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Technological change and the future of work – Issues paper
New Zealand Productivity Commission
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TO	New Zealand Productivity Commission
SUBMISSION ON:	Technological change and the future of work – Issues paper
FROM:	Watercare Services Limited ("**Watercare**")
ADDRESS FOR SERVICE:	The address for service specified below
DATE:	5 June 2019

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

- **INTRODUCTION**

1.1 Watercare's purpose and mission

Watercare Services Limited ("**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.

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.

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]

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 also give effect to relevant aspects of the Council's Long Term Plan, and act consistently with other plans of the Council.[4] Also as a substantive CCO, Watercare has a number of statutory accountability mechanisms, including the requirement to prepare and maintain a statement of intent,[5]

• SUBMISSION

2.1 General

Watercare is pleased to have this opportunity to make a submission to the New Zealand Productivity Commission's *Technological change and the future of work – Issues paper* (the "**Issues paper**").

Watercare is interested in firstly, understanding the potential impacts of technological change on New Zealand's water and wastewater services and its associated workforce, and secondly, participating in a conversation to help shape a model where digital transformations can enable a productive and prosperous future. Technological changes will have potential impacts on Watercare's future organisational operations

We appreciate that there can be some anxiety around the subject of disruptive technology and its effects on the future of work, but at a strategic level, we believe there are many opportunities to explore, for the purpose of enhancing the efficiency and skill level of our workforce.

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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.
[3] Local Government (Auckland Council) Act 2009, s 57.
[4] Local Government (Auckland Council) Act 2009, s 58.
[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.

We understand that the Productivity Commission will consequently release a draft report in August–November, which will be open for public submissions in December 2019. A final report will be delivered to the Government in March 2020.

Overall, Watercare supports the Government's inquiry into better understanding how New Zealand can maximise the opportunities and manage the risks of disruptive technological change and potential impacts on the future of work, business, and New Zealand's position in the global market; also the workforce, and society in general.

It is important to identify that Watercare anticipates increasing risk from the employment of compounding technologies. These risks could be acute to Watercare, as a major water and wastewater services provider to 1.4 million customers, because "networked technologies" can cause significant and large-scale failures due to a high-degree of interdependence. Any subsequent Government technological related policy or regulation initiatives will need to recognise these emerging risks.

The term "technology" as used in this submission is a collective term that encompasses many market references, and terms outlined in the Issues Paper such as artificial intelligence (AI), machine learning, deep learning, analytics, algorithms, robotics; augmented reality; virtual reality; big data; block chain, and the Internet of Things (IoT).

Watercare's technological initiatives - What we are doing

Watercare knows that technology has changed the daily experience of our customers – many have instant access to information products and services irrespective of location or level of participation. Therefore, technological changes have dramatically raised customer expectations of how efficiently and productively business can, and should operate.

Watercare's aspirational vision is to be *'trusted by our communities for exceptional performance every day'*. To achieve this vision, a focused business transformation was needed. Watercare fully understands that current and future significant technological changes have – and will continue to - completely change how utility service providers can and should operate their business, manage their assets, interact with their customers and motivate their workforce.

Since early 2017, Watercare has worked on developing and delivering its Strategic Transformational Programme (STP), which focuses on people, technology & process its workforce and its customers in order to deliver the following outcomes.

- A customer can do everything for themselves, wherever they are, in a single interaction;
- Every employee has the right tools, the best processes and is empowered; and,
- Every employee can make insight-informed, fact-based decisions with confidence.

STP has enabled closer alignment with IT and OT systems, which gives us greater opportunities to optimise our asset life cycles. Also concurrent with STP, Watercare is implementing other infrastructure planning, design and construction initiatives that will need to be cognisant of opportunities that technological change presents, as well as the potential for significant technological disruption.

Examples of these major initiatives are included below.

(a) In 2017, Watercare initiated a "Professional Engineering Consultancy Services Panel". This Panel includes four pre-approved suppliers who have agreed to contract terms and conditions for supplying their services, including agreed rates. The objectives of this initiative are to improve value, provide easy access to talent, and become the client of choice.

(b) Watercare's 40:20:20 vision. In early 2019, Watercare set itself an ambitious series of targets: reduce carbon in construction, or "Build carbon", by 40 per cent across Watercare by 2024; reduce the cost to deliver our capital infrastructure programme by 20 per cent by 2024; and, reduce the number of injuries incurred during construction by 20 per cent year-on-year.

(c) Watercare has concluded that New Zealand does not currently have the environment to enable world-class infrastructure delivery. Therefore, Watercare is taking an industry leadership position, and has introduced its "Enterprise Model". This will mean partnering with two "Construction Partners" to develop a long-term infrastructure programme. The Enterprise Model will be a key enabler to the delivery of Watercare's 40:20:20 vision.

(d) Watercare is developing and extending the use of digital delivery of infrastructure to the creation of "digital twins" of our assets and facilities. This will result in digital models of complex physical water and wastewater systems and networks being created and used to better understand these systems in their current state, as well as for a variety of possible future states. The potential benefits of the use of digital twins for the organisation are significant in creating timely, affordable and well considered new assets in conjunction with realising the full capacity potential of existing assets.

(e) Watercare is increasingly viewing its wastewater treatment plants as "resource recovery centres" within a circular economy model. This means moving away from a linear process (take/treat/dispose) for the treatment of effluent, to a model which harvests energy, nutrients and water to reduce waste, including greenhouse gas. Improving technological capability would greatly enable this to occur.

(f) Watercare's energy efficiency programme (started in 2016) is well underway. Current and soon to be implemented projects are projected to deliver 8GWh of yearly efficiency gains. Watercare is also actively investigating initiatives to improve its network pumping efficiencies.

Watercare's future technological intentions

Watercare anticipates that future technological change, and disruption, will continue to drive its customer needs and expectations, increase requirements for a motivated, future-fit workforce, enable increased optimisation, and reduce its environmental effects.

The future of water services is increasingly towards what is termed "Smart Water Management" (SWM). In essence this means using information and communication technology tools and real-time data and responses as an integral part of decision-making and solution design for both current and anticipated future challenges.

Watercare is currently investigating the following SWM initiatives.

a) Increasing use of smart meters: Watercare is increasingly trialling the use of "smart meters". Smart water metering systems help increase the collection frequency of data, enabling new forms of customer engagement and billing, and increased visibility of network performance;

b) Customer-centric approaches: We understand that broader technological trends are changing the fundamental relationship between service providers and customers. Watercare aims to assist customers to become more knowledgeable, improve water efficiency and community trust.

c) Non-revenue water: Creating seamless automation of external and internal data, and provision of technological tools to improve the success of leak detection efforts, and visibility of wastage and unauthorised use.

d) Improved asset management: This includes the use of more extensive technology and non-intrusive sensors to monitor asset condition, flows and performance across its network with the objective of optimizing asset life, reducing capital expenditure and operational energy.

e) Network optimisation: The increased use of big data and AI to help predict customer demand impacts and to optimise the economic and resource utilisation of water sources, networks, peak attenuation, wastewater conveyance and treatment processes; and,

f) Health and Safety: Increased use of real-time activity tracking, drones and robotics in hazardous situations/areas to reduce risk to our workforce.

2.2 Submission Point 1: Looking to the future

We agree that the four potential "future of work scenarios" presented in the Issues paper: 1) "More Tech & more jobs", 2) "More tech & fewer jobs", 3) "Stagnation", and, 4) "Steady as" cover a comprehensive range of possible future outcomes.

Whichever scenario bears out, a paper by the "*Australian Government - Department of the Prime Minister and Cabinet - Technological Change and the Future of Work, 2017*" presented an insightful way to understand the overall effect of new technologies on the number of jobs in the economy as a tension between two dynamic processes:

- On one hand, automation tends to take jobs away, and on the other,
- The invention of new complex tasks creates new jobs.

There has been no secular rise in technological unemployment over the past two centuries during certain times of major technological change and disruption. Most importantly, with improving levels of education, many people have risen to the challenge of mastering these increasingly complex roles and ways of working, so have acquired new or reformed occupations.

2.3 Submission Point 2: Technology and the labour market

We believe that many existing jobs will not be completely replaced, but will be reconfigured as a result of future technological changes. We believe the focus should remain on the role machines can, and should, play in adding value to society, and human capital. The workforce needs to work alongside AI and robots, rather than focus on being substituted by them. We believe machines can enable and amplify the capacity and productivity of the workforce and society, and we oppose the notion of total automation.

Machines and enabling technologies should be deployed to assist with efficiency and productivity, and to minimise routine, manual tasks and free the workforce to utilise more strategic and creative abilities. Therefore we believe the labour market, associated labour policies and up-skilling mechanisms are managed correctly, the application of technological change can be managed and shaped to enhance social and economic prosperity, and enhance the skill and abilities of the existing and emerging workforce.

We believe it is likely that the future work-force will decreasingly apply previously learned knowledge and skills, and increasingly work in connection to machines and automation. "Successful" workers will need to be to constantly curious, creative and successful in teamwork and collaboration.

- Therefore Watercare believes that the Government should facilitate a transitional environment which enables a workforce who adapts to new technologies in current roles, or re-deploys to emerging roles. This will manage the negative impact of disruptive technologies on the workforce in general, and Watercare staff in particular.

2.4 Submission Point 3: Education and skills supply

The workforce will need to learn how to navigate future uncertainty, instability, and change. There are many threatening images of future technology that prevent more nuanced perspectives of AI and automation. Education systems should increasingly enhance and

develop new communication, collaboration and creativity skills within an increasing technological environment, with both people and AI.

Education needs to: enable equitable access to, and adoption of, technological change; reward innovation; encourage agile approaches to achieving outcomes; promote a life-long dedication to re-training and re-skilling (Learning) as the new normal. Qualifications need to reflect the market's needs (short, sharp) and employers need to respect and accept the new view towards education and qualifications The context we now, and will work within are increasingly shaped by the integration of automation, analytics, big data and other technological development.

Notwithstanding the focus on technological integration, a focus on developing uniquely human skills, collaboration, effective communication, empathy and judgement is also essential to social prosperity. This must include a balanced perspective on the social impacts of digital networking (remote workforce capability) versus co-located, face-to-face collaboration and co-creation.

- It is very important that the water services industry continues to attract and retain highly educated people with the right skills. In this context, Watercare recommends the Government review and amend sector-wide education policies so education providers can inspire secondary and tertiary students to value uniquely human skills embrace new and emerging expertise, to develop the ability to co-create alongside – and through – technology, and to support life-long learning habits. Very few organisations will change what they produce (do) but what will change is how they do it (Technology will force collaboration.)

- Watercare advocates for industry-based education accreditation, especially in the water services sector. Therefore, Watercare supports Government initiatives to enable the establishment of industry self-accreditation, to enable the workforce to become certified in unique areas of specialisation and experience.

2.5 Submission Point 4: Firm and economic policies

Watercare believes that a major barrier exists with respect to improving New Zealand's future technology adoption and diffusion. This barrier has resulted from a lack of standards, especially a sub-optimal approach to the rollout of technological supportive infrastructure. A good example of a standardised approach was the Government's programme of its ultra-fast broadband rollout. This was a public-private partnership of the Government with four companies, and a total government investment of NZ$1.5 billion.

Currently in the United Kingdom, their Government is building a new initiative to support collaboration on their 5G mobile network roll-out, bringing together local government, landowners and industry to collaborate on planning challenges and policy mechanisms.

Standards are most effectively developed when the Government creates an enabling environment for the relevant industry players and the end users, to work together.

Governments can also play a role in the promotion of the use and uptake of standards and technical specifications.

- Watercare recommends that the Government take a strong leadership role, using the recent ultra-fast broadband rollout as an example, with respect to standardising the necessary technological platforms, and communication networks, and delivering enabling technology for New Zealand. Such leadership would help assist larger organisations to leverage off this infrastructure and approach to standardise their operations and initiatives.

- Watercare suggests that the Government considers removing impediments and enabling technologically-related infrastructure to be implemented in concert with major infrastructure projects. This will require a greater degree of multi-agency collaboration and planning.

- Watercare believes the Government could also assist organisations and businesses to take advantage of technological opportunities through support for research and development (R&D). A focused and incentivised approach to encourage technological R&D, and open-source sharing of results for the benefit of all New Zealand.

Watercare believes that delivering these above initiatives, together with fulfilment of the "Government ICT Strategy" review – the New Zealand Government's foundation for digital change – will create a more collaborative environment. This would significantly facilitate access to, and adoption of, new technologies, mitigate risks associated with 'compounding technologies', and assist in the realisation of our common vision for the country and our workforces.

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