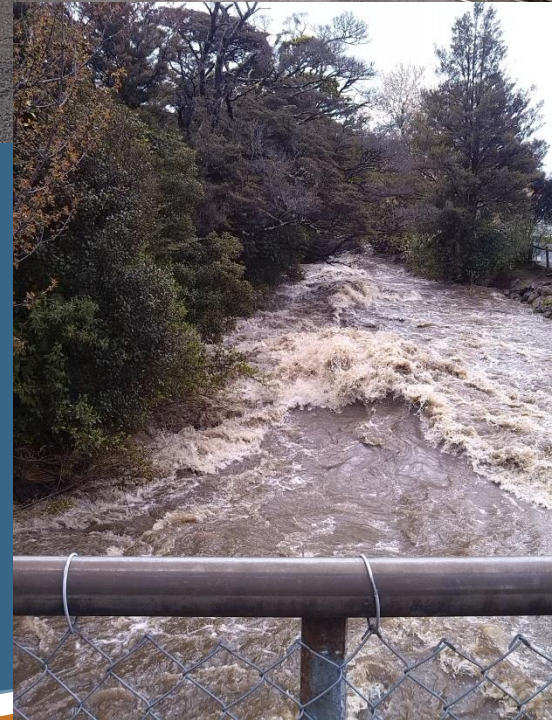


# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune



# WHY ARE WE HERE?



# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune

### Context

- Ruapehu District Council asked for assistance through the Annual Plan process
- Upper Mangawhero River & Tributaries Rank 1 Priority of 72 rivers & streams identified in 2014 Non-Schemes Report.
- Significant flooding, erosion, willow congestion.
- Five main watercourses through town.
- Onset flooding problems at 2-5% AEP (20-50 year).
- 15 October 2013 Event a “near miss” at 2.5-5%



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ISSUE	AMENDMENT	BY	DATE	NAME	DATE	APPROVED
				SURVEYED	W DE JONGE	APR 2015
				DESIGNED	P BLACKWOOD	JUL 2015
				DRAWN	Q GILSON	APR 2015
				TRACED	MARAO	APR 2015
1	ISSUE FOR DISCUSSION	GG	JUL 15	CHECKED		LEVEL FIELD BOOK
2	ISSUE FOR SURVEY INFORMATION	GG	APR 15			FILE REF: W:\OHAKUNE\CATCHMENT\5023



**MANGAWHERO RIVER**  
**INVESTIGATION FOR FLOOD PROTECTION WORKS**  
**ON MANGAWHERO RIVER AND TRIBUTARIES IN OHAKUNE**  
**LOCATION OF PRINCIPAL WATERCOURSES**

SCALE:  
 ORIGINAL  
 DRAWING SIZE  
**A1**  
 1:5,000

DRAWING No.  
**5023**  
 SHEET SL OF SHEETS

# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune



# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune

### Problems:

- Seriously congested urban and rural channels.
- Gravel build-ups downstream of Township (30 rural houses downstream SH49 flood in 0.5% AEP).
- Major outflows Miro St Drain at motels beside Shannon St.
- Channel A large urban stream tortuously fitted between houses.
- Almost all culverts undersized Channels A and B.
- House floor below dam spillway.
- 140 urban houses & 30 commercial buildings flood in 0.5% AEP.

# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune



# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune





# UPPER MANGAWHERO AND TRIBUTARIES

## Flooding and Erosion Risks at Ohakune





KEY  
 YELLOW CIRCLES: PREFERRED CULVERT UPGRADES OPTION  
 RED CIRCLES: OTHER CULVERT UPGRADE OPTION

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ISSUE	AMENDMENT	BY	DATE	NAME	DATE	APPROVED
				SURVEYED	N DE JONGE	APR 2015
				DESIGNED	P BLACKWOOD	JUL 2015
				DRAWN	G DELGASON	APR 2015
1A	PROPOSED WORKS REVISED	GG	AUG 17	TRACED	AJUGAD	APR 2016
1	ISSUE FOR DISCUSSION	GG	JUL 15			
0	ISSUE FOR SURVEY INFORMATION	GG	APR 15	CHECKED		



**MANGAWHERO RIVER**  
 INVESTIGATION FOR FLOOD PROTECTION WORKS  
 ON MANGAWHERO RIVER AND TRIBUTARIES IN OHAKUNE  
 OHAKUNE FLOOD MITIGATION OPTIONS LAYOUT

SCALE:	ORIGINAL DRAWING SIZE	DRAWING No:
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# SUMMARY

- The threshold for flooding of parts of Ohakune township is between a 20 & 50 year event.
- Significant flooding with widespread community disruption will occur in a 100 year flood.
- Flood risk is able to be mitigated to the 0.5% AEP standard.
- A combination of measures is required:
  - Channel improvements
  - Overland floodway
  - Culvert enlargements or retention area options
  - Stopbanks & floodwalls
  - Throttling of existing detention dam
- Works could be prioritised & spread over a number of years.

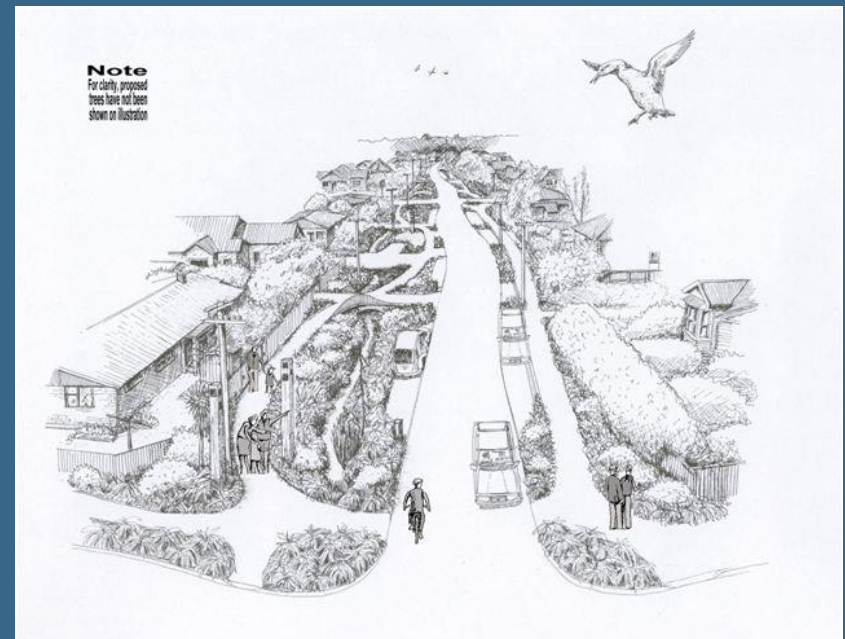
# OTHER DESIGN ENHANCEMENTS

- Sustainability
- Soft Engineering
- Channel beautification
- Improved aquatic biodiversity

# OTHER DESIGN ENHANCEMENTS



- Bings Drain



# OTHER DESIGN ENHANCEMENTS



- Dudley Creek



# OTHER DESIGN ENHANCEMENTS



- Papanui Creek



# OTHER DESIGN ENHANCEMENTS



- Picton Ave Pond



# OTHER DESIGN ENHANCEMENTS



- St Albans Stream



# OTHER DESIGN ENHANCEMENTS



Woodward Ave Swale

Loftus Street Rain Garden



# Aquatic Biodiversity Improvements

- Ohakune is a door stop to aquatic life  
Prolific downstream  
Poor upstream

## WHY

- Long sections of piped waterway
- Removal of natural waterways
- Perched culverts requiring fish passage
- Loss of natural vegetation and habitat

# HOW DO WE IMPLEMENT? SCHEME

- Back in the Catchment Board days there were Central Government subsidies available at 3 to 1
- Now we live in a user pays environment
- Works are now managed through River Schemes
- Schemes are 80% funded by targeted rates and 20% funded from the general rate

# WHAT MIGHT THIS COST

It is proposed that the initial work is spread over three years at a capital cost of \$2 million. This would be funded by way of a loan and repaid over a ten year period.

Approximate costs to rural and urban households per \$100,000 of capital value is shown below

Year	1	2	3	4 to 10	11 +
	2018/19	2019/20	2020/21	2021/22 – 27/28	2028/29 +
Urban Ratepayers	\$35	\$72	\$107	\$122	\$15
Rural Ratepayers	\$16	\$33	\$48	\$55	\$7

# UPPER MANGAWHERO AND TRIBUTARIES Ohakune Proposed Rating Area



# WHERE TO FROM HERE?

- Present findings to wider community
- Proposals through Long-term Plan
  
- **ADDED ADVANTAGES**
- Co-operation between Councils
- No silo approach to cohesive Ohakune stream management
- Design mitigation to flood risk
- Improvement in aquatic biodiversity
- Enhanced stream channel management - beautification