Central Interceptor Project

July 2012

Mike Sheffield – Project Manager
Central Interceptor

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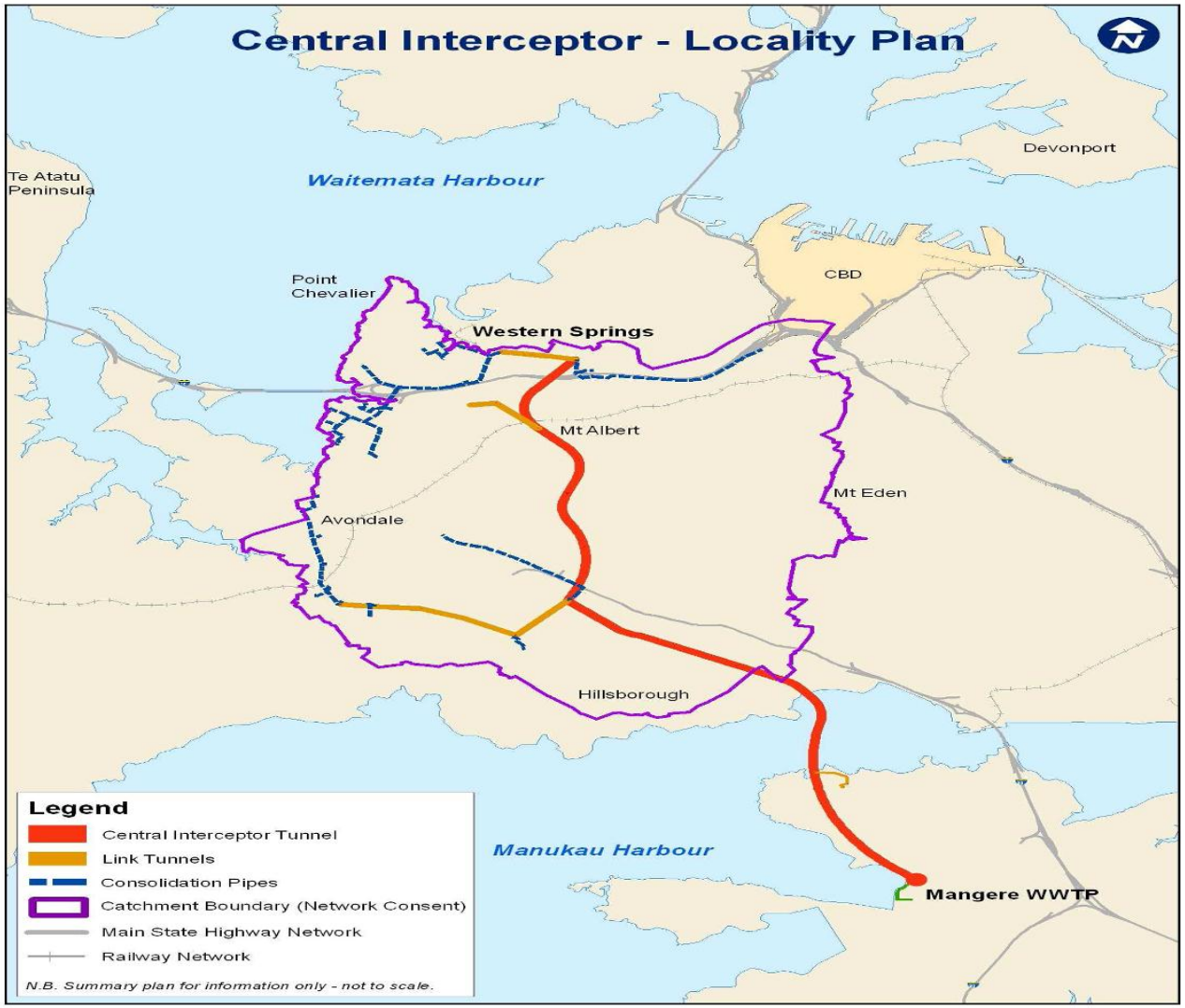
Central Interceptor Stage 1

CONCEPT DESIGN

- Main Tunnel Concept Design
  - 13.2km Long
  - 4.5m Diameter
  - 30 to 110m Below Surface
- Constructed by Tunnel Boring Machine (as per Project Hobson Tunnel)
- Associated structures at key sites
  - Access and drop shafts, flow control structures, grit traps, air intakes and vent stacks or air treatment facilities at some sites.



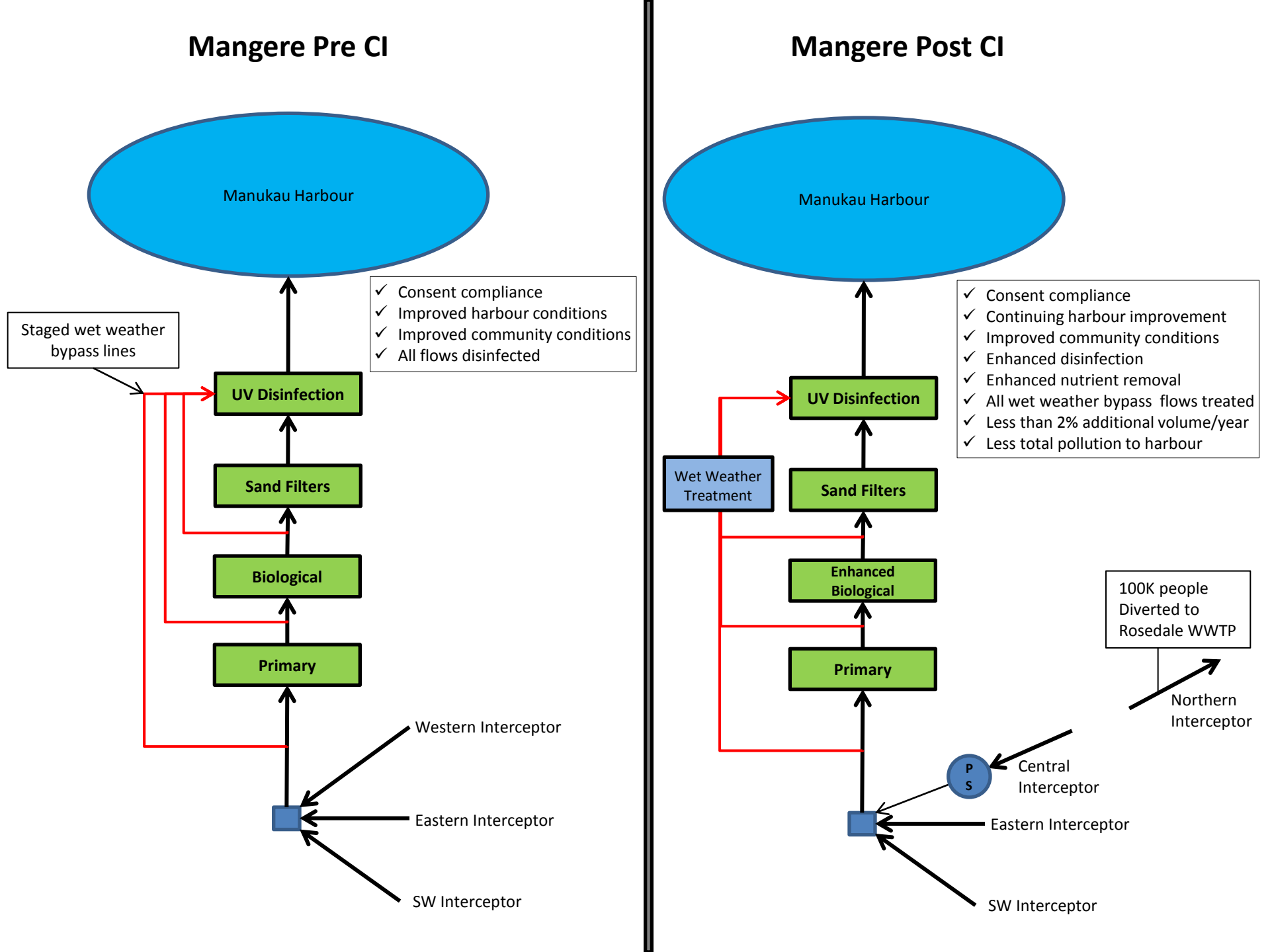
Inter-related Projects

Central Interceptor, Northern Interceptor, Mangere and Rosedale WWTP's

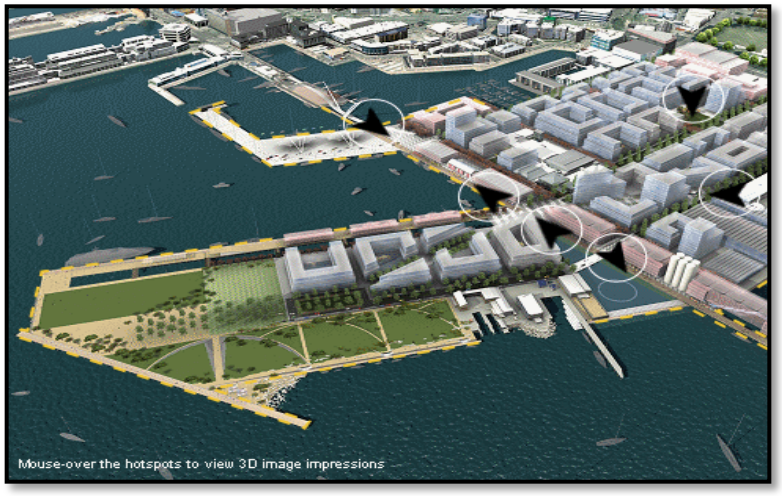
Auckland's two main wastewater treatment plants for the foreseeable future will continue to be Mangere and Rosedale. Strategy is to "balance" flows to the two plants progressively and upgrade treatment systems as needed

- **Central Interceptor:**
  - CI designed so that flows are strictly maintained within current levels and consent conditions.
  - Overflow mitigation will remove 80% of current untreated storm/waste water discharges at over 120 discharge points in Meola/Motions/Whau and Oakley creeks that ultimately discharge into Waitemata Harbour
  - These flows will be conveyed to Mangere WWTP for treatment before discharge into Manukau harbour.
  - **New treatment system will improve quality of discharges versus current discharges.**

- **Northern Interceptor:**
  - Watercare Board has approved Stage 1 , a $120M project to divert flows from Waitakere Region to Rosedale WWTP. Due for completion 2017/18 and will divert ~ 5% of flows currently going to Mangere WWTP to Rosedale WWTP
  - Stage 2 (mid – late 2020's) planned to divert up to 15% of flows away from Mangere to the Rosedale Wastewater Treatment Plant.
- **Mangere WWTP Upgrades:**
  - **Biological Nutrient Removal (BNR)** upgrade approved ($137M), due for completion 2017. Will improve nitrogen removal capability of Mangere WWTP which is one of the keys to further improvements of discharges in Manukau Harbour
  - **High Rate Wet Weather Treatment Plant** and additional UV disinfection facility ($75M) planned for completion 2022. Designed to treat all wet weather bypass flows and Will substantially improve Pathogen "kill" rate over current bypass facility.
- **Rosedale WWTP Upgrades:**
  - No immediate major upgrades needed, future upgrades to BNR system planned as flows increase


Mangere Pre CI
Manukau Harbour
✓ Consent compliance
✓ Improved harbour conditions
✓ Improved community conditions
✓ All flows disinfected
Staged wet weather bypass lines
UV Disinfection
Sand Filters
Biological
Primary
Western Interceptor
Eastern Interceptor
SW Interceptor
Mangere Post CI
Manukau Harbour
✓ Consent compliance
✓ Continuing harbour improvement
✓ Improved community conditions
✓ Enhanced disinfection
✓ Enhanced nutrient removal
✓ All wet weather bypass flows treated
✓ Less than 2% additional volume/year
✓ Less total pollution to harbour
UV Disinfection
Wet Weather Treatment
Sand Filters
Enhanced Biological
Primary
100K people Diverted to Rosedale WWTP
Northern Interceptor
P S
Central Interceptor
Eastern Interceptor
SW Interceptor

Central Interceptor: Underlying Drivers



Sea to City Land Redevelopment, Wynyard Wharf

Construction of Western Interceptor - 1955

1. Capacity

2. Asset Integrity

Central Interceptor

Key Benefit

Overflow next to Mt Albert Grammar Fields

3. Combined Sewer Overflows

CI will remove 80%+ of the Overflow Volumes

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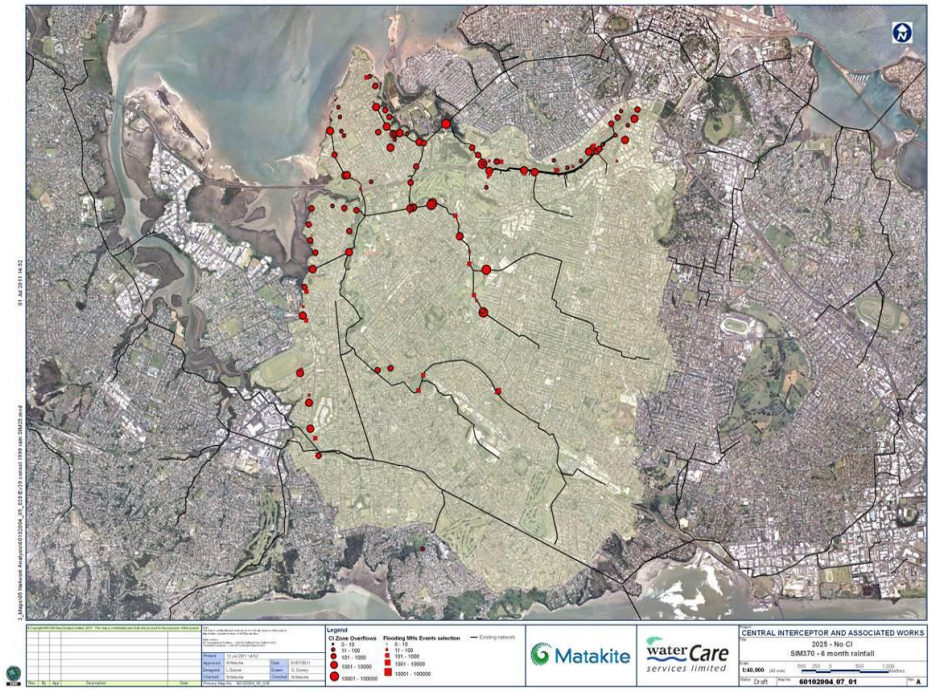
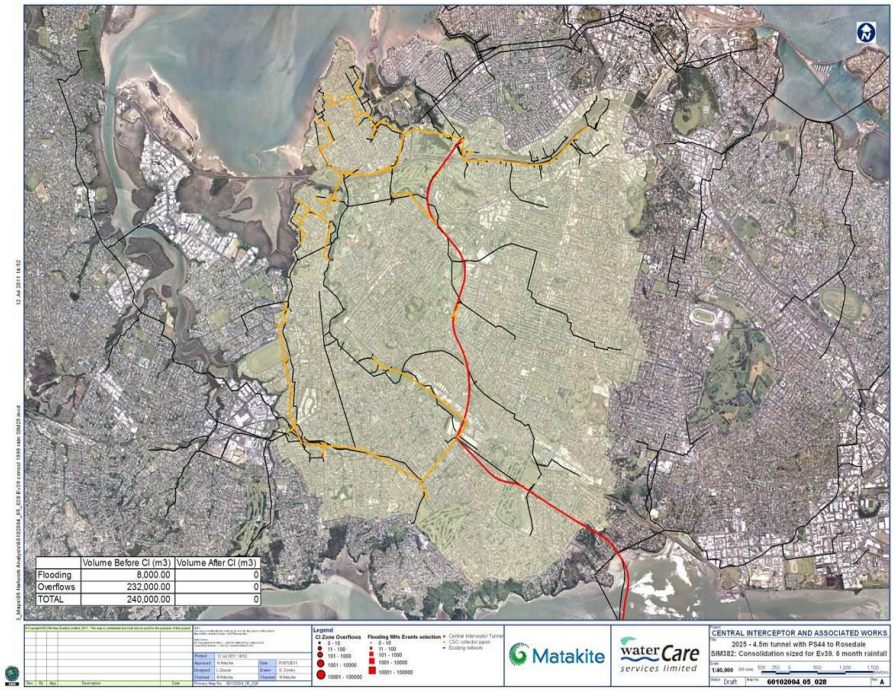
Optimised Central Interceptor

CI Stage 1 Zone – Overflows 80% Reduction target

BEFORE CI is Built



AFTER CI is Built



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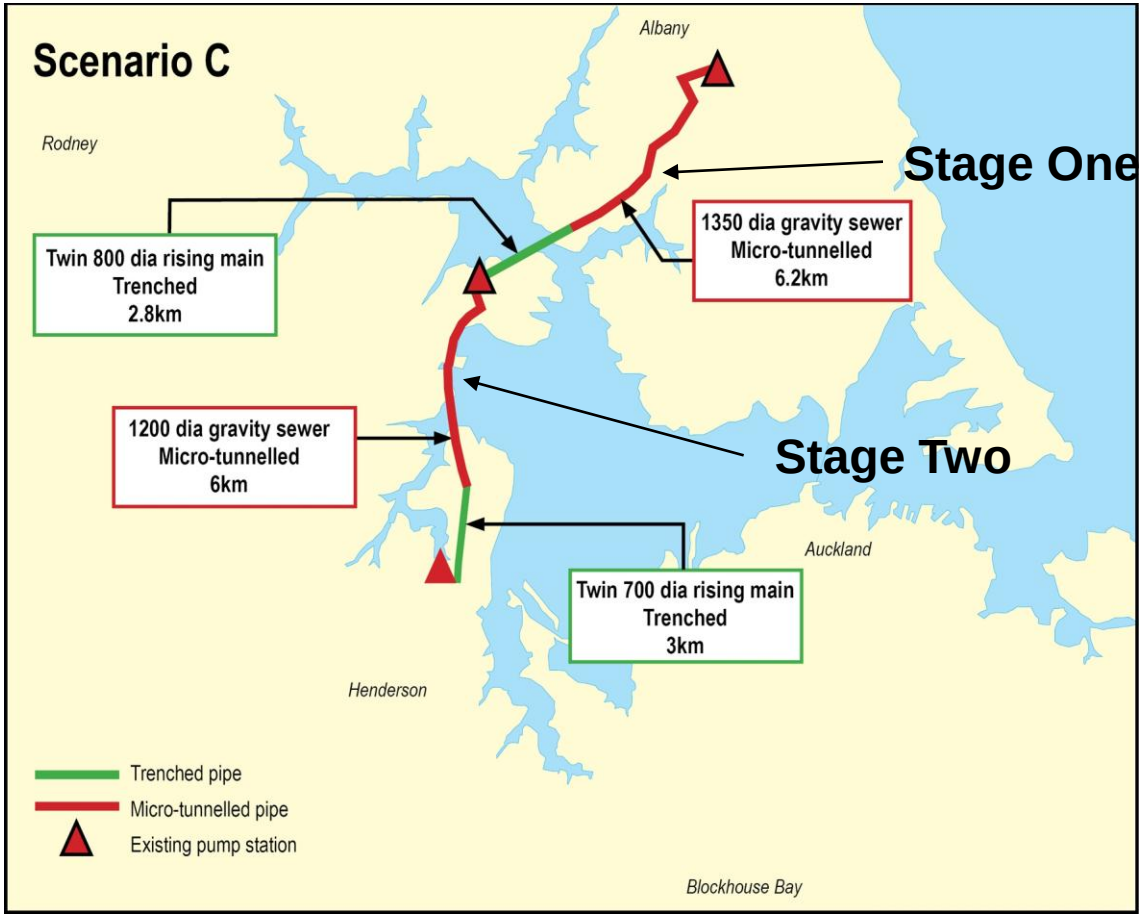
Northern Interceptor – Concept Design

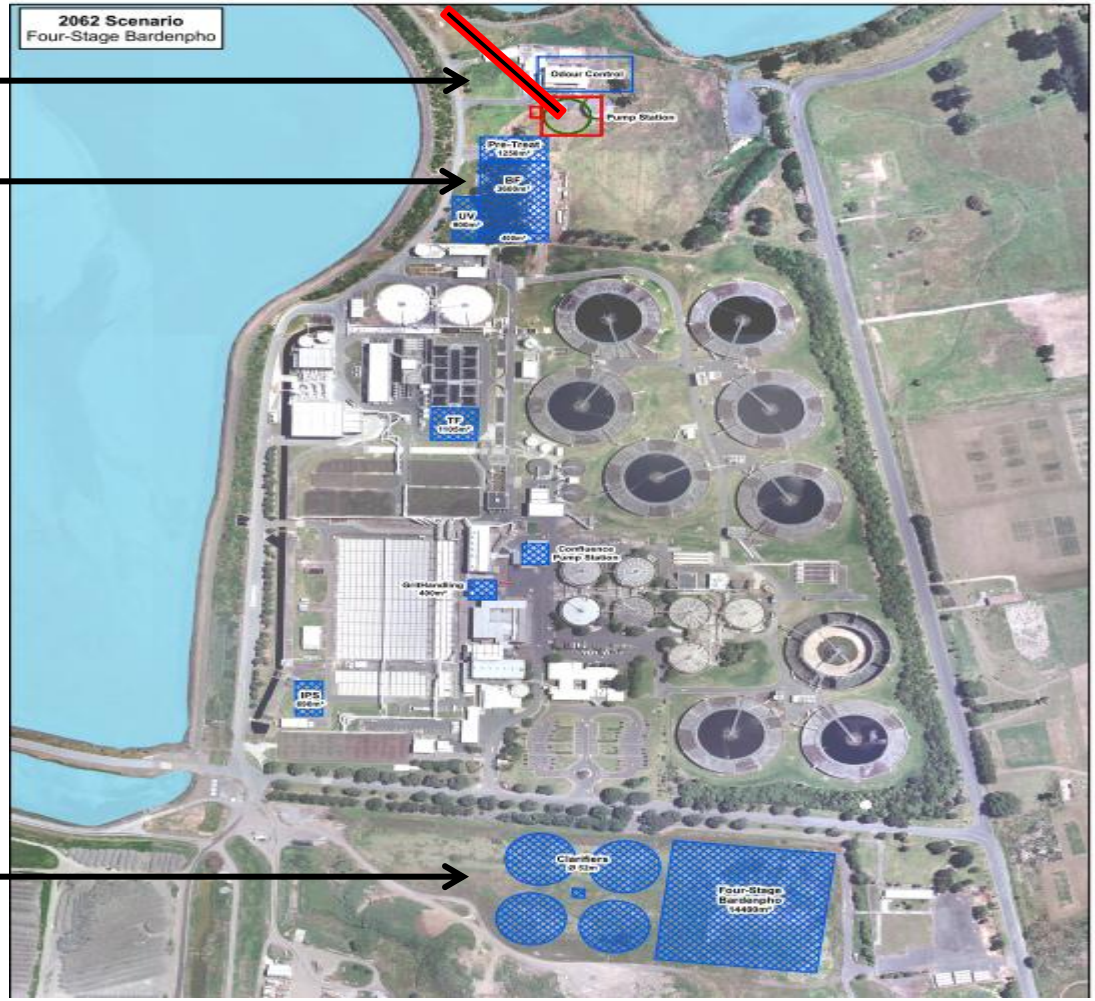


Mangere WWTP - Major Upgrades 2012 - 2023

CI Tunnel
Completion 2023

Wet Weather
Treatment
Completion 2022

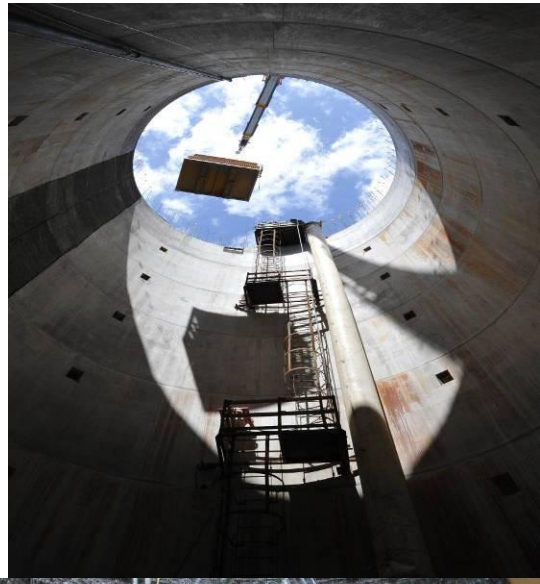
New BNR
Plant
Completion 2017



Central Interceptor Construction

- Three major construction sites for launch and retrieval of the tunnel boring machine.
  1. Western Springs;
  2. May Road; and
  3. Mangere WWTP

  (construction period 3-5 years. Proposed start time 2017)
- 7 Intermediate construction sites to provide connections to the main tunnel
  (construction period 12-18mths)
- 10 small and intermediate sites to provide connections to the link sewers
  (construction period 12-18mths)
- Numerous combined sewer overflow collector sewer construction sites. Most in road reserves, 5 located in parks
  (construction period 12-18mths. Proposed start time 2023)



Meola Stream on a sunny day – no rain
...downstream of Chamberlain Park Golf Course

Photo: Downstream section of Meola Creek

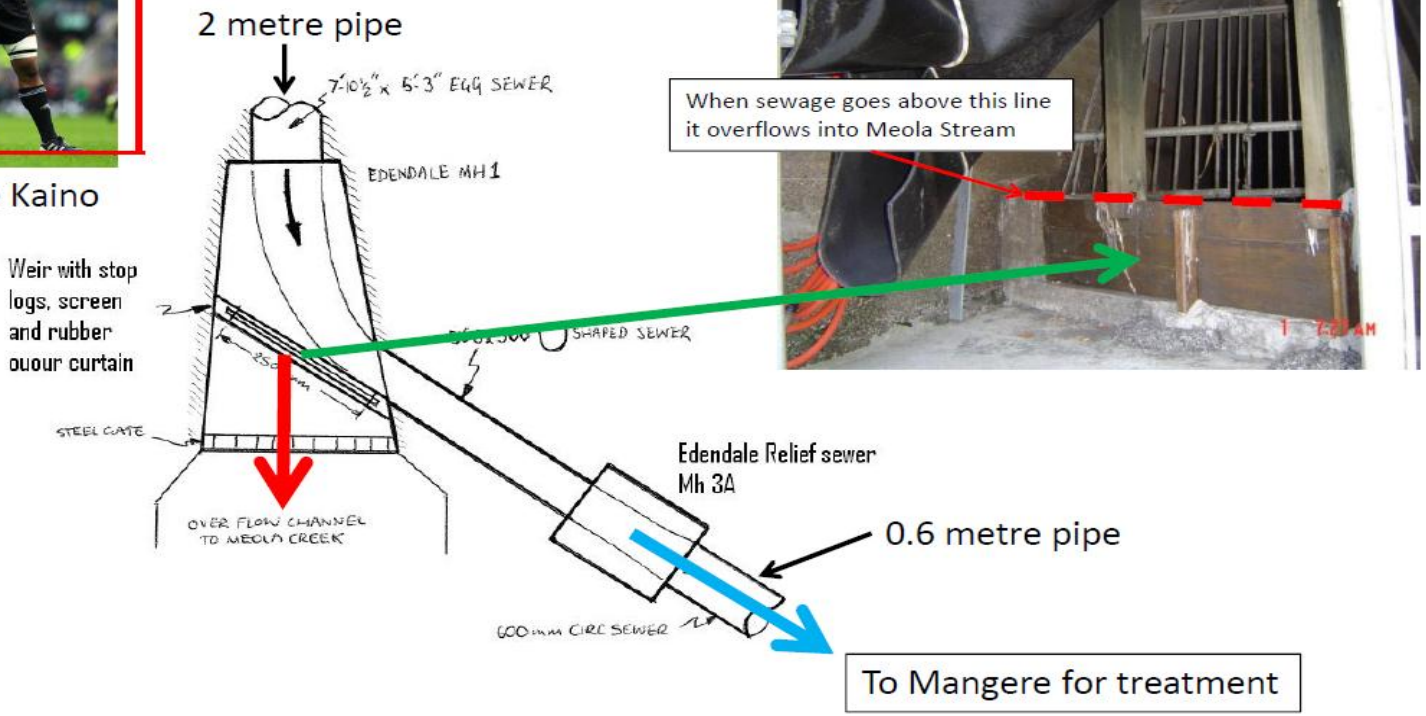
Lyon Ave Overflow
...35 minutes after rain starts

Lyon Ave Overflow into Meola Stream
...1 hour after rain starts

How does combined sewer (CSO) overflow work?

1.96 metres

Jerome Kaino



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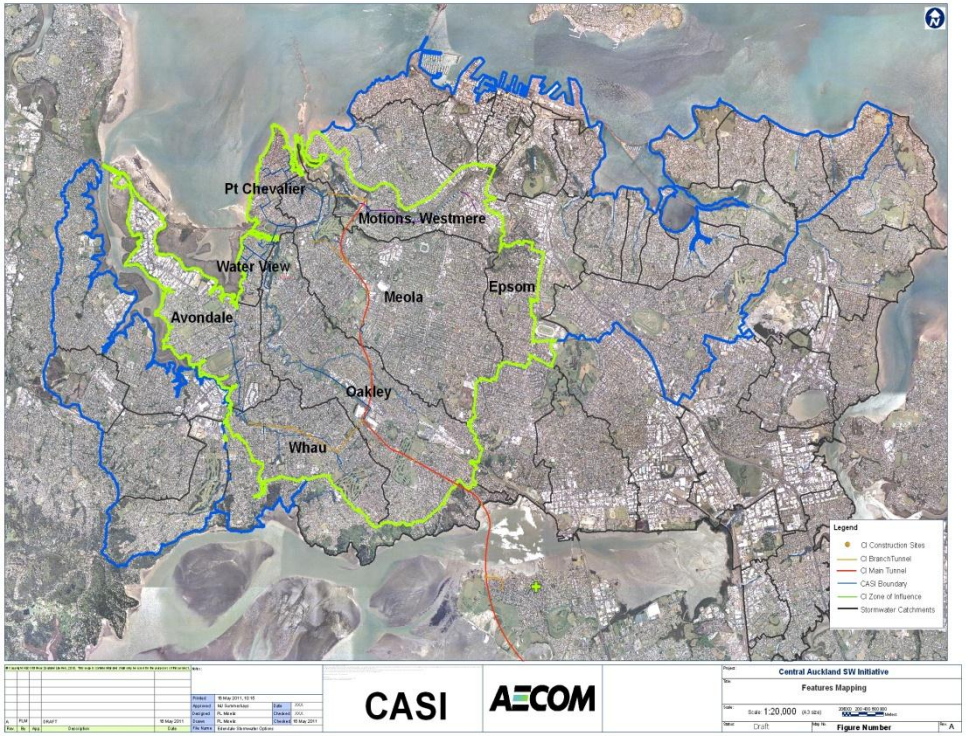
This is where the Meola Stream ends up…

AUCKLAND COUNCIL STORMWATER UNIT
CENTRAL AREA STORMWATER INITIATIVE (CASI)

CI Will NOT Reduce Storm Water Flooding
Council Is Developing Solutions To These Issues



- **Optimisation of planning and investment programmes with Watercare Services**
- **Priority Catchments**
  - **Meola**
  - **Oakley**
  - **Motions**
  - **Whau**
- **>$300 million investment *proposed* in SW AMP and LTP. At this point *not included in 3 yr LTP***
- **Planning Continues**

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Implementation Timeframe

Provisional timeline for implementing CI Stage 1