

# Kopeopeo Canal Remediation Project

Whakatāne District Council

By Ken Tarboton

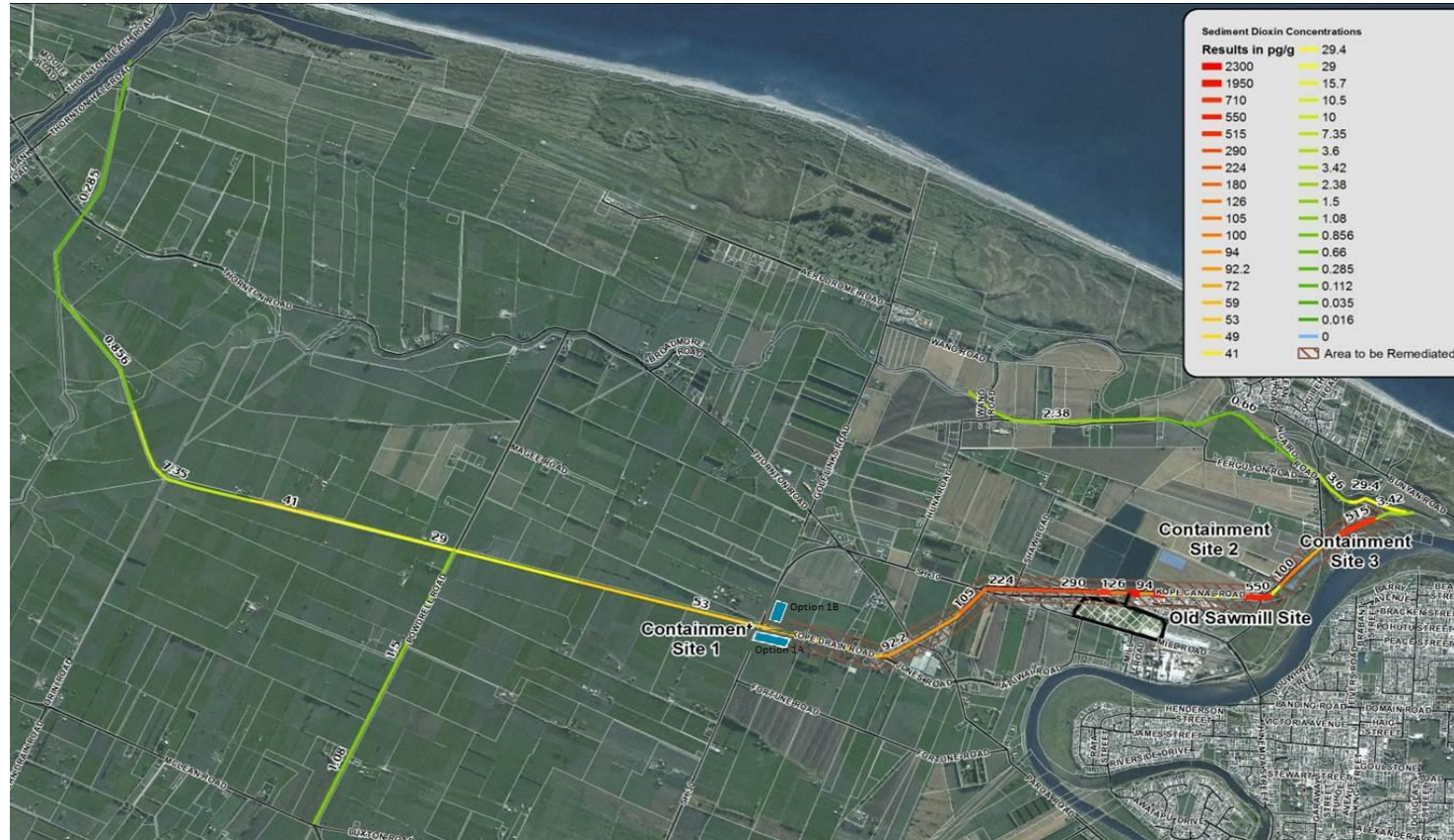
18 September 2019

# Overview

- Contamination
- Project area & goals
- Governance & funding
- Construction
- Eel Removal
- Dredging
- Bioremediation
- Next steps



# Dioxin contamination – Rangitāiki Plains





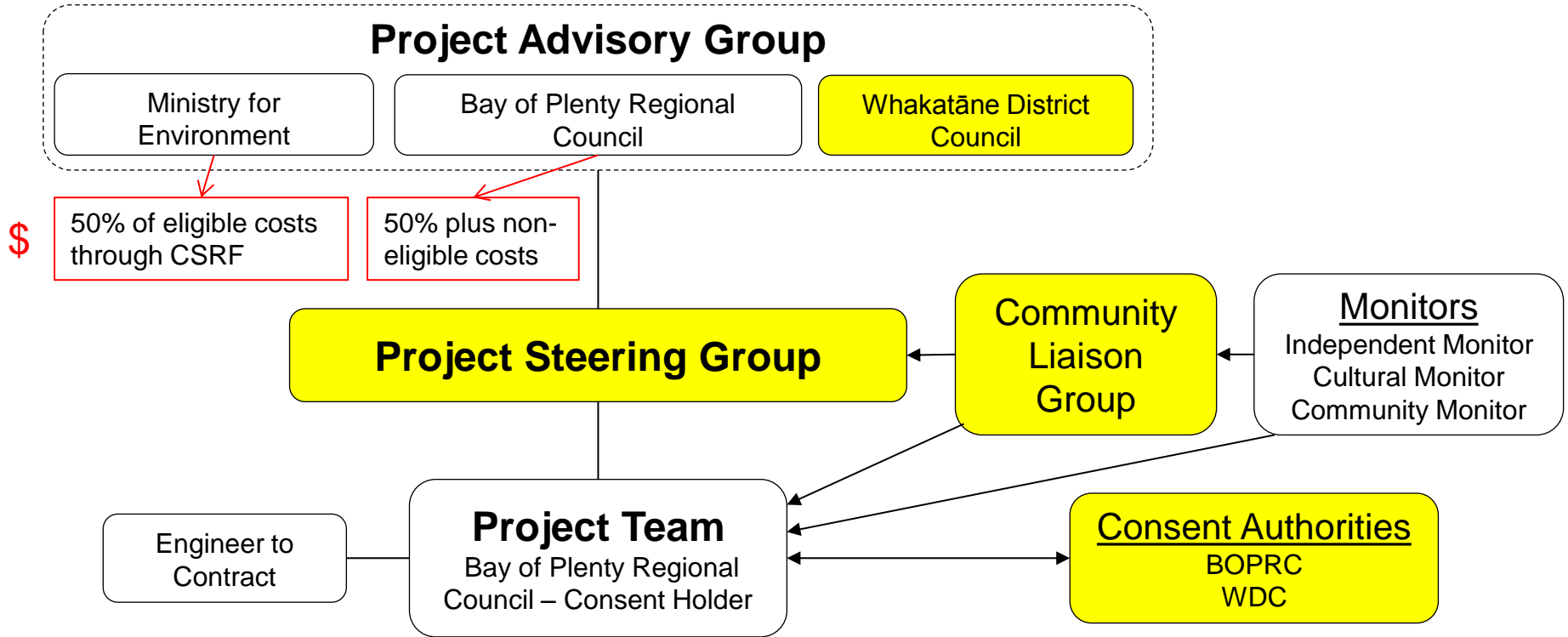
# Project Area & Goals



## Goals

- Address long term health risk - eliminate exposure pathways
- Provide clean water – to restore cultural values & practices – food gathering – especially eel
- Address legacy of contamination
- Facilitate future drainage and flood relief

# Governance & Funding



# Flood Control Structures



FCS-West



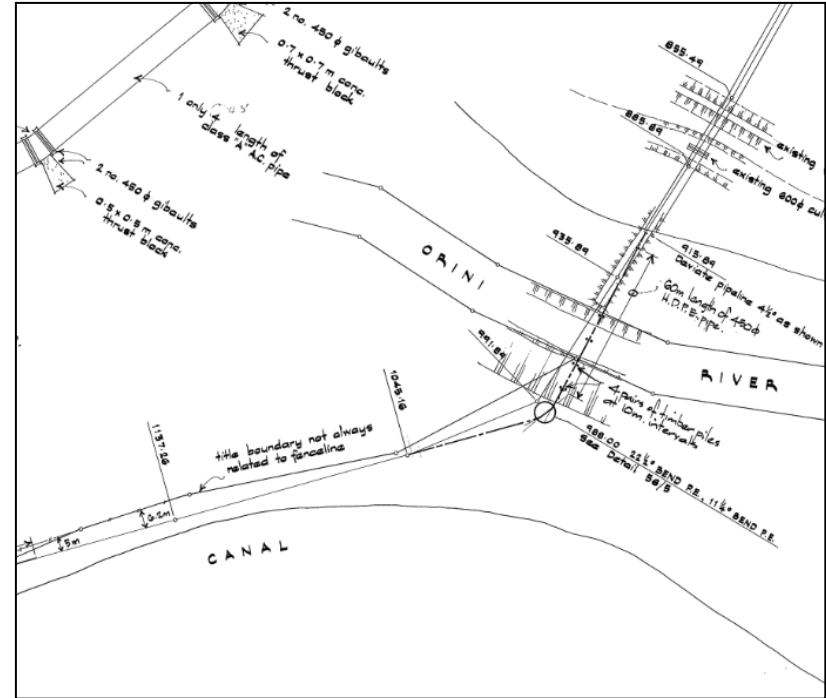
FCS- East





# FCS East - Challenges

# Waste water main location



# FCS East - Challenges





# FCS East – solution



# Containment Sites



CS-1



CS-3





# Eel removal –prior to dredging



- Baited Fyke nets over 5.1km of canal – under MPI permit
- Over 1.1 tons of eel caught
- Eel euthanized and frozen into 20kg blocks
- Processed through industrial mincer & blended into canal sediment for containment in geobags



# Dredging



# Dredging & Treatment



Dredging



Water treatment



Monitoring across shakers



Safe containment in geobags



Return of clean water to canal



# Contaminated sediment coming in from dredge





# Clean water returned to canal



# 6 major lifts over internal bridges

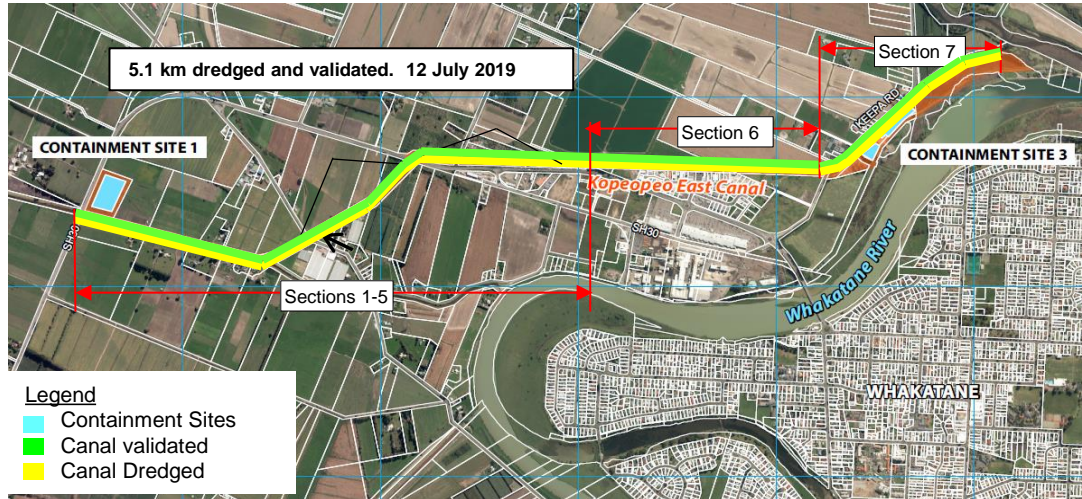


See time lapse video on YouTube:

<https://www.youtube.com/watch?v=7GPMPluGdTU&feature=youtu.be>



# Dredging completed



- Started 22 January 2018
- Completed 9 July 2019
- Validated to remediation target confirmed – 12 July





# Flood Control Structures – Removed/Modified



FCS- West modified to prevent sediment transport from W to E and allow drainage



FCS- East removed restoring full connectivity to Orini

# Containment sites at end of dredging



CS1

- 26 geobags filled
- 22,350 cubic metres
- 1,125 oversize bags



CS3

- 17 geobags filled
- 12,120 cubic metres
- 592 oversize bags





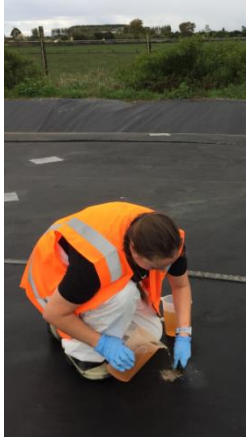
# Bioremediation initiation



White-rot fungus  
inoculation into  
wood-pellet  
topping layer

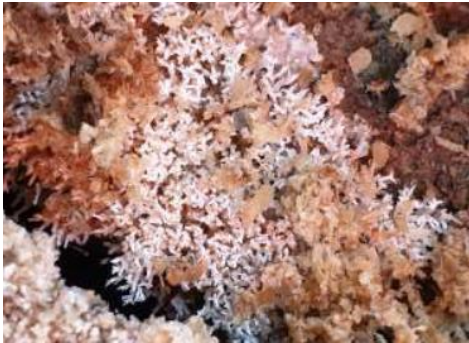


# Further inoculation & fungus growth

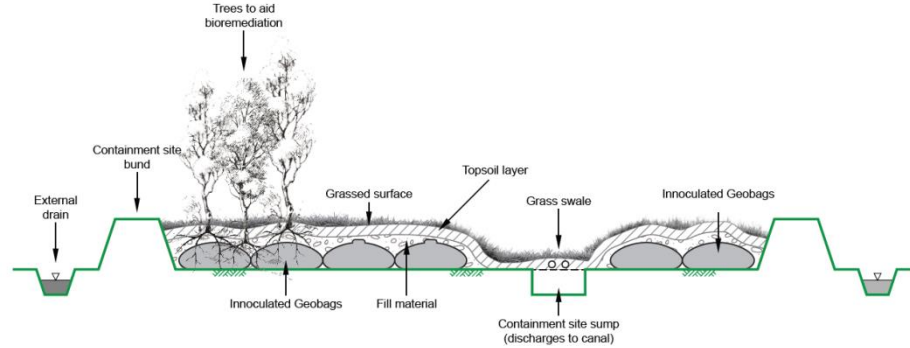


Second inoculation with "*Gongronella butleri*"- fungus isolated from heavily PCP contaminated soil at former Mill site

Fungus, already observable stimulates bacteria wars



# Geobag capping & tree planting



## Tree roots:

- Release sugars into soil → feed bacteria
- Regulate  $O^2$  and  $H_2O$  levels in sediment





# What's Next?

## 1 year

- Complete capping, tree planting & bioremediation (CS1 & CS3)
- Vehicle access opened to public through CS3
- Investigation of contamination to west and develop remedial options

## 15 years

- Ongoing bioremediation
- Monitoring of canal & containment sites discharge
- Possible further remediation to west (depends on remedial options)
- Planning and implementation of long term land use



# Kopeopeo Project - Key numbers

- 4 years - detailed planning, consents, appeals (2012-2016)
- 1 year - construct 2 containment sites (8 ha total)
- 2 flood control structures used & since removed/modified
- 5 months delay due to flooding (ex Cylones Debbie & Cook)
- 5.1 km of canal dredging completed in 18 months
- 6 crane lifts of dredge excavator & barge over bridges
- 34,500 cubic meters of contaminated sediment removed
- 43 large geobags used to safely store contaminated sediment
- 6 incidents, 3 H&S (no injury) & 3 minor environmental spills at CS's
- \$21.3M overall cost, shared by BOPRC and MfE





# Thank You – Questions?



See: <https://www.boprc.govt.nz/kopeopeo>

