



## Water Workforce Analysis Phase 3 Results

Department of Internal Affairs | 9 May 2022 | **Commercial in Confidence**



# Executive Summary

# Executive Summary



## Background

Council Long Term Plans (LTPs) signal a material step up in capital expenditure (capex) and operational expenditure (opex) on Three Waters over the next decade. This is before any allowance is made for the potential impact of new water regulatory standards and water reform. However, there is a significant concern that the workforce required to deliver that increased expenditure is not in place currently, and there is a need to strategically expand that capacity. Further, while anecdotally the workforce situation is already challenging, the data around the scale and makeup of that workforce is not comprehensive and there are no reliable forecasts as to what the future national workforce needs to look like.

In that context, Deloitte was engaged jointly by the Department of Internal Affairs (DIA) and Waihangā Ara Rau to undertake preliminary analysis to identify the nature and scale of changes that will be required in the Water Sector workforce. The objective of the analysis was to establish a preliminary “end-to end” view of the workforce – including the core workforce of councils and council-owned service providers, and the external consultant and contracting workforce that collectively delivers Three Waters capex and opex. The intention is that this initial analysis, and the related calculation tools, can be refined over time to assist with workforce planning and longer-term development strategies directed at addressing capacity constraints.



# Executive Summary



## Approach

**The approach to this project included the following key steps:**

- Building on work undertaken previously with consultants, contractors, and Wellington Water technical staff to identify the typical projects that made up the capex plans for the Wellington region
- Developing a FTE profile by specialisation/competency required to deliver each project type
- Developing a calculation tool that applies the established profiles to the capex spend, incorporated in councils' LTPs to estimate the composition and scale of the workforce required to deliver those plans
- Expanding the analysis to incorporate opex spend
- Testing and refining that analysis in consultation with Watercare and Healthy Waters to develop a “metro” profile
- Using the metro profile and the aggregation of all council LTPs capex and opex spend to provide an initial estimate of the future national workforce
- Testing the modelling approach and outputs with several provincial and rural councils to identify where the model would need to be refined to capture their specific circumstances and to develop the functionality to amend the “metro profile” to develop separate profiles for “provincial” and “rural” councils.



## Model Functionality and inputs

**The calculation tool or “model” has been designed to:**

- Take council 10-year LTP capex and opex projections
- Adjusting the LTP projections to exclude non-labour costs (materials etc) – to forecast a workforce spend profile
- Allow that modelling to be devolved to an individual council level or aggregation of councils – whether by region or potentially, under new WSE aggregation scenarios
- Model a range of sensitivities and scenarios including changing the scale and profile of the capex and opex spend and changing workforce composition
- Enable the role of Iwi/Māori to evolve and keep aligned with ongoing developments, progress and transformation of the industry.

# Executive Summary



## Results and key limitations

### The results presented in this document show:

- A national view of the baseline water workforce FTE forecast over the next 10 years which estimates an increase of 11.5k FTE or ~75%
- A disaggregated view of the national baseline split between capex and opex – with capex driving 1.5k FTE increases or 13% of the total increase and opex driving 10k FTE or 87% of the increase
- A sensitivity scenario showing the impact of lower efficiency assumptions associated with the delivery of capex and opex in a provincial and rural setting
- A disaggregated 10-year baseline view of FTE requirements split by eight major role types.

### The key limitations with the modelling are:

- A need to simplify the capex and opex spend into a limited number of projects with similar resourcing characteristics
- A need to aggregate a broad range of skills/experience into a limited number of more general role types
- The extrapolation of data and relationships sourced from a limited number of councils to the projected national spend on Three Waters capex and opex
- The basing of the analysis and modelling on relationships as they are now – which won't necessarily reflect how projects get delivered on increasingly modernised networks, how they will operate in the future, or how regulation and reform could impact on the workforce or provide opportunities for Iwi/Māori in particular.

We have tested our key insights with a range of councils, DIA and stakeholders; and also tested the results through a range of scenarios. While the range of modelling may vary for individual councils, the analysis covers some of the largest councils by overall three waters expenditure, and we are confident that this provides a robust base to support the overall direction and scale of the analysis.





# Executive Summary



## Regional Variations and insights

Discussions with Provincial and Rural councils identified a number of factors which could cause the resourcing profiles in those settings to differ from those established for the metros. These included:

- The large geographic areas serviced meaning greater travel time for staff, higher consumption of fuel, and maintenance costs
- A dependence on the experience and know-how of key staff to keep critical plants operating
- Immaturity of systems – particularly in relation to asset management
- Areas where the Māori population, land interest, or both is significant requires consultation with Iwi/Māori. Ample time and budget for both new and renewal projects and their consents need factoring in
- In some settings only a relatively low proportion of the population serviced are on reticulated networks
- Challenges posed from operating a relatively high number of small plants spread over a large area
- A view that the current opex workforce is not necessarily reflective of what a future workforce will need to look like in a more mature environment – with a view that additional resources may be required to improve the resilience of current service delivery regardless of whether there are enhanced quality of service obligations.
- While metros were expected to enjoy efficiencies due to scale and access to specialised staff, the combination of financial constraints and a flexible workforce in the regions could offset those efficiencies.

### In terms of specific feedback on the approach and modelled output:

- Councils were comfortable with the general approach
- There were differences of view as to whether the workforce profile was appropriate/could be mapped to how the council thought about its workforce
- There was a concern that the model output may overstate the opex workforce by a significant margin for some smaller councils. This is due to a combination of factors including a reliance on experienced, key staff, flexible workforce/workforce practices and lower levels of resilience – e.g. documentation of systems and processes, assurance practices etc. However, our sensitivity analysis indicates that this is unlikely to have a material impact on the overall analysis at an aggregated national level.

### Other feedback:

- Systems and processes are not necessarily well documented, which elevates the reliance on key staff and creates significant risk if these staff leave or are otherwise unable to perform their current roles
- Commitments made as part of any reform process could create significant additional cost – for example improving access to reticulated services
- Similarly, if provincial and rural communities are to enjoy the same “quality of service” commitments as those for metros that would require a significant change to the workforce and related cost.

# How this work could be utilised



## A tool to support Workforce Development Strategy

The modelling undertaken to date provides an indication as to how the Three Waters workforce will need to scale up to meet current LTP projections. The model can be used to estimate the impact on the workforce of varying the nature and timing of capex – at both an aggregate and an individual council level; and the potential impact of different workforce development strategic initiatives.

### Provincial & Rural Profiles

The analysis and modelling to date has been developed with detailed input from the respective Auckland and Wellington region service entities. Initial feedback from provincial and rural councils indicates that resourcing profiles in those settings could vary significantly.

There would be significant benefit in receiving further feedback from the provincial and rural councils. That feedback would allow further refinement of the model outputs.



## Applications of the modelling

The modelling and analysis have been designed to be utilised by councils and WSEs across a range of future purposes:

- Understanding the water workforce profile and composition as the sector transitions into the new WSEs.
- Modelling different scenario sets, as it relates to uplifts in spend and when those uplifts are anticipated to occur.
- Modelling the effect of different workforce pathways, such as skills transition as new technologies or new workforce roles evolve.
- Informing other aspects of government policy in relation to constraints, immigration settings, skills shortages, and national workforce development strategies.
- Use by individual councils to back-test and validate their capex and opex plans and to provide confidence to existing workforce of future opportunities.
- Modelling the effect of further reform (e.g. quality and regulatory standards).

# Introduction



# Introduction



## Water Workforce Analysis



### Background

Deloitte has been engaged by the Department of Internal Affairs to undertake preliminary analysis to identify the nature and scale of changes that will be required in the Water Sector workforce. This change being the step up in workforce required to deliver the very significant increase in opex and capex that is expected to be needed to ensure New Zealand's Three Waters services meet mandated standards and accommodate growth.

The Deloitte analysis and related modelling:

- Forms part of a wider programme of work directed at developing strategies to ensure that the sector has access to a workforce of the scale and capability required to deliver the anticipated work programme.
- Is based off earlier work undertaken for Wellington Water to identify the makeup and scale of the workforce required to deliver the material step up in Three Waters capex anticipated in the region's councils Long Term Plans (LTPs).



### Workstreams of analysis

As part of this project, Deloitte undertook analysis involving:



#### Industry Engagement

Working with consultants, contractors, and Wellington Water technical staff to identify the typical projects that made up the capex plans for the region



#### Profile Development

Developing an FTE profile by specialisation/competency required to deliver each project type



#### Workforce Calculation Tool

Developing a calculation tool that applies the profiles established to the capex spend incorporated in the council LTPs to derive an estimate of the makeup and scale of the workforce required to deliver the forecast capex programme.



### Outputs

This earlier work has now been expanded to incorporate opex and input from Watercare (with respect to expenditure on drinking and wastewater) and Healthy Waters (with respect to stormwater).

Phases one and two of this project were directed at validating and expanding (to incorporate opex) the initial Wellington Water analysis and to build an underlying calculation tool that can be used to estimate the scale and makeup of a future national "water" workforce.

The outputs calculated and summarised in this deck are based on capex and opex sourced from the aggregation of national LTP data and the workforce and project profiles developed in consultation with Wellington Water, Watercare and Healthy Waters.

Subsequent to these phases, we have looked to further validate the approach and model outputs with input from a number of provincial and rural councils – with a particular focus on identifying reasons why these could vary from that established for the metros and to what extent. We have also referenced data for Electricity Distribution Businesses (EDBs) as a potential benchmark operator of network assets.

Scenario functionality has been developed to demonstrate the implications for the water workforce from increasing capex and opex above the levels reflected in current LTP data and varying the phasing of any changes.

In addition to engaging with councils (and water services CCOs) Deloitte has also discussed the project – including the approach taken and intended outputs – with Water New Zealand, Taituarā, Waihanga Ara Rau and Assurity.

# Results and Key Constraints

The results presented are subject to limitations, predominantly related to data availability. This analysis is based on forecast LTP spend and does not reflect any adjustment for the anticipated material step up in the capex and opex required to meet new regulatory standards or the increased financial capacity expected to be created under a reform scenario.



## Results



### Results summary

The results presented include:

1. A national view of the baseline water workforce FTE forecast over the next 10 years
2. A disaggregated view of baseline capex and opex
3. The disaggregated 10-year baseline view of the water workforce, with functionality to analyse councils by three profiles:
  - Metro
  - Provincial
  - Rural
4. The disaggregated 10-year baseline view of the water workforce, split by eight major role types



## Limitations



### Timeframes

This analysis was undertaken through the latter part of 2021 and early 2022. Significant competing demands on council staff time has made it difficult to obtain all of the information/insight we have been seeking – particularly from provincial and rural councils. At the time of drafting we are still waiting on further feedback from one further rural council.



### Available data

This analysis has been prepared based on:

- Information provided by DIA: RFI, LTP, Annual Plan and Annual Report data.
- Wellington Water, Watercare, and Healthy Waters data to inform the 'composite Metro Profile'.
- Input from Palmerston North City Council (PNCC) and Hastings District Council (HDC) to inform the Provincial Profile.

- Input from South Wairarapa (via Wellington Water), Far North District Council (FNDC) to inform the Rural Profile.

We note that:

- While we have had the opportunity to engage with at least one council of both the provincial and rural sizes, more work is required to fully capture the nuances of delivering water services in these areas – preferably across a larger sample size.
- The analysis presented so far is based on the assumptions underpinning LTPs as these relate to the cost of delivering and investing in Three Waters services. It is likely that these assumptions will change significantly with water reform and new water standards regulation and related regulation.

# Basis of analysis

Data availability has driven the baseline analysis presented in this document.



## Baseline analysis



### Analysis undertaken in this study

The results presented in this document represent the baseline forecast only, and are driven exclusively by spend that is published in the latest 10 year Long Term Plan for councils. That is, this analysis does not include:

- Any other spend beyond the latest LTPs
- The timing and impact of Water Reform
- Any anticipated impact resulting from upcoming regulatory standards beyond that assumed in council LTPs
- Any innovation and efficiency gains from Water Reform
- Increased opex and capex resulting from the formation of WSEs with associated increased financial capacity

Furthermore, this analysis only captures roles relating to those required by councils (both internal positions and those outsourced), and does not include water-related roles in areas such as:

- Private provision of water services in rural areas
- Major commercial and industrial operations e.g. Fonterra



## Scenario analysis



### Possible future analysis

With a methodology and model established to develop a baseline, there is capability to test scenarios beyond this. The model includes functionality to model a range of possible future scenarios that could analyse:

- Flexing the amount of capex (e.g. to the full LTP values or beyond for new reform driven spend)
- Change in the composition of capex projects
- New Water Reform driven opex
- Changes in regulation
- The impact of climate change on expenditure plans
- Varying resourcing profiles for provincial and rural based on further refinement with councils
- Transitioning existing roles or creating new ones that do not currently exist – for example, plant modernisation or expansion could see increased roles for Iwi/Māori
- Addition of new workforce roles, obsolescence of existing roles or transition pathways for changes in skills mix over time including the ability to take a deeper dive into occupational categories

# National view

## Future of national water workforce demand

# 10-Year baseline water workforce estimate

Our modelling shows that the **water workforce** may need to grow by **~11,500 FTEs over 10 years**, based on LTP spend, even after **reduced annual LTP capex by 14%** to reflect our analysis of historic capex underspend on previous LTPs. Under a scenario where we uplift provincial and rural capex by 10-15% and opex by 10-35%, respectively, FTEs grow by a further **~1,100** over 10 years.

## Our Modelling Assumes:

- **LTP capex reduced by 14%** to account for historic underspend. This is based on Deloitte analysis of 5 years of previous LTPs vs Annual Report data
- A scenario range based on two 'bookends':
  - Low end, where metro, provincial and rural councils all follow the same profile
  - Upper end, where provincial capex and opex are both uplifted by 10% relative to metro, and rural capex by 25% and rural opex by +35% relative to the metro profile

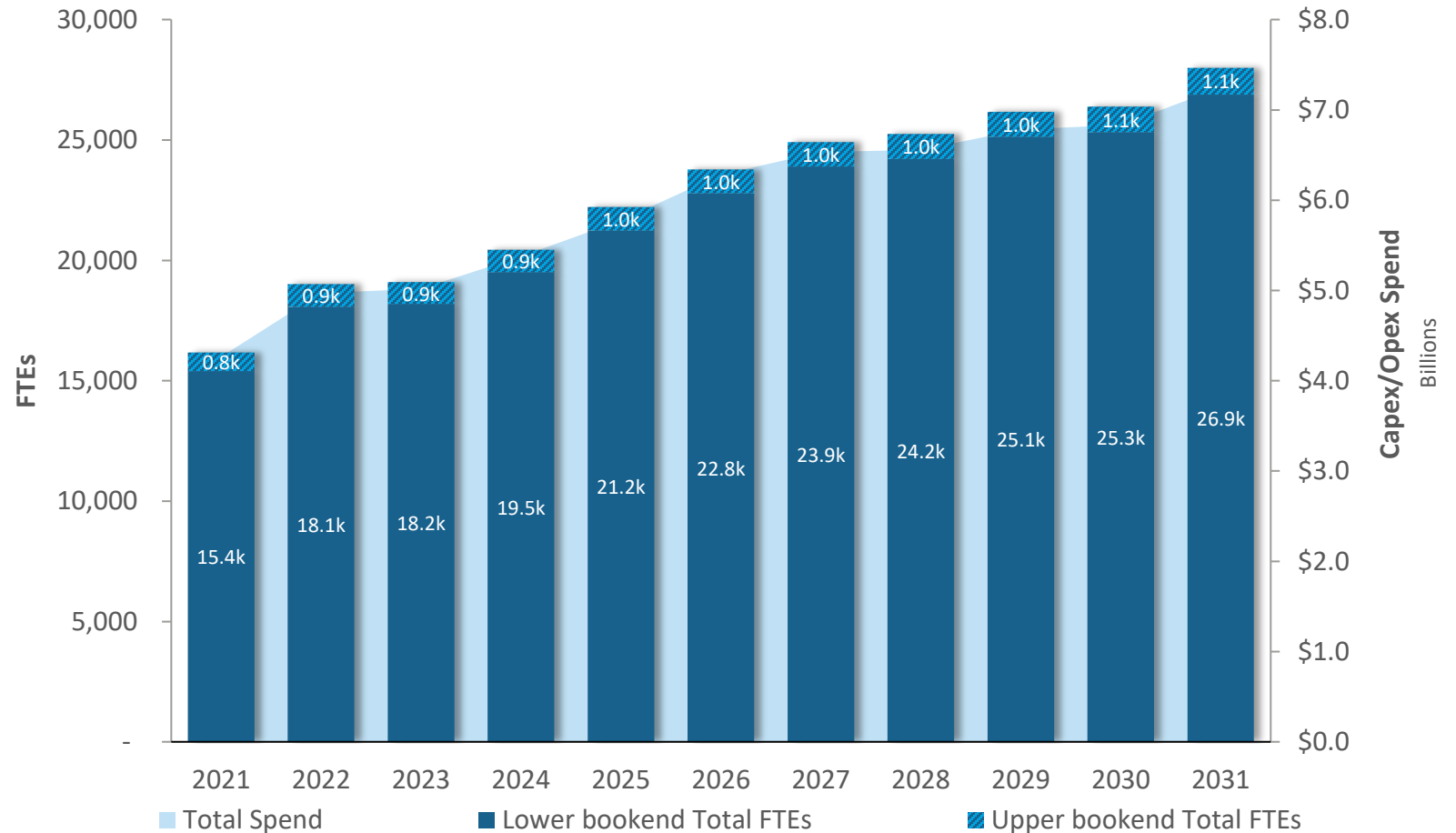


There is no single source estimate of the current workforce across councils, contractors and consultants. These high level estimates are based on a combination of RFI data, anecdotal evidence from conversations with sector participants and Deloitte analysis of StatsNZ estimates by ANZIC code

## Estimated current workforce numbers

- Contractors and consultants
- Council and direct contractors

## Total FTEs vs Total Spend

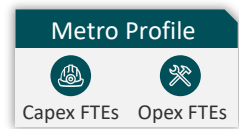
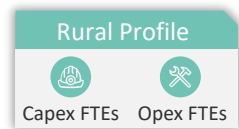


# Scenario analysis range (across two 'bookends')

While we expect that rural and provincial councils are likely to need more FTE resources to deliver the same value of activity, our scenario modelling indicates that this is unlikely to have a material impact on the overall increase in the national workforce

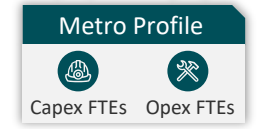
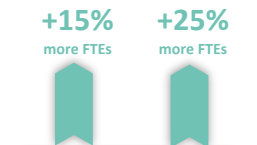
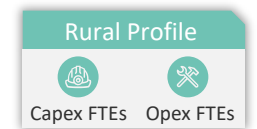
## Lower bookend

The lower bookend is defined by a highly conservative assumption that smaller councils deliver water services as efficiently as that of a metro council

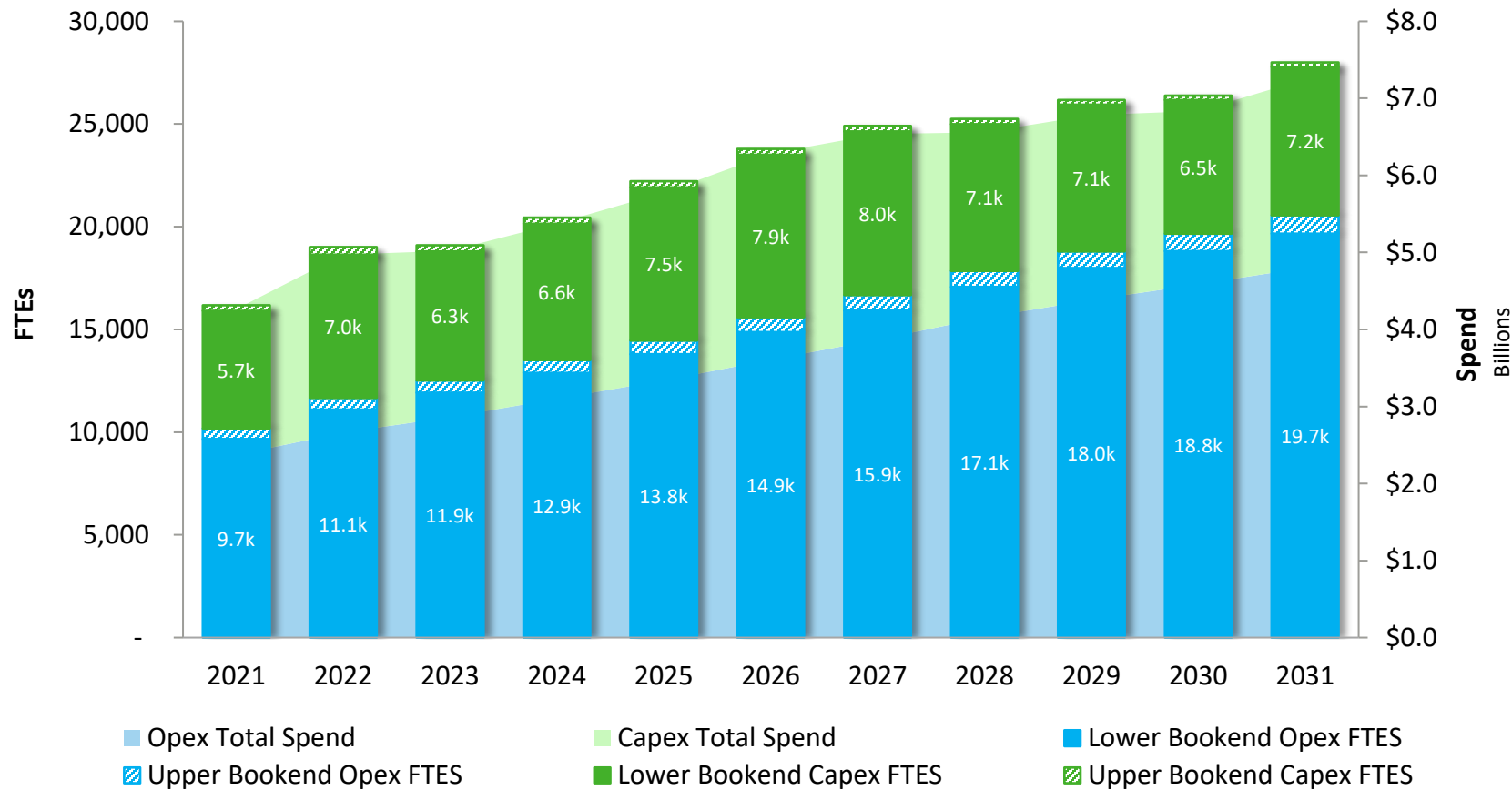


## Upper bookend

A more realistic upper bookend assumes that provincial and rural councils require more FTE resource to deliver the same value of activity. The modelling shows that the overall increase in FTEs is not very sensitive to these assumptions



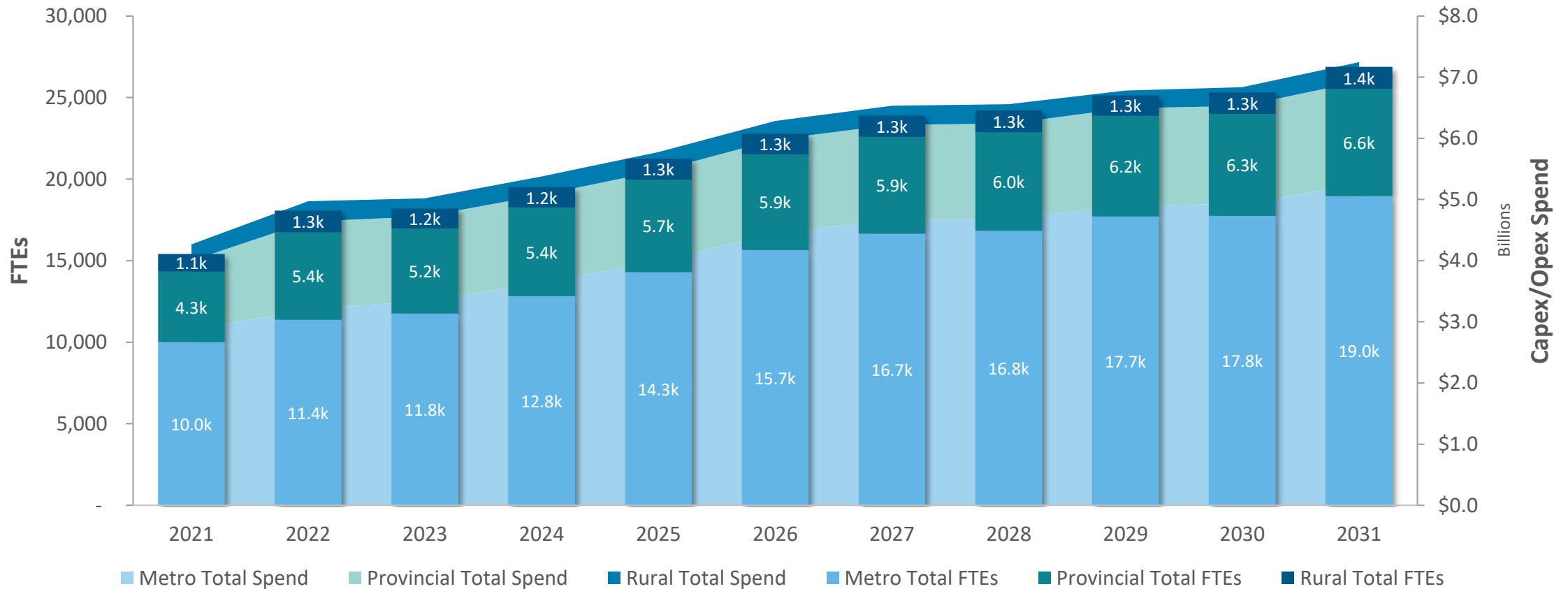
### Total FTEs vs Total Spend Opex and Capex



# Baseline 10-Year water capex and opex workforce estimate by council size

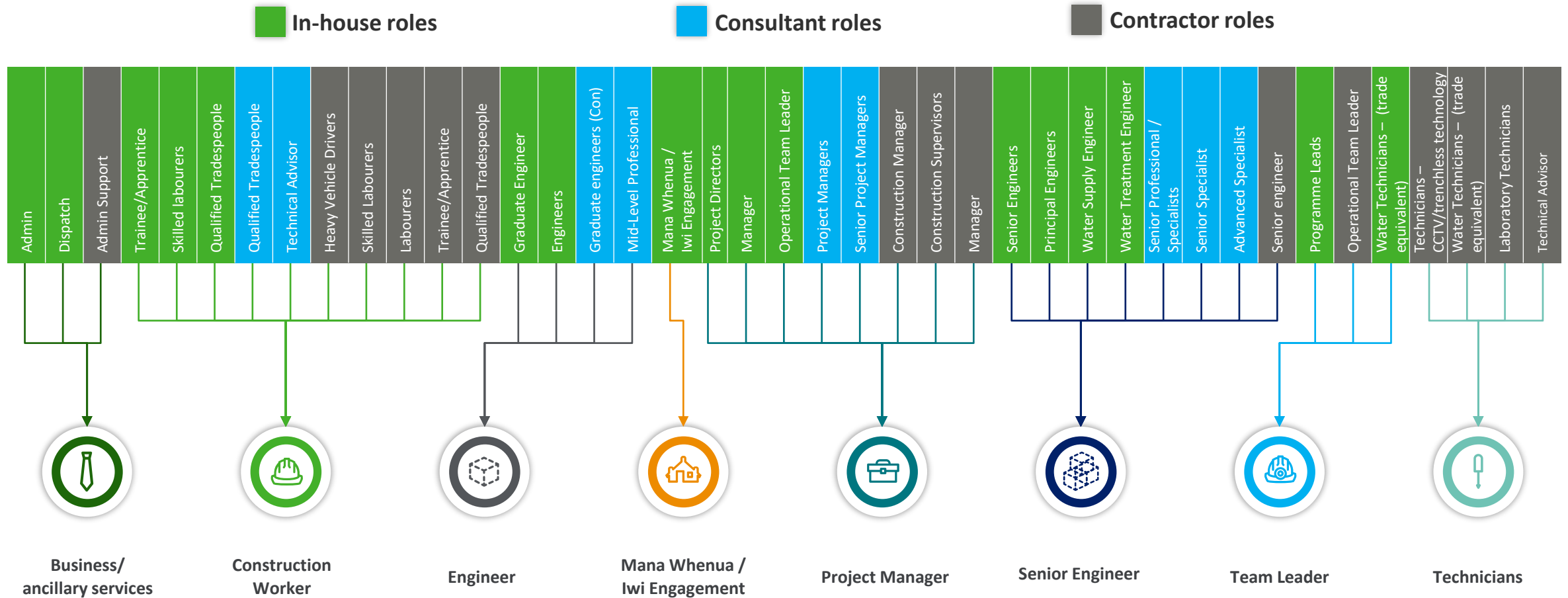
A baseline allocation of the projected Three Waters workforce has been established by inputting national LTP data and the metro resourcing profiles into the model. The share of national LTP spend is the variable that determines the allocation of the projected workforce between metro, provincial and rural councils. Given the limited impact of varying the provincial and rural spend profiles, the remaining charts in this section show the lower bookend only

**Total FTEs vs Total Spend by Region Size**



# Workforce role groupings

The roles provided by the metro entities have been grouped in a more limited number of categories. We recognise the roles types and groupings are likely to vary across a provincial and rural context.

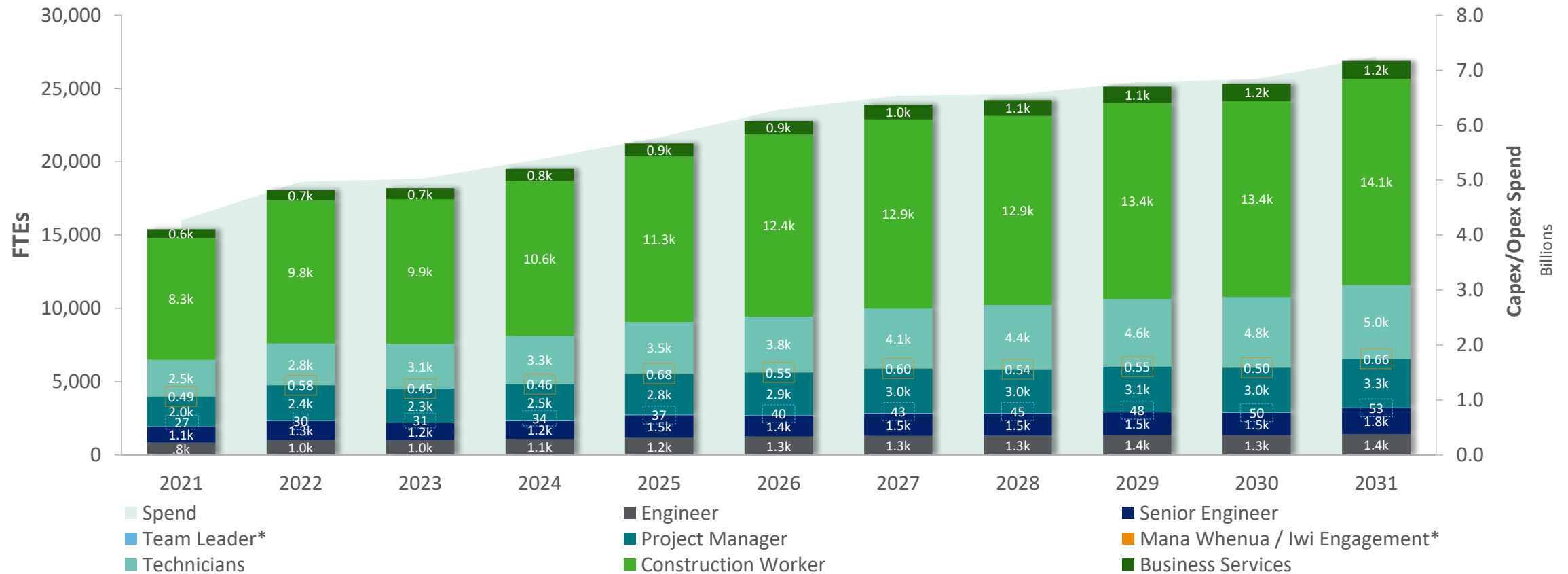




# Workforce estimate by major role types

Broadly, construction workers (driven by both capex and opex spend) represent the largest resourcing requirement each year. This is followed by technicians, which is largely driven by opex spend. We note that there are few existing dedicated Mana Whenua engagement roles across the large metro councils that have contributed to this analysis although we expect that this activity may comprise part of other roles

## Workforce by major role type



\*Note: Numbers presented for Team Leader and Mana Whenua / Iwi Engagement roles are the full unit values i.e. not thousands

# Scenarios

# Proposed Model Scenario/Sensitivity Functionality

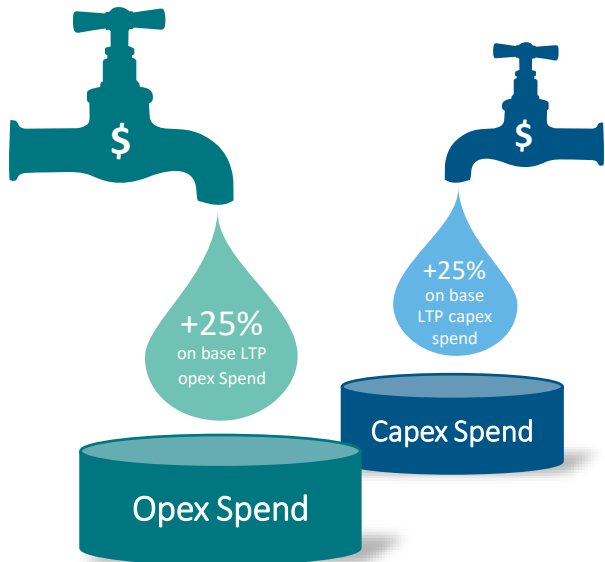
The model has functionality to test a range of scenarios in future. The model also has the ability to input data at an individual council level and to model output by region or council type.

## 1 Capex/opex uplift

An objective of Three waters reform is to accommodate a substantive uplift in capex and opex spend. The current modelling is based on LTP expenditure (adjusted down by 14% to reflect historic underspend)

### Illustrative Scenario 1 – Part 1

We have modelled the scenario below to show the potential impact of a large increase in opex and capex over time

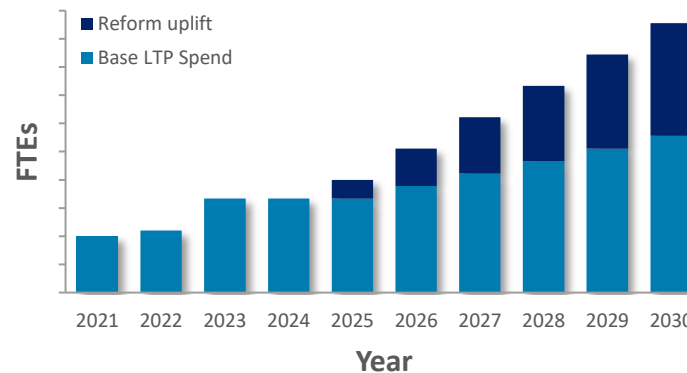


## 2 Transition of capex/opex uplift

A change in capex profile can be applied over a transition period (e.g. post reform scenario, including WSE formation and updated programme of works)

### Illustrative Scenario 1 – Part 2

We anticipate a period of steady spend in the years either side of water reform, with spend increasing once the new entities have been formed and after the work programmes are agreed. Illustrative scenario 1 includes the effect of a 25% uplifting both capex and opex, applied over a multi-year period, beginning in 2025.



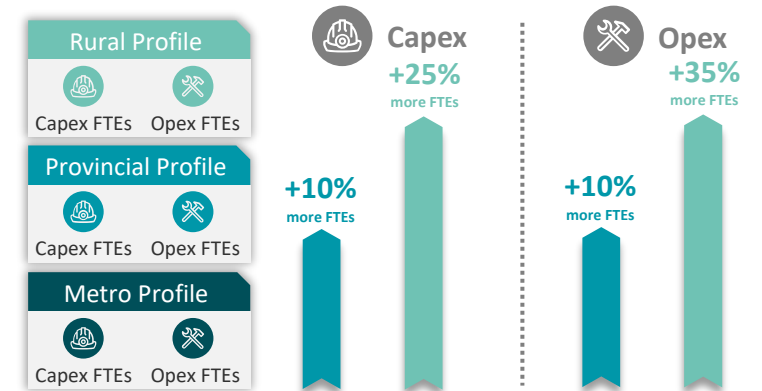
## 3 Variable Metro, Provincial & Rural Profiles

The model includes the functionality to flex resourcing efficiency at provincial and rural councils relative to metro councils.

### Illustrative Scenario 2:

Scenario 2 illustrates the effect of additional workforce requirements at provincial and rural councils relative to the same level of spend or activity at metro councils and is consistent with the 'upper bookend' in our analysis range.

This variance reflects different role types, to reflect reduced efficiencies associated with smaller councils and the geography of their water infrastructure.

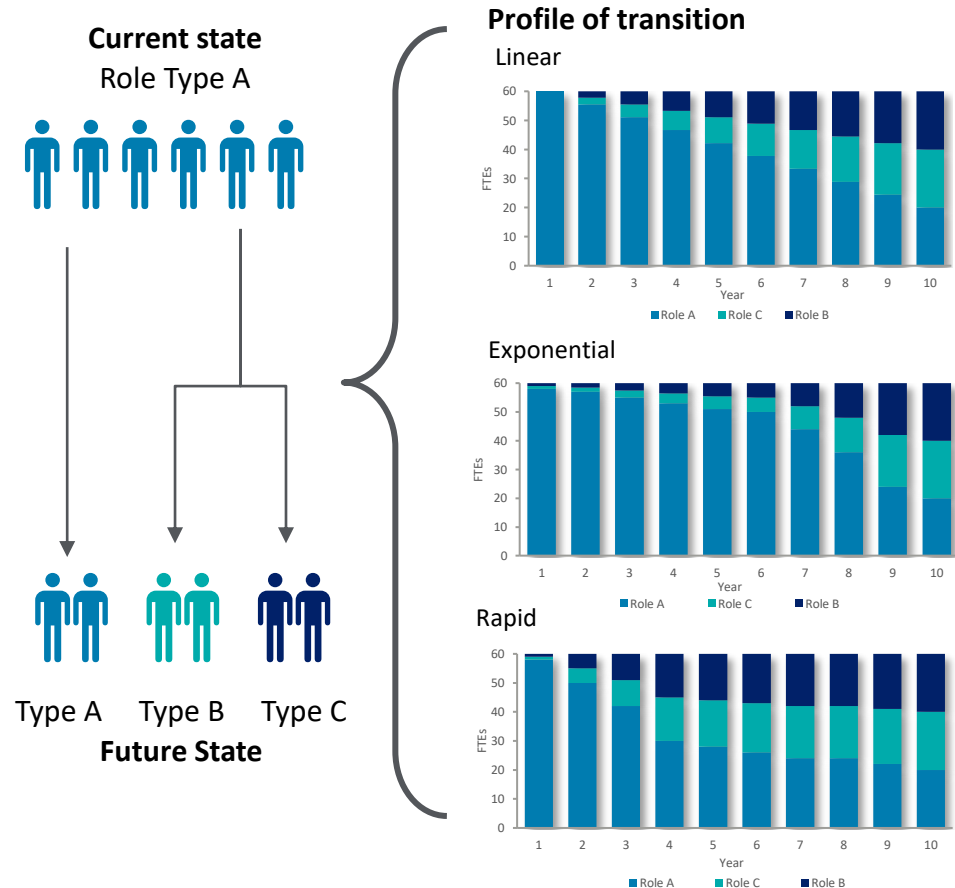


# Proposed Model Scenario/Sensitivity Functionality – Workforce Transition

The model also has functionality to test a range of alternative future workforce transition scenarios

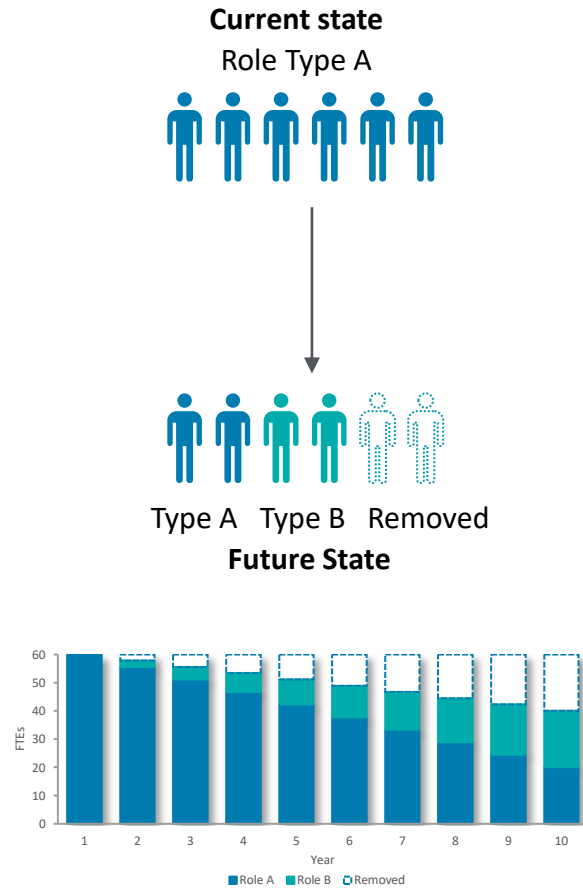
## 4 Role transition

We are aware that as technology evolves, a situation will arise where workers in existing roles will re-train and transition into new types of roles in future



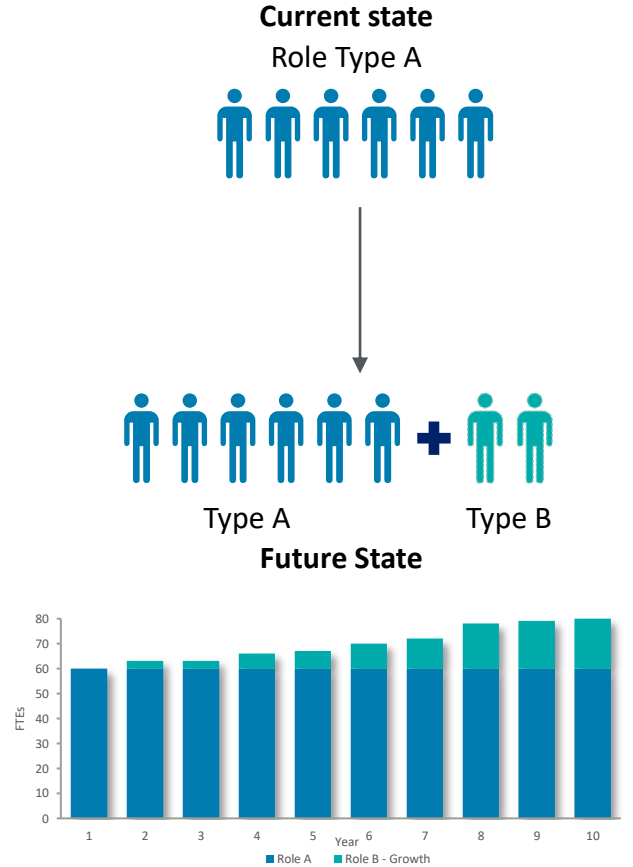
## 5 Decline of existing role types

Either through technology or productivity gains, a situation may arise where the required number of workers in existing roles simply decline



## 6 New roles

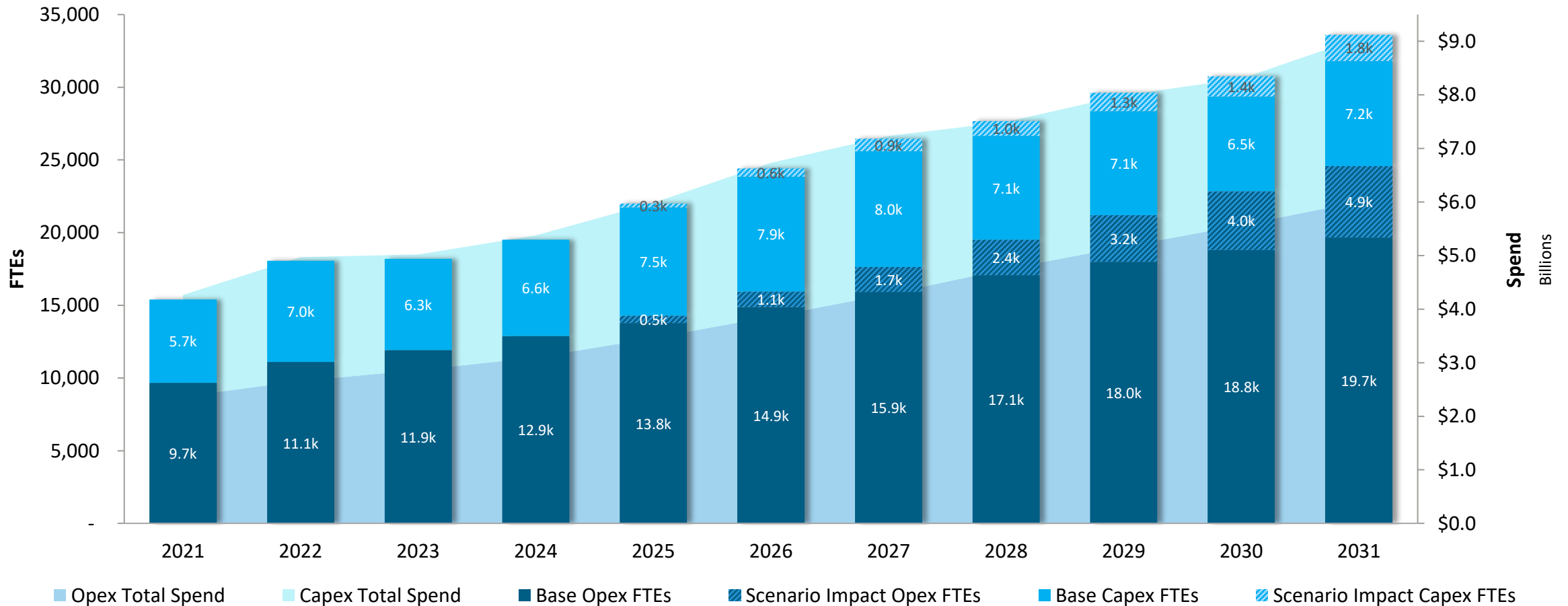
Anecdotally, we are aware of new roles that will be required in future above and beyond the base case and what is expected to scale with LTP spend



# Scenario 1 – capex and opex spend uplift

Our base case modelling uses council LTP data as a key input. The following scenario illustrates the effect of increasing both opex and capex by 25% relative to the base case – with that increase occurring gradually from 2025 onwards.

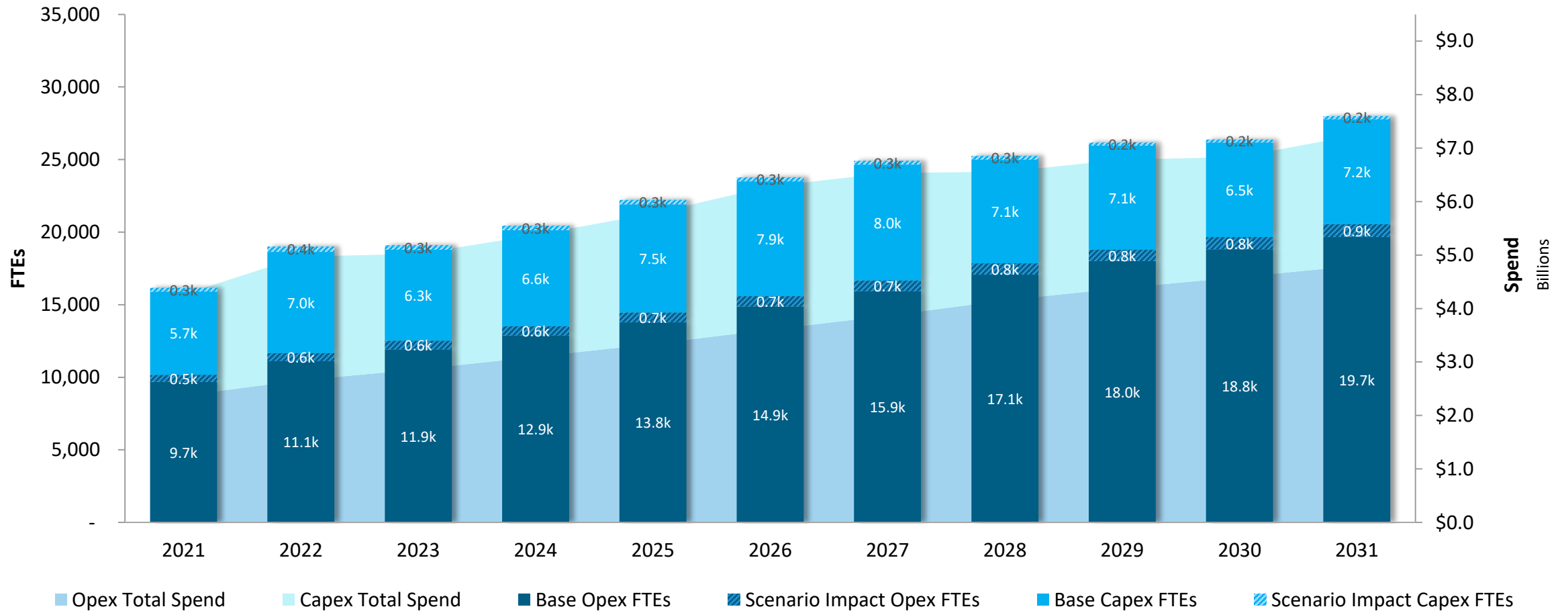
**Total FTEs vs Total Spend Opex and Capex**



## Scenario 2 – Alternative Provincial and Rural Profile workforce profile

The scenario below shows the impact of a +10% step up in both capex and opex profiles for provincial councils, and a +25% step up in capex and +35% step up in opex for rural councils; both relative to metro councils. This scenario is equivalent to the ‘upper bookend’ of our analysis range

### Total FTEs vs Total Spend Opex and Capex



# Council profiles

# Metro council profile

Our base case adopts the metro profile across all councils

## Key distinctions

The Metro profile is intended to reflect the typical resourcing requirements needed to deliver three waters-related capex and opex in a metropolitan setting. This profile largely builds upon the work developed with Wellington Water for their Capacity and Capability Review, which was subsequently presented to Watercare and Healthy Waters for validation and adjustment to reflect specific resourcing for Auckland. A weighted average composite of the two profiles was created to form the 'Metro profile'.

### Delivery and composition of services

A key driver of resourcing needs is the what and how activities are being delivered. Major projects form a high proportion of capex spend for metros which does not necessarily translates to high resourcing requirements, depending on the location or nature of the work. In some instances the requirement can be less than a simple project of equivalent spend. We also note that resourcing for metros is largely driven by outsourcing (as opposed to in-house delivery) – e.g. through an engineering and contractor panel in the case of Wellington Water.

Different procurement models have resulted in various levels of efficiency. It was noted that more “packaged” work and long term planning results in more efficient delivery of projects/work as providers can better manage delivery. Additionally, the composition of workplans can represent what a council/water provider feel is able to be delivered based on the market and resources, rather than resourcing being driven by prioritised requirements. This can skew the work programme.

### Geography & demography

The high-density nature of metros works in favour of reducing travel times which in turns aids efficiency, but can also draw on additional resources that would otherwise not be required in an provincial or rural setting e.g. traffic management most notably.

Furthermore, there is often a greater degree of criticality associated with emergency events, such as breaks and bursts, which often divert resources from all other capex/opex works until the problem is remedied (e.g. Jervois Quay mains burst).

### Technology and infrastructure

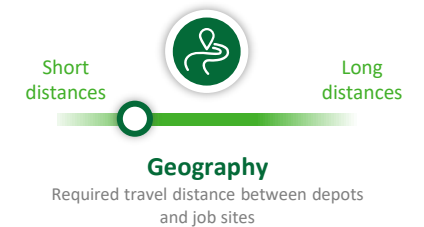
Metros are noted to have more sophisticated treatment plants with a greater degree of automation. New technology may require a small training component e.g. different interfaces and graphics. In some instances, further upskilling may be required for operators of older plants as they are replaced with more complex ones. Despite the increased automation anticipated across the network, the number of resources is not anticipated to be reduced but rather the skills of the people required will change.

### Other factors and considerations

Mana whenua, resource management and climate resources have not been fully scoped yet in the current process. However, it is anticipated that as things progress the need to increase them will be significant, compared to the current base. These are issues that are likely to become more pronounced and require greater engagement, focus and accountability.

Compliance and reporting requirements will also increase significantly as drinking water regulation comes into play. Entities will need more and more regular checks and samples of water, increased testing and increased reporting. This will also impact waste water as that comes into regulation in the future.

## Relative difference





# Provincial and rural council profiles

The upper bookend applies a provincial and rural profile with a higher ratio of staff to activity spend

## Key distinctions

In order to get a sense of how resourcing requirements might vary for provincial and rural councils relative to that established via the metro profiles we:

- Discussed our methodology and findings with representatives of the Far North District Council (FNDC), Palmerston North City Council (PNCC) and Hastings District Council (HDC); and
- Reviewed Wellington Water experience in servicing South Wairarapa District Council (SWDC) and Hutt City Council (as a proxy for a provincial city)

Feedback from councils was that they understood the approach at a conceptual level and weren't aware of alternative analysis that could be referenced.

### Delivery and composition of services

HDC and FNDC indicated that resource profiles and costs are likely to vary quite significantly between Metros and provincial and rural councils – particularly in relation to opex. Feedback indicated that while there would be some differential in terms of capex spend and resourcing a lot of the core capex process was outsourced. PNCC noted that it had retained this capex capability in-house.

Opex was seen as being significantly more resource hungry and an area where there would be substantive differences between provincial and rural councils, and the metros – with there likely to be significant variations as between different provincial and rural councils.

The importance of opex resources should not be understated as these roles are the ones keeping things running (i.e. represent critical workforce) with opex requirements already being significantly under resourced, resulting in the number of current FTEs being a stretched in terms of existing commitments.

### Geography & demography

Geography – with councils having large geographic areas to cover which meant that more time was spent travelling to provide services which tie up additional staff time and incur additional cost e.g. for fuel.

Demographic considerations – for example the FNDC population is more than 50% Māori. This will require significant time, effort and resource investment in the consultation process – either in relation to new capex or the renewal of existing consents. These opportunities naturally require a broader investment process which correlates with an increased opex cost component.

### Technology and infrastructure

Existing infrastructure reflects the history of a region and can pose significant challenges in terms of the cost of maintaining operations. For example FNDC has 17 wastewater plants and 9 drinking water plants to service a population of 70,000 – of which only 30% are connected to the reticulating system.

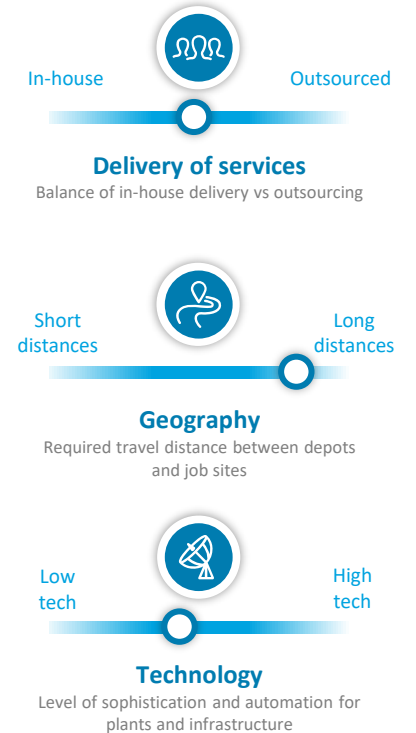
These plants are also at risk of an ageing workforce that is expected to exit the sector within a short period (i.e. many could be lost through transition and over the next 5 – 10 years) resulting in a significant loss of sector knowledge, plant knowledge and insights.

### Other factors and considerations

Climate change is putting more pressure on the system and creating increased demand for opex

In a rural setting a number of plants have utilisation levels that vary significantly through the year – with seasonal peaks associated with peak production periods for the rural economy.

## Relative difference



# Provincial and rural council profiles - commentary and insights

Provincial and rural councils provided a number of insights and concerns that may need to be developed further through additional validation

## Commentary and insights

It is likely that in some areas – plant operation for example – current resourcing models levels understate the true operating cost/resourcing differential. This is particularly the case in the operations/technicians roles that run the key plants. This is due to the heavy reliance on staff who have a lot history of operating specific plant and an ability to keep plant operating at safe levels off the back of that experience. The number of staff in this category could be 50% to 100% lower than what is needed in the long run.

Concern was expressed that current costs and resourcing levels may not be a good proxy for those required going forward as a consequence of heightened regulatory requirements and structural change. In particular:

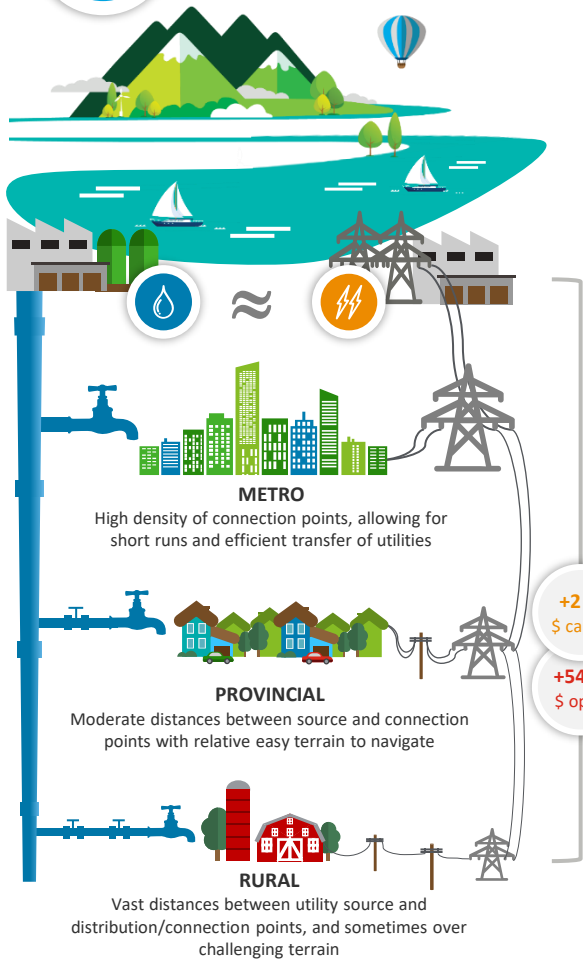
- The “promises” made in terms of the benefit of any structural change could come at a heavy cost in terms of the ability to meet quality of service commitments particularly where these extend to consumers beyond the current networks e.g. in the FNDC area only 30% of the population is connected to a reticulated service.
- Similarly, if service levels committed to are to be the same for provincial and rural settings as for metros this will come at an additional cost.
- Metro’s are less likely to have plant that is “held together” by “make-do” solutions – so the opex profile is likely to change under a model that is looking to deliver higher and more consistent standards over time.
- The documentation of systems and processes is often poor which increases the dependence on key staff. There is likely to be a need for significant investment in this area – which will improve resilience but won’t necessarily increase the quality of service.
- Other areas of underspend on opex include spend on data management, assurance and control and quality assurance.
- More generally, a concern was expressed that a transition to new structural arrangements

could see a need for increased staffing, and increased costs per staff members, if there is a loss of key staff through the process with the consequent need to recruit and train replacements as well as a loss of efficiency. Further, the potential for a “bidding war” for staff could increase costs further, without any quality of service improvements.

# Utilities as a potential comparator

We have also looked at electricity distribution businesses (EDBs) as a potential benchmark. While there are differences in these networks, it did show a higher cost for provincial/rural networks over metros, and a higher uplift for opex in particular

## Approximation of efficiency profiles using EDBs



Electricity distribution businesses (EDBs) run regional utility networks and are required to publicly report key operational metrics (including capex, opex and ICP meter numbers). There are some similarities in these networks:

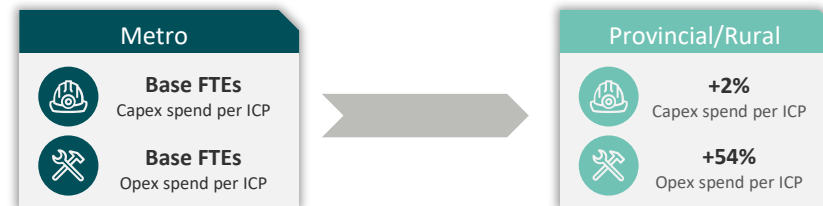
- Capital and operating expenditure**  
 Both types of utilities require regular investment and maintenance of a regional infrastructure networks . These activities are associated with a workforce that must physically be on-site to the do the work, supported by office-based staff providing ancillary services.
- Area served and challenges faced**  
 Like water services entities, EDBs often serve multiple territorial authorities which may range from large to small, or a combination of council areas. Rural electricity networks require cables across long distances, comparable to pipes networks of varying lengths.

However, significant differences in the networks are apparent, including:

- while water networks are almost exclusively underground, electricity networks may be above/below ground resulting in different asset lives (e.g. pylons and poles)
- Parts of the electricity network may be provided by other entities such as the generator/retailers and transmission networks
- Some lines infrastructure may be ducted or shared alongside other utility operators (e.g. telecommunication networks)

We have reviewed publicly available information on average capex spend per ICP and opex spend per ICP over the last five years for each EDB. EDBs have been grouped into either metro, provincial and rural depending, based on the district size predominantly served – roughly equivalent to the underlying council regional area. Both statistics were then averaged again to calculate the relative percentage differences in spend for both capex/opex per ICP between groups. This analysis showed that:

- There is a materially higher average cost for provincial/rural regions vs metro regions
- The opex cost per ICP is materially higher than capex for provincial/rural regions

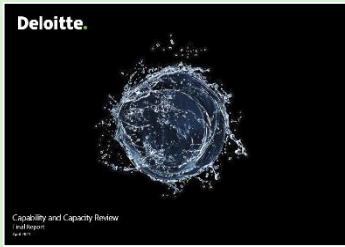


# Wellington Water Case Study

# Wellington Water Case Study



## Capacity and Capability Review



### Capacity and Capability Review Wellington Water 2021



#### Background

Wellington Water commissioned Deloitte to undertake a Capacity and Capability Study to inform its response to concerns relating to:

- Existing delivery pressure and constraints relating to its current capital works programme
- The expectation that those challenges would increase given the material step up in capital expenditure on Three Waters infrastructure signalled in the Wellington Region's councils Long Term Plans
- Wider pressure on the construction sector capacity and supply chains arising from Government's focus on water reform nationally alongside a push for economic stimulus through the delivery of "shovel ready" projects and the fast-tracking of infrastructure delivery

The purpose of the Study was to:

- Undertake an "end to end" view of the capacity and capability required to deliver the capital plan
- Focus specifically on the scale and profile of the workforce required to deliver the programme – both internal to Wellington Water and at its consultant and contractor panel members



#### Process

In undertaking the Study Deloitte worked with representatives from Wellington Water and its Consultant and Contractor panels in order to:

- Develop an approach to estimating the future workforce requirement
- Developing an appropriate basis for segmenting the projected capital spend into a series of "buckets" with a relatively standardised resourcing profile
- Breaking each "bucket" down further into the core delivery phases
- Building a calculation tool that could use the inputs developed above to translate the Wellington Water forecast capital spend into a profile of the workforce required to deliver that programme by year
- Further breaking that profile down as between Wellington Water internal resource and that to be sourced from either the Consultant or Contractor panels



#### Outputs and outcomes

The output of the work was shared with the Consultant and Contractor panels, the Wellington Water Senior Leadership Team (SLT) and the Wellington Water Board and representatives of the region's councils.

The Study showed that a very significant step up was required in the workforce in order to deliver the capital expenditure forecast.

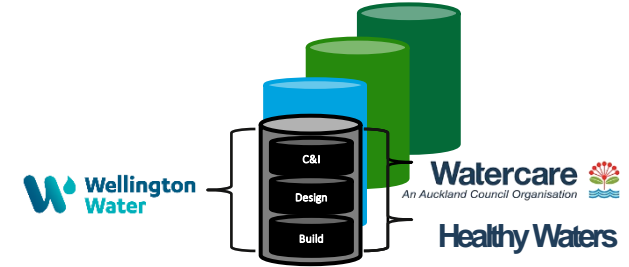
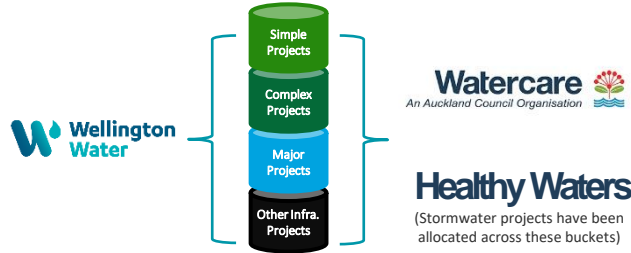
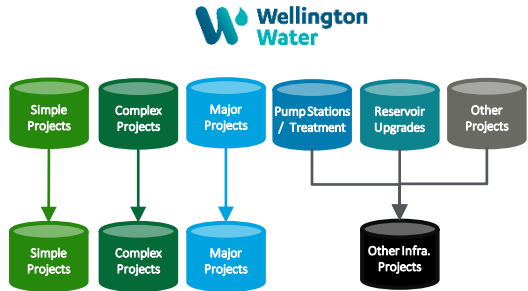
Following on from the Study Wellington Water initiated preliminary studies into expanding its engineering graduate programme and setting up a training facility to increase the number of people potentially available to work on the "frontline" delivering water services.

# Appendix

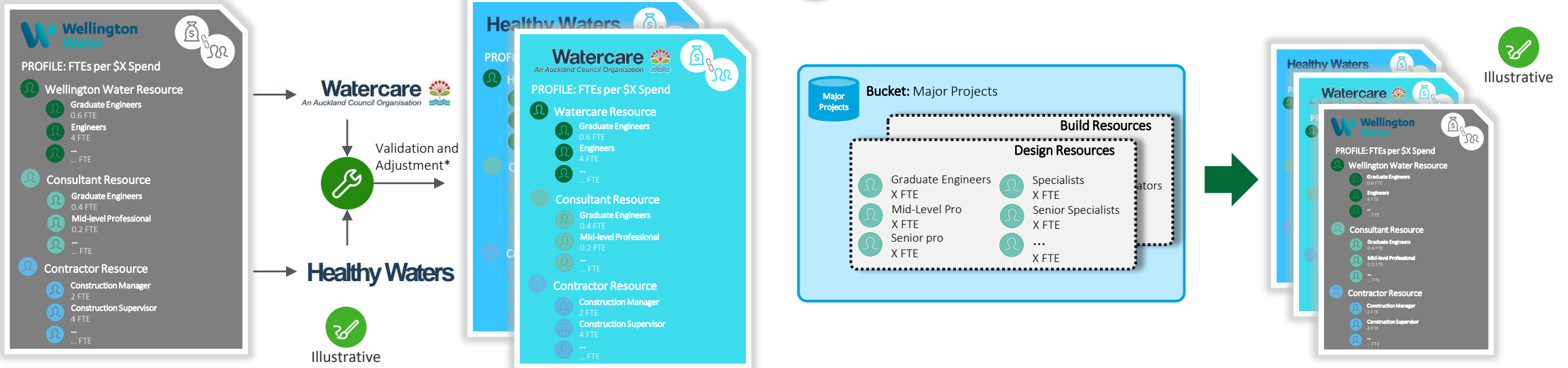
## Modelling methodology, inputs, and assumptions

# Capex Methodology

- 1a Simplified original Wellington Water Buckets
- 1b Agreement of buckets with WC and HW
- 2 Agreement of sub-buckets



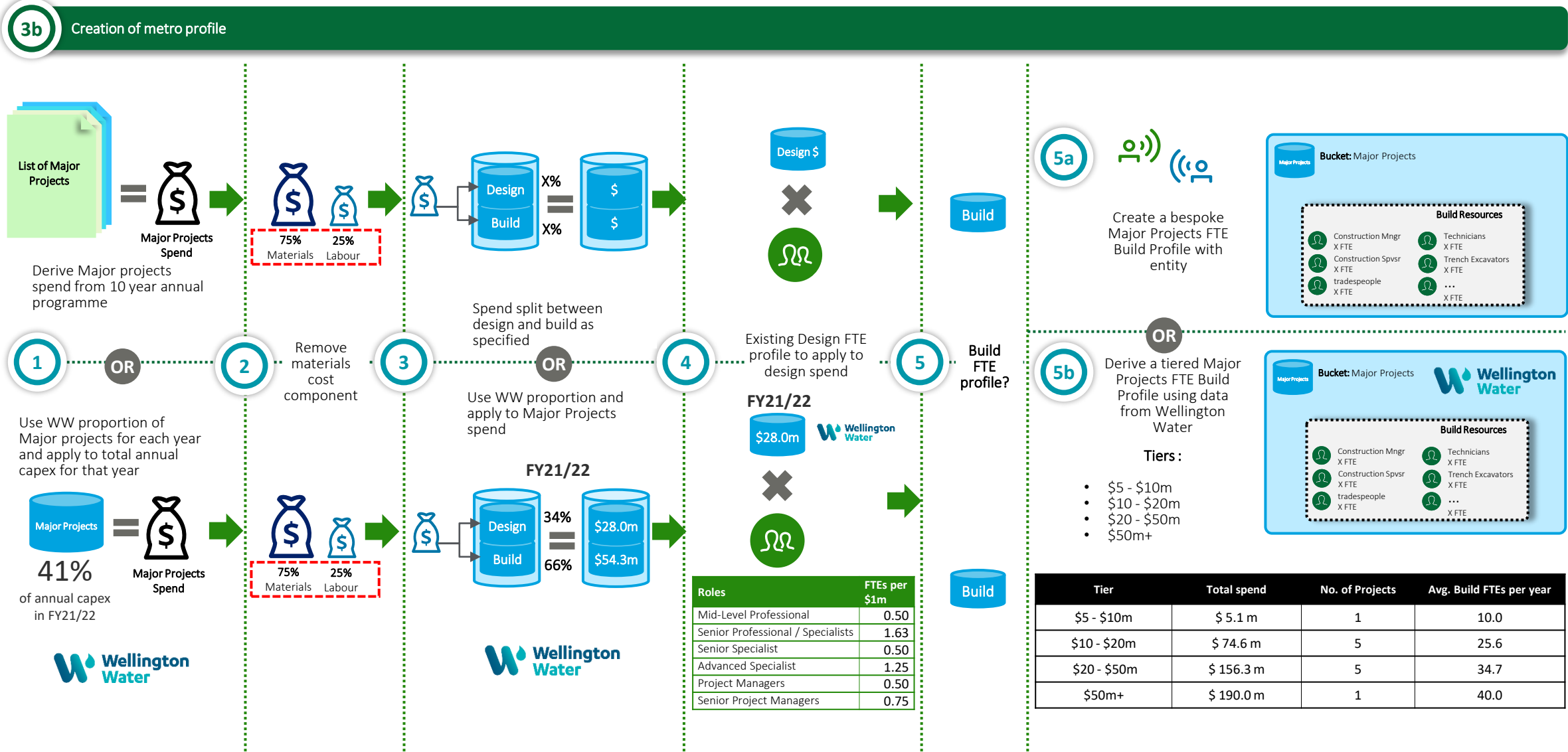
- 3a Creation of Watercare and Healthy Water Profiles based on Wellington Water (excl. Major Projects)
- 3b Specification of Major Projects metric to include in profiles



\*This adjustment includes those made specifically to all consultant engineering resources. All FTEs were decreased by c.33%, on a prorated basis, in order for the modelling to reflect the 124 actual FTEs delivering water-related services in FY21/22 for Wellington Water. This calibration was made in the original resourcing profile developed for the purposes of Wellington Water's Capacity and Capability Review, before any other steps were taken to develop the metro profile for DIA's water workforce model.

# Capex Methodology (cont'd)

Major Projects Build FTEs do not scale proportionately with spend

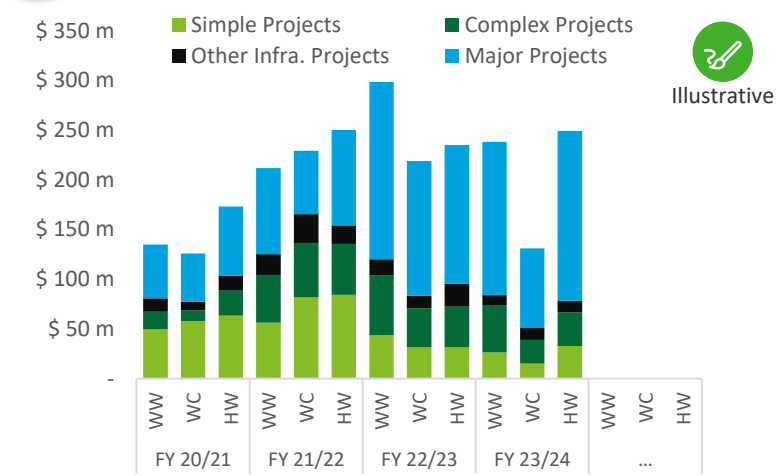
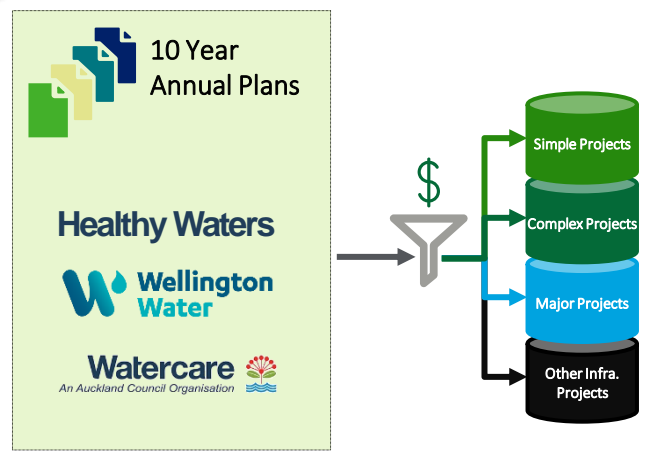
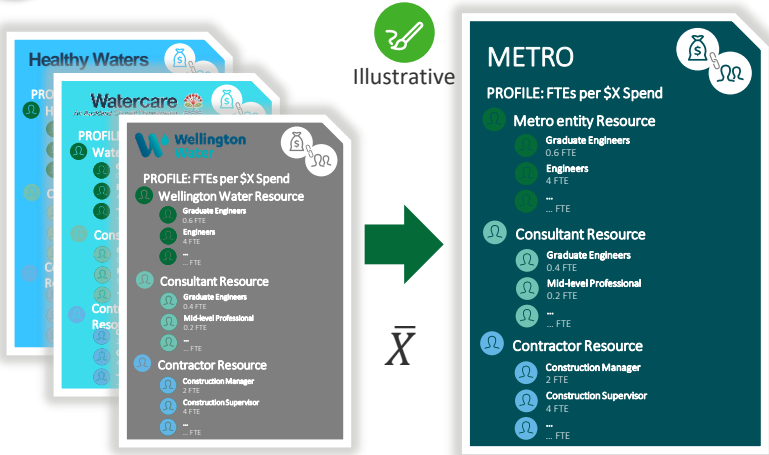




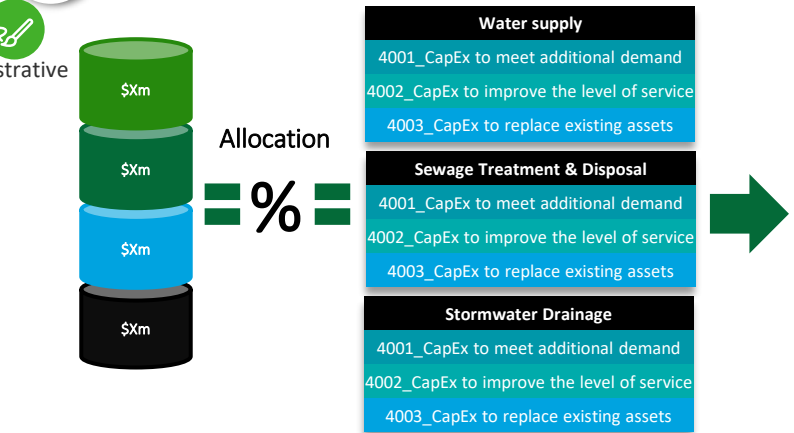
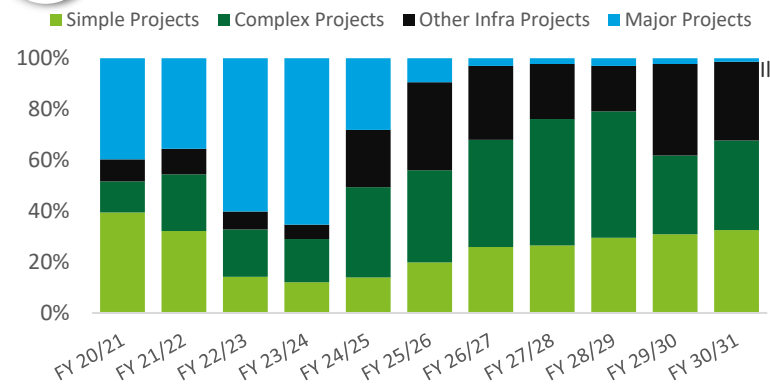
# Capex Methodology (cont'd)



- 4 Creation of metro profile
- 5 Allocation of capital programme projects for each entity into buckets
- 6 Summarise profile of programme across three entities



- 7 Averaged % proportions of spend per bucket
- 8 Mapping of spend between buckets and LTP data for Years 1-10

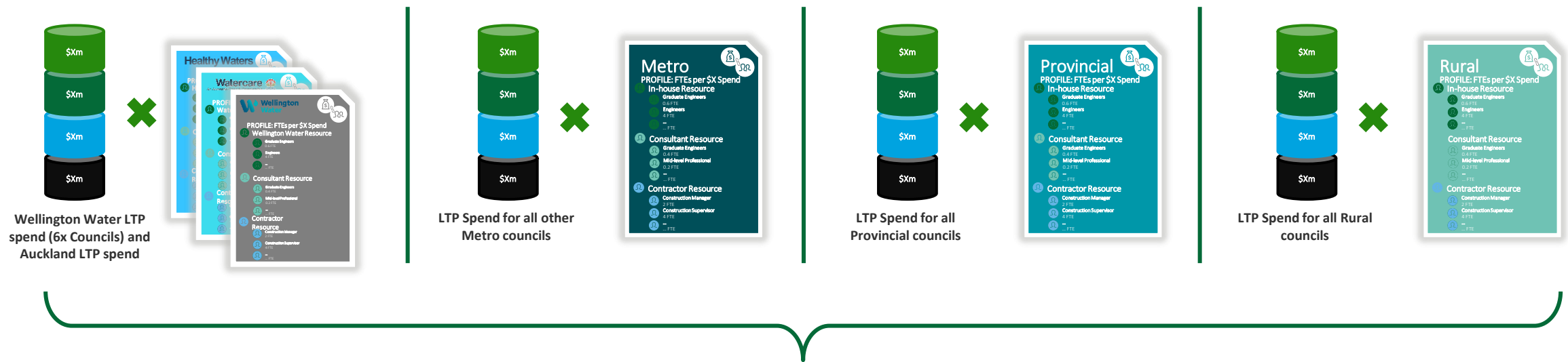


| LTP Category                | Capex Bucket                               | FY21             | FY22 | FY23 | FY24 | FY25 | ... |
|-----------------------------|--|------------------|------|------|------|------|-----|
|                             |  | Water supply     |      |      |      |      |     |
| Sewage Treatment & Disposal | 4001_CapEx to meet additional demand       | Simple Projects  | X%   | X%   | X%   | X%   | X%  |
|                             |  | Complex Projects | X%   | X%   | X%   | X%   | X%  |
|                             |  | Major Projects   | X%   | X%   | X%   | X%   | X%  |
|                             | 4002_CapEx to improve the level of service | Other Infra.     | X%   | X%   | X%   | X%   | X%  |
|                             |  | Simple Projects  | X%   | X%   | X%   | X%   | X%  |
|                             |  | Complex Projects | X%   | X%   | X%   | X%   | X%  |
|                             | 4003_CapEx to replace existing assets      | Major Projects   | X%   | X%   | X%   | X%   | X%  |
|                             |  | Other Infra.     | X%   | X%   | X%   | X%   | X%  |
|                             |  | Simple Projects  | X%   | X%   | X%   | X%   | X%  |

# Capex Methodology (cont'd)

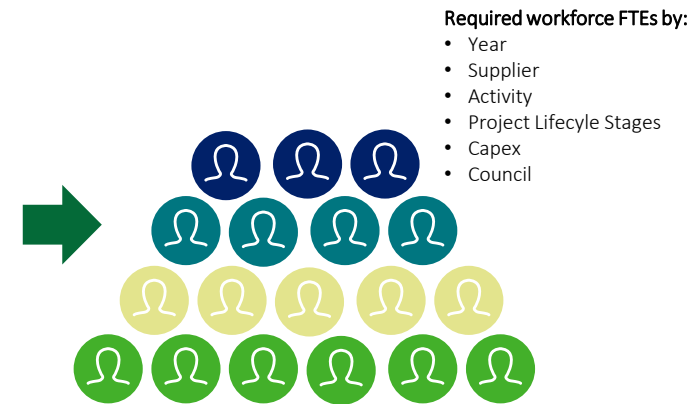


9 FTE Analysis Y1-10 ✓



| Required FTEs         |      |      |      |      |      |      |      |      |      |      |
|-----------------------|------|------|------|------|------|------|------|------|------|------|
| Capex Bucket          | FY22 | FY23 | FY24 | FY25 | FY26 | FY27 | FY28 | FY29 | FY30 | FY31 |
| Simple Projects       | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Complex Projects      | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Major Projects        | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |
| Other Infra. Projects | X    | X    | X    | X    | X    | X    | X    | X    | X    | X    |

Illustrative



# Opex Methodology

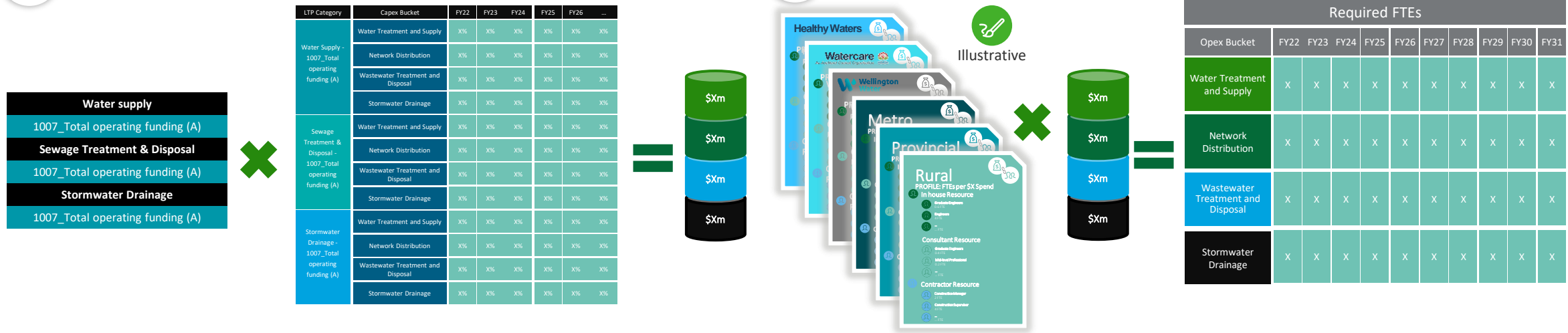
Our approach to opex is conceptually similar to capex



- 1 Agreement of buckets
- 2 FTE Profiles
- 3 Creation of metro profile



- 4 Creation of mapping table to translate LTP data spend into buckets for Y1-10
- 5 FTE Analysis Y1-10



# Council profile size and WSE assumptions

Council size and WSE region assignment as assumed in the modelling

| Council                      | Profile assignment |
|------------------------------|--------------------|
| Ashburton District           | Provincial         |
| Auckland (Group)             | Auckland           |
| Buller District              | Rural              |
| Carterton District           | Rural              |
| Central Hawke's Bay District | Rural              |
| Central Otago District       | Provincial         |
| Chatham Islands              | Rural              |
| Christchurch City            | Metro              |
| Clutha District              | Rural              |
| Dunedin City                 | Metro              |
| Far North District           | Provincial         |
| Gisborne District            | Provincial         |
| Gore District                | Rural              |
| Grey District                | Rural              |
| Hamilton City                | Metro              |
| Hastings District            | Provincial         |
| Hauraki District             | Rural              |
| Horowhenua District          | Provincial         |
| Hurunui District             | Rural              |
| Hutt City                    | Wellington         |
| Invercargill City            | Provincial         |
| Kaikoura District            | Rural              |
| Kaipara District             | Provincial         |
| Kapiti Coast District        | Provincial         |
| Kawerau District             | Rural              |
| Manawatu District            | Provincial         |
| Marlborough District         | Provincial         |
| Masterton District           | Provincial         |
| Matamata-Piako District      | Provincial         |
| Napier City                  | Provincial         |
| Nelson City                  | Provincial         |
| New Plymouth District        | Provincial         |
| Opotiki District             | Rural              |
| Otorohanga District          | Rural              |

| Council                        | Profile assignment |
|--------------------------------|--------------------|
| Palmerston North City          | Metro              |
| Porirua City                   | Wellington         |
| Queenstown-Lakes District      | Metro              |
| Rangitikei District            | Rural              |
| Rotorua District               | Provincial         |
| Ruapehu District               | Rural              |
| Selwyn District                | Provincial         |
| Southland District             | Provincial         |
| South Taranaki District        | Provincial         |
| South Waikato District         | Provincial         |
| South Wairarapa District       | Wellington         |
| Stratford District             | Rural              |
| Tararua District               | Rural              |
| Tasman District                | Provincial         |
| Taupo District                 | Provincial         |
| Tauranga City                  | Metro              |
| Thames-Coromandel District     | Provincial         |
| Timaru District                | Rural              |
| Upper Hutt City                | Wellington         |
| Waikato District               | Provincial         |
| Waimakariri District           | Provincial         |
| Waimate District               | Rural              |
| Waipa District                 | Provincial         |
| Wairoa District                | Rural              |
| Waitaki District               | Provincial         |
| Wairarapa District             | Rural              |
| Wellington City                | Wellington         |
| Wellington Regional            | Wellington         |
| Western Bay of Plenty District | Provincial         |
| Westland District              | Rural              |
| Whakatane District             | Provincial         |
| Whanganui District             | Provincial         |
| Whangarei District             | Metro              |

## Contacts

For more information on the report, please contact DIA at: [threewaters@dia.govt.nz](mailto:threewaters@dia.govt.nz)  
or reach out to the following people:



**John Tan**

Partner, Corporate Finance  
Deloitte

04 470 3676  
johntan@deloitte.co.nz



**Alan Dent**

Consultant  
Deloitte

adent@deloitte.co.nz



**Mary Kilkelly**

Director, Corporate Finance  
Deloitte

MaKilkelly@deloitte.co.nz



Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited (“DTTL”), its global network of member firms, and their related entities (collectively, the “Deloitte organisation”). DTTL (also referred to as “Deloitte Global”) and each of its member firms and related entities are legally separate and independent entities, which cannot obligate or bind each other in respect of third parties. DTTL and each DTTL member firm and related entity is liable only for its own acts and omissions, and not those of each other. DTTL does not provide services to clients. Please see [www.deloitte.com/about](http://www.deloitte.com/about) to learn more.

Deloitte Asia Pacific Limited is a company limited by guarantee and a member firm of DTTL. Members of Deloitte Asia Pacific Limited and their related entities, each of which are separate and independent legal entities, provide services from more than 100 cities across the region, including Auckland, Bangkok, Beijing, Hanoi, Hong Kong, Jakarta, Kuala Lumpur, Manila, Melbourne, Osaka, Seoul, Shanghai, Singapore, Sydney, Taipei and Tokyo.

Deloitte is a leading global provider of audit and assurance, consulting, financial advisory, risk advisory, tax and related services. Our global network of member firms and related entities in more than 150 countries and territories (collectively, the “Deloitte organisation”) serves four out of five Fortune Global 500® companies. Learn how Deloitte’s approximately 330,000 people make an impact that matters at [www.deloitte.com](http://www.deloitte.com).

Deloitte New Zealand brings together more than 1500 specialist professionals providing audit, tax, technology and systems, strategy and performance improvement, risk management, corporate finance, business recovery, forensic and accounting services. Our people are based in Auckland, Hamilton, Rotorua, Wellington, Christchurch, Queenstown and Dunedin, serving clients that range from New Zealand’s largest companies and public sector organisations to smaller businesses with ambition to grow. For more information about Deloitte in New Zealand, look to our website [www.deloitte.co.nz](http://www.deloitte.co.nz).

This communication and any attachment to it is for internal distribution among personnel of Deloitte Touche Tohmatsu Limited (“DTTL”), its global network of member firms and their related entities (collectively, the “Deloitte organisation”). It may contain confidential information and is intended solely for the use of the individual or entity to whom it is addressed. If you are not the intended recipient, please notify us immediately, do not use this communication in any way and then delete it and all copies of it on your system.

None of DTTL, its member firms, related entities, employees or agents shall be responsible for any loss or damage whatsoever arising directly or indirectly in connection with any person relying on this communication. DTTL and each of its member firms, and their related entities, are legally separate and independent entities.