Our Climate Your Say: Consultation on the Zero Carbon Bill
Ministry for the Environment
PO Box 10362
WELLINGTON 6143

TO: Ministry for the Environment

SUBMISSION ON: Our Climate Your Say: Consultation on the Zero Carbon Bill
("Discussion Document") – June 2018

FROM: Watercare Services Limited ("Watercare")

ADDRESS FOR SERVICE: The address for service specified below.

DATE: 19 July 2018

Watercare could not gain an advantage in trade competition through this submission.

1. EXECUTIVE SUMMARY: WATERCARE BROADLY SUPPORTS THE ZERO CARBON BILL

1.1 Watercare is pleased to have this opportunity to submit on the Ministry for the Environment's ("MfE") "Our Climate Your Say: Consultation on the Zero Carbon Bill".

1.2 Through this submission, Watercare hopes to provide insight into its current mitigation and adaptation strategies, and to provide observations or concerns regarding the Act's implementation (once enacted). Watercare understands the advantage that comes from using the UK Climate Change Act as the "starting point" for the Zero Carbon Bill, and the lessons learned from the previous 10 years.

1.3 However, Watercare encourages the Government to reflect on how the framework proposed in the Zero Carbon Bill fits into New Zealand's current regulatory landscape. In particular, Watercare wishes to ensure a joined-up approach is adopted so there is no duplication or added complexity as a result. Rather, Watercare hopes to see a clear and concise establishment of roles and responsibilities between Government departments and the Climate Commission. Further, Watercare is keen to see how the high-level targets codified in statute are to be implemented through predictable and transparent policy.

1.4 Watercare broadly supports the Zero Carbon Bill, and the legislative framework it seeks to put in place. Watercare supports a clear Government-led mandate to transition to a low-emissions economy, where the legal framework and corresponding obligations are transparent, predictable, and clearly communicated. Clear and predictable policy is crucial.
for Watercare, who design, commission, and construct infrastructure that often has a 100-year design life.

1.5 Watercare is New Zealand’s largest provider of water and wastewater services, and is responsible for a significant range of critical infrastructure. Watercare is conscious that the unprecedented increase in the number and intensity of storms will continue to put pressure on Watercare’s infrastructure. This will potentially affect our ability to service our customers. As a minimum cost provider, Watercare will need to proactively balance the need to invest in “future-proofing” assets and manage the risk of stranded assets, while keeping to its statutory obligations as a council owned organisation.

1.6 Watercare supports the proposed mechanisms of codifying a 2050 target and the process to establish three emissions budgets (of five years each), recognising the intention of Government to provide predictability and transparency in short and long term planning. However, the mechanisms articulated in the Zero Carbon Bill will only be as effective as the policies that implement them. Watercare encourages MFE and other departments to ensure there is comprehensive consultation with each sector targeted to reduce emissions, so that the transition is fair for all.

1.7 Watercare also supports the proposed establishment of a Climate Change Commission, recognising the value of an independent expert body who can provide empirical and evidence-based guidance, coupled with sector expertise. Watercare considers that a sufficient level of accountability can be achieved through clearly written provisions in the Zero Carbon Act, which require the Government to adopt the Climate Change Commission’s suggestions or provide clear reasoning as to why not.

1.8 Watercare is supportive of including a national adaptation framework in the Zero Carbon Bill, and considers it important that New Zealand’s approach to adaptation is made alongside the mitigation strategy. Watercare is currently drafting its own mitigation and adaptation strategy, and considers that all public infrastructure providers can benefit from a collective approach and the sharing of resources. Watercare is supportive of the proposed functions in principle, but wishes to engage in further consultation with MFE regarding the implementation of these functions.

2. WATERCARE IS NEW ZEALAND’S LARGEST PROVIDER OF WATER AND WASTEWATER SERVICES

Our purpose and mission

2.1 Watercare is New Zealand’s largest provider of water and wastewater services. Watercare is a council-controlled organisation under the Local Government Act 2002 and is wholly owned by the Auckland Council. Watercare is a company registered under the Companies Act 1993.

2.2 Watercare provides integrated water and wastewater services to approximately 1.4 million people in Auckland. A total of 360 million litres of water is treated each day at 15 water treatment plants and distributed via 89 reservoirs and 90 pump stations to 450,000 households, hospitals, schools, commercial and industrial properties. Watercare’s water distribution network includes more than 9,000 km of pipes. The wastewater network collects, treats and disposes of wastewater at 18 treatment plants and also includes 7,900 km of sewers.
2.3 As a council-controlled organisation ("CCO") under the Local Government Act 2002, and a substantive council-controlled organisation under the Local Government (Auckland Council) Amendment Act 2009 ("Auckland Act"), Watercare has certain obligations. For example, Watercare must achieve its shareholder’s objectives as specified in the statement of intent, be a good employer and exhibit a sense of social and environmental responsibility.¹

2.4 As the CCO that provides water and/or wastewater services in Auckland,² Watercare is also required to manage its operations efficiently with a view to keeping overall costs of water supply and wastewater services to its customers (collectively) at minimum levels, consistent with effective conduct of the undertakings and maintenance of long-term integrity of the assets. Watercare must also not pay a dividend.³ Watercare must give effect to relevant aspects of the Council’s Long Term Plan, and act consistently with other plans of the Council.⁴

2.5 As a substantive CCO, Watercare has a number of statutory accountability mechanisms, including the requirement to prepare and maintain a statement of intent,⁵ undergo performance monitoring, provide an annual report, give effect to the Long Term Plan, and act consistently with other specified plans and strategies of the Council.

**Watercare’s interest in the Zero Carbon Bill Discussion Document is two-fold**

2.6 Watercare’s interest in the Zero Carbon Bill Discussion Document is borne out of two key motivations. Firstly, Watercare’s willingness to be an industry leader in transitioning to a low-emissions model. Secondly, Watercare’s need for greater certainty as to how the Zero Carbon Bill "framework" will, when enacted, filter down into central and local government. These policies will affect our day-to-day operations, asset management, and investment decisions. The need for greater certainty is primarily because Watercare designs and commissions the construction of infrastructure that often has a 100-year design life.

2.7 Watercare understands the impact that climate change is having, and will continue to have, on New Zealand, and on Watercare’s provision of water and wastewater services. In particular, Watercare is aware that the investment in current and future assets will need to be, as far as practicable, future-proofed in light of the different climate conditions that they will face. The unprecedented increase in the number and intensity of storms has the ability to stress current assets, and Watercare’s ability to service its customers. As a minimum cost provider, Watercare will need to proactively manage the risk of assets becoming “stranded” and the need to invest in the future-proofing of assets.

2.8 Watercare is also aware of its contribution to New Zealand’s emissions profile from its wastewater treatment plants, namely the process emissions and electricity used to run its plants. As explained below, Watercare has set targets to achieve energy neutrality at its largest wastewater treatment plants in coming years, in an attempt to mitigate its emissions contribution.

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¹ Local Government Act 2002, s 59.
² As defined in section 4 of the Local Government (Auckland Council) Act 2009.
⁵ This statement of intent covers a three year period, and requires Watercare to publicly declare its activities and intentions for the year, and how this will achieve its objectives: it provides an opportunity for shareholders to influence the organisational direction; and a basis for accountability for directors and shareholders. It also carefully considers section 58 of the Local Government Act 2009, which requires Watercare to give effect to relevant aspects of the Council’s Long Term Plan, and each year, prior to the statement of intent review, Watercare receives a letter of expectation from the Mayor which significantly influences Watercare’s direction and allows for alignment with the Council.
What we are doing

2.9 Watercare has an objective of being an industry leader of climate change mitigation and adaptation in New Zealand. For example, Watercare's action to date includes:

(a) Watercare's "Climate Change Adaptation and Mitigation Strategy" that is currently being drafted in accordance with its fully sustainable strategic priority and the United Nations Sustainable Development Goal 13 "Climate Action".

(b) Watercare is part of the Climate Leaders Coalition, which represents 60 companies who contribute to almost half of New Zealand's greenhouse gas emissions. By signing the CEO Climate Change Statement, each business is committed to setting, reviewing and reporting on their own emissions reduction targets in line with the Paris Agreement.

(c) Seeing Watercare's wastewater treatment plants as "resource recovery centres" in a circular economy model. This means moving away from a linear process (take/treat/dispose) for the treatment of effluent, to now harvesting energy, nutrients and water to design waste out – including greenhouse gas.

(d) Watercare intends to produce bio-solids that would be marketable for various rural and domestic uses. This would also have the benefit of acting as a soil conditioner to assist in the storage of carbon. To help enable this, Watercare would be supportive of any government policy initiatives that would promote such initiatives on a nation-wide basis.

(e) Commitment to electrification of 100% of Watercare's headquarters vehicle fleet by the end of 2019. This was part of a wider business pledge made in 2016 with 30 other New Zealand organisations. Watercare has currently shifted 30% of its fleet, and is on track for the 2019 deadline for electric vehicles.

(f) Watercare's energy efficiency programme (started in 2016) is well underway. Current and soon to be implemented projects are anticipated to deliver 10GWh of yearly efficiency gains. Watercare is also actively investigating initiatives to improve its pumping efficiencies.

(g) Watercare is also focused on carbon mitigation initiatives. As such, Watercare has set up the Hunua ranges revegetation project, aimed at converting previously commercial forestry areas into native forest. This will require growing 8 million trees over the next 30 years on Watercare operated land, with the ambition of capturing a significant amount of carbon.

2.10 For many years, Watercare's greenhouse gas ("GHG") emissions have been reported through Watercare's annual report. There was a detailed update in 2015 through an online Energy and Greenhouse gas supplement. There was no standard methodology for the accounting of greenhouse gas emissions from wastewater treatment in New Zealand then. Accordingly, Watercare developed its own accounting tool in-house in 2009 using IPCC and GHG protocol guidelines. This tool was reviewed and significantly improved in 2014, which resulted in an expansion in the emission sources included. Watercare's accounting tool was discussed and shared with Water New Zealand and MFE in March 2018 to contribute to the thinking on greenhouse gas accounting methodologies.

2.11 Watercare has continued to engage in national discussion on how New Zealand transitions to a low emissions economy. We recently submitted on the Productivity Commission's Draft
report on transitioning to a low emissions economy ("Productivity Commission Draft Report"). In particular, Watercare provided comment on the question of whether wastewater treatment plants should be included in the Emissions Trading Scheme ("ETS"). Watercare is happy to engage further on the ETS during consultation of the proposed amendments to the Climate Change Response Act 2002 later this year.

3. THE PROPOSED LEGISLATIVE FRAMEWORK IS BROADLY SUPPORTED

3.1 As proposed, the Zero Carbon Bill will codify an agreed upon 2050 target, a series of 5-year carbon budgets, and the mechanisms for setting and revising both. The Zero Carbon Bill will also establish a Climate Change Commission and give national guidance to adapting to the impacts of climate change. Watercare agrees that the use of primary legislation is appropriate to establish an enduring framework that can overcome the tendency of political and electoral favour of short-term approaches.

3.2 Watercare understands that legislation by itself will not fully achieve actual emission reductions, but purely establish a framework. The ultimate effectiveness of the Zero Carbon Act will depend upon a large number of other associated and supportive central and local government programmes, policies and regional and district plans changes to achieve the prescribed 2050 target and associated emissions budgets.

Watercare agrees to the 2050 target and emissions budgets

Observations

3.3 As seen in the UK, setting a clear 2050 target and emissions budgets provides important certainty on direction and pace through the transition. However, a key concern of the majority of businesses, organisations and councils, will be how to translate this certainty into subsequent (and broad reaching) climate related policy.

3.4 One criticism of the UK model, 10 years on, is the amount of policy required to achieve the UK carbon budgets, that remains susceptible to change and revision. This means certainty from the targets have not translated to certainty for policy. This undermines investor confidence at the implementation stage. The policy planning and implementation must be flexible, however, there must also be mechanisms in place to ensure predictability for businesses and public infrastructure providers. This is because their long-term investments and actions will be based on the policy framework. Given Watercare’s assets are often designed for a 100-year life, clear and predictable direction from the Government is of great importance to Watercare.

3.5 Watercare is keen to ensure the predictability and transparency provided for in the Zero Carbon Act (once enacted) is translated into the policy creation and implementation. Initiatives to guide long-term decision-making could include the following:

(a) Central-government led policies with a clear mandate and direction for implementation.

(b) Sector-based leadership from central to local government and provides a clear "direction" for each sector.

(c) Establishment of partnerships within and across sectors to share key learnings. For example, Watercare has previously worked in partnership with Auckland Council and NIWA, and seeks that partnerships like these continue.
(d) A broad policy oversight function, which is within the scope of the Climate Change Commission or MFE, to ensure policy implementation in different sectors do not undermine one another.

3.6 As a willing industry leader, Watercare wishes to ensure New Zealand's transition is as smooth, collaborative and well-communicated as possible within and between sectors.

Responses to the Discussion Document

3.7 In relation to the 2050 target (questions 1-4), Watercare:

(a) Q1: Agrees that the Government should set a 2050 target in legislation now, to ensure certainty sooner rather than later.

(b) Q2: Considers that a net zero emissions target for 2050 is best. In confirming the 2050 target, Watercare urges the Government to put careful thought into ensuring a just transition for those industries where technology is still being developed.

(c) Q3: Agrees that the Government should focus primarily on reducing domestic emissions. Watercare recognises that there may be a place for international carbon units (with strong environmental safeguards) if New Zealand decides on the most ambitious 2050 target (net zero emissions).

(d) Q4: Agrees that the Government should not be able to revise the 2050 target downwards. To do so will undermine the predictability and certainty the target is intended to achieve. This will undermine investor confidence in Government targets and in the legitimacy of the transition.

3.8 Watercare is primarily focused on how the 2050 target, once established, will be implemented. Watercare is also conscious that further consultation must take place within the sectors primarily targeted to reduce emissions.

3.9 In relation to the establishment of the three emissions budgets (questions 5-8), Watercare:

(a) Q5: Agrees with the proposed mechanism of "stepping stones" in the form of three emissions budgets of five years each. This will ensure short-term accountability in line with long-term obligations, and provide greater predictability and transparency for investment in the transition. Again, Watercare's focus is on how these emissions budgets are implemented through policy.

(b) Q6: Considers that there should be some flexibility provided to the Government making small modifications to the third budget.

(c) Q7: Considers that the second budget should not be adjusted, even in exceptional circumstances. To do so leaves open the option for the Government of the day to potentially use "exceptional circumstances" to undermine the purpose of the Zero Carbon Act. This would be of severe concern to Watercare, given the long-term certainty Watercare requires for its future infrastructure planning.

(d) Q8: Agrees with the list of considerations that the Government and Climate Change Commission must take into account when advising on and setting emissions budgets. Serious thought is required to address how the emissions budgets are specifically implemented at a local government level.
3.10 Watercare recognises that the mechanism of the emissions budgets are designed to constrain the Government and businesses in their carbon emissions. Therefore, everyone has to adjust and innovate. As such, Watercare considers that the emissions budgets, once consulted on and established, should not be deviated from.

Government Response

Observations

3.11 Watercare considers it important that the Government is accountable and proactive in providing a "plan" to meet each emissions budget. A policy gap has appeared in the UK, due to the fact there is no statutory response timeframe in place that the Government must comply with. This has created uncertainty for businesses and councils, and has undermined confidence in the policy-planning framework. Watercare considers that the Government should be required to provide plans within a certain timeframe. However, the Government needs to ensure the pressure of a timeframe does not compromise the quality of the policy plan.

3.12 When considering the policy plan for meeting emissions budgets, Watercare suggests that the Government ensure:

(a) There is sector-specific input into how the policy plan will be implemented, and this is consulted on prior to publishing.

(b) There is representation from local government, including CCO's, acknowledging that CCO's have other "constraints" to consider when operating like a business (i.e. Watercare's obligation to be a low-cost provider).

Responses to the Discussion Document

3.13 In relation to the Government response (questions 9-10), Watercare considers:

(a) Q9: That the Zero Carbon Bill should require Governments to set out plans within a certain timeframe to achieve the emissions budgets.

(b) Q10: When setting plans, the Government needs to take into account:

(i) Sector-specific input; and

(ii) how policies will impact local government bodies (including CCO's), recognising the other statutory constraints placed on them already.

4. WATERCARE IS SUPPORTIVE OF ESTABLISHING A CLIMATE CHANGE COMMISSION

Observations

4.1 Watercare is supportive of the establishment of an independent Climate Change Commission. This will be a mechanism for providing predictability and transparency during New Zealand's transition to a low-emissions economy. The Commission will provide New Zealand with an independent, non-political expert body. It will be empowered to provide empirical evidence-based advice to Government and other sectors on setting emissions budgets, and achieving them.
4.2 Watercare also considers the proposed monitoring function of the Commission to be equally important. This is because it provides a degree of political accountability in ensuring the Government's plan for emissions reductions are meeting the targets. Overall, we consider the introduction of an independent Climate Change Commission that is focused on long-term strategy and policy to be a positive addition to the current regulatory landscape, provided the roles and responsibilities are clearly defined.

4.3 Watercare considers that the political accountability on the Government alone, as a result of establishing the Climate Change Commission, will be significant. The UK equivalent - the Committee on Climate Change – has been considered instrumental in transforming the political debate on climate change. This has primarily been achieved through reports that have established an agreed empirical evidence base, which in turn have provided for honest target setting, parliamentary scrutiny and reporting. However, a "policy gap" is forming in the UK. This means that the carbon budget reductions set by the UK parliament have a gap in policies that would enable them to be achieved. We encourage our Government to learn from lessons associated with the current UK experience, insofar as they may be applicable here.

4.4 Watercare is aware that changes to the ETS via the Climate Change Response Act 2002 are to be consulted on later this year, and considers it important that these reflect the ambition and language of the Zero Carbon Bill. The Bill and ETS should remain consistent during their parallel journeys through the House of Representatives. Watercare looks forward to engaging further on recommendations previously submitted on the Productivity Commission Draft Report, particularly regarding central government engagement with the wastewater industry.

**Responses to the Discussion Document**

4.5 In relation to the Climate Change Commission (questions 11-13), Watercare:

(a) **Q11:** Agrees that the Climate Change Commission should advise on and monitor New Zealand’s progress towards its goals.

(b) **Q12:** Considers that the Climate Change Commission should primarily advise the Government on policy settings in the NZ ETS.

(c) **Q13:** Agrees with the proposed expertise of the Climate Change Commissioners.

**5. WATERCARE AGREES WITH THE PROPOSED NATIONAL ADAPTATION PLANS**

*Observations*

5.1 The majority of the proposed Zero Carbon Bill will likely focus on climate change mitigation. However, MFE has also proposed inclusion of adaptation in the Bill. Watercare fully supports the inclusion of adaptation related planning guidance into the resultant Bill. However, Watercare would go further to suggest there should be a greater focus on adaptation than what is inferred in the Discussion Document.

5.2 We consider that adaptation is integral to the Zero Carbon Bill, and New Zealand’s overall approach to climate change. Watercare recognises that a comprehensive national adaptation strategy is of equal importance to a national mitigation strategy, and the two should be approached in tandem.
5.3 Watercare believes that to be able to create "...the right environment for adaptation...", strong national direction will be required. This means clear direction on how councils should approach decision-making regarding areas that will be most impacted by climate change. For example, certain properties are being increasingly exposed to sea level rise/coastal inundation, and/or flooding. Watercare must maintain, and in some cases, upgrade infrastructure in areas that are increasingly becoming exposed.

5.4 Robust national guidance is required to ensure local authorities are empowered to engage with, determine, and implement, the optional planning option. Any national direction given to councils on when they must identify exposed areas, and how to assess options such as managed retreat, accommodation, or protection would be advantageous.

5.5 Watercare understands that the proposed national adaptation plans and the functions set out below will be split between MfE and the Climate Change Commission (with some cross over). These functions are:

(a) A national climate change risk assessment: The Climate Change Adaptation Technical Working Group has recommended that this assessment take place as a priority. Watercare agrees. In particular, understanding the risks to people and infrastructure is crucial to Watercare delivering its water and wastewater services. Watercare also consider it important that there is consistent and accurate updating of publically available information to inform the national adaptation plan. Watercare agrees that this should be the responsibility of the Climate Change Commission.

(b) A national adaptation plan: Watercare agrees with establishing a comprehensive plan, as long as there is clear communication and engagement with local government and stakeholders from each sector. In particular, Watercare encourages MfE (who are proposed to be responsible for this) to ensure consultation on various adaptation aspects are done together in a streamlined manner (as far as practicable) to keep it as simple as possible for participants to engage meaningfully.

(c) Regular review of progress towards implementing the national adaptation plan: Watercare agrees with the proposal that the Climate Change Commission should have some oversight of the national adaptation plan, and provide a review at the "mid-point" of each 5-year cycle.

(d) An adaptation reporting power: as proposed, this will require public and private bodies who own public infrastructure and deliver public services to provide information regarding their risks. Watercare fully supports the concept as proposed, and is keen to engage with MfE to ensure that appropriate targeted and specific obligations are developed. Mandatory reporting, through standard reporting formats and specified required information will be important to get a holistic view of New Zealand’s infrastructure risk profile.

5.6 Watercare's Head of Sustainability and Head of Risk and Resilience are tasked with leading improvements in efficiency, and ensuring adaptation and development of adaptive capacity within Watercare’s operations. To date, Watercare has undertaken a number of infrastructure adoptions. Some examples of these are set out in Appendix A to this submission, along with a proposed approach to monitoring organisation's risk profile.

5.7 In developing an adaptation reporting power, Watercare proposes that MfE consider the following:
(a) Adaptation of assets and infrastructure to enable continued performance in extremes of temperature, very dry or wet conditions and sea level rise or storm surge.

(b) Training and development to increase the adaptive capacity of staff and systems to cope with unforeseen extreme events, where asset or infrastructure adaption alone is not cost effective or practicable.

5.8 Moving forward, Watercare sees great benefit in engaging in discussions with other public infrastructure providers regarding adaptation. This could include using the information from the national climate change risk assessment, and collaboration on future planned adaptive capacity training and testing as it is developed and delivered. Establishment of the national adaptation plans, along with a targeted adaptation reporting power provides this platform, and should be prioritised.

Responses to the Discussion Document

5.9 In relation to the inclusion of adaptation in the Zero Carbon Bill (questions 14-16), Watercare:

(a) Q14: Agrees that adaptation should be included, but advocates that a greater emphasis on adaptation planning is required in the Zero Carbon Bill.

(b) Advocates for strong national adaptation guidance for local authorities to help them identify areas of vulnerability, especially in relation to impacts from sea level rise/coastal inundation and flooding. National guidance is required to plan for, and implement, options such as managed retreat, accommodation, or protection.

(c) Q15: Agrees with the proposed functions, but wishes to be engaged on how they will be implemented further. In particular, Watercare supports central Government initiating the first risk assessment (while the Climate Change Commission is being established), with future assessments being the responsibility of the Climate Change Commission.

(d) Q16: Considers that the establishment of a targeted adaptation reporting power should be explored with further consultation with key stakeholders like Watercare.

6. FINAL OBSERVATIONS

6.1 Watercare acknowledges that many climate change impacts will be quite different to most other hazards because they are slow-onset, incremental, and likely to increase in severity over time. Because of the long-time horizons involved, Watercare realises that innovative statutory, political and institutional approaches will be needed in order to deal with the new legal, economic, environmental and social challenges that will develop.

6.2 Watercare recognises that the transition to a low-emissions economy is not simply a case of if, but when. Watercare supports the intention behind the Zero Carbon Bill - to provide a clear, predictable and calculated pathway through the transition. Watercare seeks that the proposed legal framework and institutions provide clarity of roles and responsibilities moving forward. They should not duplicate or add complexity to what is currently provided by the Environmental Protection Agency or the Parliamentary Commissioner for the Environment.
6.3 Watercare looks forward to engaging in further consultation on the Zero Carbon Bill. Watercare would be happy to provide further information to MFE on matters pertaining to this submission or Watercare’s business if that would assist further.

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## APPENDIX A – Examples of infrastructure adaptations and a proposed KPI for monitoring organisation’s risk profile

<table>
<thead>
<tr>
<th>Climate Change Conditions</th>
<th>Project Completed or Underway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drought Conditions</td>
<td>Increased water take from the Waikato river to augment metropolitan supplies. Moving to a groundwater source at Warkworth to ensure continuity of supply.</td>
</tr>
<tr>
<td>High Temperatures</td>
<td>Ultrasonic System Trial to combat increases in algal blooms in the Nihotupu dam. Powder Activated Carbon upgrades underway at Ardmore and Huia Water Treatment Plants to combat taste and odour issues caused by algal blooms in the stored water in the dams.</td>
</tr>
<tr>
<td>High Rainfall / Deluge Conditions</td>
<td>Centrifuge and UV Disinfection at Ardmore Water Treatment Plant to cope with highly turbid water. Continuing Inflow and Infiltration Programme to reduce infiltration into water and wastewater infrastructure.</td>
</tr>
<tr>
<td>High Winds / Stormy Conditions</td>
<td>Impact of power outages: Partnering with Vector to ensure increased security of supply using Vector owned community battery capability to maintain operation of the Kawakawa Bay Pumpstation. Solar pilots at 3 sites to recharge Control System reserve batteries which would otherwise cease operation after 24 hours without recharging.</td>
</tr>
<tr>
<td>Sea Level Rise / Storm Surge</td>
<td>Standards for new assets include consideration of 1 in 100 year events after expected climate change driven sea level rise is factored into the modelling. New Pukekohe Water Treatment Plant, Snells Algies Waste Water Treatment Plant and Mairangi Bay Pumpstation to be located above modelled rise in sea level. Pukekohe Transfer Pumpstation has been armoured to withstand flooding and potential storm surge. The analysis of the new Helensville Water and Wastewater Treatment Plants includes requirements to be above modelled future sea and 1 in 100 year event levels.</td>
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Considerations for monitoring an organisation's risk profile

Watercare considers that a key performance indicator to monitor an organisation's risk profile is valuing the organisations assets at risk from sea level rise up to 2050. Possible steps and benefits include:

- The government setting a target for sea level rise and storm surge expected up to 2050.
- Modelling of the target across the country to identify risk areas.
- Organisations identified as providing public infrastructure or delivering public services would then be required to assess the cost of assets at risk within these areas.
- Over time, targeted actions (led with clear central government guidance) would be taken to reduce this figure (is cost of assets at risk).
- By acting early and spreading the investment across the intervening years, organisations would gradually reduce their risk profile, while managing the associated costs.
- Organisations not taking requisite action or continuing to invest in high-risk area would be identified publicly as failing to address their increasing risk profile.
- The government would have access to a "think tank" of infrastructure adaptation examples, which other organisations can use to inform their approach.