

Building the

CENTRAL INTERCEPTOR

A super-sized new wastewater tunnel for central Auckland



What's it all about?

In the older parts of central Auckland, wastewater and stormwater flow into a combined network of pipes. When it rains heavily, stormwater can overwhelm these pipes. Unfortunately this means that wastewater overflows with the stormwater into our creeks and streams.

At Watercare, we want everyone to be able to enjoy clean waterways and open spaces - so between 2019 and late 2026 we're building a \$1.5 billion wastewater tunnel across central Auckland called the Central Interceptor (CI).

CI is the largest wastewater project in Watercare's history, with a 16.2-kilometre and 4.5-metre diameter tunnel, which will run between Pt Erin in Herne Bay and the Māngere Wastewater Treatment Plant. It also has two link sewers and a number of shafts along the route for collecting and transferring wastewater into the tunnel.

This project is a key part of our region-wide wastewater strategy. It will ensure there is enough capacity in the central Auckland wastewater network to cater for both more homes and more people.

We also have other projects in the western isthmus, such as separating the stormwater and wastewater pipes. Together, the Central Interceptor and our western isthmus strategy will significantly reduce wastewater overflows in the area.

See what you'll enjoy

Cleaner waterways and beaches: stormwater overflows will be significantly reduced in the central Auckland area.

Greener parks: we'll leave public spaces in a better condition than we find them by planting two trees for every one we remove.

Restored habitats: we'll plant trees and remove weeds and pests to bring the Norwood Reserve lava rock forest back to life.

Improved open spaces: together with local environmental groups, schools and Auckland Council, we'll plant native species in our parks and reserves.



Keeping you informed

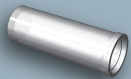
Before we start work at any of our sites, we reach out to the people who live and work nearby. We want you to know what's happening and provide a way for you to give us feedback. You'll get a bulletin, newsletter, notice or letter, or even an invitation to a public event, depending on the information we have for you. Visit www.centralinterceptor.co.nz to keep up to date with the project and sign up for project newsletters.

Central Interceptor



Project build **2019** to late-**2026**

16.2 kilometres



longest wastewater tunnel in NZ



high enough to fit a giraffe



wide enough to fit four rhinos side by side

226,000m³ capacity

so we can store wastewater and control the flow rate into the treatment plant – that's 90 Olympic swimming pools.

- Central Interceptor
- Main construction site
- Construction site

How's it being built?

A lot of people ask if they'll be able to hear or feel the tunnel being built as it goes underneath their house or their neighbourhood. The short answer is no, as the tunnelling work will be between 15 and 110 metres underground.

Construction of the Central Interceptor is well underway. In 2018 a partnership, Ghella Abergeldie Joint Venture, won the contract to build CI. Ghella is an Italian family company with more than 150 years of Italian and international tunnelling experience. Australian company, Abergeldie, has delivered complex underground construction projects across New Zealand over the past four decades.

We have 17 construction sites along the route (see the map). Large construction sites will operate for four to six years, with smaller sites open for around 24-30 months. At these sites we are digging the shafts we need to insert and remove equipment and materials. Most of the shafts will also connect to existing underground pipes, collecting their wastewater and transporting it to the Māngere Wastewater Treatment Plant.



Pouring concrete inside the Māngere main shaft

Meet our tunnel boring machines

To dig the tunnel and lay the concrete segments behind it, we're using a state-of-the-art tunnel boring machine, or TBM. Infrastructure constructed by TBMs is strong and reliable, enabling us to excavate through a wide variety of ground conditions.

TBMs are traditionally given female names in honour of the patron saint of miners and tunnellers, Saint Barbara. To find a name for our TBM, we asked children at schools along the tunnel route for ideas. They chose 'Hiwa-i-te-Rangi', a female Matariki star connected to the promise of a prosperous season. The children thought this name best represented our project's aspiration to improve the natural environment.

Hiwa-i-te-Rangi is on her 16.2km journey north from Māngere to Grey Lynn. To bore the tunnel, she uses a massive cutter head, 5.4m in

diameter, to grind through a variety of different soils and rocks. This 'spoil' is then conveyed back to the shaft in skips to be lifted out of the tunnel.

The spoil is then trucked to Puketutu Island, in Māngere, to help restore the original volcanic cone. One day this will be opened to the public as a regional park. We will truck up to 5,000m³ of spoil a week (enough to fill up more than 150 6m-long sea containers).

As she digs the tunnel, Hiwa-i-te-Rangi will lay some 10,150 precast concrete segment rings, each made up from six interlocking pieces. The resulting 4.5m-diameter pipe has a durable lining which protects the concrete from corrosion over its 100-year lifespan.

We also have a second TBM, a 'micro' version named 'Domenica' named for the contractor's Ghella family. Domenica has bored two link

sewers at depths ranging from 12m to 70m, with a combined length of 4.3km (see map opposite).

Her first job was to bore Link Sewer C, a 2.1m internal diameter pipeline measuring 3.2 km from May Rd to Miranda Reserve in Blockhouse Bay. She then bored a 1.1km tunnel, at 2.4m internal diameter, below the Meola stream in Mt Albert.

Domenica built her tunnels with fully-constructed concrete pipes using a system called 'pipe jacking'. Here we lower each pipe into the shaft behind the previous one. A hydraulic jacking rig pushes it forward, which also gives the TBM her cutting momentum.

Tunnelling work is tough and our crews stay underground for their entire shift as they tunnel away 24/7.



Hiwa-i-te-Rangi



Domenica being lowered into our May Road shaft

The Central Interceptor is much more than a tunnel

The CI tunnel is being built to last 100 years, creating an environmental legacy for the people of Auckland/ Tāmaki Makaurau. However, our ambition for the project extends well beyond this. We also want to deliver social outcomes that improve the well-being of communities along the tunnel route.

To do so, we have adopted four keystone values:

- *Tuakana-Teina*: effective succession, mentoring, future workforce, internships, apprenticeships, career pathways
- *Mauri Ora*: creating wellbeing and maintaining mauri/lifeforce/essence of both people and the environment
- *Whanaungatanga*: family-based approach to work, being community-minded, ensuring quality of stakeholder, community and industry relationships
- *Tangata Whakapapa*: embracing the wholeness of a person, true inclusion

To support these values, a ‘Cultural Outcomes Group’ guides our programmes and provides advice on our initiatives. This Group comprises representatives from Mana Whenua, Watercare and our contractor, Ghella Abergeldie JV.

Pink hard hats raise awareness of breast cancer

CI supports the Breast Cancer Foundation by raising funds and awareness with our very visible ‘Pink Hard Hat Programme’. Visitors to our sites wear a hard hat as part of the PPE, to be safe on site. For every hat we give out, we donate \$10 to the Foundation and hope to raise more than \$22,000 over the duration of the project.



Maia Wati-Cooper (Ngāti Porou, Ngāti Kahungunu) was an engineering intern with us who then joined permanently as an Environmental & Community Outcomes Graduate

They focus on sustainability and using organic horticulture techniques and are now delivering fresh produce to restaurants in the local area.



Micro-greens will add colour to local dishes



School pupil visitors don pink hard hats for Breast Cancer

Supporting our local schools

Make Give Live is a social enterprise focussed on easing isolation and improving mental health and well-being in the community. Local groups meet weekly to craft beautiful knitted or crocheted items for those in need.

To provide warmer head gear for its workforce, our contractor bought 200 beanies. As part of the ‘Give’ part of the programme, it then provided our neighbours, May Road School, with 200 distinctive, bright pairs of slippers. We are so pleased to be able to help the children’s learning by keeping them warm in the classroom.



May Road School pupils with their Make Give Live slippers

Mana Whenua laundry service

CI has developed a laundry service in partnership with our local Mana Whenua hapū, Te Ahiwaru, in Māngere. The service recognises Watercare’s 74-year relationship with Te Ahiwaru and Makaurau Marae.

Te Ahiwaru operates and manages the laundry service which cleans all Personal Protective Equipment (PPE) from our construction sites. This saves our people having to take dirty clothes home and wash them each day. Every morning, they turn up and put on a fresh, clean set of PPE. This service also protects household members who would have to use the same washing machine used to clean the PPE.

For the service, CI provided two containers: one equipped with commercial washing machines and driers and one with sewing and embroidery machines, and space to store PPE.

We hope the work experience will help some of the younger Marae generation who are not currently in employment.



Laundry staff busy with another big load

Targeted student internships for Māori and Pasifika

The Central Interceptor (CI) project is committed to recruiting more Māori and Pasifika students, who can contribute to a growing national network of Māori and Pasifika business leaders. For three years, CI has employed three tertiary students over summer through the TupuToa Internship Programme.

We provide a living wage and the students join the CI team that’s the best fit for their studies. With TupuToa’s help, we want our interns to progress through to managerial roles. This programme will help us to value diversity more and enable the interns to work with cultural integrity.

Morningside Urban Market Garden

Grow Space is a community-focused, sustainable social enterprise. It aims to build the business skills, financial independence and social connections of migrant and refugee women.

We are pleased to provide funding to build a garden for an important Grow Space initiative. A number of migrant and refugee women have developed new gardening and business skills.