NATIONAL PERFORMANCE REVIEW

2016-2017

VOLUME 2: **PARTICIPANT COMPARISONS**

water NEW ZEALAND

The New Zealand Water & Wastes Association Waiora Aotearoa

The following changes have been made to the digital edition of the NPR.

Version	Date Changed	Page Number	Change
2	18/5/2018	17	Updated Figure 12: Wet weather overflows per 1000 properties Print version incorrectly shows the sum of 2015/16 and 2016/17 overflows per 1000 properties

FURTHER INFORMATION ON THIS REPORT IS AVAILABLE FROM:
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Figures

1 INTRODUCTION

This section of the report shows comparative data. For sector wide trends and contextual information on data refer to Volume 1 of the report. Figures in Volume 1 and Volume 2 have both been categorised into the groupings shown in Figure 1.

Not all participants provided data for all measures. Only participants who provided data have been included in figures. Where participants names are listed on histograms but no data appears, this is because a 0 value has been provided.

All values are GST exclusive unless otherwise noted.

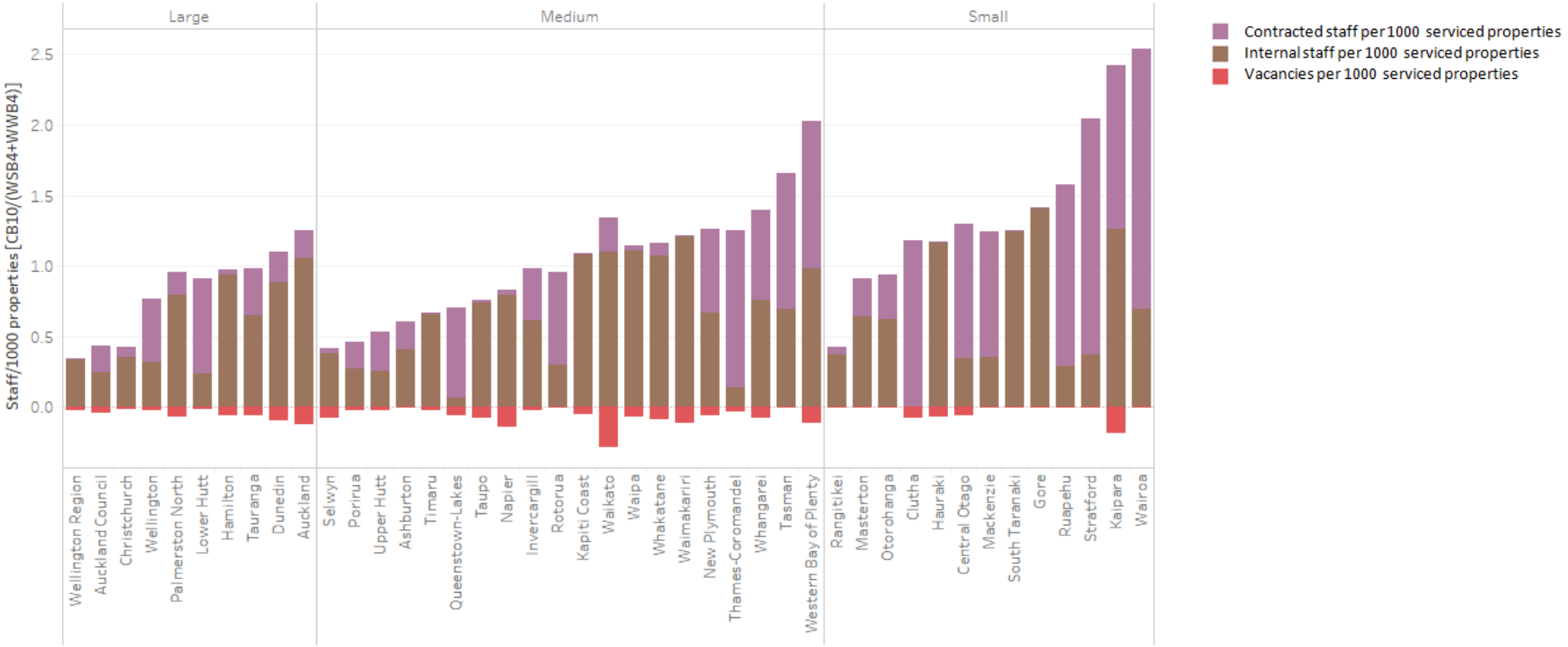
When making comparisons of participants it is important to consider the impact of service area characteristics impact on performance. Some characteristics that impact on performance are covered in this report: connection density, tourist numbers, and service coverage. Other factors such as climate, topography and soil type can also have large performance impacts, however are not included in this report.

Figure 1: Aspects of 3 Waters service provision addressed by the NPR

2 SECTOR OVERVIEW

2.1 Staffing

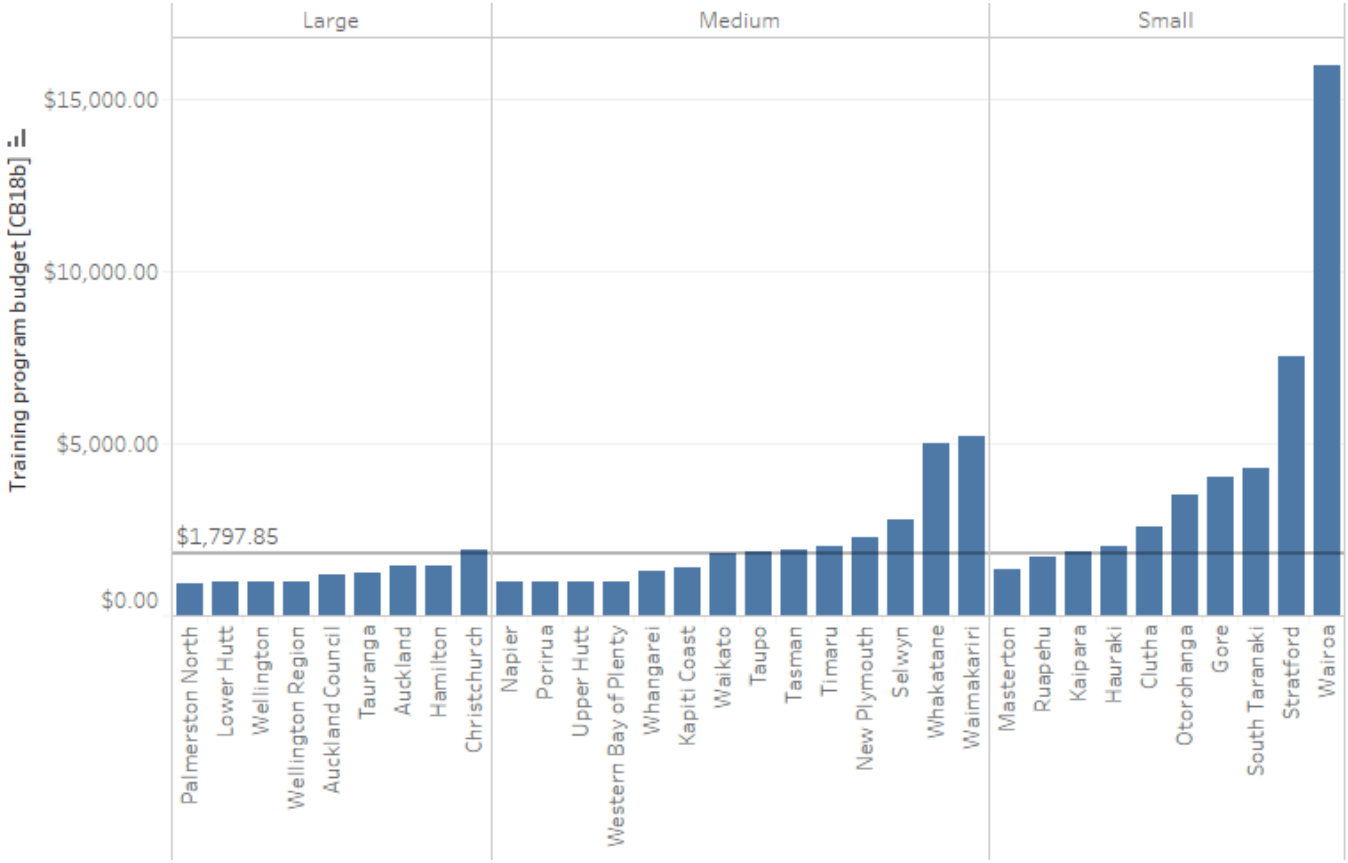
Figure 2: Number of internal staff, permanent contractors and vacancies per 1000 properties on the stormwater and wastewater system[1]



[1] The number of full time employees not on the organisations payroll but exclusively involved in the delivery of 3 waters services for the organisation. Does not include consultancies contracted to perform one of tasks.

2.1.1 Training

Figure 3: The average training budget allocated for each member of three water staff[2]



[2] Figures for the Wellington Group of Council, do not include mandatory Health and Safety training which is received by all staff. Whakatane figures are only for the assets team. The figure provided by Waimakariri includes travel costs.

Table 1: Training development plans used for the majority of three water staff

Participant	Training Plans in Place Yes/No	Comments
Timaru	Yes	Along with D&W Training records
Tasman	Yes	Addressed as part of performance management conversations
Tauranga	Yes	Blue Print (Staff Performance and development process)
Stratford	No	
Selwyn	Yes	These are across Council
Queenstown Lakes		Annual training plans developed for all 3
Otorohanga	Yes	working progress
New Plymouth	Yes	Plans are in place for all staff, stored in HR
Napier	Yes	
Masterton	Yes	Training and development is assessed during performance reviews or as required.
Mackenzie	Yes	
Kapiti Coast	Yes	
Kaipara	Yes	As part of the 6 monthly and Annual Performance Development Plan
Invercargill	Yes	Corporate Performance and Development
Hamilton	Yes	Combination of Training matrices developed for the relevant depts. In order to identify and book legislative, industry and other relevant training. Training needs also identified via HR driven Performance Development Program
Gore	Yes	
Clutha	Yes	
Christchurch	Yes	Performance Review and Development
Ashburton	Yes	Included in performance and development
Upper Hutt, Greater Wellington, Porirua, Lower Hutt, Wellington	Yes	Performance development Plans developed annually and updated quarterly.

Participant	Training Plans in Place Yes/No	Comments
Waipa	Yes	
Waimakariri	Yes	Training development plans are part of the Performance Review process.
Watercare	Yes	
Western Bay of Plenty	Yes	Training and development plans reviewed
Thames - Coromandel	Yes	
Taupo	Yes	Training plans are in place for operations staff, national standards etc…
South Taranaki	Yes	6 monthly Performance Development
Rotorua	No	
Palmerston North	Yes	
Marlborough		Good training plans for plant operators and
Whakatane	No	
Wairoa	Yes	
Whangarei	Yes	
Central Otago	No	no formalised training plans developed, but
Auckland Council	Yes	
Hauraki	Yes	
Dunedin	Yes	Training development plans usually come out of the PDR process with staff as well as key
Ruapehu		
Waikato	Yes	Staff have ongoing continious training made
Rangitikei	Yes	

2.2 Health and Safety

Figure 4: Near miss reports per staff member (internal and contracted) [CB12/(CB10+CB11)]

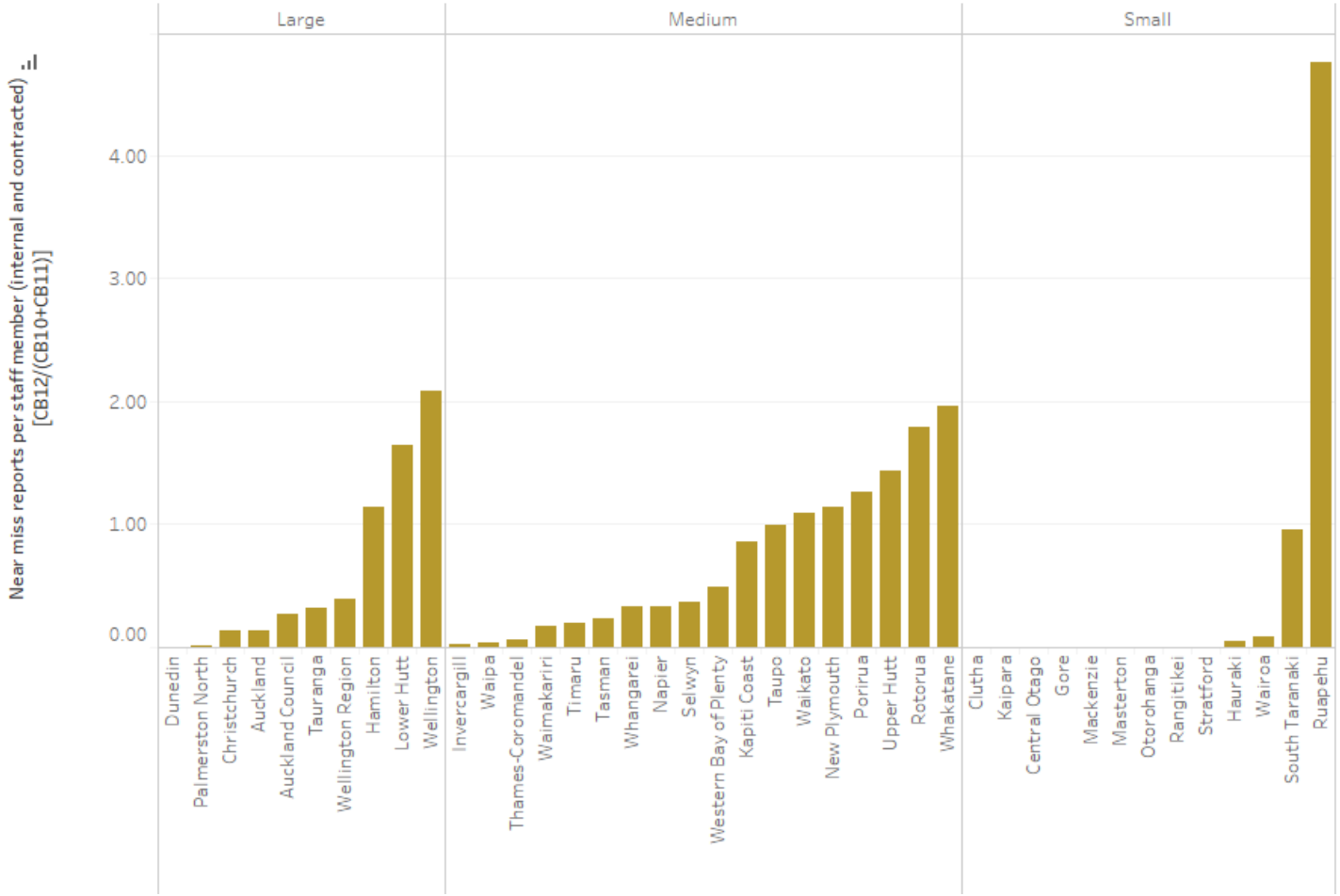
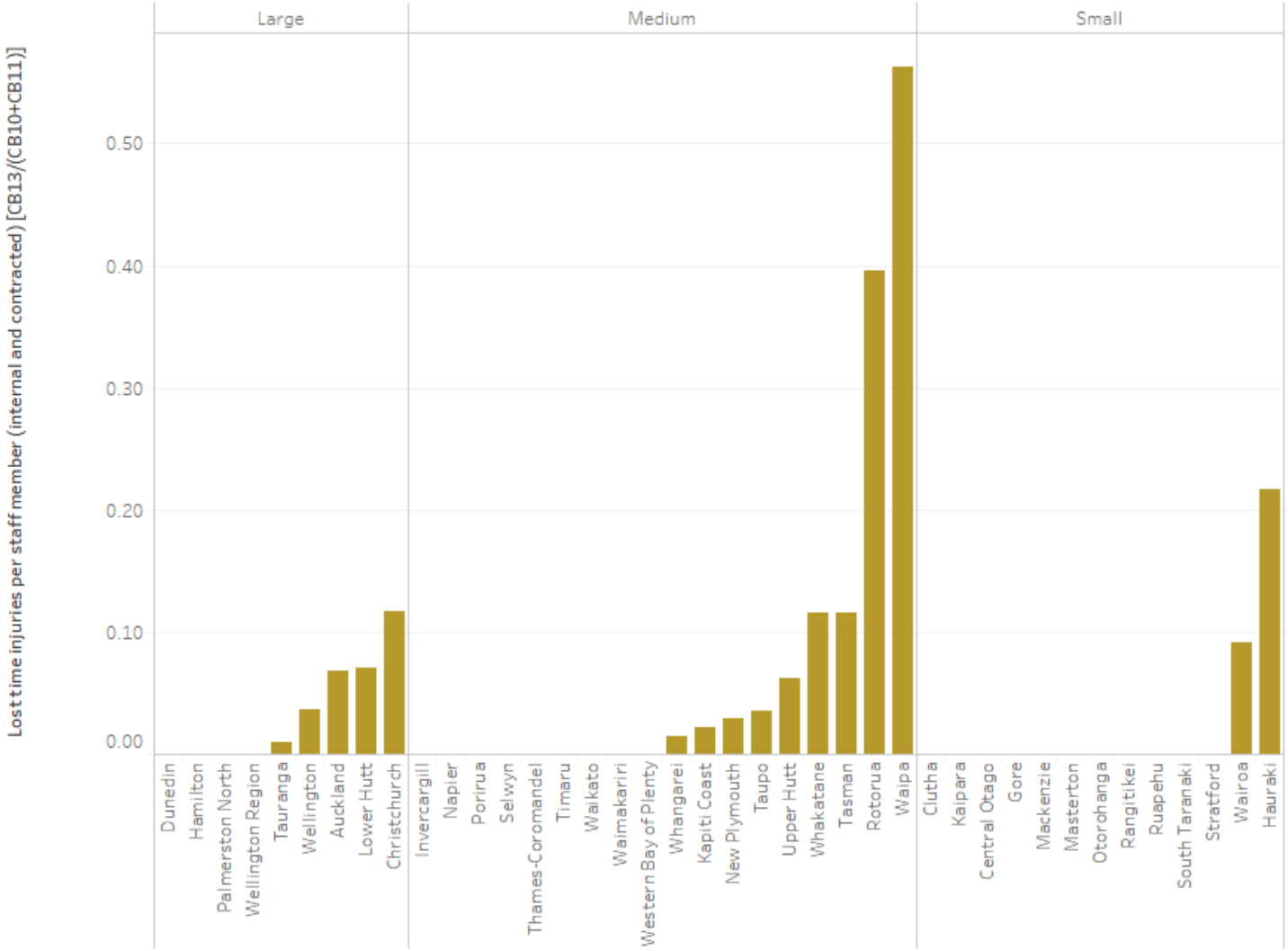


Figure 5: Lost time injuries per staff member (internal and contracted) [CB13/(CB10+CB11)]



2.3 Participant Characteristics

Figure 6: Water supply service coverage

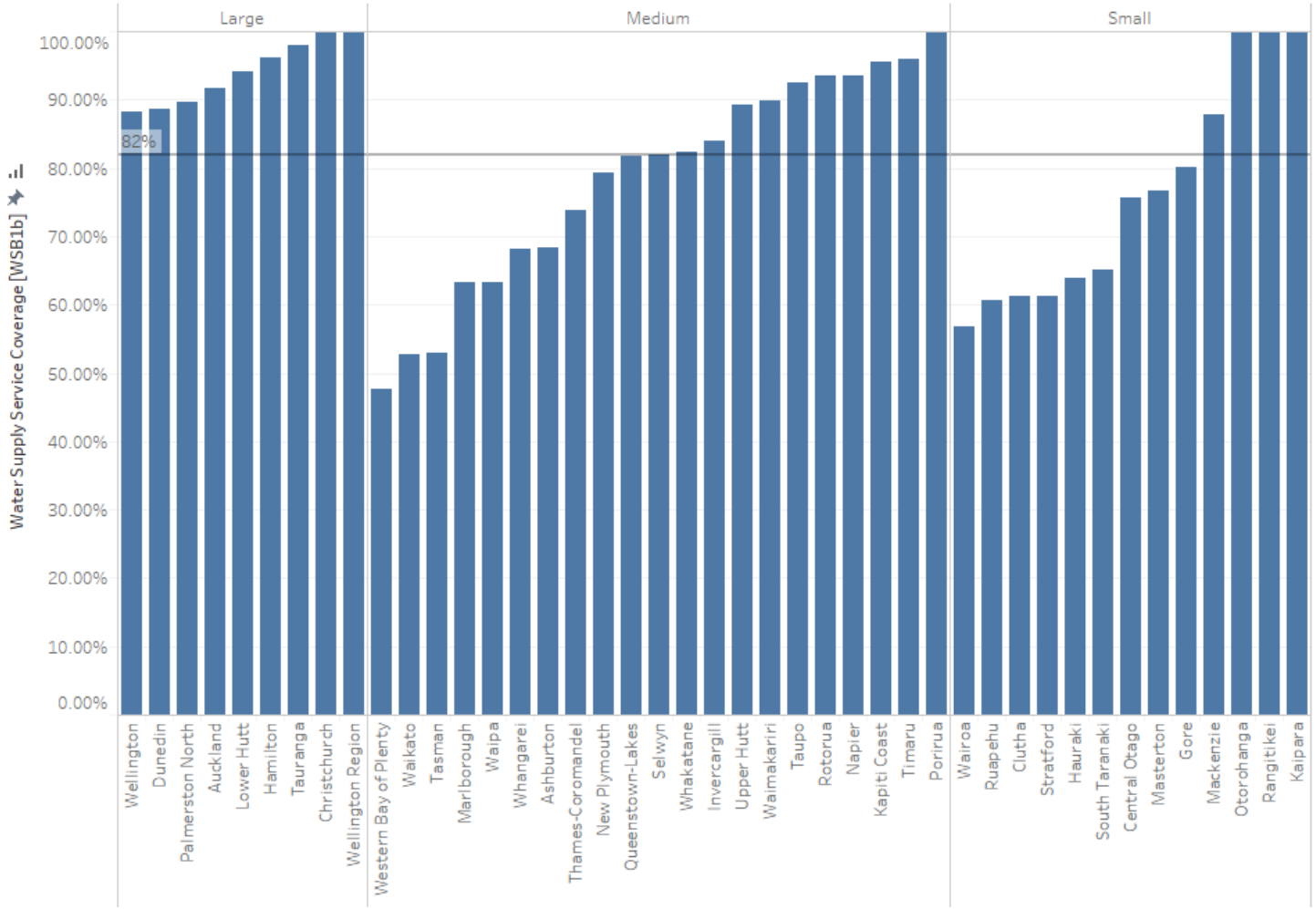


Figure 7: Wastewater service coverage

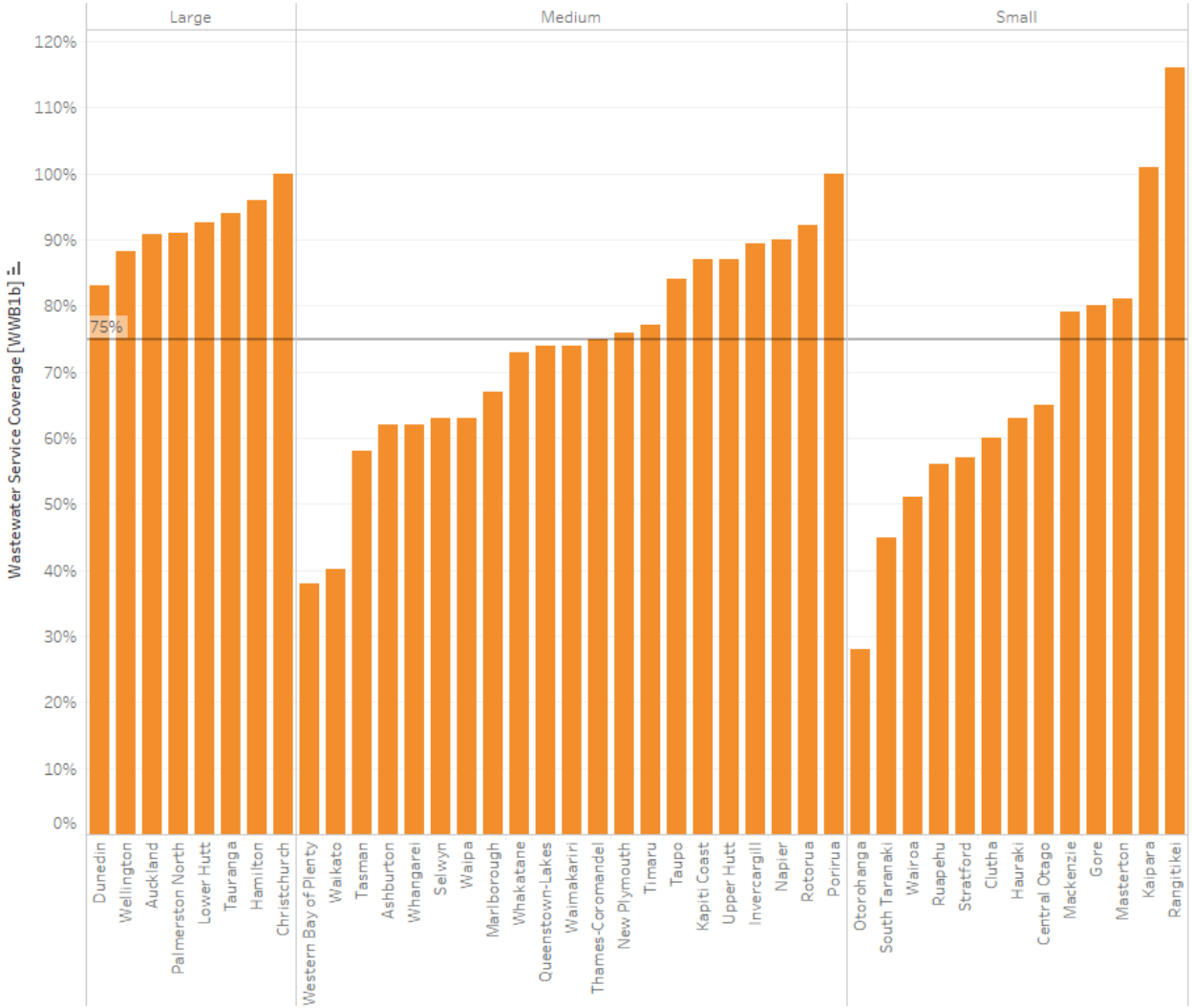


Figure 8: Tourist numbers

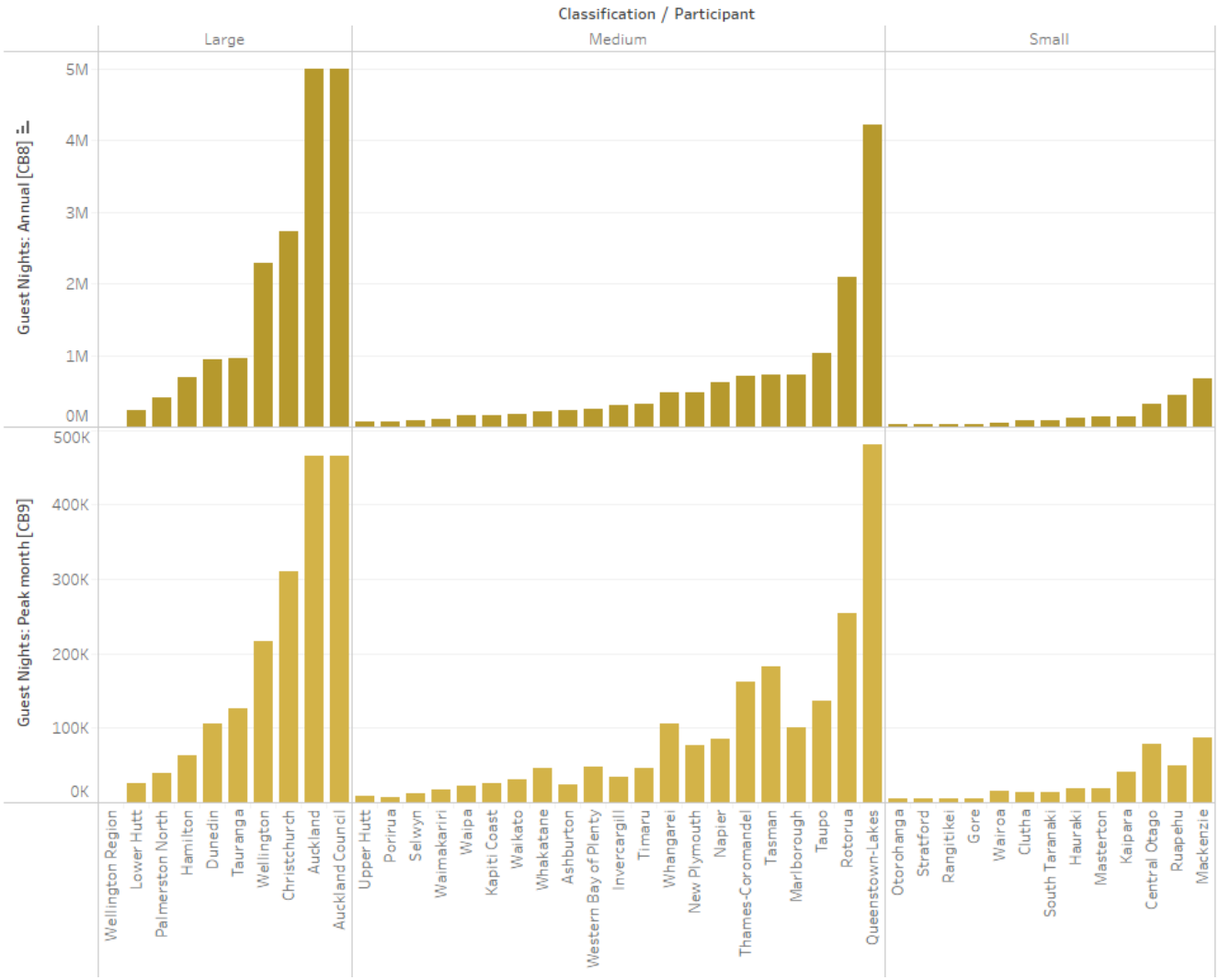


Figure 9: Water supply connection density (properties/km)

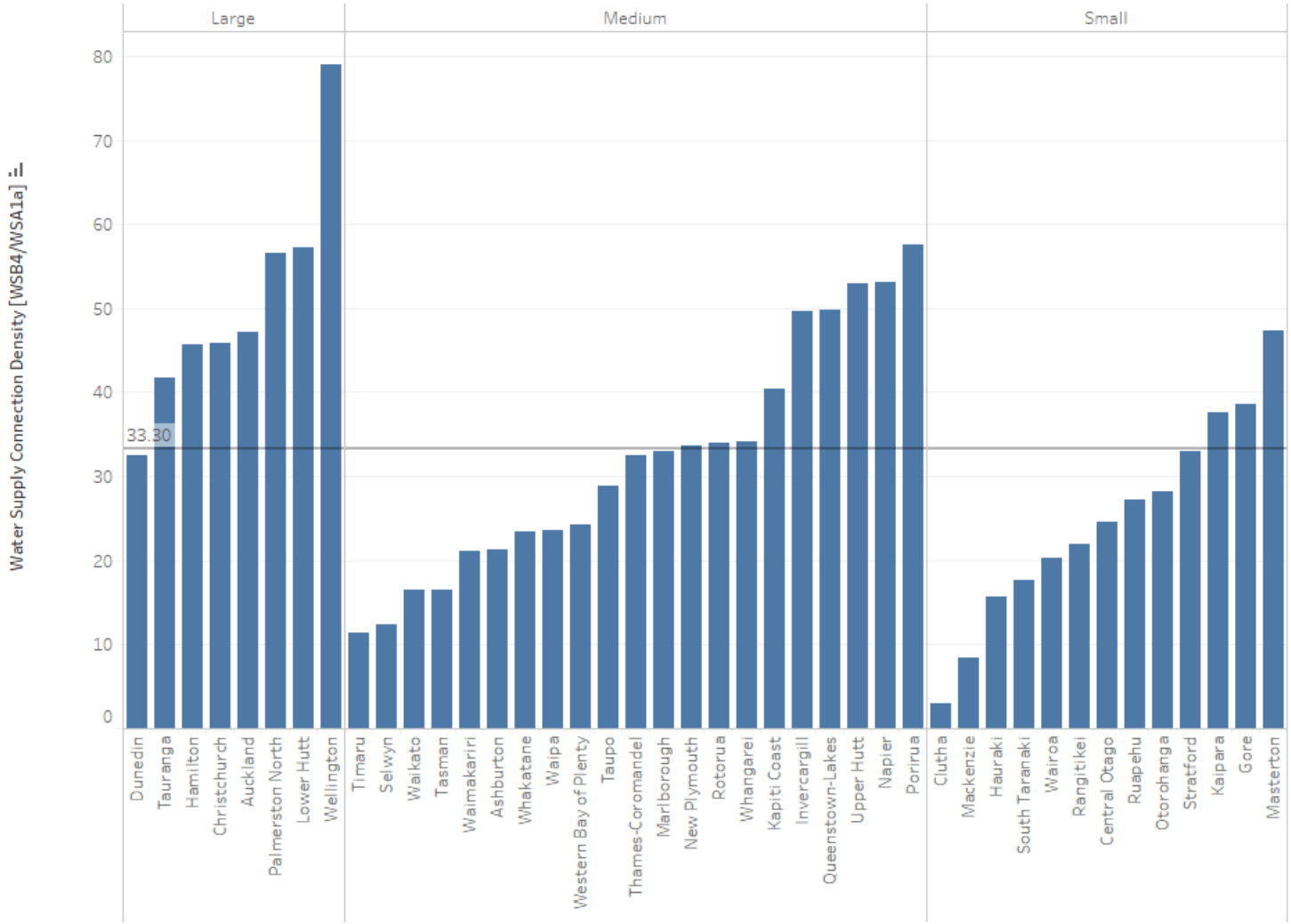
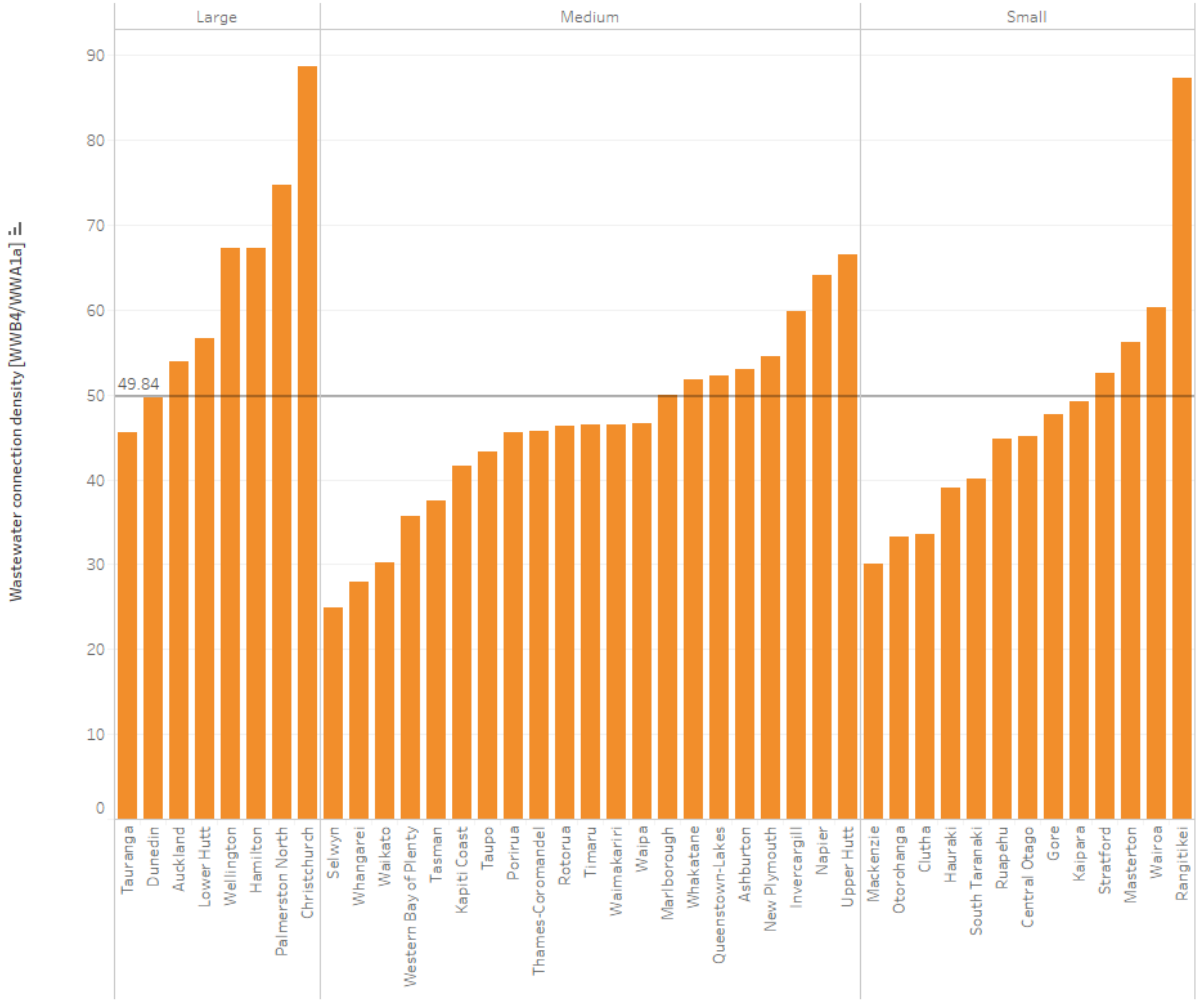


Figure 10: Wastewater connection density (properties/km)



3 PUBLIC HEALTH AND ENVIRONMENTAL PROTECTION

3.1 Wastewater overflows

Figure 11: Dry weather overflows per 1000 properties

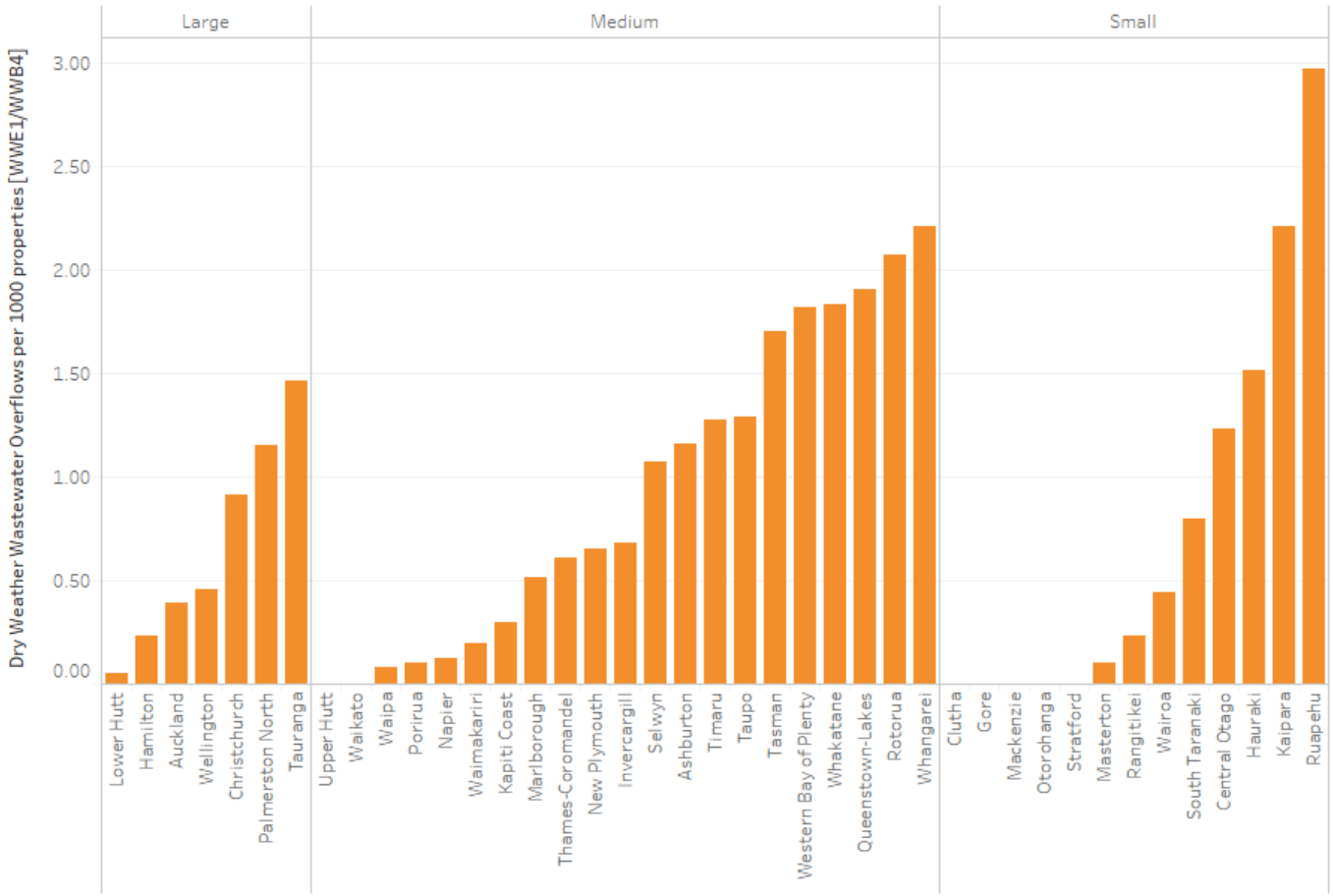
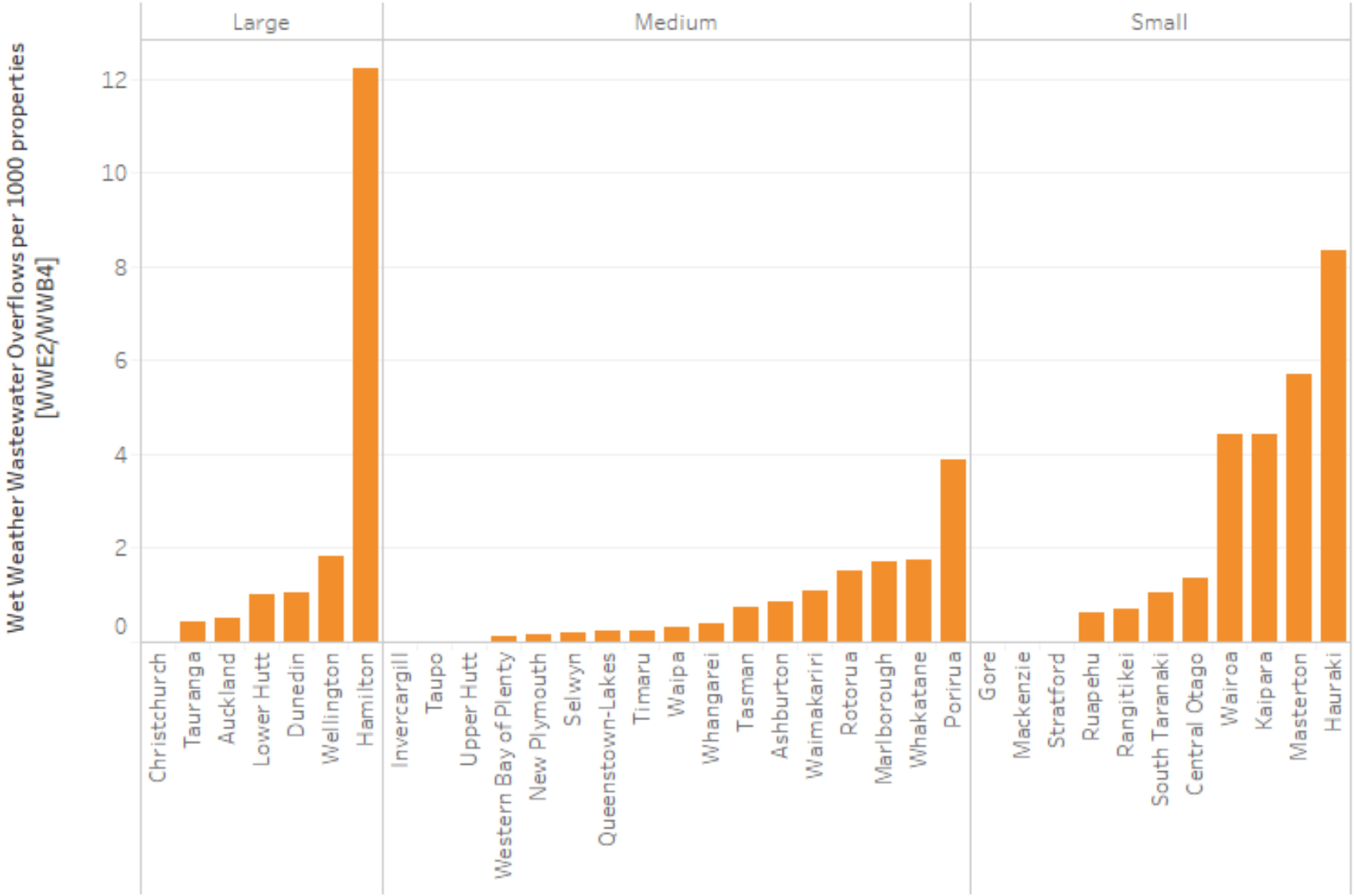


Figure 12: Wet weather overflows per 1000 properties



4 CUSTOMER FOCUS

4.1 Attendance and resolution times for system faults

Figure 13: Median time taken to attend and respond to urgent fault's or unplanned interruption's to the water supply system

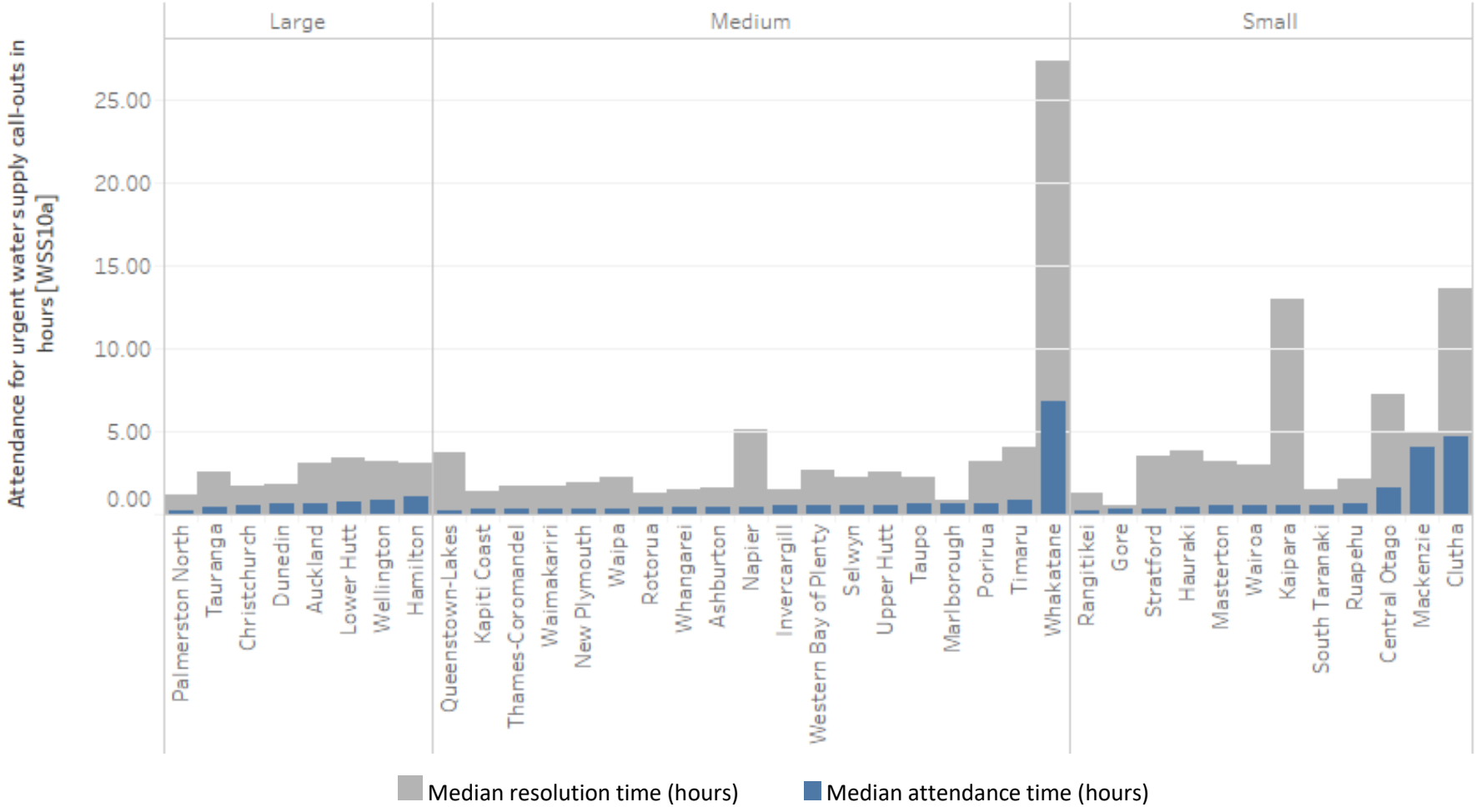


Figure 14: Median time taken to attend and respond to non-urgent fault's or unplanned interruption's to the water supply system

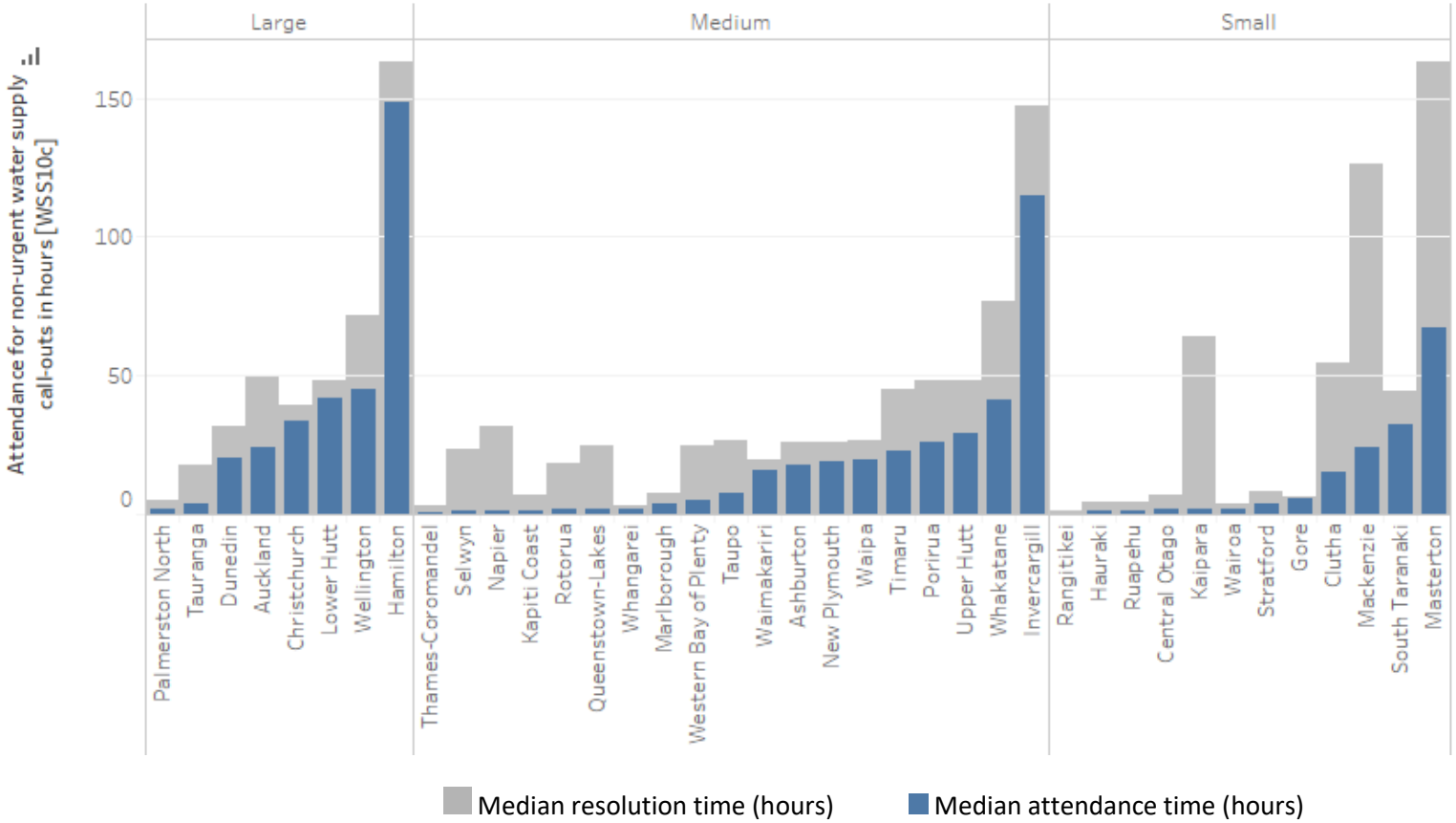


Figure 15: Median time taken for the local authority to attend and respond to sewerage overflows or other faults in the local authority's sewerage system

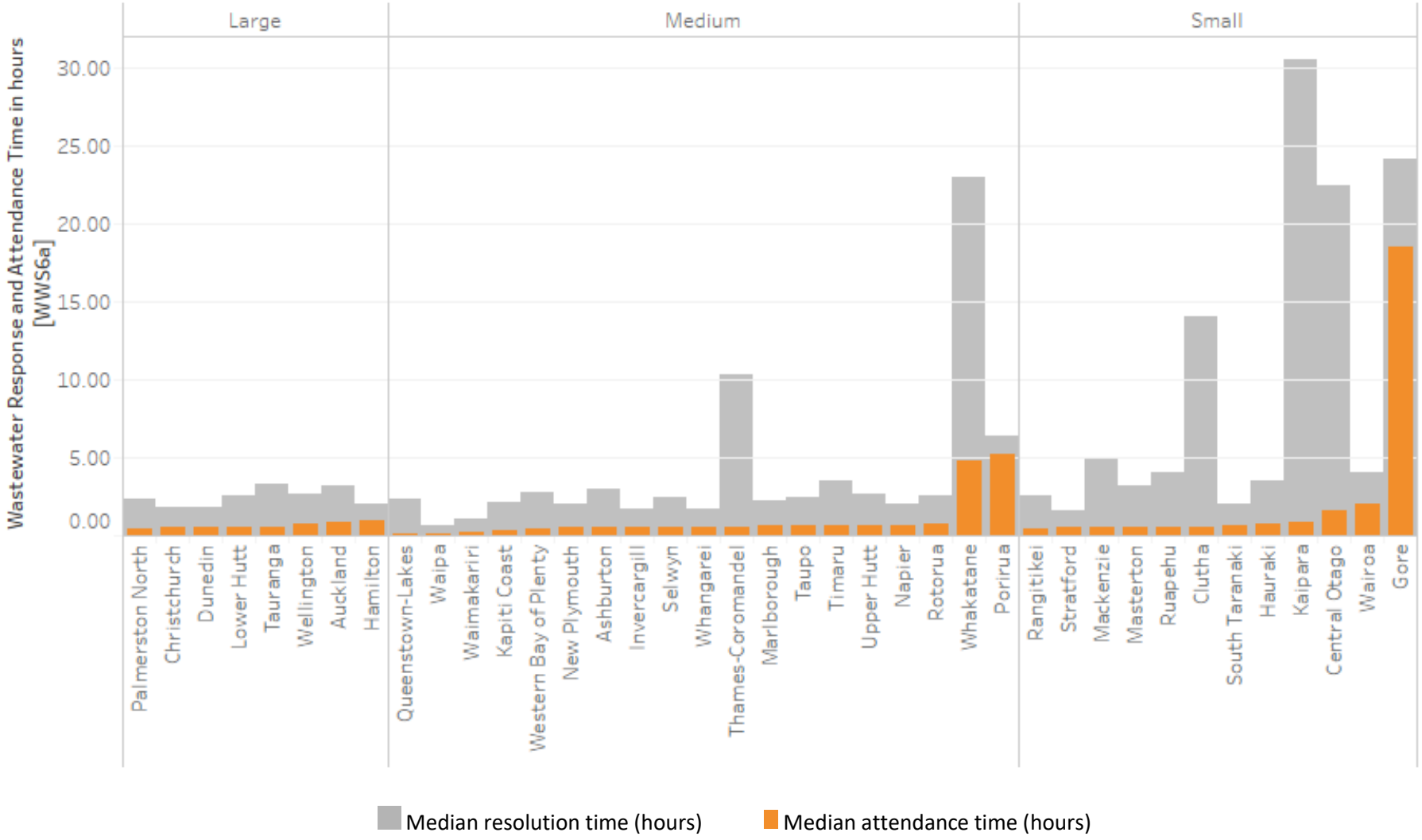
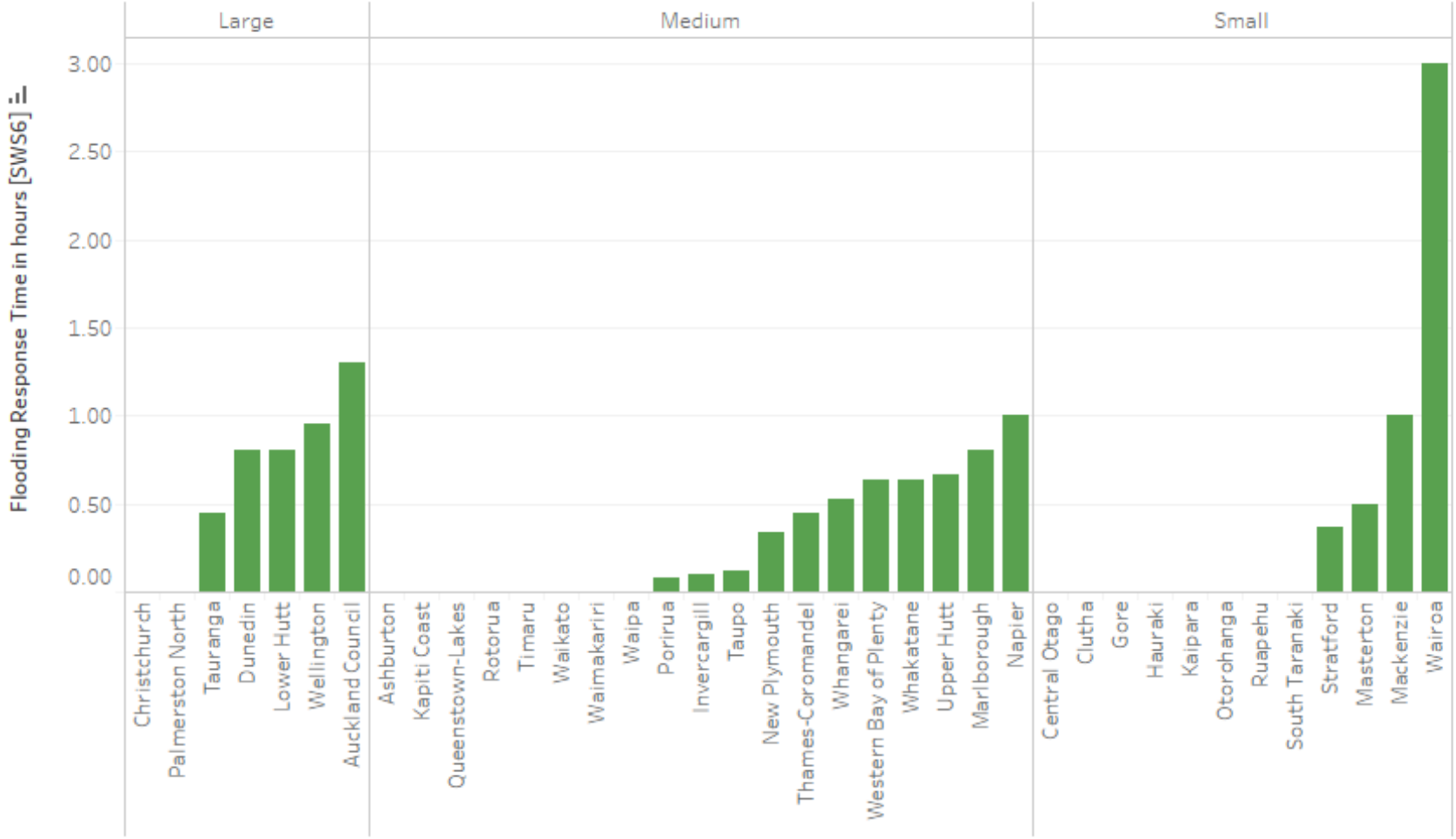
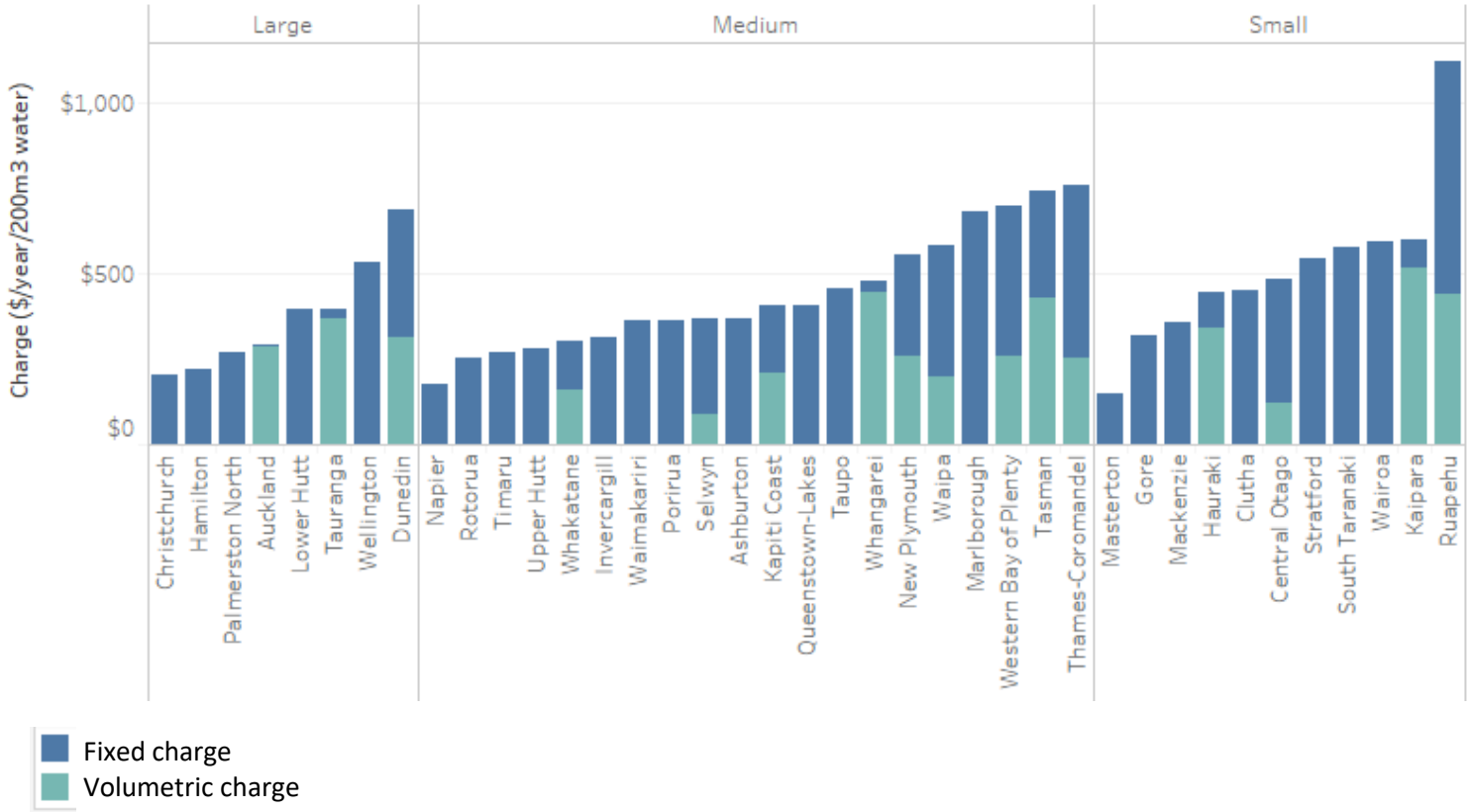


Figure 16: Median time taken by organisations to attend call outs in relation to a flooding event



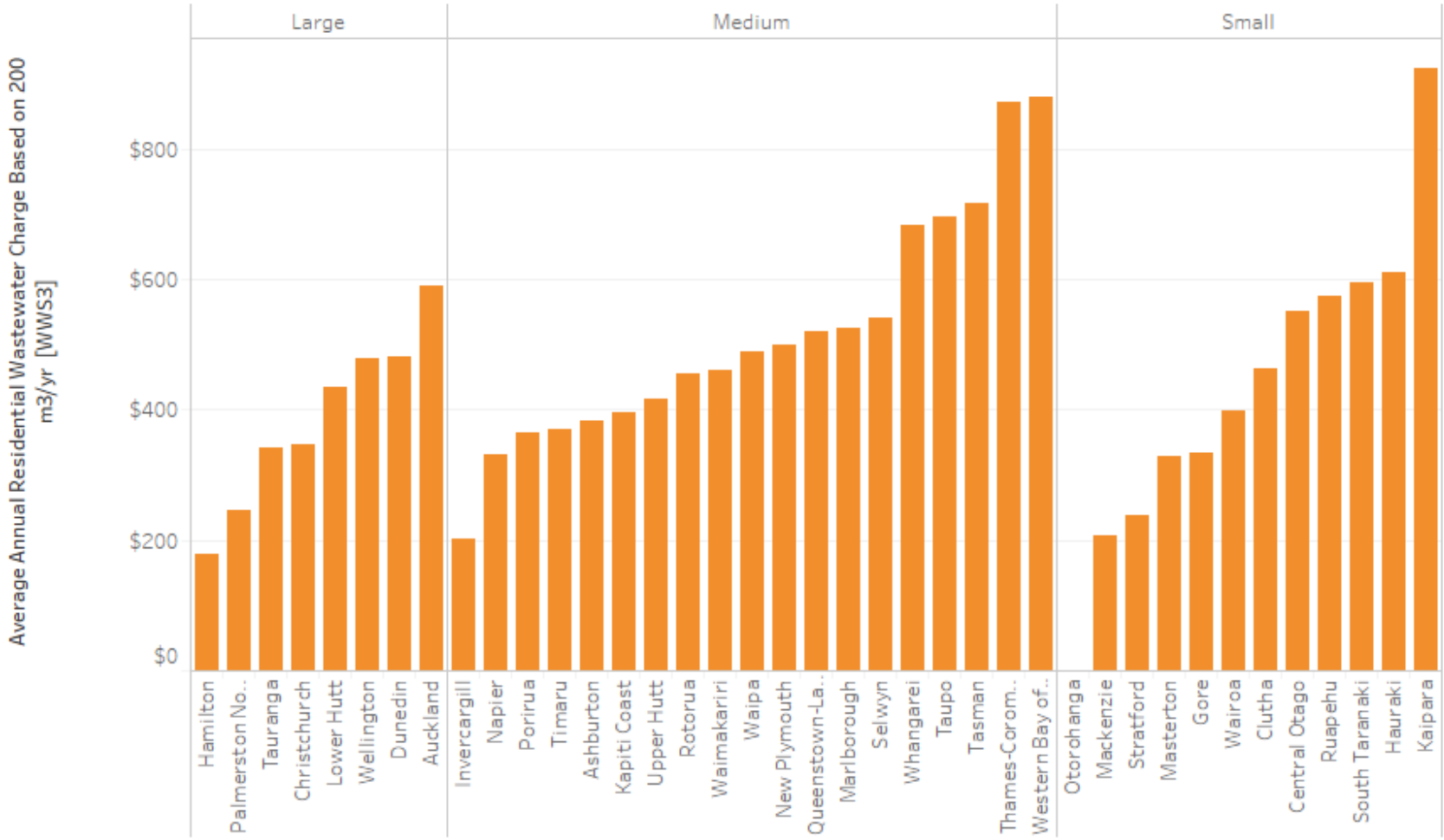
4.2 Charges

Figure 17: Residential water charges (GST inclusive) for a connection using 200m3 year[4]



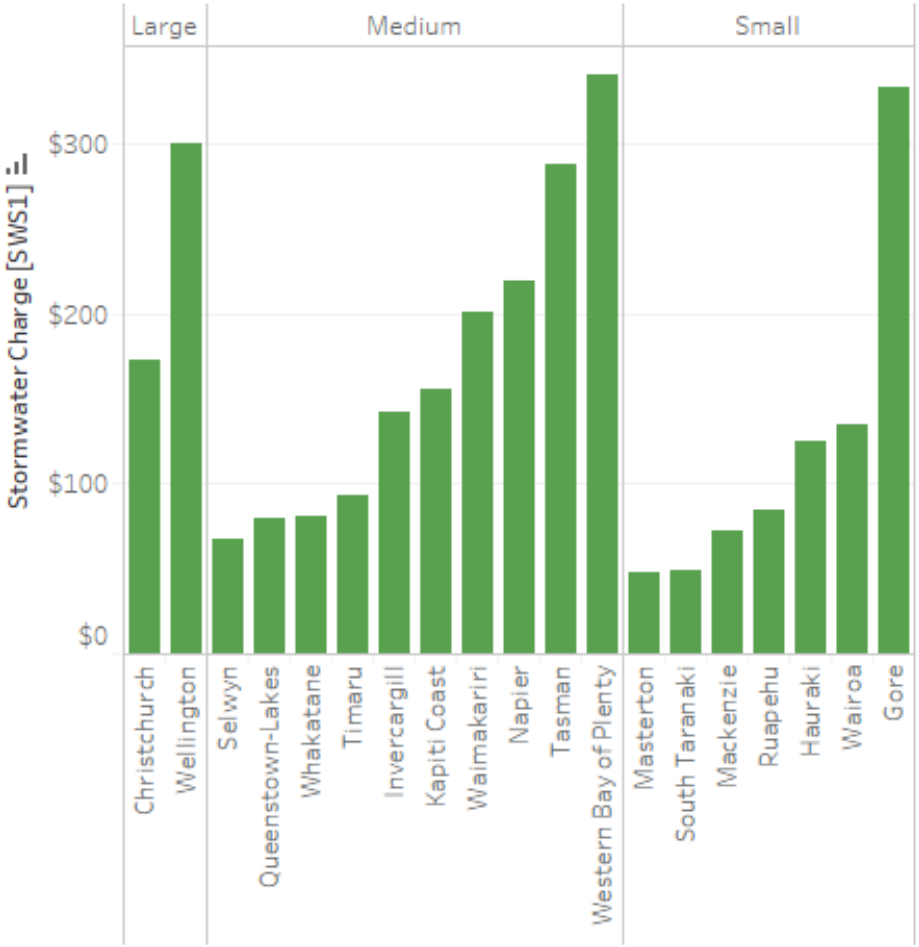
[4] Whakatane have 3 separate schemes, two of which are charged volumetrically. Figures used in this benchmarking graph are the average charges related to the two volumetric schemes. The third scheme is charges a fixed rate of $224.21/year
Taupo has different charging regimes for each of their 21 water schemes. The benchmarking figures shown in this graph are the average of schemes charges fixed rates. A further 8 schemes are charged using a rate applied based on land value.
Ruapehu charges separate rates for each of their water schemes. Values shown here exclude 3 schemes which have no fixed charges, where rates vary from $775 to $1,762.50

Figure 18: Residential wastewater charges (GST inclusive) for a connection using 200m^3 of water[5]



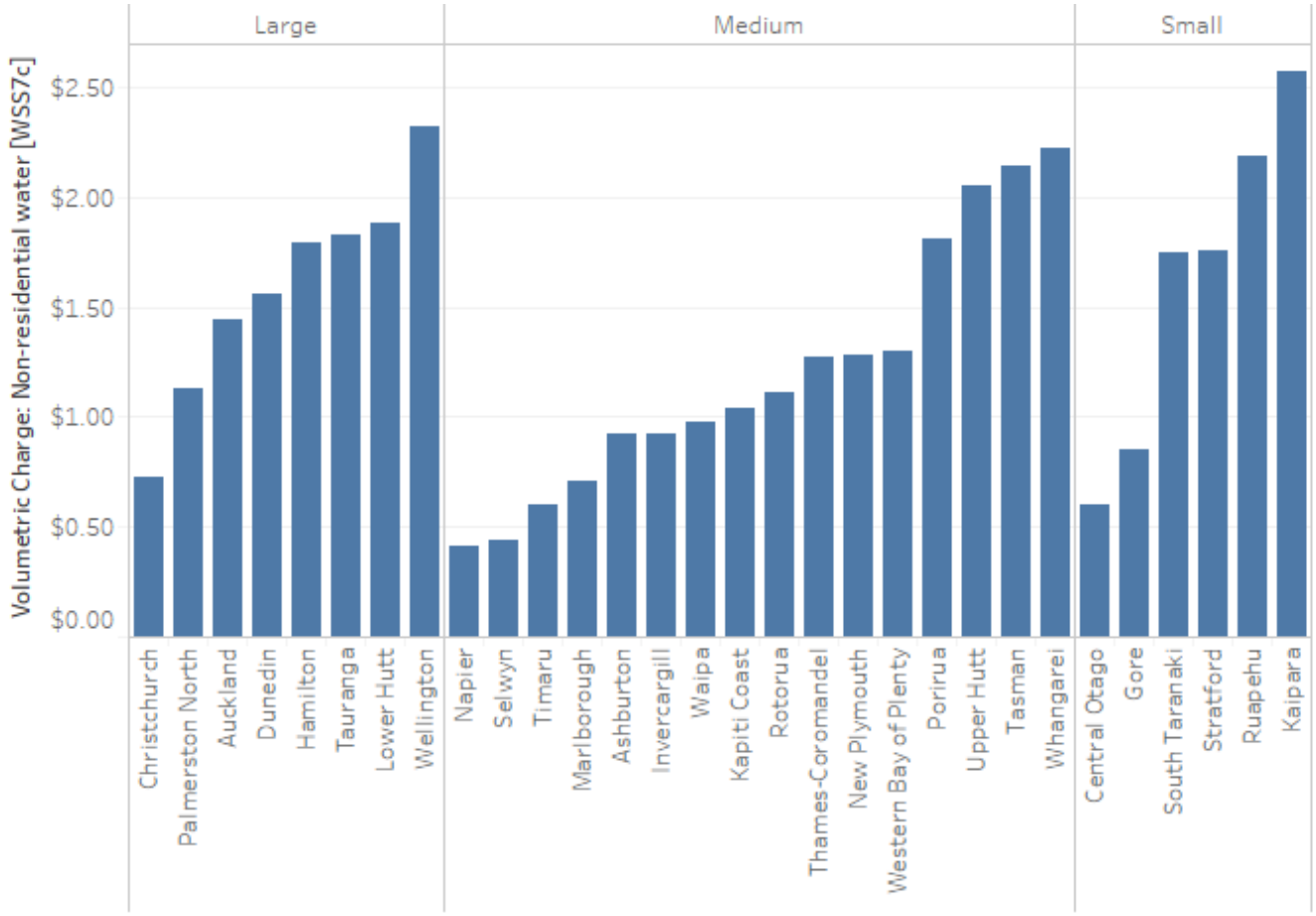
[5] The value for Dunedin shows the combined drainage rate which includes wastewater and stormwater charges

Figure 19: Stormwater charges (GST inclusive)[6]



[6] Stormwater charges are commonly included as a component of General Rates or Uniform Annual General Rates. Some, but not all, participants have determined stormwater charges based on average property values in the district, multiplied by the proportion of the general charge that relates to stormwater.

Figure 20: Volumetric charge (GST inclusive) per m^3 for non-residential water supply connections[7]



[7] Volumetric charges are not always linearly applied. Different forms of charging include (but are not limited to) free water allowances and stepped tariffs.

Table 2: Trade waste contaminant charges (GST inclusive)[8]

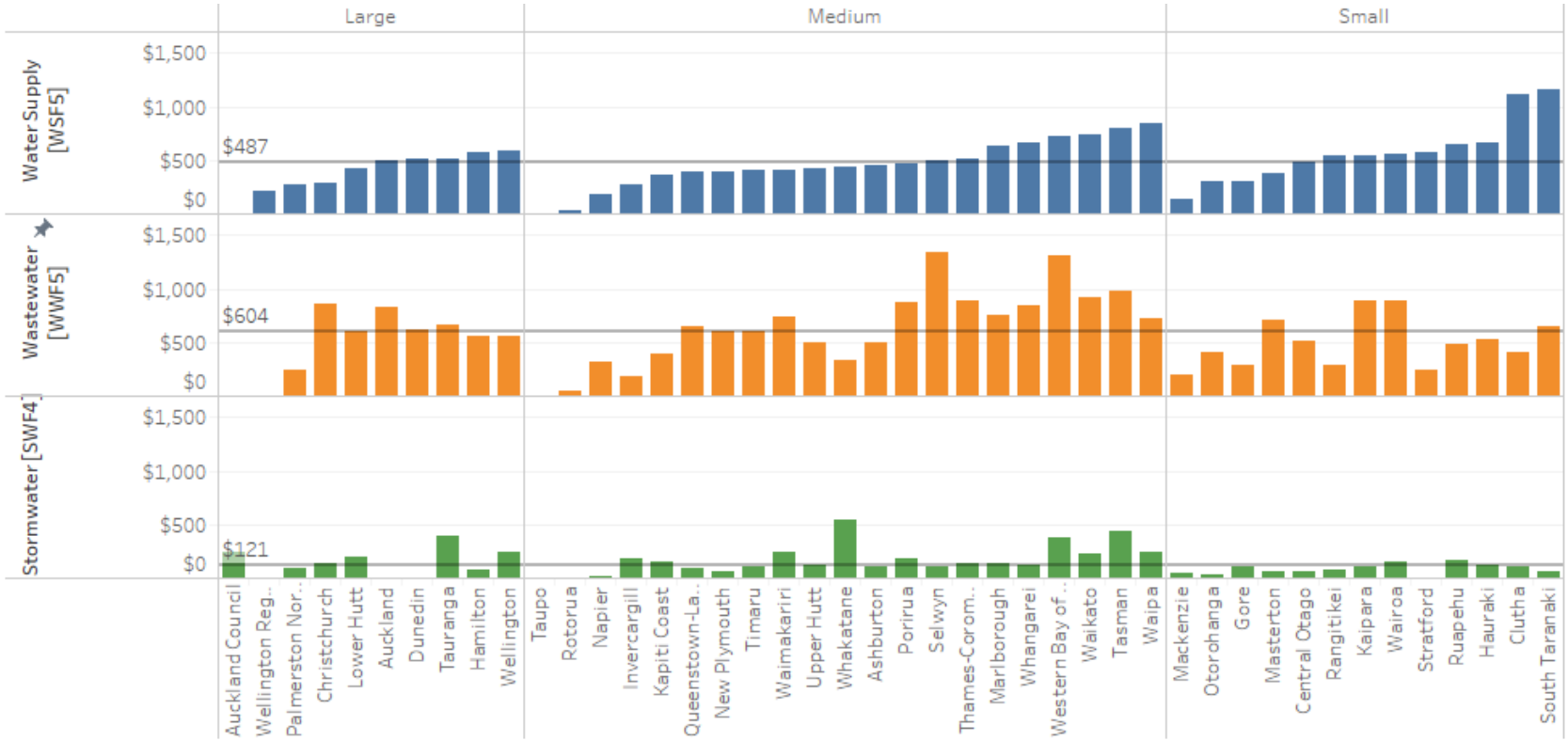
	Solids		Oxygen Demand				Nutrients		Heavy metals		
	SS ($/kg)	TSS ($/kg)	COD ($/kg)	CBOD ($/kg)	BOD ($/kg)	BOD5 ($/kg)	Total Phosphorous	TKN ($/kg)	Copper ($/kg)	Zinc ($/kg)	Nickle ($/kg)
Whangarei		0.58	0.52					0.68			
South Taranaki		2.51 [Eltham] 1.10 [Hawera] 0.42 [Other]	0.5 [Eltham] 0.46 [Hawera] 0.28 [Other]								
Rotorua				5.93							
Marlborough	Charge (price not provided)				Charge (price not provided)						
Dunedin		0.19				0.08					
New Plymouth	0.88				2.54				277	89.92	501
Invercargill	0.359				0.395						
Gore		0.42c/m3			0.33c/m3		$23.56/m3				
Christchurch		0.36			0.5						
Ashburton						1.9					
Upper Hutt		0.91	0.36								
Waimakariri	Charge (price not provided)				Charge (price not provided)						
Hutt		0.91	0.36								
Wellington	0.31 [Up to 1,575kg/day] 0.57 [Above 1,575kg/day]				0.32 [Up to 3,150kg/day] 0.71 [Above 3,150kg/day]						
Tauranga	1.73		0.66								
Palmerston North	0.7				0.4345		36.9405				

[8] Hauraki, Hamilton, Waipa, Selwyn also noted that they use contaminant based charges, however information was not provided on what these charges are.

5 ECONOMIC SUSTAINABILITY

5.1 Revenue

Figure 21: Revenue collected per property serviced[9]



[9] Per property revenue figures are skewed in areas with high non-residential water usage e.g. South Taranaki has 7 major connections which contribute to 16% of total consumption.

5.2 Expenditure

Figure 22: Operational expenditure per property serviced

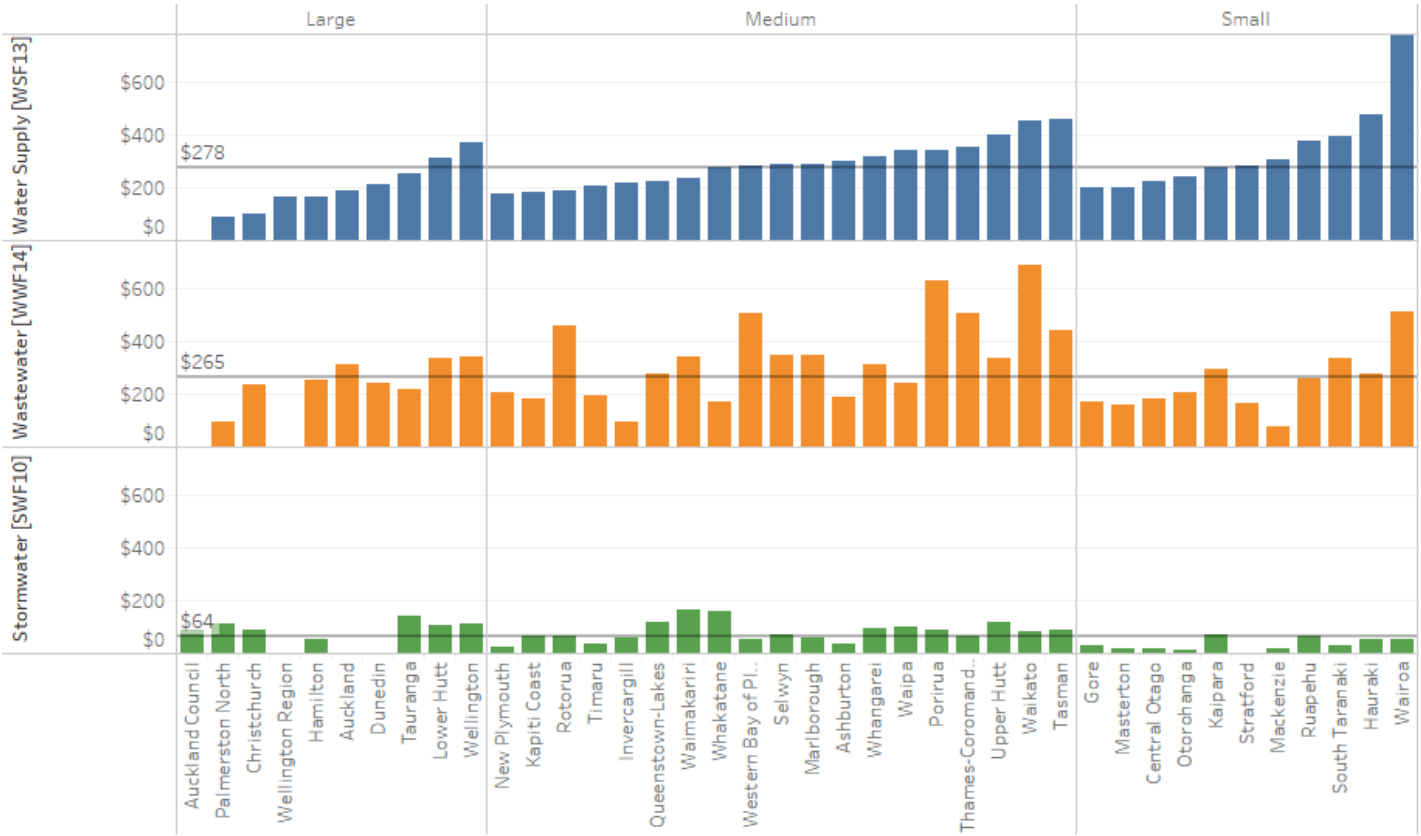
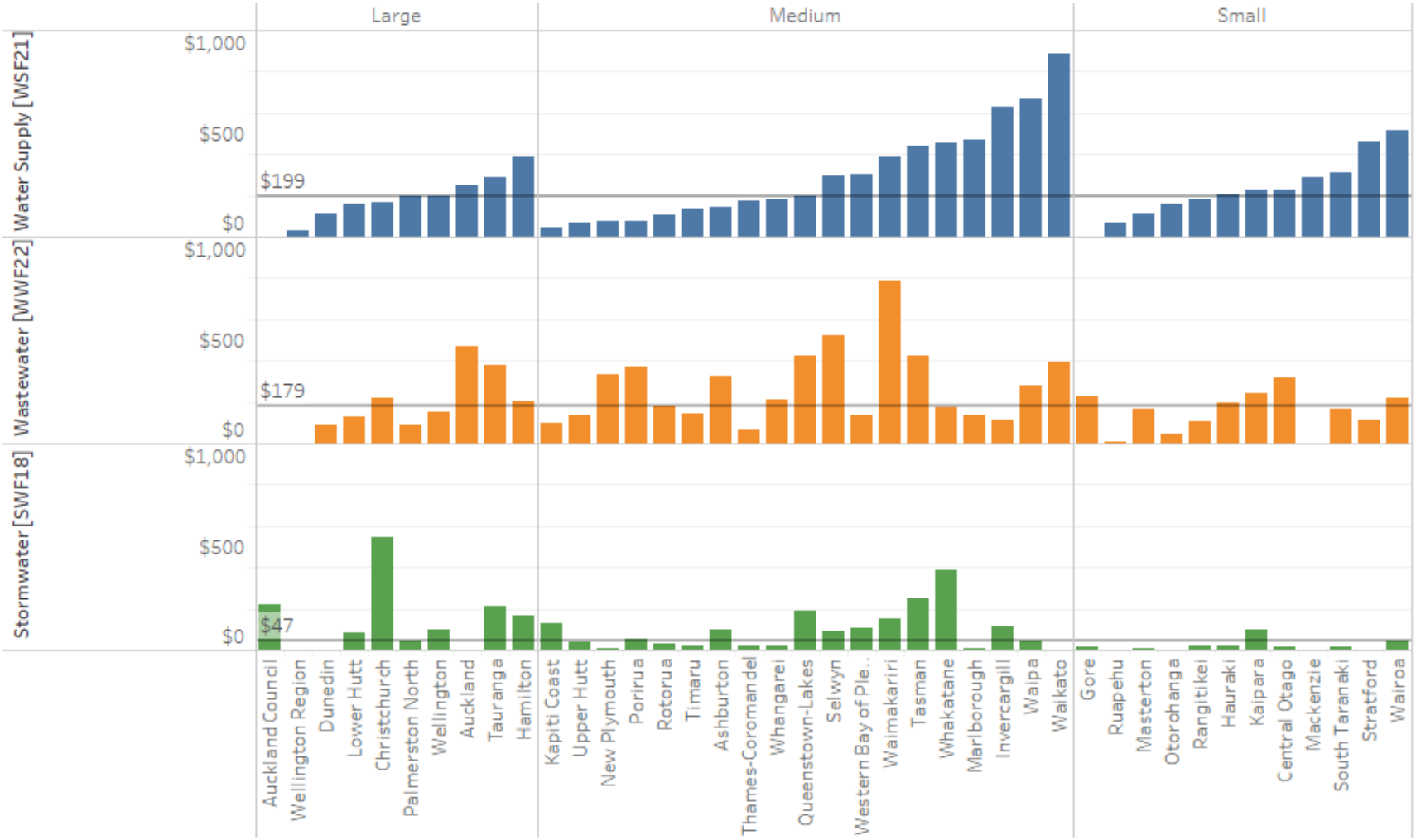


Figure 23: Capital expenditure per property serviced



5.3 Financial Benchmarks

Figure 24: Actual expenditure as a proportion of budgeted expenditure across water, wastewater and stormwater networks

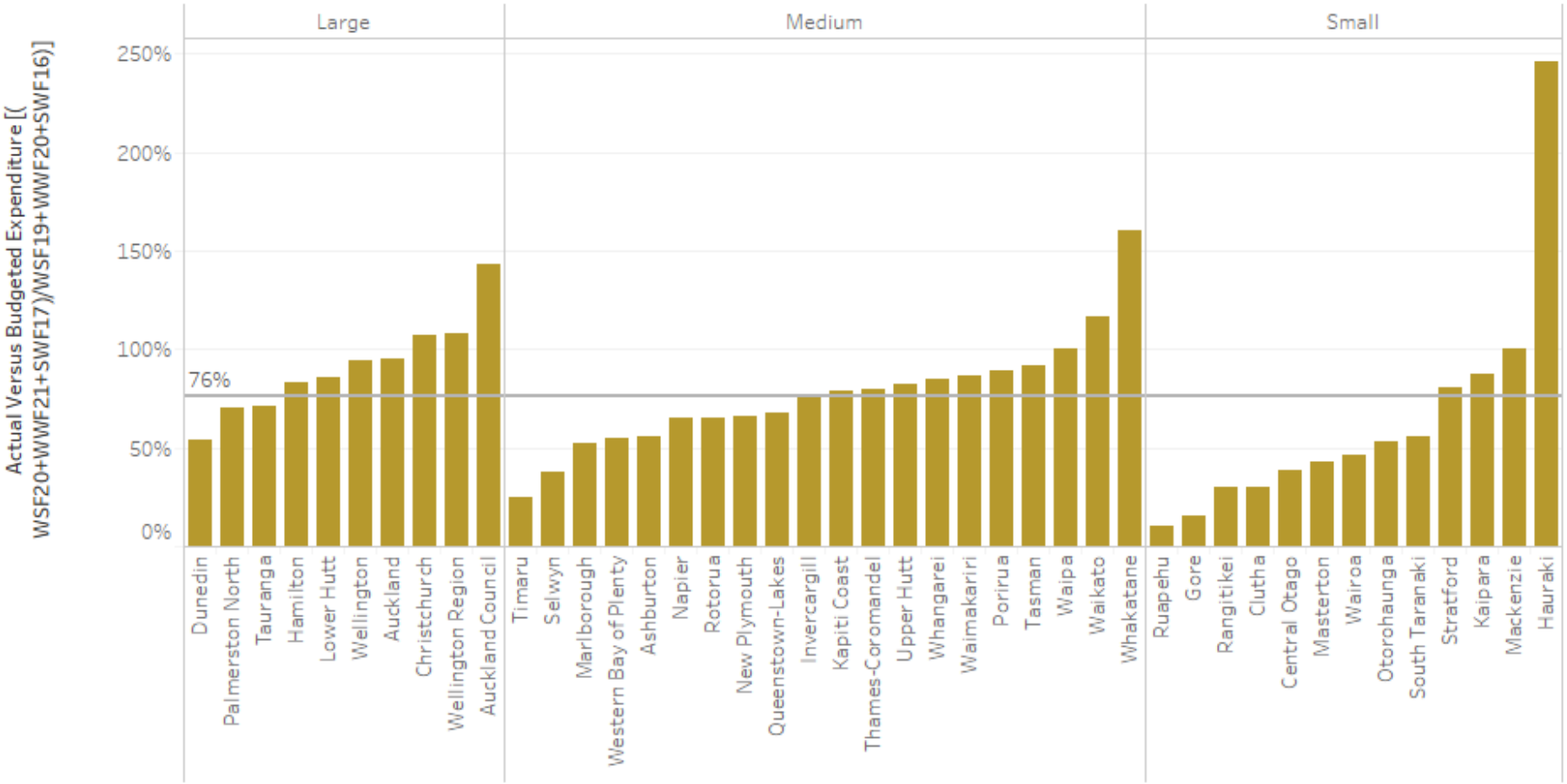
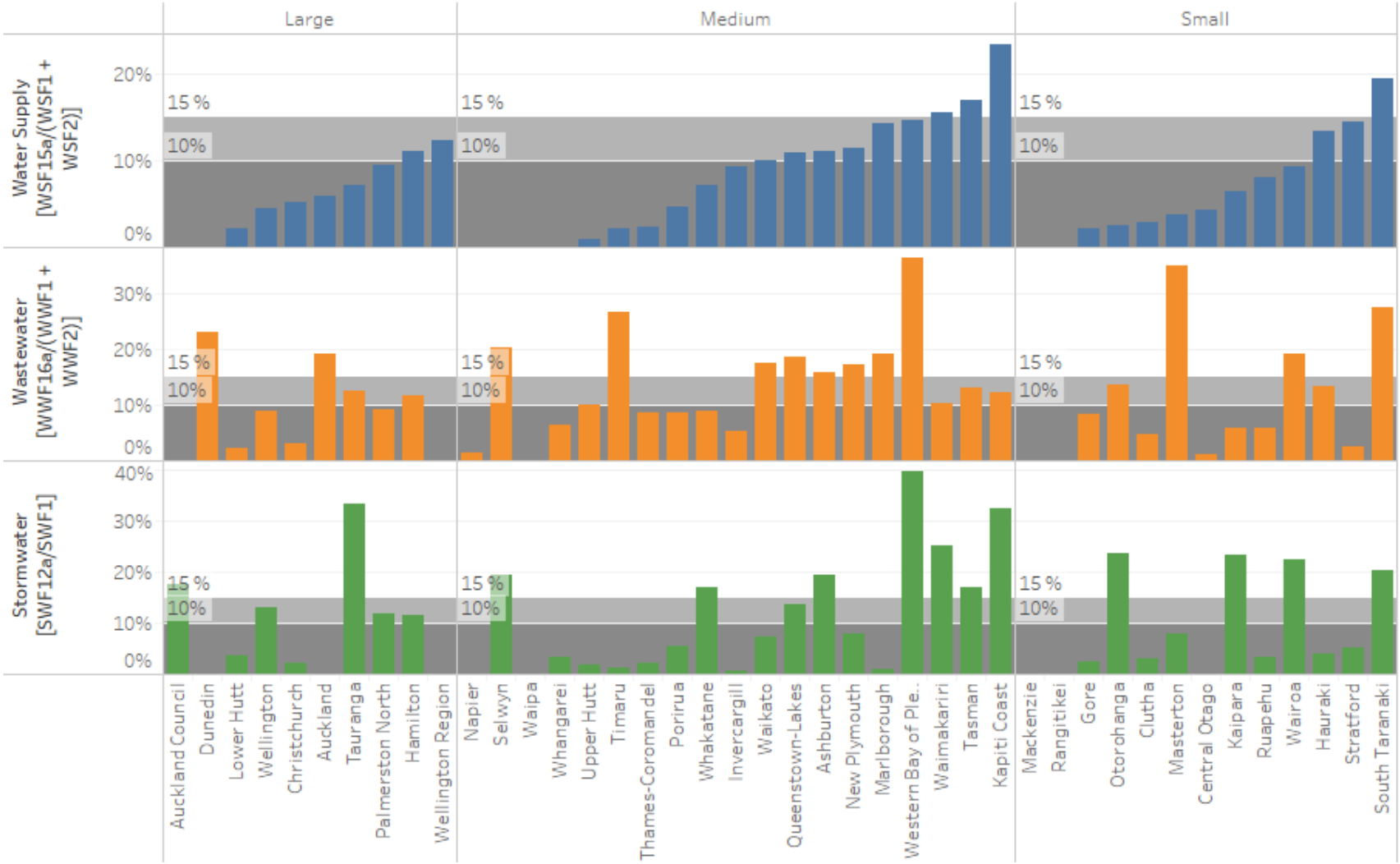
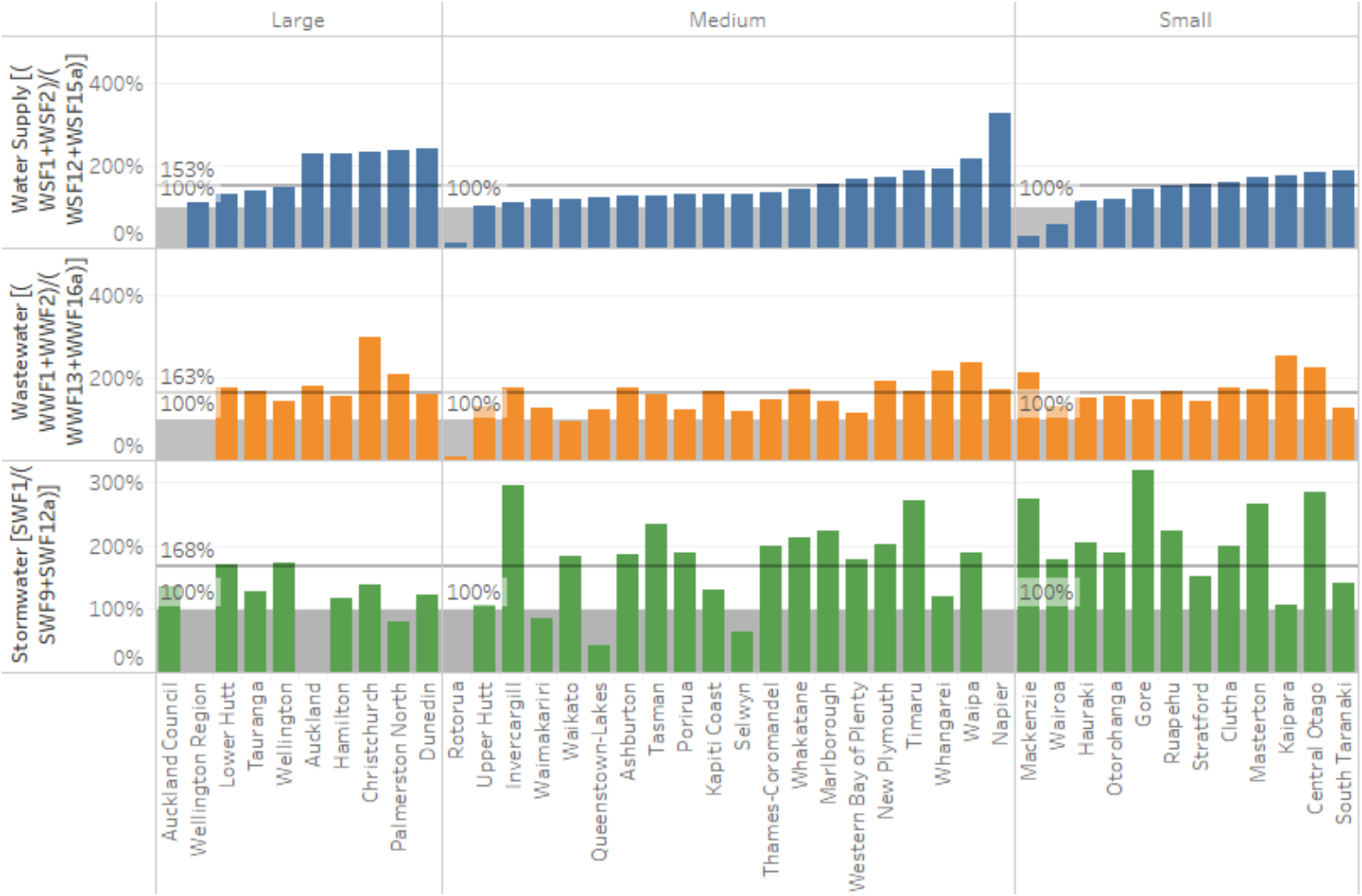


Figure 25: Interest as a proportion of revenue (excluding developer contributions) [10]



[10] Rotorua was a significant outlier and so has been excluded from the figure

Figure 26: Ratio of revenue to operating costs for water, wastewater and stormwater



6 RELIABILITY

6.1 Water Supply Interruptions

Figure 27: Number of unplanned interruptions to the water supply per 1000 properties connected

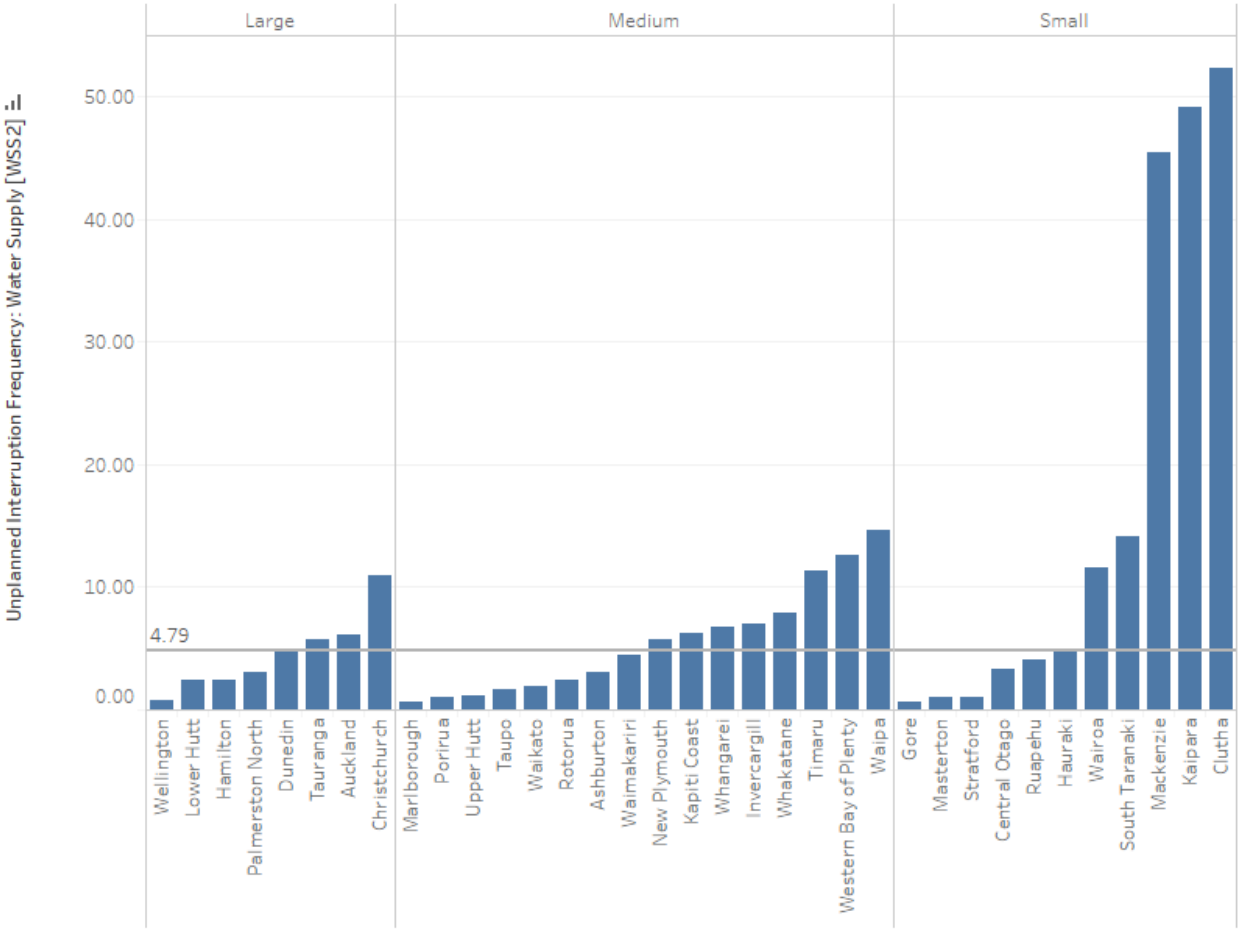


Figure 28: Average water pipeline age (years)

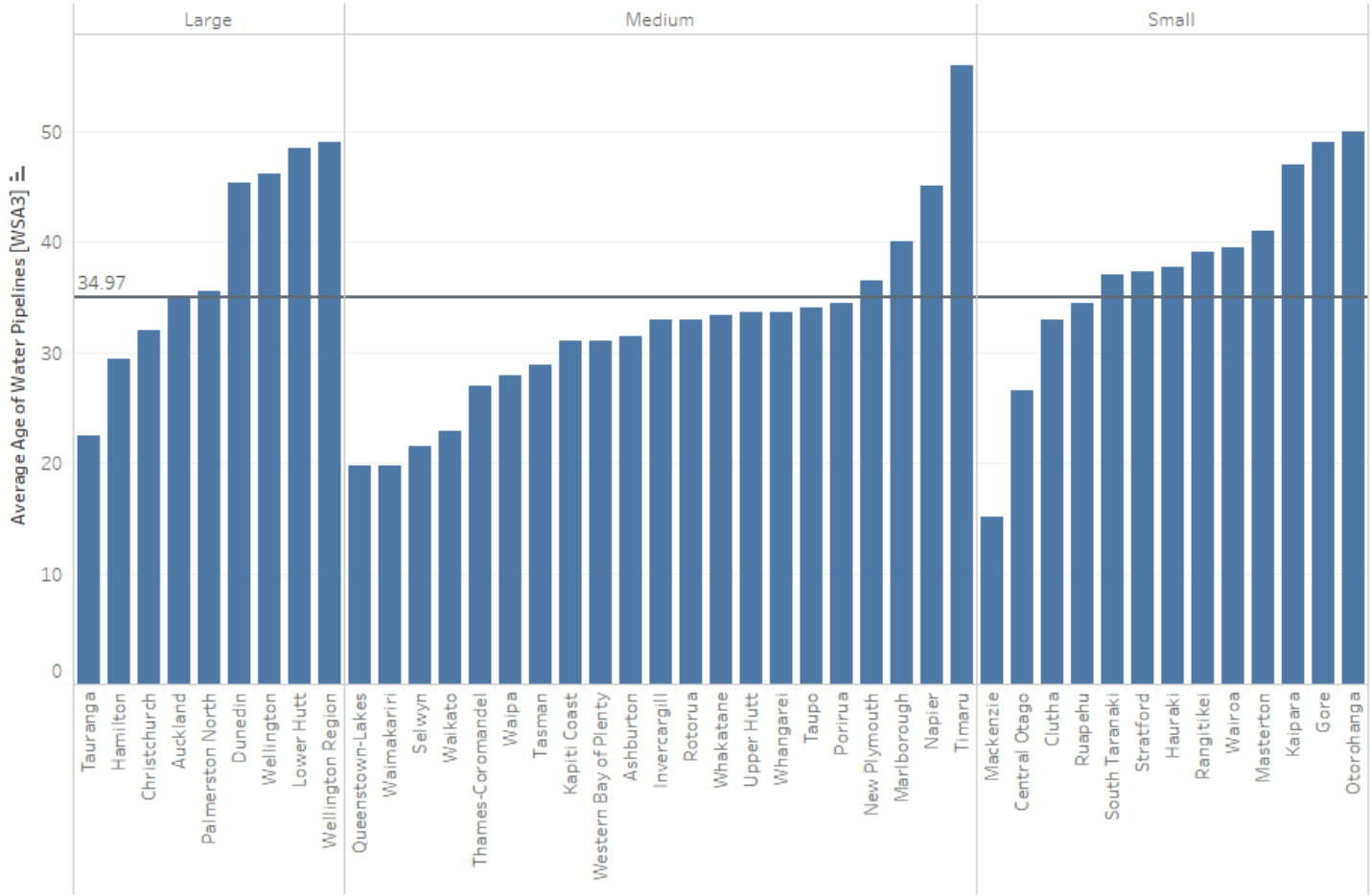


Figure 29: Average wastewater pipeline age (years)

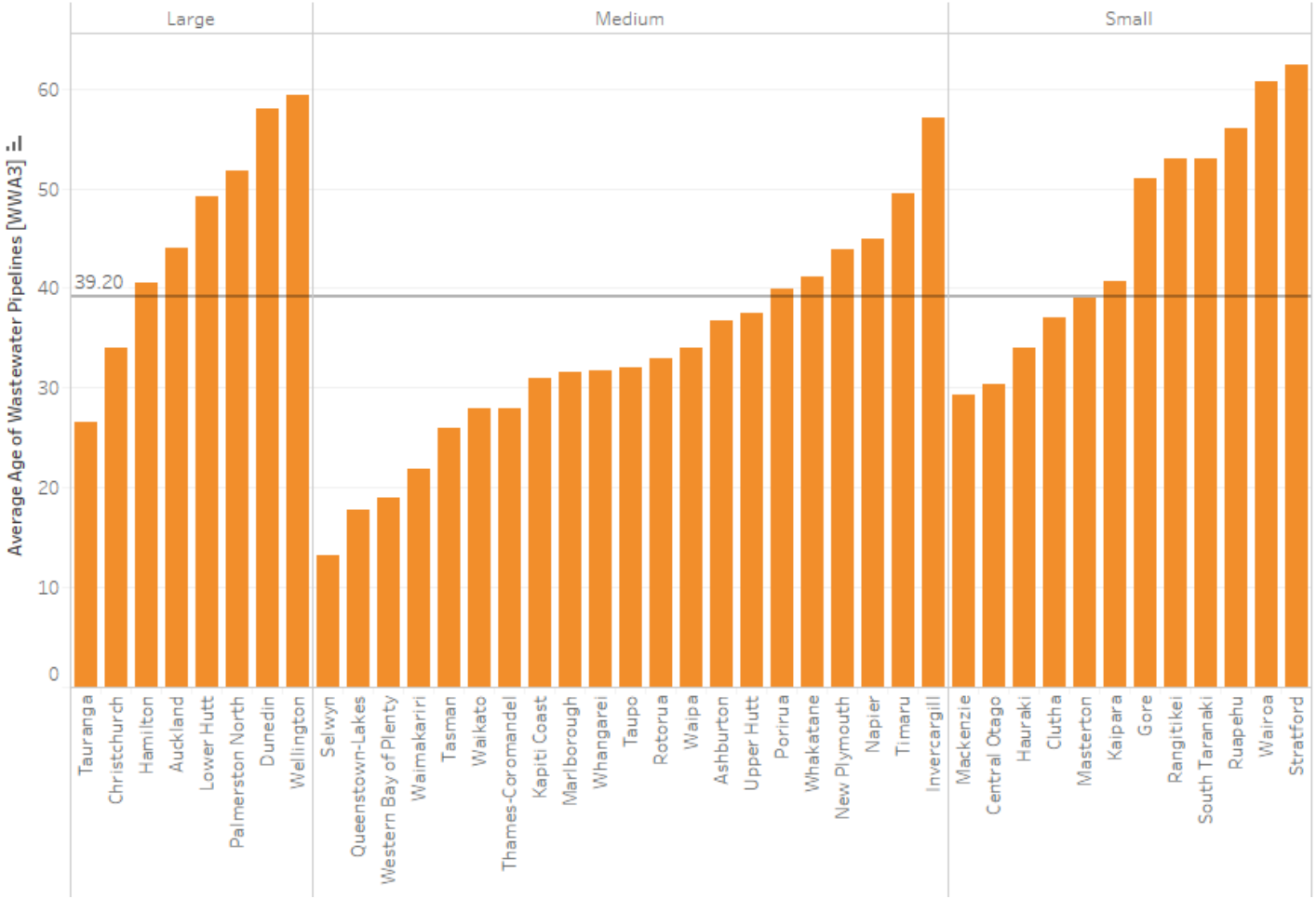


Figure 30: Average stormwater pipeline age (years)

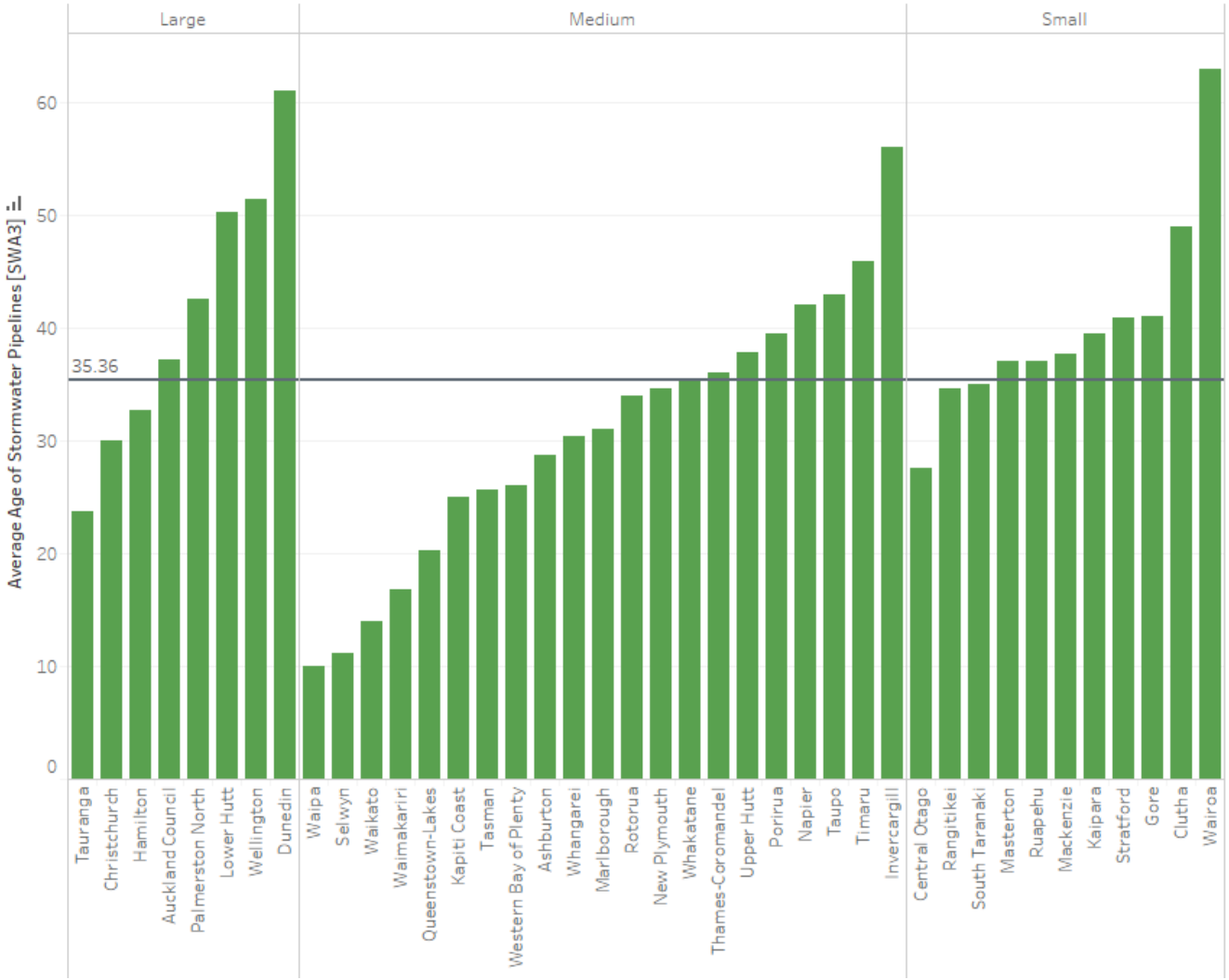


Figure 31: Proportion of pipelines that have not yet been assessed for a condition grading

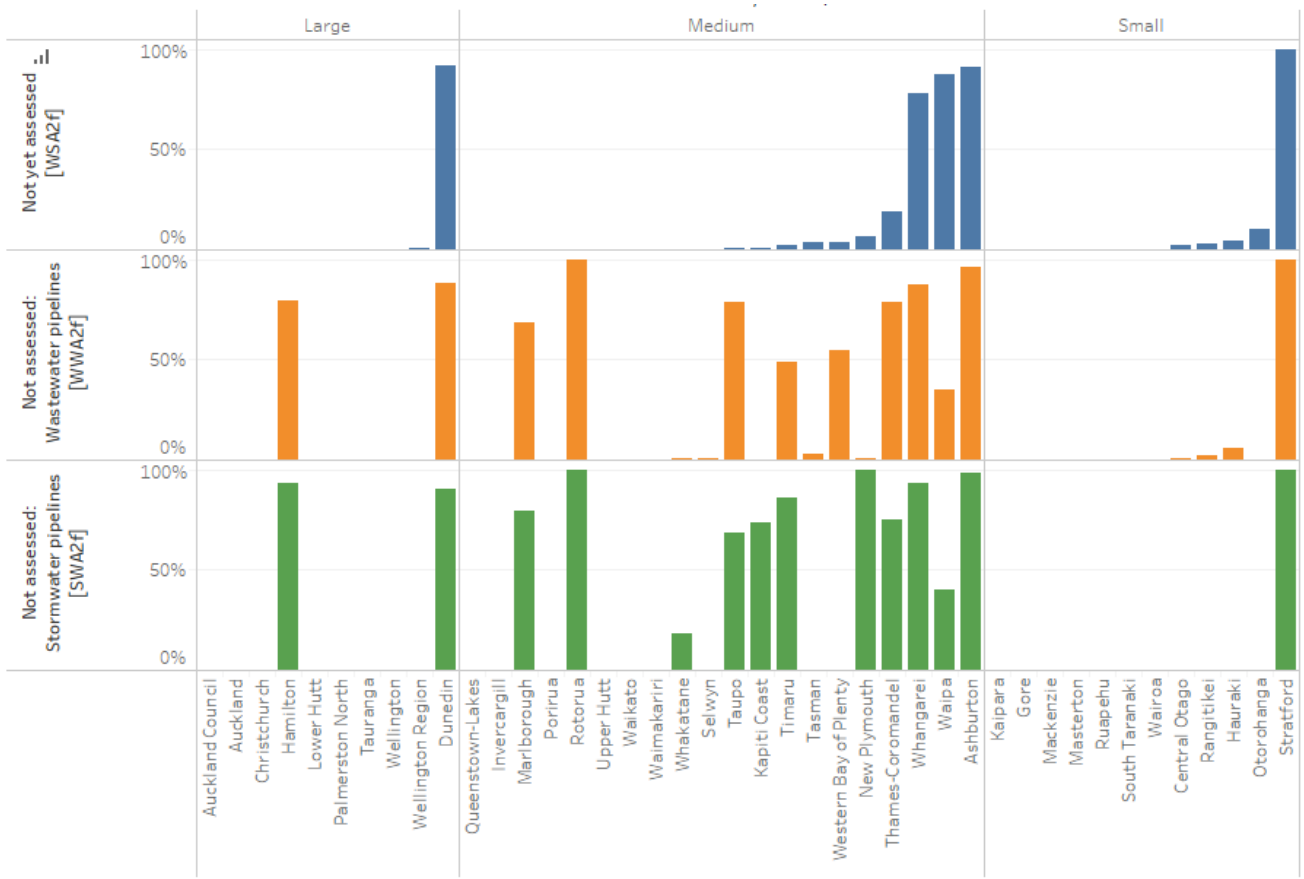


Figure 32: Percentage of water pipelines that have been assessed in a poor or very poor condition

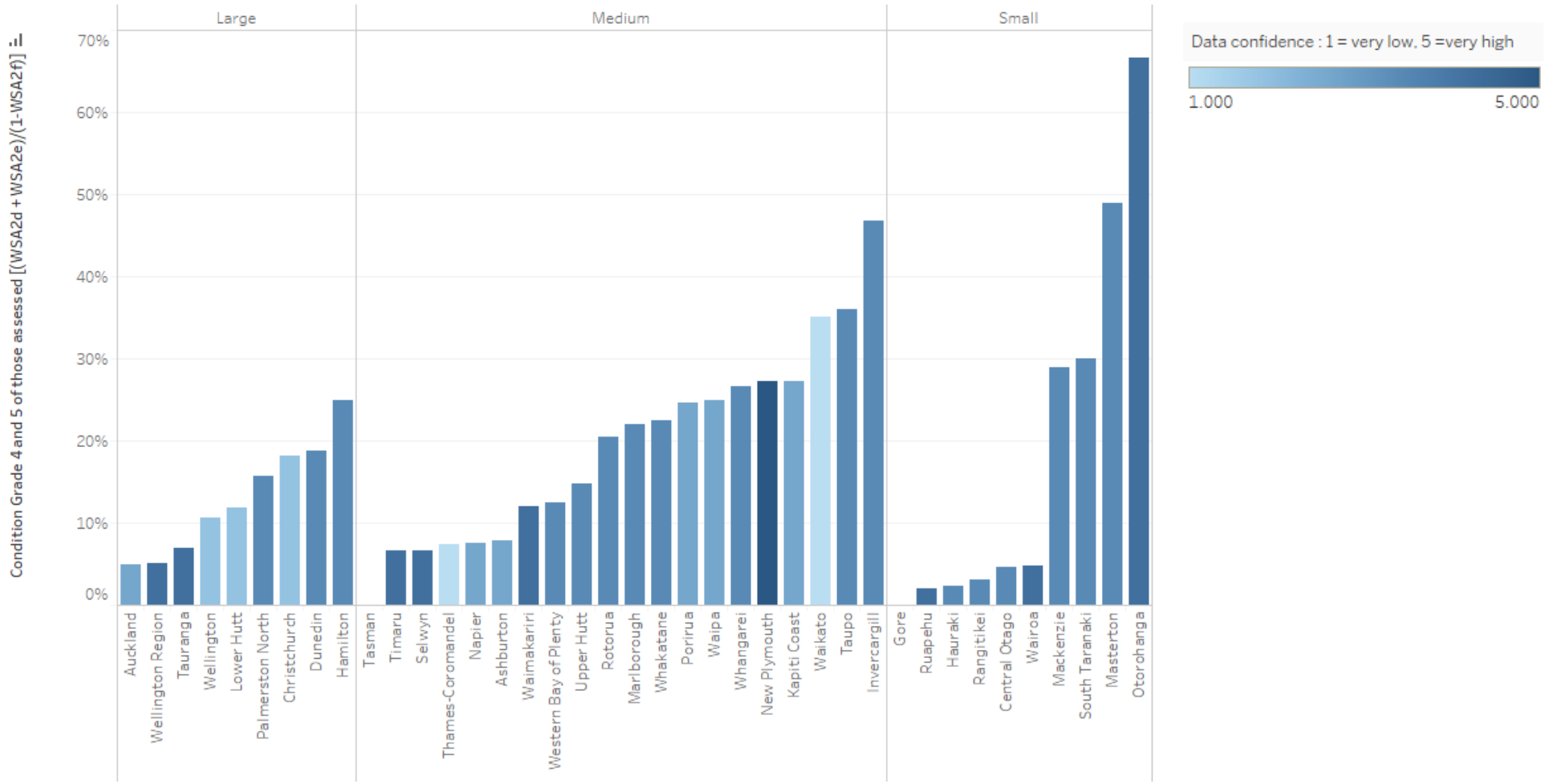


Figure 33: Percentage of wastewater pipelines that have been assessed in a poor or very poor condition

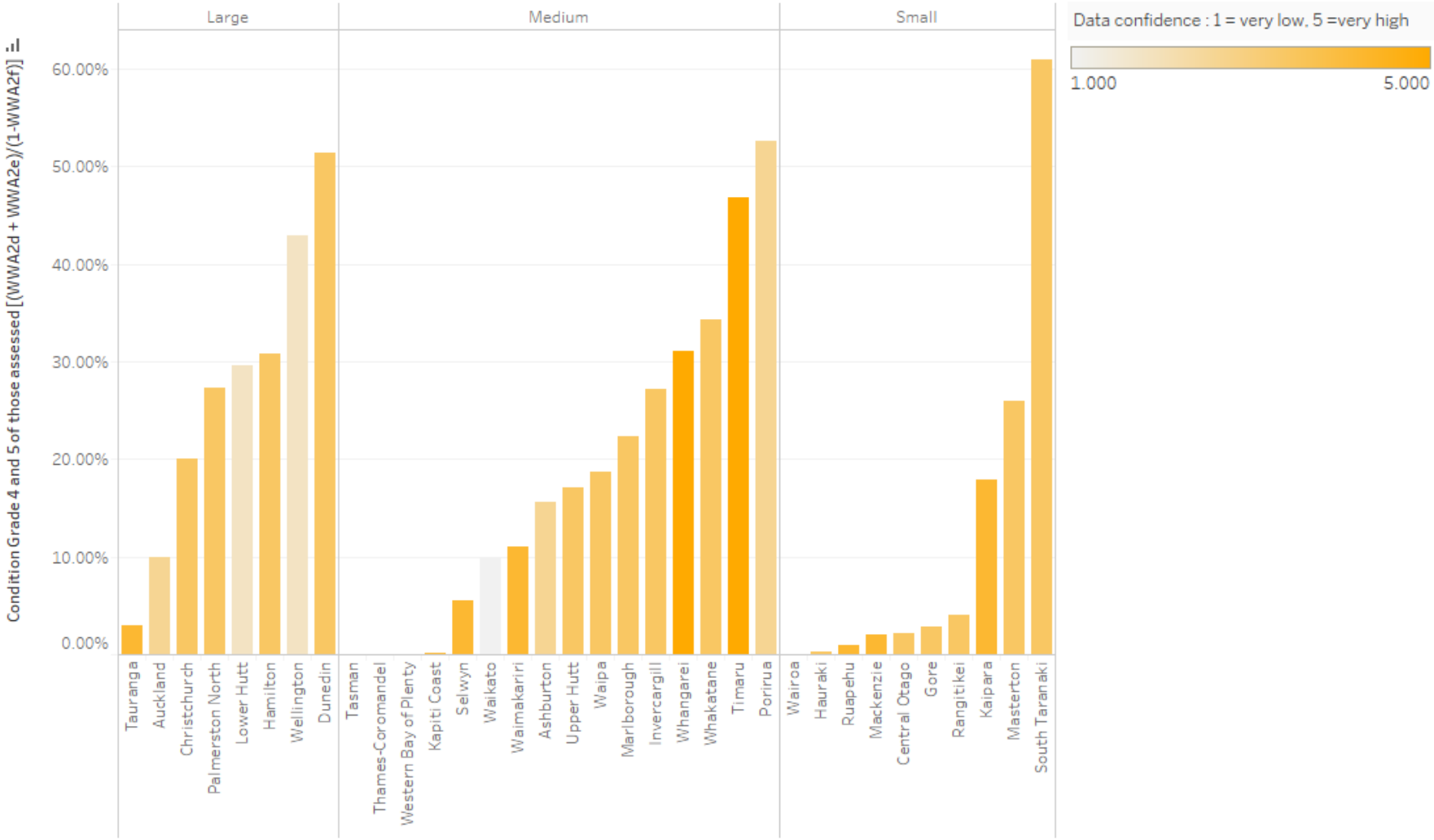


Figure 34: Proportion of stormwater pipelines that have been assessed in a poor or very poor condition

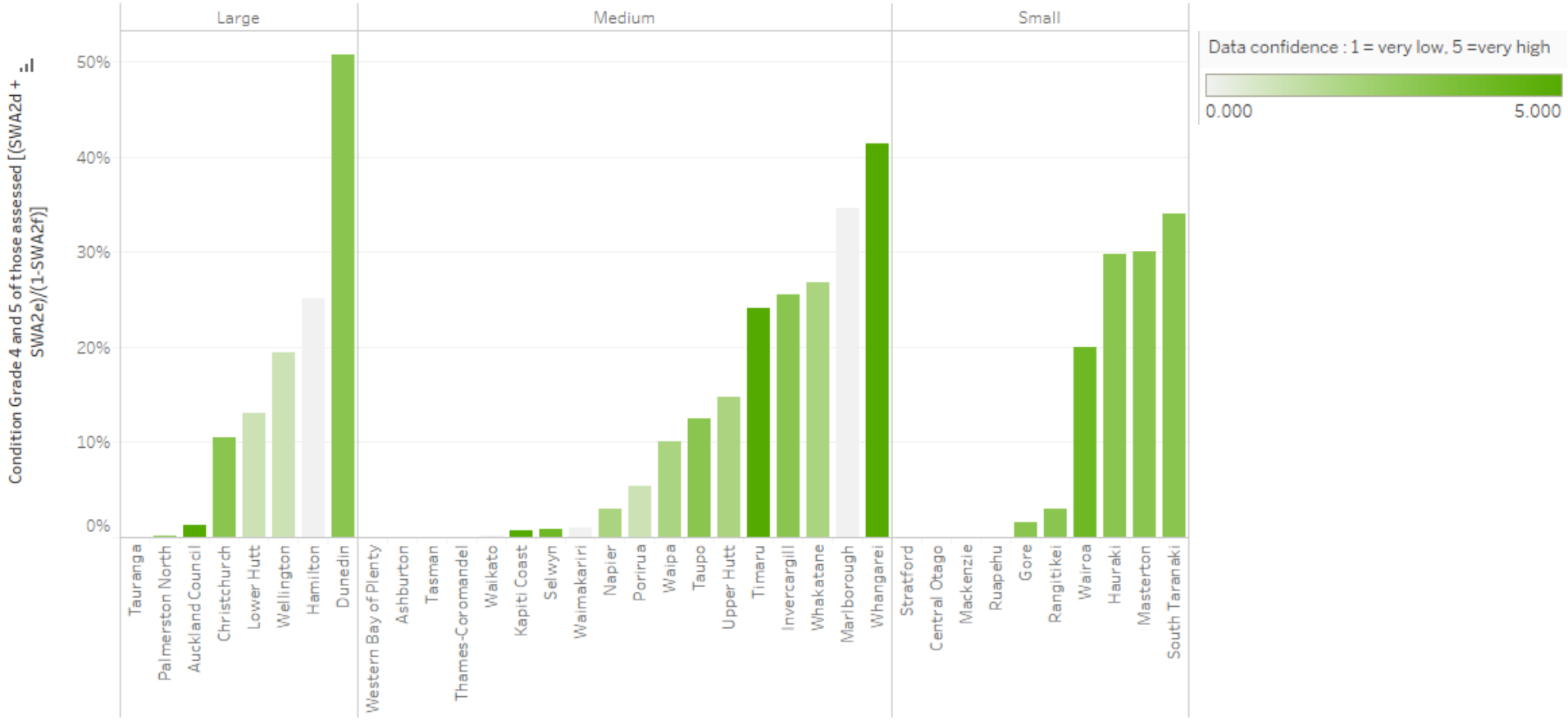


Figure 35: Inflow and Infiltration programs and KPI's

Participant	Performance Indicator	Description
Timaru	Under development	Modelling of reticulation and pump stations. Inspection of private properties is ongoing
Tasman		Contractor is constantly on look out for I/I and repairs completed as issues found. Annual budgets for investigations and CCTV to accurately locate sources or I/I, catchment by catchment. Owners of problem private reticulation instructed to make repairs at own cost. In year two of long term program. Working with building inspectors to improve water tightness of new private plumbing - this is proving highly successful. Over time improvements to stormwater system and secondary flow paths will also aid with I/I outcomes.
Masterton		Targeted Wastewater renewal programme. Adoptions of residential Private sewer laterals proposed for 2018 LTP. Enhanced CCTV and data collection programme. Targeted discharge minimisation.
MacKenzie		Smoke testing to target I/I
Kapiti	Under development	Recalibrated model for Paraparaumu/Waikanae identified areas for further investigation
Invercargill		Monitoring of Constructed Overflows Flow monitoring and Hydraulic Model to identify RDII areas Mains and Laterals Renewal Programme
Hamilton	0-22% range across 27 catchments	Investigated and analysed the severity of I/I to include featured in the renewal strategy to be implemented during the 18-28 LTP (funding approval dependant)
Christchurch	Estimate 15% (based on a small number of catchments)	
Ashburton		Gully trap/downpipe inspection programme. CCTV surveys.
Palmerston North.		Updating and re-calibrating of wastewater model in progress. Renewal of wastewater pipes has been prioritised in catchments with high I&I indicators. A targeted I&I city wide programme is to be initiated from 2018-19 (subject to 10 year plan adoption)
Waipa		CCTV investigation. Pipe renewals
Wairoa		CCTV program for 30% of network complete. Pipe relining commenced.
Watercare		I&I program commenced in Mellons Bay with 1560 properties investigated and 44 defects identified. 50% of defects have been remedied by property owners.
Western Bay		Online monitoring underway of WW through network Review of I&I based on flow monitoring and wastewater model undertaken.
Ruapehu		CCTV, smoke testing, pump station checks
Dunedin		All renewals for the foreseeable future are targeted at areas of high I&I
Tauranga		For an ARI10 (1hr duration) – April 2013:- WWTP1 – SWI 6.5, GWI1 4.71%, GWI2 231.5 L/p/d, RDII 0.62% WWTP2 – SWI 2.61, GWI1 17.2%, GWI2 221.5 l/p/d, RDII 0.66%
South Taranaki		KPI metrics measured for each treatment plant include GWI1, GWI2, RDII and PWWF Internal metric of max instantaneous RDII used to represent inflow up to 4 hours after rainfall Weighted average combined 2016-2017 annual RDII 7.3% Max instantaneous RDII 53%, GWI1 45% GWI2 359l/p/d, PWWF 7.2.
Wellington City, Porirua, Hutt, Upper Hutt	Under development: anticipate a 10% threshold	

7 RESOURCE EFFICIENCY

Figure 36: Volume of water supplied to participant systems in 2016-17 (m3)

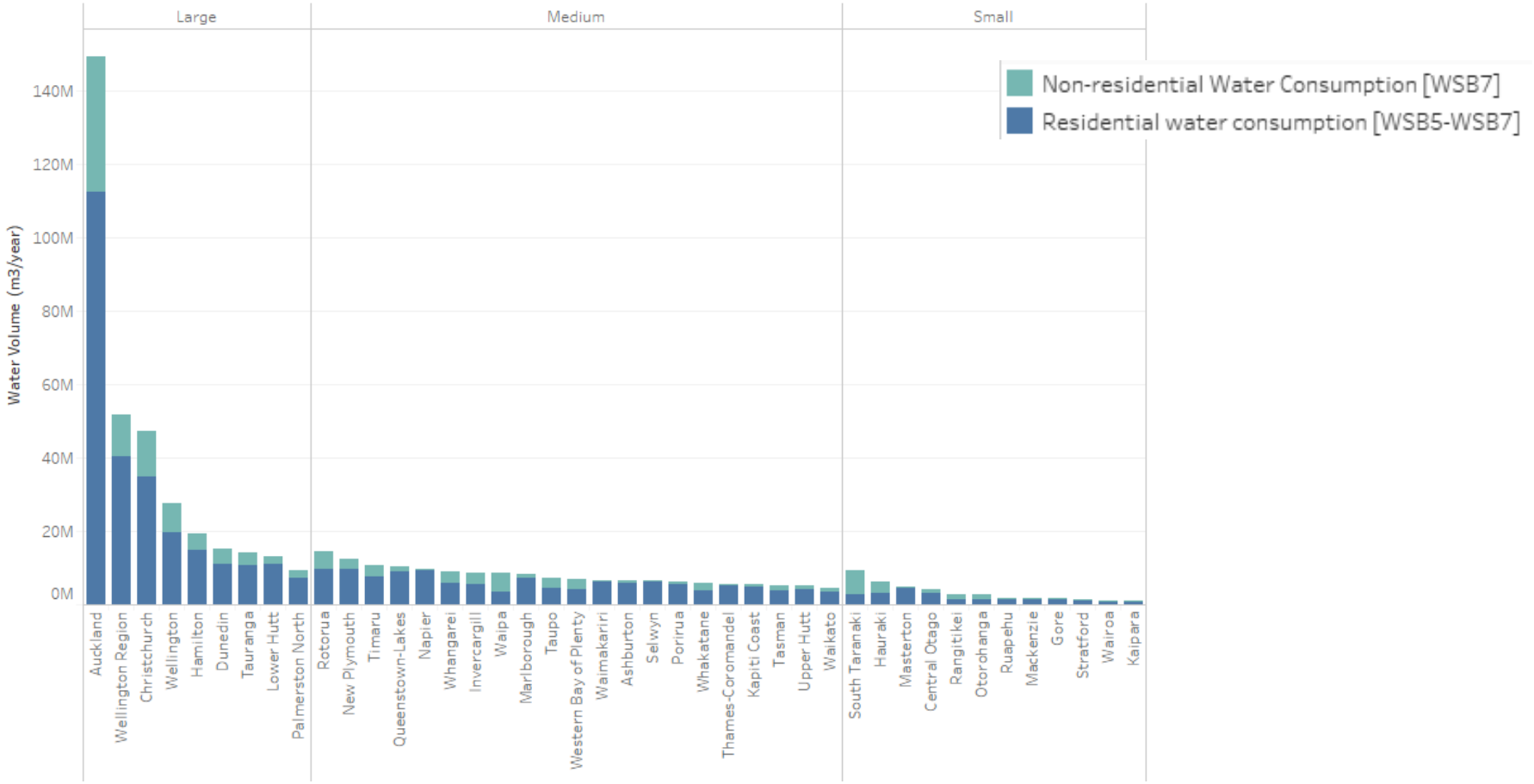


Figure 37: Volume of water supplied (m3/year) to large size participant systems

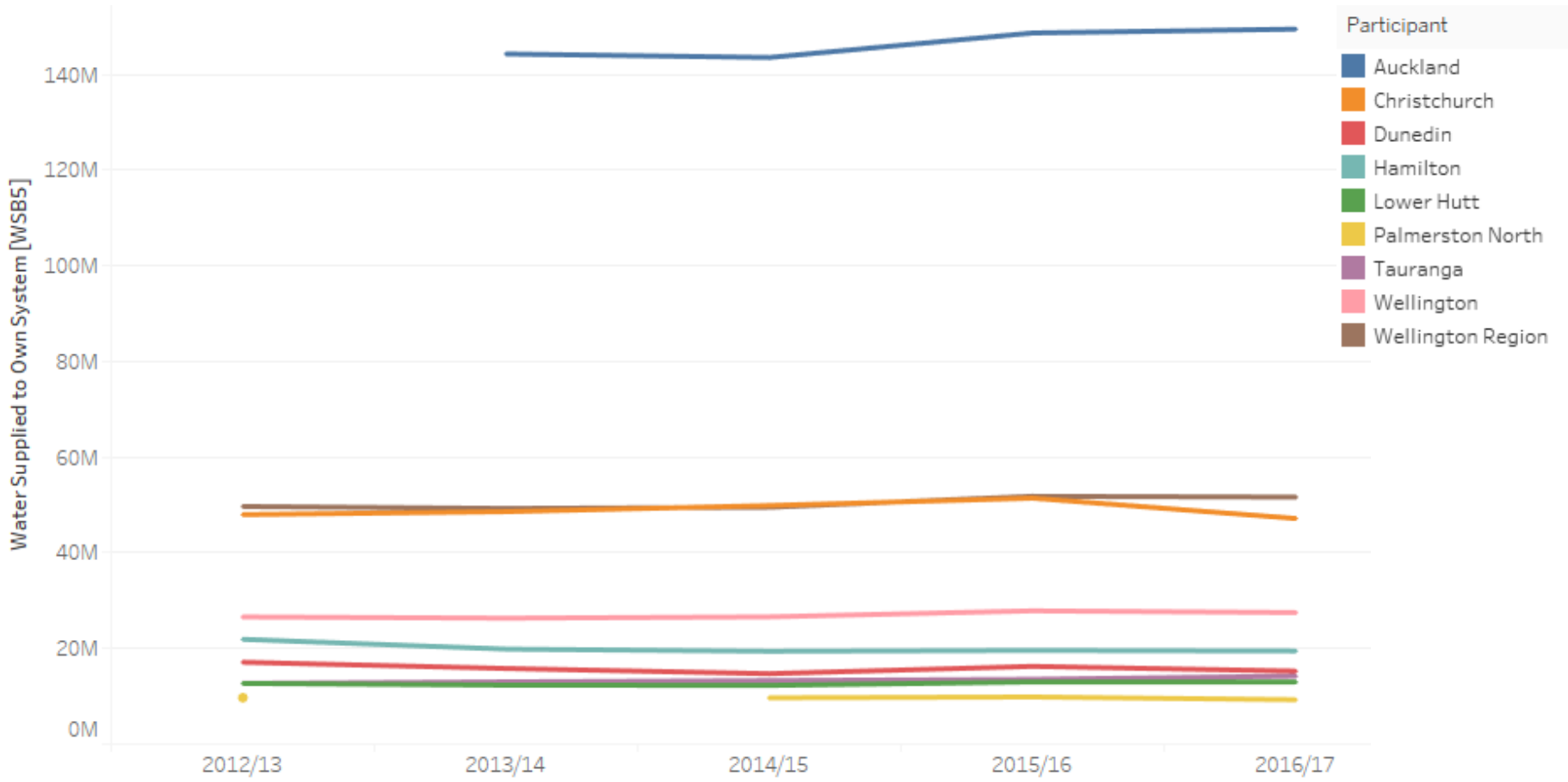


Figure 38: Volume of water supplied (m3/year) to medium size participant systems in the north island

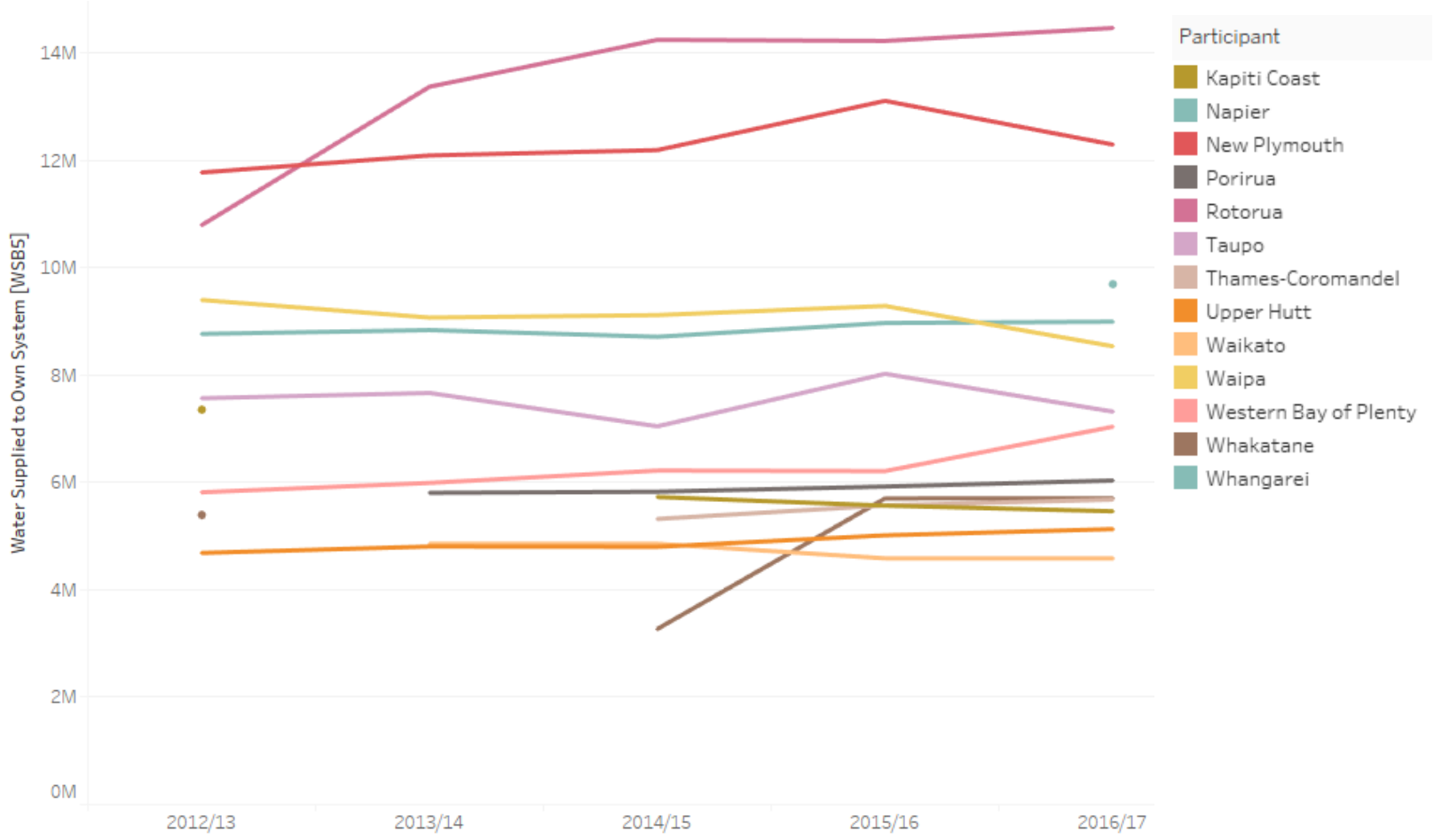


Figure 39:: Volume of water supplied (m3/year) to medium size participant systems in the south island

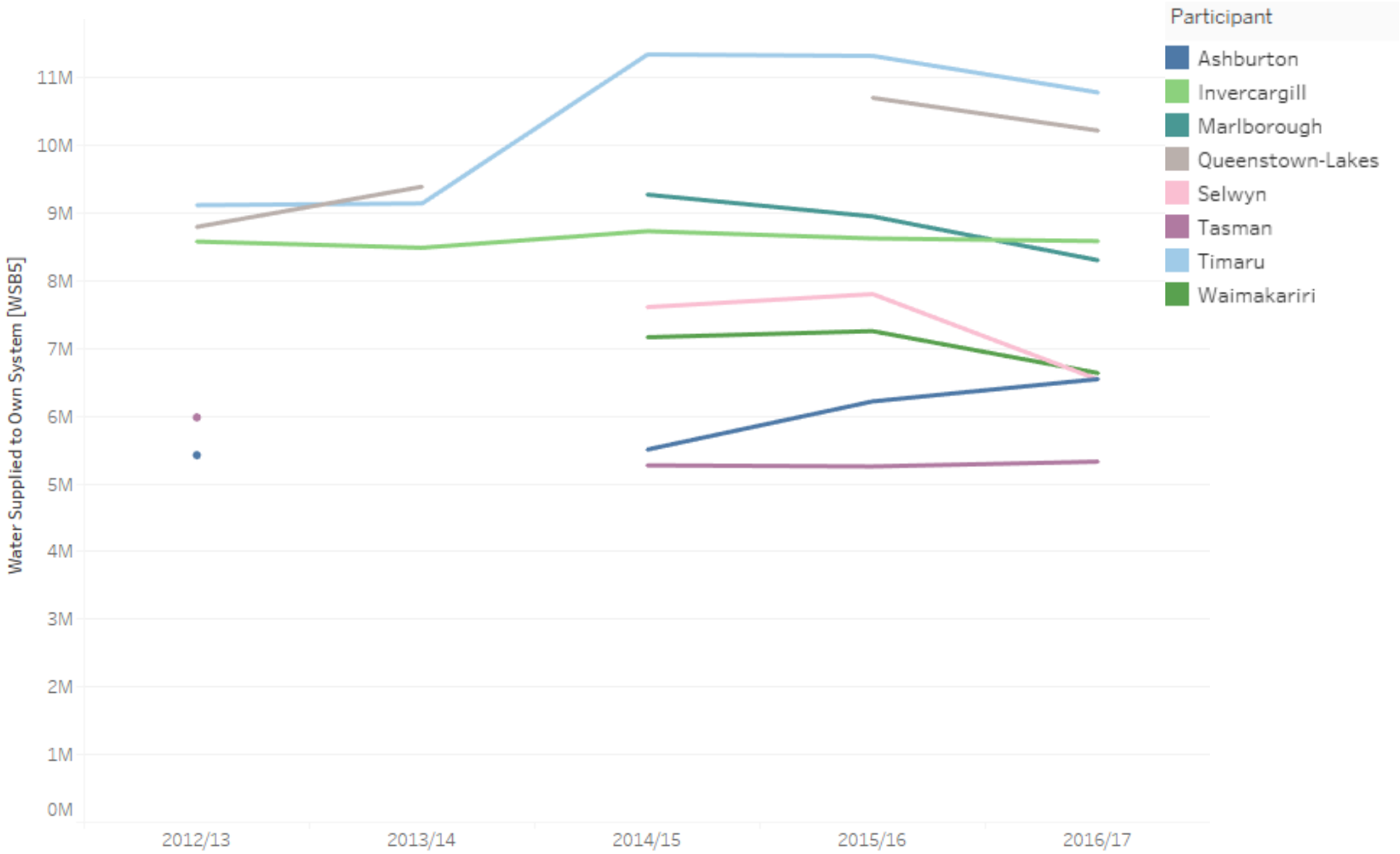


Figure 40: Volume of water supplied (m3/year) to small size participant systems

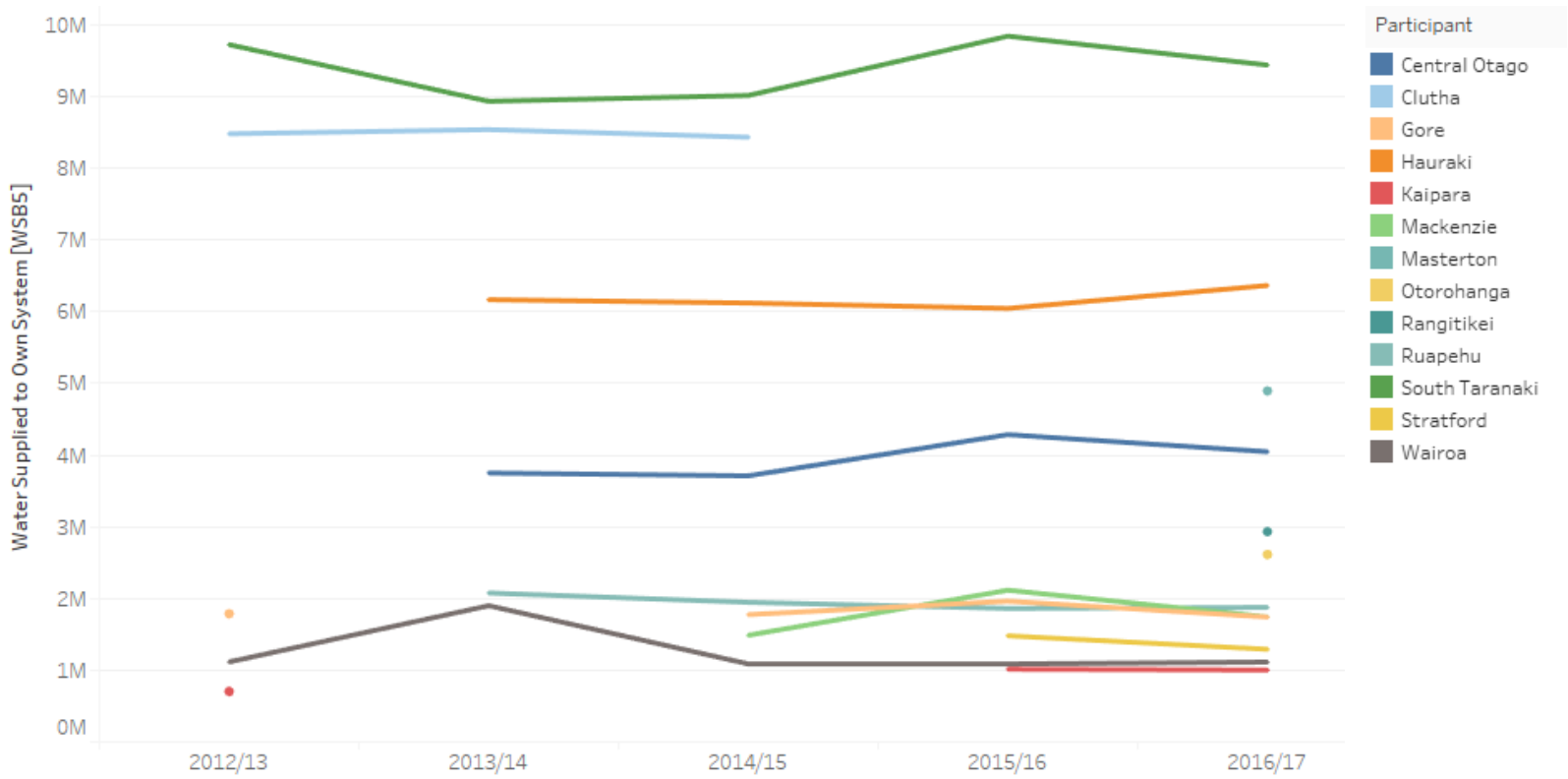


Figure 41: Percentage of non-residential connections with water meters

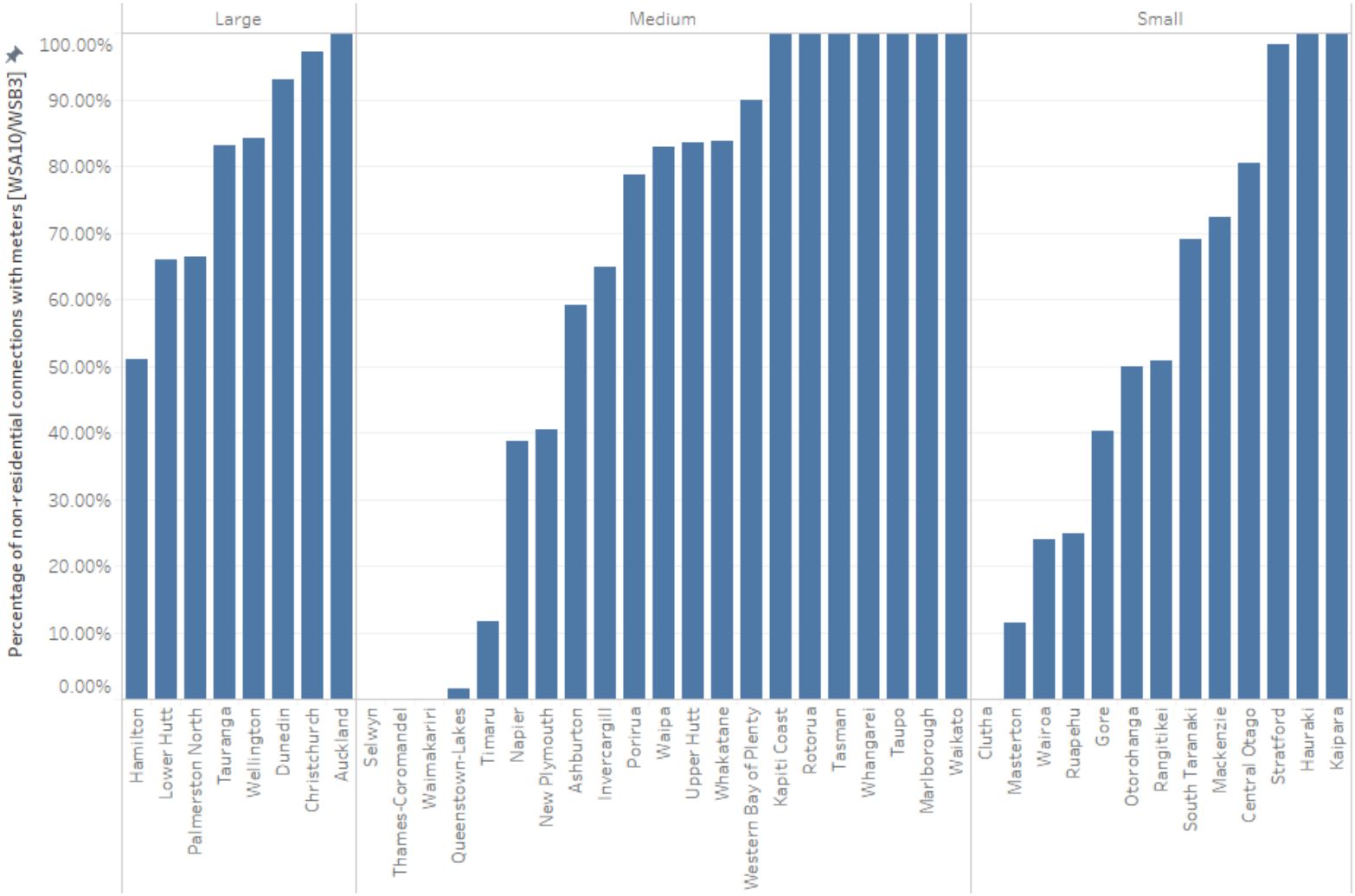


Figure 42: Total number of water restrictors installed on participant systems

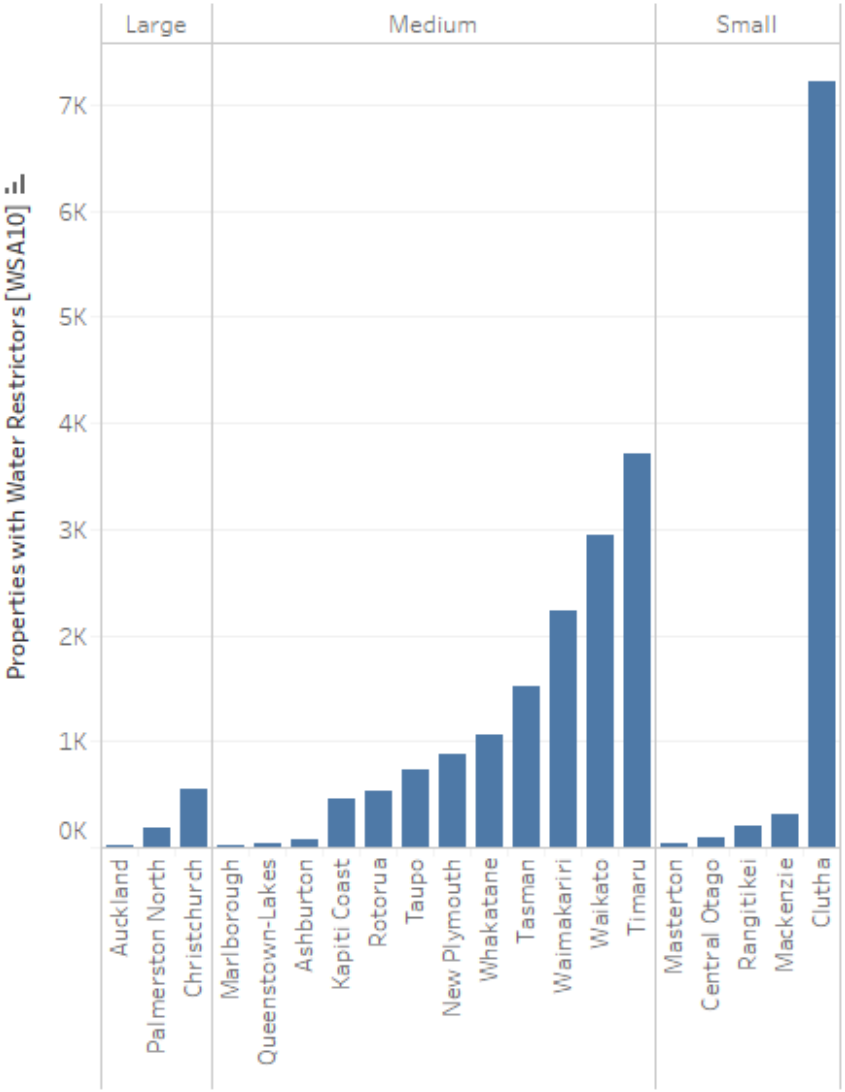


Figure 43: Current annual real water losses for large participant systems (litres/service connection/day)

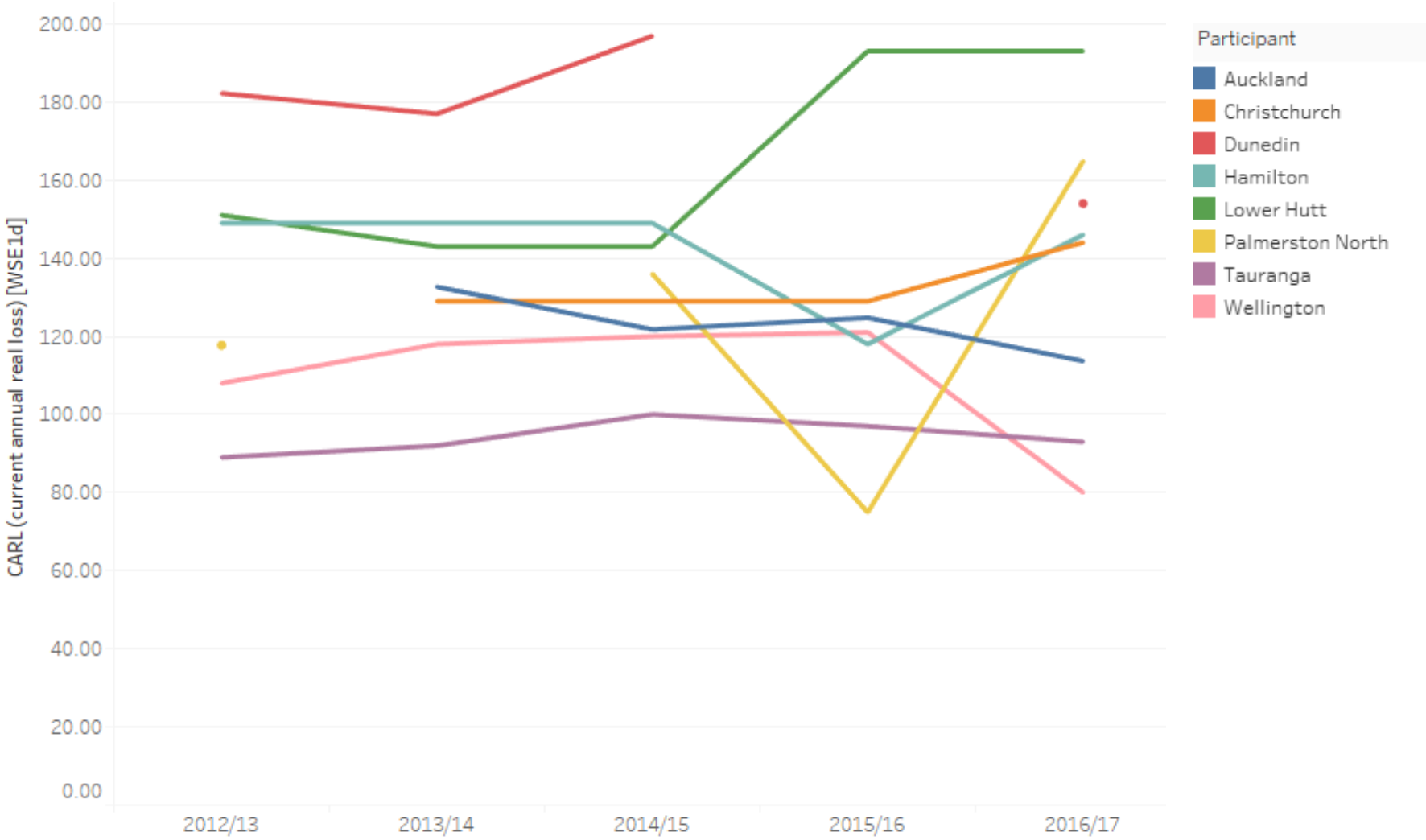


Figure 44: Current annual real water losses for medium size participant systems in the north island (litres/service connection/day)

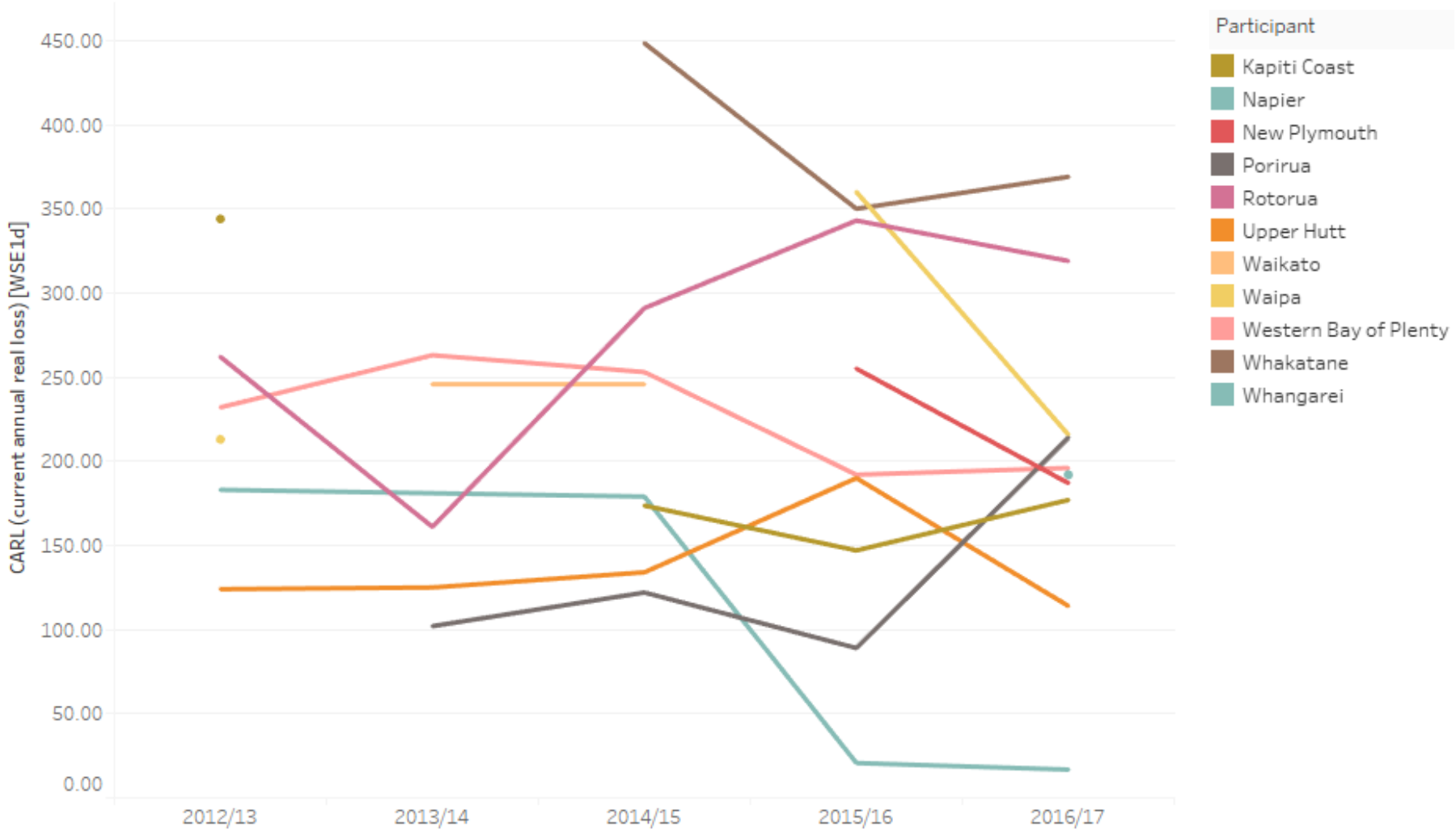


Figure 45: Current annual real water losses for medium size participant systems in the south island (litres/service connection/day)

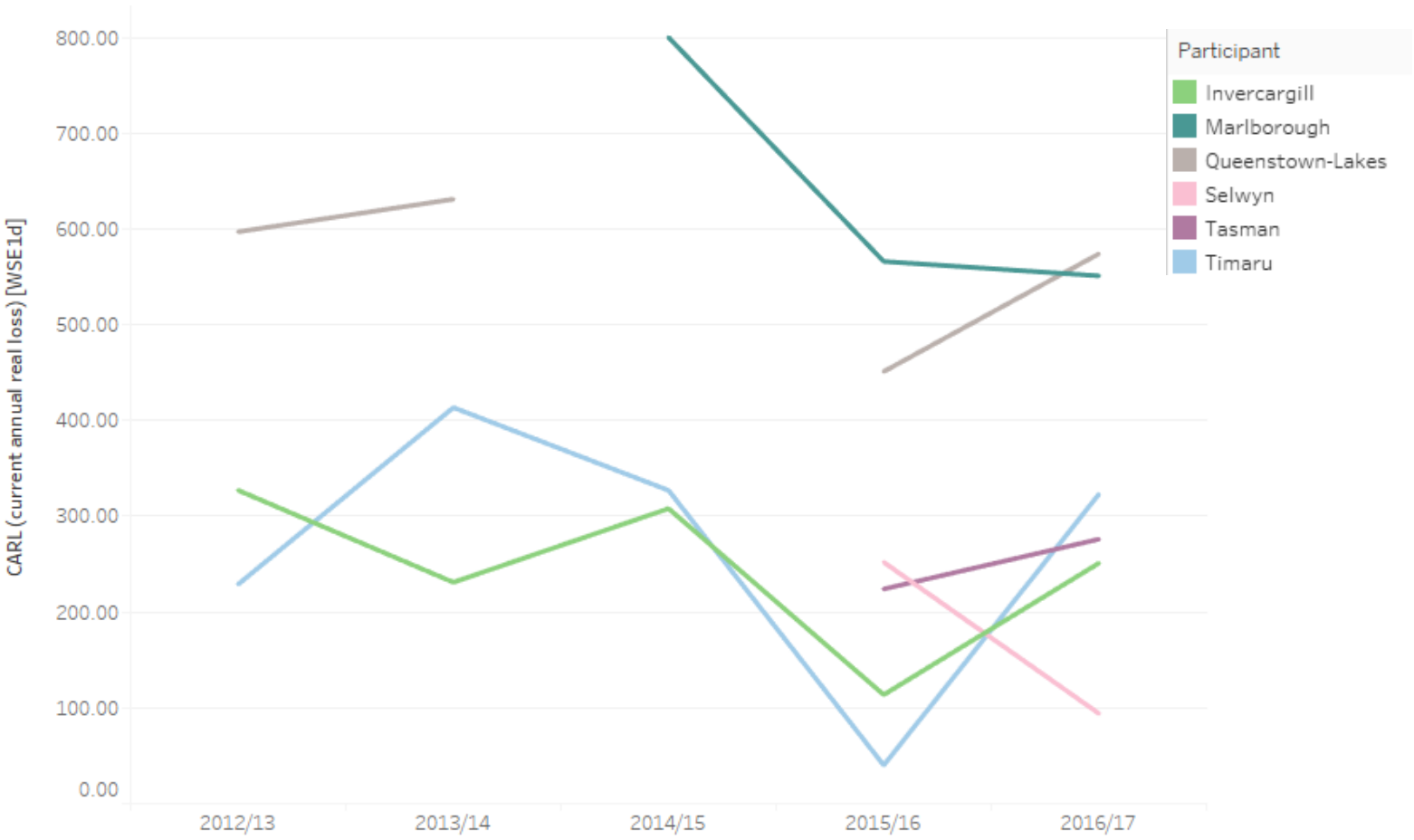


Figure 46: Current annual real water losses for small size participant systems (litres/service connection/day)

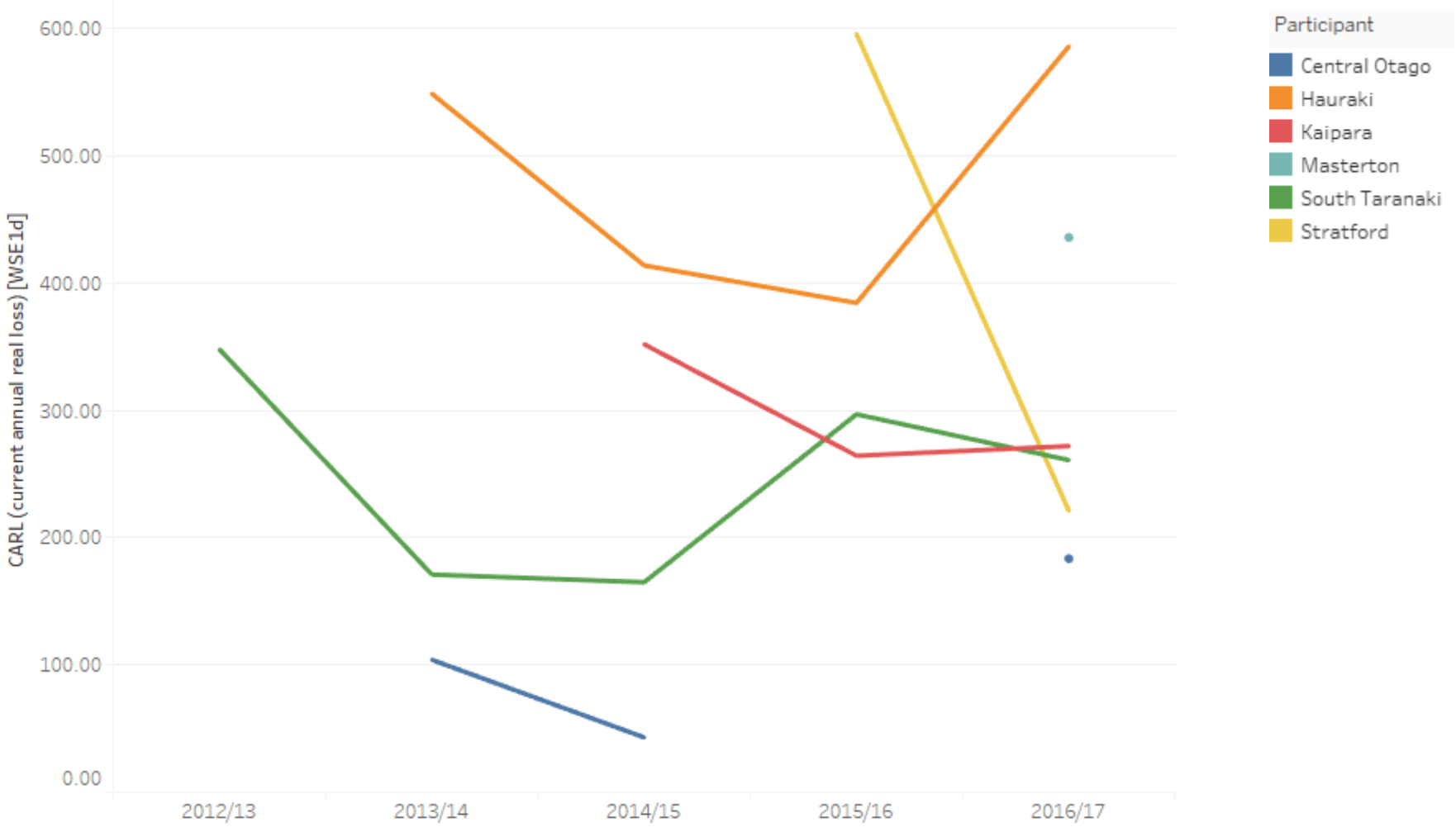


Figure 47: Energy intensity of the water supply systems (GJ/m3)

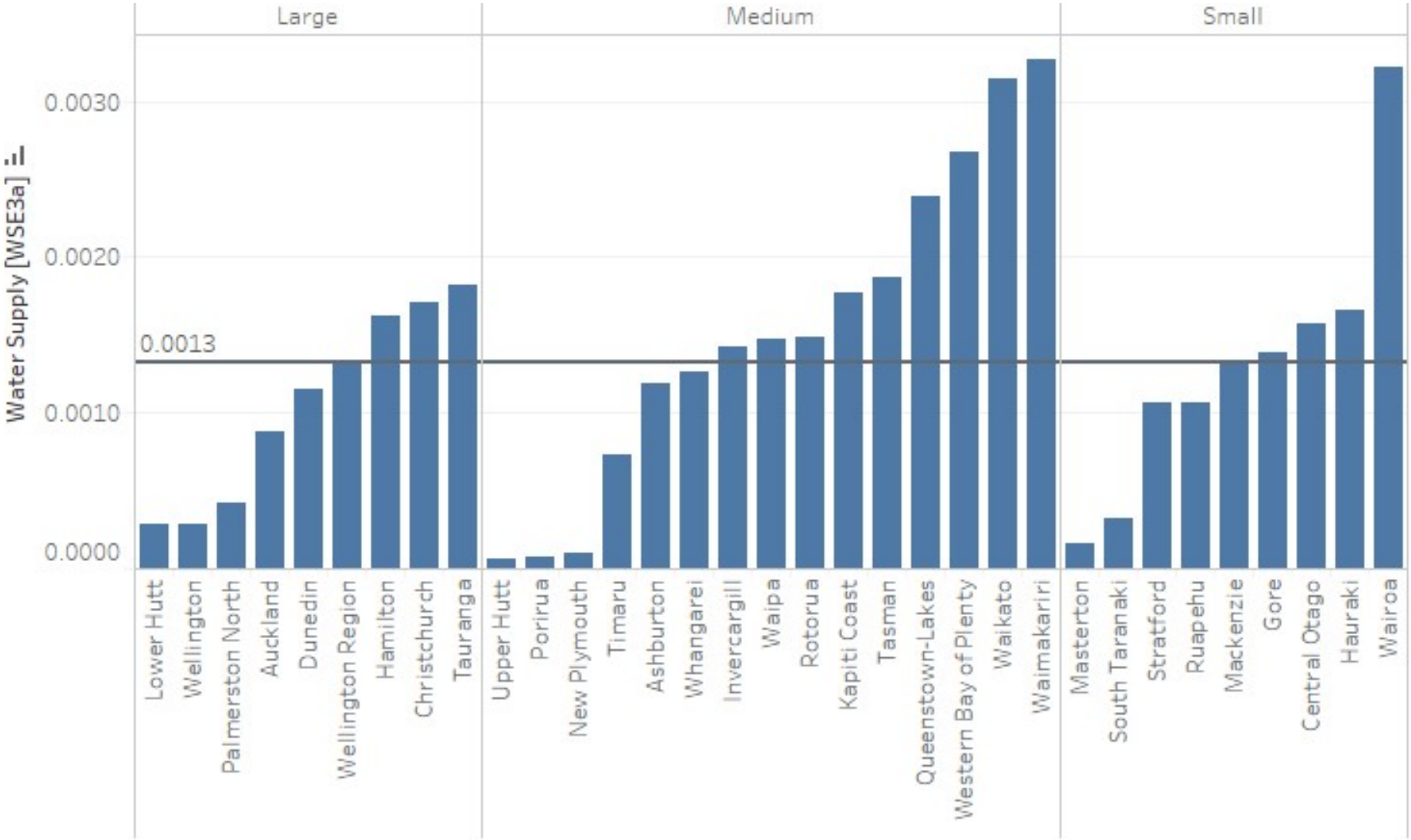
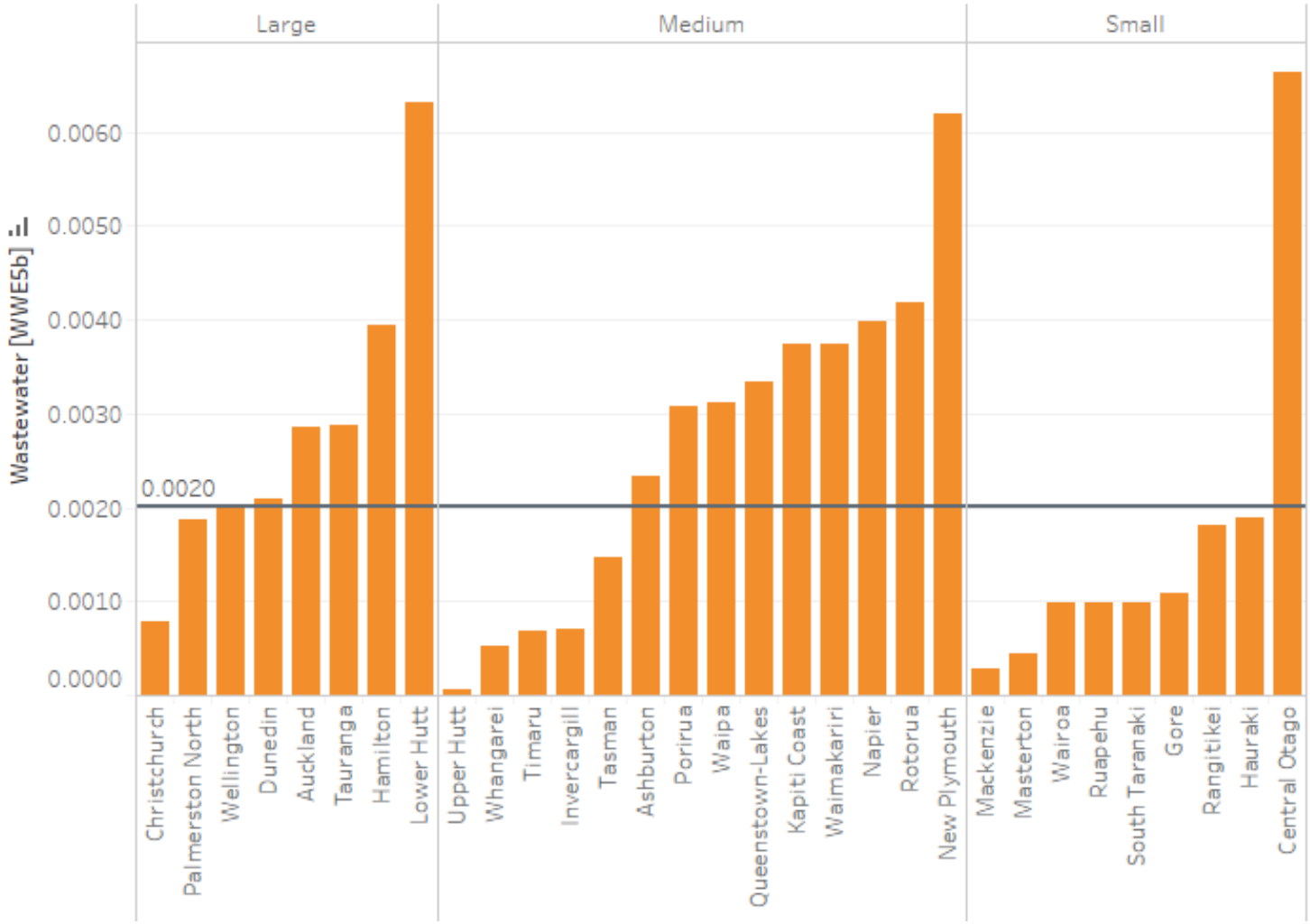


Figure 48: Energy intensity of wastewater systems (GJ/m3)



8 RESILIENCE

8.1 Climate Change

Table 3: Sea level rise projections for councils with coast lines

Participant	Projection	Comment
Tasman	Plan for a sea level rise of 0.5m for the period 2090-2099, but consider the consequences of SLR of at least 0.8m	The official advice is plan for a sea level rise of 0.5m for the period 2090-2099, but consider the consequences of SLR of at least 0.8m in this same period. Beyond 2100, allow 10mm/year additional. The latest MfE advice (in draft) is that to plan for a sea level rise will be of up to 0.8 by 2090 and 1.0 m for the period to 2115 100 years. For sensitive infrastructure plan for 1.9 m by 2150. It will be assumed that this is a realistic estimate of sea level rise unless/until MfE revises its official advice. Predominantly related to Stormwater
Tauranga	0.3m to 1.25m	0.3m SLR (climate change to 2055) used for current planning, moving to 1.25m (climate change to 2130) for future urban growth structure planning
Selwyn	0.08-0.23m by 2046	Climate Change Report
Otorohanga	1.7mm	Per year over the 20th Century
New Plymouth	0	
Masterton	0.8m by 2090	GWRC climate change strategy. Tracking 0.8m sea level rise by 2090's.
Kapiti Coast	0.06 - 0.18 by 2030 - 0.8-1.0 by 2090	
Kaipara	0.5m	Under tidal areas
Invercargill	800mm by 2100	
Christchurch	1m by 2100	For all new stormwater works
Ashburton	0.5m	To 2100. Following Table 1 of Preparing for coastal change A guide for local government in New Zealand (MfE 2009)
Lower Hutt, Porirua, Wellington Region, Wellington City	1m	Service Plan growth and demand
Waimakariri	0.5m-1.0m	Most new infrastructure works has an allowance for sea level rise where applicable, either over a 50 or 100 year horizon.
Western Bay of Plenty	Only in District Planning	Initial modelling underway to assess effects of climate change on long term asset viability.
South Taranaki	0.15 within 30 years	
Marlborough		The mathematical models used for designing infrastructure include a factor for uncertain future changes including more frequent & intense storms, more rainfall, longer periods without rain. The exact assumptions used will depend on the life expectancy of the infrastructure being designed, cost and criticality and uncertainty on other factors such as growth, resilience, etc
Whakatane		WDC - Undertaking modelling projects over next few years when budget allows
Auckland Council	0.8m	
Hauraki		Recognised and noted for future LTP
Dunedin	0.3 m to 2040, 1.6m to 2090 (upper end of range)	
Rangitikei	Not used.	Sea level rise would affect Koitiata and Scotts Ferry, but this is not specifically included in design as a height/runup.

Table 4: Rainfall return period projections

Participant	Projection	Comment
Timaru	0.16	This is based on TDC Design Rainfall for 2 degree rise by 2090.
Tasman	Varies depending on the duration of the event. From 3.5% to 8.0%.	Predominantly related to Stormwater
Tauranga	12% to 25%	12% increase in rainfall intensity for current planning (climate change to 2055), moving to 25% increase in rainfall intensity for future urban growth structure planning (climate change to 2130)
Queenstown Lakes	Yes	
Otorohanga	2	According to a risk assessment undertaken by the Environment Waikato 2009
Palmerston North		2 degrees C applied to HIRDS outputs
New Plymouth	HIRD Data + 2.1 degree temp rise by 2090	
Napier	1 in 50 years	Future climate change affects will be incorporated in the design standards
Masterton	0	GWRC climate change strategy 2015 & NIWA 2016 GWRC report is unable to give predictions on increase or decrease in Masterton's AEP. Masterton 2040 & 2090 rainfall average is predicted to be similar to current levels but it is acknowledged that the likelihood of more frequent rain events will occur in Masterton District.
Mackenzie	6 - 28 % increase	
Kapiti Coast	-1% to +10% by 2030 & 0% to +26% by 2090	Winter rainfall change. AEP change not calculated.
Hamilton	0	Has not changed. Already based on 2.1 Degree C Climate Change Design Level of Service as follows, AEP %, ARI years: Primary Systems Residential Area- 50, 2 Industrial Area- 20, 5 Commercial Area, Business, CBD- 10, 10 Community and Major Facilities- 10, 10 Parks, Reserves and Open Spaces- 50, 2 Rural and future Urban- 50, 2 Transport Corridor- 50, 2 Residential - falling away from public road- 2, 50 Secondary Systems Local Roads, Collector Roads, Off road systems- 1, 100
Gore		This is generally considered on a case by case basis, the Council does not have a specific policy for this
Christchurch	No	No allowance for change in return period of events as this is irrelevant for stormwater, however allowance for a 16 % increase in storm intensity by 2100
Ashburton	43	Depends on the duration and intensity of the event. Response is for a 10% AEP event
Upper Hutt, Lower Hutt, Porirua, Wellington Region, Wellington City	0 to 50	Climate change and impacts assessment, MfE 2008. Return periods of heavy rainfall events in a range from no change to halving by 2040
Waipa		No % available in report. Waipa: Increased frequency of extreme rainfall events. Possibility of higher river levels. Waikato Region: Increased risk of inland flooding in the west and in river catchments in the Coromandel.
Waimakariri	0.16	All new infrastructure has an allowance of 16% for increase in rainfall intensities.
Western Bay of Plenty	YES - For stormwater	Only addressed through stormwater

Table 5: Average annual rainfall projections

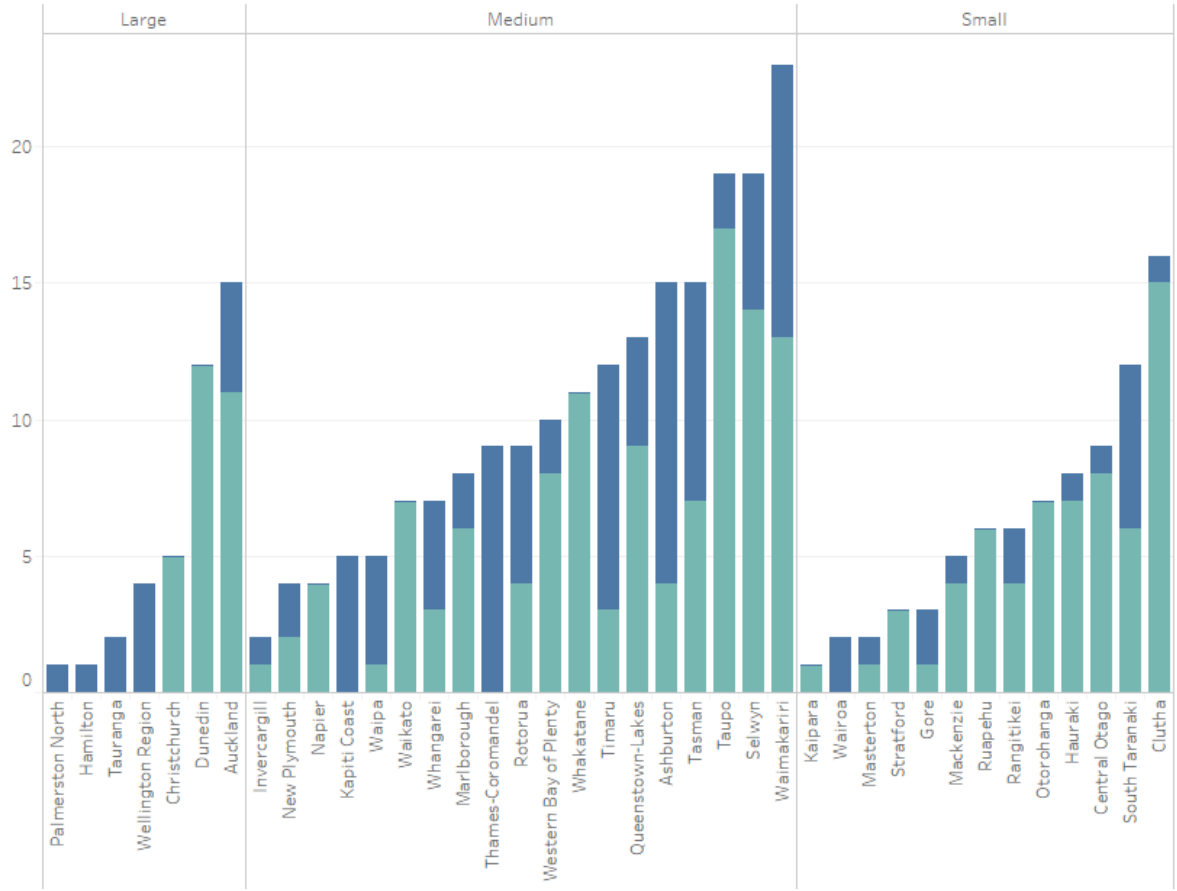
Participant	Projection	Comment
Auckland Council	-3%	
Tasman		Predominantly related to Stormwater. The RCP4.5 and RCP8.5 projections indicate slightly more rainfall in most seasons except spring for much of the area of coastal plains adjacent to Tasman Bay (i.e. Motueka, Waimea plains) to 2040. By 2090 for RCP8.5, more rainfall is projected for the plains in summer, autumn, and especially winter. By 2090 under RCP8.5, the western part of Tasman District is projected to receive less rainfall (by less than 5%) in summer and autumn, but significantly more rainfall in winter (up to 40% in some parts).
Tauranga		Infrastructure design uses a model based on a 100 year rainfall history in Tauranga performed by Opus.
Selwyn	No long term change	Climate Change Report
Queenstown Lakes	Yes	
Otorohanga	1250mm	According to a risk assessment undertaken by the Environment Waikato 2009
New Plymouth	HIRD Data + 2.1 degree temp rise by 2090	
Masterton	0	GWRC climate change strategy 2015 - Rainfall in Masterton District is predicted to stay at 2015 levels by 2040 & 2090. Though seasonal rainfall change is predicted IE Less rain Spring & Winter, more rain in Summer & Autumn. Increased drought periods and increased 'Hot' days are predicted for 2040 & 2090.
Kapiti Coast	-2% to +7% by 2030 & -7% to +14% by 2090	
Kaipara	0.08	8% increase very 1°C
Invercargill	No	
Hamilton	14% Avge increase	Based on 2.1 deg C Climate Change
Christchurch	Yes	This has only been allowed for in water supply planning of future demand (decrease of 5% by 2100 - Source NIWA
Ashburton	16	To 2045. Figure cited in stormwater model build report.
Upper Hutt, Lower Hutt, Porirua, Wellington Region, Wellington City	0 to 13.4	Climate change and impacts assessment, MfE 2008. Flow volumes increase in a range from no change to 13.4% by 2038
Waipa	4% decrease (-23% to +16%)	Waipa: Average annual rainfall may not change significantly in the Waipa District. Waikato Region: Little change for Ruakura and Taupo. For example, spring rainfall in Ruakura could decrease by 4%; but depending on the model - lower to upper limit: -23% to +16%.
Waimakariri	0	The District is expecting longer dry periods but similar AAR. Not all projects allow for the secondary impacts of drier conditions.
Western Bay of Plenty	No	

8.2 Emergency Management Plans

Council	Emergency Management Plan in place	Details
Timaru	Yes	Draft Crisis and Emergency Response Management Guidelines has been prepared for natural and other events that could disrupt 3 waters operations (Document#930290)
Tasman	Yes	WATER: Staff are currently formulating a Water Emergency Plan that outlines a call tree (communication model), Bacteria Transgression Procedures, Chlorine Dosing Procedures, Issuing a Boil Water Notice Procedures, Contingency Plans and identifying Critical Control Points. Furthermore, staff are updating Water Safety Plans for each water supply scheme which has a identified specific contingency for each scheme. We have also engaged a consultant to help with this process. WASTEWATER: There are specific documents that are available in ActiveManuals™ that outline procedures in the event of an overflow. STORMWATER: Currently we do not have any specific emergency plans related to the Stormwater Utility, aside from the Contractors plans or documentation. It is has been an area identified as requiring improvement.
Tauranga	Yes	Incident Response Plan, Business Continuity and the Drought Management Protocol (high water demand) in place.
Stratford	Yes	Water and Wastes Incident Response Plan available and is in the process of being reviewed.
Selwyn	Yes	Lifelines report
Queenstown Lakes	Yes	Contractor 'ERP's in place for CBD Flooding, Large WW overflow in vicinity of lake, Drinking water contamination event, Chlorine Gas leak etc
Otorohanga	Yes	Services have engaged electrical contractors to ready 3 waters plant and pump stations to receive generator power
New Plymouth	Yes	Incidents graded by severity and response take as part of response plans specific to the grade and any additional considerations that may arise from situation
Napier City Council	Yes	
Masterton	Yes	WELA lifelines document
Mackenzie	No	
Kapiti Coast	Yes	A range of emergency / risk planning studies and plans have been prepared and are recorded in the 2015 AMPs Water Mains – Water mains Contingency Planning Report 2006. » Treatment Plants – Earthquake Risk Reduction Study 2006. » Reservoirs - Structural assessment and auto shut valve installation 2004-2010 » Continued Critical Infrastructure Functions - Business Continuity Plans for water treatment and operations updated on a bi-annual basis. » Council Civil Defence Emergency Plan that details planning and response procedures. » Asbestos Cement Water Supply Pipe Assessment, 2011 » Water pipe Inspection and test plan 2011 » Business continuity plan review 2014 » Lifelines response plan 2014 » Asset criticality framework 2014
Kaipara	Yes	Emergency response plans
Invercargill	Yes	Reliance placed on work done with Emergency Management Team and internal emergency response knowledge of Asset Managers and Engineering Services Group - development within improvement plan of current AMP's
Hamilton	Yes	Individual Business Continuity Plans have been developed for all three waters activities. Events covered are earthquake (seismic), flood, fire
Gore	No	Business Continuity plans are currently being developed
Clutha	Yes	Part of lifelines group
Christchurch	Yes	Specific plans have been developed for water supply contamination events, and loss of supply in zones (emergency valves) . Land drainage flooding events plan. Wastewater overflow response and clean up plan
Ashburton	Yes	High level plan developed. Some contingency plans exist for drinking water but detailed response plans are a work in progress.
Upper Hutt, Lower Hutt,	Yes	Scenarios considered: Tsunami, Earthquake, Severe Storm, Prolonged Power Outage, Loss of Communication or Control System Capability, Contamination of Water

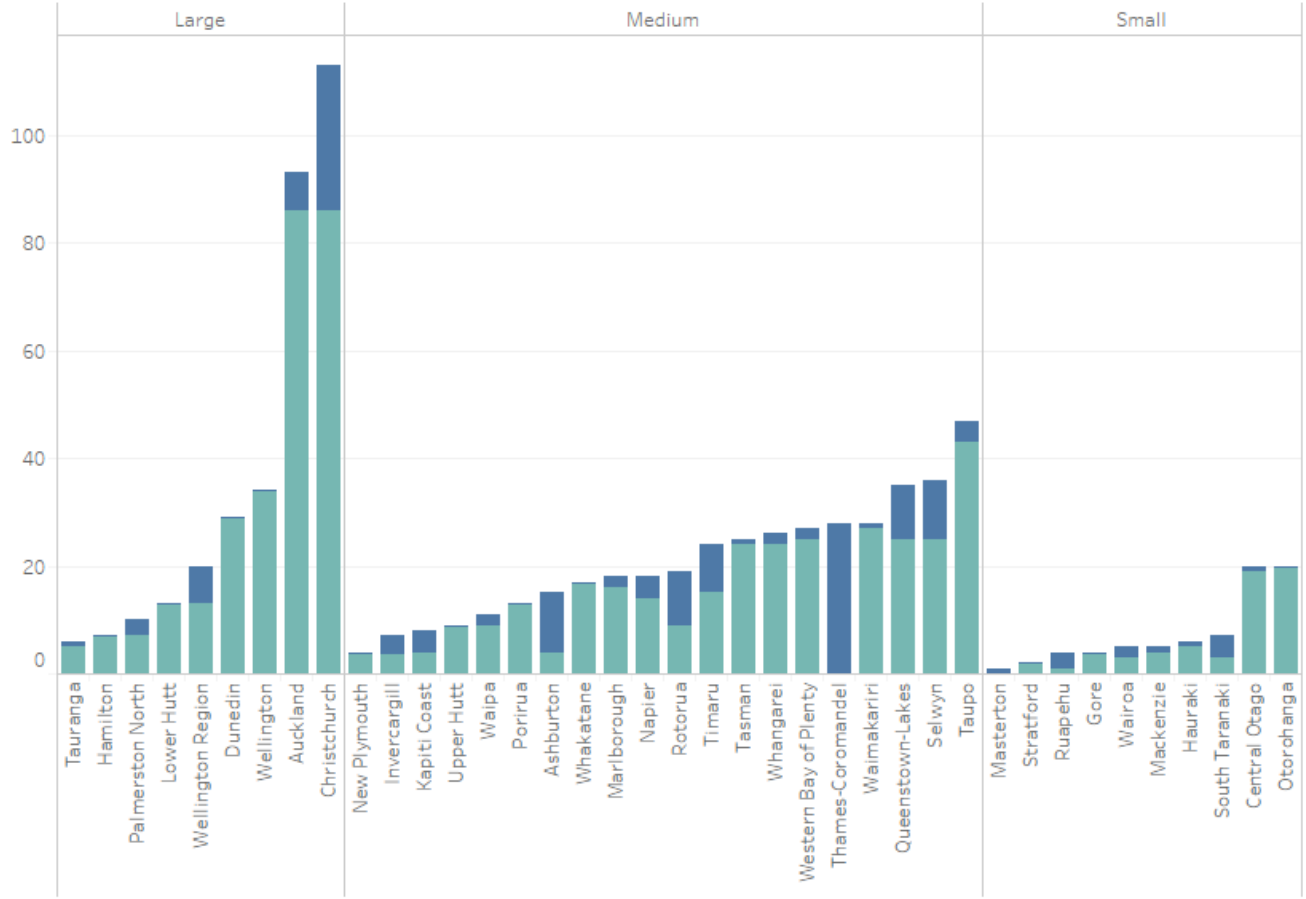
Council	Emergency Management Plan in place	Details
Porirua, Wellington Region, Wellington City		Supply, Loss/Lack of Raw Water, Terrorism/bomb threat/sabotage, Solar Storm, Snow, Serious Harm Assets considered: Water Supply, Wastewater, Stormwater, Interdependency with other lifeline utilities Phases: Reduction, Readiness, Response, Recovery
Waipa	Yes	Emergency Plans exist and emergency response scenarios are run through/roleplayed with staff quarterly to test the plans and ensure staff and networks are prepared in case of an emergency. Any opportunities for improvement or high risks are identified and plans updated accordingly.
Waimakariri	Yes	We have basic Business Continuity Plans and Emergency Response Plans
Watercare Services Ltd	Yes	Watercare maintains and regularly tests a range of Emergency / Incident Response and Business Continuity Plans including those to address loss of critical supporting systems and infrastructure.
Western Bay of Plenty	Yes	Emergency Management Plan is available - Currently being reviewed and updated
Taupo	Yes	We have developed business continuity plans for key areas.
South Taranaki	Yes	Business Continuity Plan for all activities including Water Supply, Wastewater - Significant Hazards covered include Earthquakes, Volcanic Hazards (Ashfall and Lahars), Damaging Winds, Floods and Pandemic. Engineering Group manager is Taranaki CDEM Group Controller and Asset Engineer and Manager are Lifelines Utility Coordination group members.
Rotorua	No	
Palmerston North	Yes	Manawatu-Wanganui Civil Defence Emergency Management Group Plan 2016-2021
Marlborough		Emergency response plans have been developed by the Assets & Services Dept. Earthquake and flood are the predominant risks but other risks are more frequent but with lower consequences. We are learning more about tsunami but have less infrastructure within inundation zones. We take opportunities to exercise our plans both from real and fictional scenarios. WE are active participants in Marlborough Engineering LIfelines
Whakatane	No	Corporate plans existing for tsunami, earthquake, flood, town evacuation only. Certain components for critical Water, Wastewater and Stormwater infrastructure have emergency operating protocols
Wairoa	Yes	
Whangarei	Yes	Active involvement in Engineering Lifelines Northland Group. Internal business continuity plans and response plans as part of ISO documentation.
Central Otago	Yes	Earthquake and Flooding, at organisation level but not specific to 3 waters
Auckland Council	Yes	Plan Types: Business Continuity Plans (BCP), Incident Response Plans (IRP), Contractors' contingency plans and also Civil defence programme
Hauraki	no	
Dunedin City Council	Yes	The Dunedin City Council are currently building Business Continuity Plans for the 3 Waters using the Water Research Foundation, EPA and American Water Works Associations, Business Continuity Plan for Water Utilities: Guidance Document. The BCP documentation is designed to cover the first 30 days of any event that disrupts BAU. There has also been some processes developed around the BCP including: BCP development framework process, BCP activation process and Review of BCP The DCC are also developing a suite of Emergency Response Plans, so far included in this are processes to guide for: Disruption to BAU operations, Contaminated water, Drinking water tankers, Flushing residential properties and smaller buildings – water, Flushing the water system in a large building, Lifting a boil water notice, Earthquake, Landslide, Cyber security, Drought, Flooding These ERP's are designed to give an overview of processes for the first 3-4 days following an event. There has been no development on recovery phase plans as of yet. Other documentation that has a impact on the business resilience to events includes the Infrastructure Strategy and the 3 Waters Strategic Statement, both of which take in to consideration planning for business resilience through to 2060. Water Safety Plans have also bee developed.
Rangitikei	Yes	All realistic scenarios are planned for, with the exception of solar flares. This includes various volcanic hazards, seismic, liquefaction, floods, etc.

Figure 49: Number of water treatment plants with and without backup generation



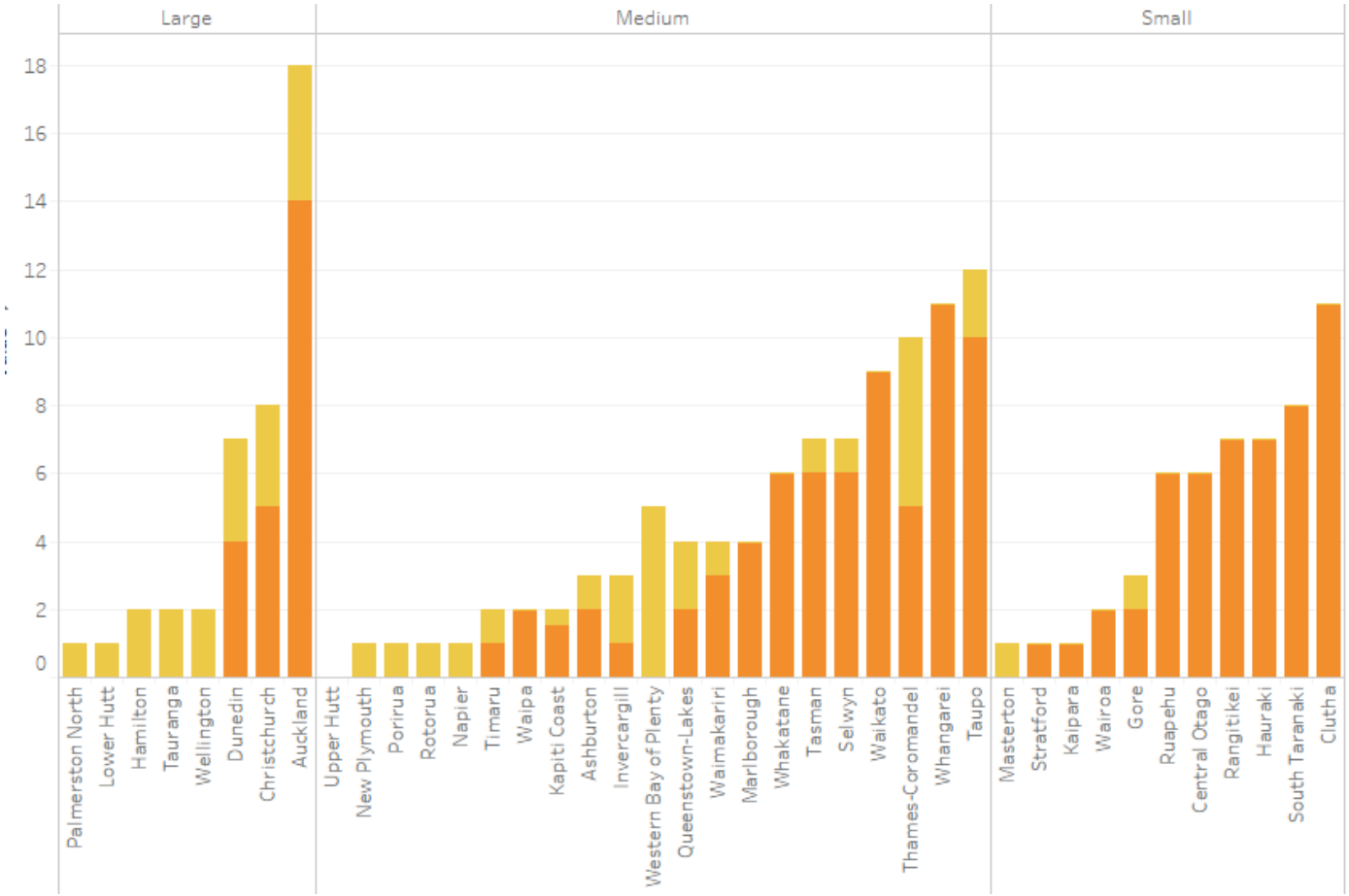
Water treatment plants with backup generators
Water treatment plants without backup generator

Figure 50: Number of water pump stations with and without backup generation



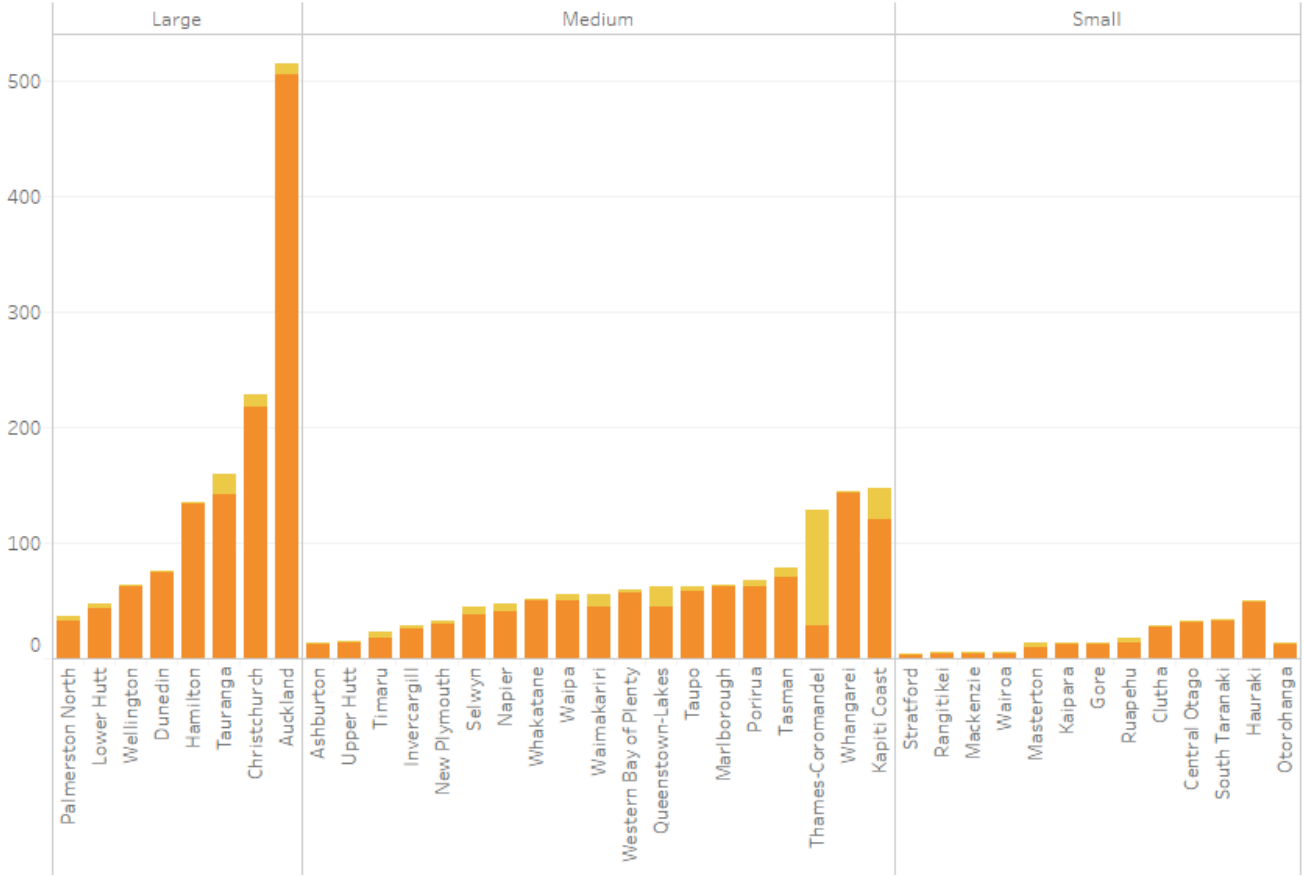
Water pumps with backup generators
Water pumps without backup generator

Figure 51: Number of wastewater treatment plants with and without backup generation



Wastewater treatment plants with backup generators
Wastewater treatment plants without backup generator

Figure 52: : Number of wastewater pumps with and without backup generation



Wastewater pumps with backup generators

Wastewater pumps without backup generator

Figure 53: Days of treated water stored in reservoirs on average

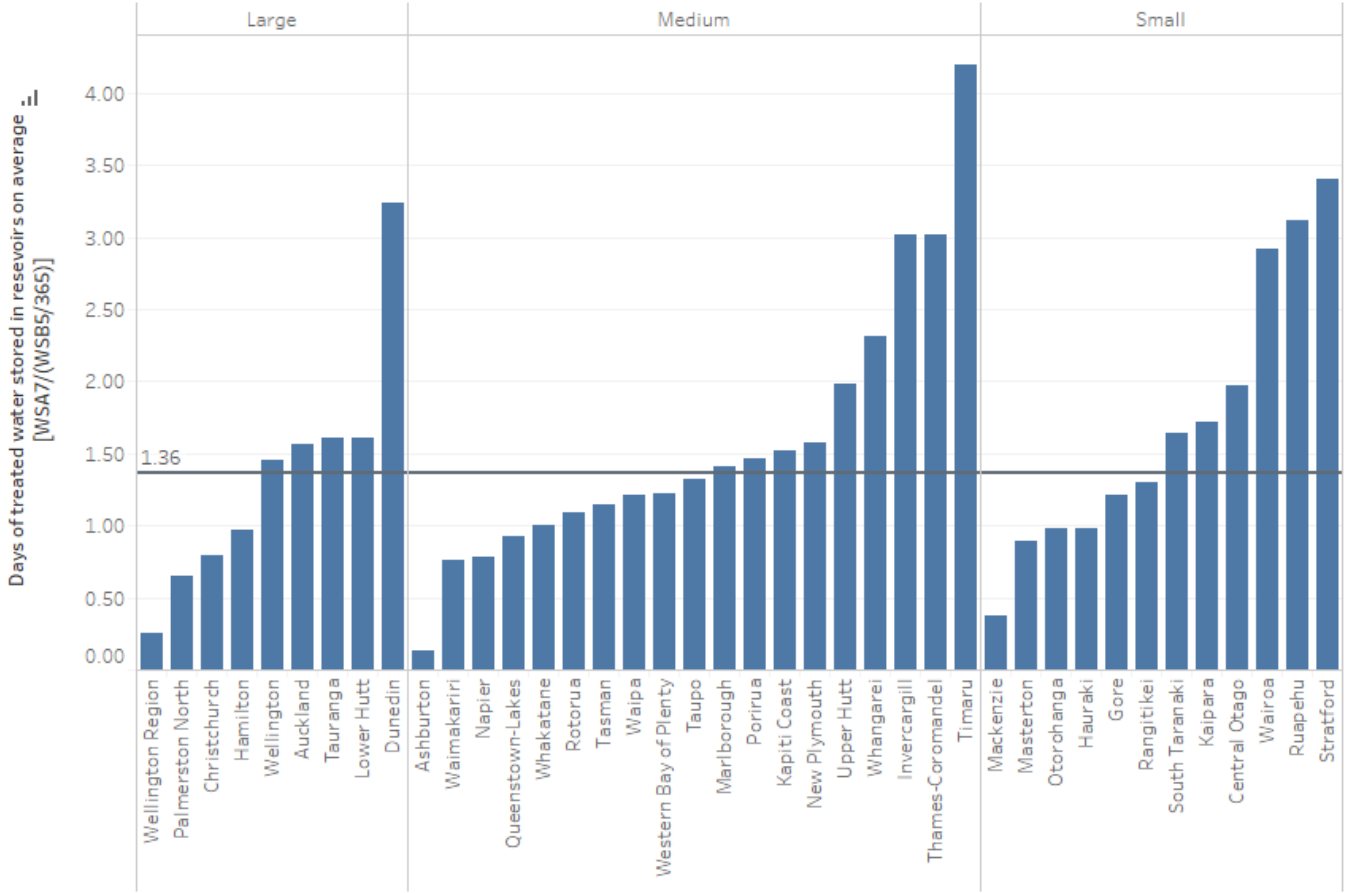


Figure 54: Average level of water storage reservoirs

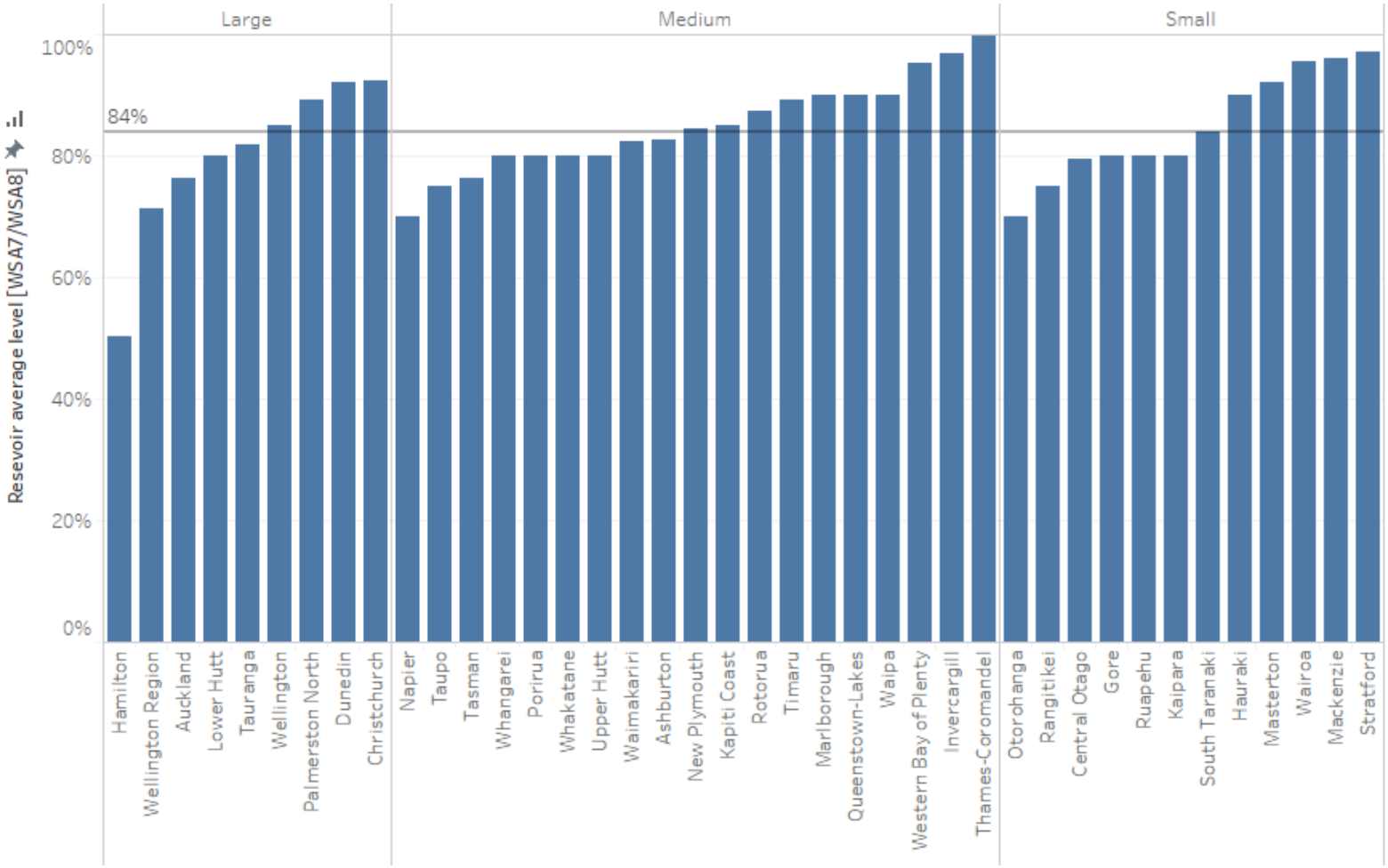
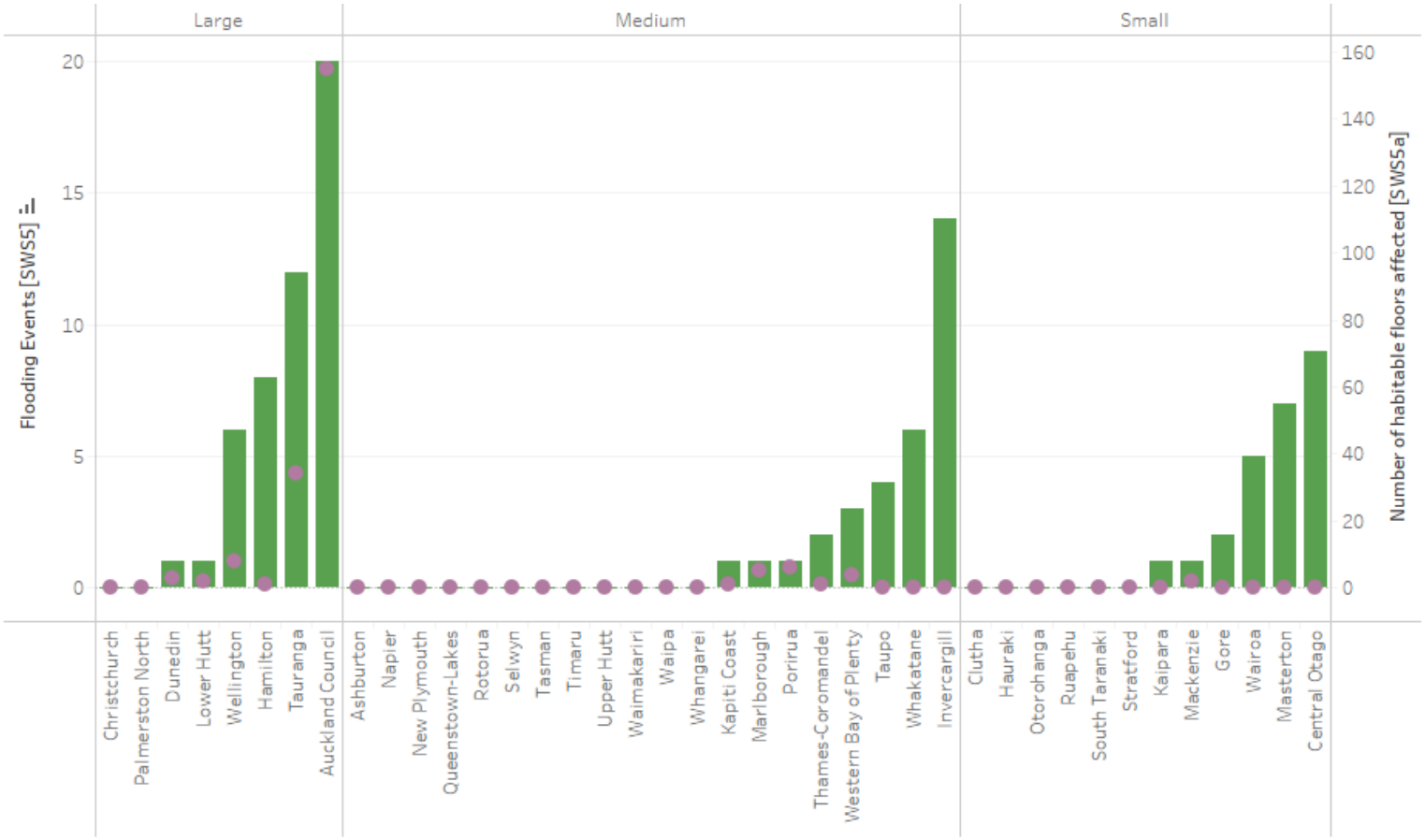


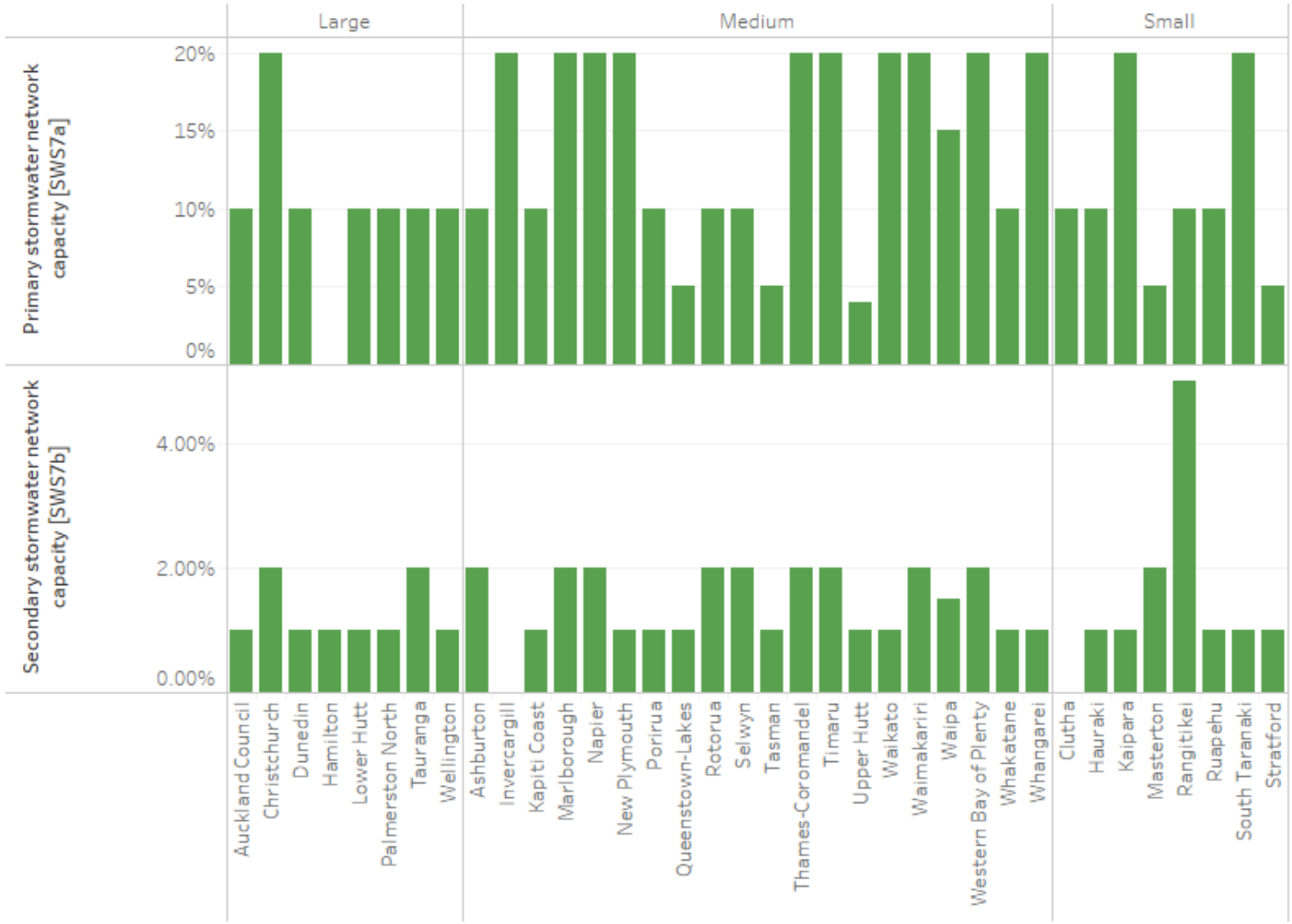
Figure 55: Number of flooding events recorded and the number of habitable floors impacted per participant



Flooding events

Habitable floors flooded

Figure 56: Annual Exceedance Probability of events designed to be contained by Primary and Secondary Stormwater networks



water NEW ZEALAND

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