

Te Tatua-a-Riukiuta Aquifer and the Waititiko - Waiateao Creeks

Management Plan proposal:

Author: Elizabeth Walker (STEPS),

Contributing Authors: Jeanette Budgett (Unitec Institute of Technology), Sandra Anderson (University of Auckland).

With thanks for contributions from Sharon Eccleshall, Andrew Mackintosh, Nick Goldwater and others.

Landscape Vision

The proposal is to recognise, protect and restore the Western Springs-Meola-Three Kings (Te Tatua-a-Riukiuta) Aquifer comprising the Waititiko (Meola) - Waiateao (Motions) Creeks.

This document contains a set of proposed objectives, policy statements and implementation strategies which might form a preliminary discussion document and working model for a future aquifer-based management plan. Development and implementation of the proposal would require coordination between the Albert-Eden/Waitemata and Puket papa local boards, in partnership with the local communities, Auckland Council and Watercare.

The proposal objectives are:

- holistic management of the aquifer
- a mountain to sea pathway ensuring public access for future generations
- restoration of native biodiversity on a catchment-based level

History and Context

Auckland has applied for World Heritage status for its unique volcanic field and maunga including Maungawhau, a source for this catchment. Our proposal contributes to this holistic vision for the Auckland isthmus. The basis for this application is famously depicted by HOchstetter in 1859 (see below).



“The isthmus of Auckland with its extinct volcanoes, by Dr. Ferdinand von Hochstetter 1859”.

Auckland Libraries

Meola and Motions Catchments and the underlying aquifer have been subject to much development and change over the past 2 centuries. Water from 3 Kings Quarry is still being pumped out of the aquifer to “dewater” for quarrying, and housing is to be developed in the old quarry. Western Springs contains a man-made dam built to hold the city water supply before 1912 (Appendix 1).

At 1558 Hectares, Meola catchment is the largest on the Auckland isthmus and now receives more than an estimated 1 million cu meters of stormwater and sewage overflows per year – by far the worst in Auckland (See Appendix 2). This catchment seems to be artificially enlarged by receiving stormwater flowing from the upper Motions catchment. Maps appear to show that while Meola and Motions hydrological catchments are of about 900 HA each, the Auckland Council stormwater system has connected the upper Motions and Meola catchments into the lower Meola creek, while Motions creek flows from Western Springs. Further info is needed.

More than 1 km of Meola’s 5-6 km length has been piped by storm water engineers and developers, some within the last 20 years. Meola and Motions communities were cut off historically by the NW Motorway, leaving the communities disconnected from their geographical catchments. Auckland Council (AC) and Watercare view the “upper and lower” catchments as separate and invest AC resources in selected enhancement projects (see map in Appendix 3).



Roy Clements Treeway boardwalk

Auckland City Council and Watercare built the Roy Clements Treeway boardwalk in 2008. Albert Eden Local Board (AELB) has funded Roy Clements Treeway planting through the community, and also ‘Lower Meola’ planting projects which are run by Healthy Waters. The St Lukes Environmental Protection Society (STEPS) together with AELB and Auckland Council Parks has been carrying out riparian planting and maintenance of the Roy Clements Treeway and Meola banks since 2008. In 2010 STEPS restored and planted a wetland area on Mt Albert Grammar School (MAGS) land (see map in Appendix 4).

In recent years Auckland Zoo has improved Motions creek where it flows through the zoo. (See <http://www.aucklandzoo.co.nz/sites/conservation/community-and-home/water>). Sadly the destruction of rock forest habitat was carried out by a tenant on Auckland Council land behind MOTAT within the last 5 years. Most recently, the Waitemata Local Board has built the new Weona-Lemington Walkway adjacent to the Motions Creek estuary.

The aquifer and catchment are described in Appendix 5, along with some historical photos.

An extract from a recent 2017 submission by STEPS to the Albert-Eden local board is in Appendix 6

Purpose :

This proposal is for an over-arching plan to coordinate the various Auckland Council, Community, and Watercare enhancement projects, which are planned in the near future, some of which are listed In Appendix 8. The goal is to provide policies that each group can reference within the wider context.

Maps:

Maps should also cover all activities and potential opportunities.

Good maps of the following are also needed.

Existing:

- Stormwater network (Motions & Meola)
- Wastewater network (Motions & Meola)
- Vegetation cover
- hydrology/ topography (direction of flow from build areas)

Historic :

- § creek path
- § vegetation cover (types)
- § Lava flow

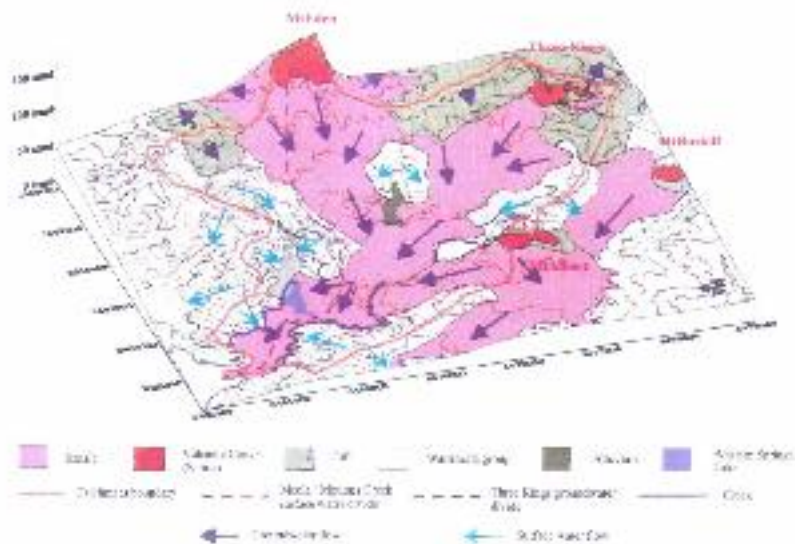
Constraints (include effects of proposed works e.g. overflow areas)

Opportunities

- § Stakeholders, proposed major works and proposed plans
- § Landscape Plan (ideal outcomes)
- § Mitigation of adverse effects on Meola creek
- § Resilience planning for our creeks

(see Meola creek 'flyover view' at <https://youtu.be/hYORKWxO6Rw>)

Western Springs/ Three Kings/ Meola Aquifer



3d Hydrogeological Model of the Western Springs Aquifer (Viljevac 1998 Figure 2.12).

References: Clarke, C, Roy Clements Treeway Boardwalk – Urban stream management

<http://www.nzsses.auckland.ac.nz/Conference/2008/papers/Clarke.pdf> p6

Key Community Stakeholders

- STEPS
- Kura Kaupapa o nga Maungarongo
- Mahurehure Marae
- Mt Albert Grammar School MAGS (Lyon Ave site owner)
- Weona Walkway/ Waiateao Community Group
- 'Lower Meola' community groups (led by Auckland Council (AC) Waicare)
- Pasadena School
- Western Springs College
- Auckland Zoo
- Plant and Food (Haverstock CI site owner)



See also wider list of stakeholders in Appendix 7.

Conservation Volunteers on Roy Clements Treeway

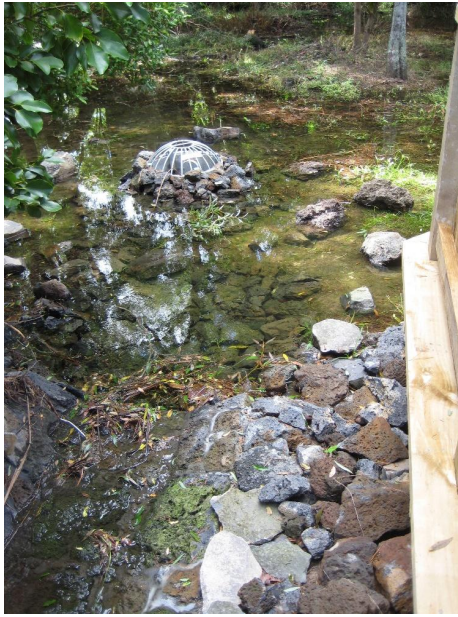
Timescale:

The plan should look at least fifteen years ahead and should be reviewed after ten years.

Landscape elements and Water catchments requiring recognition, protection and restoration (listed from macro to micro scale):

The ring of volcanic cones marking the approximate edge of the aquifer, which includes:

- Meola Creek itself which has on its path
 - Springs from aquifer
 - Wetlands – includes current and potentially public areas that once were wetlands (such as Gribblehirst Park)
 - Rock forest remnants
 - Mangrove forests/ estuary
 - Roy Clements Treeway
 - Cultural heritage/ tangata whenua – archaeological sites
 - Any other special wildlife habitats
- § Western Springs where the aquifer surfaces
- § Motions creek which drains Western Springs
 - Mangrove forests/ estuary
 - Springs?



Clean spring water in STEPS Wetland, Roy Clements Treeway

Management Approach:

The following sections outline high-level objectives, policies and implementation actions to achieve this vision.

A. Recognition of the aquifer

Policy: To recognize and promote a holistic management of the aquifer

- Identify and champion the aquifer and operate in a watchdog capacity
- Develop a coordinated approach between the local boards involved
- Foster a working relationship with Watercare across the entire catchment
- Engage community groups and other stakeholders
- Map a 'mountain-to-sea' pedestrian route via creeks, riparian strips, reserves, footpaths etc.
- Identify locations of major upcoming projects and coordination opportunities. A list of upcoming major projects is provided in Appendix 8.
- Establish a "Mountain to Sea" Walkway

B. Protection of the aquifer and catchments

Policy: To protect the aquifer and catchments from adverse effects

- Develop management plans to keep sewage and stormwater out of streams
- Prevent canalizing of streams into sewers
- Mitigate the impacts of local stormwater discharge into water courses
- Measure water quality and report to establish performance indicators and improve water quality
- Overland flow of natural spring water maximised by daylighting /naturalisation of piped streams
- Map, identify and signal the original watercourses.

C. Restoration of the aquifer and associated cultural heritage and native biodiversity
Policy: To restore the integrity of the catchment water quality and associated native biodiversity and heritage values

- Enhance riparian planting
- Plant species informed by ecology rather than amenity
- Identify and manage weeds
- Set up pest control
- Reintroduce species important to ecosystem function.
- Provide signage and narrative themes
- Engage with Te Aranga Maori Design Principles
http://www.aucklanddesignmanual.co.nz/design-thinking/maori-design/te_aranga_principles
- Facilitate community engagement, social events and working bees
- Establish a Te-Tatua-a-Riukiuta umbrella website for all community stakeholders, with links to territorial authorities for maintenance, communication and advocacy.

Upcoming Major projects

Each upcoming project will provide an opportunity to work towards the big picture and overall enhancement of the landscape along with improvements for people. See Appendix 8 for initial list of known projects.

Appendix 9 contains further detail on one of these upcoming projects – the Central Interceptor (CI). This outline is STEPS input to Watercare. Watercare will expand the enhancement plan in conjunction with the Meola community.



Weona Lemington Walkway completed 2017.

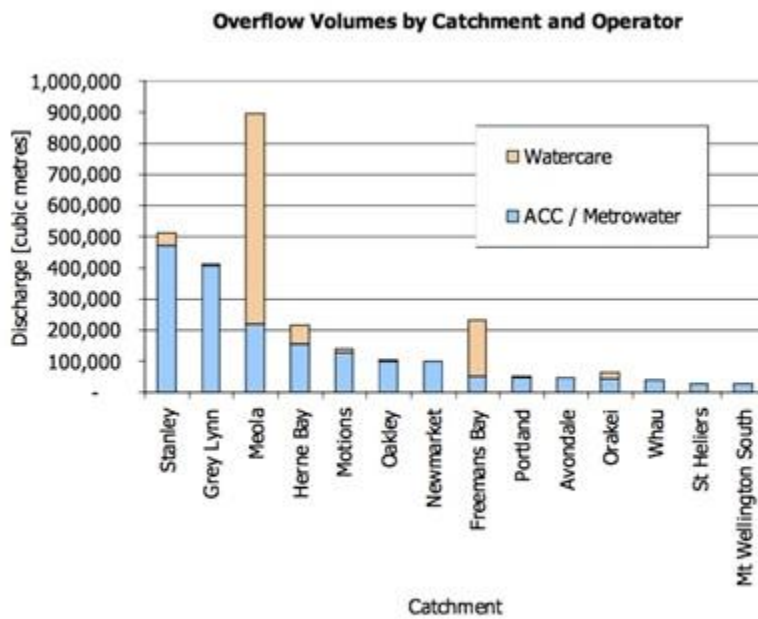
Appendix 1 History of Auckland Wastewater

JR Fitzmaurice 2009



History of AKL WW
and Mangere WWTF

Appendix 2



Overflow volumes across the city (14 largest)

Auckland Council 2010

Appendix 3



Map of CANOPY
area as at 1.5.17.pdf

Appendix 4



Roy Clements
Treeways MU plan.p

Appendix 5

Description of the geology, aquifer and streams

E Walker, STEPS, 2017



Western Springs- 3
Kings Aquifer and M

Description of the Isthmus and Meola / Motions Catchment

Metrowater 2001.



chpt 07
metrowater.pdf

[Link here to Photographs of Meola Creek](#) held in Auckland Libraries' heritage collections.

Appendix 6

Request in STEPS 2017 submission to Albert Eden Local Board Plan:

We believe that a strategy is needed to guide the protection and enhancement of both Auckland's largest aquifer, and Meola Creek – the largest catchment on the Auckland isthmus.

We ask AELB to work with the Puketāpapa and Waitemata local boards to develop a joint approach to managing and protecting Waititiko Meola Creek and underlying aquifer. Te Tokaroa Meola Reef, Western Springs and the underground water at Three Kings all form a part of this same landform, along with Motions Creek.

The strategy would include restoration of the creek, protection of the aquifer, and enhancement of the lava rock forest as taonga, with more opportunities for the community to learn about and cherish them. It would also include mangrove forest (at Te Tokaroa). The work that AELB is planning in Chamberlain park – both on creek and wetlands, would be an essential part of this wider strategy.

STEPS advocate for Meola Creek to return to being a living natural waterway with clean water and a healthy native riparian zone, that native flora and fauna consider home, and that Aucklanders cherish, protect and feel proud of.

More specifically, STEPS has a vision of a mountain to sea walkway from Mt Albert to Meola Reef for the whole community to enjoy.

We ask that AELB adopt a 'Green Fingers'¹ vision for Meola Creek, and to Sponsor the Waititiko-Meola Creek mountain to sea walkway in conjunction with the other boards and STEPS. We note that AELB already has plans for part of this walkway through Chamberlain park, which STEPS supports.

¹ Green Fingers was a term Auckland Council used to describe riparian planting along creeks (extending in from harbours).

Appendix 7

Other Stakeholders

o Albert Eden Local Board (AELB)	o Wider Meola community
o Waitemata Local Board (WLB)	o Ward Councillors
o Puket papa Local Board	o SLGA/ Hobanz (RCT/ Lyon Ave)
o Watercare Services limited	o Tangata Whenua/ Mana whenua
o AC Healthy Waters/ WaiCare	o Other Schools
o Park / stream neighbours	o Others to be identified

Appendix 8

Some upcoming major projects

- AELB Chamberlain Park changes (AC/ AELB)*
- Central Interceptor (Watercare) – five sites on Meola + Western Springs
- Meola Reef plan (Waitemata Board)
- Western Springs Park plan (Waitemata Board)
- Improved stormwater in future (AC Healthy Waters)



Group at Norgrove Aug 2017



Roy Clements Treeway flood plain being planted

Appendix 9

Watercare 'Meola/ Roy Clements Treeway Enhancement Project'

Central Interceptor

Watercare Systems Ltd plans to build the Central Interceptor (CI), a new wastewater tunnel proposed to run between Western Springs and the Mangere Wastewater Treatment Plant.

Start--finish: 2019–2025.

https://www.watercare.co.nz/about-watercare/Projects%20around%20Auckland/Central_Interceptor/Pages/Central-Interceptor.aspx

Meola/ Roy Clements Treeway (RCT) Enhancement Project Outline:

Locations: The five Meola CI sites: Norgrove and Rawalpindi Park, Roy Clements/ Kerr Taylor; possibly Haverstock, MAWM (Mt Albert War Memorial Park) and also the land around the Western Springs CI site [near the sportsground]. While this enhancement project technically excludes the specific 'CI site reinstatement plans', it focuses on the restoration opportunities in the surrounding park lands and stream. We would like common policies/ approaches to apply to the site reinstatement plans where possible.

Note that the initiative is named "Roy Clements Treeway Enhancement" for two reasons. The first is that the community spirit, co-operation and energy demonstrated in the creation of the Roy Clements Treeway on MAGS land in the 1980s provides an inspirational example for local communities and Watercare in the 2010's. STEPS requests Watercare to "consolidate and extend " the Roy Clements Treeway along Meola Creek. The second reason is that this name is recorded in a legal agreement with Watercare. It is not necessarily intended that by the end of this project the name "Roy Clements Treeway" will apply to any physical area beyond MAGS land.

This joint community and Watercare project should help further the vision from the Strategy document above.

Constraints: - plan to be completed by Dec 2018

- Implementation to be completed by end of 2020 according to the agreement.
- Watercare would like some early results to be implemented soon.
- Reality may be that some aspects cannot be done until after the CI work.
- We are likely to want to delay some aspects of the implementation by agreement because of the upcoming major works.

Proposed Project Activities:

They could include:

- Enhancement of rock forest and wetland remnants
- Community Ecological planting and maintenance (though most of this done year to year through HW/ AELB/ Parks) however perhaps consider funding new plants and site preparation for MAGS to do streamside planting on their side of stream.
- Removal of large scale weed infestation – eg asparagus weed at Norgrove
- Removal of weed trees such as willow, privet (i.e. large scale jobs we cannot manage).
- Signage – reinforce the landscape and community narrative
- (Permeable) Pathway – extending the Meola 'Mountain to Sea' walkway – could be low key – not high tech/ expensive. This could also be a route marked on footpaths and maps...
- Creek improvements
- "public experience" ?