Ministry for the Environment
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NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2014

A Guide to Identifying Freshwater Management Units

Under the National Policy Statement for Freshwater Management 2014

New Zealand Government

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1 Introduction

The National Policy Statement for Freshwater Management 2014 (NPS-FM) requires regional councils and unitary authorities (referred to as 'councils') to identify freshwater management units (FMUs) for planning and managing fresh water.

This guidance provides councils with some practical considerations and principles for identifying FMUs to meet the requirements of the NPS-FM. It may also be of use to iwi and hapū, water users, or community members who are participating in a regional freshwater planning process.

This is a living document, and will be updated as experience identifying FMUs across New Zealand increases. It will also be updated to reflect any future amendments to the NPS-FM.

This document refers to other parts of the NPS-FM planning process that are pre-requisites to limit-setting (eg, identifying values, attributes and freshwater objectives) or will be influenced by limits (eg, methods to achieve limits). However, this guidance does not go into these parts of those processes in detail. For more information see 'Other National Policy Statement for Freshwater Management'.

Approach to the guidance

The NPS-FM does not mandate a single correct or preferred way to identify FMUs. Each FMU must reflect the unique circumstances of each region, as these circumstances will dictate what freshwater objectives and limits will be set within the FMU. This guide provides some general direction on matters that councils could take into account when identifying FMUs in their region.

Document structure

The guidance document is structured as follows:

- Section 1 introduces the guidance and outlines the structure of the document
- Section 2 explains what FMUs could be, and the relationship between FMUs and other requirements in the NPS-FM
- Section 3 outlines matters councils should consider when identifying FMUs
- The Appendix provides a checklist of the matters outlined in Section 3.

Other National Policy Statement for Freshwater Management guidance

The Ministry for the Environment is producing guidance to support the implementation of the NPS-FM. The guidance provides varying levels of detail, grouped around the different parts of the freshwater planning process. The NPS-FM guidance section of the Ministry's website provides a brief

overview of what is involved at each part of the process, and links to more technical guidance where available.

In addition, *A Guide to the National Policy Statement for Freshwater Management 2014* provides more detailed information about the policy intent and requirements for each objective and policy of the NPS-FM, and explains the terms used in the NPS-FM and the relationship between the NPS-FM and other parts of the regulatory system.

2 About freshwater management units

What is a freshwater management unit?

The term freshwater management unit (FMU) was introduced to the National Policy Statement for Freshwater Management (NPS-FM) in the 2014 amendments. An FMU is defined in the NPS-FM 2014 as:

> *A water body, multiple water bodies or any part of a water body determined by the regional council as the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management.*

By definition FMUs are made up of freshwater bodies. Managing fresh water is, however, inherently linked to managing the land that feeds into the freshwater body, or the catchment that supplies it. The NPS-FM requires councils to manage fresh water and land use in an integrated and sustainable way. Councils should therefore consider the surrounding land use and its effect on freshwater bodies when identifying FMUs.

Why the concept of freshwater management units was added to the National Policy Statement for Freshwater Management

The concept of FMUs was added to the NPS-FM following recommendations by the Land and Water Forum to:

- encourage a pragmatic approach to freshwater management by allowing water bodies to be grouped together where appropriate
- allow a single objective to apply to freshwater bodies that are not connected
- establish a spatial scale at which management activities are undertaken, including freshwater accounting and setting freshwater objectives and limits.

The definition of FMUs is intentionally flexible so councils can determine the spatial scale best suited to managing fresh water in the specific circumstances of their region. Management includes setting values, objectives, limits, and undertaking freshwater accounting and monitoring.

The use of spatial units in land and water planning is not a new concept for councils, as this approach is already used by councils for water allocation. Incorporating FMUs into the NPS-FM formalises the concept, and attaches specific obligations to it.

Requirements for freshwater management units

The NPS-FM requires that all freshwater bodies in a region be included within an FMU (Policy CA1). As with all other aspects of the NPS-FM, councils can implement this policy progressively up until 2025. Councils will need to fully implement the policies of the NPS-FM by 2025 (or 2030 in certain circumstances) (Policy E1).

The NPS-FM also requires councils to do the following for each FMU:

1. Establish a freshwater quality and freshwater quantity accounting system when setting or reviewing limits in accordance with Policies A1, B1 and CA1-CA4 (Policy CC1).
2. Identify values, formulate freshwater objectives, set limits and targets to achieve those objectives, and choose methods to achieve those freshwater objectives, limits and targets (Policy CA2).
3. Develop a monitoring plan that identifies at least one representative site for monitoring progress against freshwater objectives, once freshwater objectives are set (Policy CB1).

3 Points to consider when identifying freshwater management units

When identifying freshwater management units (FMUs), councils must decide on the most relevant and practical approach for their region – there is no 'one size fits all' approach.

Possible approaches for defining FMUs include:

- dividing the whole region into FMUs at once
- defining one FMU at a time
- dividing the region in broader zones or areas early on, followed by the more detailed delineation of FMUs within each zone or area as part of the process of identifying values and potential freshwater objectives and limits.

Councils could identify FMUs themselves (without stakeholder engagement) as a distinct process, separate to the process of engaging with communities on identifying freshwater values, defining objectives and setting limits. Alternatively, councils could identify FMUs in parallel to engaging with communities on identifying freshwater values, defining objectives and setting limits, using this process as a way to ensure FMUs reflect the different values and uses associated with particular freshwater bodies.

It is likely that, whichever approach is chosen, the process will be iterative and initial decisions will need to be revisited during the planning process (eg, as values are identified for a water body). For example, it may become apparent that a number of separate FMUs share the same values and would require the same freshwater objectives and limits. It may therefore be appropriate to group these as a single FMU. Alternatively, it may become apparent that an area initially set as a single FMU has distinct parts with completely different sets of values and management approaches. In this case, it may be appropriate to manage these parts as separate FMUs.

Below we have suggested two sets of questions that may help when setting boundaries for FMUs:

- The first set of questions provides a starting point by considering the hydrological, social, political and cultural characteristics of the region.
- The second set of questions considers practical issues with managing fresh water to give effect to the NPS-FM, and may result in sub-dividing or grouping the units initially identified from the first set of questions.

The Appendix contains a full list of all the questions.

Key questions for primary consideration

Hydrologic similarity and characteristics of the region

1. Does the proposed FMU reflect key hydrological characteristics (particularly catchment boundaries)?

Catchments or sub-catchments are likely to be logical starting points for identifying FMUs, as they represent hydrologically connected surface water areas. Considering other matters though (see the 'Key questions for secondary consideration') may result in subdivision or grouping of catchments to establish the final FMUs for the region or area.

Cultural and social characteristics of the region

1. Does the proposed FMU take into account the current and potential patterns of use and demand for freshwater resources?

2. Does the proposed FMU take into account social and political characteristics of the region or area, including:
    - rohe boundaries
    - territorial authority boundaries
    - communities interested, engaged or involved in freshwater management?

When identifying FMUs, councils should consider the different uses of land in the area surrounding the water bodies. The way land is used (eg, whether the surrounding environment is urban or rural) affects the amount and patterns of water use and demand. Changes to the way land is used in the future may change the amount and patterns of water use and demand.

Councils should also consider cultural, social and political boundaries, as these may influence how well water users, mana whenua, and the community identify and connect with freshwater management issues.

Case study– Establishing FMUs: Greater Wellington Regional Council

Greater Wellington is basing water planning around five catchment areas or 'whaitua'. FMUs are established within these whaitua through whaitua committees, which consult widely with the community of interest.

FMU boundaries are being determined through consideration of the values for fresh water for each area of the whaitua.

For example, the Ruamāhanga whaitua is being separated into FMUs based on where:

- pristine water quality will be protected
- intensive pastoral development occurs
- there are prominent geophysical features, such as being prone to erosion
- urban issues affect water quality
- degraded freshwater bodies need specific management methods and regimes.

This approach allows for limits and management methods to be tailored for the specific values and outcomes being sought for each FMU.

Key questions for secondary consideration

Physical characteristics and connections
1. Does the proposed FMU take into account key similarities and differences in the physical characteristics of the region or area?
2. Does the proposed FMU take into account connections between water bodies?
3. Does the proposed FMU take into account connections between surface and groundwater?
4. Does the proposed FMU take into account connections between fresh water and coastal water?

Grouping relevant physical characteristics

Councils may consider grouping freshwater systems that are not hydrologically connected to form FMUs, in particular if there are several small or isolated water bodies that require a similar management approach. Consideration could also be given to aggregating heavily modified water bodies where water quality may be affected by physical alterations.

Connections between water bodies

When identifying FMUs, councils should consider the connections between water bodies in the area. These connections may be physical (eg, a lake and its adjacent wetlands, or a lake and its catchment), or hydrological through water movements (eg, a river and an aquifer that is partially recharged by the river). Other matters, such as biological/ecological connections (eg, eels may access a lagoon through movement over the barrier between it and the adjacent sea or river), should also be considered.

FMUs for surface and groundwater

A council may choose to define separate FMUs for surface and groundwater bodies, or to define FMUs that include surface water and their connected groundwater.

However, separation of surface and ground waters in FMUs may prevent a truly integrated management system being developed. Integration is important, and should be considered in FMUs, especially where land, groundwater and surface waters are highly connected, lag times are short, and groundwater abstractions affect the amount of surface water available.

Including shallow groundwater that is highly or moderately connected to the surface water in an FMU will help councils manage the cumulative effects of surface water depletion from groundwater use.

Connections between fresh and coastal water

The NPS-FM does not require coastal water to be included in FMUs, or to have freshwater objectives and limits set for it. However, the NPS-FM requires that when setting freshwater objectives and limits, councils have regard to connections between fresh water and coastal water (Objective C1, Policy C2).

This may mean decisions about managing fresh water will be driven in part by intended outcomes in coastal water (eg, to provide for mahinga kai). Therefore, when identifying FMUs, councils should consider any connections between freshwater bodies and coastal water. For example, where multiple rivers meet in an estuary a council may decide to group those rivers together in one FMU so any decisions about managing the FMU are consistent with the intended outcomes for the estuary.

Existing spatial scales used

1. Does the proposed FMU take into account existing management units?

Many councils have set water management units or zones before the requirement in the NPS-FM to identify FMUs. These existing units or zones may or may not be the same as an FMU. If a water management unit or zone was established for water quality management purposes, it should be reviewed to assess whether it is also the appropriate scale for managing water quantity issues, or whether further FMUs are required, FMUs should be combined, or completely different FMUs should be established.

Freshwater values	
1.	Does the proposed FMU take into account the compulsory and any other relevant additional national freshwater values and other regional or local values?
2.	Does the proposed FMU take into account outstanding freshwater bodies?
3.	Does the proposed FMU take into account the significant values of wetlands?
4.	Does the proposed FMU take into account degraded freshwater bodies?

Freshwater values

The NPS-FM requires councils to identify a set of values for each FMU. This will include the compulsory national values (ecosystem health and human health for recreation), any additional national values from Appendix 2 of the NPS-FM that are applicable, and any other local or regional values that are identified.

Where the same set of values is identified for multiple freshwater bodies, it may be appropriate for these freshwater bodies to be grouped into a single FMU. Where a particular freshwater body (or part of) has markedly different values than the wider surrounding area, this may mean there is a case for separating it into its own FMU so management decisions can be made that will provide for its specific values.

As mentioned earlier, the relationship between values and FMUs means decisions about both of these is likely to be iterative. For example, a geographic area will need to be defined (at least roughly) before a decision can be made about the values that apply there; but the decision about how to define an FMU will be based on the likely values, and could potentially be revisited once those values are defined in more detail.

Case study – Establishing FMUs: Gisborne District Council

Gisborne District Council is giving effect to the NPS-FM through notifying a regional plan. Within the regional plan, the council developed a plan for the Waipaoa catchment. The identification of prominent freshwater values drove the development and establishment of FMUs in the Waipaoa catchment.

Three prominent values were identified in the Waipaoa catchment, and led to the establishment of three FMUs:

- Waipaoa Hill Country FMU, where eco-system health values are of particular importance
- Poverty Bay Flats FMU, where the emphasis is on food production values
- Gisborne Urban FMU, where recreation values are of particular importance.

A key principle for Gisborne District Council when establishing FMUs in the Waipaoa catchment was to maintain simplicity, so users could easily recognise the boundaries of the FMUs.

Outstanding freshwater bodies and significant values of wetlands

The NPS-FM requires that the significant values of outstanding freshwater bodies and wetlands are protected. These water bodies could be split or grouped into separate FMUs as the freshwater objectives, limits and management actions associated with these values may be significantly different than those for other freshwater bodies. Alternatively, the outstanding freshwater bodies and/or wetlands may be included within a broader FMU, as a way to ensure the freshwater objectives and limits set for the FMU are sufficient to provide for the significant values of the outstanding freshwater body or wetland.

Degraded freshwater bodies

Councils may consider setting separate FMUs for degraded freshwater bodies. The NPS-FM requires councils to improve the quality of freshwater bodies that have been degraded by human activities to the point of being over-allocated. Councils may choose to group degraded water bodies into FMUs, where similar values are held and management methods are required to remediate and restore the quality of the water bodies.

Variation in the status of water quality within an FMU may require dividing an FMU into smaller ones, to enable specific management methods to be developed to address the cause(s) of the issue. Alternatively, councils could manage the variation in the status of water quality by having different management methods in different parts of the FMU.

Freshwater objectives and limits

1. Is the proposed FMU at the appropriate scale for setting freshwater objectives and limits?

The main purpose of FMUs is to establish a spatial scale at which management activities are undertaken, and over which freshwater objectives and limits will apply.

Therefore, when considering the make-up of FMUs councils should, as much as possible, give consideration to what kinds of freshwater objectives and limits are likely to be set, and whether the proposed FMU is the right scale to set them.

The NPS-FM does not require that each objective align exactly with the boundaries for an FMU. For example, a council may consider that to meet a particular freshwater objective at the bottom of a catchment it may be appropriate to set more stringent freshwater objectives further up the catchment. A council may also consider that different limits should apply to different parts of the catchment to achieve a single freshwater objective. In these cases it may not be useful or feasible to divide the catchment into multiple FMUs.

The process of identifying freshwater objectives and limits will be iterative, and the final mix of freshwater objectives and limits will not be known until the entire process has been worked through (likely involving detailed analysis and discussion with water users and the community). Therefore, this is one area where the make-up of FMUs may also need to be revisited as the proposed management approach becomes more defined.

Case study – Water management zones in the Tukituki catchment: Hawke's Bay Regional Council

Hawke's Bay Regional Council divided the Tukituki River Catchment into water management zones in 2012. These water management zones preceded the NPS-FM requirement to establish FMUs.

Within each management zone objectives and limits have been set, including:

- minimum flows, below which consented surface water abstraction must stop
- allocation limits for surface water and groundwater abstraction
- water quality limits that will manage the amount of nutrients entering ground and surface water.

The water management zones were defined based on the:

- different types of river environments that exist within the catchment
- distribution and value of different aquatic species
- existing and potential resource use in different parts of the catchment
- pressures and impacts affecting parts of the catchment.

The Tukituki catchment water management zones are an example of spatial management areas that take into account key physical characteristics of the region, and cover both water quality and quantity objectives.

Freshwater accounting and monitoring
1. Does the proposed FMU consider freshwater accounting requirements?
2. Does the proposed FMU take into account the monitoring system(s) requirements?

Freshwater accounting

A freshwater accounting system will quantify and account for the relevant sources of contaminants discharged to an FMU and all water takes from an FMU.[1]

It could be appropriate to consider establishing larger FMUs where:

- there are relatively minor water contamination or water supply and demand issues
- current and likely future demand for water use is minimal.

[1] For more information about the freshwater accounting requirements of the NPS-FM see *A guide to freshwater accounting under the National Policy Statement for Freshwater Management 2014*.

Councils might consider smaller FMUs to tailor the approaches where:

- significant reductions in contaminants are needed to meet the freshwater objective
- current and expected future demand for water use is likely to be significant.

Freshwater monitoring

The NPS-FM requires monitoring to be undertaken at sites that are representative of each FMU, so the size of an FMU needs to be appropriate for freshwater monitoring. If an FMU is large, it may require several monitoring sites to give a representative sample of the state of the FMU – although this depends on the homogeneity of the FMU, and the nature and scale of the threats and risks across the FMU. If FMUs are small, each FMU may need fewer monitoring sites but there may be a greater number of total monitoring sites across the whole region.

Where an established monitoring network and sampling regime is in place, the make-up of this network may be a factor in determining how FMUs are created. The size and location of FMUs should be primarily dictated by management needs and the representativeness of monitoring sites. However, making good use of existing monitoring networks will enable councils to continue to use existing long-term data sets in the freshwater objective and limit setting process.

Case study – Management units in the Waitaki Catchment: Environment Canterbury

Environment Canterbury developed water management zones (WMZs) in 2010. The Canterbury region was separated into 10 WMZs. In some cases the WMZ includes a whole catchment, while other WMZs include only part of a catchment or catchments.

Planning in the Waitaki catchment zones to set water quality limits included identifying FMUs within each zone. Environment Canterbury used the following criteria to establish FMUs:

- Was it a hydrologically logical scale for setting freshwater objectives and limits?
- Did it reflect social characteristics of the catchment, including the number of different communities of interest in the catchment?
- Did it align with the particular areas of interest within the catchment?
- Did it enable the design of a monitoring plan that included representative sites for monitoring freshwater objectives?
- Did it enable the design of an accounting system at a scale commensurate with water management issues in different parts of the catchment?
- Would significant additional monitoring and development of accounting systems be needed, at significant costs to the community?

Following the assessment of FMU options, it was recommended that the Upper Waitaki WMZ be a single FMU, and that the Lower Waitaki WMZ be split into three FMUs. FMUs in the Waitaki catchment were determined based on the spatial unit having its own hydrological characteristics, and interested and engaged communities of interest.

Appendix: Summary of considerations when setting boundaries for freshwater management units

Primary Considerations

Hydrologic similarity and characteristics of the region

1. Does the FMU reflect key hydrological characteristics (particularly catchment boundaries)? ☐

Cultural and social characteristics of the region

1. Does the FMU take into account the current and potential patterns of use and demand for freshwater resources? ☐

2. Does the identification of FMU take into account social and political characteristics of the region or area, including: ☐
   - rohe boundaries
   - territorial authority boundaries
   - communities interested, engaged or involved in freshwater management?

Secondary Considerations

Physical characteristics and connections

1. Does the proposed FMU take into account key physical characteristics of the region or area? ☐
2. Does the proposed FMU take into account connections between water bodies? ☐
3. Does the proposed FMU take into account connections between surface and groundwater? ☐
4. Does the proposed FMU take into account connections between fresh water and coastal water? ☐

Existing spatial scales used

1. Does the proposed FMU take into account existing management units? ☐

Freshwater values	
1. Does the proposed FMU take into account the compulsory and any other chosen additional national freshwater values and other regional or local values?	☐
2. Does the proposed FMU take into account outstanding freshwater bodies?	☐
3. Does the proposed FMU take into account the significant values of wetlands?	☐
4. Does the proposed FMU take into account degraded freshwater bodies?	☐
Freshwater objectives and limits	
1. Is the proposed FMU the appropriate scale for setting freshwater objectives and limits?	☐
Freshwater accounting and monitoring	
1. Does the proposed FMU consider freshwater accounting requirements?	☐
2. Does the proposed FMU take into account the monitoring system(s) requirements?	☐

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