Q4 Report Summary

For November 2023 to January 2024:

- Noise limits were complied with for all permanent and temporary monitors, and engine testing noise (slides 30, 35-37, 43)
- Flight operations increased 31% when compared to Nov-Jan 2023 (slide 4)
  Flight operations are down 12% compared to Nov-Jan 2020 (slide 4)
- Complaints total 50, decreasing from 105 in Nov-Jan 2023 (slide 17)
- There is one main complainant in Q4:
  a resident in Remuera that made 58% (29); and
  there were 8 complaints from the main complainants of the previous quarters (from East Tāmaki) (slide 18)

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ANCCG Meeting

Monitoring Period

November 2023 – January 2024

Meeting: 11 March 2024

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NB: Glossary of terminology given in Appendix A

Aircraft Operations

Figure 1: Number of Aircraft Operations per Month

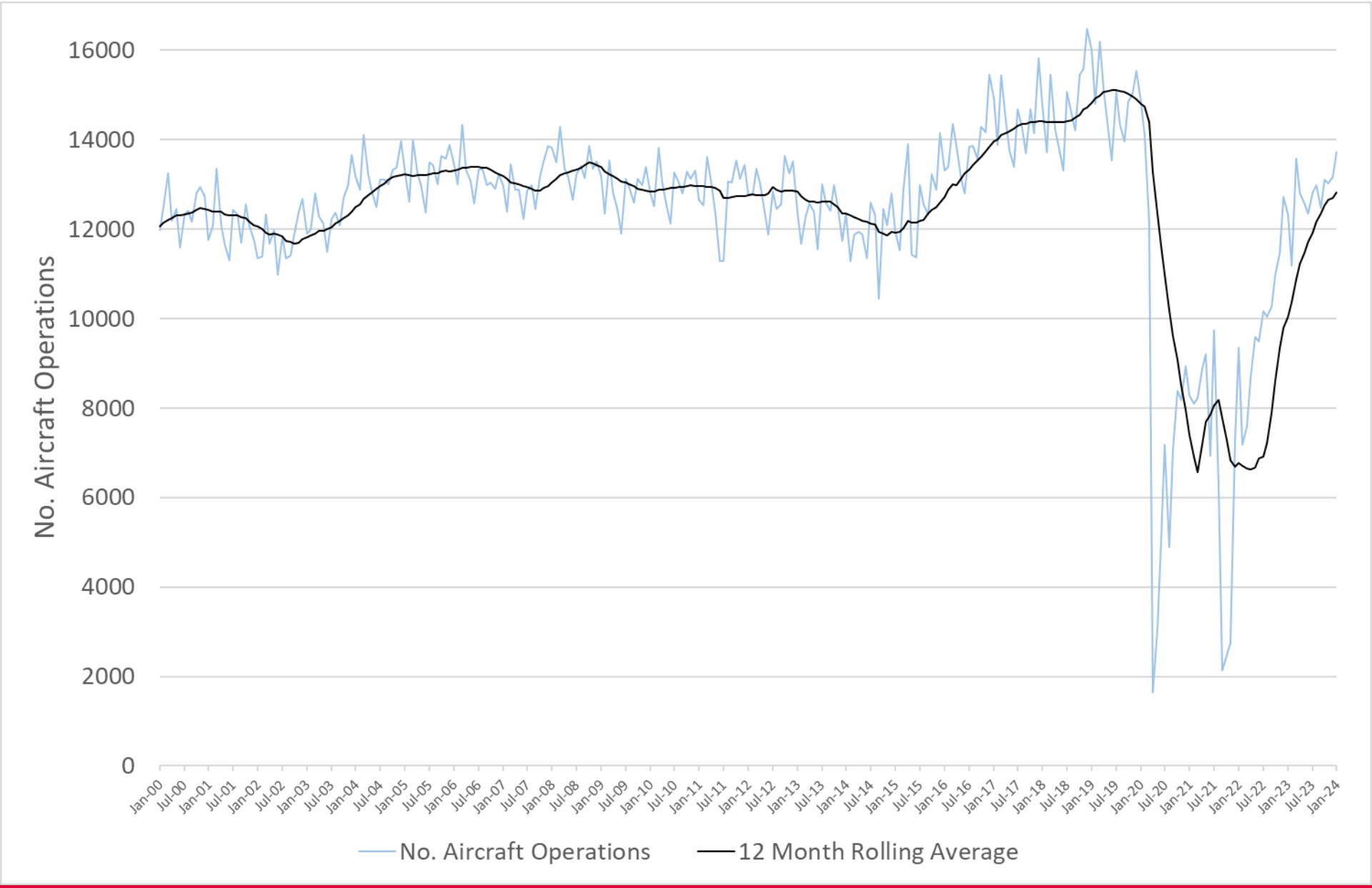

Table 1: Summary of Aircraft Operations

Operation	Total	Day	Night
Arrivals	19,945	16,491	3,454
Departures	19,926	17,859	2,067
Circuit	32	32	0
Total	**39,903**	**34,382**	**5,521**

Table 2: Average Daily Aircraft Operations

Total	Day	Night
434	374	60

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Figure 2: Aircraft Operations by Time

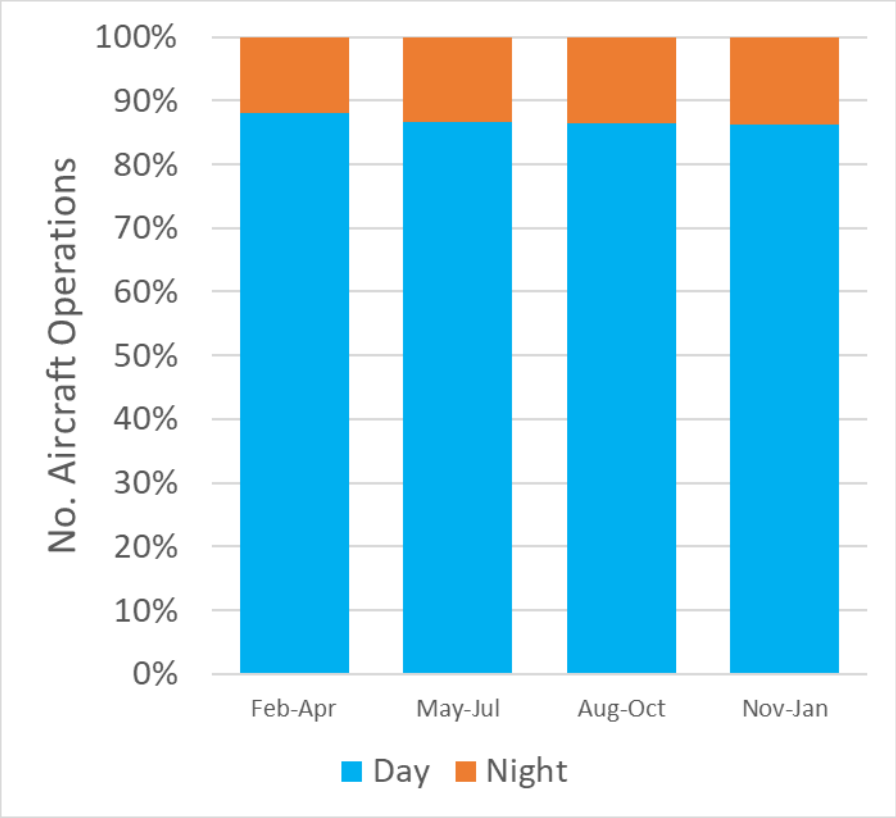

Figure 3: Aircraft Operations by Aircraft Type

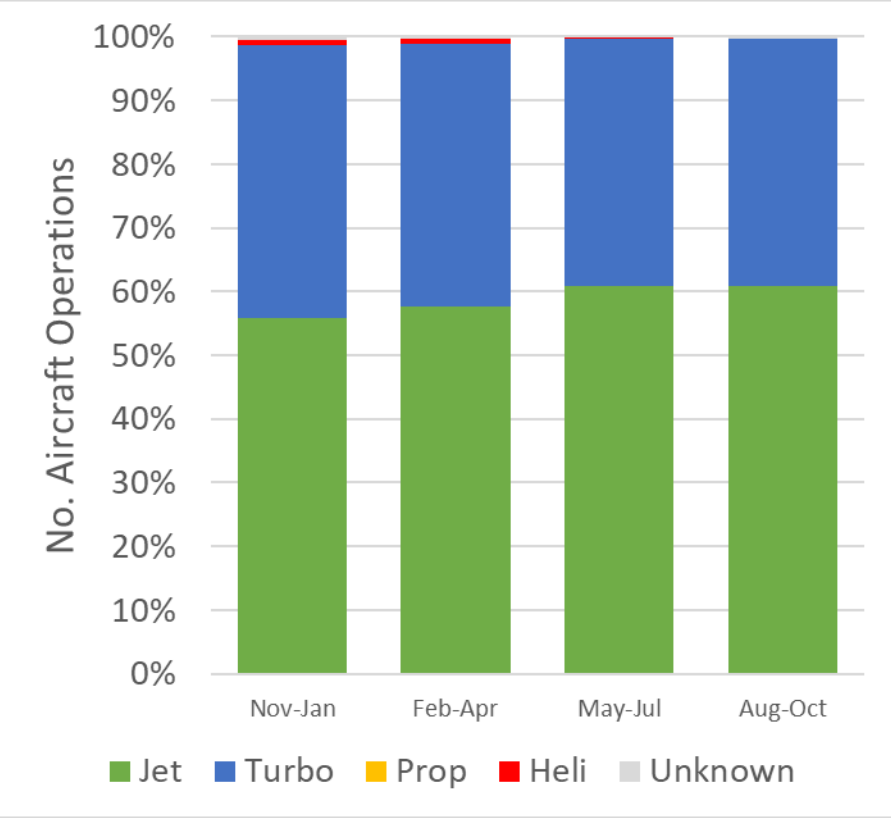

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Figure 4: Aircraft Operations by Runway

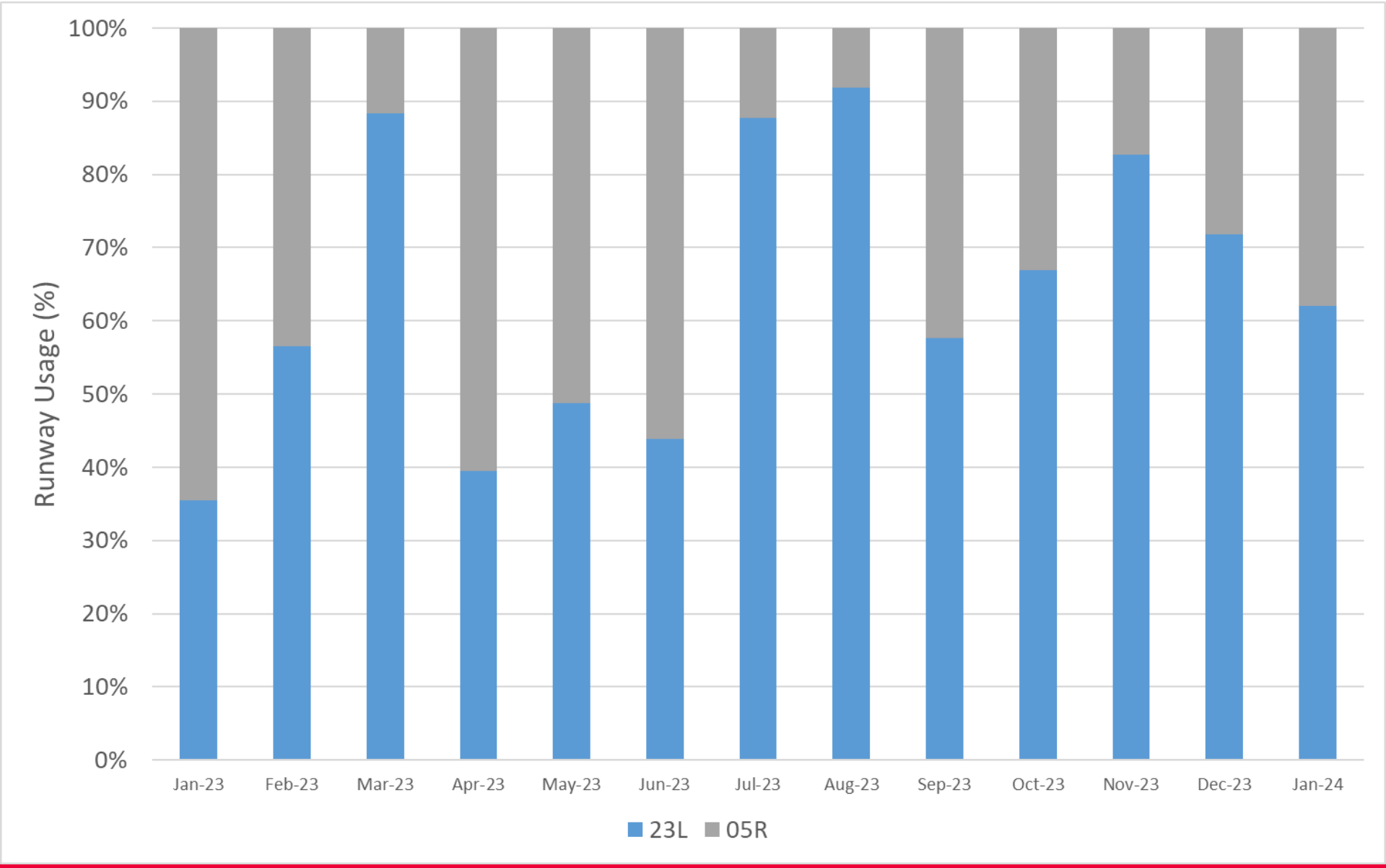


Figure 5: Number of SMART Approaches per week

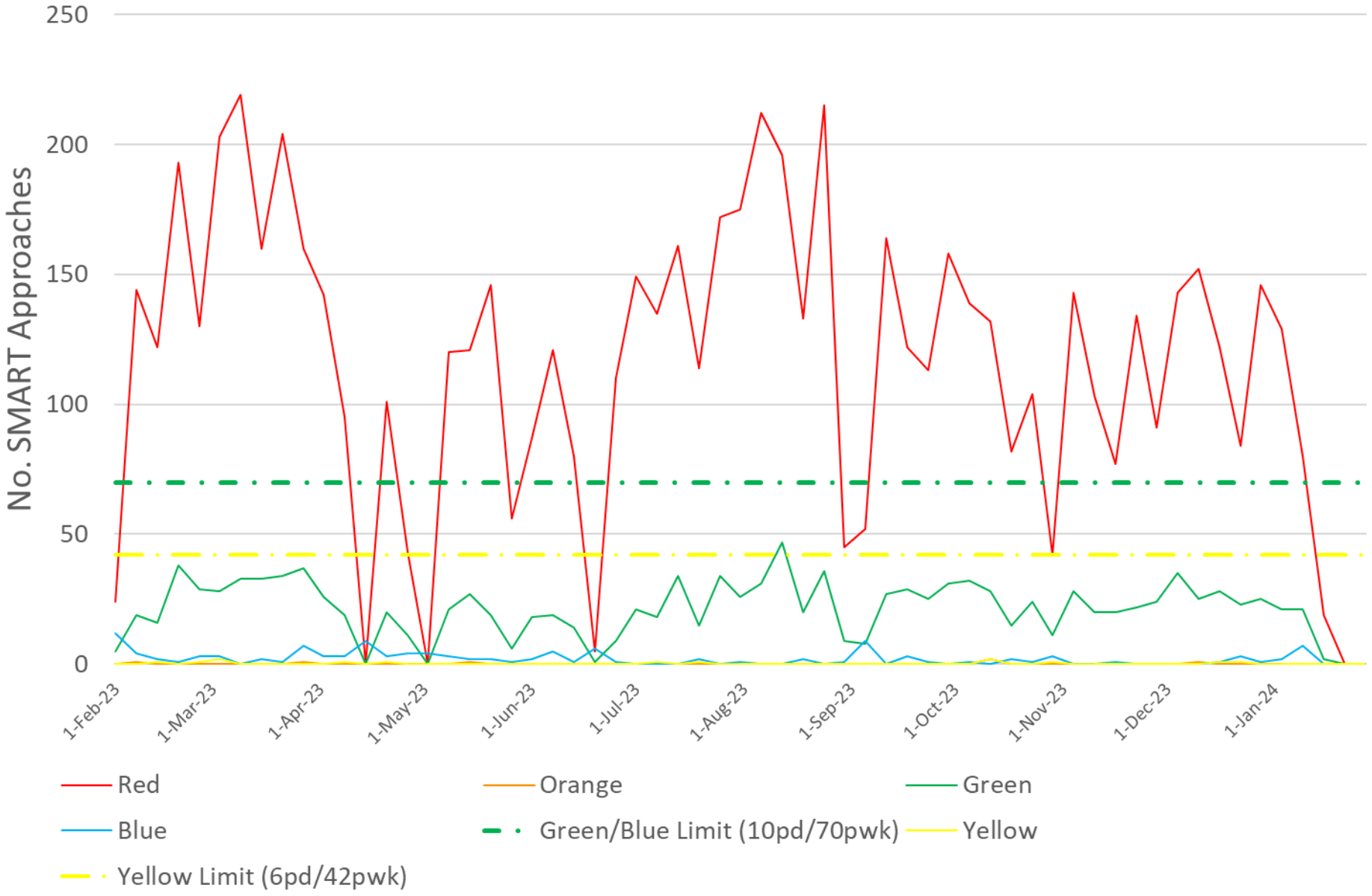
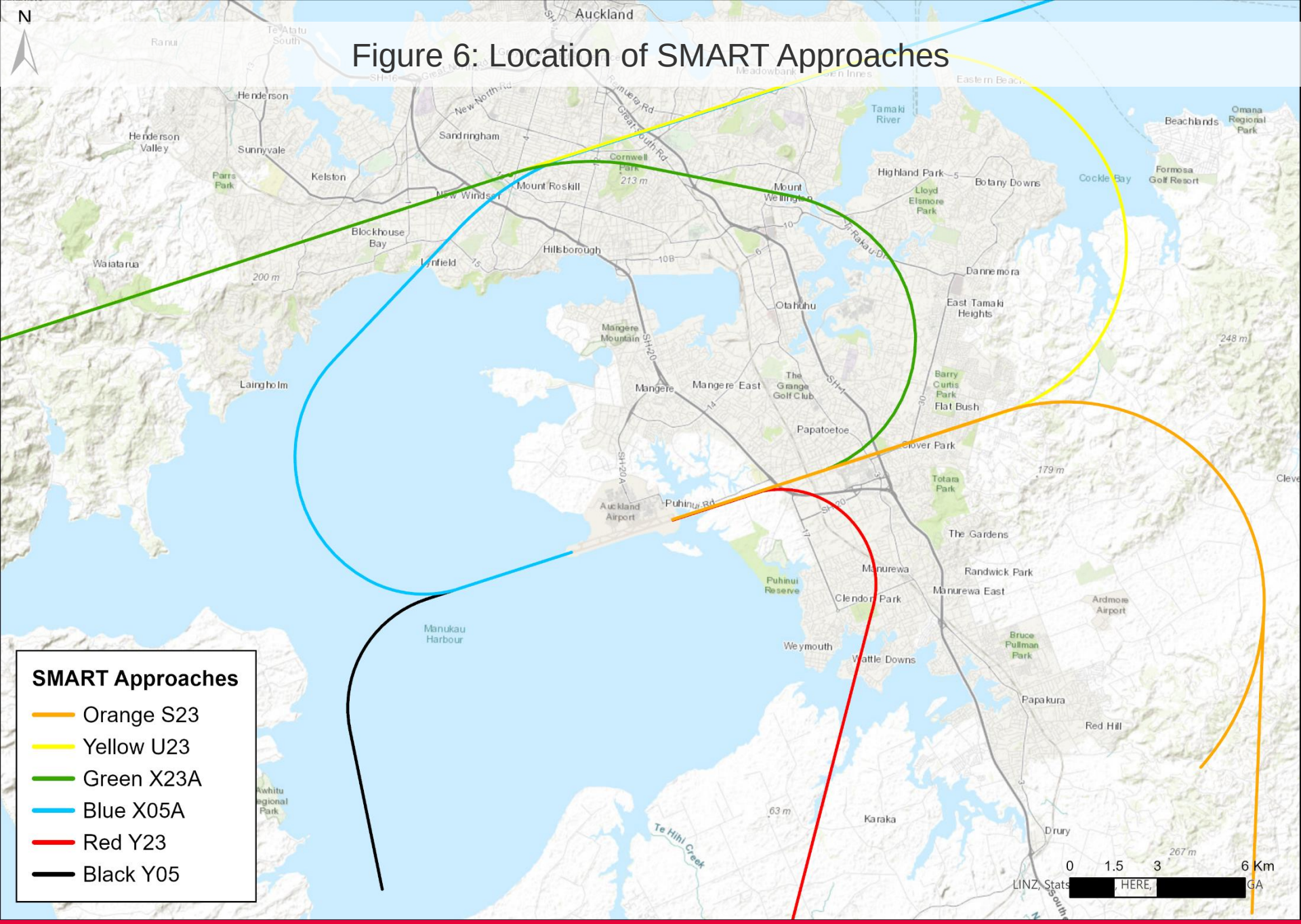


Figure 6: Location of SMART Approaches



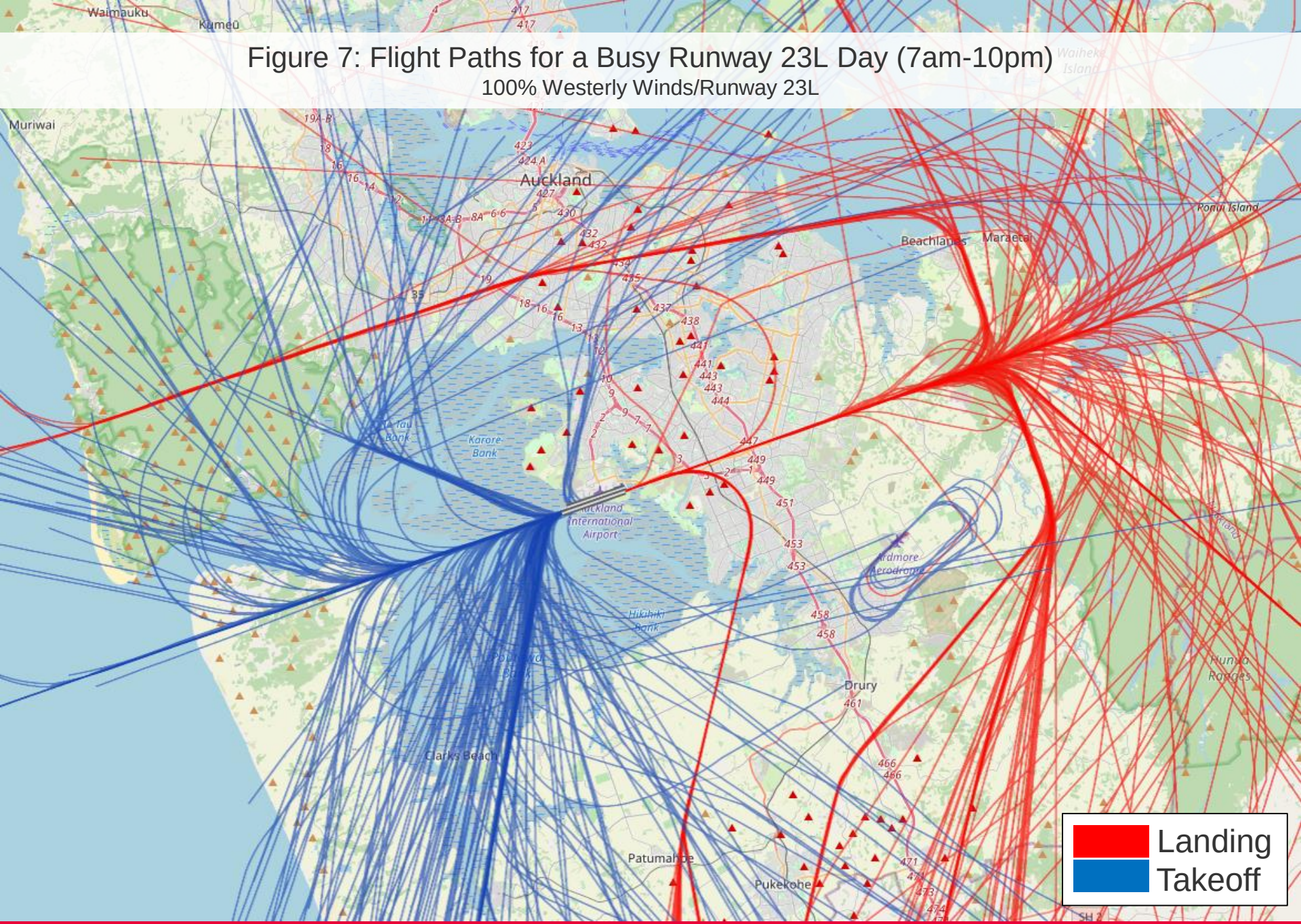
SMART Approaches

- Orange S23
- Yellow U23
- Green X23A
- Blue X05A
- Red Y23
- Black Y05

Flight Path Diagrams

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

100% Westerly Winds/Runway 23L



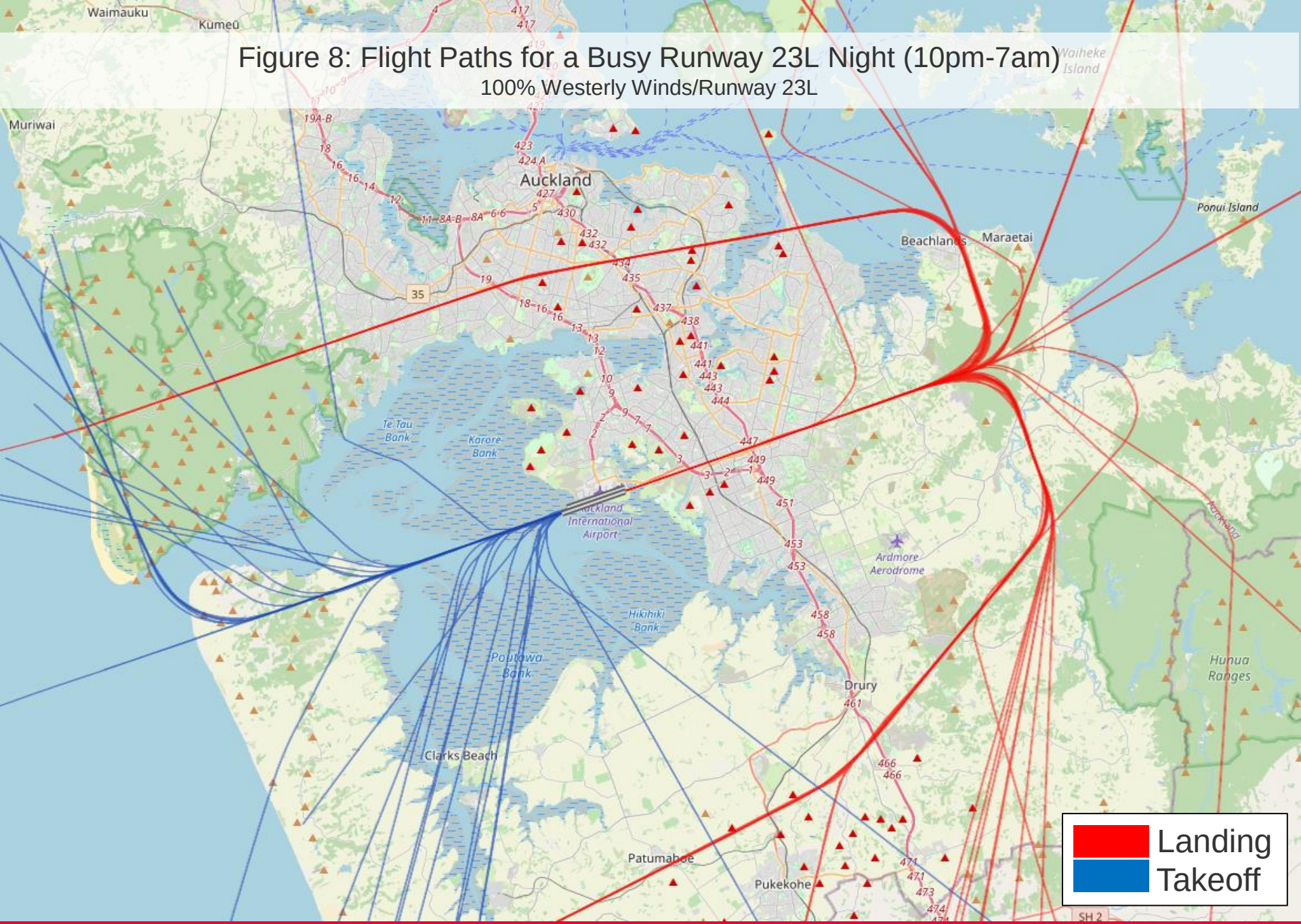


Figure 8: Flight Paths for a Busy Runway 23L Night (10pm-7am)

100% Westerly Winds/Runway 23L

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

99% Easterly Winds/Runway 05R

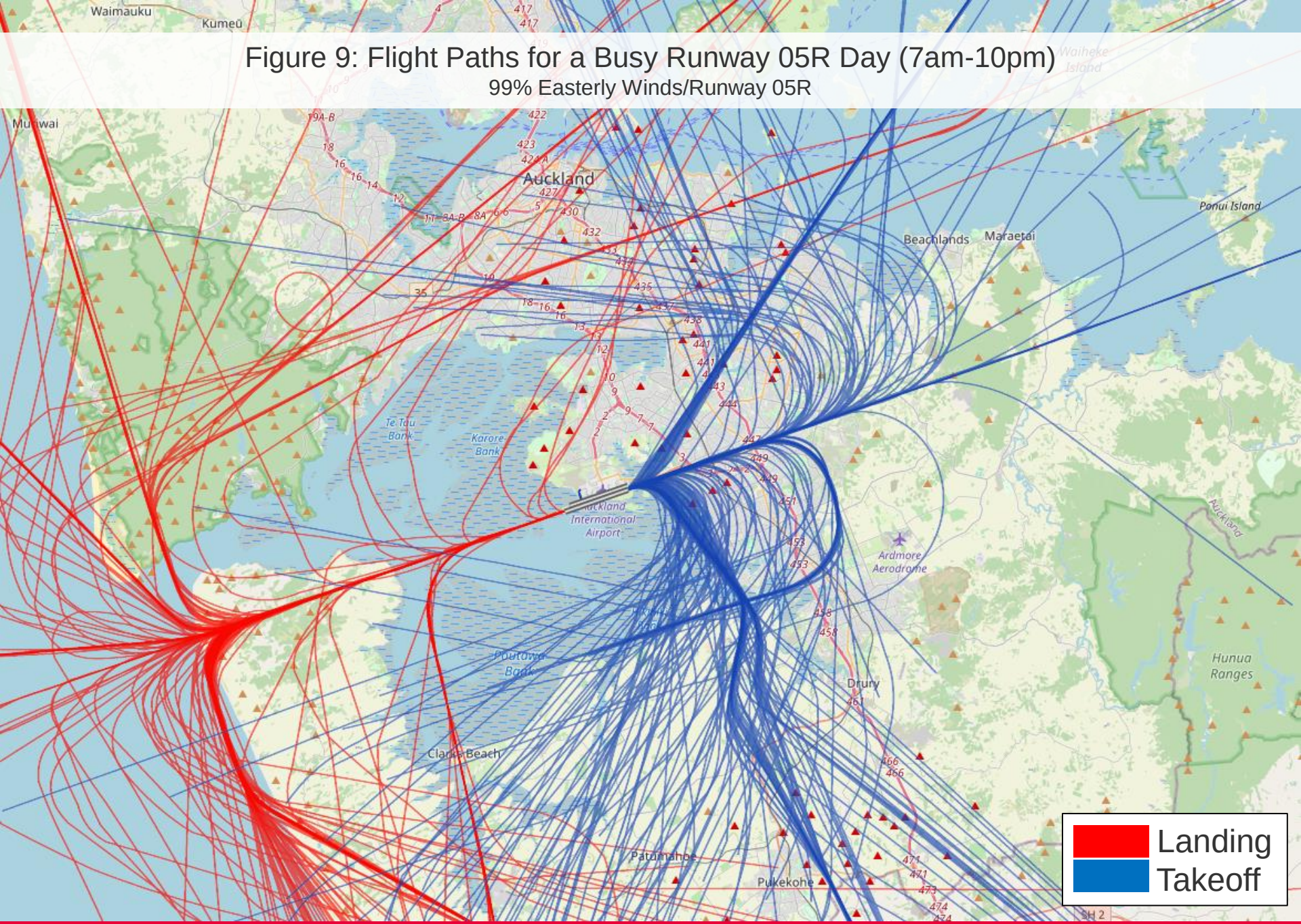
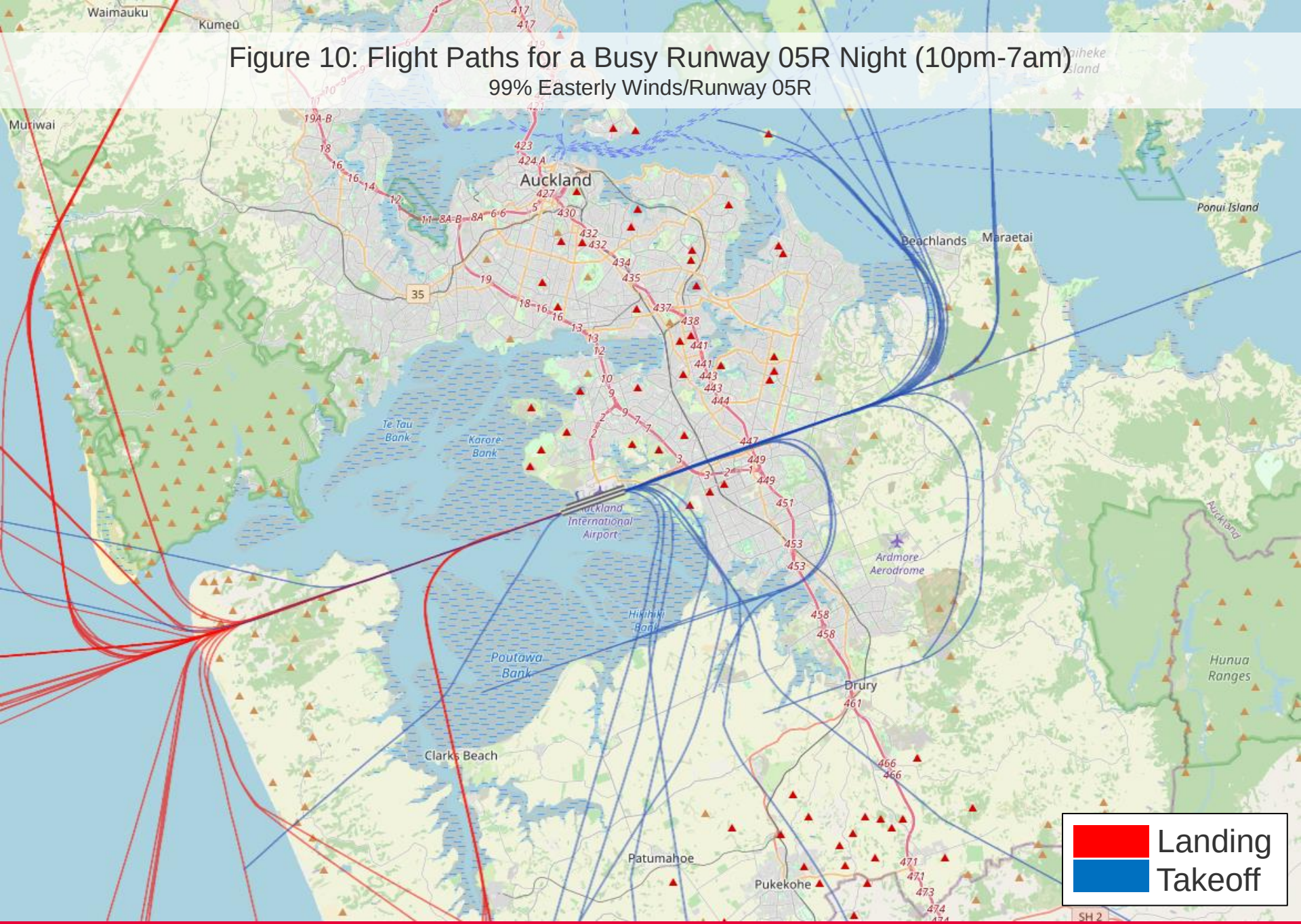


Figure 10: Flight Paths for a Busy Runway 05R Night (10pm-7am)

99% Easterly Winds/Runway 05R



Noise Complaints

Figure 11: Number of Aircraft Noise Complaints per Month

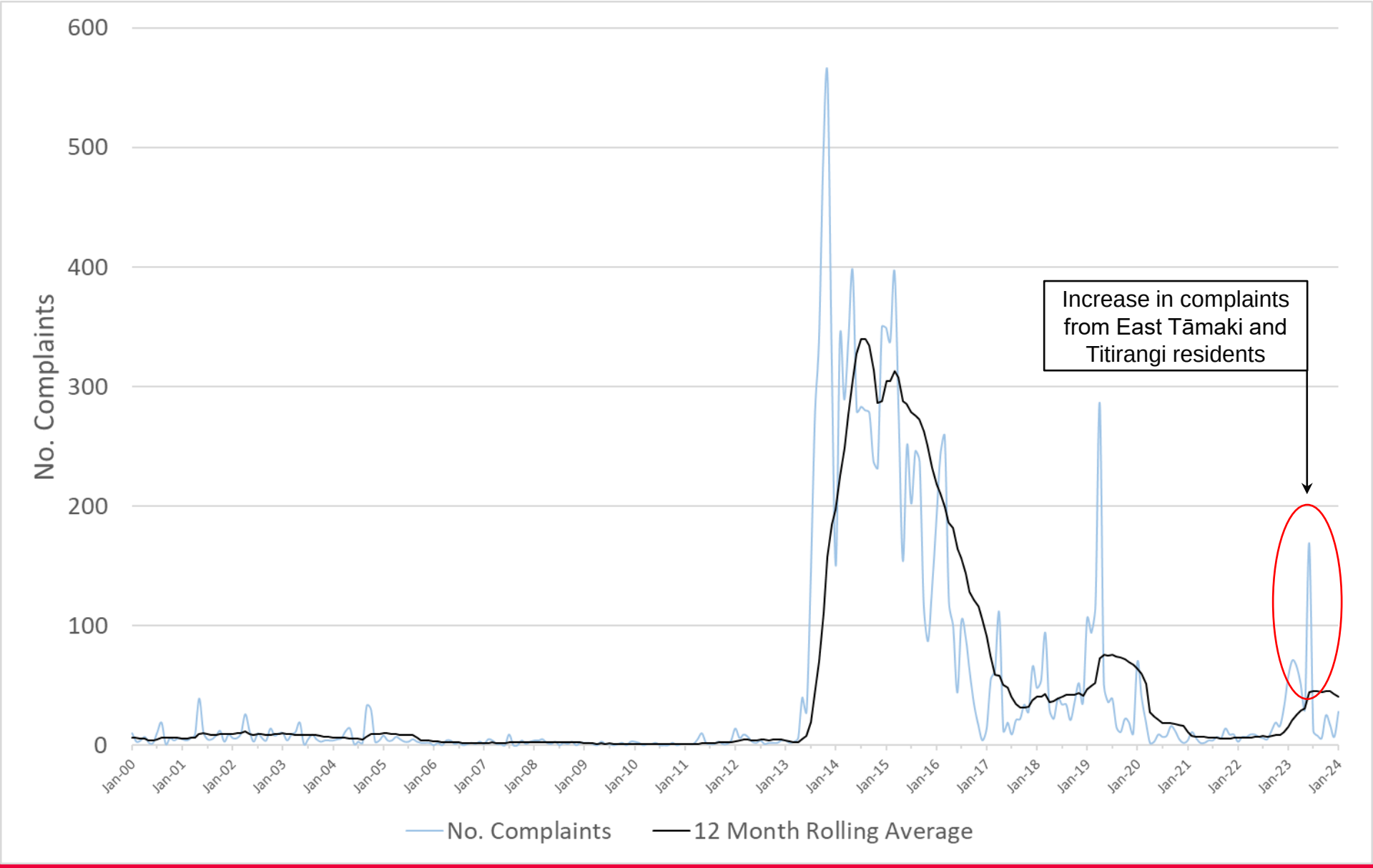


Table 3: Summary of Noise Complaints

	Nov	Dec	Jan	Nov-Jan	Aug-Oct	May-Jul	Feb-Apr
Number of Complaints	15	7	28	50	39	212	188
Specific	*14*	*6*	*22*	*42*	*35*	*196*	*184*
Generic	*1*	*1*	*3*	*5*	*4*	*14*	*4*
Question	*0*	*0*	*3*	*3*	*0*	*2*	*0*
Number of People Complaining	3	3	11	15	13	19	12

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Figure 12: Map of Noise Complaints

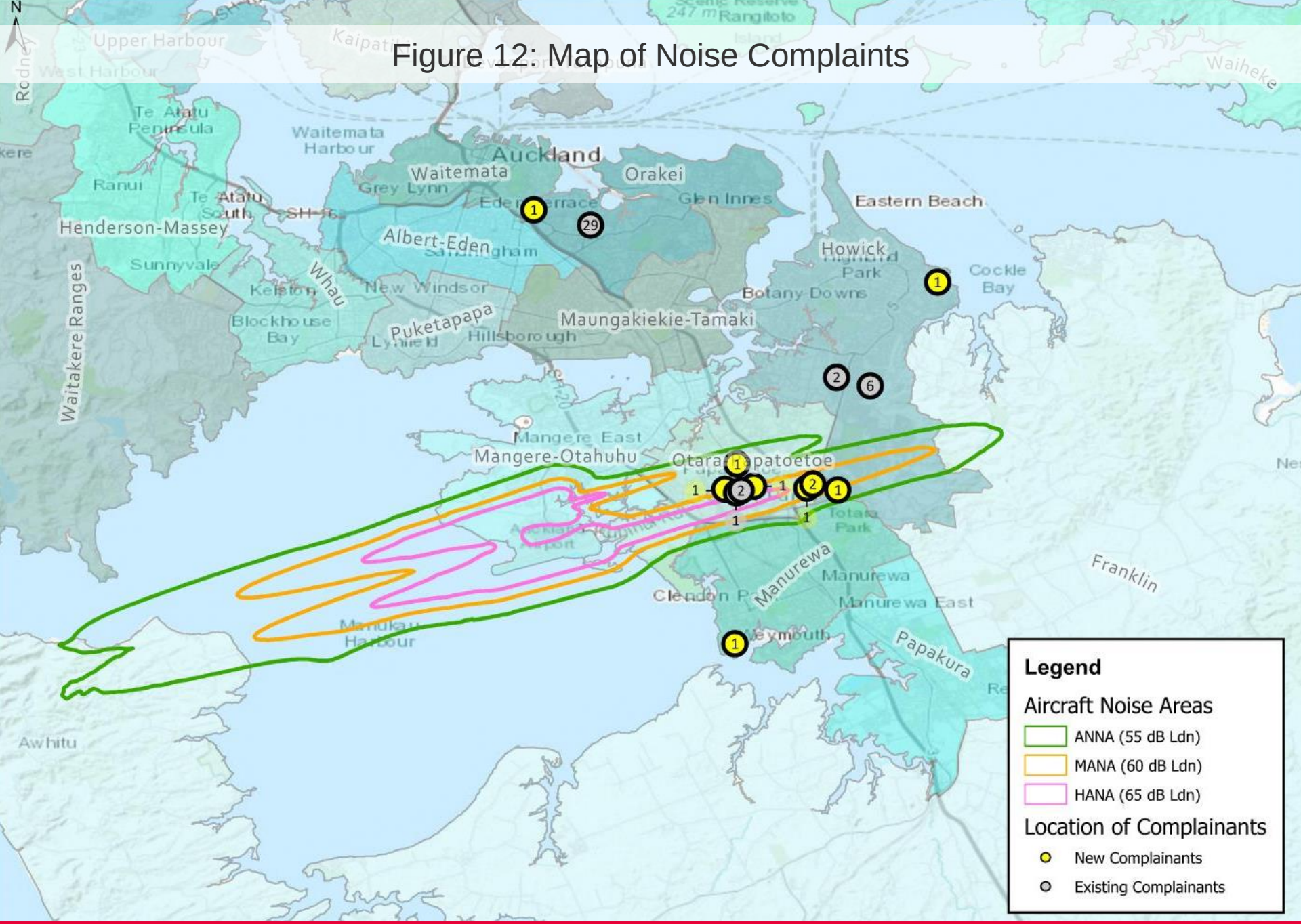
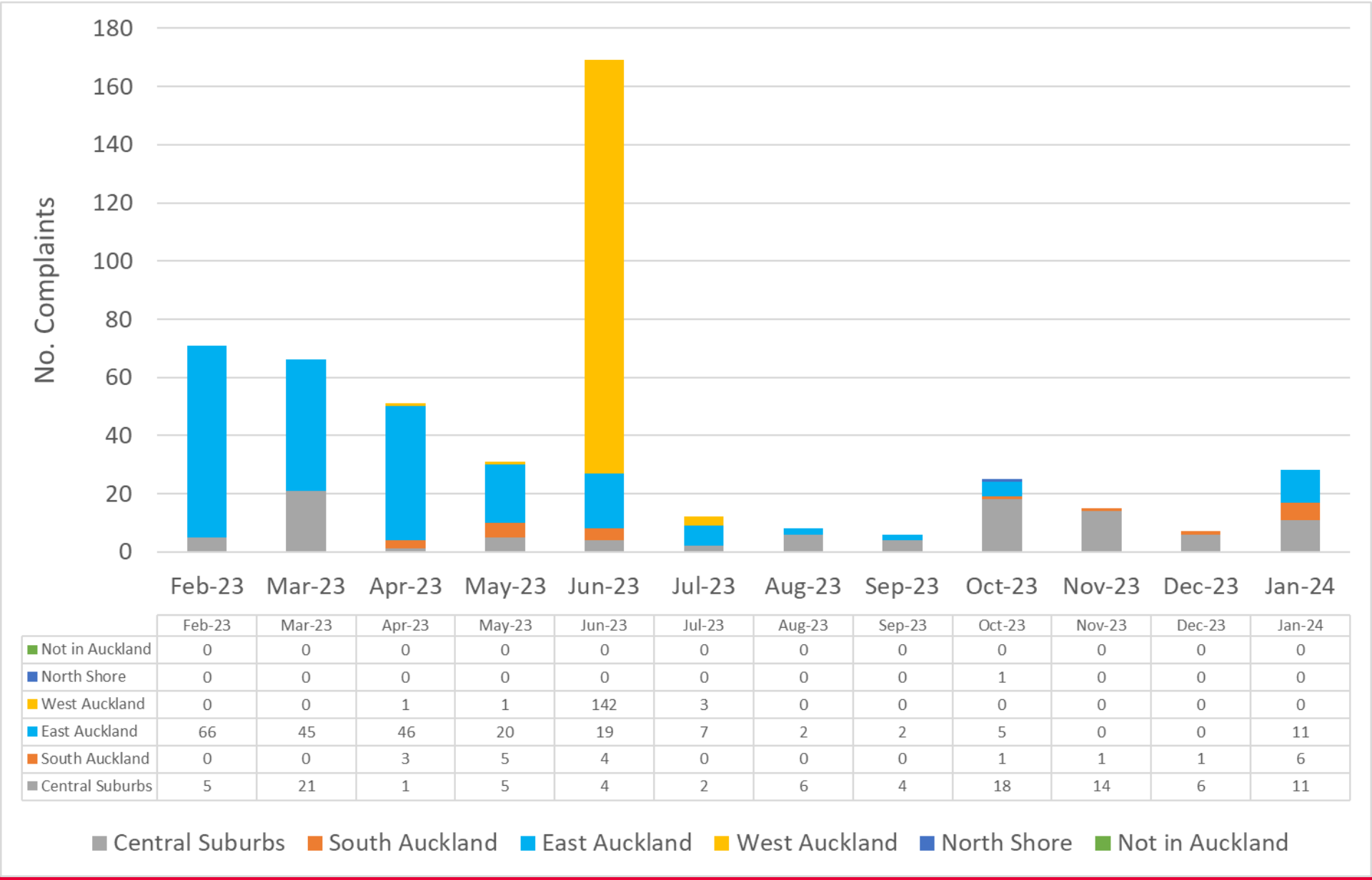


Figure 13: Number of Noise Complaints by Area



	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23	Dec-23	Jan-24
Not in Auckland	0	0	0	0	0	0	0	0	0	0	0	0
North Shore	0	0	0	0	0	0	0	0	1	0	0	0
West Auckland	0	0	1	1	142	3	0	0	0	0	0	0
East Auckland	66	45	46	20	19	7	2	2	5	0	0	11
South Auckland	0	0	3	5	4	0	0	0	1	1	1	6
Central Suburbs	5	21	1	5	4	2	6	4	18	14	6	11

Figure 14: Noise Complaints by Time

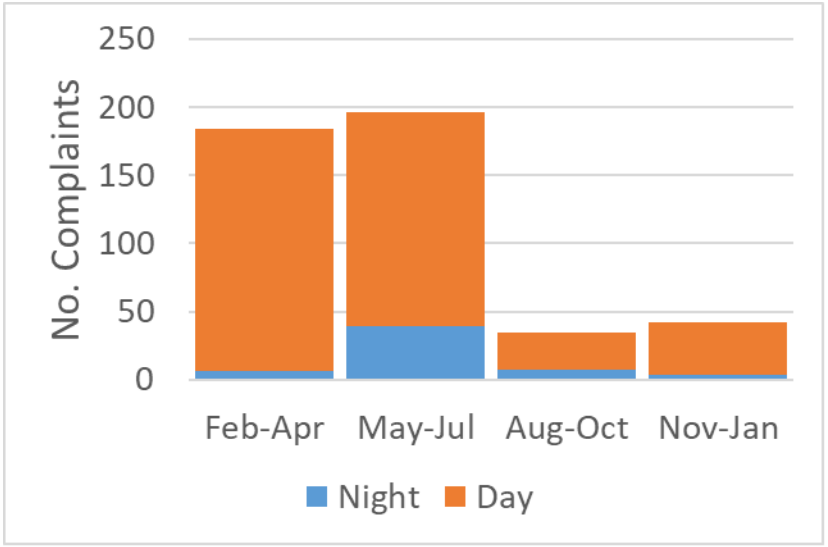


Figure 15: Noise Complaints by Runway

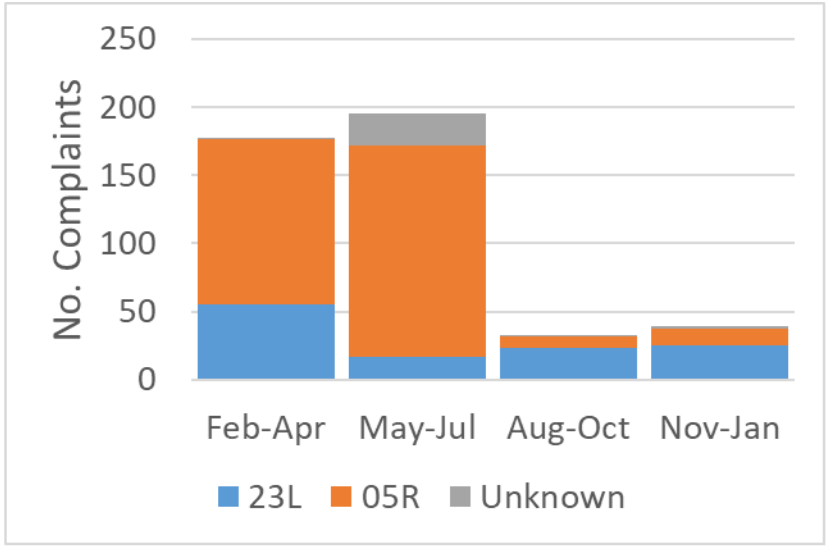


Figure 16: Noise Complaints by Aircraft

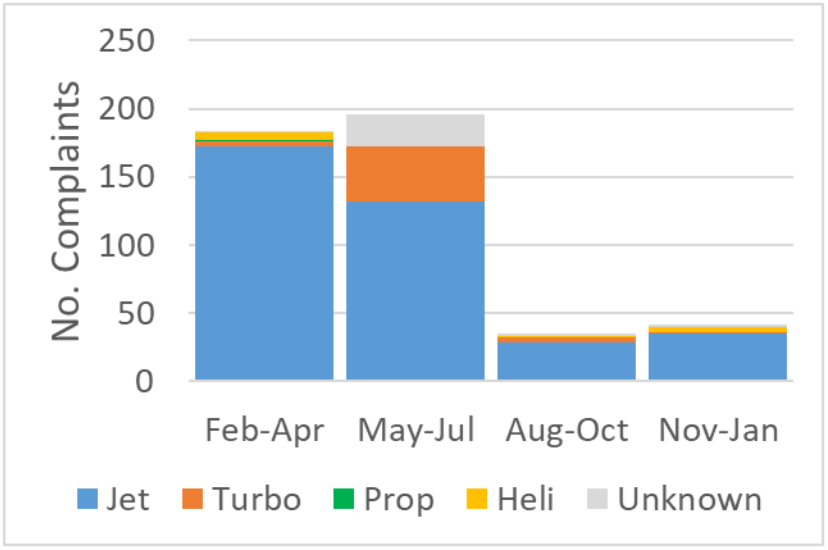


Figure 17: Noise Complaints by Operation

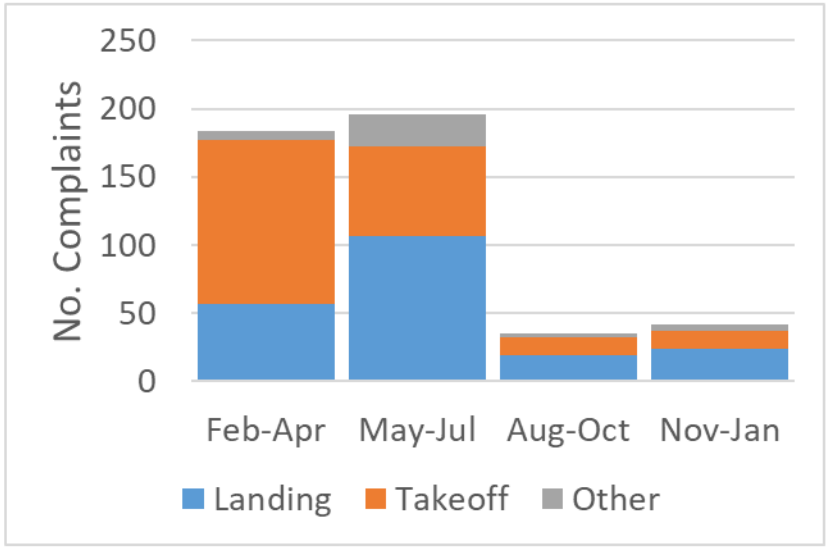


Figure 18: Specific Noise Complaints by Destination

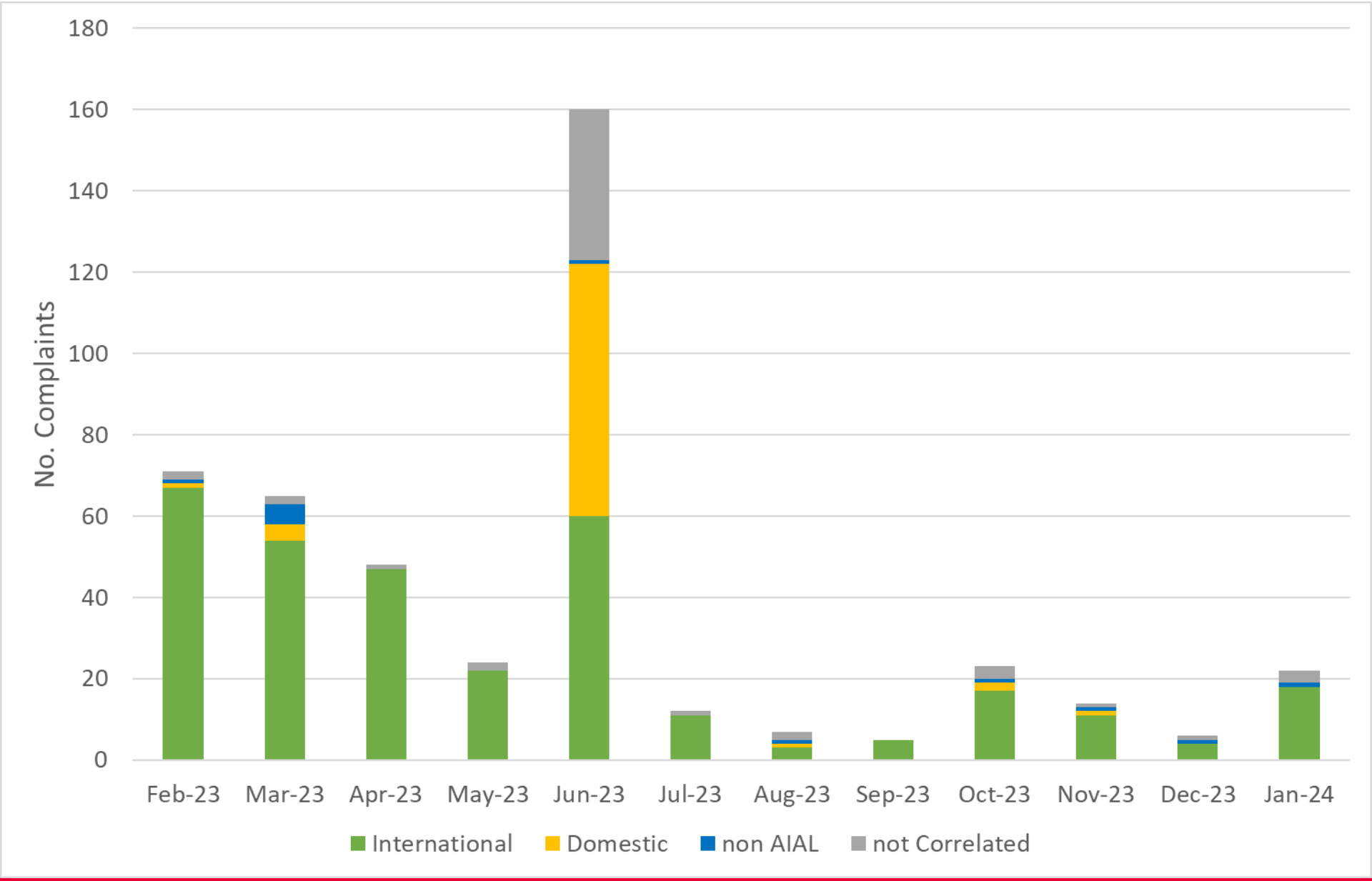


Figure 19: Specific Noise Complaints vs Usage of Runway 05R

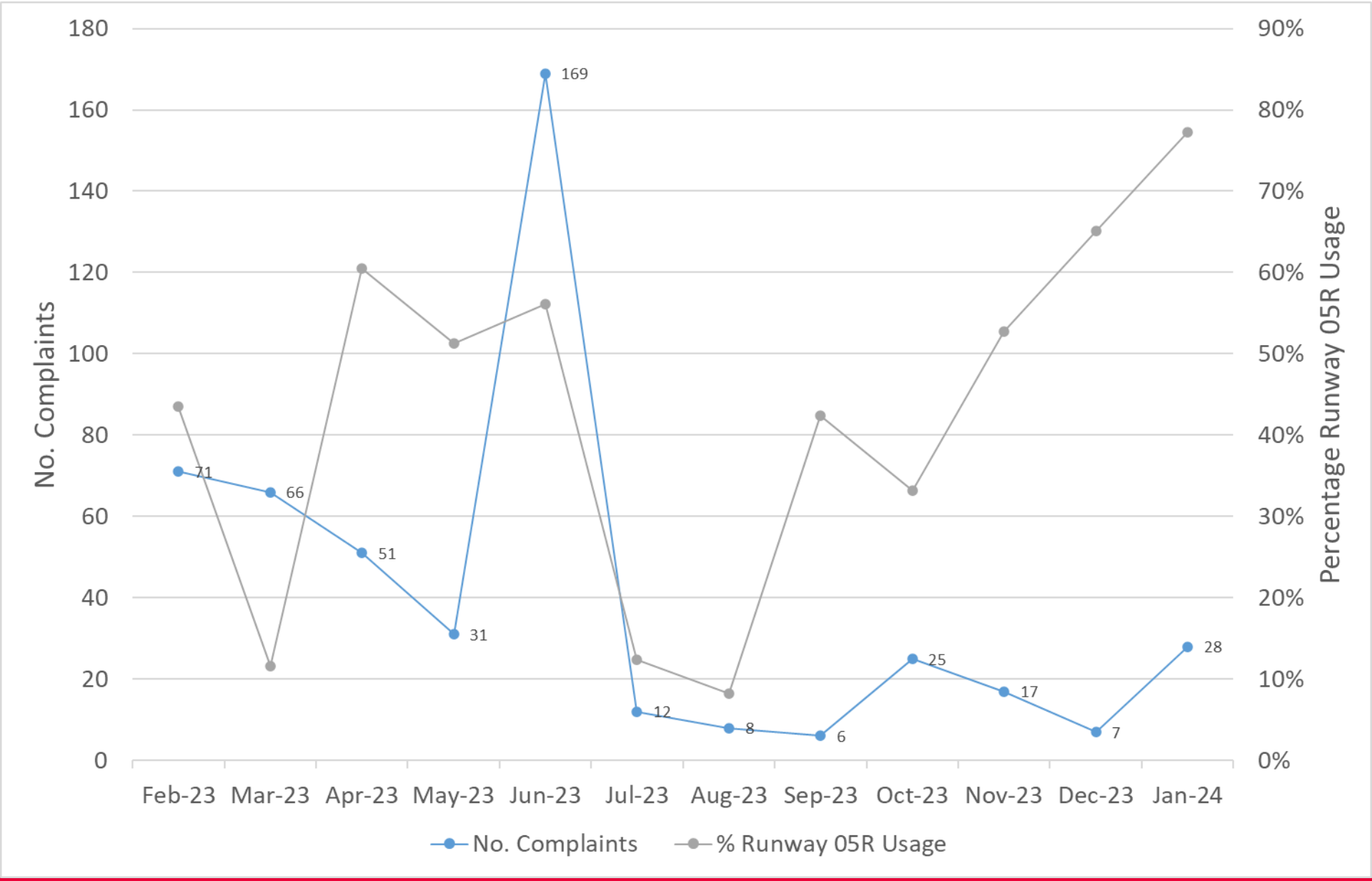


Figure 20: Specific Complaints by Hour vs Aircraft Operations by Hour

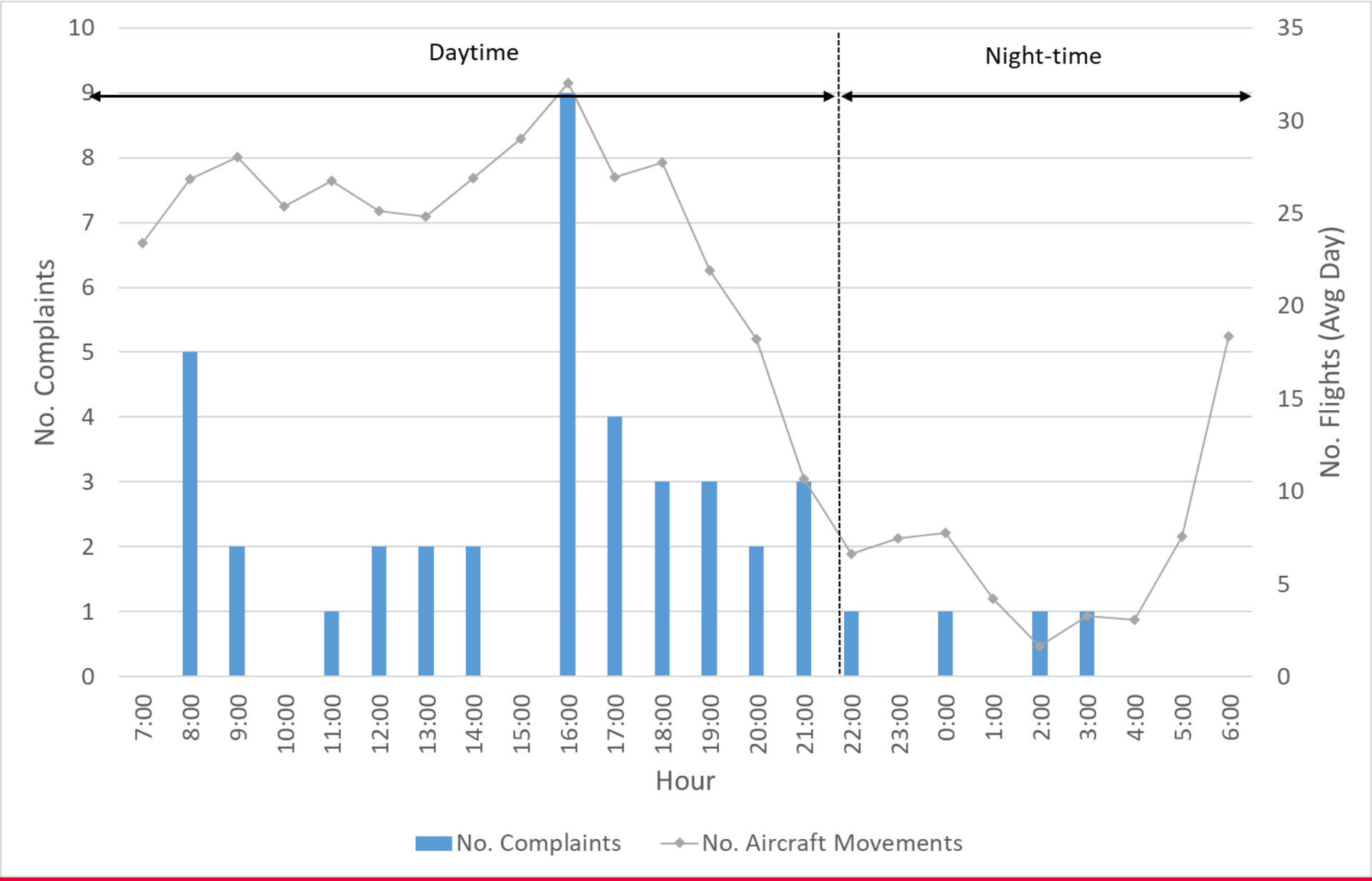


Figure 21: Noise Complaints by Type

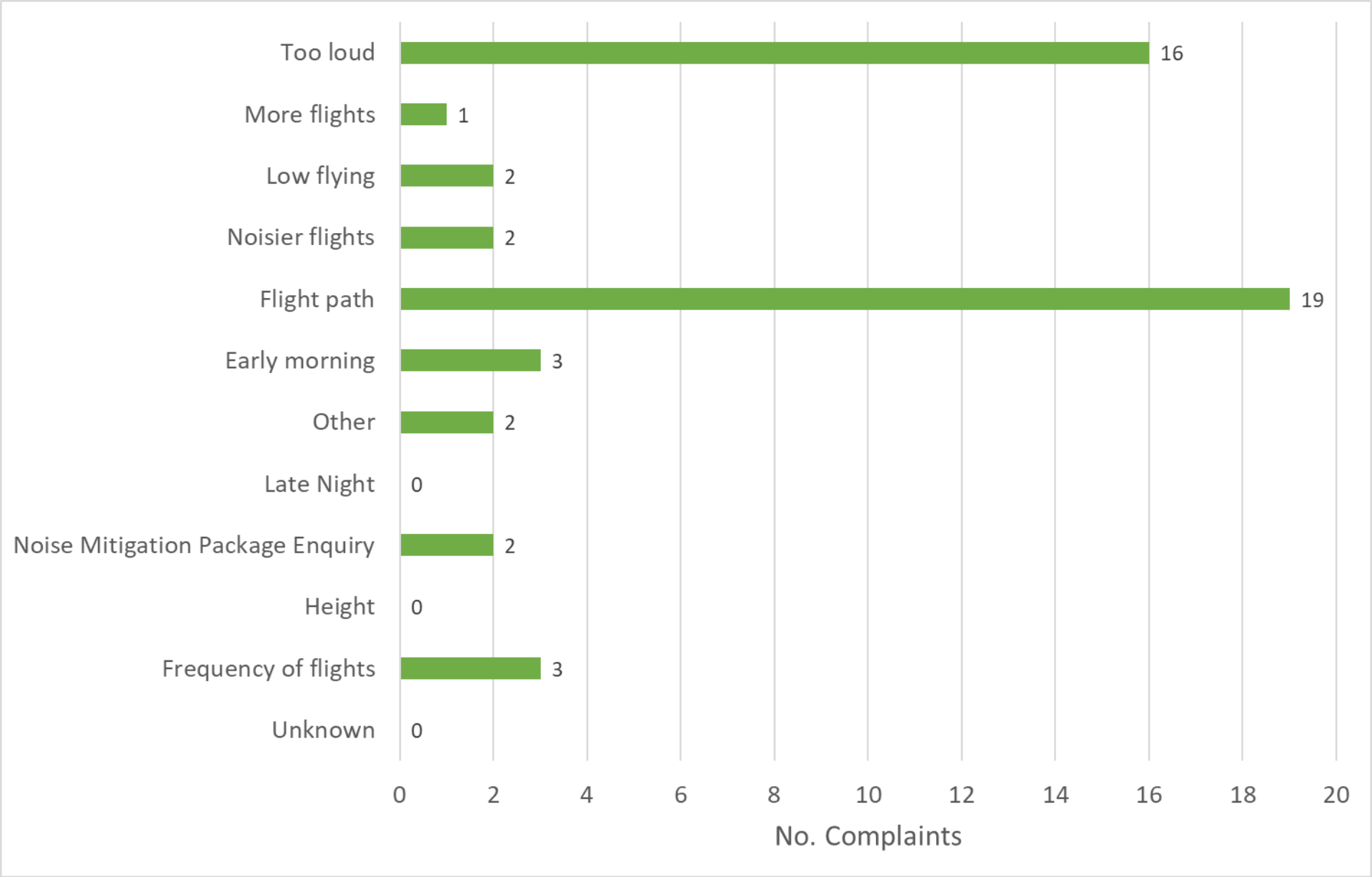
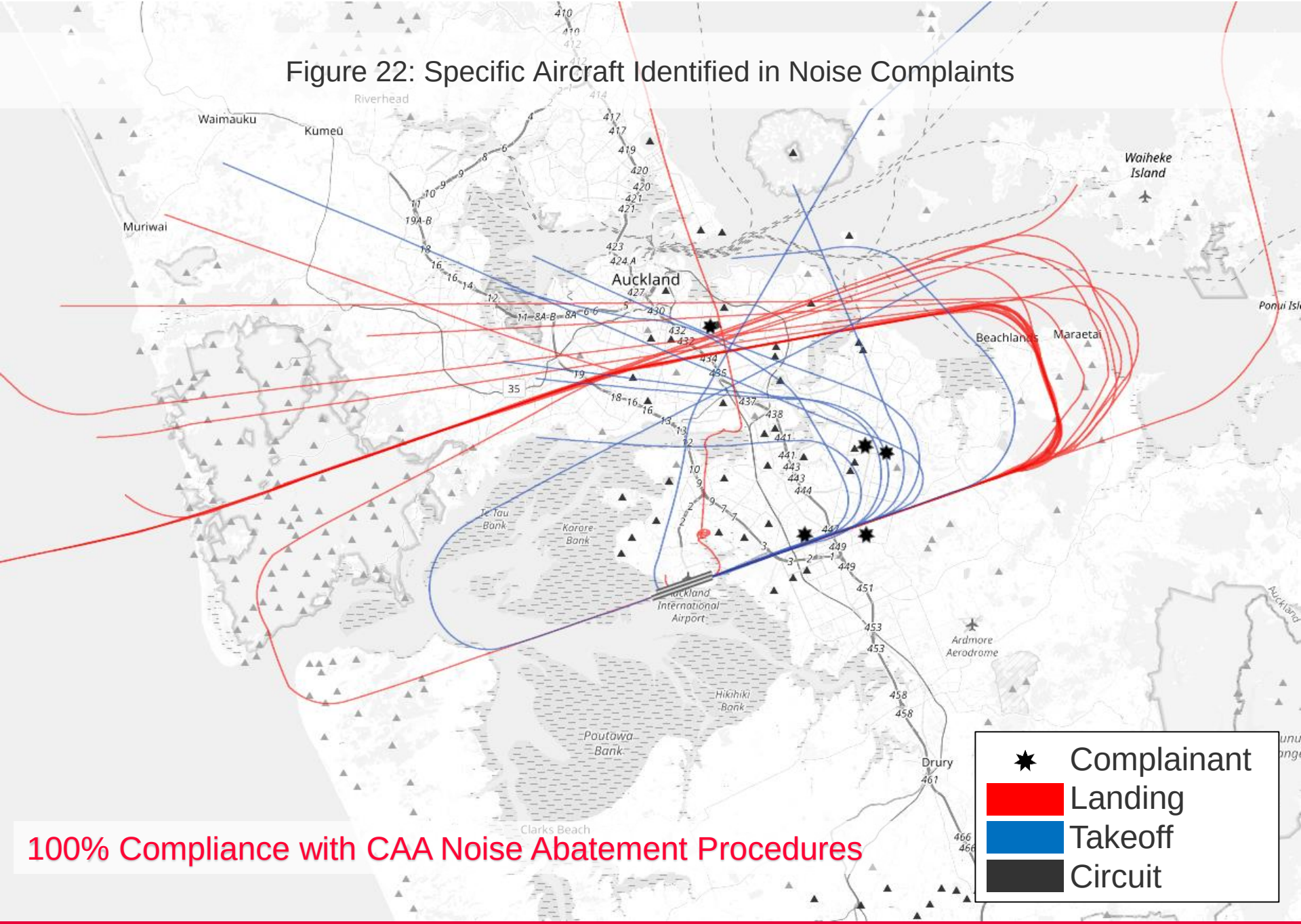
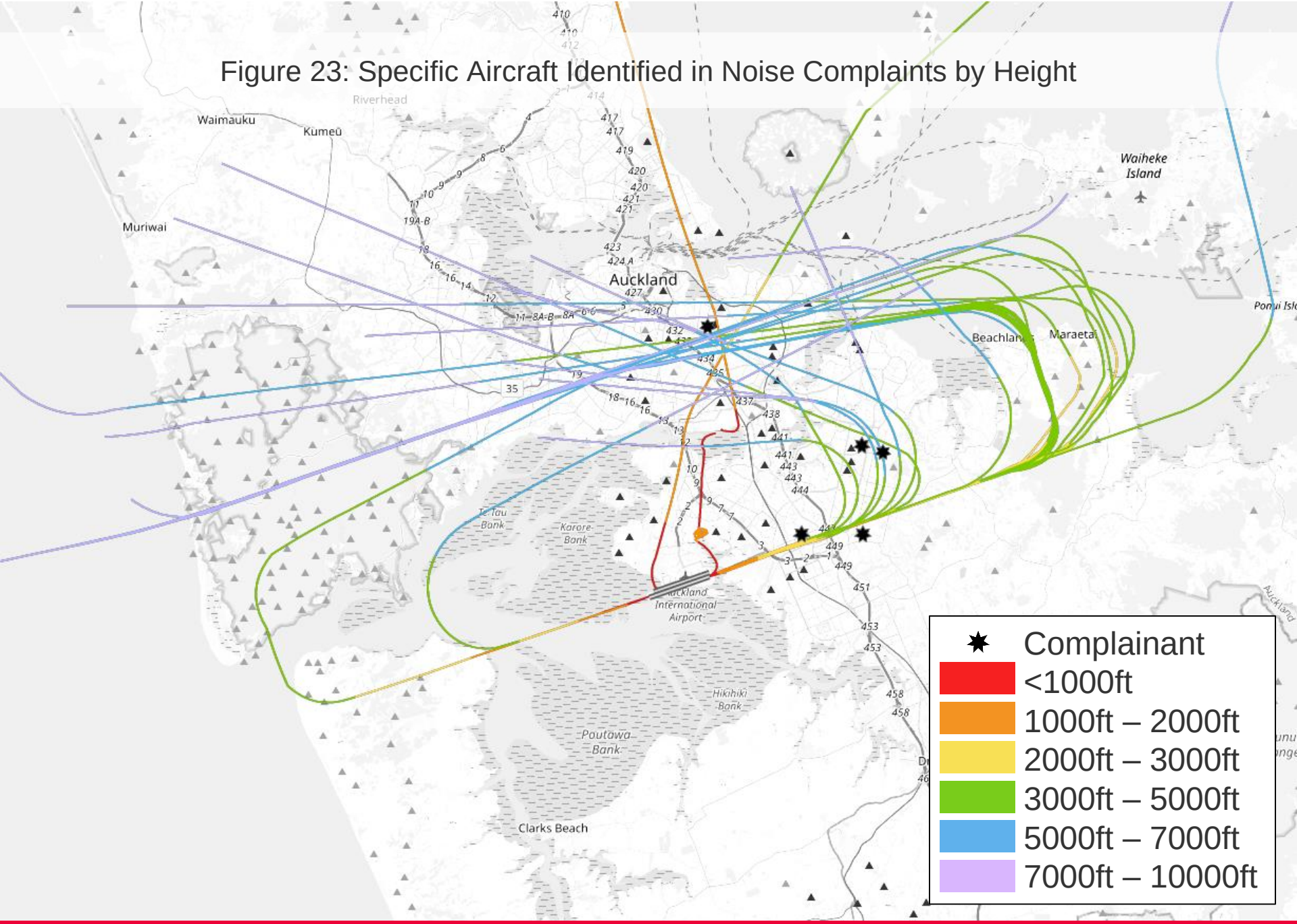


Figure 22: Specific Aircraft Identified in Noise Complaints



100% Compliance with CAA Noise Abatement Procedures

Figure 23: Specific Aircraft Identified in Noise Complaints by Height



Noise Monitoring

Figure 24: Noise Monitor Locations

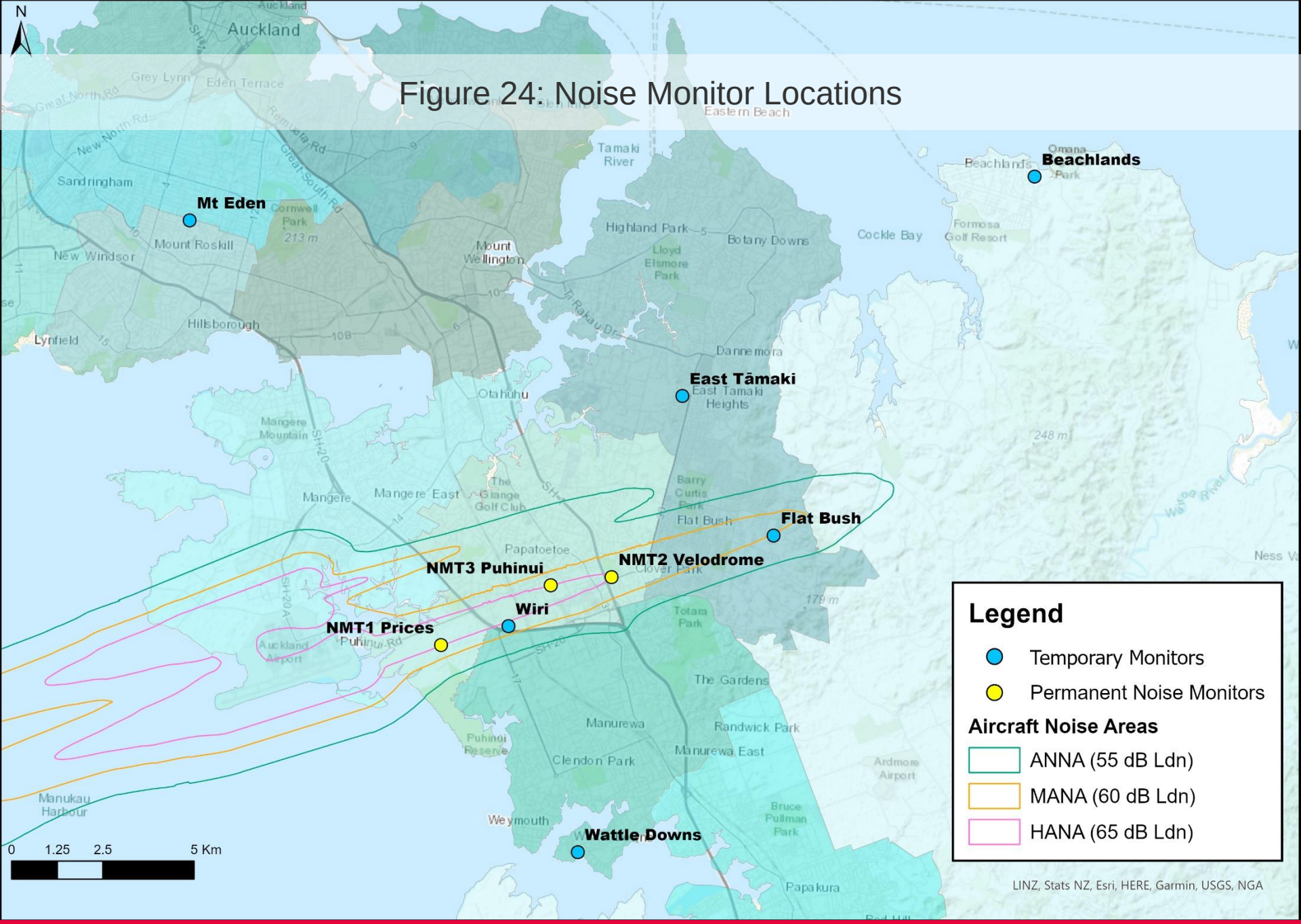


Table 4: Noise Monitor Maintenance Work

East Tāmaki	10/11/2023 to 29/11/2023	– SD Card failure from 10/11/2023, replaced 29/11/2023 – Missing noise data during this period
Beachlands	18/11/2023 to 01/12/2024	– SD Card failure on 18/11/2023, replaced 01/12/2023 – Missing noise data during this period
Wiri	31/12/2023 to 15/01/2024	– Power to site unavailable – Missing noise data during this period
Prices Rd (temporary)	10/01/2024	– NMT installed
Wattle Downs	22/01/2024 to 25/01/2024	– NMT communication module error, reboot required – No missing data during this period

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

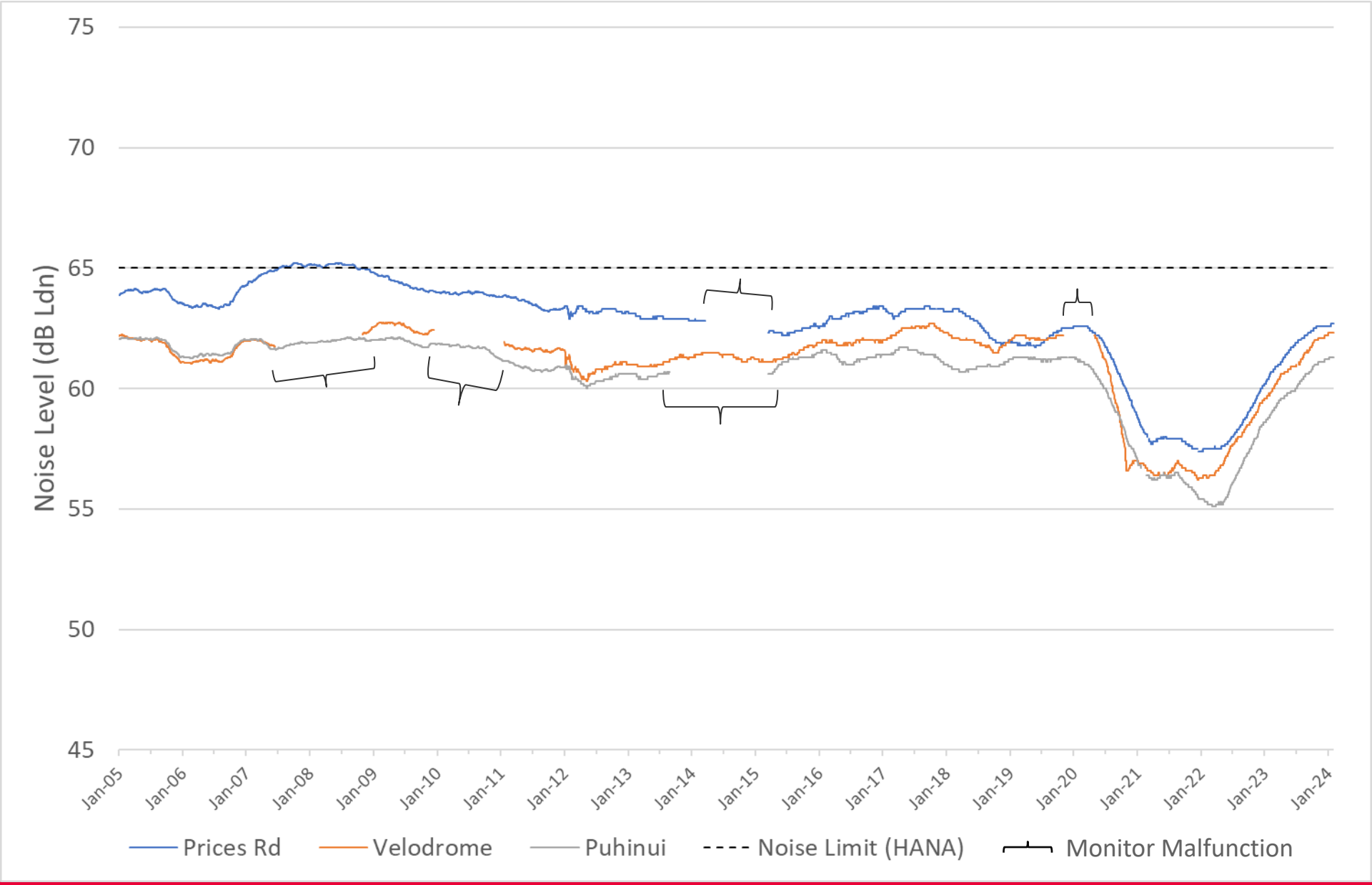
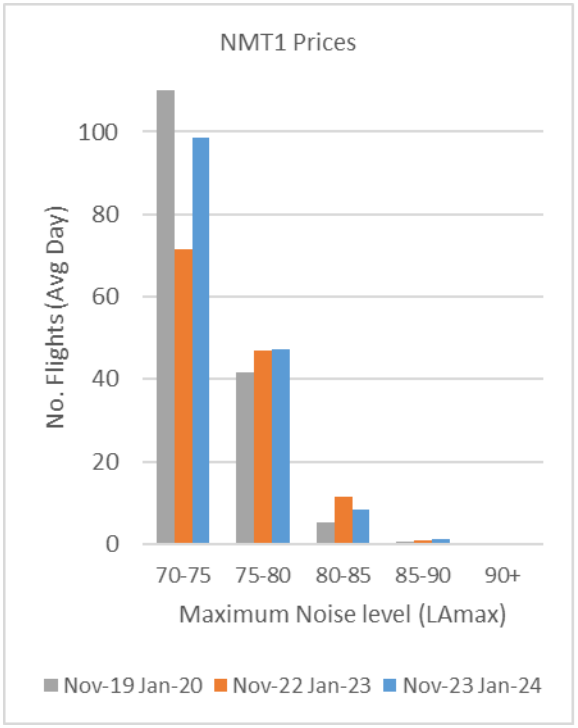
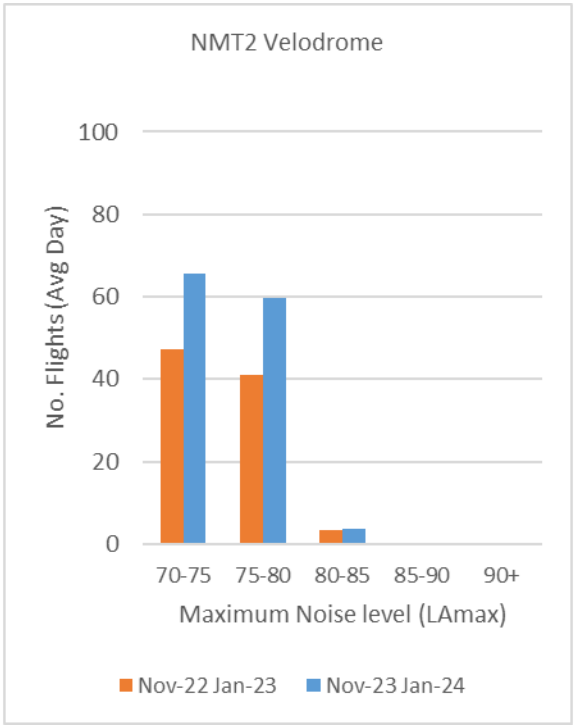


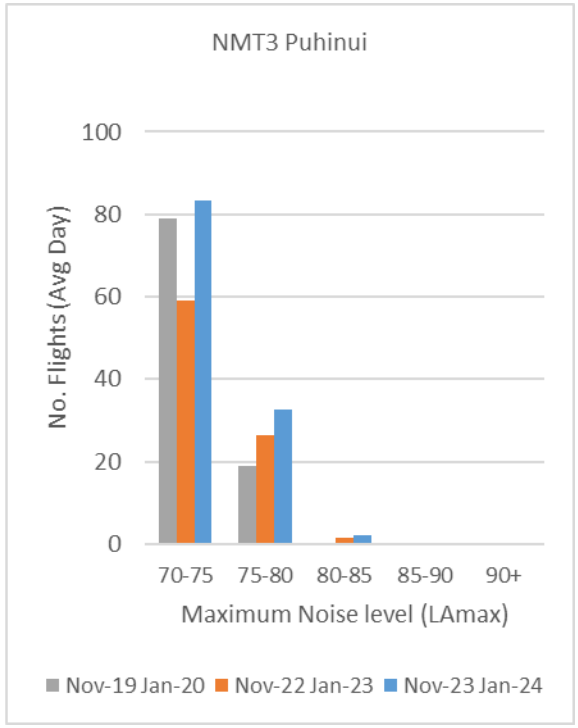
Table 5: Measured Noise Exposure (L_{dn}) for each Financial Year – Permanent Monitors

Financial Year	Prices Rd	Velodrome	Puhinui
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
FY21 (Jul-20 to Jun-21)	57.9	56.5	56.4
FY22 (Jul-21 to Jun-22)	58.0	57.7	56.0
FY23 (Jul-22 to Jun-23)	61.9	60.9	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.

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Table 6: Correlation of Aircraft Operations with Captured Noise Events
Permanent Monitors

	NMT1 Prices	NMT2 Velodrome	NMT3 Puhinui
Total Aircraft Operations	19,921	14,619	17,048
No. Aircraft Operations Captured by Monitors	16,175	12,774	14,175
Correlation	81%	87%	83%

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.

All monitors show a correlation above 80% this quarter.

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Table 7: Temporary Noise Monitor Summary of Measured Aircraft Events Since Deployment

	Date Deployed	Days Deployed	Measured L_{dn}	Average L_{Amax}
Mt Eden	1-Apr-15	3228	38	62
Wiri	4-Aug-17	2466	59	75
Wattle Downs	23-Dec-17	2231	47	67
Beachlands	4-Nov-22	434	45	64
Flat Bush	20-Dec-22	408	59	70
East Tāmaki	4-Aug-23	182	38	66

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

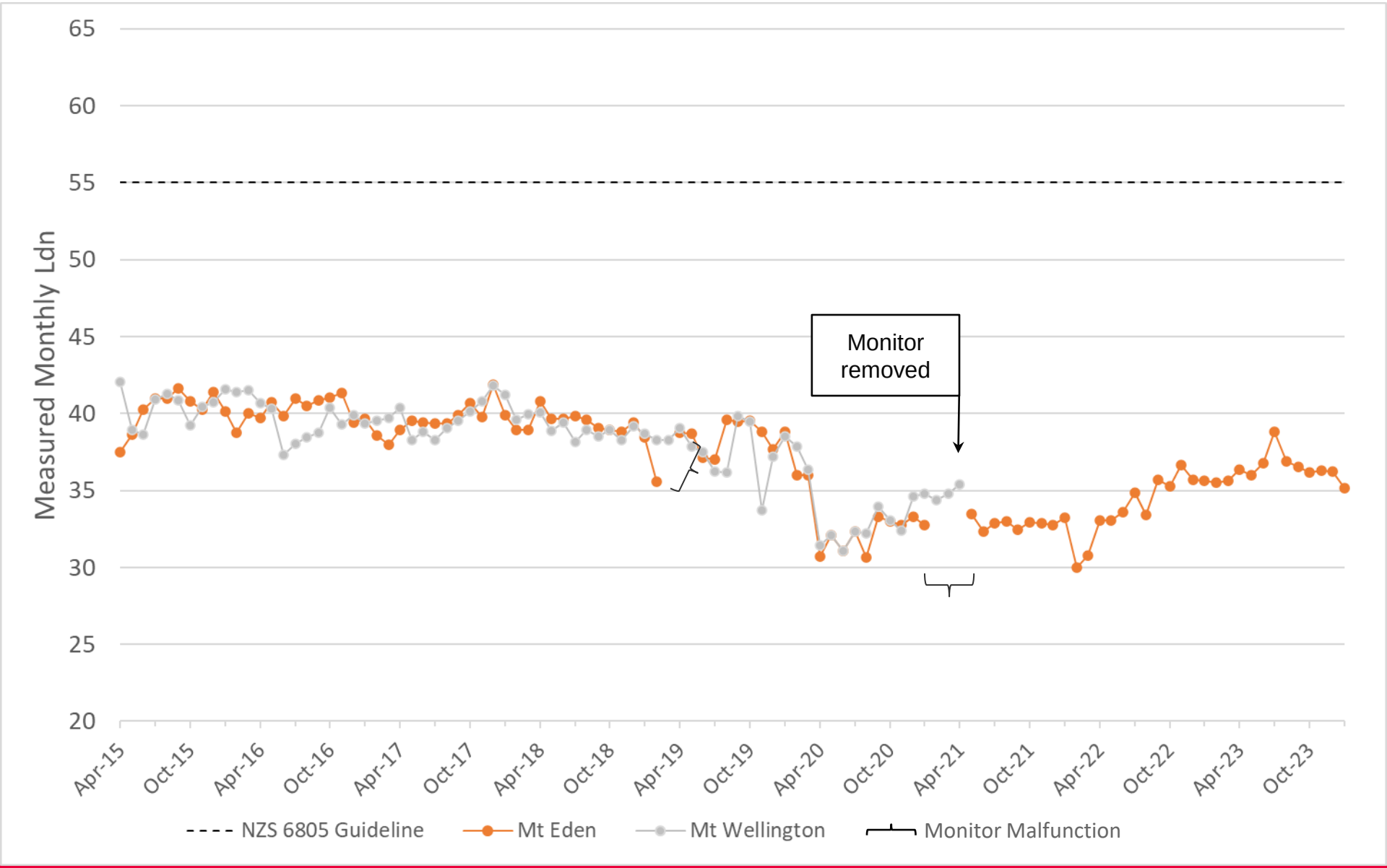


Figure 28: Measured Monthly Noise Exposure (L_{dn}) – Eastern Suburbs Temporary Monitors

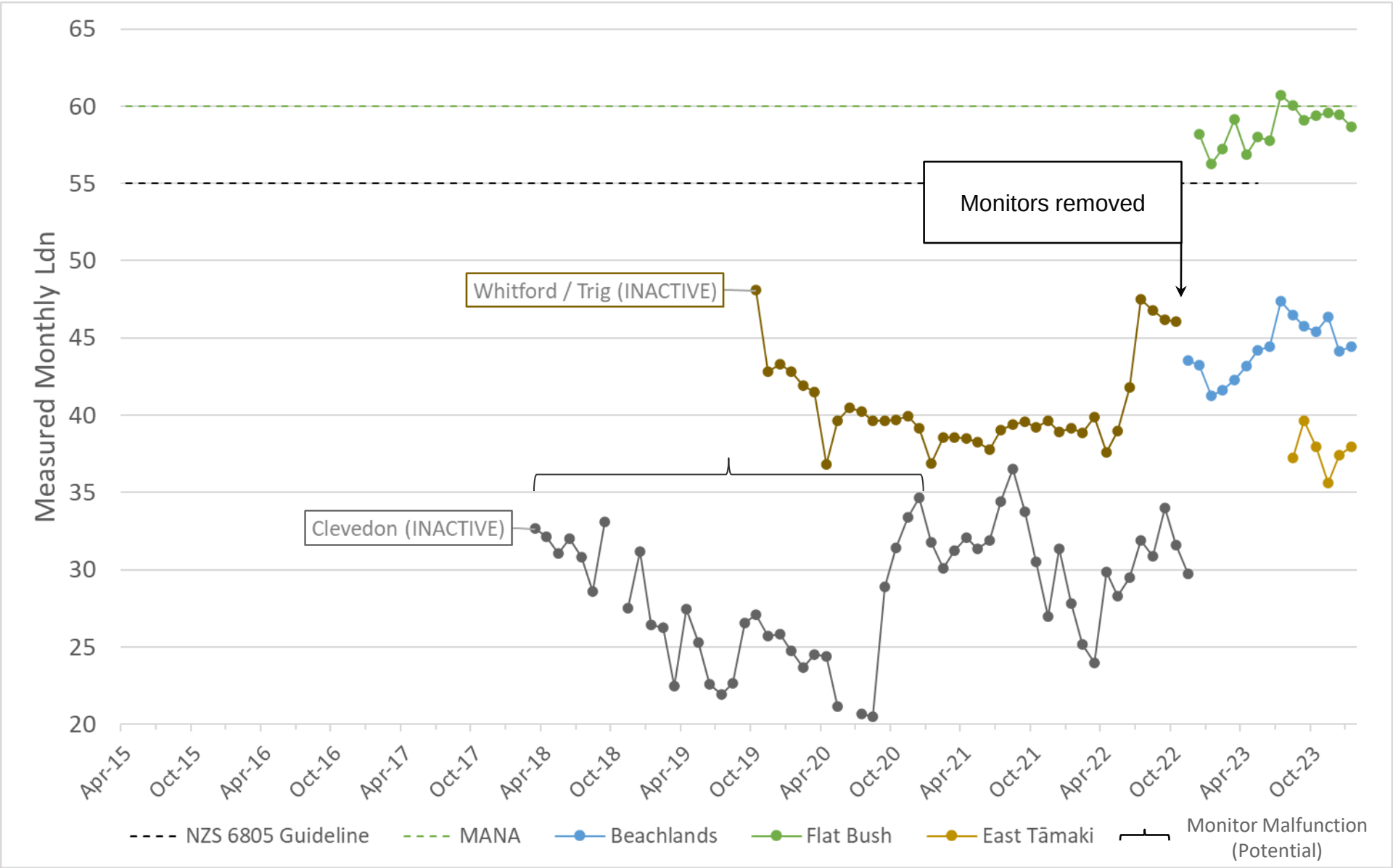


Figure 29: Measured Monthly Noise Exposure (L_{dn}) – Southern Suburbs Temporary Monitors

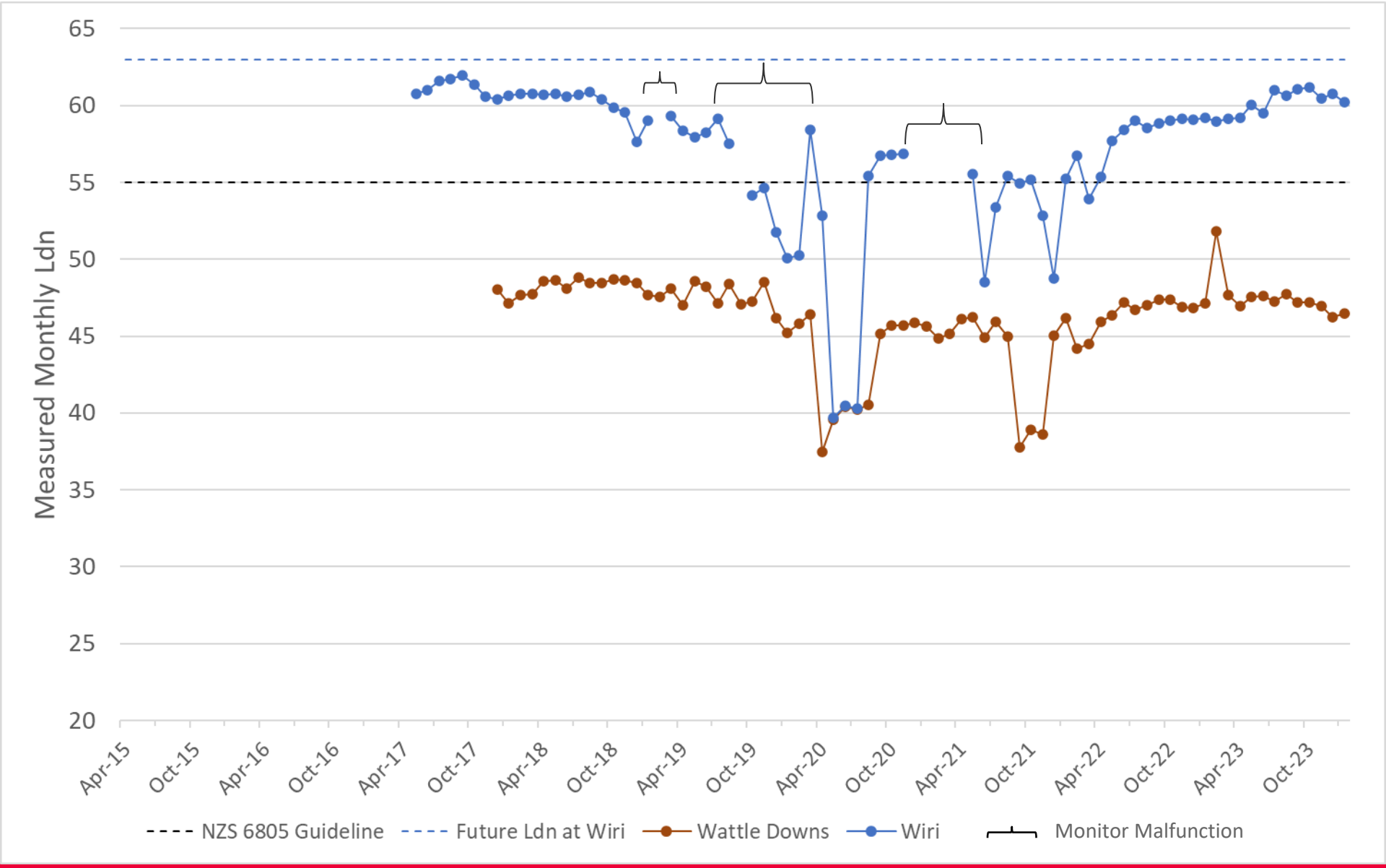
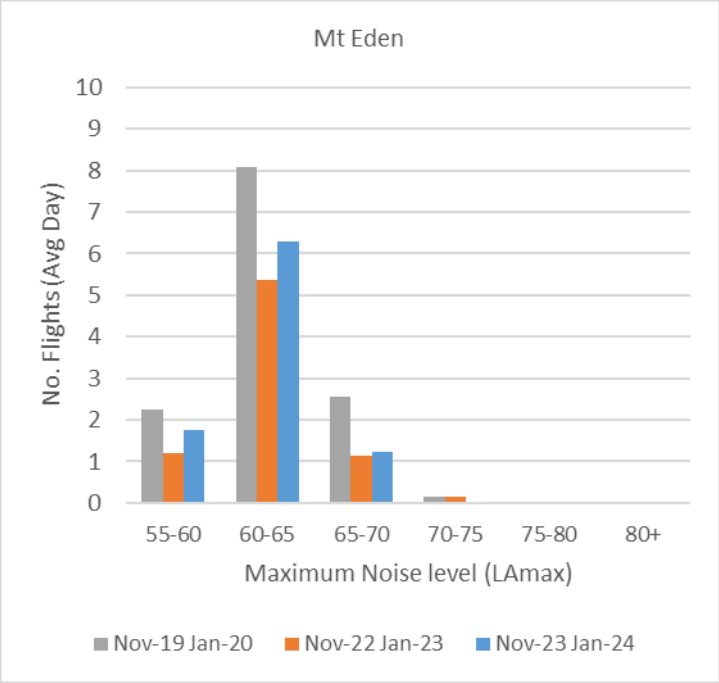
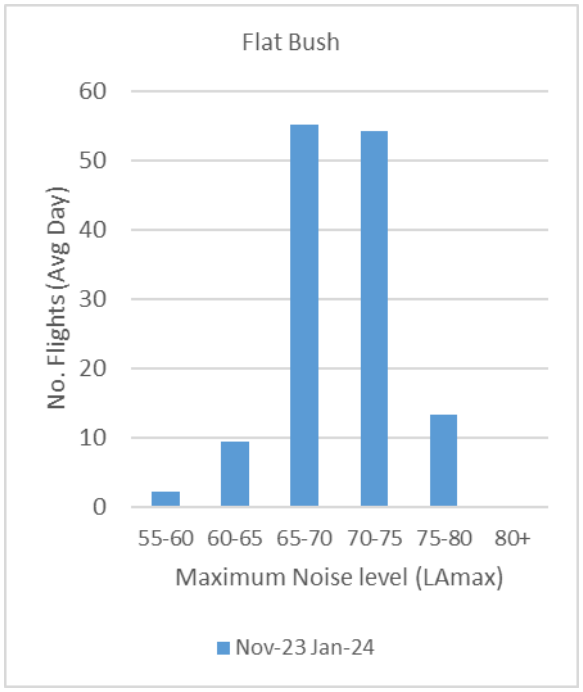


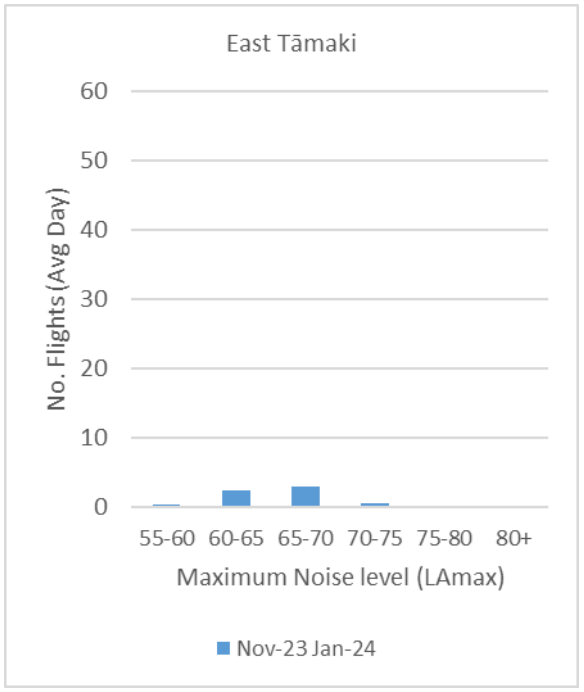
Figure 30: Number of Aircraft Noise Events in Each Noise Band Central Suburbs Monitors (L_{Amax} – Maximum Noise Level)

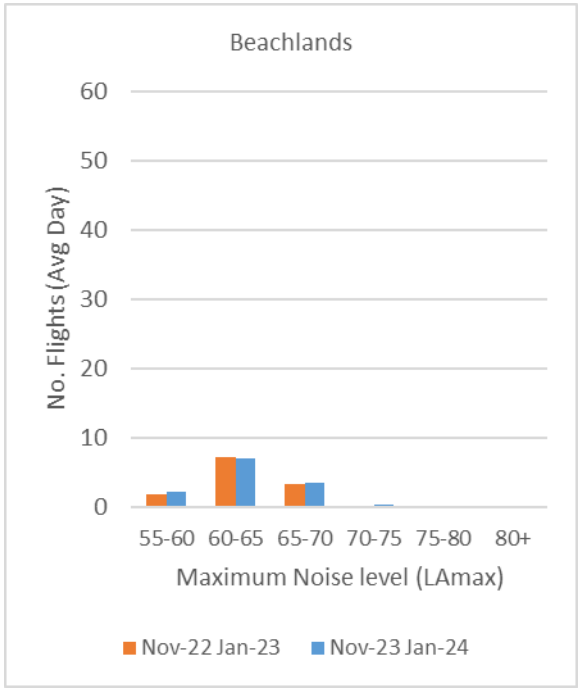


NB: Aircraft noise events over 70-75 L_{Amax} start to become disturbing inside houses with windows open as they have the potential to interfere with watching tv, talking etc.

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.

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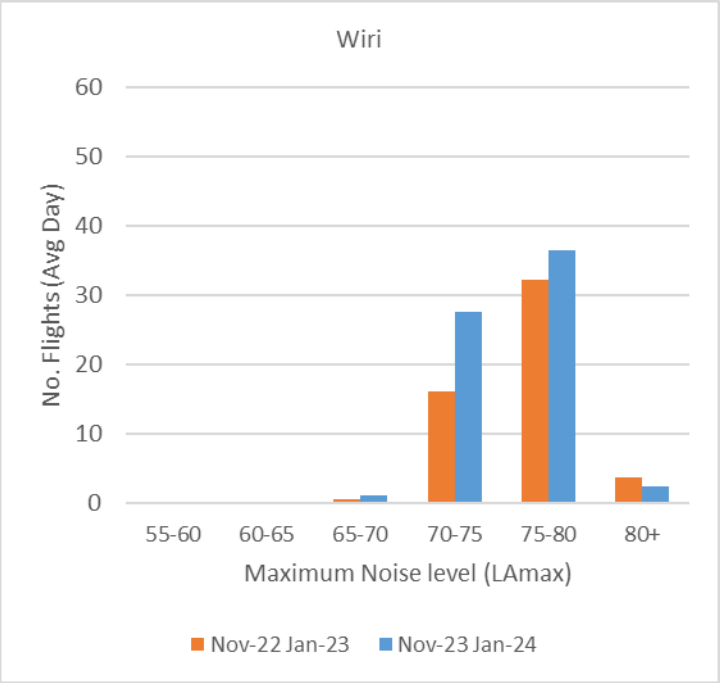
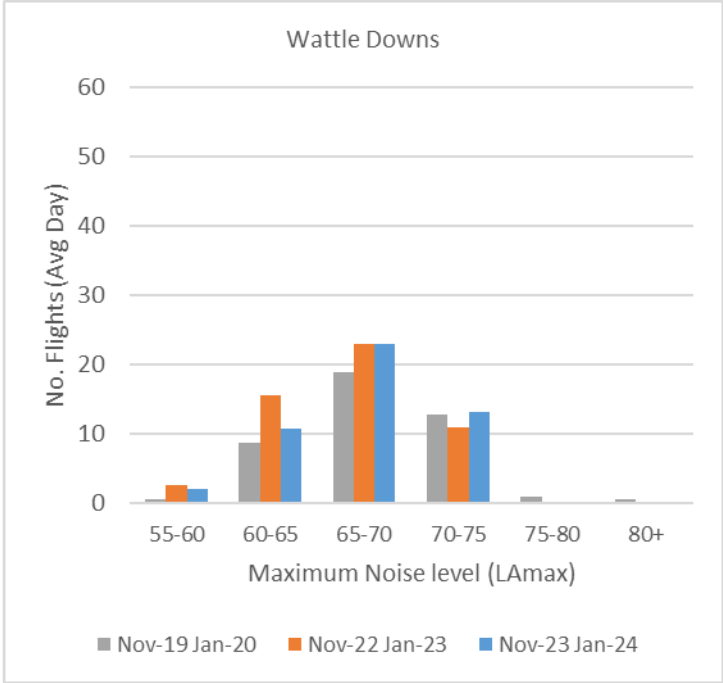
Figure 32: Number of Aircraft Noise Events in Each Noise Band Southern Suburbs Monitors (L_{Amax} – Maximum Noise Level)





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.

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Engine Testing

Figure 33: Engine Testing Compliance Locations

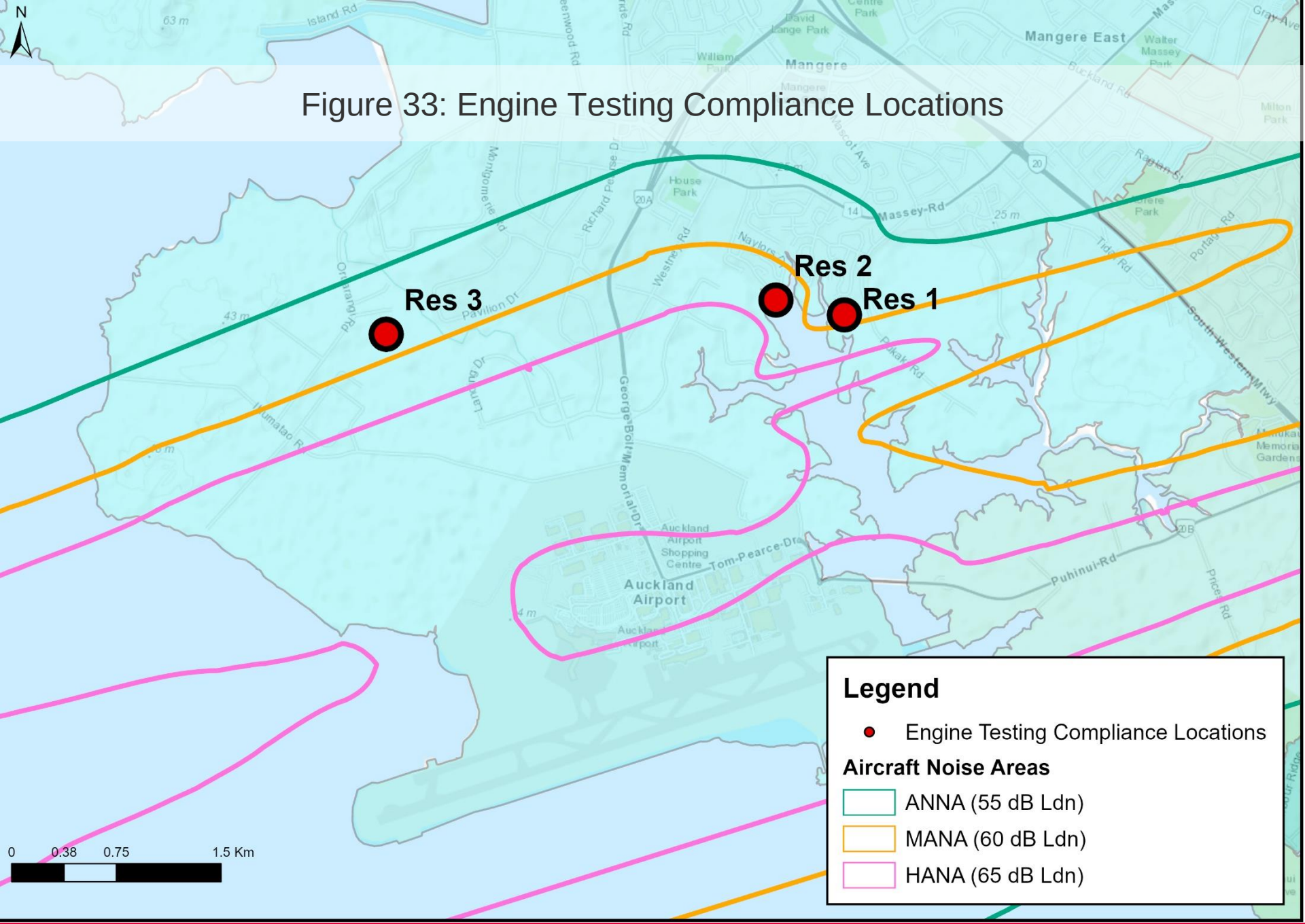
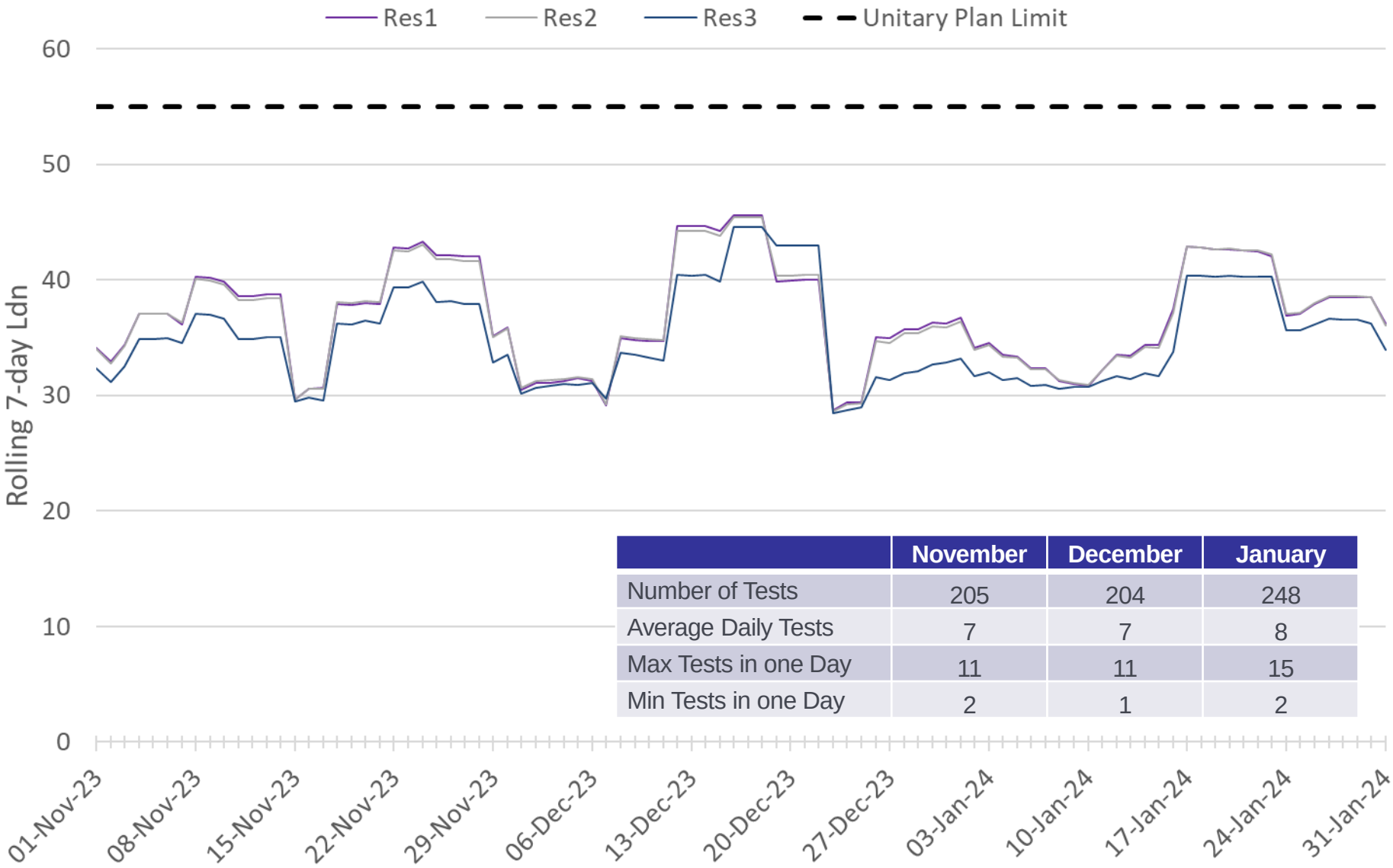
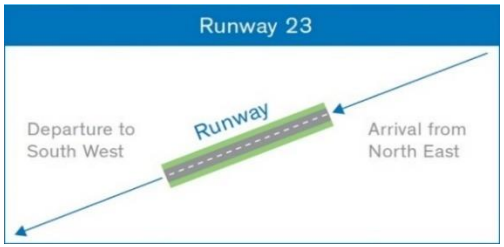
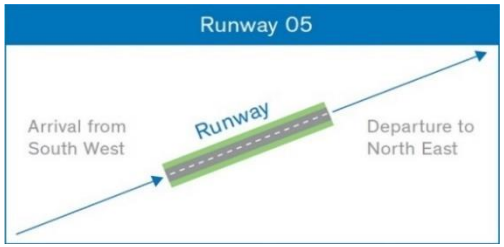


Figure 34: Engine Testing Summary



	November	December	January
Number of Tests	205	204	248
Average Daily Tests	7	7	8
Max Tests in one Day	11	11	15
Min Tests in one Day	2	1	2

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 
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

MARSHALL DAY Acoustics

Appendix C: Suburbs by Area

Suburb	Area
Alfriston	South Auckland
Anawhata	West Auckland
Arkles Bay	North Shore
Auckland	Central Suburbs
Auckland Central	Central Suburbs
Avondale	West Auckland
Beachlands	East Auckland
Birkdale	North Shore
Birkenhead	North Shore
Blockhouse Bay	West Auckland
Botany Downs	East Auckland
Bucklands Beach	East Auckland
Chatswood	North Shore
Clendon Park	South Auckland
Clevedon	South Auckland
Clover Park	South Auckland
Coatesville	North Shore
Cockle Bay	East Auckland
Cornwallis	West Auckland
Drury	South Auckland
East Tāmaki	East Auckland
East Tāmaki Heights	East Auckland
Ellerslie	Central Suburbs
Epsom	Central Suburbs
Farm Cove	East Auckland
Flat Bush	East Auckland
Forrest Hill	North Shore
Glendowie	Central Suburbs
Glenfield	North Shore
Goodwood Heights	South Auckland

Suburb	Area
Grafton	Central Suburbs
Greenhithe	North Shore
Greenlane	Central Suburbs
Grey Lynn	Central Suburbs
Gulf Harbour	North Shore
Half Moon Bay	East Auckland
Hauraki	North Shore
Henderson	West Auckland
Henderson Valley	West Auckland
Herne Bay	Central Suburbs
Howick	East Auckland
Huntly	Not in Auckland
Hunua	South Auckland
Karaka	South Auckland
Kohimarama	Central Suburbs
Laingholm	West Auckland
Long Bay	North Shore
Lynfield	Central Suburbs
Mangere	South Auckland
Mangere Bridge	South Auckland
Mangere East	South Auckland
Manukau	South Auckland
Manukau Heads	South Auckland
Manurewa	South Auckland
Massey	West Auckland
Meadowbank	Central Suburbs
Mellons Bay	East Auckland
Milford	North Shore
Mission Bay	Central Suburbs
Mount Albert	Central Suburbs

Suburb	Area
Mount Eden	Central Suburbs
Mount Roskill	Central Suburbs
Mount Wellington	Central Suburbs
Muriwai	West Auckland
Newmarket	Central Suburbs
Northcote Point	North Shore
Northcross	North Shore
Northpark	South Auckland
One Tree Hill	Central Suburbs
Onehunga	Central Suburbs
Oneroa	Central Suburbs
Onewhero	Not in Auckland
Orakei	Central Suburbs
Oratia	West Auckland
Otahuhu	South Auckland
Otara	South Auckland
Pakuranga	East Auckland
Pakuranga Heights	East Auckland
Panmure	Central Suburbs
Papakura	South Auckland
Papatoetoe	South Auckland
Parnell	Central Suburbs
Patumahoe	South Auckland
Point Chevalier	Central Suburbs
Point England	Central Suburbs
Pollok	South Auckland
Ponsonby	Central Suburbs
Randwick Park	South Auckland
Ranui	West Auckland
Remuera	Central Suburbs

Suburb	Area
Rothesay Bay	North Shore
Royal Oak	Central Suburbs
Saint Andrews	Central Suburbs
Saint Heliers	Central Suburbs
Saint Johns	Central Suburbs
Saint Marys Bay	Central Suburbs
Sandringham	Central Suburbs
Shamrock Park	East Auckland
Shelly Park	South Auckland
Silverdale	North Shore
Snells Beach	North Shore
Somerville	South Auckland
Stanley Point	North Shore
Sunnyhills	East Auckland
Takanini	South Auckland
Te Atatu South	West Auckland
Titirangi	West Auckland
Totara Heights	South Auckland
Totara Vale	South Auckland
Waiheke Island	Central Suburbs
Waitakere	West Auckland
Waiuku	South Auckland
Wattle Downs	South Auckland
Westmere	Central Suburbs
Weymouth	South Auckland
Whanganui	Not in Auckland
Whangaparaoa	North Shore
Whangaripo	North Shore
Whitford	East Auckland
Wiri	South Auckland