

# ICMPs – A Hamilton City Experience from Creation to Implementation

Andrea Phillips, Infrastructure Engineer, Hamilton City Council  
Nathanael Savage, Infrastructure Planner, Hamilton City Council



# Drivers

- National Policy Statement – Freshwater management
- Waikato (and Waipa) River – Vision and Strategy
- Waikato Regional Policy Statement
- Healthy Rivers: Proposed Regional Plan Change 1
- Comprehensive Consent(s) from Regional Council
- Hamilton City District Plan

# Drivers Require...

- **Assessment** of cumulative urbanisation effects on waterways
- Quantification of **mitigation** required
- Opportunities for **enhancement**

# Citywide Data

- **Data, data** and more **data** has been collated under the SW Master Plan
- **Mapped** outputs that can be refined and updated through more specific catchment planning

# Citywide Maps

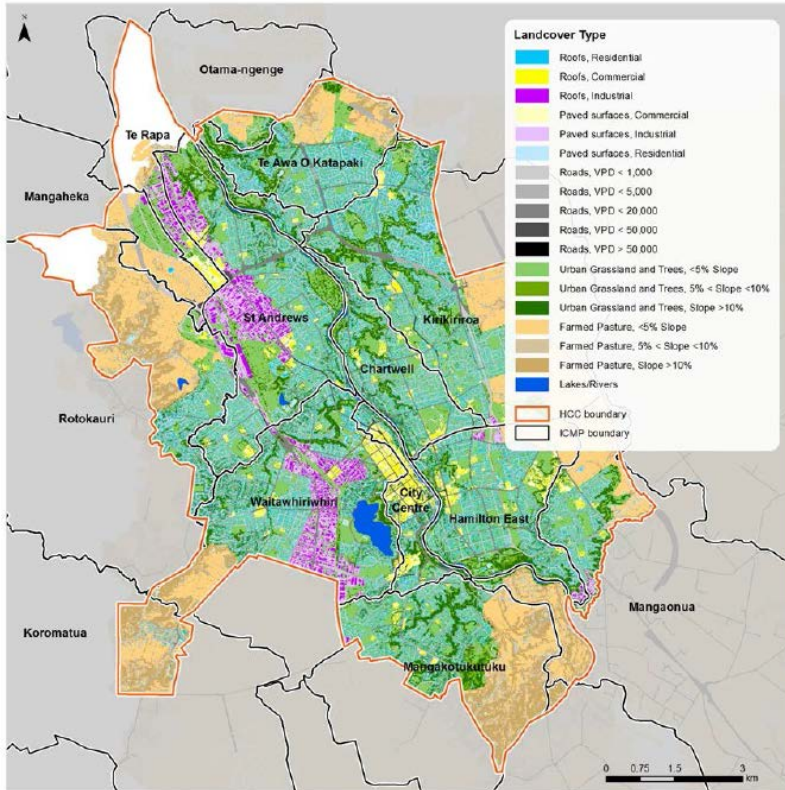


Figure 26: HCCLM Land Cover (areas of treatment priority are shown in purple and yellow)

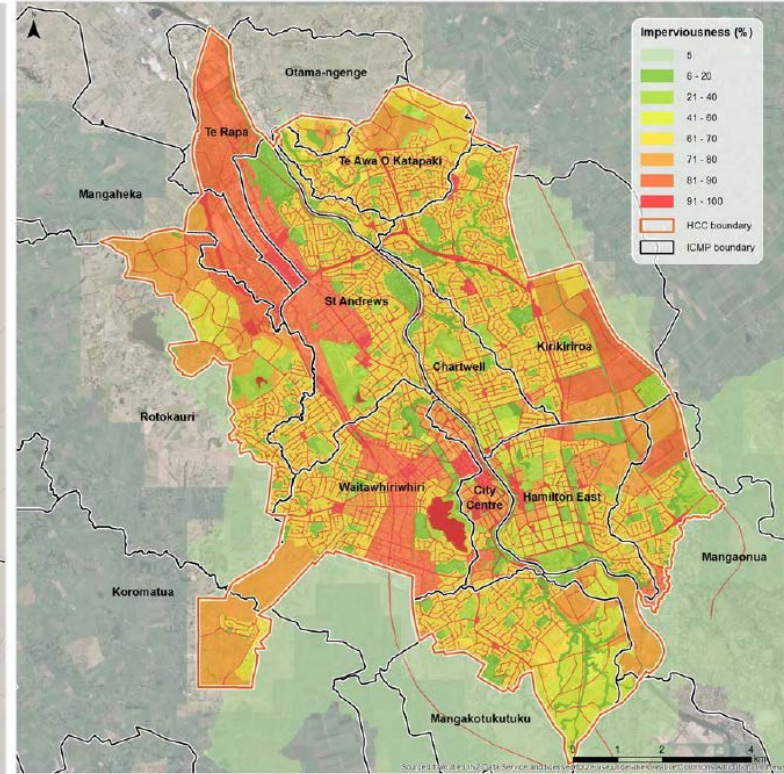


Figure 35: Future Impervious Based on PDP and SMP Assumptions

# Citywide Maps

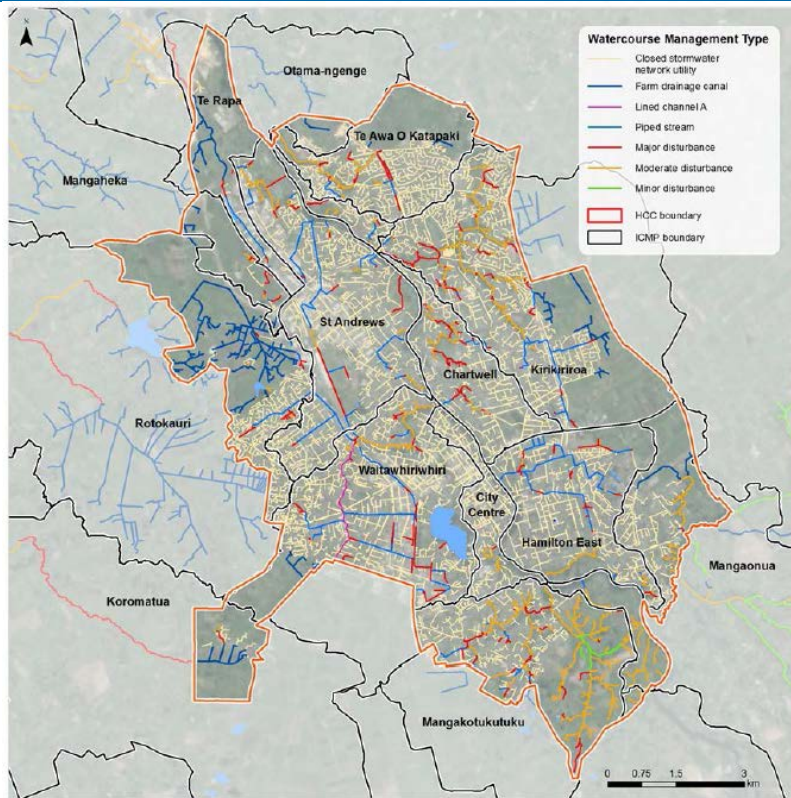


Figure 22: Watercourse Management Types in Hamilton

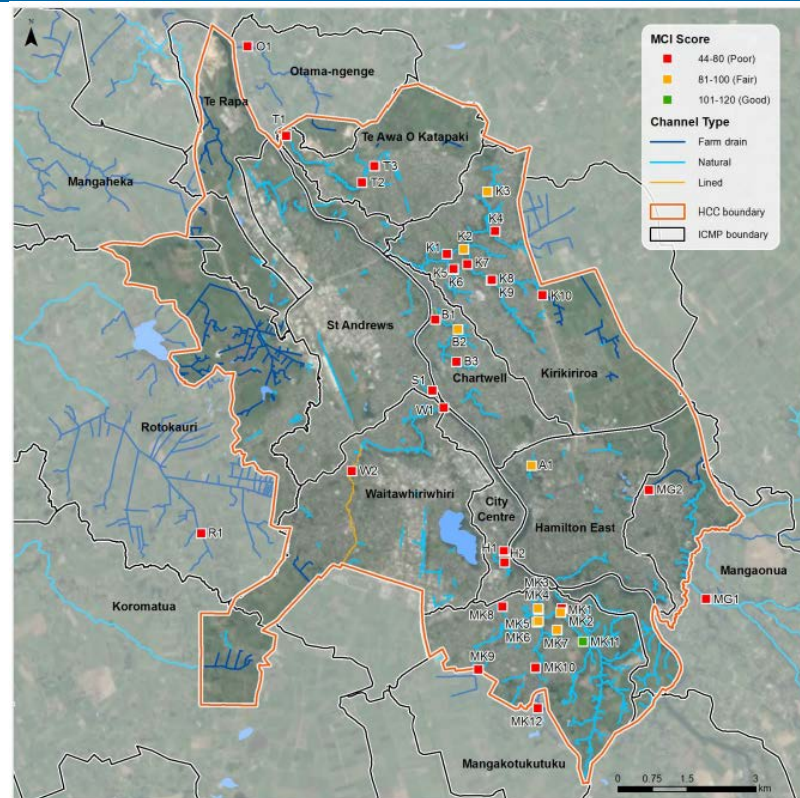


Figure 16: MCI Score in Hamilton Watercourses

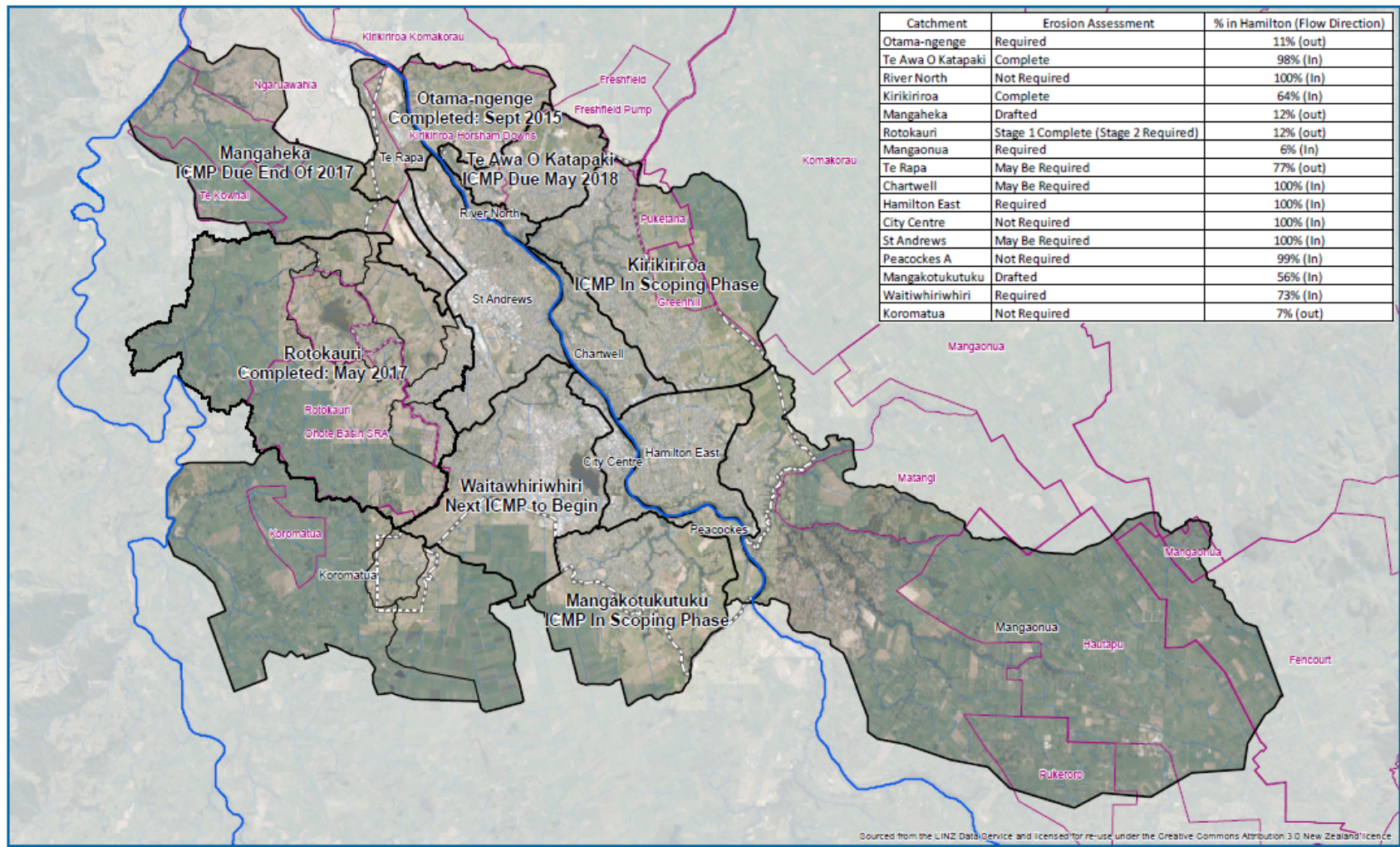
# What is an ICMP?

- Evidence based document
- Establishes targets and provides a means of compliance (BPO's for mitigation)
- 3 waters infrastructure integration
- Considers land use (growth) with optimised infrastructure solutions to mitigate effects

# Types of technical investigations

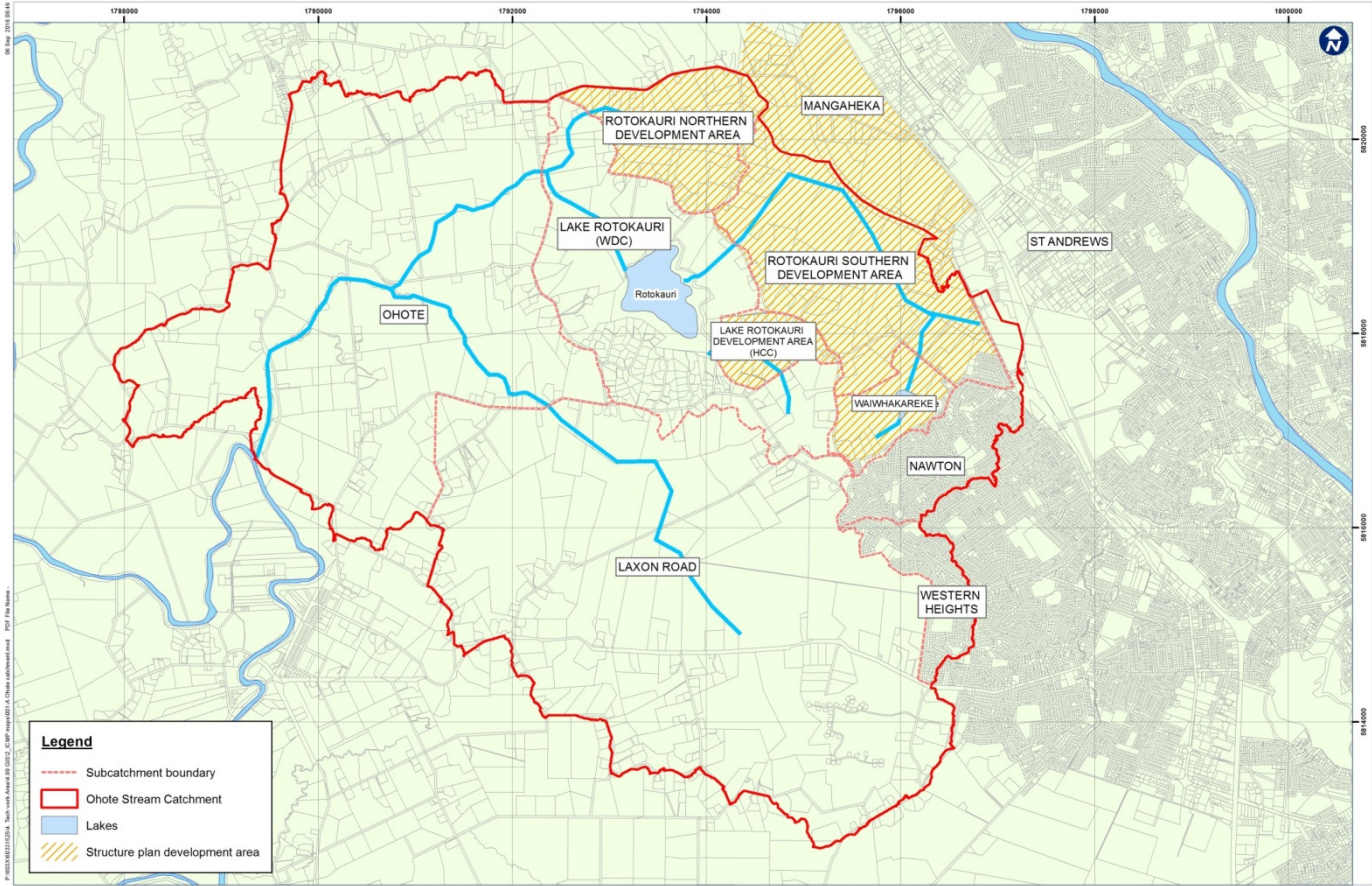
- Receiving Environment (ecological, sediment quality, water quality, erosion, riparian cover)
- Primary infrastructure (water, wastewater, stormwater)
- Stormwater (contaminant load, treatment, modelling)
- Other....survey, growth & future landuse, geotechnical, hydrogeology





# Rotokauri ICMP

- Rotokauri growth cell part of wider Ohote catchment draining to Waipa River
- Includes 'Significant Natural Areas', and two peat lakes joined essentially by a farm drain
- Rotokauri Structure Plan – green corridor
- High water table, flat land, downstream limitations



**Legend**

- Subcatchment boundary
- Ohote Stream Catchment
- Lakes
- Structure plan development area

Rev	By	Appr	Description	Date

**Project Information**

Project Name: Rotokauri Integrated Catchment Management Plan

Client: Hamilton City Council

Project Manager: [Name]

Design Lead: [Name]

Drawn: [Name]

Checked: [Name]

Date: May 2015

Project Status: [Status]

Project Location: [Location]

Project Description: [Description]



**Rotokauri Integrated Catchment Management Plan**

**Rotokauri Catchment Location**

**Within the Ohote Stream Catchment**

Scale: 1:35,000 (A3 size)

Scale bar: 0 20 40 60 80 100 Meters

Scale bar: 0 0.25 0.5 0.75 1 Kilometres

Project No: 001A

Sheet No: -

Revision: A

# Objectives and Targets

- Alongside generic O&T's, specific ones were developed relating to catchment matters such as:
  - Alignment with the Rotokauri Structure Plan
  - Protection of Lake Rotokauri water quality
  - Protecting groundwater levels in proximity to Lake Waiwhakareke
  - Flood protection and downstream levels of service (L. Rotokauri lake level management regime)
- How do we meet these?

# Parameters

- **DESIGN PARAMETERS** are confirmed within the ICMF (e.g. 70% Phosphorus removal from stormwater)
- **MEANS OF COMPLIANCE** is a way to achieve the design parameters

# Means of compliance - Stormwater

## Stage 1



Source controls  
On lot measures  
Rain tanks etc



## Stage 2



Sub catchment  
Raingardens/  
Wetlands



## Stage 3



Main Corridor Wetlands  
(Central/Main Swale corridor)

40% TP removal

TP 50% removal

70% Ph removal via overall treatment train

# What's the cost?

- Council historically funds (Rates and DC's) and delivers strategic infrastructure
- Developers historically fund and deliver local infrastructure to service their development
- Cost for strategic infrastructure for this catchment is substantial...

# Strategic Wastewater

## Wastewater CAPEX

• Far Western Interceptor	\$7.5M
• 5x Sewer Pump Stations (SPS)	\$16.6M
<b>Total</b>	<b>\$24.1M</b>

SPS includes storage to current Infrastructure Technical Specifications



NOTE: Pipeline sizes and alignments are preliminary and shall be confirmed by detailed sub-catchment design and integration with other infrastructure (e.g. roads and drainage).



This may need raising to gradeable to the F/WI connection, otherwise a small pump station may be required

WWPS 4  
Catchment area: 170 Hectares  
Flow: 70-80 L/s  
Storage: 480 m³  
Inlet: 450 mm  
Rising main: 300 mm

WWPS 3  
Catchment area: 140 Hectares  
Flow: 60-70 L/s  
Storage: 400 m³  
Inlet: 375 mm  
Rising main: 250 mm

WWPS 5  
Catchment area: 56 Hectares  
Flow: 25-30 L/s  
Storage: 160 m³  
Inlet: 225 mm  
Rising main: 150 mm

WWPS 1  
Catchment area: 92 Hectares  
Flow: 15-20 L/s  
Storage: 100 m³  
Inlet: 225 mm  
Rising main: 150 mm

Legend

- Proposed Pump Station
- Existing Pump Station
- Existing Wastewater
- Proposed Wastewater
- Existing Rising Main
- Proposed Rising Main
- Gravity to interceptor
- Current large lot / on site disposal
- Pump Station Catchment
- Rotokauri ICMP Boundary
- Hamilton City Boundary

Rev	By	App	Description	Date

Printed	CH	Date	June 2016
Approved		Checked	
Designed		Checked	
Drawn			

Copyright AECOM New Zealand Limited 2014. This map is confidential and shall only be used for the purposes of this project. The information contained herein is for the purposes of the project and shall not be used for any other purpose. AECOM New Zealand Limited and its employees shall not be liable for any loss or damage, whether direct or indirect, arising from the use of the information contained herein.

File: Rotokauri Strategic Wastewater Infrastructure of NZP 151524

100% Investment - UND NZ National Transport Strategy 2014  
 100% Investment - UND NZ Coastal Plan 2014



Project: Rotokauri Integrated Catchment Management Plan  
 Title: Strategic Wastewater Infrastructure PLAN

Scale: 1:19,000 (A3 size)

Status: Concept

Map No: 006

Sheet: -

Rev: A



Discharge to existing network by gravity if possible otherwise private pumps are to be used (locations to be confirmed)



# Strategic Water

## Water CAPEX

• Pukete Reservoir connection	\$5.5M
• Southern 450mm trunk	\$0.7M
• Northern 450mm trunk	\$0.8M
<b>Total</b>	<b>\$7M</b>



**Legend**

- Future 250mm trunk watermain
- Future 450mm bulk watermain
- Rotokauri ICMP Catchment

Rev	By	App	Description	Date

Printed	CH	Date	May 2015
Approved		Checked	
Designed		Checked	
Drawn		Checked	

© Copyright AECOM New Zealand Limited 2014. This map is confidential and shall only be used for the purposes of this project. The information contained in this map is confidential and shall only be used for the purposes of this project. The information contained in this map is confidential and shall only be used for the purposes of this project. The information contained in this map is confidential and shall only be used for the purposes of this project. The information contained in this map is confidential and shall only be used for the purposes of this project.



**Rotokauri Integrated Catchment Management Plan**  
**Strategic Water Infrastructure PLAN**

Project: **Rotokauri Integrated Catchment Management Plan**  
 Title: **Strategic Water Infrastructure PLAN**

Scale: **1:17,500** (A3 size)

Status: **Concept** Map No: **007**

# Strategic Stormwater - Quantity

## Storage requirements in Rotokauri:

• Central Basin 1	\$8.2M
• Central Basin 2	\$6.4M
• Central Basin 3	\$20.6M
• Central Basin 4	\$7.3M
• Central Basin 5	\$9.8M
<b>Total Estimated Storage</b>	<b>\$52.3M</b>



**Legend**

- Proposed major culvert (minor culverts not shown)
- Main storage & conveyance channel (CC)
- General conveyance channel (C) or pipeline (P)
- Conveyance swale (CS)
- Potential reserve storage area
- Rotokauri ICMP boundary
- Structure Plan Roads
- Exelby Road Outlet (ERO) - erosion, stability and ecological works zone

P:\031021\10214\_101\work\Aerial\01\_GIS\_C\MP\map\004\_Stormwater Infrastructure.mxd PDF File Name:

820000

581000

Rev.	By	App.	Description	Date

Printed	Approved	Designed	Drawn	File Name	Date	Checked
-	CH	-	-	-	May 2015	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Copyright AECOM New Zealand Limited 2014. This map is confidential and shall only be used for the purposes of this project.

This map is confidential and shall only be used for the purposes of this project. This information contained or derived in this document is not to be distributed outside the project. AECOM New Zealand Limited does not warrant the accuracy of this information. Any use of the information by other parties is at their own risk. The liability of the client does not extend to the design and delivery of any project based upon information received from any other source.

Map features depicted in terms of NZTM projection.

© Crown Copyright - LINZ NZ National Topo Dataset 2014

© Crown Copyright - LINZ NZ Cultural Dataset 2014



**Project:** Rotokauri Integrated Catchment Management Plan

**Title:** Stormwater Drainage Infrastructure (planned growth with mitigation)

**Scale:** 1:17,500 (A3 size)

**Status:** Concept

**Map No.:** 004

**Rev.:** A

**Scale bar:** 0 0.1 0.2 0.3 0.4 Kilometres

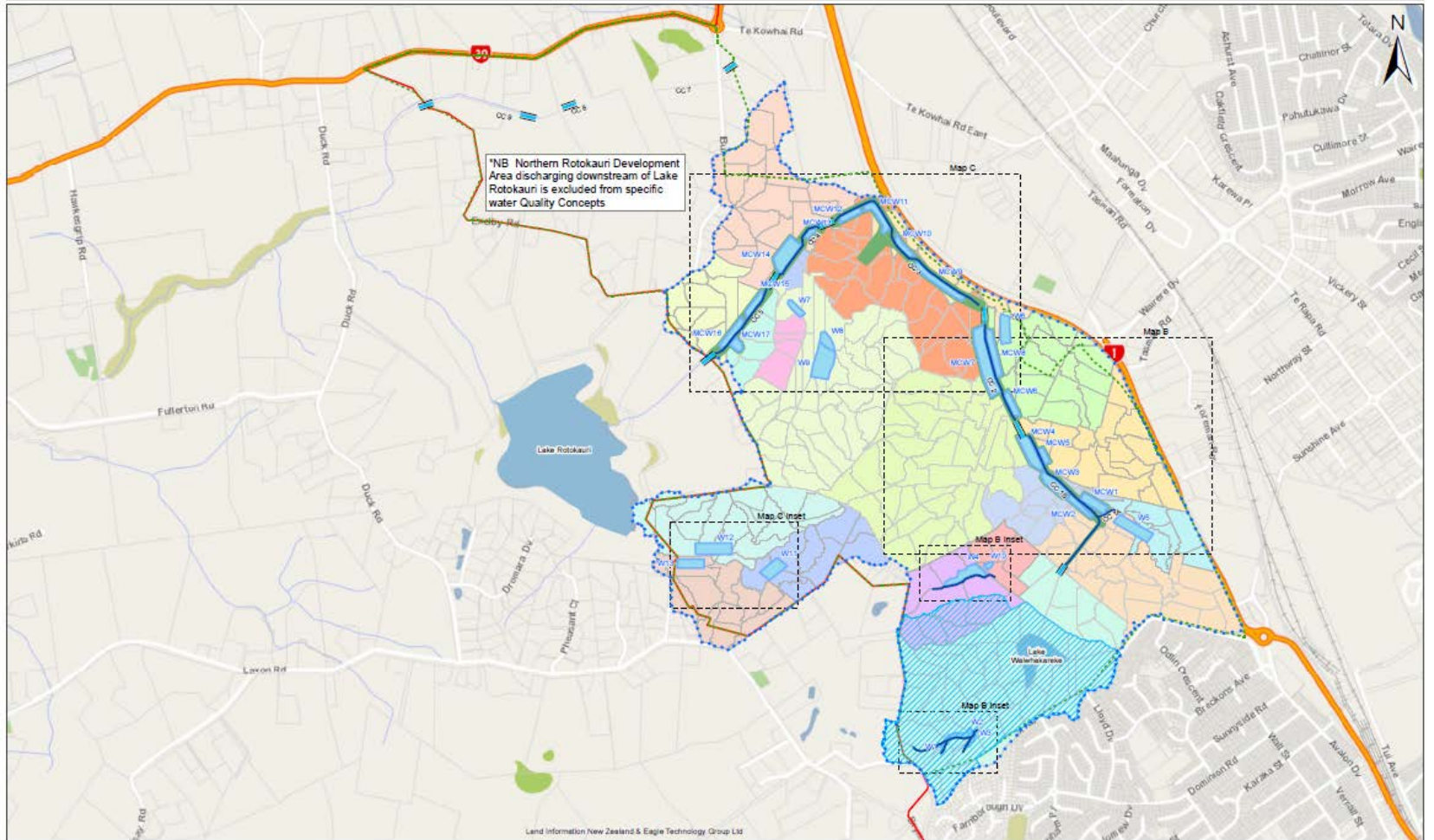
# Strategic Stormwater - Quality

Treatment requirements in Rotokauri:

- Treatment Basin 1            \$2.4M
- Treatment Basin 2            \$1.9M
- Treatment Basin 3            \$6.1M
- Treatment Basin 4            \$2.1M
- Treatment Basin 5            \$2.9M
- Treatment other                \$23M

**Total Estimated Treatment    \$38.5M PLUS standard ITS**

# Rotokauri ICMP SW Treatment Concept and Indicative Sub-Catchments Southern Development Area



# Holistic approach

- Strategic infrastructure is only one part
- On lot (developer led) infrastructure is needed
- Integration with other desired community / environmental outcomes
- Addressing mitigation of residual adverse downstream effects in watercourse
- Maintenance and operations obligations and cost



# Other documents supporting implementation and compliance

## **AT SOURCE:**

- Council identified **on lot solutions** (Three Waters Management Practice Notes)

## **CENTRALISED DEVICE:**

- **HCC ITS** – SW chapter updated December 2016

## **RECEIVING ENVIRONMENT:**

- **Downstream erosion mitigation** assessments (providing \$/ha contribution to fund works)

# Implementation Issues

- Cost/ Funding implications – Council (10 Year Plan) & Developer
- Maintenance – private on lot & public devices
- Sensitivity to sediment
- Approval of developments – technical and integrated ownership
- Monitoring and compliance
- Recording data and devices – public AND private

# Conclusions

- Valuable documents that comprehensively consider enhancement opportunities and mitigation of cumulative effects
- Can provide certainty for development planning
- Cost of mitigation measures is a challenge
- ICMP preparation challenges include time, cost, complexity
- New processes and thinking required

# Questions

