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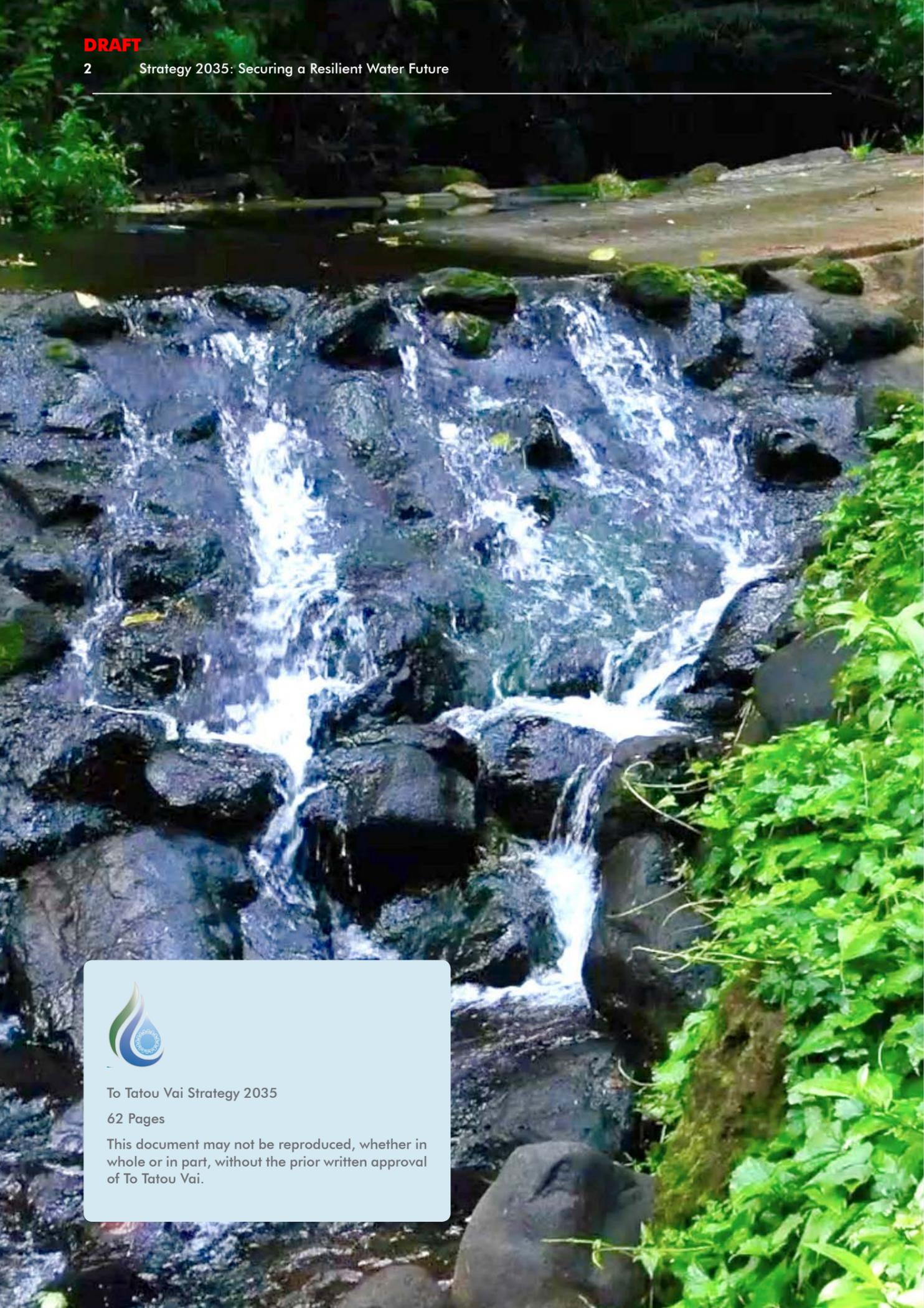
# **STRATEGY 2035**

*Kaveinga Nui 2035*

## **SECURING A RESILIENT WATER FUTURE**

To Tatou Vai





# Table of Contents

- Message from the Chair..... 4
- Message from the CEO..... 5
- Executive Summary..... 7
- Acronyms..... 9
- Key Terms Used in Strategy 2035 ..... 10
- Background: Understanding Rarotonga’s Water System ..... 12
  - Rarotonga’s Water System ..... 14
  - How Water Moves Around Rarotonga ..... 16
  - Journey of Investment and Stewardship..... 18
  - Stakeholder Roles and Responsibilities..... 21
  - Unique Features of Rarotonga’s Water System..... 22
  - To Tatou Vai’s Responsibilities in Operations and Stewardship..... 23
  - Key Shifts Shaping Rarotonga’s Water System to 2035..... 24
- Strategy 2035 ..... 30
  - Strategic Framework: Our 2035 Direction ..... 32
  - Strategic Choices..... 38
  - Strategic Priorities..... 42
- Delivering the Strategy..... 52
  - Key System Enablers ..... 54
  - Our Financial Strategy for Resilience..... 56
  - Implementation Roadmap ..... 58
  - Measuring Success ..... 60
- Annex 1: Strategy 2035 Implementation Roadmap..... 62
- Annex 2: Strategy 2035 Outcome and Financial Scorecard ..... 64



To Tatou Vai Strategy 2035

62 Pages

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## Message from the Chair

There is a Chinese proverb, “Far water quench no thirst”. It means long-term solutions are impractical for solving immediate problems.

TTV has had since its inception many immediate problems. It had to apply for and obtain environmental permits for administering polyalluminium chloride to clean the water before it could properly start operations. It had to pile sludge, a by-product of the cleansing process, in bags on the sides of scour ponds while it searched for land suitable for a sludge drying facility. It had to acquire vehicles and specialist succour trucks without the budget to do so. Without certainty in the amount of Crown grants for operating expenditure TTV had to prematurely introduce tariffs, a controversial measure anyway, before meters had been installed island wide. The installation of meters has in itself become a much larger task as TTV works out and rationalises a network of piping that has grown haphazardly over the past 100 years.

But now with the environment permits secure, the sludge drying facility in Arorangi completed with the assistance of T&M Heather and Tinomana, suitable vehicles secured through the kind assistance of the Government of Japan, and the installation of smart meters along with the tariffs with the assistance of Vodafone, not only has TTV come a long way, it is now better placed to focus on the long term challenges of running the water network.

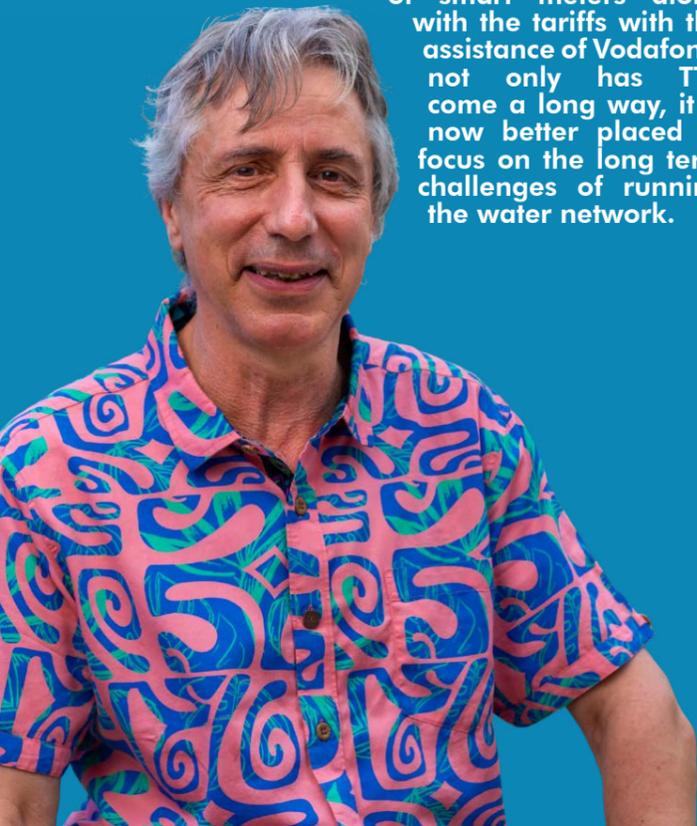
As this strategic plan highlights drought periods are becoming longer, demand for water is becoming greater and public expectations of quality service are increasing as TTV shifts from bulk Crown funding to users paying for their consumption of water. The passage of the Utilities Act is welcomed but that requires TTV to lift to a new level of customer service and its staff generally to hold suitable qualifications.

TTV has no security of tenure and securing premises which will be suitable long term is important. However, more important is dealing with the challenging issue of the AVG filters which require substantial modification or possibly replacement. Despite the tremendous work done by staff to make the network more secure losses from the system remain too high and it is acknowledged reducing loss in the system remains the most economic way to secure better pressure and thereby greater security during periods of water shortage.

This strategic plan is a comprehensive top down document which takes the vision and the mission and cascades down to a kaleidoscope of concrete actions TTV will take over the coming years. The architects of this plan are those responsible for the significant advances we have made so far – the staff who set up the superstructure for the strategic plan – and the catchment committees, Government Ministries and others who refined it. All of this was managed under the wise guidance of Young & Co. All those involved have good reason to be proud of what they have achieved.

Kia manuia,

**Brian Mason,**  
Chairman



## Message from the CEO

Kia Orana,

Strategy 2035 sets the work To Tatou Vai must deliver over the next decade.

I know tariffs have changed the conversation about water. People now expect answers, not slogans. That is fair. If we ask you to pay, we must show what you get, how we are improving service, and what we will fix next.

We have made real progress in a short time. We now operate the treatment plants, the network, and the community drinking-water stations as one system. We test and monitor water quality more consistently than ever before. We respond to faults faster than we could a few years ago.

But I will not sugar-coat the rest.

The system still loses too much water through leaks. Pressure is not consistent across zones. Heavy rain can quickly change raw water and force tough operating decisions. Dry periods stress supply and expose weak points. Some homes sit 30 metres above the mean high water mark and rely on tanks, harvesting, trucking or stations. They still need a fair pathway to essential water access.

This Strategy gives us focus. It also keeps us honest. It is built around four priorities.

We will complete metering, build a clear baseline, and target the biggest losses and the highest use first.

We will standardise how we operate and maintain the system. We will strengthen planning, asset management and performance reporting, so we rely less on crisis response.

We will invest in monitoring, alarms and safe control. We will only automate what we can operate and maintain. Technology must reduce risk, not add it.

We will communicate early and plainly when conditions change. We will publish a six-monthly State of Rarotonga’s Water report, so progress is visible and problems are not hidden.

We will also keep talking about catchments. If we lose the source, nothing else matters. We will work alongside landowners and catchment committees to protect water from ridge to reef.

Our values guide how we do this work. We put people at the heart. We act with accountability. We work in partnership. We take stewardship seriously. We build resilience, because the climate will not get easier.

None of this will be perfect, and it will not happen overnight. We will keep learning, and we will keep adjusting the plan as data improves and conditions change.

To our team, thank you. Your work is technical, physical and often unseen. It matters to every household and every business on the island. To our customers, thank you for your patience and your pressure. Both keep us sharp.

Kia manuia,

**Apii Timoti,**  
Chief Executive Officer



# Strategy 2035:

## Our 2035 Direction

### Our Vision

Trusted, resilient water valued by all.

### Our Mission

To transform Rarotonga’s water system, protecting water sources while building resilience and optimising system performance so it remains valued and reliable in an increasingly variable climate and system conditions.

### Our Outcomes

By 2035, Rarotonga’s water system will be:



Trusted



Reliable when under stress



Improving in water quality



Used responsibly within limits



Supported by collective environmental stewardship



Fair in access and cost across the island

### Our Strategic Priorities: Where we focus to deliver our Vision

Four Strategic Priorities translate the Vision into practical action where we will focus our efforts over the next decade.

1

#### Responsible Water Use

We will actively manage water use and reduce avoidable losses so the system operates reliably and stays within its limits.

2

#### Optimise System Operations

We will improve how the system is planned, operated, and maintained to lift reliability and reduce reactive work.

3

#### Automated Water Systems

We will introduce real-time monitoring and safe automation to improve responsiveness and water quality and reduce operational risk.

4

#### Community Trust and Partnerships

We will strengthen communication, relationships, and accountability so people have confidence in how water is managed.

# Executive Summary

By 2035, Rarotonga will have a water system that is reliable when under stress, transparent in performance, improving in quality, valued by all, and fair in access and cost, regardless of where water is required on the island.

Strategy 2035 sets the pathway to achieve that outcome. It sets out the strategic direction, choices and priorities required to transform towards a resilient water for Rarotonga in the face of a climate challenged future.

Water security underpins public health, tourism confidence, economic stability and everyday life. When water is unreliable, households struggle, businesses hesitate and public trust weakens.

Major infrastructure upgrades delivered under the Te Mato Vai programme significantly strengthened Rarotonga’s treatment and ring main network. At the same time, governance arrangements, tariffs and operational systems were introduced rapidly. That work established a functioning utility in To Tatou Vai (TTV) as the island’s water utility.

But infrastructure alone does not create a resilient system.

Parts of the network were not designed for today’s climate volatility, service expectations or regulatory standards. TTV has made major progress in reducing the amount of leakage out of the system by repairing a significant number of leaks and separating the old pipes from the new network, approximately 27% of treated water is still lost before reaching customers. Pressure varies across the island and different customers experience access differently. Except for metering and billing, most operational processes are handled manually. Funding pathways for long-term asset renewal also remain limited under current funding settings.

At the same time:

- Rainfall is becoming more intense and dry periods longer
- Public expectations are rising
- Tariff increases face resistance
- Regulatory and stakeholder scrutiny is intensifying

Without discipline renewal of assets, loss reduction, and operational maturity, reliability will decline over time.

Strategy 2035 shifts the focus from building foundations to strengthening resilience, improving performance and building public confidence.

### Our Strategic Choices: The decisions that shape our direction

Five deliberate Strategic Choices define this Strategy. They clarify priorities, manage expectations and set clear boundaries for reform.

- Private water storage is recognised as part of Rarotonga’s long-term system resilience, with To Tatou Vai supporting safe interaction with the network while maintaining system stability and fairness.
- The immediate priority is to reduce system losses by fixing leaks and improving pressure management before pursuing major new supply sources.
- The network was not designed to provide universal service above 30 metres from the mean high-water mark, and TTV is not legally obligated to supply services beyond this elevation. TTV acknowledges that while building development above this point is likely to increase in the future, feasible solutions will be explored, provided they do not compromise network reliability or fairness.
- Potable water at the tap remains a long-term aspiration but cannot be reliably delivered across the network within the period of this strategy, so potable drinking water will continue to be provided through TTV-managed community water stations while water quality across the reticulated system has been lifted to a strong baseline level and will continue to be strengthened over the planning period.
- Supporting these choices is a sustained programme of network renewal, leak reduction and modern system monitoring that will strengthen reliability, resilience and fairness across the island.

## Our Financial Strategy for Resilience

*Four Strategic Priorities translate the Vision into practical action where we will focus our efforts over the next decade.*

Delivering safe and reliable water services is both an engineering and a funding challenge. Since its establishment under the To Tatou Vai Act 2021, TTV has been transitioning from full Government funding to a utility model in which operating costs are increasingly funded through customer tariffs as connections are progressively brought onto the billing system.

While operational sustainability is achievable, the current legislative setting creates structural constraints on capital funding. Tariffs can progressively fund operating costs and short-life asset replacement, but long-life infrastructure renewal and resilience upgrades depend on Crown funding, Cabinet-approved access to depreciation reserves, CIIC capital contributions, or external development and climate finance.

Strategy 2035 recognises that sustaining reliable water services will require a predictable capital funding pathway alongside continued progress toward operational funding through tariffs.

## Our Implementation Roadmap

Our Implementation Roadmap<sup>1</sup> outlines how TTV will deliver Strategy 2035 over the next decade. It signals the sequencing and prioritisation of key initiatives across the strategy period while recognising that detailed timing, cost, and delivery programmes will continue to be confirmed through annual planning, budgeting, and investment programmes set out in the Statement of Corporate Intent.

Implementation is structured across three phases reflecting system readiness, organisational maturity, and risk:

Phase 1: 2026-2027, Understand and Stabilise

Phase 2: 2028 – 2031, Optimise and Actively Manage

Phase 3: 2032 – 2035, Strengthen Resilience and Future Capability

Investment initiatives are grouped into three categories under each of the strategic priorities: infrastructure and capital works, system and processes, and workforce capability. Together, these programmes support the delivery of the

Strategy's strategic priorities and guide the sequencing of investment and organisational effort over time.

## Our Immediate Focus: 2025—2027

*Over the next two years, To Tatou Vai will:*

- ✓ Complete the metering programme
- ✓ Establish a verified demand and loss baseline
- ✓ Define minimum service levels
- ✓ Publish regular performance reports
- ✓ Strengthen structured leak reduction
- ✓ Complete automation readiness assessments
- ✓ Engage Government on capital funding

These actions will stabilise the system, improve visibility, and create the conditions for sustained investment and long-term system resilience.

Strategy 2035 recognises that improvement will take time. It commits to steady, measurable progress and transparent reporting

Progress will be reviewed at least every two years.

## Why Strategy 2035

Strategy 2035 sets out how TTV manages Rarotonga's water system from weather-exposed, capital-constrained to a performance driven and financially stable utility.

The To Tatou Vai Act 2021 requires the Board to set and adopt a strategic plan at least once every two years. Strategy 2035 is To Tatou Vai's (TTV) long-term direction under that requirement spanning the next 10 years. It sets out how TTV will deliver its functions on Rarotonga: operating and maintaining the network, meeting prescribed water supply and water-quality standards, working with landowners and catchment committees to protect water sources, and demonstrating how it is planning for future needs.

This Strategy provides a clear and transparent basis for decision making, investment and partnerships over the next decade.

## Acronyms

<b>AI</b>	Artificial Intelligence
<b>CIIC</b>	Cook Islands Investment Corporation
<b>CRA</b>	Competition and Regulatory Authority
<b>DWS</b>	Drinking Water Standards Cook Islands
<b>EIA</b>	Environmental Impact Assessment
<b>EIP</b>	Environmental Improvement Plans
<b>EMP</b>	Environmental Management Plan
<b>EMCI</b>	Emergency Management Cook Islands
<b>ERP</b>	Enterprise Resource Planning
<b>ESG</b>	Environmental, Social and Governance
<b>ICT</b>	Information & Communications Technology
<b>ICI</b>	Infrastructure Cook Islands
<b>KPI</b>	Key Performance Indicator
<b>MFEM</b>	Ministry of Finance and Economic Management
<b>MOU</b>	Memorandum of Understanding
<b>MPN</b>	Most Probable Number
<b>NES</b>	National Environment Service
<b>NRW</b>	Non-Revenue Water
<b>NSDA 2020+</b>	National Sustainable Development Agenda
<b>OEMP</b>	Operational Environment Management Plan
<b>SCADA</b>	Supervisory Control and Data Acquisition
<b>TMO</b>	Te Marae Ora (Ministry of Health)
<b>TMV</b>	Te Mato Vai
<b>TTV</b>	To Tatou Vai
<b>TTV Act</b>	To Tatou Vai Act 2021
<b>WHO</b>	World Health Organisation
<b>WTP</b>	Water Treatment Plants

# Key Terms Used in Strategy 2035

*This Strategy uses several terms with specific meanings in the context of Rarotonga's water system. These definitions help ensure readers clearly understand what To Tatou Vai can deliver today, and what Strategy 2035 aims to improve over time.*

## Access

Having a safe and reliable way to obtain essential water services. Access does not always mean being connected to the network, especially areas that are outside the full-service zone, 30 metres above the mean high water mark.

## Baseline Data

Verified data on water demand, losses, pressure, catchment performance and population dynamics. TTV is working with national agencies to build a complete baseline which will assist planning and forecasting.

## Billed Water

The portion of water supplied that is metered, recorded and subject to charges under TTV's tariff framework.

## Catchment

The valleys or parts of those valleys, including the subsurface, from which TTV derives water.

## Catchment Committees

Representatives of landowners set up as elected committees whose task is to promote the preservation and conservation of the catchment environment, and to better secure the cooperation of those landowners in ensuring the continued supply of water. Clean Water

This is a commonly used phrase. In this Strategy, TTV uses the defined term Safe Water to ensure clarity and consistency.

## Climate Variability

Shifts in climate patterns, including longer dry seasons and more intense rainfall events, are affecting water supply and reliability.

## Connected Users

Households and businesses that receive water through the reticulated network.

**Distribution Network** The system of pipes that transports water from treatment plants to customers.

## Distribution Zones

Defined sections of the water distribution network supplied by one or more intakes. Zones are used to monitor flows, manage pressure, and better understand how water moves through the network.

## Intake

The structure that collects water from a stream or catchment and directs it into the public water supply system.

## Landowner

A person with an interest in native freehold land.

## Metering

The measurement of water use at customer connections to support billing, responsible water use, and leak detection.

## Network

The network of dams, intakes, galleries, other collection points, water mains, and associated infrastructure used by To Tatou Vai to collect and distribute water on Rarotonga.

## Network Nodes

Specific connection points within the water distribution network where pipes, valves, storage or monitoring points meet. Nodes represent key points used to understand flows, pressures and system performance across the network.

## Non-Revenue Water (NRW)

Water that enters the system from the catchment but is not billed water. This includes leaks, unauthorised use, water supplied without billing and unmetered or unrecorded consumption.

## Potable Water

Water supplied through the reticulated network that meets the Cook Islands national drinking water standards issued under the Public Health Act 2024 at the point of delivery to the consumer (at the tap). Where national standards have not yet been issued, the World Health Organisation Guidelines for Drinking-water Quality apply which defines water that is safe for human consumption directly from the tap.

## Reliable Water

Water that is clean, safe and consistent with stable pressure.

## Resilient Water

A water system that adapts to changing and uncertain conditions and continues to function overtime.

## Responsible Water Use

Actions to reduce water use and losses so demand stays within what the system can reliably supply.

## Safe Water

Water suitable for everyday household use (washing, bathing, food prep) and managed to minimise health risks but not potable at the tap.

## Safe Drinking Water

Water that meets the Cook Islands national drinking water standards issued under the Public Health Act 2024. Where national standards have not yet been issued, the World Health Organisation Guidelines for Drinking-water Quality apply, defining water that does not represent a significant risk to health over a lifetime of consumption.

## Service Area

The service area covers those that are within the 30 metre mean high water mark.

## Service Levels

The minimum agreed standards for pressure, continuity, or quality that users can expect from the water system.

## Te Mato Vai

The comprehensive programme of works to upgrade the Rarotonga intakes, treatment facilities, and water mains commenced in 2014.

## Turbidity

Cloudiness or haziness in water is caused by suspended particles, often increasing after rainfall.

## Water Security

Reliable access to safe water over time, even as conditions and demands change.

## Water Treatment

A chemical, biological or physical process employed to improve the quality of water supply prior to distribution.

## Unconnected Users

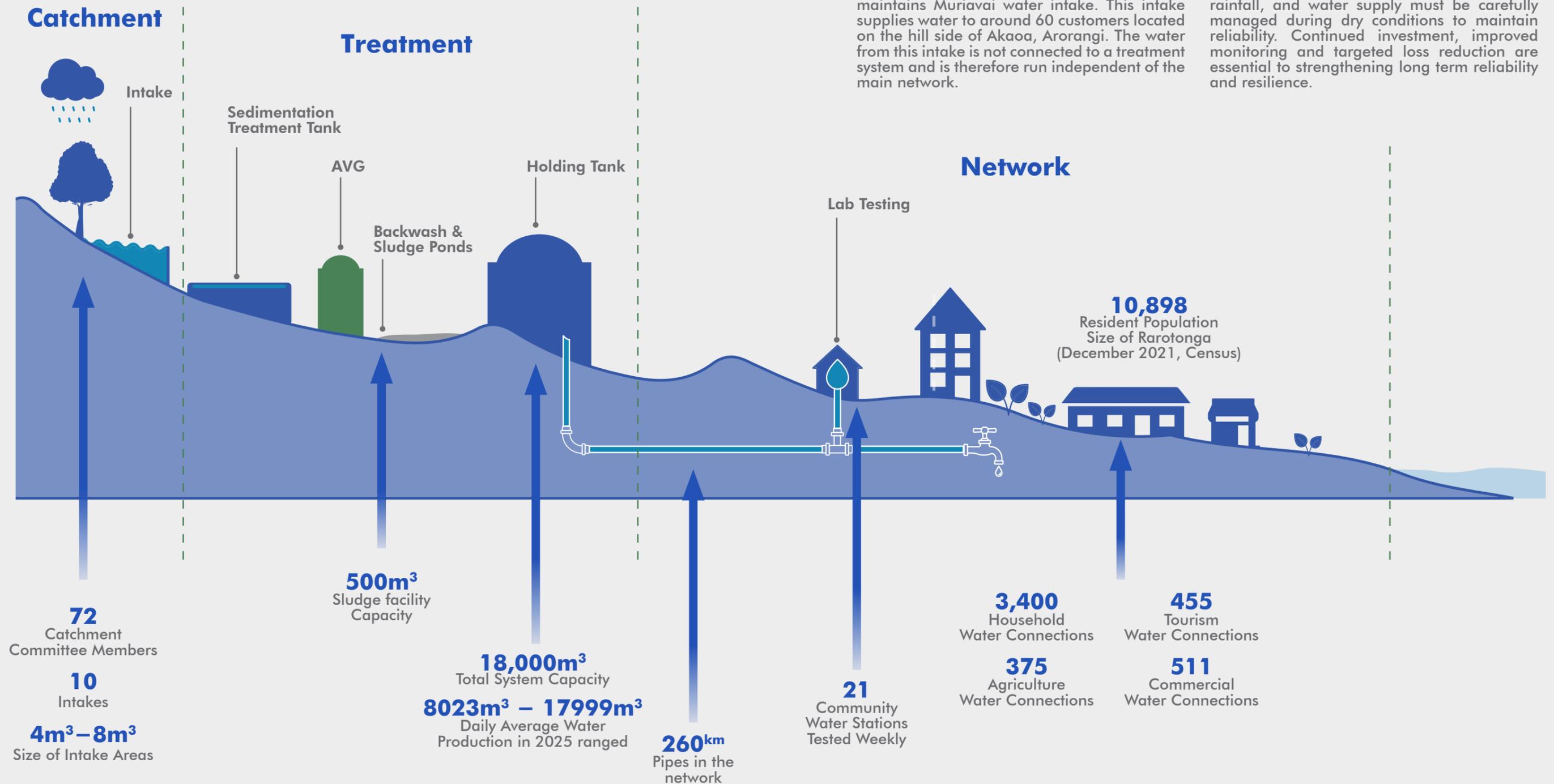
Any person who is not receiving water or service directly from TTV, or is not connected to the TTV water network, and may be accessing water services independently, for example, through private storage tanks, rainwater harvesting, water trucking services, or community water stations.

# Background: Understanding Rarotonga's Water System

*Tua Tapapa:  
Kia Nakiro I Te Turanga  
Vai O Rarotonga*

# Rarotonga's Water System

## The system and what TTV manage



Rarotonga's public water supply is a gravityfed system that draws surface water from steep inland valley catchments through ten water intakes – Avatiu, Takuvaine, Tupapa, Matavera, Turangi, Avana, Totokoitu, Taipara, Ngatoe and Papua - and associated treatment plants located around the island. Treated water is then distributed through an islandwide network supplying TTV customers, while unconnected users access water through tanks, rainwater harvesting, water trucking or community drinking water stations. TTV also operates and maintains Muriavai water intake. This intake supplies water to around 60 customers located on the hill side of Akaoa, Arorangi. The water from this intake is not connected to a treatment system and is therefore run independent of the main network.

Although significant infrastructure upgrades have been completed in recent years and has improved treatment and ring main performance, the system continues to face constraints associated with its reliance on rainfall-fed surface water, remaining legacy infrastructure and ongoing leakage within parts of the network. Limited asset visibility and gaps in performance data further affect system efficiency and planning. Water quality requires manual and active management, particularly when turbidity rises during heavy rainfall, and water supply must be carefully managed during dry conditions to maintain reliability. Continued investment, improved monitoring and targeted loss reduction are essential to strengthening long term reliability and resilience.

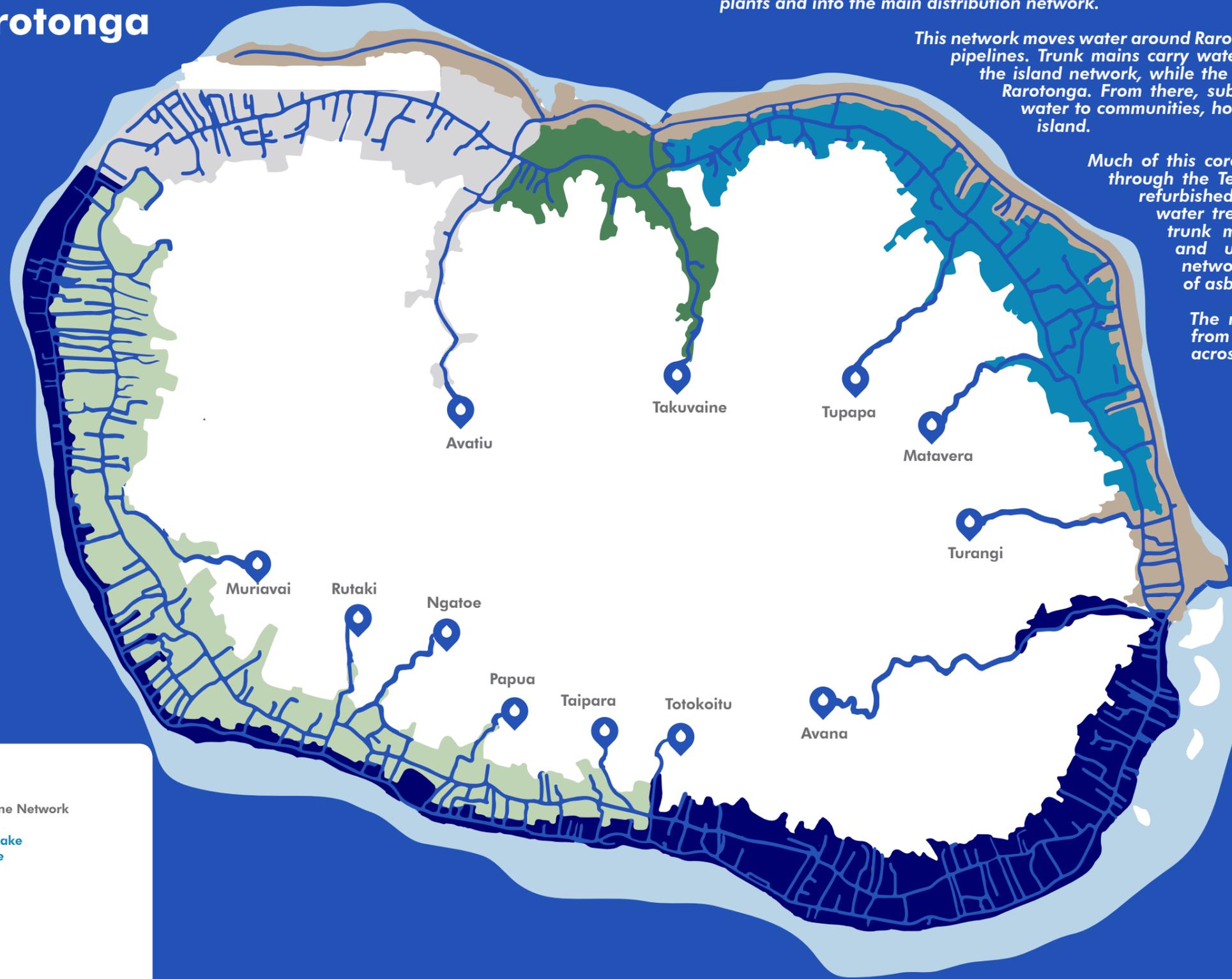
# How Water Moves Around Rarotonga

Water from Rarotonga's valley catchments enters the island's water supply system through a series of intakes located around the island. From these sources, water flows through treatment plants and into the main distribution network.

This network moves water around Rarotonga through a series of major pipelines. Trunk mains carry water from the valley intakes into the island network, while the ring main links supply around Rarotonga. From there, sub-mains, smaller pipes, deliver water to communities, homes and businesses across the island.

Much of this core infrastructure was delivered through the Te Mato Vai programme, which refurbished intakes, constructed new water treatment plants, replaced some trunk mains connecting the intakes, and upgraded key parts of the network involving the replacement of asbestos concrete pipes.

The map represents a typical flow from intake to distribution zones across different parts of Rarotonga.



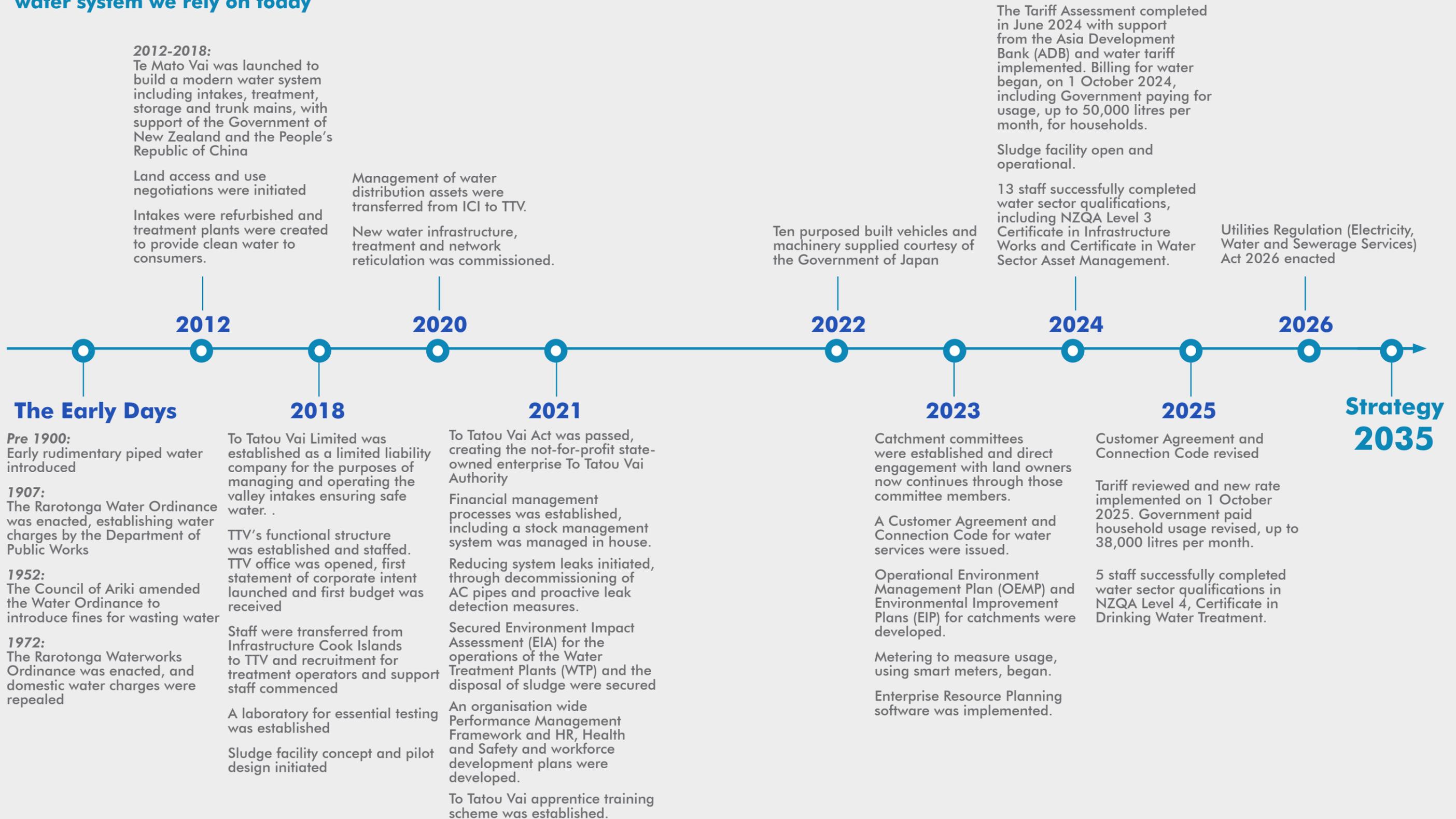
**Legend**

- Intake (Blue location pin icon)
- Pipeline Network (Blue line icon)

Water Supply Sector	Water Intake Source
SEC 1 (Dark Blue)	Avana, Totokoitu
SEC 2 (Light Blue)	Turangi
SEC 3 (Teal)	Matavera, Tupapa
SEC 4 (Green)	Takuvaione
SEC 5 (Light Green)	Avatiu
SEC 6 (Lightest Green)	Muriavai, Rutaki, Ngatote, Taipara, Papua

# Journey of Investment and Stewardship

The milestones, investments and commitments that built the water system we rely on today

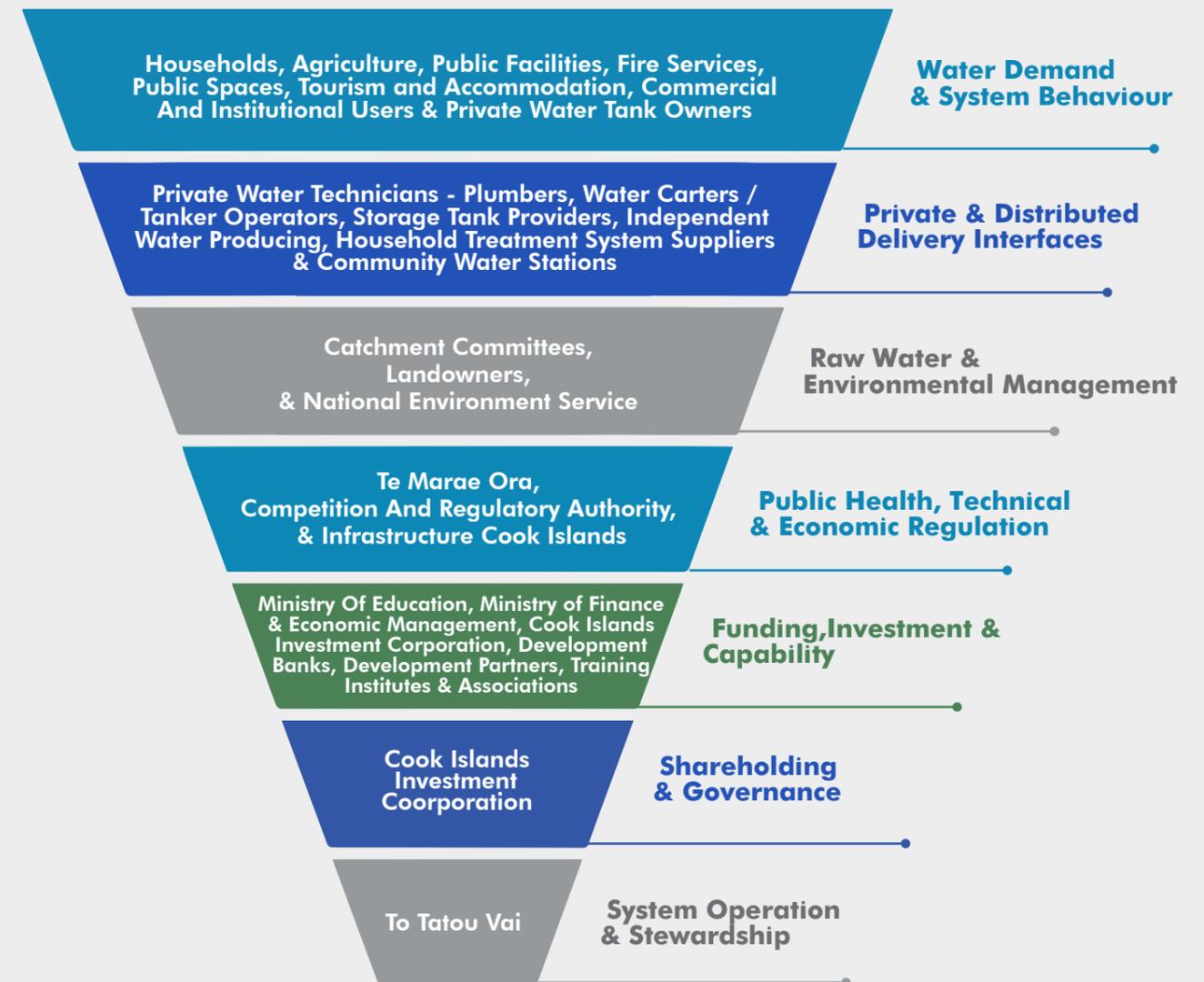




# Stakeholder Roles and Responsibilities

## Everyone has a part to play

Rarotonga's water system operates as a functional ecosystem rather than a single organisation. TTV is one of many actors that must work together to ensure water users on Rarotonga have access to reliable, resilient and quality water. Together these, actors play a shared role in protecting Rarotonga's long-term water security.



## Unique Features of Rarotonga’s Water System

Rarotonga’s water system is shaped by four system conditions beyond the control of operations: a rainfall-fed supply, uneven and location-specific demand, a multi-agency governance environment, and strong links between catchments, communities and lagoon health.



### Water Supply

- Rarotonga’s water supply is primarily rainfall-fed surface water drawn from upland catchments, with limited storage across the system.
- The system combines newer treatment plants and trunk infrastructure invested in through Te Mato Vai with older local reticulation closer to users, so performance is not uniform across all zones.
- For some households and communities, private tanks, harvesting and community water stations already form part of the lived water system.



### Water Demand

- The main sources of demand are agriculture, households and tourism, each placing different pressures on the system.
- Demand is shaped not just by total volume, but by where and when water is needed across the island.
- New housing is increasingly occurring inland and upslope, often in areas where network pressure and service capacity are more constrained.
- Rarotonga is transitioning from historic free-water expectations to a service-and-payment model, so the value of treated water as a utility service is still being established.



### Governance

- To Tatou Vai manages the utility, but water outcomes are also shaped by health, environment, infrastructure, development and funding decisions across government.
- Landowners and catchment committees are part of the governance landscape and influence how source areas are protected and managed.
- There is currently no formal mechanism that consistently aligns development decisions, water capacity and long-term planning across agencies.
- Water services are currently funded largely through government allocations, with a tariff being introduced to support long-term financial sustainability.



### Environmental Stewardship

- Rarotonga’s water system begins in upland catchments and sits within a wider ridge-to-reef system.
- Land use, erosion, runoff and wastewater affect raw water quality, downstream waterways and lagoon health.
- Protecting catchments is therefore both a water security issue and an environmental stewardship issue.

## To Tatou Vai’s Responsibilities in Operations and Stewardship

Within this wider functional ecosystem, TTV’s contribution centres on its role as the long-term operator and steward of Rarotonga’s water system. Environmental stewardship and water conservation is a responsibility of the community at large, everyone has a part to play. The responsibilities below summarise what TTV must deliver to support water security, reliability, and shared outcomes across Rarotonga. Together, these define TTV’s role as the long-term system operator and steward.



### Water Supply

Secure and progressively stabilise the delivery of reliable water from source to customer.

- Manage and protect catchments with landowners and catchment committees.
- Provide technical input into land-use and environmental decisions affecting catchment zones.
- Assess treatment plant asset conditions, manage plant renewals, and replace failing components.
- Operate, maintain and optimise collection, treatment and network systems.
- Maintain stable pressure, flows and system performance across the network under variable conditions.
- Reduce leakage and physical losses through proactive detection, repair, and targeted renewals.
- Monitor treatment performance and carry out laboratory testing to meet prescribed water quality standards and public health requirements.
- Strengthen climate resilience through improved monitoring, automation and balanced nature based solutions.



### Water Demand

Manage demand to optimise limited supply, protect reliability, fairness and long-term system resilience

- Promote responsible and efficient water use.
- Ensure fair and appropriate access for connected users.
- Meter and monitor all usages to improve visibility of consumption, detect losses and support leak and waste reduction.
- Monitor changes in customer demand profile and ensure system operation is not compromised.
- Identify abnormal or excessive use.
- Provide clear consumption information and guidance during normal and constrained periods.
- Apply fair and transparent tariffs to manage demand and maximise access by all customers.
- Work with high-use sectors to manage peak demand and reduce stress on the system.
- Manage new water connections to the network and ensure alignment with system capacity.
- Explore strategies to improve access to the network by those outside the supply zone.



### Governance & Environmental Stewardship

Provide water stewardship for the long-term public interest.

- Maintain regulatory and environmental compliance under the relevant legislation including the National Environment Act 2023, Public Health Act 2024 and the Utilities (Electricity, Water and Sewage services) Act 2026.
- Communicate transparently with customers and the public to build trust and shared responsibility
- Provide clear advice to Government on emerging risks, priorities and long-term water security.
- Build strong partnerships with landowners, catchment committees, government agencies, regulators and development partners.
- Plan and sequence long-term investment, renewals and system modernisation
- Balance reliability, sustainability and environmental protection in major decisions.
- Manage system risks early, including climate risks, operational risks and public health risks
- Strengthen institutional capability, workforce readiness and retention of technical knowledge.
- Advocate for long-term protection of water resources



# Key Shifts Shaping Rarotonga's Water System To 2035

*Te Au Akakeuanga  
Puapinga Te Ka Akanoo  
I Te Turanga Vai O  
Rarotonga Ki Te Mataiti  
2035*

# Key Shifts

## Key Shifts shaping Rarotonga’s water system to 2035

Rarotonga’s water system is entering a decade where volatility, higher expectations, and funding constraints will shape water outcomes as much as infrastructure does. The key shifts below summarise the most material changes expected to 2035 across water supply, demand, governance and environmental stewardship. Together, they explain why Strategy 2035 makes the Strategic Choices and Strategic Priorities that follow.



### Water Supply

“Rain falls differently now – all at once...or far in between.”

Technical Agency Interview (2025)

### 1 Climate variability becomes the dominant driver of water security risk

Rainfall patterns are becoming less reliable as a planning baseline. Dry periods are longer, rainfall arrives in shorter and more intense bursts, and hotter temperatures increase evapotranspiration and reduce effective supply.

As variability increases, system reliability will depend less on “average-day performance” and more on the ability to anticipate and respond to rapid changes in raw water conditions and network stress.

What this means for Strategy 2035:

- Plan for a wider range of climate conditions and more frequent extremes.

- Understand catchment water collection capacity and plan within its natural limits.
- Strengthen drought readiness and operational response settings. Prioritise investments that reduce vulnerability to short-notice shocks.

### 2 Catchments become strategic assets that require active stewardship

Catchment condition increasingly determines raw water quality, the frequency of turbidity shocks, and the effort and cost required for treatment. Under heavier rainfall, slips, erosion, and sediment movement are expected to increase.

Catchment stewardship is essential for long-term water security, treatment performance, and downstream environmental outcomes. It is also an area where responsibilities span multiple parties and success depends on coordination and sustained resourcing.

What this means for Strategy 2035:

- Strengthen catchment stewardship arrangements, capability, and partnerships.
- Support coordinated and balanced (environmentally, technologically and economically) solutions where they protect water quality and reduce risk.
- Connect catchment investment to measurable outcomes for water quality, water reliability, and environmental health.

### 3 The network and treatment system require a step-change in visibility, automation, and redundancy

The system remains constrained by leaks, uneven pressure, lack of real-time visibility and hence, limited capability for real time corrective measures. A significant share of water is lost through leaks, which reduces effective supply, weakens pressure, and increases operating costs, especially during dry periods.

Treatment operations remain highly dependent on manual monitoring and physical access to sites. Severe weather, slips, and road closures can restrict access across multiple plants at the time stable operations are most needed. Turbidity shifts are becoming faster and more severe, placing pressure on the manual operation and dosing processes.

What this means for Strategy 2035:

- Accelerate the transition from reactive response to planned system management.
- Staged infrastructure enhancements at the treatment plants to enable early detection of rapid changes and make real time adjustments to operations
- Expand metering and identification of distribution zone area to support water pressure management including leak reduction
- Extend infrastructure augmentations across the network to support improved monitoring and the introduction of automation.
- Reduce system vulnerability so essential water services can continue during prolonged dry periods, turbidity events or restricted intake access.



### Water Demand

“The team has built area-specific experience in the catchment, and this guides how they dose, but the valleys are changing.”

TTV Senior Team member (2025)

### 4 Demand forecasting remains limited, and demand pressure will be more local and seasonal

Information on reliable and integrated medium-term forecasts for visitor arrivals, housing location, agricultural activity, or population movements is currently limited. While major growth is not expected, demand pressure will remain dynamic because it is driven by where and when water is used, not just total annual volume.

The challenge for TTV is not simply “how much water is needed”, but “where and when demand concentrates”, and whether the system can provide fair and reliable service across all zones.

What this means for Strategy 2035:

- Build demand intelligence and forecasting capability as a core utility function.
- Strengthen cross-agency planning inputs so development decisions consider water service capacity.
- Define and communicate service levels so expectations are realistic and equitable across zones.

### 5 Social licence for water charging is narrow and must be managed deliberately

As metering and billing expand, public scrutiny will increase around fairness, affordability, and service levels, especially where customer experience varies across zones. Trust will be shaped by whether people can see a clear link between what they pay, what service they receive, and what improvements are being made.

This is not only a communications issue. The level of public trust and acceptance, TTV’s social licence will shape what is fundable, how quickly change can occur, and how TTV maintains public trust while implementing reforms.

What this means for Strategy 2035:

- Use transparent data to explain constraints, priorities, and investment choices.
- Make equity and hardship considerations explicit in pricing and service decisions.
- Sequence changes carefully, with clear public reporting on progress and outcomes.

**6** Operating sustainability may improve, but capital sustainability requires external support

Metering, customer registration, and billing strengthen prospects for operating sustainability over time. However, the major investments required for resilience and reliability, including storage, automation, renewals, sludge systems, and catchment protection, exceed what tariffs alone can fund without creating unsustainable cost pressures for customers and the system.

Long-term resilience will require a blended approach to capital funding and stronger investment planning and readiness.

What this means for Strategy 2035:

- Clarify and confirm what is funded through tariffs versus what requires external capital support.
- Strengthen investment planning, business cases, and project readiness.
- Align water resilience investment with mandate and national priorities, identify financial pathways

**7** Governance expectations are rising, and compliance requirements will expand

Expectations for drinking-water safety, service performance, transparency, and accountability are increasing. With the introduction of the new regulatory framework under the Utilities Regulation (Electricity, Water and Sewerage Services) Act 2026, regulatory settings will become more structured, with clearer expectations on service levels, reporting, customer protections, and performance evidence.

TTV's inherited system and historic operating model were not designed for modern compliance and reporting demands. Meeting rising expectations will require stronger internal systems, clearer evidence of performance, and faster response capability during any risk event.

What this means for Strategy 2035:

- Strengthen the "utility backbone", including data governance, risk management, performance reporting, and planning systems.
- Build the operational and monitoring capacity needed to demonstrate safety and respond quickly to risks.
- Improve coordination across agencies where decisions in tourism, agriculture, housing, and environment affect water outcomes.

**8** TTV's role is expanding from service operator to resilience and stewardship leader

Positioning TTV as a credible resilience and stewardship institution will be essential to build partnerships, unlock external investment, and deliver integrated outcomes.

What this means for Strategy 2035:

- Strengthen TTV's leadership role in coordinated planning and resilience programmes.
- Build partnerships that connect water services to catchment protection, public health, and sustainable development.
- Lift organisational capability for programme delivery, monitoring, and accountability.



**Governance/  
Environmental  
Stewardship**

**"The network manages us at the moment. Leaks are constant, and we are always responding."**

TTV Senior Team Member (2025)



# Strategy 2035

## *Kaveinga Nui* 2035



## Strategic Framework: Our 2035 Direction

**“Trusted, resilient water valued by all”** Our Vision

**Our Mission:** transform Rarotonga’s water system, protecting water sources while building resilience and optimising system performance so it remains valued and reliable in an increasingly variable climate and system conditions.

### Why . . .

#### Our Vision

This vision is inspired by the need for Rarotonga’s water system to be trusted, resilient, and valued by everyone who relies on it. It recognises that water is a finite resource, shaped by environmental limits, catchment conditions, and the pressures of a changing climate.

Building resilience requires not just adapting infrastructure, but a stable and well-managed whole of system, from source protection to treatment, network, responsible water use, and customer service.

Trust grows when water can be relied on, information is clear, and decisions are made openly. Resilience grows when people adjust use during changing conditions, when the system can respond to shocks, and when actions are shared across customers, landowners, communities, government, and partners. Valuing water means recognising it as a scarce and finite resource, and often water sources are not where users need it. Rarotonga is dependent on rainfall and the natural limits of the island’s water sources. It also means caring for water together and using it wisely, regardless of how households receive their water.

#### Our Mission

The mission reflects To Tatou Vai’s shift from establishment to actively managing the whole water system in a changing and increasingly pressured environment. While core operations have stabilised, the system continues to face design constraints, uneven performance, climate driven variability and growing expectations from customers, regulators, and partners.

TTV does not currently provide potable water at the tap; safe drinking water is supplied through community stations, while the reticulated network is managed to minimise publichealth and environmental risks. The mission focuses on strengthening, modernising and optimising treatment and network performance, protecting catchments, and building the capability needed to respond to faster and more complex conditions.

Achieving this mission requires working with customers to support responsible water use, improving system visibility and planning for longterm investment so the system becomes increasingly safe, reliable and resilient over time.

## “Turanga Vai Matutu tei Irinakiia e te Akaperepere ia e te Katoatoa”

To Matou Oroma

**Ta Matou ka Rave:** Ka akameitaki i te turanga vai o Rarotonga nei ma te Paruru i te au Punā Vai, ka akamatutu e ka akatūke i te turanga o te vai, kia noo tinamou rai tona puapinga e kia irinakiia te reira ki roto i teia Tuatau e tau nei te Reva e te turanga o te vai.

### Our Values



#### People at the heart

We put people at the heart of what we do, prioritising fairness, equity, and public health. Making balanced decisions when needs compete and being guided by long-term interests of the wider community and water system.



#### Stewardship

We act as guardians of water, caring for the environment from ridge to reef, so our water resources are protected for present and future generations.



#### Accountability

We take responsibility for our decisions and actions, operate transparently, and ensure value for money by being accountable for the use of public resources and the services we deliver.



#### Resilience

We plan for the long-term and will adapt to change, anticipating risk and strengthening our systems and ways of working to deliver reliable, sustainable, and climate resilient water services over time.



#### Partnership and teamwork

We work together openly with our people, government, landowners, and partners, recognising that caring for our water system and achieving shared outcomes depends on collaboration, coordination, and mutual respect.

# Our Outcomes

By 2035, water users will experience a water system that is trusted, reliable, improving in quality, and supported by responsible water use and shared care for water across the island. The outcomes below describe what this will mean for water users (you) across Rarotonga.

By 2035 water users' experience will be as follows...



### The water system is trusted

You understand how water is managed and why decisions are made, even when they are difficult. Information is clear, honest and timely.



### The water system is reliable

You can rely on the supply and quality of water under normal conditions and during periods of stress, including prolonged dry periods, heavy rainfall and unexpected disruptions.

When disruptions occur, services recover quickly, and you are well informed on how to act during these times.



### Water quality progressively improves

You have access to water that is managed to minimise health risks and improves over time. Clear communication ensures you understand when water is safe and unsafe or not meeting standards, supporting public health and confidence as Rarotonga moves toward long-term potable outcomes.



### Water is used responsibly and within limits

You use water with an understanding that it is finite and variable. When conditions change, you adjust your use and recognise your role in sharing water fairly across the community. This responsible use supports the integrity, reliability, and fairness of the system for everyone.



### Water sources and the environment are cared for collectively

You can see that the streams, intakes and catchments are actively protected and maintained. Landowners, communities, organisations and agencies work together to look after these places, supporting long-term water security and environmental health.



### Fair access for all

You can access the essential water services you need, even if service levels differ depending on location and system constraints. You are supported with clear information and coordinated action across TTV, landowners, agencies and communities to help ensure water is shared fairly during dry periods or system changes.

# Outcome Key Performance Indicators

The following outcomes describe the kind of water system Rarotonga should experience by 2035, one that is trusted, reliable, improving in quality, used responsibly, environmentally cared for and fair for all users. These KPIs track To Tatou Vai's progress toward each of these outcomes. They represent the most critical measures of whether the Strategy is delivering a trusted, reliable, resilient and fair water system. Each KPI is SMART aligned, realistic for the island's operating environment and measurable as baseline data becomes available. Together, they provide a transparent way for customers, Government, the Board and development partners to understand how effectively the Strategy is delivering the intended 2035 outcomes.



### The water system is trusted

From 2026, TTV publishes an objective state of Rarotonga's water report twice yearly (June and December), providing all agreed public-facing water data and trends to build trust through clear, honest, and accessible information. From 2027, TTV conducts a biannual customer feedback survey to assess trust, understanding, fairness, and service experience. Results must trend upwards and are utilised to inform operational and strategic improvements.



### The water system progressively becomes more reliable

In 2027, TTV defines and adopts a minimum service level for pressure and continuity across all connected zones. Targets to be set in the next review of the strategy once minimum service level has been established.



### Water quality progressively improves

100% Of community drinking-water stations managed by TTV meet any relevant regulator issued drinking water standards monthly (verified weekly). Water quality testing on the Rarotonga network and at community water stations show less than 1% e.Coli.



### Water is used responsibly and within limits

Achieve an annual  $\geq 1\%$  reduction in peak period demand. By comparison to the baseline levels identified in 2027, using metering analytics and targeted demand management communications. By 2030, non-revenue water (nrw) levels are reduced by 50%.



### Water sources and the environment are cared for collectively

By 2030, environmental management plans (EMPs) for all catchments are developed, and progressively implemented, and reviewed annually with catchment committees, recognising that delivery depends on available resourcing.



### Fair access for all

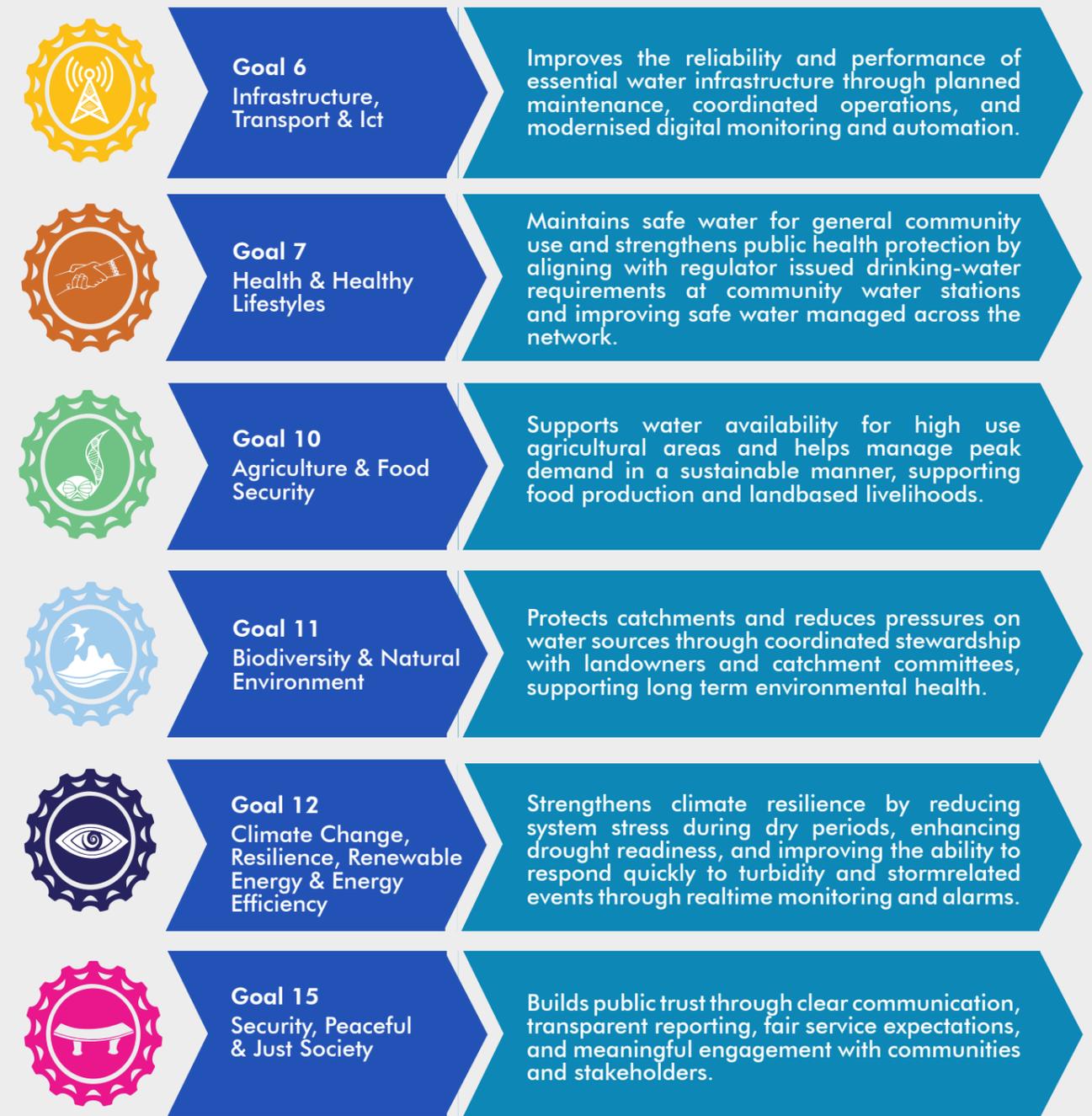
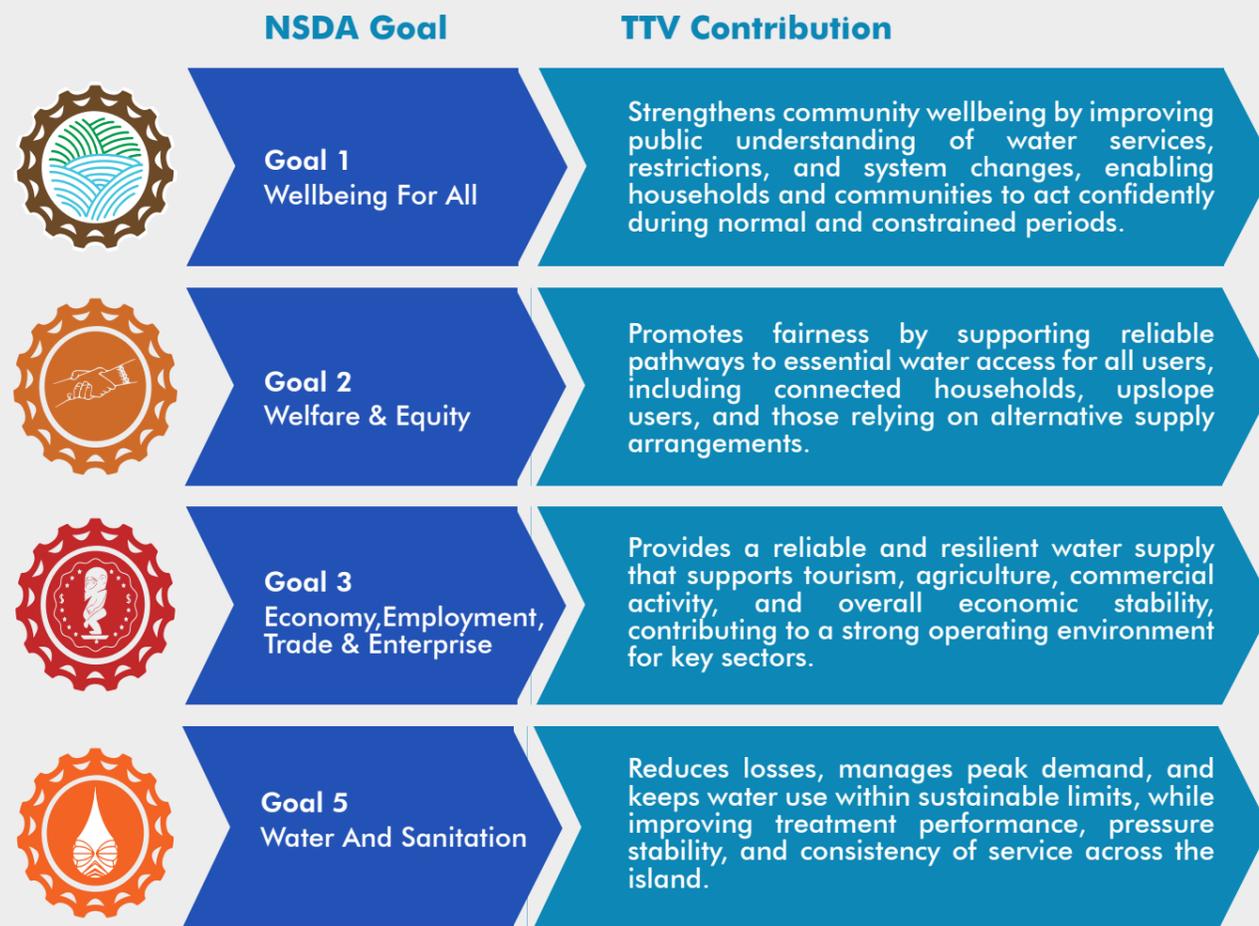
By 2027, TTV defines the acceptable pathways for essential water access for connected customers in the supply zone. By 2035, at least 85% of households have a reliable and safe pathway to essential water services. (NsdA 2020+ indicator 5.1)

# Alignment with the National Sustainable Development Agenda (NSDA 2020+)

## How Strategy 2035 supports national development goals

The Cook Islands National Sustainable Development Agenda (NSDA 2020+) is the guiding document for the nation, steering us all towards a vision of wellbeing. These national priorities are closely linked to the performance of Rarotonga’s water system.

By strengthening system reliability, building resilience, protecting water sources, and modernising how the water system is planned and operated, To Tatou Vai supports the transformation of Rarotonga’s water system in line with the NSDA 2020+.



# Our Strategic Choices

## The decisions that shape our direction

*TTV faces several strategic choices that will shape how Rarotonga's water system evolves over the next decade. These choices respond to the pressures outlined in the Key Shifts in this Strategy, including climate variability, system constraints, uneven service experience, regulatory expectations and increasing public scrutiny.*

*The following Strategic Choices set out where deliberate decisions are required to protect long-term water security, improve system performance, and ensure fair and reliable services for all users. Together, they clarify what TTV will prioritise, what it will not do, and the boundaries within which future decisions will be made. They also support transparent communication with customers, partners, government, and development agencies.*

*Two crosscutting commitments underpin all Strategic Choices. These commitments shape how TTV plans, partners, and acts across the wider water system.*

## Cross-cutting commitments that guide all Strategic Choices

### No one left behind

All water users are considered in long-term planning, whether connected to the reticulated network or not, and fairness is maintained as service levels evolve. This reflects the diverse needs of households, landowners, communities, and businesses from small-scale and subsistence users to agricultural and commercial operators across Rarotonga, including those in areas with the greatest service constraints.

### TTV as part of a wider ecosystem

Water security depends on the stakeholders working together, including landowners, government agencies, catchment committees, plumbers, developers, regulators, donors, and communities. TTV recognises these shared roles and responsibilities and supports coordinated action across the wider water system.

## Strategic Choice 1:

### Recognise private storage as part of the system

*Private storage is recognised and will be supported as part of Rarotonga's long-term water system, provided it interacts safely and fairly with the public network*

Private storage, including tanks and rainwater harvesting systems, is now an established part of how many households and businesses manage water on Rarotonga. It plays an important role in supporting resilience during dry periods. As development patterns evolve and new building and plumbing standards are introduced, TTV

requires a clear position on how private storage fits within the wider system.

TTV's focus is on the points where private systems connect to or draw from the public network. Safe installation and appropriate crossconnection practices are essential to protect water quality and maintain network pressure. Private storage supports resilience, but it is not a substitute for investment in the core network and must not enable disproportionate draw during periods of scarcity.

TTV will not own or operate private tanks, regulate household plumbing, guarantee water quality within private systems, or permit unsafe or unregulated crossconnections. TTV will also

not support tankfilling practices that compromise pressure or fairness for other users.

Over the next decade, although TTV is not in a position to fund private storage, it will support initiatives that expand capacity. Clear and consistent rules will be needed to guide how private storage connects to the public network, how behaviour is managed during constrained periods, and how donor-funded and privately funded installations align with national standards and safe practice.

## Strategic Choice 2:

### Fix system losses before pursuing major new source

*TTV will prioritise recovering lost water from the existing system before pursuing major investment in new water sources.*

*"We estimate around 27% of water collected from the catchment is leaking out of the distribution network before it gets to customers." TTV Senior Team member (2025)*

While the TTV Act sets a function for TTV to identify new sources of water to meet future anticipated demand, Rarotonga currently loses an estimated 27% of all water produced before it reaches customers due to leaks in the system. This volume is larger than what most new supply options could provide. This insight, together with effective management of private water storage, makes it clear that the largest opportunity to increase available water is to reduce losses in the existing network and smart use of privately stored water rather than build additional sources.

Alternative water sources such as desalination, groundwater or large-scale storage, may play a role in the future. However, these options are expensive, energy intensive and complex, and they can only be responsibly considered once TTV has stabilised core operations, reduced losses, improved system visibility and strengthened treatment and network performance.

TTV sees the fastest and most cost-effective way to increase supply as stopping the water that is already collected at the treatment plants from being lost through the network. New sources cannot compensate for a system that cannot hold or deliver the water it creates, and such new sources must not be treated as a shortcut around the essential work of leak reduction, pressure management and operational improvement.

TTV must prioritise its efforts. Only where time and resources permit will the future assessments of alternative sources be led by TTV, staged, evidence based and aligned with system readiness.

This includes understanding demand, clarifying long-term risks, and comparing the cost and benefit of new supply options against continued system optimisation. This includes understanding demand, clarifying long-term risks, and comparing the cost and benefit of new supply options against continued system optimisation.

## Strategic Choice 3:

### Applied targeted solutions above the 30 metre high water mark

*TTV will plan for these communities using realistic, system-appropriate solutions, without committing to universal network service above the 30 metre mean high water mark.*

*"There are different ways those above the 30 metre mean high water mark access mains water when they are not currently connected. This includes carting water, private storage, community water stations and over the counter purchases. More households and developments are now located above 30 metres and, while not directly connected to the mains, we need to be thinking about their longterm experience too." TTV Senior Team member (2025)*

People living and developing above the 30 metre mean high water mark are already part of Rarotonga's water future. These areas interact with the public system through trucking, private storage and local supply arrangements, meaning they cannot be treated as separate from the wider water system. However, the existing network was not designed to supply properties above 30 metres.

Service outcomes in these areas depend on many partners, including landowners, developers, plumbers, planning agencies and the Building Code, not TTV alone. Land in the Cook Islands is held under traditional shared ownership, which shapes how and when development occurs and how longterm service options are negotiated.

TTV's focus is to consider how these communities can be supported in a fair and transparent way, using solutions that reflect technical

constraints and system capacity. Different areas may require different approaches, including network extension where feasible, enhanced or mandatory private storage, alternative or decentralised supply options, or watertrucking support. Any network expansion will only be considered where it is technically viable and must not compromise TTV's statutory obligation to provide fair and appropriate access for connected users within the 30 metre mean high water mark.

TTV will not guarantee full network service above 30 metres, create expectations that service levels will match lower elevation areas, nor extend the network where it undermines fairness or system performance. Over time, clearer guidance will be needed on realistic levels of service, how different solutions apply in different locations, and how to align water service expectations with development and building settings.

#### Strategic Choice 4:

##### Progress towards potable water at the tap

*Potable water at the tap is a long-term aspiration for Rarotonga, but it is not deliverable within Strategy 2035. TTV will strengthen the system and continue providing safe drinking water through community water stations.*

*"We are not yet in a position where the network can safely or consistently meet potable drinking water standards at the tap." TTV Senior Team member (2025).*

TTV is required under the To Tatou Vai Act to provide water services reliably, efficiently and cost effectively, and in accordance with any applicable published standards in the Cook Islands in accordance with the Public Health Act 2024. Where national standards do not exist, TTV will reference the World Health Organisation (WHO) Guidelines for Drinking Water Quality. These guidelines for Drinking Water Quality set internationally recognised benchmarks for potable drinking water. These guidelines specify that microbiological contamination be absent, specifically that E. coli is not detectable in any 100 mL sample. Drinking water must also comply with health-based guideline values for chemical parameters and meet operational and aesthetic parameters that ensure treatment effectiveness and consumer acceptability.

Today, potable water is provided through

community water stations, while the reticulated network is managed to minimise public health risks for general community use.

The current network is not designed to achieve potable outcomes at every tap. Turbidity, variable pressure, manual treatment processes and legacy network limitations mean consistent compliance cannot be achieved under all conditions. Achieving potable water at the tap would require major upgrades to treatment capability, automation, renewals, pressure management and household plumbing. All these foundations must be in place before potable outcomes can be considered. Strategy 2035 focuses on strengthening the foundations required for future potable outcomes. This includes improvements in treatment capability, monitoring and system control, network condition, and operational performance.

TTV will not commit to potable water at the tap within this strategy period, promise outcomes that cannot be delivered safely and consistently, or advance potable pathways that exceed system capability or affordability. Any movement toward tap level potability must be incremental, evidence based, have community ownership and be aligned with system performance over time.

#### Strategic Choice 5:

##### Renew and modernise the network

*TTV will take a planned, long-term approach to reducing leaks and renewing the network so that the system becomes more reliable, efficient, and resilient over time.*

*"We do not yet know exactly where the water is going." TTV Senior Team member (2025)*

Rarotonga's distribution network remains the most vulnerable part of the system. Leaks, bursts and pressure variability continue to drive reactive operations and absorb significant staff time. An estimated 27% of all water produced is lost before it reaches customers, representing the single largest opportunity to increase available supply without developing new sources. The island wide metering project began in 2023 and currently covers over 60% of the island. This project is giving TTV clearer visibility of demand and losses, strengthening its understanding of where leaks are occurring and where renewal will have the greatest impact.

TTV will shift from reactive fixes to structured leak reduction and targeted renewals.

Better monitoring, data and asset condition information will allow renewal decisions to be based on evidence rather than urgency. Reducing losses and repeat failures will strengthen reliability, support pressure management, improve customer experience and ensure the system can continue operating within its limits during dry periods.

TTV will sequence its efforts across three streams of work:

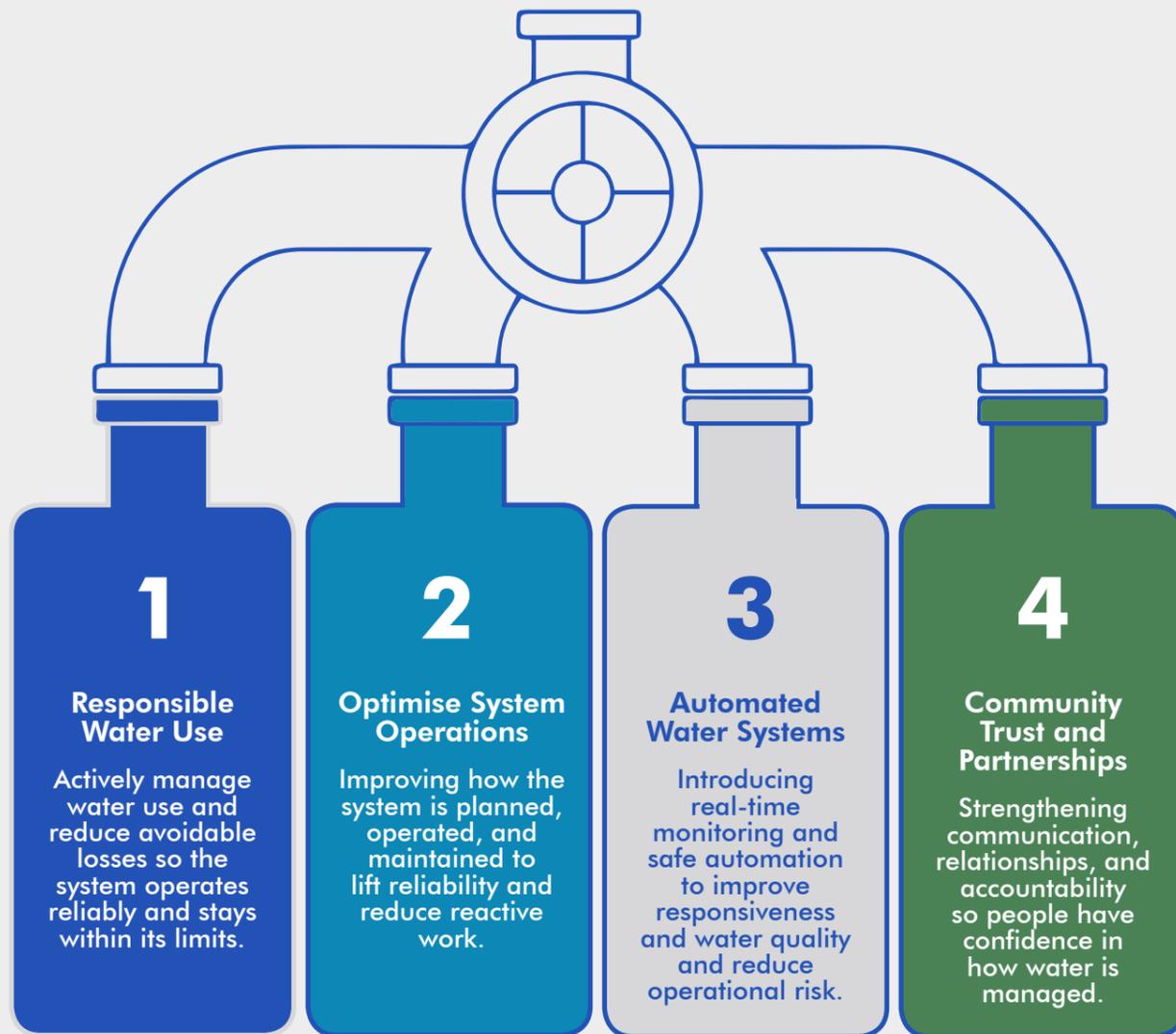
1. **Immediate leak response** – reactive identification and repair of bursts or visible leaks to prevent major losses and service disruption.
2. **Planned leak reduction** – targeted programmes to identify and repair nonurgent leaks using metering data, pressure management and leak detection tools.
3. **Progressive network renewal** – long term replacement of ageing or repeatedly failing assets to reduce losses, improve pressure stability and strengthen resilience.

Priorities will be set based on where leaks are concentrated, where failures recur, and where improvements will deliver the greatest overall system benefit and fairness.

# Our Strategic Priorities

## Where we focus to deliver the Vision and Mission

The Strategic Priorities translate TTV's Vision and Mission into four areas of practical action for the next decade. They focus effort where it will have the greatest impact on delivering reliable, safe, and resilient water services, while strengthening the system for a more climate-challenged future.



Together, these priorities provide the pathway for stabilising the system, improving performance, and building the trust and shared responsibility needed to achieve long-term water security.

# Strategic Priority: Responsible Water Use

1

Responsible Water Use means working with all users to use water responsibly, reduce avoidable losses and keep demand within the system's limits so water can be shared fairly and services remain reliable, especially during dry periods.

### Why this matters ...

Responsible Water Use on Rarotonga comes from many different users and activities including households, agriculture, tourism and commercial operators, construction and road works, emergency use, and people living off-grid or above the 30 metre high water mark. Not all demand is visible through standard customer connections, and not all water that enters the network reaches customers due to leaks and losses.

As climate variability and peak demand place more stress on supply, Responsible Water Use becomes essential to maintaining reliable service. It is not just an internal TTV activity, it depends on customers and other actors playing their part, with TTV enabling, guiding, and applying the tools needed to support responsible use and reduce losses across the system.

### What success looks like ...

- Water use and losses are reduced so total demand stays within what the system can reliably supply, including during dry periods.
- Pressure differences across the network reduce, leading to a more consistent and fair level of service for customers.
- Leaks and losses reduce over time (both within the network and on the customer side), improving reliability and freeing up water that is currently wasted.
- High-use and non-essential demand reduces during constrained periods without undermining fairness and affordability.
- Customers understand their role, receive timely information, and respond constructively to demand measures.

### How this priority will be enabled ...

- ✓ TTV will deliver Responsible Water Use in stages: building credible visibility of water demand and losses through metering and analysis
- ✓ applying targeted interventions where they will have the greatest impact (especially during dry periods and peak demand).
- ✓ Water demand measures will be designed and communicated in ways that strengthen trust, protect public health, and reinforce fairness.

**What tools and levers will be used**

TTV will use a mix of operational, customer, and policy levers, including:

- Completing metering and customer registration to build system-wide visibility of demand and losses.
- Targeted engagement and tools for the highest water users (e.g. the top 5%) during peak or constrained periods.
- Pressure management to reduce inequities, minimise bursts, and lower leakage driven by high or unstable pressure.
- Proactive leak detection and repair (network-side) and working with plumbers and customers to reduce property-side leaks.
- Seasonal or climate-triggered demand settings (e.g. drought stages), including restrictions where required.
- Tariff signals where appropriate, designed carefully to reinforce fairness, affordability, and trust.
- Supporting household resilience measures such as rainwater harvesting and storage, aligned with clear standards and system rules.

**How we will measure success**

Progress will be tracked through a small set of practical indicators, such as:

- ✓ Share of total demand that is measured and understood (metering coverage and data quality).
- ✓ Reduction in leaks and losses over time (e.g. non-revenue water trend and/or verified leak reduction outcomes).
- ✓ Reduction in pressure-related service complaints and improved consistency of service across the network.
- ✓ Reduction in demand during constrained periods among the highest-use customers (e.g. top 5%).
- ✓ Evidence of improved customer understanding and response (e.g. survey results, reduced repeat issues, increased leak reporting).

**Focus areas for the next 24 months . . .**



**Key delivery risks and mitigation**

Key risks include poor or delayed data undermining credibility, customer resistance if measures are perceived as unfair, and limited ability to reduce losses quickly if leak detection and repair capacity is constrained.

These will be mitigated through phased delivery, early investment in data quality, targeted action focused on the biggest opportunities (high users and high-loss areas), clear communication, and strong coordination across operations and customer-facing functions.

**Where are our valued relationships**

Responsible Water Use requires shared action across the water system, including:

Customers and communities, as the main drivers of behaviour change and responsible use.

Agriculture, tourism, and commercial users, as key sectors with concentrated demand.

Plumbers and service providers, to identify and resolve customer-side leaks.

Emergency Management Cook Islands (EMCI), for drought planning and response coordination.

Relevant government agencies, particularly where land use, development, and building settings influence demand and storage practices.

# Strategic Priority: Optimise System Operations

## 2

*Optimising system operations means running the water system in a coordinated, efficient and data driven way, so services are reliable, risks are reduced, and reactive work is progressively replaced with planned preventative operations.*

### Why this matters ...

To Tatou Vai is a statutory authority with obligations under the To Tatou Vai Act 2021 to deliver water services in a reliable, efficient and cost-effective manner and to meet prescribed supply and water quality standards. Optimise System Operations is essential to meeting these obligations and demonstrating value for money.

TTV has moved from a project environment to an enduring water authority, and important foundations are now in place, including governance structures, core systems, operating and maintenance programmes, tariffs and improving system data.

While much has been achieved in the five years since establishment, operations are still constrained by manual processes, gaps in data, fragmented systems and inconsistent workflows. Optimising operations will ensure the organisation can function as a mature utility: disciplined, coordinated and increasingly data driven.

The next phase is to review and refine these foundations so they operate as one integrated system, improving reliability, strengthening data driven decision making, and reducing avoidable

cost and operational pressure on staff. This shift moves TTV from reactive response to planned, preventative delivery.

### What success looks like ...

- Whole of system is run as efficiently as possible and maximises the use of available water resources when it is in abundance, and optimises use when water is scarce.
- Teams work as one system across treatment, network and customer functions, with no operational silos.
- Staff feel supported, connected and confident, improving performance and retention.
- Roles and workflows are clear and consistently applied, supporting coordinated operations, improving productivity and staff confidence.
- Operations are planned and coordinated using reliable system information, not crisis response, improving efficiency and cost control.
- Customers experience fewer disruptions and more predictable, consistent service.

### How this priority will be enabled ...

TTV will Optimise System Operations in a sequenced way: first

- ✓ improving role clarity, standard processes and the quality of operational data; then
- ✓ integrating systems so teams can plan and respond consistently across treatment, network, and customer functions.

This staged approach avoids trying to “fix everything at once” and focuses effort where it delivers the greatest reliability and most efficiency gains.

### What tools and levers will be used

- Review and strengthen the operating model (including structure, leadership roles and succession planning) to improve coordination and accountability.
- Standardise and simplify operating procedures across treatment and network operations.
- Improve asset, maintenance and performance management so decisions are risk based and preventative.
- Improve and integrate digital platforms and data (including system analytics capability) to ensure decisions are timely and evidence based.
- Apply continuous improvement practices to reduce inefficiencies, improve productivity, and strengthen value for money over time.
- Progressively adopt fit-for-purpose automation and analytics (including AI where appropriate) to support operational monitoring and planning.

### How we will measure success

- ✓ Fewer unplanned outages and service disruptions.
- ✓ Reduction in reactive maintenance and emergency response activity.
- ✓ Improved response times to operational issues.
- ✓ Increased proportion of critical assets with reliable condition and performance data.
- ✓ Improved operational efficiency and consistency of service across the network.

### Key delivery risks and mitigation

Risks include staff turnover, fragmented systems, poor data quality, and overreliance on individuals rather than documented processes. These will be mitigated through sequencing, documentation and standardisation, investment in data and systems, and building workforce capability and leadership depth.

### Where are our valued relationships

Optimising System Operations requires shared action across the water system, including:

**Key suppliers and service providers (equipment, ICT, parts and specialist support).**

**Peer utilities and training partners (mentoring, capability uplift and operational learning).**

**Development partners where support strengthens capability, systems and long-term operability.**

### Focus areas for the next 24 months . . .



# Strategic Priority: Automated Water Systems

## 3

*Automated Water Systems means upgrading treatment and network operations so the system can respond quickly and consistently to changing conditions, supported by real-time monitoring and safe control.*

### Why this matters ...

Rarotonga’s water treatment system is fully manual based and site dependent. Operators typically rely on physical site visits, visual checks and obtain samples, which works in normal conditions but leaves little margin when raw water changes quickly between visits. High-rainfall events can rapidly increase turbidity, sediment and debris, forcing immediate dosing and throughput decisions, increasing sludge volumes, and sometimes requiring throttling or shutdown to protect quality. Access constraints during severe weather can delay adjustments when they are most needed.

The treatment process is also exposed to equipment limitations. Some critical filtration units are not consistently performing as designed when under stress, and storm events increase desludging demands and operational load. The distribution network remains variable and partly fragile, with pressure variability and faults amplifying customer impacts when supply is constrained. In this context, “automation” is not just SCADA or dashboards. Monitoring without the ability to physically

control plant and network behaviour is poor value. Automation must be preceded by the right enabling infrastructure, reliable power and communications, and clear operating protocols.

### What success looks like ...

- Treatment remains stable across wet weather and dry season conditions
- Operators receive real-time alerts and can act quickly without relying on repeated site visits
- Water-quality risk reduces during turbidity events and recovery is faster after storms
- Staff time shifts from constant manual adjustment to oversight, optimisation and preventative work, reducing operational pressure and enabling more consistent coordinated service delivery
- Operational data supports compliance and confident decision making

### How this priority will be enabled ...

Building strong system monitoring and control requires collaboration with technical partners, utilises and operational teams who support automation, system visibility, and safe operating practices, including:

- ✓ Automation readiness and feasibility assessment
- ✓ Upgrade enabling infrastructure to ensure control is possible (valves, actuators, dosing interfaces, critical instrumentation, power)
- ✓ Install real-time monitoring and alarms at priority plants, reservoirs and critical network points including SCADA
- ✓ Introduce automation in stages with clear human oversight and safe fallback modes
- ✓ Strengthen power and communications reliability at priority sites
- ✓ Build staff capability to operate, maintain and optimise automated water systems

### What rools and levers will be used

- Infrastructure upgrades for control and instrumentation
- Telemetry, SCADA, and real-time dashboards
- Operating protocols for automated and remote control, including human override
- Backup power and redundancy for critical assets
- Training and vendor support for maintenance and calibration

### How we will measure success

- ✓ Percentage of treatment plant and network nodes with real-time monitoring, alarms and controllable assets
- ✓ Reduced response time to turbidity and flow changes
- ✓ Fewer water-quality incidents linked to delayed response
- ✓ Improved operator safety and reduced high-risk site exposure
- ✓ Increased availability of reliable operational data for reporting and planning

### Where are our valued relationships

Automated Water Systems requires shared action....

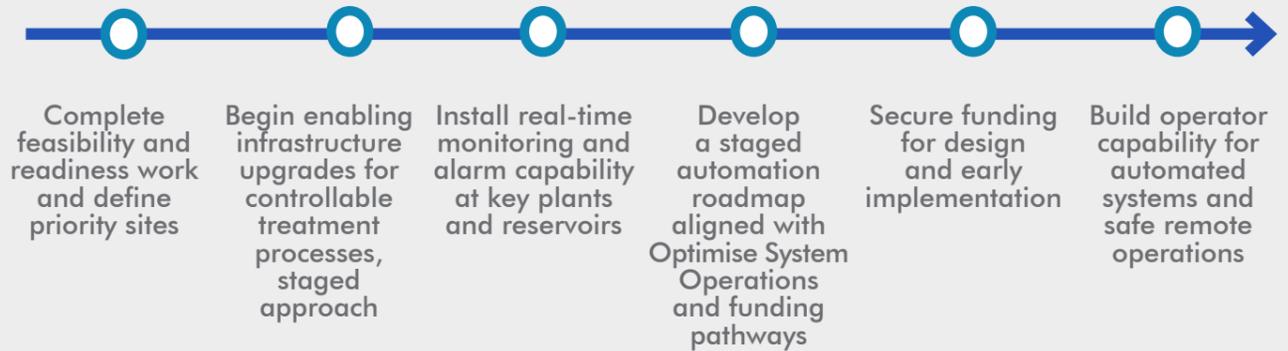
**MFEM and development partners for sequencing, funding, and investment readiness**

**Technical partners for design, integration, commissioning, and training**

**Peer utilities for capability support and lessons learned**

**TTV operational staff to co-design practical controls and safe operating envelopes**

### Focus areas for the next 24 Months . . .



### Key delivery risks and mitigation

- Infrastructure not upgraded to respond to automation
- Power or communications instability
- Skill and maintenance gaps
- Over-reliance on technology

These risks will be mitigated through staged implementation, power resilience planning, early investment in workforce training, clear governance and operating protocols, and careful system integration.

# Strategic Priority: Community Trust and Partnerships 4

*Community Trust and Partnerships means building strong, consistent, and credible relationships so customers, landowners, partners and the public have confidence in how water is managed.*

## Why This matters ...

- Trust and engagement strategy with stakeholder segmentation
- Standard communication protocols and templates for outages, restrictions and quality notifications
- Six-monthly 'State of Rarotonga's Water' report with a consistent indicator set
- Annual performance summary aligned to service, operational and financial indicators
- Clear customer education materials on metering, tariffs and roles and responsibilities
- Stakeholder MOUs and landowner agreements that set expectations and strengthen cooperation
- Community channels that match how people prefer to receive information, including radio, notices, social media, community leaders, schools and churches
- Complaint handling and feedback loops that close the loop with the public

## How we will measure success ...

- ✓ Baseline trust and customer sentiment measures established and tracked over time
- ✓ Increased proactive leak reporting and reduced escalated complaints
- ✓ Improved public understanding of service levels, restrictions, and water-quality messages
- ✓ Consistent delivery of communications standards across all channels
- ✓ Increased engagement and participation from landowners and key sectors

## Where are our valued relationships

Building trust in the water services relies on strong relationships with communities, institutions, and partners who help communicate, protect, and support the system, including:

Customers and communities, including high-use sectors and vulnerable households

Landowners and catchment committees

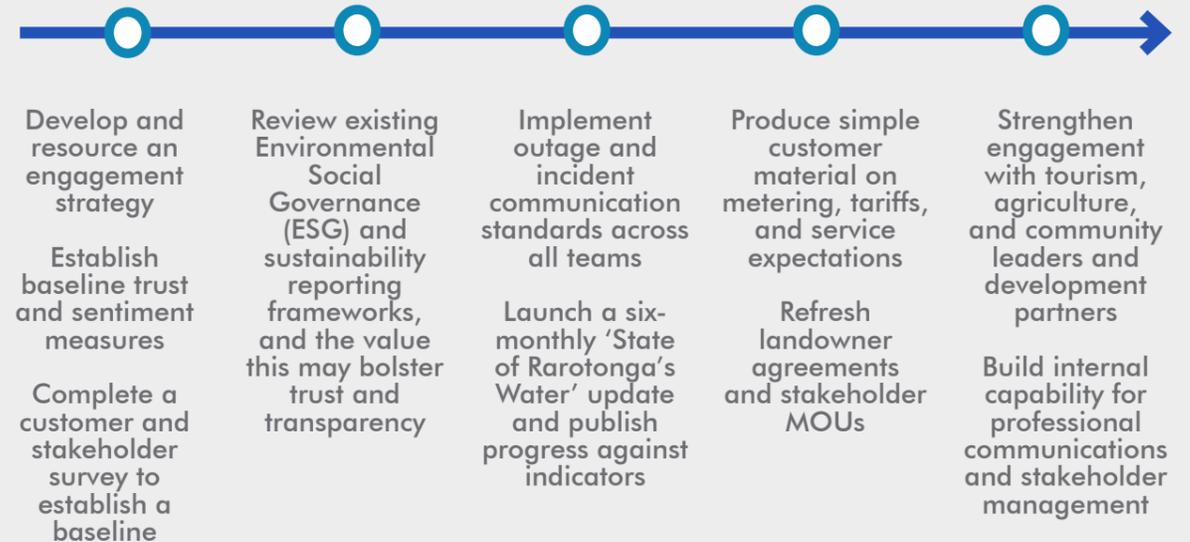
Tourism, agriculture, and commercial users

Media partners and community information channels

Schools, churches, and community leaders

Government agencies, regulators and development partners

## Focus areas for the next 24 months . . .



## Key delivery risks and mitigation

- Messaging remains reactive or inconsistent
- Performance reporting is not trusted or is too technical
- Low capacity to deliver engagement and reporting consistently
- A vocal minority dominates public narratives online

# Delivering The Strategy

*Tukuanga i te  
Kaveinga Angaanga*



# Key System Enablers

## What must be true for Strategy 2035 to succeed

These enablers set out the organisational and system wide conditions that must be true for To Tatou Vai to deliver Strategy 2035 with consistency, accountability and long term resilience



### Clear ownership of roles

Ensure everyone clearly understands, accepts, and acts on their role in valuing water, conserving supply, all contributing to a trusted, resilient water system.



### Trustworthy messaging

People receive clear, timely, and accurate information so they understand water services, decisions, and expectations. This supports timely and appropriate action to safeguard public health and service continuity.



### Harmonious partnerships

Build strong, respectful partnerships with communities, landowners, businesses, government, and funders to support shared responsibility, collective care, and coordinated action across the water system.



### Financial security

Stable and transparent funding pathways are in place through tariffs, CIIC, Government support and development or climate finance. Capital investment is sequenced based on evidence, system risk and affordability to maintain and renew critical infrastructure.



### Workforce capability and institutional strength

Workforce capability, technical knowledge retention, and organisational systems are strengthened. Reliable data and asset information are in place to support evidence-based decision-making and long-term performance improvement.

**Together, these enablers create the institutional conditions required to deliver Strategy 2035 with credibility, accountability, and longterm resilience.**



# Our Financial Strategy For Resilience

*Delivering safe and reliable water services is not only an engineering challenge. It is also a funding challenge.*

## Current financial settings and structural constraints

Since its establishment under the To Tatou Vai Act 2021, To Tatou Vai has been transitioning from a model in which both operating and capital costs were funded entirely through Government appropriations to a utility model in which an increasing proportion of operating funding is derived from tariff revenue as customers are progressively brought onto the billing system. Over this period, Government

appropriations for operating expenditure have reduced, while capital investment has continued to rely on appropriated funds and external financing. The long-term objective is for To Tatou Vai to achieve operational self-sufficiency within the parameters established by law, while maintaining affordability and public accountability.

To Tatou Vai is required by law to operate on a not-for-profit basis and to set tariffs with a view to funding maintenance, repair, replacement and upgrade of infrastructure.

Cost	Funding Sources	Pre Tariffs	Current	Strategy 2035
Operations	Government Appropriation	100%	60%	0%
	Tariff Revenue – Customer <sup>1</sup>	0%	40%	90%
	Development Finance	0%	0%	10% <sup>1</sup>
<b>Capital – asset renewal</b>				
Capital – asset renewal	TTV Depreciation Reserves	0%	0%	100%
<b>Capital – new assets</b>				
Capital – new assets	Government Appropriation	95%	0%	25%
	Development Finance <sup>2</sup>	5%	0%	75%

<sup>1</sup> Support for workforce training, development and technical advisory

<sup>2</sup> Support for technical assistance and capacity building programmes

Water molecule itself is a natural resource and is not sold. Tariffs fund the infrastructure, treatment processes and operational systems required to collect, treat, store and deliver water safely and reliably across Rarotonga. The intakes, treatment plants, pipes, monitoring and operational teams required to operate the service all carry real costs. Tariffs, therefore, fund the water service, not the water source molecule.

However, the Act also creates a structural constraint on capital funding.

Depreciation funding for key infrastructure assets must be held in a reserve account under the Ministry of Finance and Economic Management Act. Any withdrawal from that reserve requires the approval of Cabinet and Financial Secretary. This funding is therefore not a Board-controlled renewal fund for future upgrades to the infrastructure.

The Act further limits depreciation recovery to assets depreciated over five years or less. Long-life infrastructure cannot be depreciated into the tariff base.

This means:

- Tariffs can progressively fund operating costs and short-life asset replacement.
- Tariffs cannot fund long-life infrastructure renewal through a standard depreciation model.
- Depreciation cash cannot be deployed independently by the Authority.
- Major renewals and resilience upgrades depend on Crown funding, Cabinet approved depreciated funding, CIIC capital contribution, or external development and climate finance.

While we expect operating costs to be well covered by 2035 through a mix of tariff revenue and subsidies, there is currently no automatic or self-executing capital replacement pathway for long-life assets within the Act. Operational sustainability is achievable. Capital autonomy is not under current settings.

## Financial Strategy 2035

Without a clear and predictable capital pathway, To Tatou Vai risks remaining operationally funded but unable to sustain the continuous capital renewal that a modern water utility requires. Water infrastructure is long-life, capital-intensive and subject to climate stress. It does not tolerate irregular or ad hoc investment. If renewal and resilience funding are uncertain, service reliability and water safety will ultimately decline.

The Authority will continue to move toward operating sustainability through tariffs including Government paying for household water usage.

To achieve long-term capital sustainability we will have:

- An agreed and predictable capital funding pathway with Government.
- Clear rules for accessing depreciation reserves.
- Formal clarity on asset ownership and renewal responsibility.
- A structured capital programme aligned to whole-of-life costs.
- Active pursuit of development and climate finance for resilience investment.

Strategy 2035 recognises that sustainable water service depends on a constant and transparent stream of capital investment. To achieve this, To Tatou Vai will unlock appropriate finance, strengthen its investment readiness, and operate with openness and partnership. This includes working closely with Government, CIIC, development partners and climate finance institutions to build a credible, sequenced capital programme grounded in whole-of-life cost discipline.

Capital pathway reform is therefore not a technical adjustment. It is a core institutional priority that underpins long-term service reliability, affordability and public trust.

# Implementation Roadmap



The Implementation Roadmap outlines how To Tatou Vai will put this Strategy into action over the next decade.

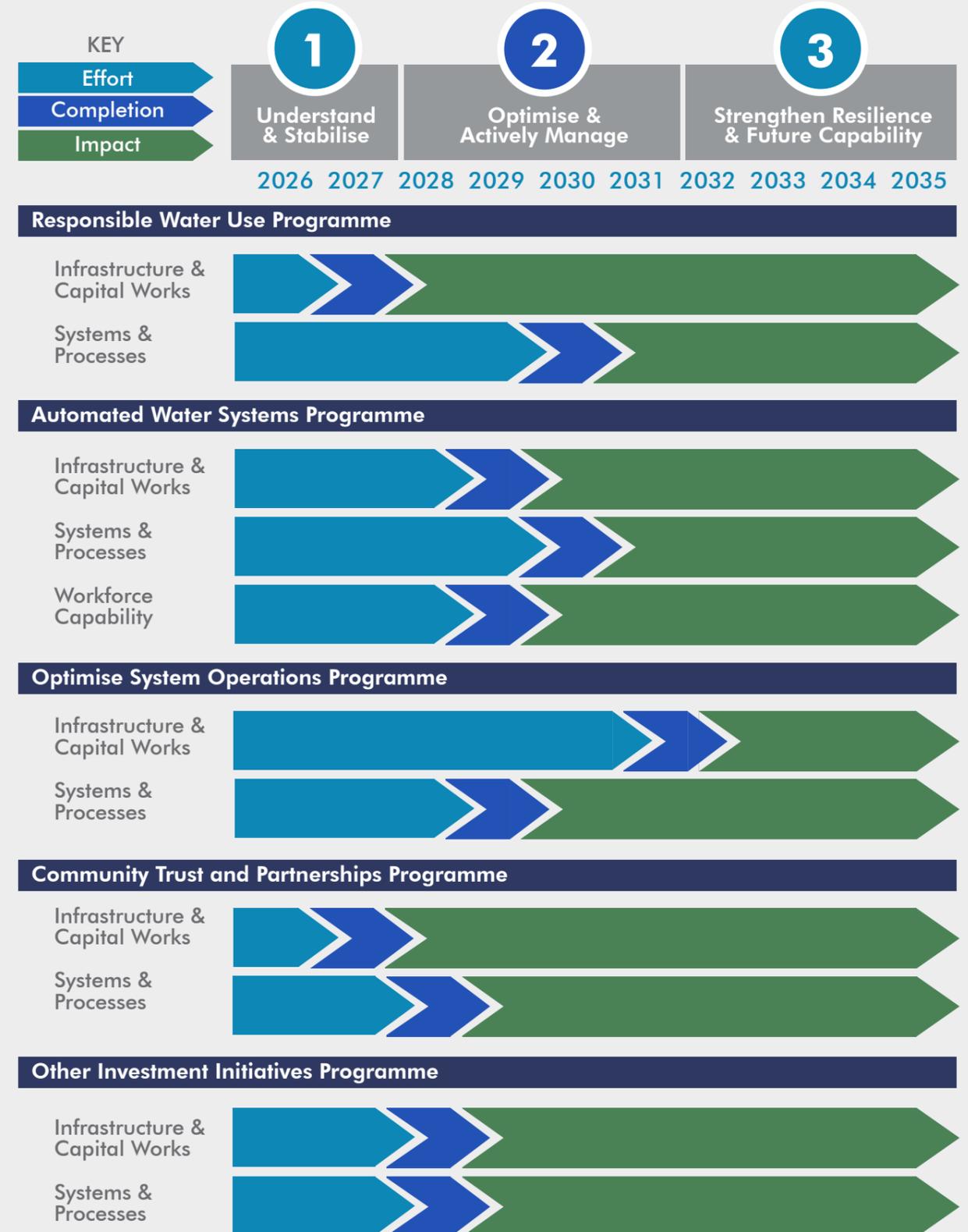
It sets out indicative timeframes to signal sequencing and prioritisation of investment over the decade. These timeframes are strategic only and do not lock in future decisions. Detailed scheduling, costs, and delivery approaches will continue to be confirmed through annual planning, budgeting and investment programmes through the Statement of Corporate Intent.

Implementation initiatives are arranged into three phases, reflecting system readiness, organisational maturity, and the level of risk at each stage.

Investment types are grouped into three categories:

- 1. Infrastructure and capital works** – physical assets required to improve reliability, resilience, and overall system performance.
- 2. Systems and processes** – improvements to how the organisation plans, operates, and makes decisions.
- 3. Workforce capability** – ensuring skills, roles, and succession keep pace with system complexity and service expectations.

## High Level Implementation Roadmap



# Measuring Success

Success under Strategy 2035 will be assessed not only through technical performance, but by whether Rarotonga’s water system becomes more trusted, resilient and responsive over time. Transparency, learning and climate readiness are central to how success is defined. Measuring success combines regular reporting, reflection and the ability to adapt as conditions, risks and expectations evolve.

Monitoring, evaluation & learning activity	How is success assessed
Six-Monthly State of Rarotonga’s Water	Provides a public update on system performance, pressures, disruptions, and on the ground activity, supporting transparency, shared understanding, and trust.
Annual outcome review	Tracks progress toward strategic outcomes through annual planning and reporting, including trends in water quality, reliability, system performance, customer confidence, and equity of access, measured against approved KPIs.
Mid-term success review (around 2030)	Formal review five years after adoption to confirm the Strategy remains fit for purpose and to adjust priorities or sequencing in response to emerging conditions
End-of-strategy evaluation (by 2035)	Evaluates whether the Strategy has delivered its intended outcomes over the full ten-year period and informs the next strategic planning cycle.

Annex 2: Strategy 2035 Outcome and Financial Scorecard include a set of measures that will be reported on to track whether TTV is moving in the right direction. The scorecard will be reviewed regularly by the Board and leadership to monitor progress, identify emerging risks and ensure that effort and investment remain aligned with the long-term direction set out in this strategy.

## Principles guiding all monitoring, evaluation, and learning

### Learning and adaptation

Findings from reviews and evaluations will be used to adjust approaches over time and to inform the development of the next strategic plan beyond 2035.

### Transparency and shared understanding

Progress will be communicated through accessible reporting so landowners, catchment committees, communities, government agencies, and partners can understand how the Strategy is performing.

### Climate and resilience lens

Success includes strengthened readiness for prolonged dry periods, intense rainfall, and other climate-related pressures, aligned where appropriate with national climate and resilience frameworks.

### Updating of Strategy 2035

In accordance with the To Tatou Vai Act 2021, TTV is required to review and adopt an updated Strategy at least every two years. This statutory obligation sits alongside the monitoring, evaluation and learning activities outlined above.



## Annex 2: Strategy 2035 Outcome and Financial Scorecard

The Strategy 2035 scorecard translates the outcomes into a small set of measures that track whether the organisation is moving in the right direction. It focuses on outcomes that matter for water users, the performance of the water system, organisational capability and financial sustainability. The scorecard will be reviewed regularly by the Board and leadership team to monitor progress, identify emerging risks and ensure that effort and investment remain aligned with the long-term direction set out in this strategy.

Outcome / enabler	Measure (KPI)	Baseline	Target
Trusted	State of Rarotonga’s Water report published	Not yet in place	Twice yearly from 2026
	Customer feedback survey on trust, understanding, fairness and service experience	Not yet in place	Biannual from 2027, with results trending upwards
Reliable under stress	Minimum service level for pressure and continuity across all connected zones	Not yet defined	Defined and adopted in 2027
Improving in water quality	TTV-managed community drinking water stations meeting relevant Drinking Water Standards weekly	Less than 1 MPM for Total Coliform Less than 1 MPM E.coli NTU < 1 Aluminium 1ppm Maximum Acceptable Value pH Guideline Value 7.0-8.5 Aluminium Guideline Value ≤ 0.1ppm	No Total Coliforms found No E-Coli found NTU < 0.2 Aluminium ≤ 0.1ppm MAV pH value 7.0 – 8.0. Aluminium ≤ 0.1ppm
	Rarotonga network testing fortnightly	NTU < 1 Guideline Value Aluminium 1ppm Maximum Acceptable Value Aluminium Guideline Value ≤ 0.1ppm. pH value 7.0 - 8.5	NTU < 1 Aluminium ≤ 0.1ppm Maximum Acceptable Value Aluminium ≤ 0.1ppm. pH value 7.0 - 8.0

Outcome / enabler	Measure (KPI)	Baseline	Target
Used responsibly within limits	Peak period demand	Baseline to be established in 2027	At least 1% reduction per year from 2027 baseline
	Non-Revenue Water	Approx. 27%	50% reduction in baseline by 2030
Supported by collective	Catchments with EMPs developed, progressively implemented, and reviewed annually with catchment committees	Catchment committees established; full EMP coverage not yet achieved	All catchments by 2030, then annual review
Fair in access across the island	Acceptable pathways for essential water access for connected customers in the supply zone	Not yet defined	Defined and adopted in 2027
	Households with a reliable and safe pathway to essential water services	Baseline not yet published	At least 85% by 2035
Financial Security / not-for-profit basis	Operating expenditure funded by Government appropriation	60%	0%
	Operating expenditure funded by tariff revenue	40%	90%
	Operating expenditure funded by development finance	0%	10%
	Capital renewal funded through TTV depreciation reserves	0%	100%
	New asset capital funded through Government appropriation	0%	25%
	New asset capital funded through development finance	0%	75%
	Return on equity included in tariff / cost-of-service model	0%	0%

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# Trusted, Resilient Water Valued By All