



Recomended Freshwater Management Units of the Te Awarua-o-Porirua Whaitua

Summary of full report

November 2016

Prepared By:

Ton Snelder – Land Water People Ltd

Tim Kerr – Aqualinc Research Ltd

For any information regarding this report please contact:

Ton Snelder

Phone: 027 575 8888 or 03 377 3755

Email: ton@lwp.nz

Land Water People Ltd

PO Box 70

Lyttelton 8092

New Zealand

LWP Client Report Number: 2016-016

Report Date: November 2016

LWP Project: 2016-016

Quality Assurance Statement

[Click here and type text]

Version	Reviewed By	
1	Ned Norton	

1 Introduction

This report is a simplified summary of a more extensive report detailing Freshwater Management Units (FMUs) for the Te Awarua-o-Porirua Whaitua (Snelder and Kerr, 2016).

The original report details extensive analyses and describes subjective elements that are associated with defining FUMs. The subjective elements ultimately require decisions that are part of the decision-maker's responsibility rather than being technically derived. This report recommends a set of FMUs, but it the decision-maker needs to consider the subjective elements and either ratify or alter the FMUs as the Whaitua planning process proceeds. The full report describes how the recommended FMUs can be modified using the framework that has been developed.

2 Freshwater Management Units

The National Policy Statement for Freshwater Management 2014 (NPS-FM) directs regional councils to develop regional plans for managing freshwater quality and quantity. Plans must contain freshwater objectives, policies and limits.

The quality and quantity of water in water bodies, the values they support and the appropriate balance between water resource use and other values vary spatially. This means that it is generally inappropriate to set specific (i.e. numeric) freshwater objectives that apply broadly to all water bodies in a region. The NPS-FM requires that regional councils subdivide their regions into FMUs. The NPS-FM defines a FMU as a water body, multiple water bodies, or any part of a water body determined by a regional council as the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes.

3 FMUs for the Te Awarua-o-Porirua Whaitua

This document describes recommended FMUs for the Te Awarua-o-Porirua Whaitua for managing water quality and quantity. The FMUs are based on the national River Environment Classification (REC) system and its underlying digital representation of the network of streams and their catchments. The REC is mapped in a geographic information system (GIS), which allowed the ultimate (coastal) receiving waters and urbanised land areas to be considered.

The recommended FMUs are a framework of related spatial units that serve different purposes and overlap. There are several reasons that this framework of spatial units is necessary including:

- To acknowledge and provide for the “source to sea” nature of rivers, which is a key driver of variation in characteristics, values and objectives within a catchment, and requires the appropriate management of all upstream locations to achieve objectives.
- To provide for different plan provisions (e.g. objectives versus polices),
- To provide a basis for managing different issues (e.g. water quality versus water quantity, and surface and groundwater), and
- To provide a basis for different management functions including setting objectives, defining policies and limits, accounting for resource use and assisting in consenting processes.

The recommended FMUs were developed in four steps; 1). define a management classification, 2). define the management zones, 3). define the FMUs,4). define the administrative points. These steps are described in the following sections.

4 Step 1 - Management classification

The management classification is the grouping of water bodies so that differences in values and capacity for use can be considered when objectives are set.

The Whaitua's streams grouped into three "management classes" based on land cover and slope. The land cover groups are defined by Urban and Rural categories. The rural category is further subdivided into Hill and Lowland categories.

The streams were then further categorised according to the three coastal receiving environments in the Whaitua; Taupo Swamp, the Poriura Harbour and the open coast. These receiving environments represent differing values and sensitivities. The recommended management classification is the combination of the stream and coastal receiving environment – resulting in five¹ management classes (Figure 1).

The combination of freshwater and coastal receiving environments had previously been recognised by the Te Awarua-o-Porirua Whaitua committee who had suggested a preliminary set of FMUs on this basis. The robustness of the recommended FMUs is supported by an analysis of water quality and hydrology data, which is described in the full report.

¹ Note that stream discharging to the open coast receiving environment belong to Rural+Low and Rural+Hill classes but have been lumped into a single Rural class.

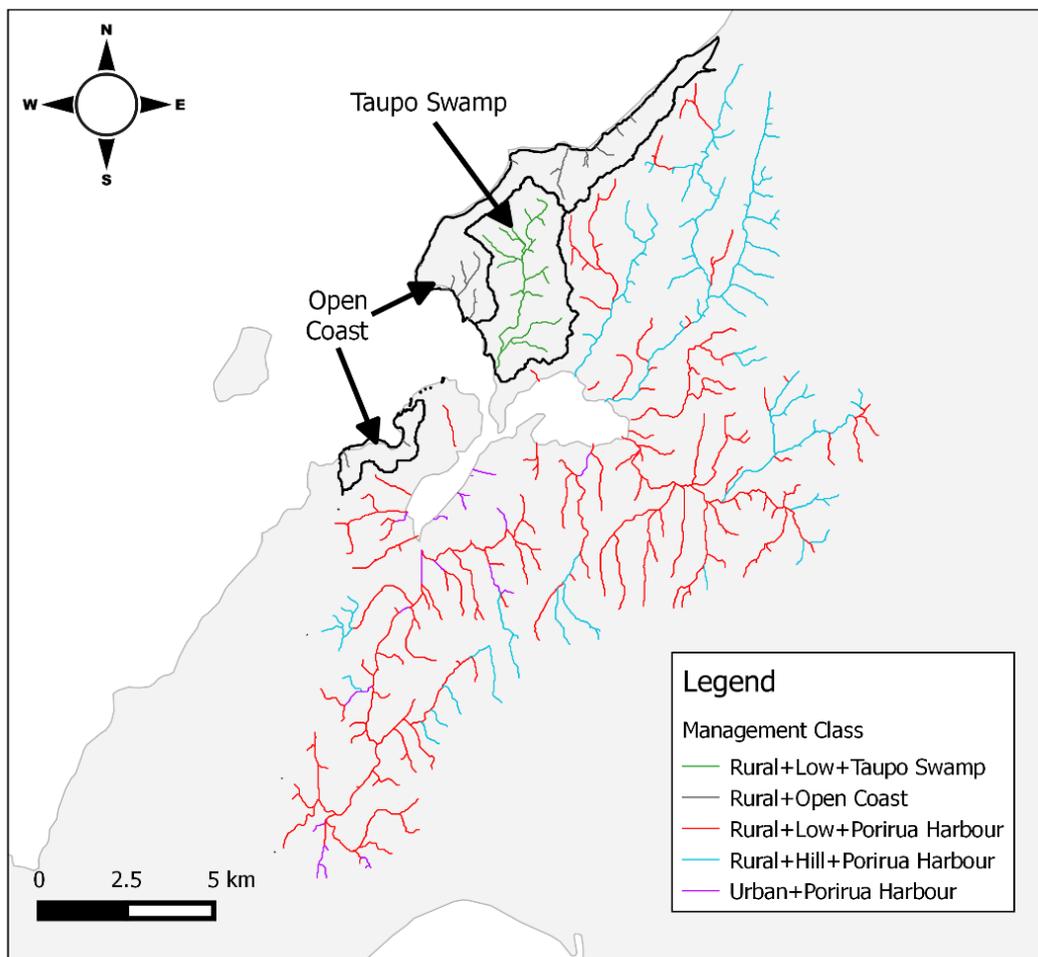


Figure 1. The recommended water quality management classes for the Te Awarua-o-Porirua Whaitua. The classes comprise the combination of three stream categories (Urban, Rural+Low and Rural+Hill) and the three coastal receiving environments.

5 Step 2 - Management zones

Management zones recognise that management actions (i.e. policies and rules) to achieve objectives apply to land areas (and associated land use and development) that drain to water bodies, and not only to the water body itself. Therefore, all land areas that drain to water bodies belonging to a management class become a management zone. Individual locations can belong to more than one management zone because there may be more than one management class downstream (Figure 2).

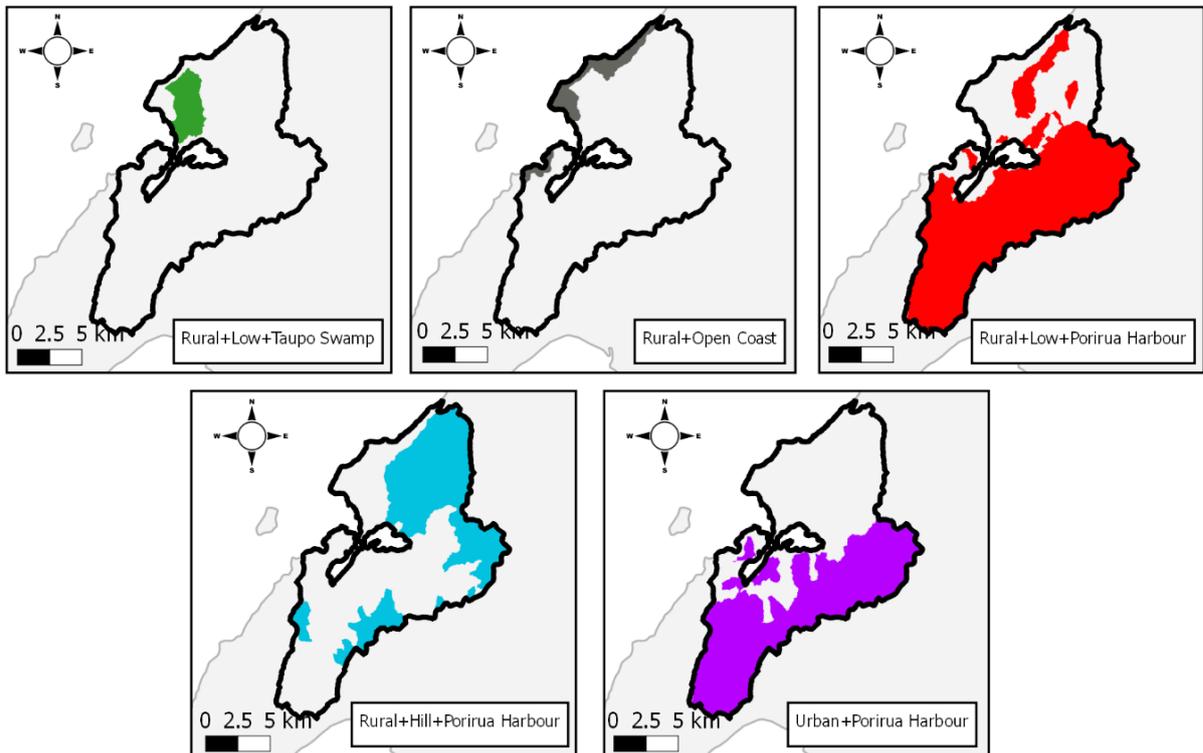


Figure 2. The management zones of the five recommended management classes.

6 Step 3 - Freshwater Management Units

FMUs are defined by layering management zones. Layering recognises that locations that lie in multiple management zones must comply with the policies and limits associated with the most restrictive downstream objectives. The recommended FMUs have been layered based on the assumption that the order of restrictiveness for objectives is as follows; Rural+Hill, Rural+Low, Urban. This assumption is based on the finding that overall water quality in the Whaitua is highest in the Rural+Hill class followed by the Rural+Low and is lowest in the Urban class.

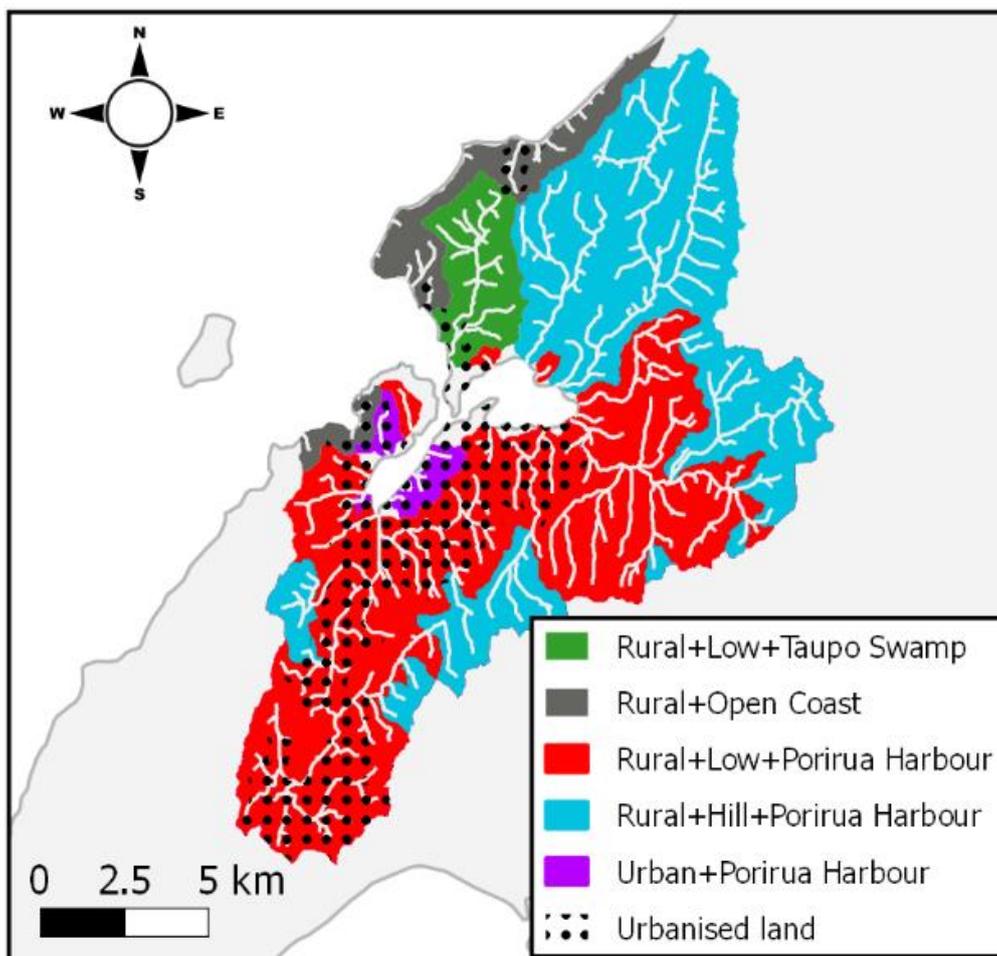


Figure 3. Recommended FMUs for the Te Awarua-o-Porirua Whaitua. The urbanised land within the FMUs identifies areas that may be subject to actions to manage the effects of urban land use on the associated management class.

It is likely that management actions that are applied to FMUs will need to explicitly address the effects of urban land uses. The FMUs identify 'urbanised land' as land that is either already or potentially used for residential, commercial, industrial, and transportation purposes (Figure 3). To achieve objectives in downstream water bodies, it is likely that special policies will need to be applied to urbanised land to manage the effects of urban land use.

7 Step 4 - Administrative points

Administration and accounting for contaminant discharges and water use must occur within individual catchments. A minimum set of individual catchments are defined by the points in the drainage network where there is a change in the management zone. These points represent a framework of administrative points, each of which defines a sub-catchment or catchment. There are many administrative points but this need not result in a complicated plan because administrative units are of relevance to plan implementation whereas plan provisions apply only to the management classes (objectives) and associated FMUs (policies and rules that control resource use and development).

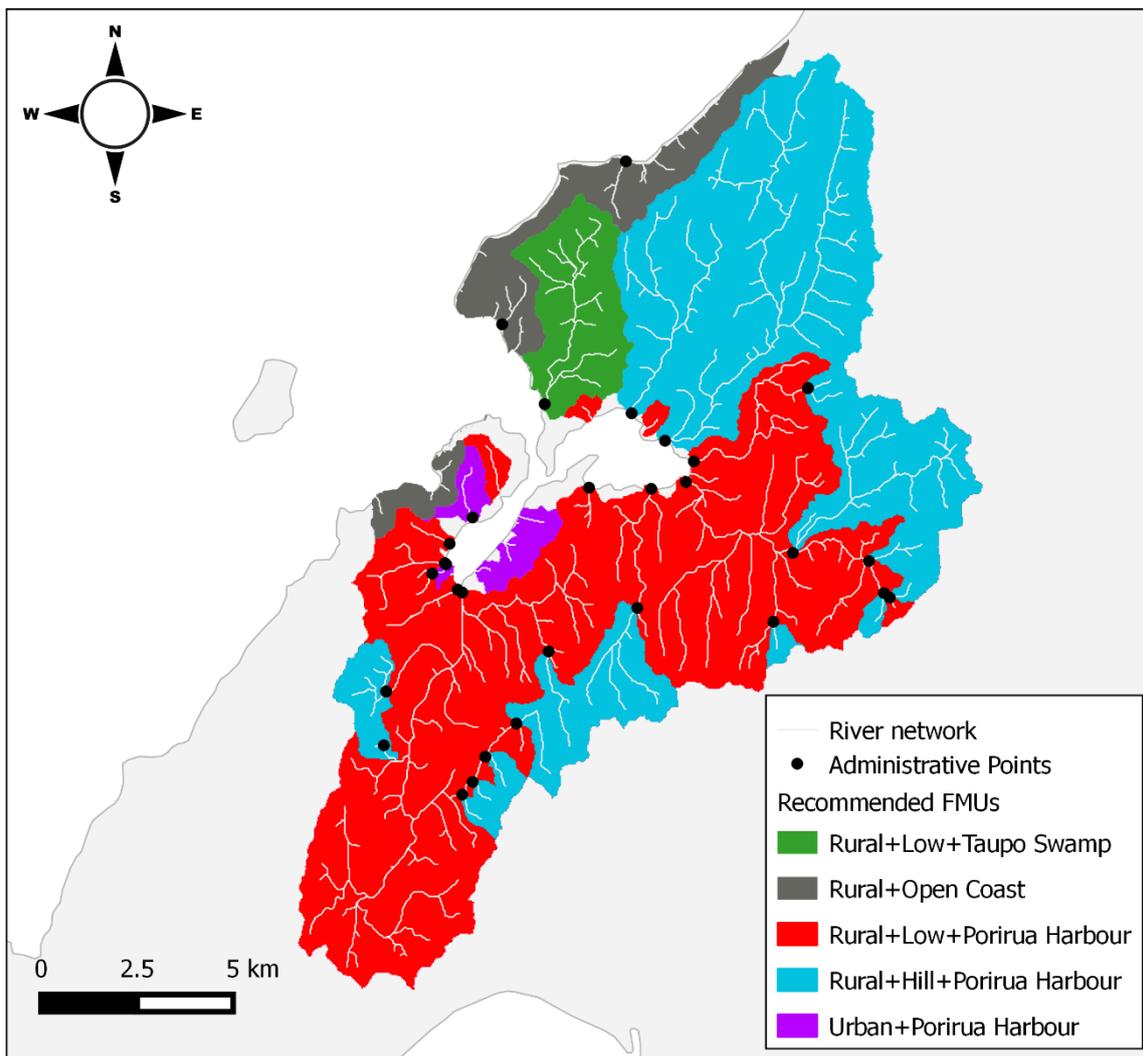


Figure 4. Recommended administrative points for the Te Awarua-o-Porirua Whaitua. The black dots identify points at which the FMU changes or the stream meets the coast. These are administrative points where limits need to apply and resource use accounting needs to occur.

Administrative points are not necessarily monitoring locations; for either water quality or quantity. Monitoring of both water quality and quantity (e.g. monitoring flows) would be carried out at representative sites (such as is currently provided by the water quality and flow monitoring networks) and the data collected at these sites would be used to inform on the achievement of objectives in management classes as a whole.

8 Conclusions

The recommended FMUs should be understood as the starting point that can be easily modified as the process of developing a plan for the Whaitua proceeds. A number of possible simplifications are possible. It may be that a classification is not needed for managing water quality because there is only minor variation in the rules needed across the Whaitua to achieve

a specific set of water management objectives. It may also be decided that the Rural+Low and Rural+Hill distinction is unnecessary if objectives and policies for these water bodies are identical. It is also possible that FMUs may need to be added as the Whaitua planning process proceeds, following additional considerations such as specific values, human rather than bio-physical factors and/or additional bio-physical factors of particular water bodies, objectives and policies. These modifications to the recommended FMUs are all easily made within the framework presented here.

9 References

Snelder, T and Kerr, T (2016). Defining a biophysical framework for Freshwater Management Units of the Te Awarua-o-Porirua Whaitua. LWP Ltd Client Report 2016-014. Prepared for Greater Wellington Regional Council.