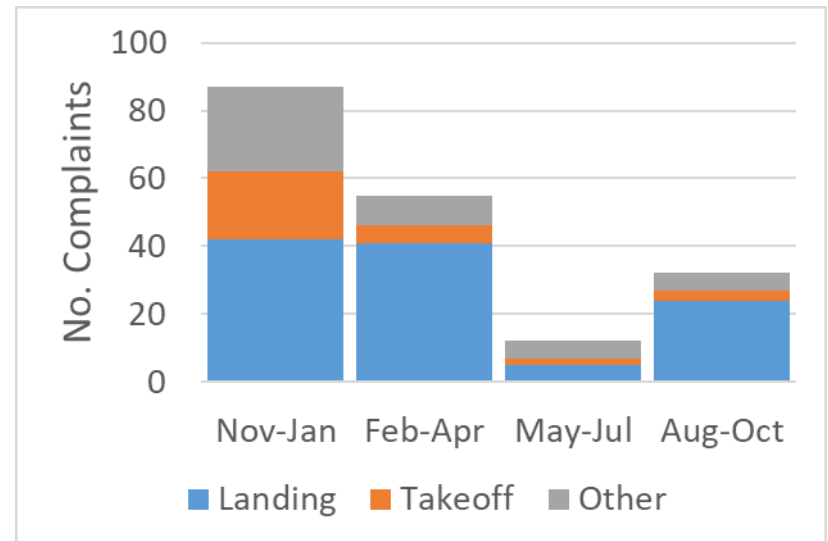


Figure 18: Specific Noise Complaints by Destination

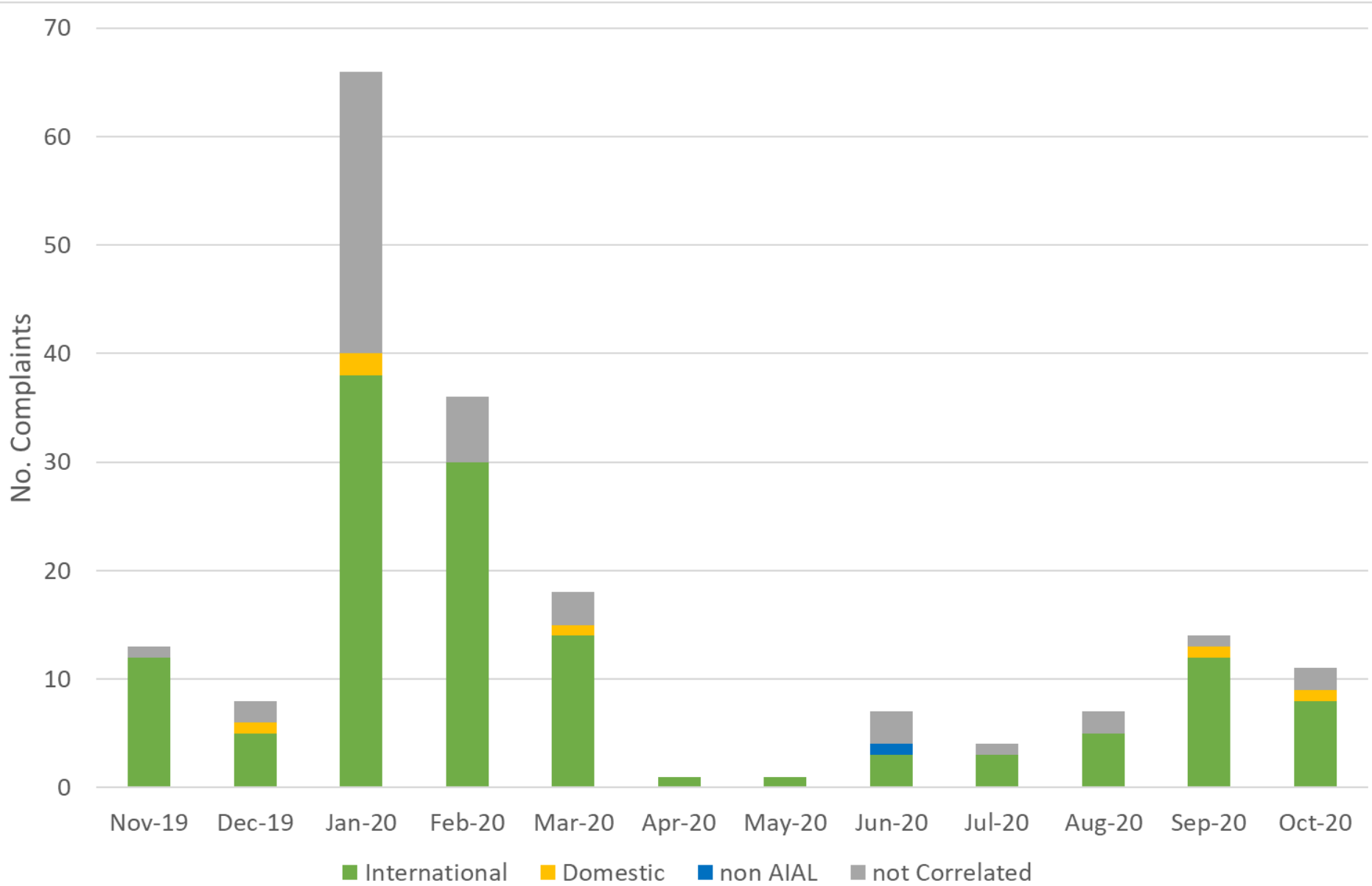


Figure 19: Specific Noise Complaints vs Usage of Runway 05R

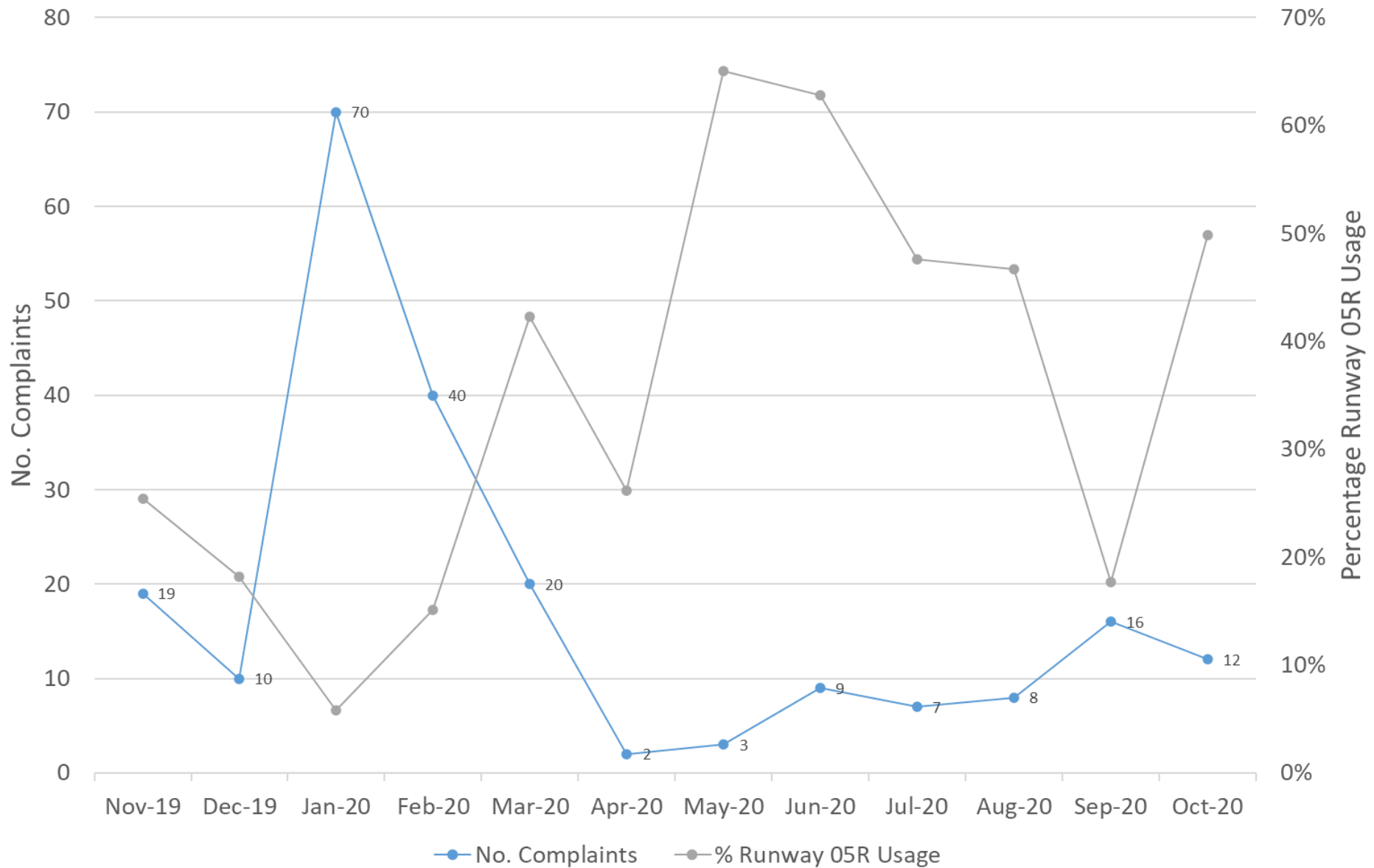


Figure 20: Noise Complaints by Hour vs Aircraft Operations by Hour (Aug - Oct)

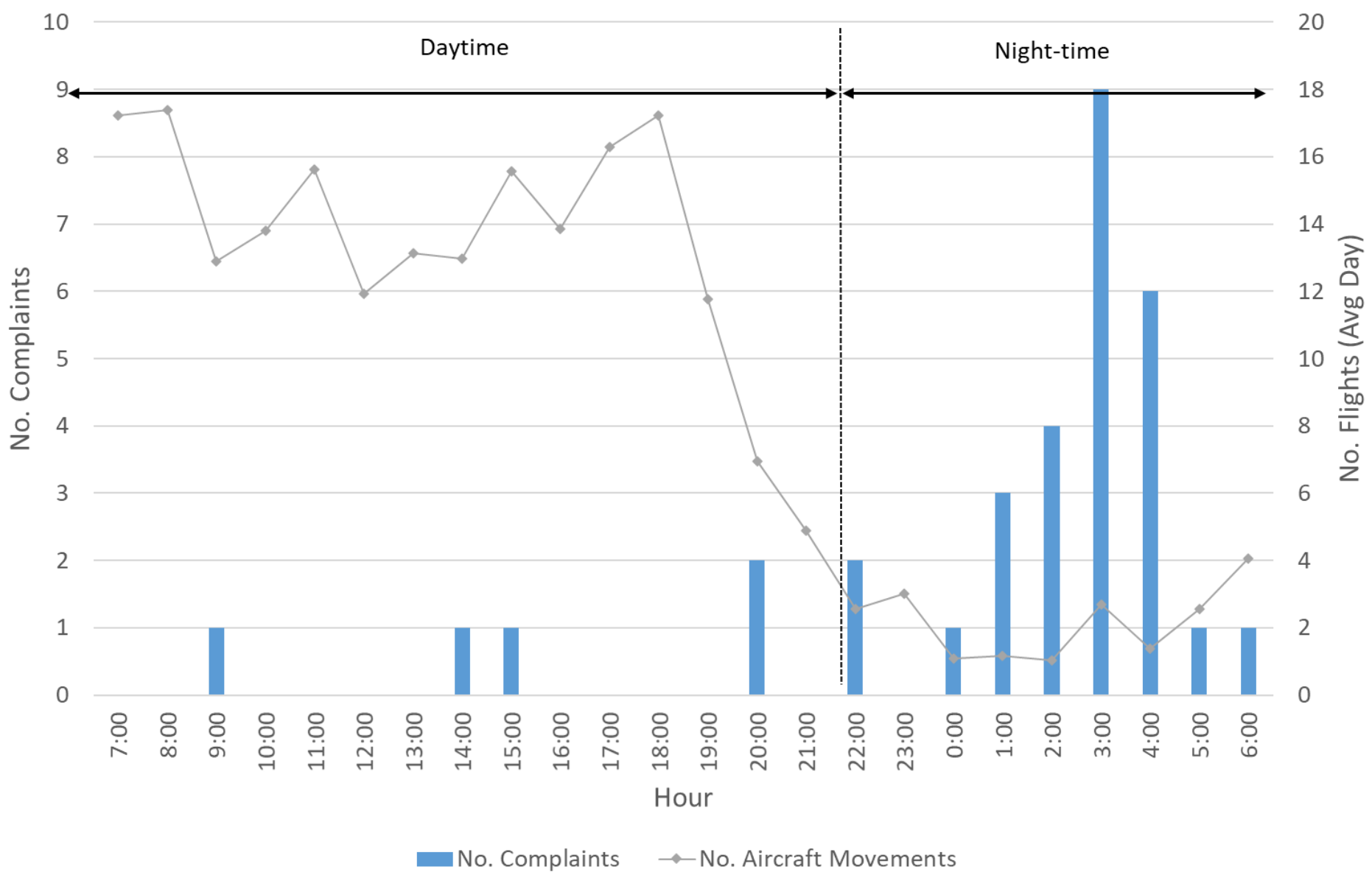


Figure 21: Noise Complaints by Type (Aug - Oct)

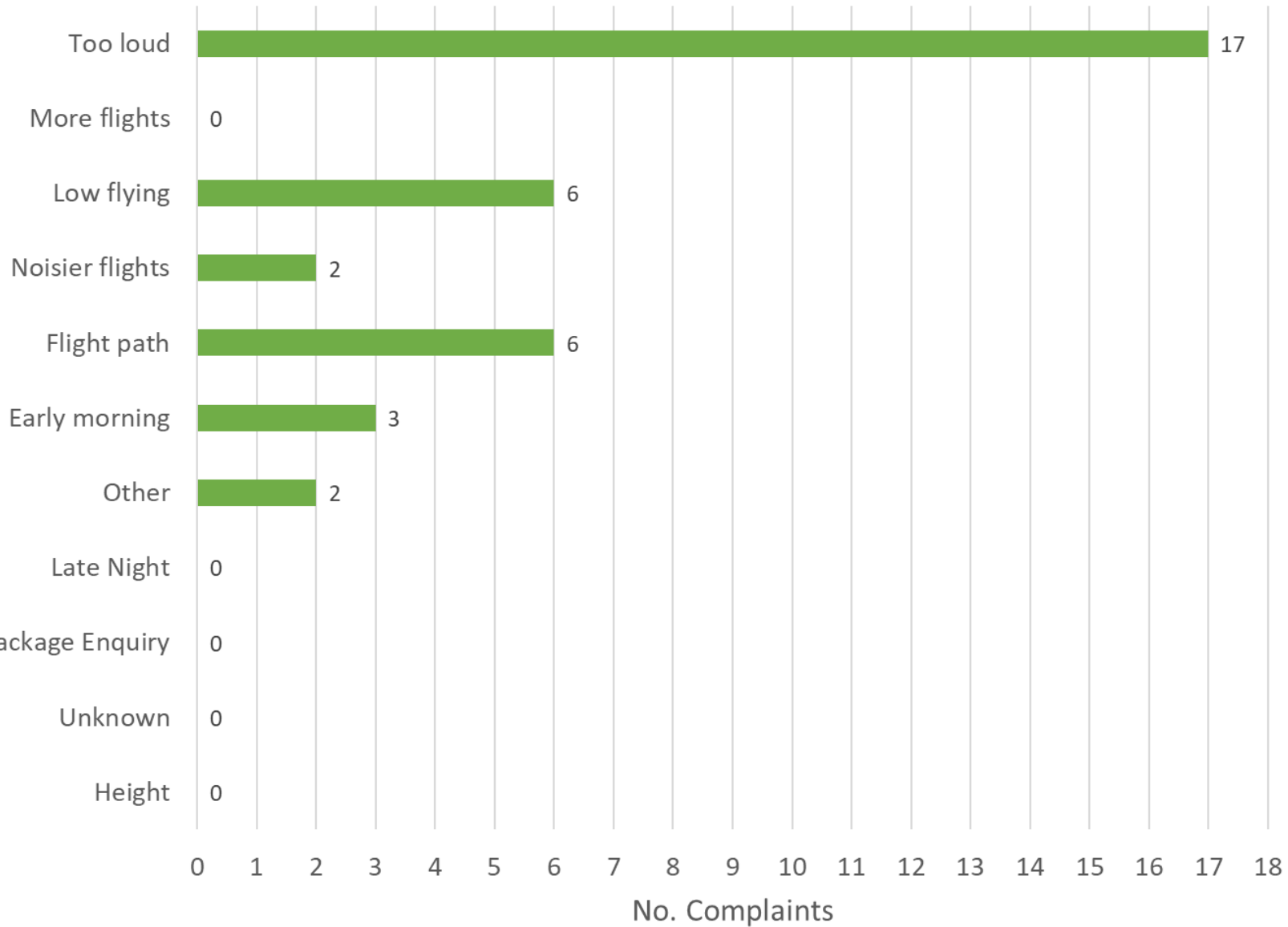
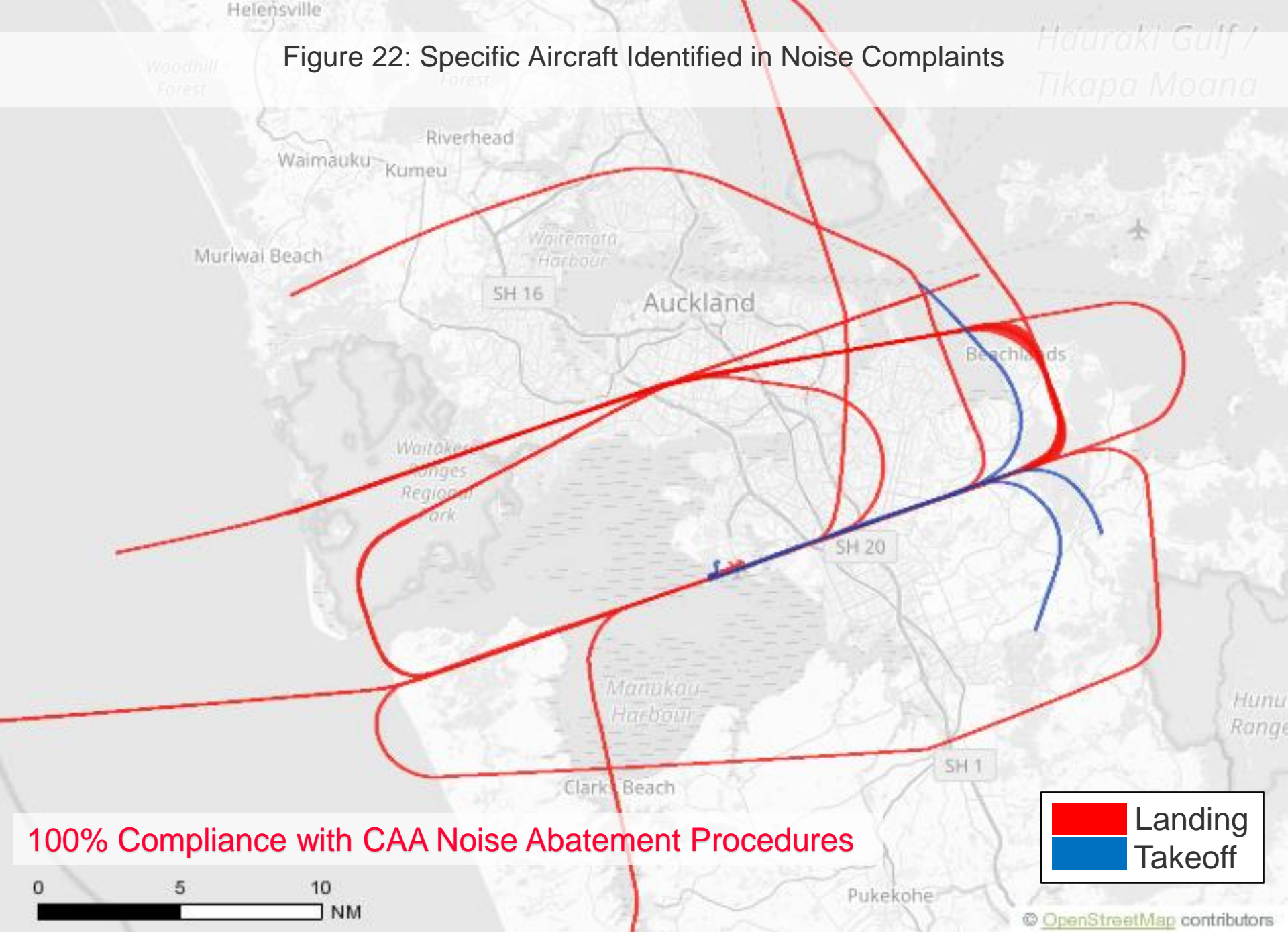


Figure 22: Specific Aircraft Identified in Noise Complaints

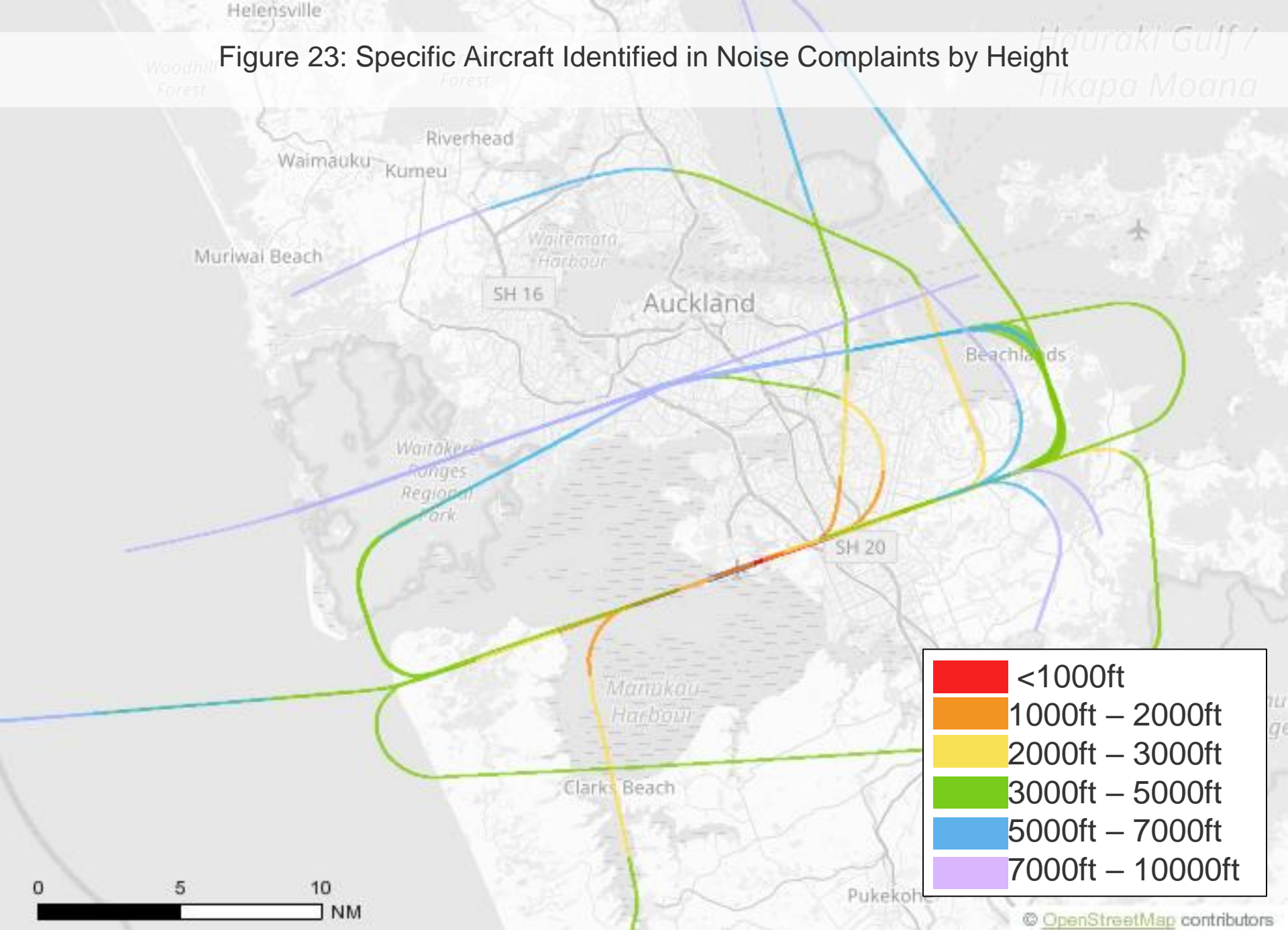


100% Compliance with CAA Noise Abatement Procedures

 Landing
 Takeoff

0 5 10
NM

Figure 23: Specific Aircraft Identified in Noise Complaints by Height





Noise Monitoring

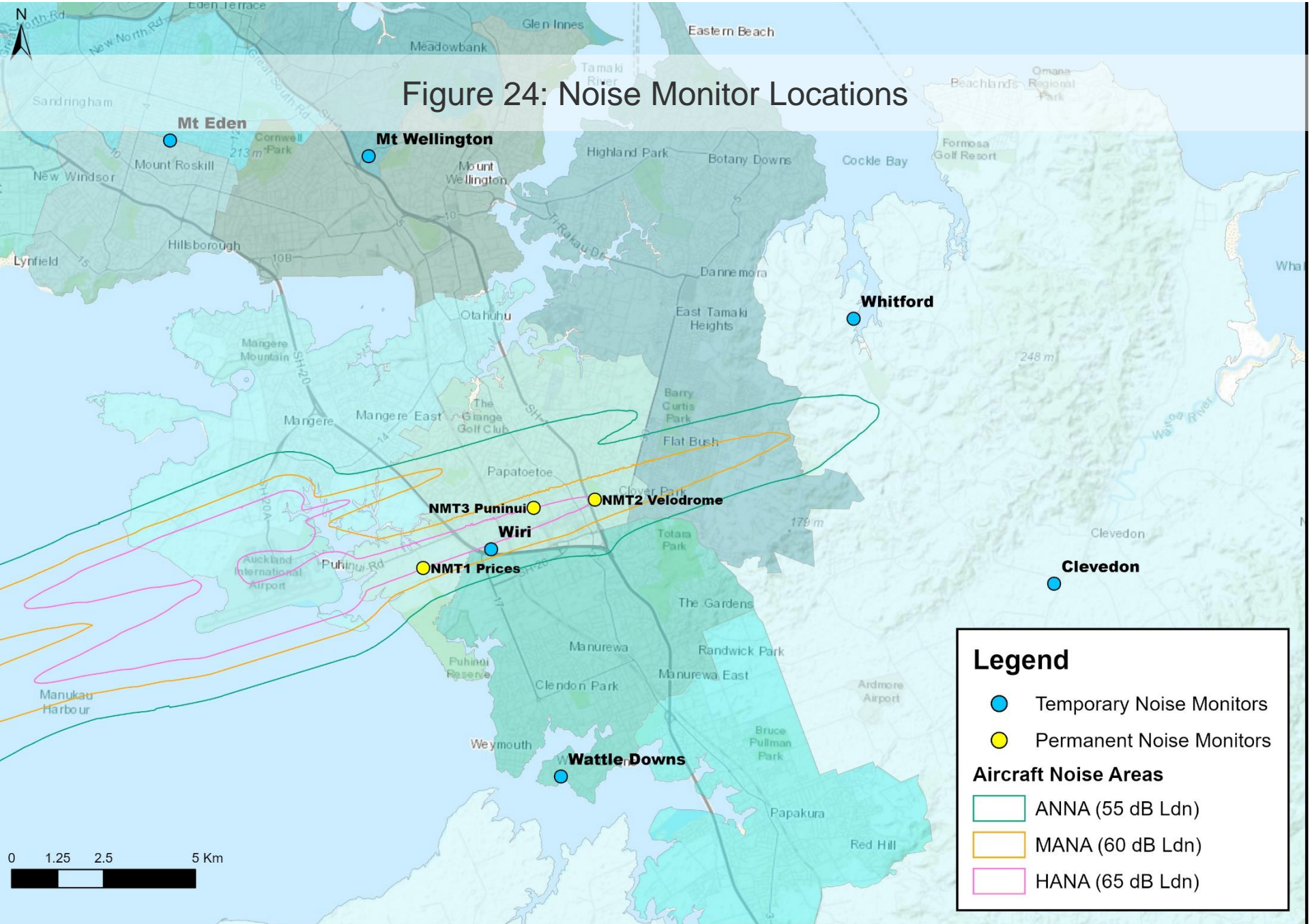


Figure 25: Measured 365 Day Rolling Noise Exposure (L_{dn}) – Permanent Monitors

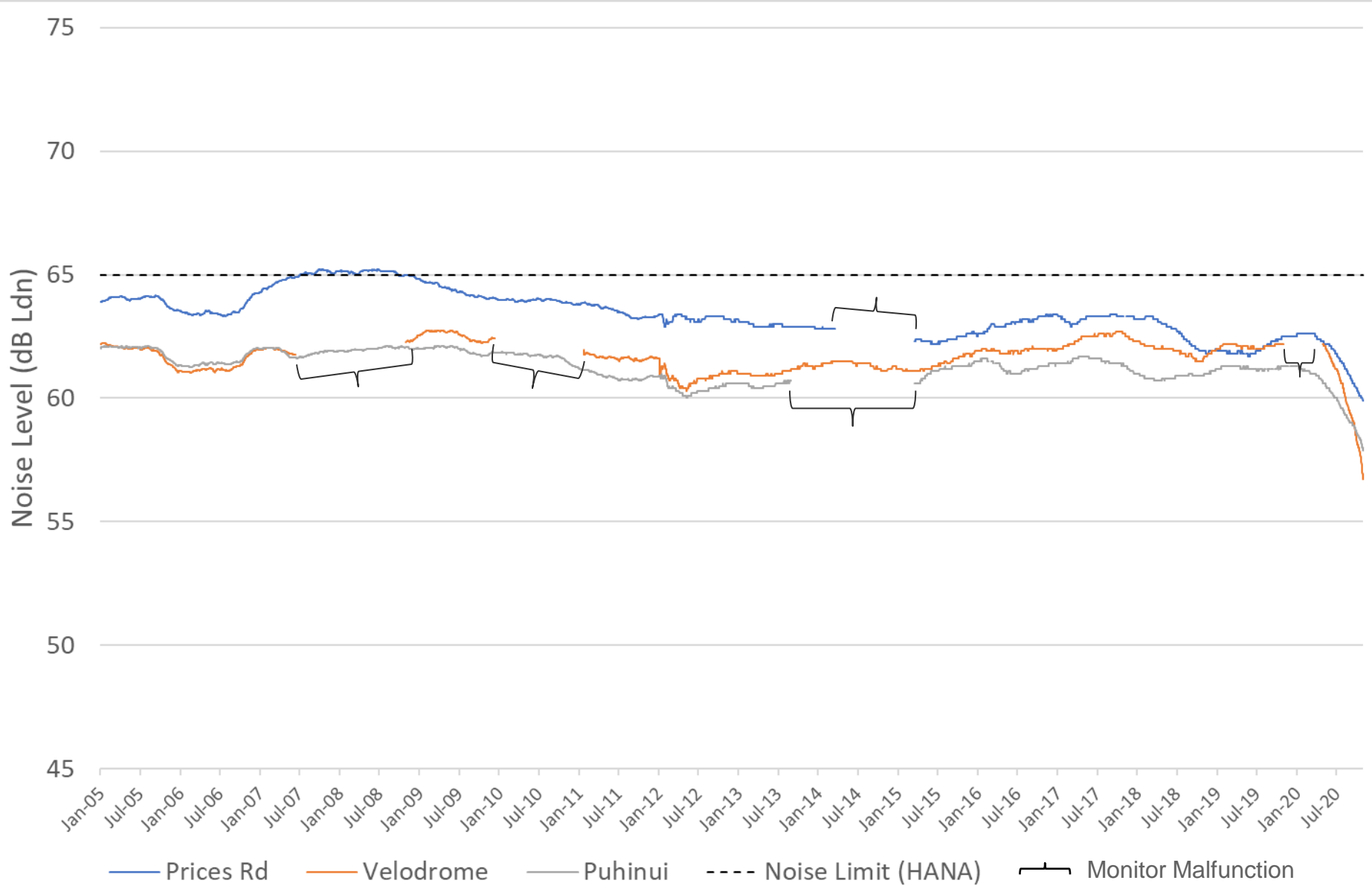
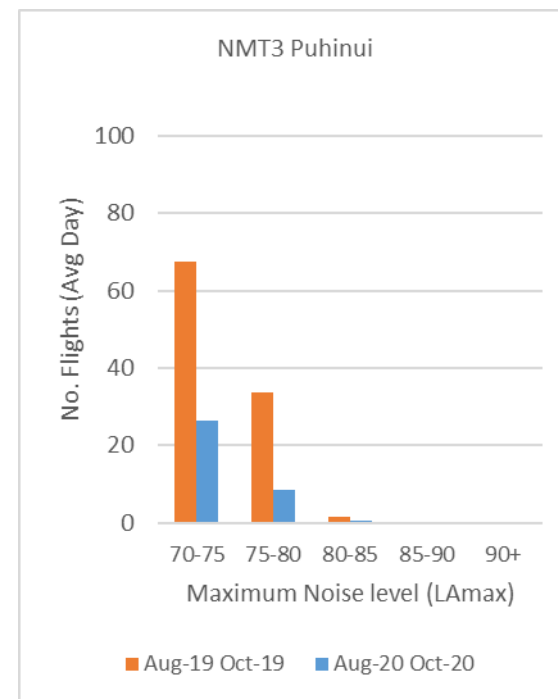
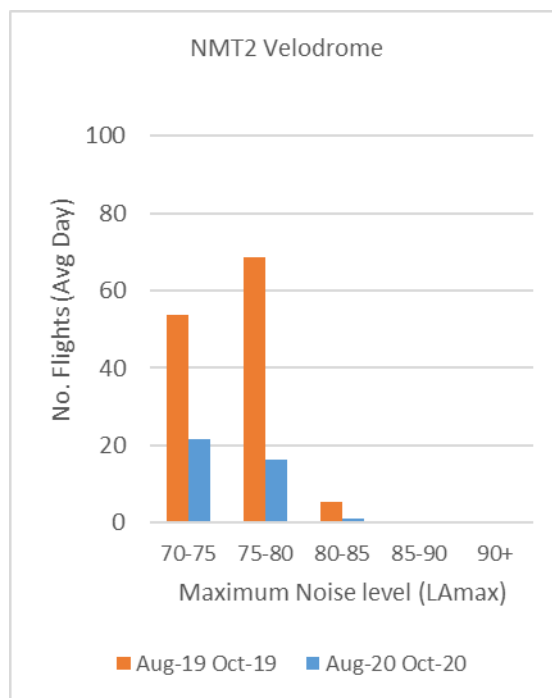
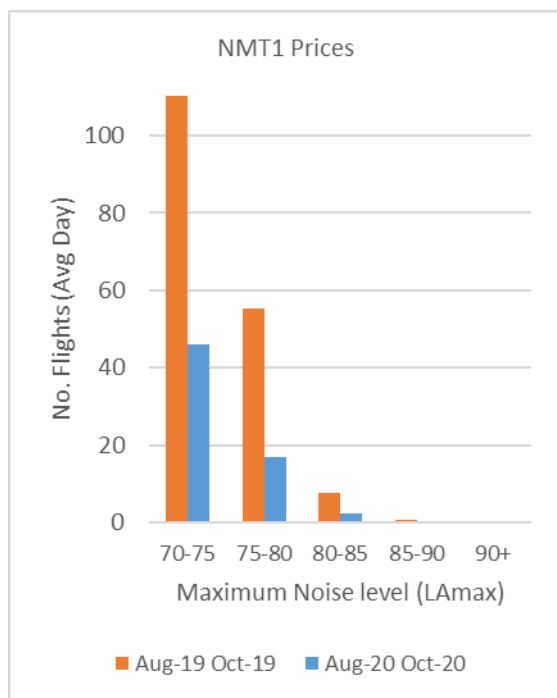


Table 4: Measured Noise Exposure (L_{dn}) for each Financial Year – Permanent Monitors

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	8,912	5,386	5,803
No. Aircraft Operations Captured by Monitors	7,901	3,757	5,414
Correlation	89%	70%	93%

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	2040	39	62
Mt Wellington	17-Apr-15	2024	39	65
Wiri	4-Aug-17	1278	59	75
Wattle Downs	23-Dec-17	1043	47	67
Clevedon	10-Mar-18	963	28	56
Whitford (Trig)	1-Dec-19	335	44	59

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

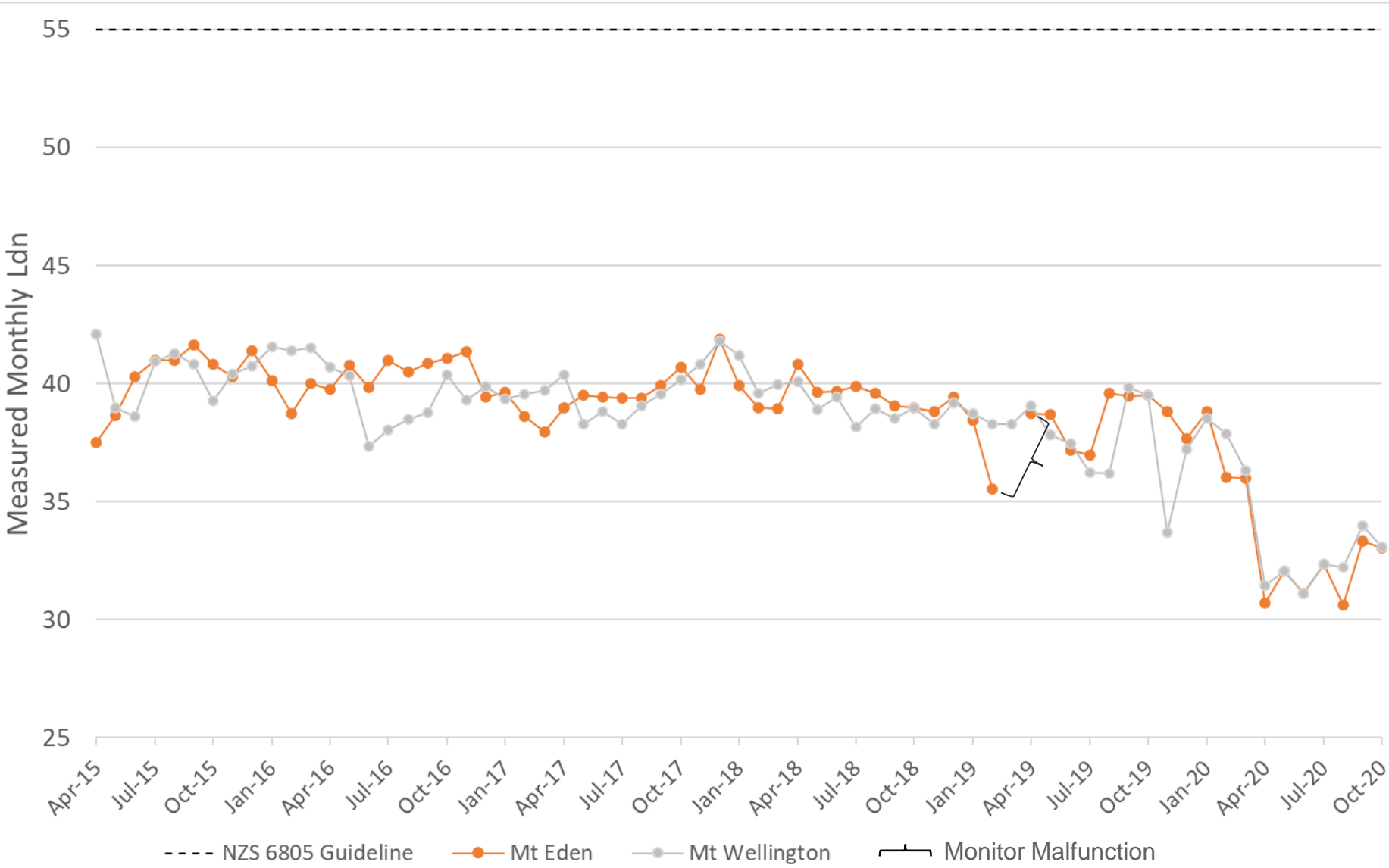


Figure 28: Measured Monthly Noise Exposure (L_{dn}) – Eastern Suburbs Temporary Monitors

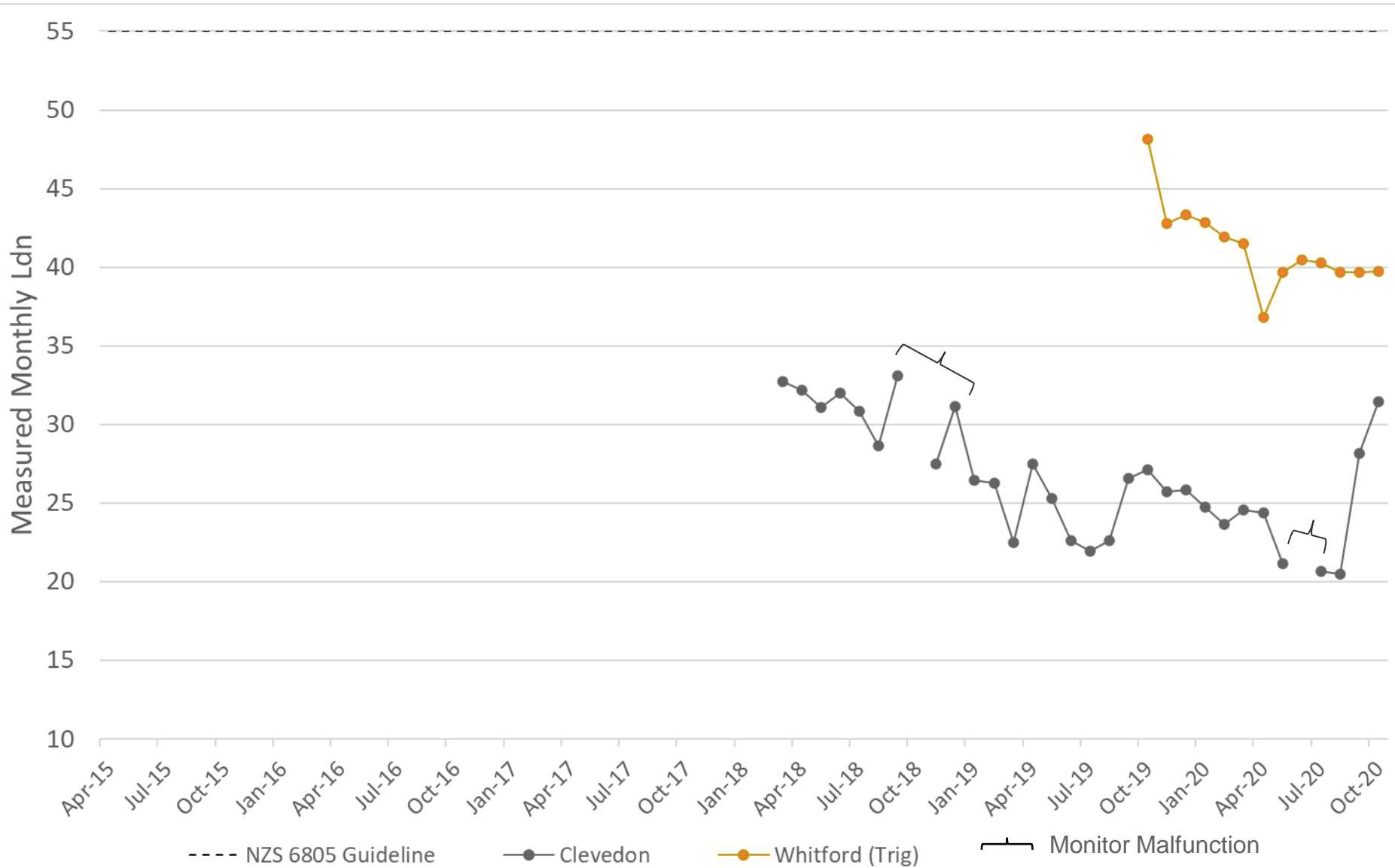


Figure 29: Measured Monthly Noise Exposure (L_{dn}) – Southern Suburbs Temporary Monitors

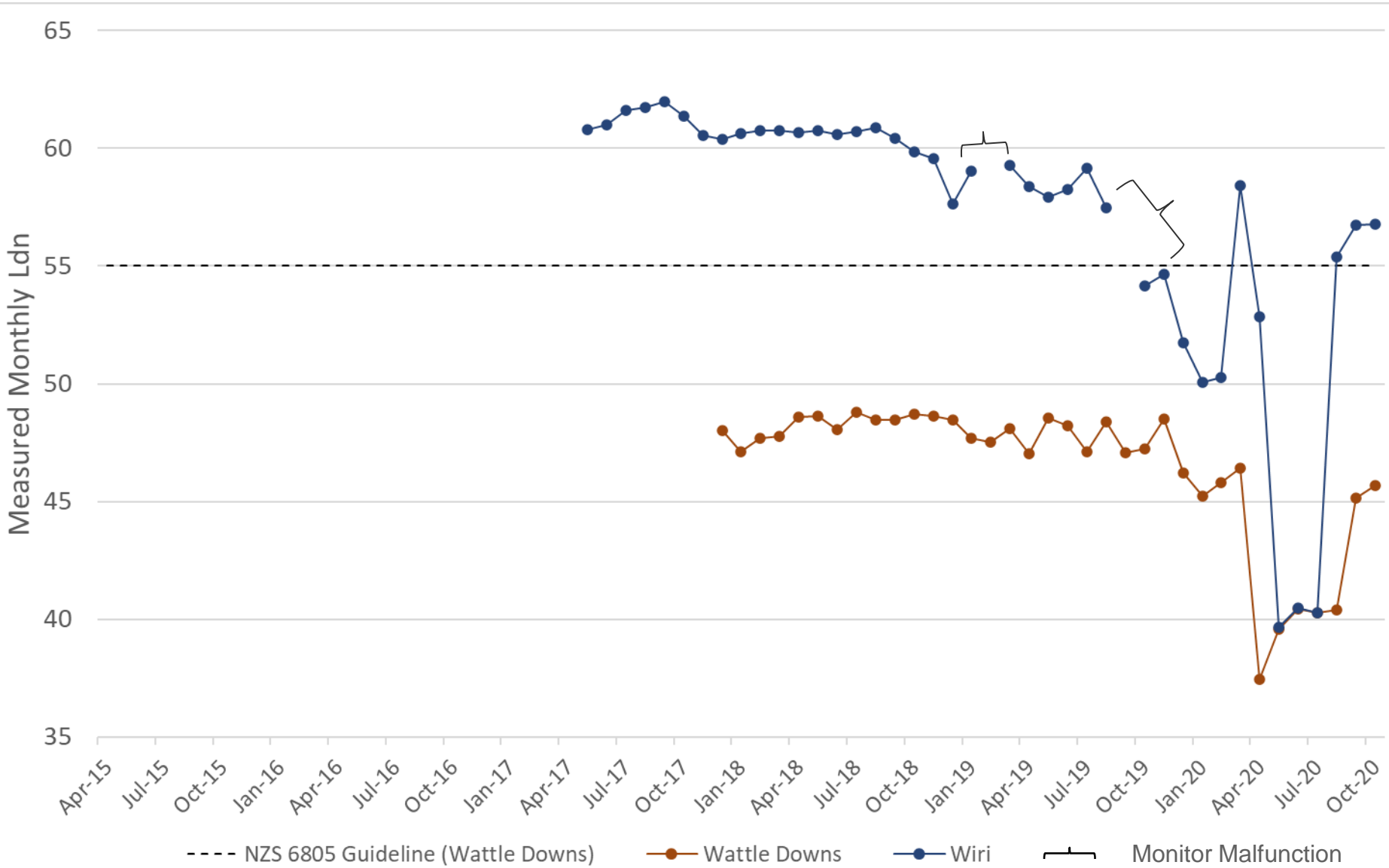
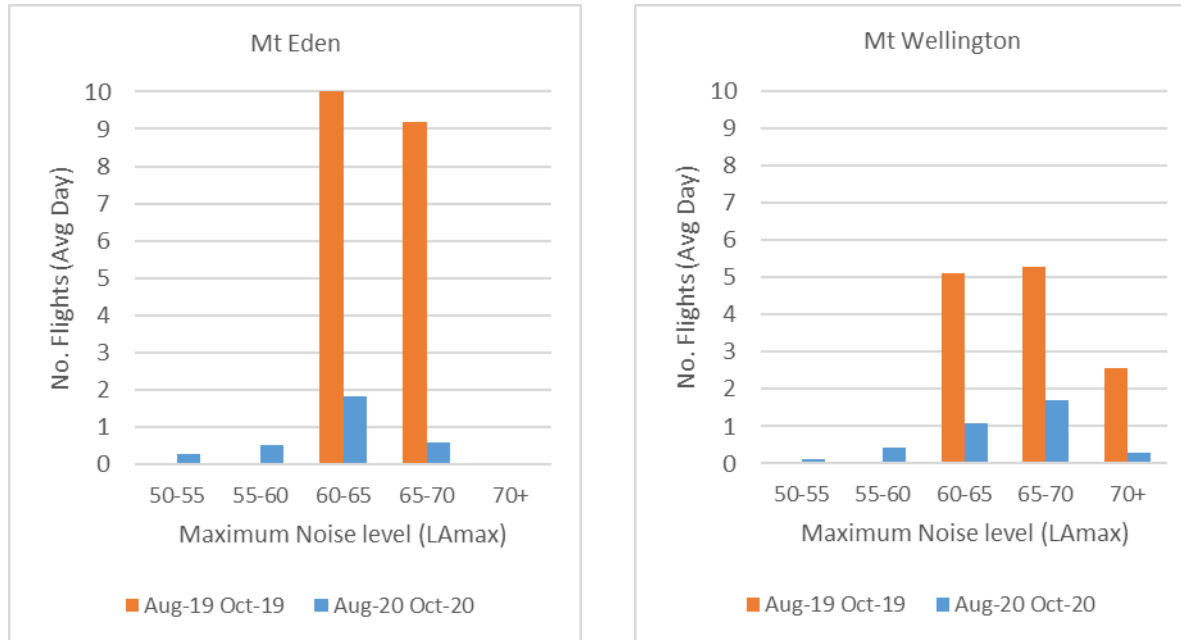
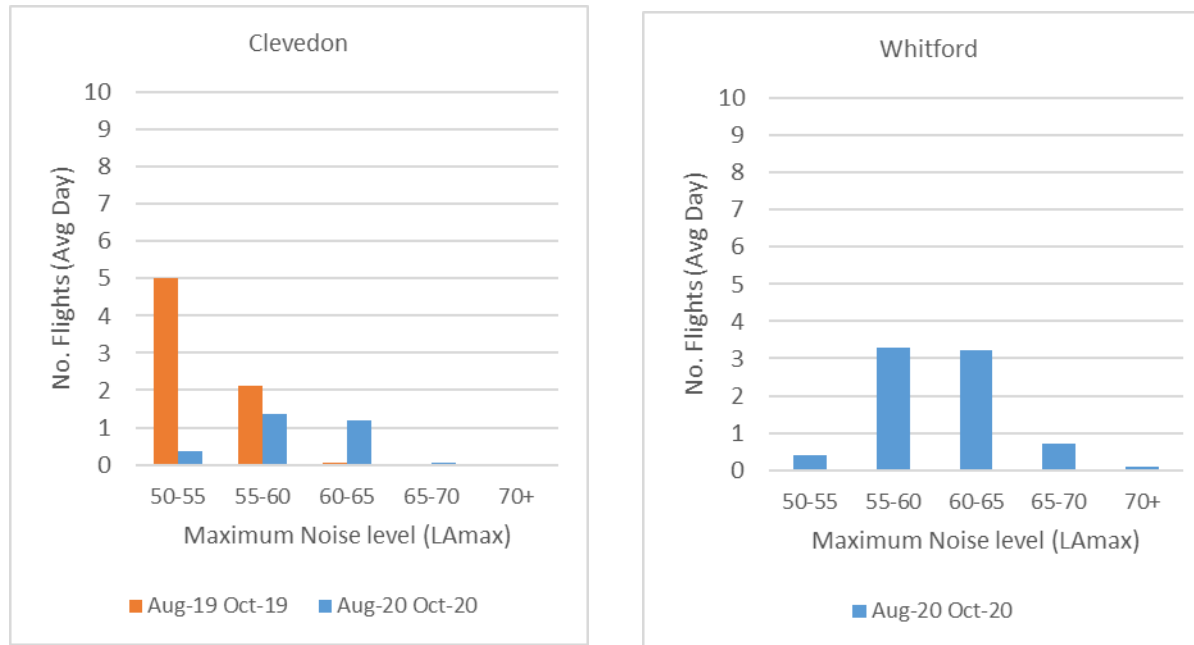


Figure 30: Number of Aircraft Noise Events in Each Noise Band
 Central Suburbs Monitors (L_{Amax} – Maximum Noise Level)



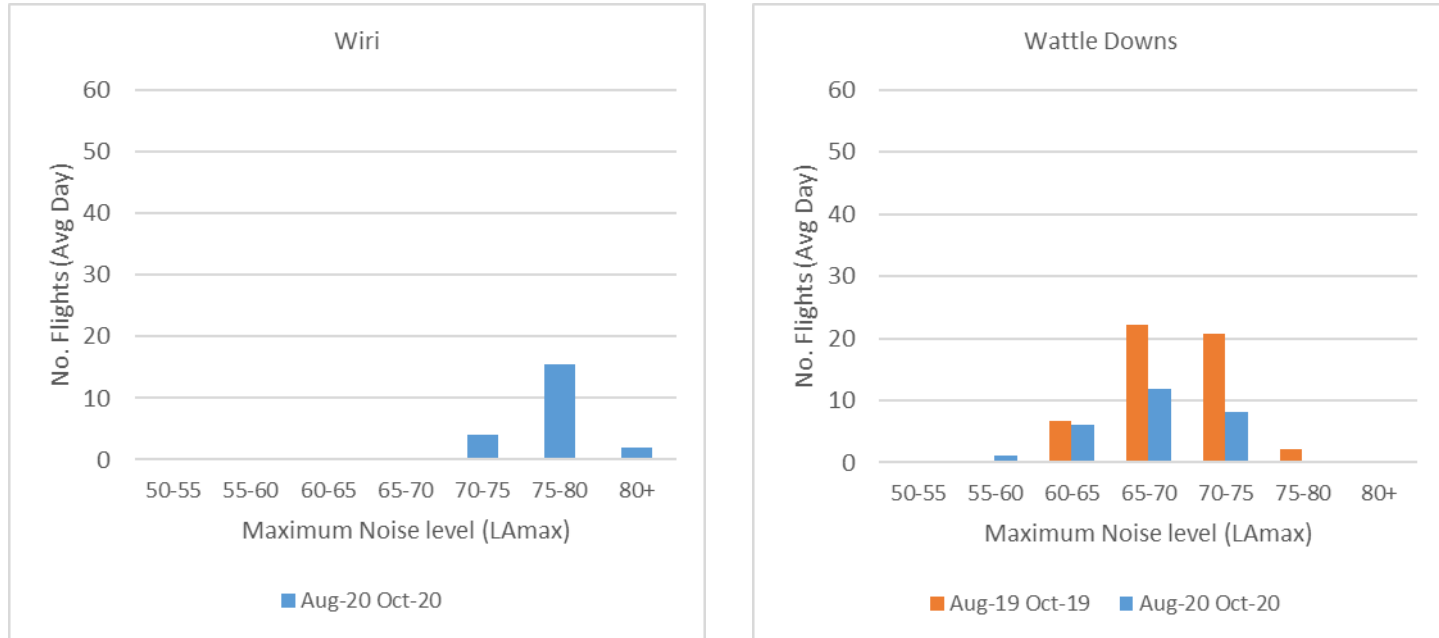
NB: Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

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)

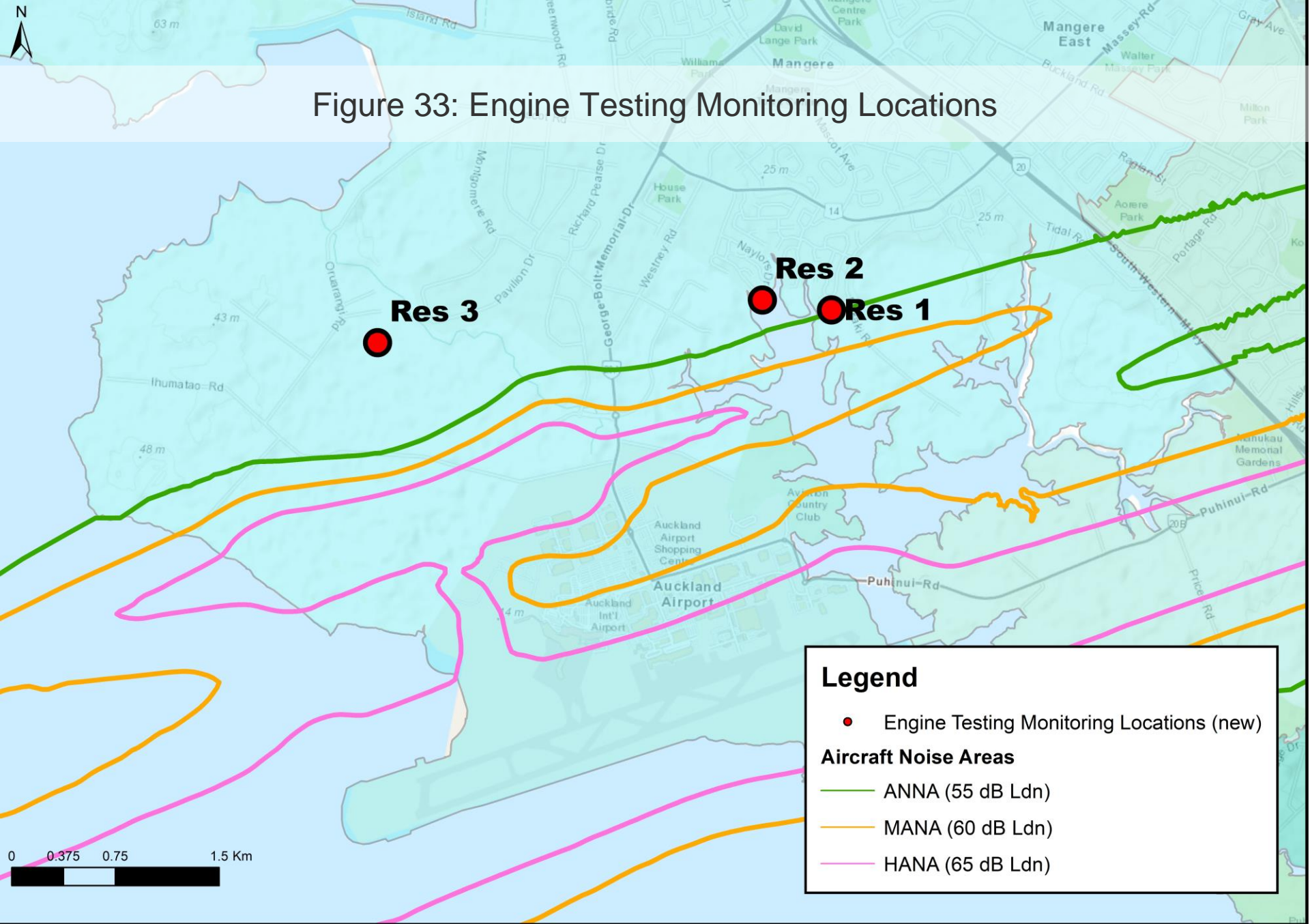


NB: Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.



Engine Testing

Figure 33: Engine Testing Monitoring Locations



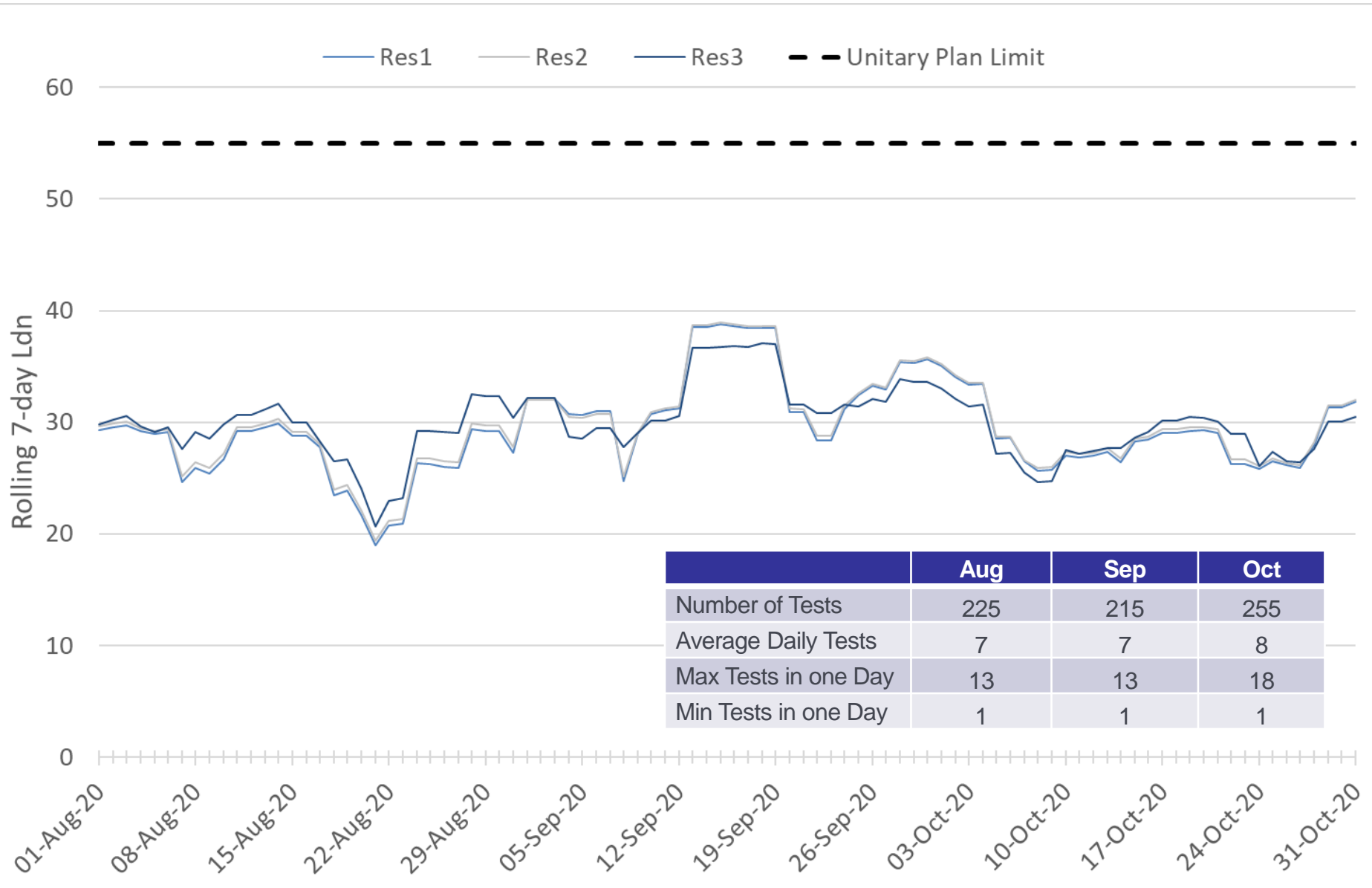
Legend

- Engine Testing Monitoring Locations (new)

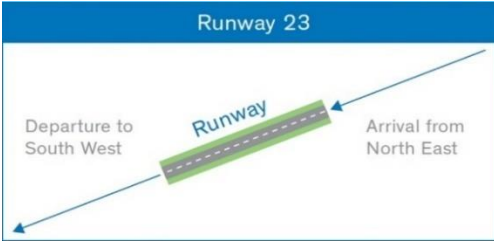
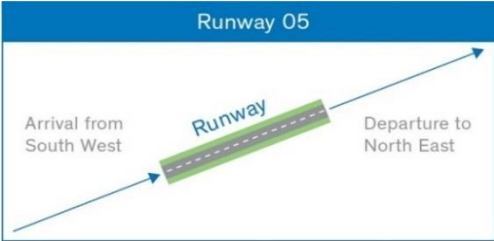
Aircraft Noise Areas

- ANNA (55 dB Ldn)
- MANA (60 dB Ldn)
- HANA (65 dB Ldn)

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	Occurs in Westerly Wind Conditions	Occurs in Easterly Wind Conditions
	 <p>The diagram shows Runway 23 with a blue header. A green runway strip is oriented diagonally. A blue arrow points from the top-right towards the bottom-left, labeled 'Arrival from North East'. Another blue arrow points from the bottom-left towards the top-right, labeled 'Departure to South West'.</p>	 <p>The diagram shows Runway 05 with a blue header. A green runway strip is oriented diagonally. A blue arrow points from the bottom-left towards the top-right, labeled 'Arrival from South West'. Another blue arrow points from the top-right towards the bottom-left, labeled 'Departure to North East'.</p>
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	The total noise that is from general ambient noise sources (cars, wind etc.).	
	Includes 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 55-60 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>		