

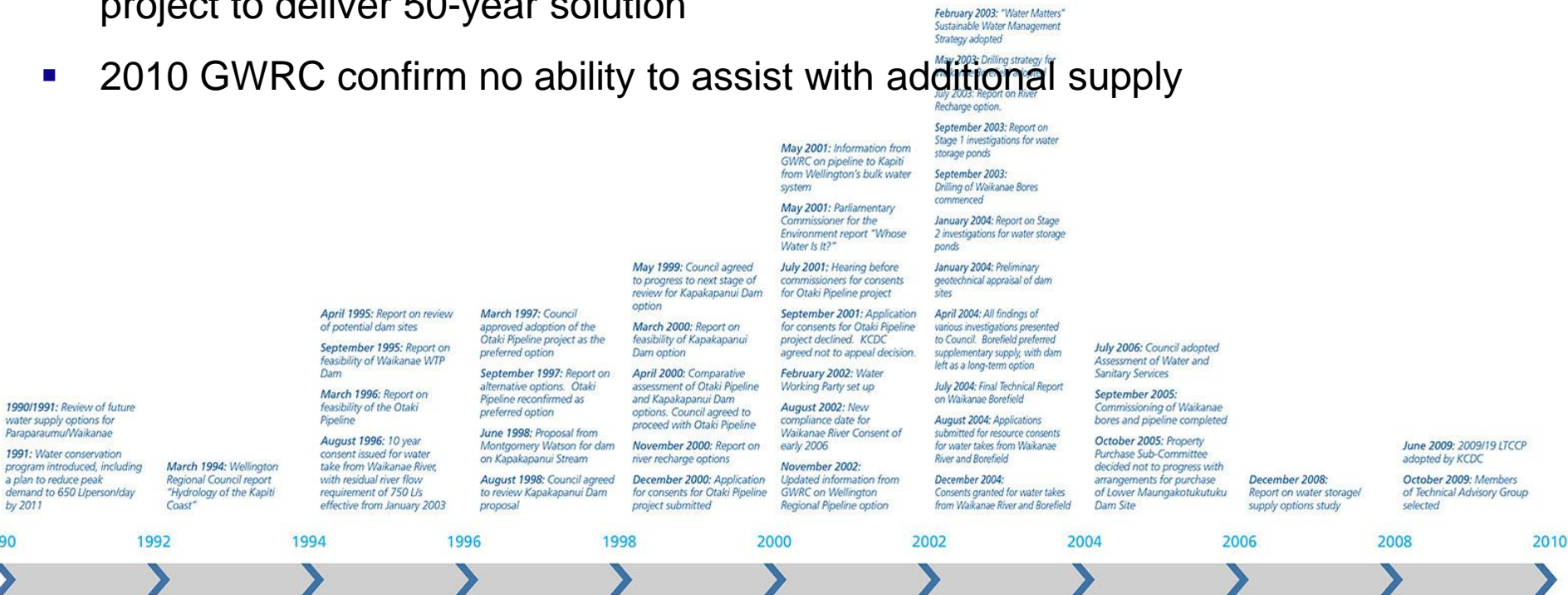
River Recharge with Ground Water

Overview

21 February 2019

The search for water

- 2001 Ōtaki River pipeline declined
- 2003 Water Matters Strategy Inc water metering 2008 and Peak demand target 490 l/p/p/d
- 2005 Supplementary groundwater added (hard water)
- Increasing growth pressures and high water use
- 2009 Council committed to well-resourced project to deliver 50-year solution
- 2010 GWRC confirm no ability to assist with additional supply



The water supply solution

- 2010 River Recharge with Groundwater confirmed as preferred option
 - Staged flexible programme
 - Iwi Support (Water Working Group)
 - Purchase land for Dam
 - Demand risk still an issue

Staged approach to water supply solution

Council is taking a holistic approach to providing a sensible long-term solution to water supply on the Coast. There is not one simple answer, but a number of interconnected actions that can be staged over time to spread the cost impact on residents.

Waikanae River Recharge

Groundwater from bores used to recharge Waikanae River in times of drought, so only treated river water is supplied to Waikanae, Rauparua and Raumati residents. Staged development providing a 50-year solution. Use existing borefield.

Water Conservation incentives

Interest free loans up to \$5000 for water saving systems. Pay principal back via your rates over 10 years.

Green Gardener/ plumber, Eco Design Adviser

Three free Council services helping with small leaks and water conservation advice.

Rules

Development rules require all new dwellings to have rainwater tanks or diversion systems.

Water Meters

Water meters estimated to bring peak water demand down by 25%.

Dam

Council buying land behind the Ngaru Valley for a future dam. Dam cannot be staged, so costs are up front at the start.

Leak Detection

Active leak detection programme using zone meters and ultrasonic pipe monitoring.

Pipe Maintenance

Pipe maintenance and upgrade programme to repair and replace aging infrastructure.

Water Treatment Plant Upgrade

Upgrading of 35-year-old Waikanae Water Treatment Plant to replace aged infrastructure and increase capacity to meet rising demand.

River recharge timeline

2010-13 Consenting – Approved Sept 2013

2013-15 Construction – Opened May 2015

2014-17 Baseline monitoring – Top compliance

2015-18 River Recharge used - Two summers

2017 Baseline completion confirmed by GWRC

- 2018 Transition to Ongoing plans

Consenting Investigations

- Extensive investigations to inform and support consenting process
- Demand modelling
- Surface water yield modelling
- Aquifer testing and groundwater modelling
 - Aquatic ecology
 - Wetland ecology
 - Cultural impact assessment



Consent Approval

- November 2012: AEE lodged
 - 23 submissions
- June 2013: Hearing before independent commissioners
- September 2013: 35 year consent granted
 - Innovation
 - Ground water discharge to river so more river water could go to supply
 - No NZ precedent
 - Extensive monitoring regime
 - 3 year baseline monitoring
 - Adaptive Management
 - 20% restriction on river recharge during baseline
- 78 pages of conditions
- 139 individual consent conditions

River recharge in operation

Groundwater discharge into the river

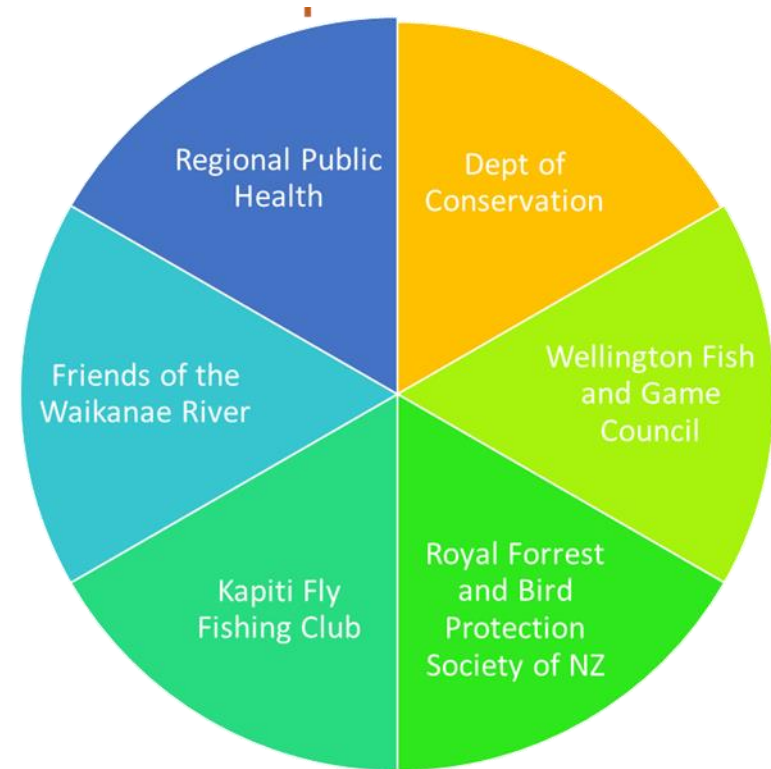
River intake to WTP

Recharge to river

Discharge swale

Baseline monitoring

- 3 Years of baseline monitoring of
 - Waikanae River
 - 7 Small Coastal Streams
 - 13 Wetlands
 - 32 Borefield sites
- Adaptive management
 - Annual review process
 - Iwi & Regional Council
 - 6 stakeholder groups



Key Stakeholders

136 Automated data parameters

- 7 Small Coastal Stream site
 - Each with in stream DO, Temperature, and water level. Plus piezometer ground water level.
 - 13 Wetland sites
 - Each with a piezometer ground water level. Some sites have more than one piezometer.
- Borefield sites
 - 13 Electrical conductivity sensors
 - 32 Piezometer ground water level sensors across deep and shallow aquifer
- River and WTP sites
 - Water level in river
 - 2 Raingauges
 - 8 Production bores data collection including instantaneous pump rates and daily abstraction rates
 - 3 flow meters through the WTP

1400+ Manual data parameters

- **320** Production Bore Water quality sample parameters (monthly)
- **520** Wetland condition monitoring parameters across 13 sites, plus aerial photos + photo points
- **180** at 5 River Condition monitoring parameters across 5 locations (every 2 weeks or more in summer)
- **378** Small Coastal Stream parameters across 7 sites (monthly)
- **6** parameters across 2 River flow gauging sites
- **7** Small Stream Fish Surveys
- **5** Waikanae River Fish Surveys
- **2** Upstream Tributary Fish Surveys
- Additional Borefield water depth and EC measurements as needed.
- Additional monitoring as and when needed should trigger levels activate.

Waikanae River

- Water level in river.
- Two Rain gauges.
- Intake and discharge data.
- Blended bore water sampling..
- Manual river monitoring.
 - 9 water chemistry parameters
 - Water temperature
 - Periphyton (algae)
 - macroinvertebrates
- Waikanae River Fish Surveys four times a year.
- Two Manual River flow gauging sites
- Two Upstream Tributary Fish Surveys.

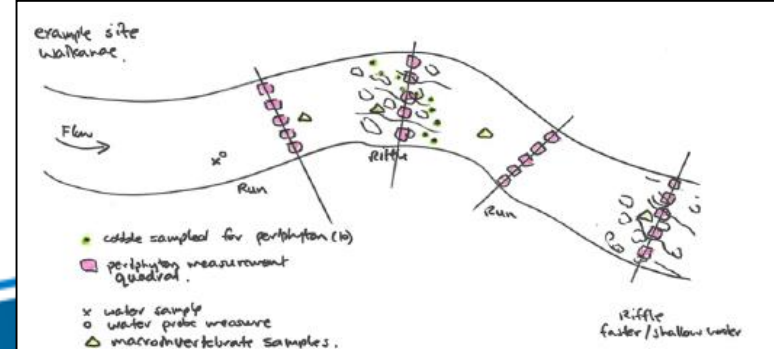


Figure 2. A diagrammatic representation of the measurements undertaken at a site.

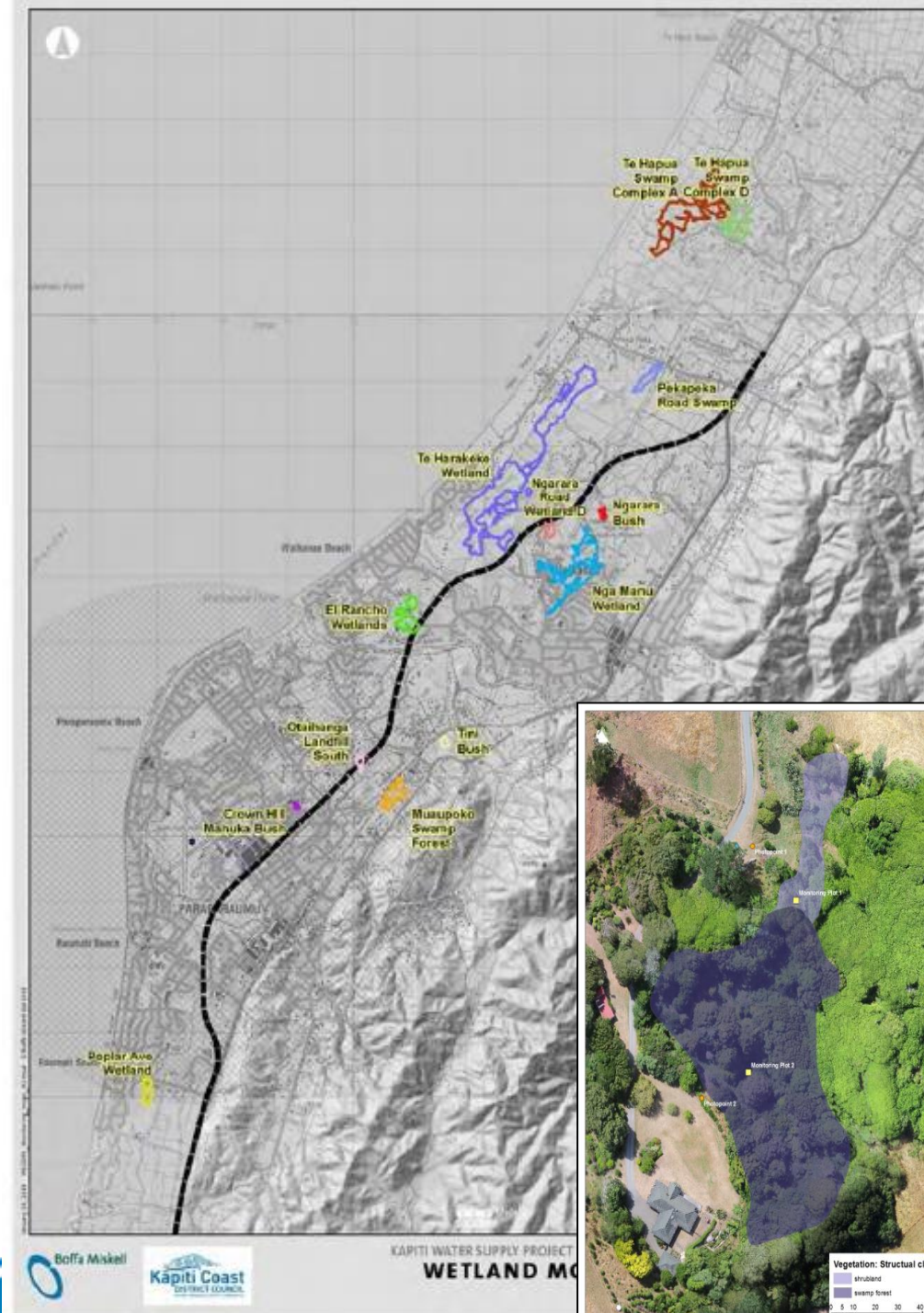
Small Coastal Streams

- 7 SCS Baseline Sites
- In stream DO
- Temperature
- Water level.
- GW Piezometer level
- Manual data monthly (summer)
- Fish surveys
- Bug surveys
- Cross Sections



Wetlands

- 13 Wetland Baseline Sites
- Ground water level.
 - Automated piezometer
 - Some sites had up to 3 piezos
- Annual manual wetland condition monitoring
- Aerial photos
- Photo points



32 Borefield Sites

- [illegible]

Figure 2: Location Plan - Waikanae Borefield Abstraction Wells and Monitoring Bores

Borefield water level

Waikanae Borefield Level Monitoring

Legend

-  Monitoring Sites
-  Production Bores
-  Monitoring Zone
- [Hide...](#)



Adaptive Management

Annual Adaptive Management Process

Key Updates



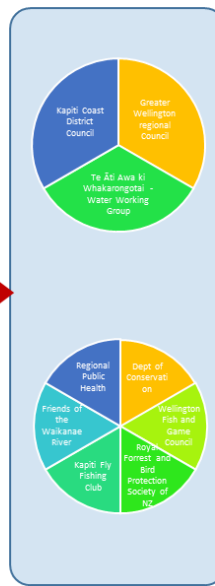
Preliminary Briefing



Annual Reports



Meeting



Recommendations



Regulatory Approval

Greater Wellington Regional Council

Completion of 3 year of BLM

- Annual adaptive management stakeholder participation and support
- 4 Star green rating
 - Every year of baseline monitoring
 - Top GWRC compliance ratings
- 30+ compliance reports submitted to GWRC
- Nov 2017 GWRC confirmed
 - Completion of baseline monitoring requirements
 - Removal of the 20% restriction on river recharge.

Key Outcomes

- Provides 50 year supply solution
- 35 year resource consent
- Can be staged as demand increases
- Highest GWRC consent compliance rating
- Enhanced understanding of Waikanae River, wetlands, small coastal streams and borefield
- Maintains minimum flows in the Waikanae River
- Significant Iwi and stakeholder engagement
- Successful adaptive management
- Sustainable use of exiting resources