Report No.	19-139
Information Only - No Decision Required	

STATE OF ENVIRONMENT - CATCHMENT SUMMARIES

1. PURPOSE

1.1. The purpose of this report is to provide Council with a summary of the current state and trends of each of the region's major catchments (as defined by Freshwater Management Unit). Each report summarises the current state and trends in air, land and water, and (in some cases) reports on performance against One Plan targets.

1.2. Annual reporting on the State of the Environment is a key performance measure identified in Horizons' Annual Plan 2019-20. These catchment summary documents provide the first of these annual reports on the State of the Environment. It is also intended that these documents provide the foundation from which we can further develop catchment-scale reporting required by the **National Policy Statement for Freshwater Management** (NPS-FM).

2. EXECUTIVE SUMMARY

2.1. Prior to 2019, State of Environment reporting was completed around every five years, with the most recent report published in May 2019. These reports have traditionally provided a regional summary of data and information about the region's environment.

2.2. These catchment summary reports synthesise information presented in the 2019 State of Environment report for each **Freshwater Management Unit** (FMU). Originally identified by Horizons and endorsed by Council's Strategy and Policy Committee on 11 August 2015, an FMU is defined as "… *the 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*." It is noted that these FMU's, which are currently based around the region's large river systems, may be amended in future as catchment planning processes progress, and that future annual reports may need to be adjusted to accommodate these changes.

2.3. Catchment-scale reporting is finding increasing favour nationally and internationally as a means of communicating the state of natural resources and value of their effective management. Approaching reporting from a catchment perspective acknowledges the unique differences in the environmental, economic, social and cultural needs of the diverse areas of our Region. Rather than a more traditional science-driven reporting framework, catchment reporting sets a basis from which to provide our communities with simple and clear communication around the current state of the environment.

2.4. From 2019-20, Horizons will be reporting on the State of the Environment on an annual basis, providing communities with catchment-scale summaries of key environmental data and information, such as the current state and trends in climate, air, land and water in major catchments (as defined by Freshwater Management Unit). This paper introduces the first of these annual catchment summary (State of Environment) reports.

2.5. While the overall aim of this project is to synthesise our current knowledge about the condition of our region's air, land, biodiversity and water, the catchment summary reports also provide a first step in summarising data and information to inform catchment planning processes. These reports will also be used to inform targeting of non-regulatory programmes support alignment of the Natural Resources and Partnerships group, providing information to land owners and catchment care groups.

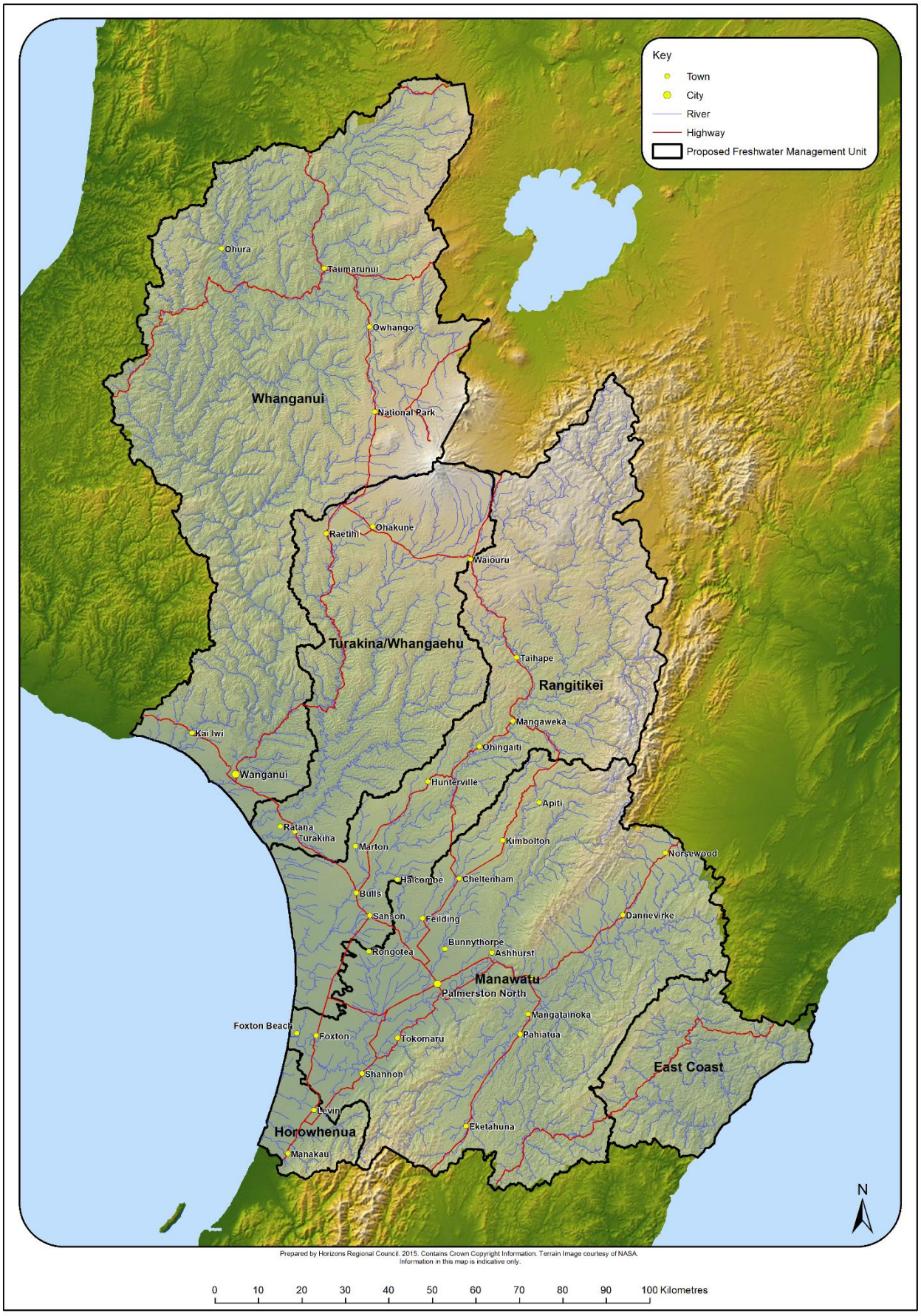

FIGURE 1 HORIZONS' FRESHWATER MANAGEMENT UNITS

2.6. A summary of key information presented for each catchment summary is outlined below in the 'Discussion' section of this report. In time, we anticipate that reporting metrics will be revised, and new metrics included. However, these documents provide a baseline from which we can further develop catchment-scale reporting.

2.7. State of Environment Report - Catchment Summaries will be made available via Horizons' website and to Council (via the hub) on Friday 6 September 2019. One example for the Manawatū FMU is included as an annex to this report.

3. RECOMMENDATION

That the Committee recommends that Council:

a. receives the information contained in Report No. 19-139 and Annex.

4. FINANCIAL IMPACT

4.1. There is no financial impact associated with recommendations in this paper.

5. COMMUNITY ENGAGEMENT

5.1. This is a public item and therefore Council may deem this sufficient to inform the public.

6. BACKGROUND

6.1. State of Environment reporting was traditionally completed approximately every five years, with the most recent report published in May 2019. From 2019-20, Horizons will be reporting on the State of the Environment annually, providing communities with catchment-scale summaries of key environmental data and information, such as the current state and trends in climate, air, land and water in major catchments (as defined by Freshwater Management Unit). This paper introduces the first of these annual catchment summary reports.

6.2. **The National Policy Statement for Freshwater Management** (NPS-FM) outlines requirements for monitoring plans, freshwater accounting and reporting on maintaining and improving overall water quality. These catchment summaries provide a first step toward this type of reporting for each of the currently identified FMU's and will also provide baseline information for catchment planning processes and 'Our Freshwater Future' programme.

6.3. Alignment of work programmes across the Natural Resources and Partnerships group is a key focus as we continue to work toward improved alignment and increased efficiency across these areas of Horizons' business.

7. DISCUSSION

Manawatū Freshwater Management Unit

7.1. The Manawatū FMU includes the Manawatū River and its wider catchment, along with a number of west coast lake catchments and the Manawatū River estuary.

7.2. The Manawatū is one of the largest FMU's in the region (5,899 km^2), flowing from its source on the eastern side of the Tararua/Ruahine Ranges through Te Apiti Manawatū Gorge, to the Tasman Sea on the western side of the ranges at Foxton Beach. The major land use in the Manawatū catchment is agricultural (70%) with 47.2% used for sheep and beef farming while dairy farming accounts for 19.3%. Native bush, mostly within the conservation areas of the Ruahine and Tararua Ranges, accounts for a further 17.3%.

7.3. The catchment includes around 9,724 km of streams and rivers, with large rivers extending around 1,408 km. Around 34% of the length of these large rivers is currently considered suitable for swimming under the existing NPS-FM.

7.4. River water quality shows primarily improving trends over ten years for ammoniacal nitrogen however, other indicators such as macroinvertebrates (measured as MCI), water clarity and bacteria (measured as E.coli) are more variable. Trends in periphyton (measured as chlorophyll-*a*) are likely to be degrading for the majority of sites. With the exception of ammoniacal-N, the majority of sites fail to achieve One Plan water quality targets.

7.5. There are 72 lakes greater than one hectare in area in the Manawatū catchment. Presently, none of these lakes are monitored for water quality and four have been assessed for ecological health. Of the four assessed to date, two have been found to be in excellent ecological health.

7.6. There is just one estuary in the catchment, the Manawatū Estuary, which is considered a regional treasure and has gained designation as a Wetland of International importance under the RAMSAR Convention (a treaty signed by more than 150 countries).

7.7. There are two **Groundwater Management Zones** (GWMZ) located in the Manawatū FMU. Tararua GWMZ is around 1% of total allocation, while the Manawatū GWMZ is 46% allocated. Pressures on surface water allocation in the upper catchment mean that the surface water is currently fully allocated. However, the mid-lower reaches of the catchment and most of its various tributary rivers have water available. In the Manawatū catchment, the greatest proportion of surface water allocation is to agriculture (71.5%), followed by municipal supply (19.5%), with the rest allocated to industrial or "other" uses.

Rangitīkei Freshwater Management Unit

7.8. The Rangitīkei FMU includes the Rangitīkei River and its tributaries, along with a number of west coast lake catchments. There are ten estuaries, with the main estuary located at the mouth of the Rangitīkei River.

7.9. The headwaters of the Rangitīkei River are situated in the Kaimanawa Ranges, south-east of Lake Taupo. It flows south through the Central Plateau, past Taihape, Mangaweka, Hunterville, Marton and Bulls to the Tasman Sea at Tangimoana, 40 km southeast of Wanganui. Much of the catchment is agricultural, with sheep and beef farming accounting for almost 47.2 % of land use, and dairy farming 19.3%.

7.10. The Rangitīkei River is 253 km long and its wider catchment covers an area of 4,264 km^2. There is a total of 6,726 km of stream within the catchment, 841 km of which comprises large rivers (> order 4). Currently 68% of the large river length has been assessed under the NPS-FM as suitable for swimming.

7.11. River water quality shows primarily improving trends over ten years for ammoniacal nitrogen, soluble inorganic nitrogen and bacteria (measured as *E.coli*) and primarily degrading trends for dissolved reactive phosphorus and periphyton (measured as chlorophyll-*a*). Trends for macroinvertebrates (MCI) are variable. Most sites achieve On Plan targets for nitrogen (as ammoniacal nitrogen and soluble inorganic nitrogen). Around half of the sites assessed failed to achieve One Plan targets for periphyton and dissolved reactive phosphorus, and the majority of sites failed to achieve One Plan water quality targets for macroinvertebrates, water clarity and bacteria (measured as *E. coli*).

7.12. There are 49 lakes greater than one hectare in area in the catchment. To date eleven of these have been assessed for ecological health. Three of these have been classified as being in poor ecological health, with the majority classified as being in either moderate – high or excellent health.

7.13. The majority of consented water use is currently allocated to agricultural and horticultural uses (82%). There are no large urban areas in the catchment, so water allocated for

municipal use only comprises 7% of the total allocated water. There are two Groundwater Management Zones in the Rangitīkei FMU: the Rangitīkei GWMZ is currently 67% allocated, while the Northern Rangitīkei GWMZ has limited groundwater availability and no specified allocation limit. Of the 16 Water Management Sub-zones that make up the catchment, there is water available in 15 zones, although six of these zones are approaching full allocation.

East Coast Freshwater Management Unit

7.14. The East Coast FMU encompasses the Akitio River, Ōwahanga River, and Waihi Stream, along with the Wainui, Tautane and Waimata catchments. There are six main estuaries, and nine unnamed streams discharging to the east coast.

7.15. The East Coast catchment is one the smallest of the region's catchments, covering an area of 1,222 km^2. Land use is primarily sheep and beef farming, which accounts for 71% of land use. The remaining land uses include native cover (14.5%), forestry (5.3%), and other uses (8.2%). Around 25% of the land area has been identified as highly erodible.

7.16. Total stream length for large rivers (> order 4) totals 254 km, this includes the Waihi Stream and the Akitio River. To date only 6% of the total large river length is assessed as suitable for swimming under the NPS-FM.

7.17. River water quality monitoring is currently only available for two sites. Analysis suggests primarily improving trends over ten years for nitrogen (as ammoniacal nitrogen and soluble inorganic nitrogen), and bacteria (measured as *E.coli*). Trends in macroinvertebrates are available for one site and are likely to be degrading. Both sites achieve One Plan water quality targets for nitrogen (as ammoniacal nitogen and soluble inorganic nitrogen) and dissolved reactive phosphorus. Water quality and bacteria (as *E coli*) show mixed results, and the one site assessed fails to achieve the target for macroinvertebrates.

7.18. There are 10 known wetlands and 99 known bush remnants in the East Coast catchment. The catchment also has four lakes larger than one hectare in area, none of which Horizons currently monitors.

7.19. There is one Groundwater Management Zone in the East Coast FMU however, the groundwater resource in this area of the region is limited and there is currently no specified groundwater allocation limit for this GWMZ. Surface water is currently fully allocated in the Upper and Lower Akitio, but water is available in three of the five sub-zones. The water use is approximately 50/50 municipal (Pongaroa) and irrigation of pasture.

Horowhenua Freshwater Management Unit

7.20. The main water body in the Horowhenua FMU is Lake Horowhenua. Other notable waterways include the Ohau River and Waikawa Stream, and Lake Papiatonga. This FMU also includes five estuaries – the Ōhau River, Waikawa Stream, Waiwiri Stream, Hōkio Stream and Wairarawa Stream estuaries.

7.21. The Horowhenua catchment is the smallest in the region at 355 km^2. Approximately 51 km^2 (13%) of the catchment consists of versatile soils, ideal for horticulture. Aside from native cover (34.6%), the land use classification of "other" encompasses 23.6% of the land use in the catchment. This is mainly comprised of horticulture, including vegetable growing and market gardening, and lifestyle blocks.

7.22. Lake Horowhenua is one of 11 lakes greater than one hectare in size in the catchment. To date, two lakes (not including Lake Horowhenua) have been assessed using the LakeSPI method, with both classified as being in poor ecological health.

7.23. Stream length for rivers and streams in this FMU totals 614 km. Of this, 70 km is represented by large (> order 4) rivers and the majority of this (73%) is assessed as suitable for swimming under the NPS-FM.

7.24. River water quality trends are variable for the majority of water quality indicators. Ten-year trends in periphyton (measured as chlorophyll-*a*) are likely to be degrading for two of three sites where this assessment could be made. All sites analysed achieve One Plan targets for ammoniacal nitrogen and periphyton (measured as cholorophyll-a). Macroinvertebrates (as MCI) achieve the One Plan targets as most sites however, the majority of sites fail to achieve One Plan water quality targets for dissolved reactive phosphorus, soluble inorganic nitrogen, water clarity, and bacteria (measured as *E. coli*). Groundwater quality in the catchment indicates clear impacts from land use in the area as shown by high nitrate levels in monitoring bores.

7.25. Approximately two thirds of the water allocated in the catchment is for agricultural and horticultural uses. The bulk of the remaining allocation (34%) is classified as municipal (mainly Levin town supply) with an additional 5% consented for industrial purposes. There is one Groundwater Management Zone in this FMU which is 14% allocated. All surface water management sub-zones currently have water available for allocation.

Turakina-Whangaehu Freshwater Management Unit

7.26. The main water bodies in the Turakina-Whangaehu FMU are the Whangaehu and Turakina Rivers and their tributaries. Both rivers discharge at the coast to the Turakina and Whangaehu River estuaries.

7.27. The total catchment area is 2,953 km^2, and land use is dominated by sheep and beef farming (61.5%), with only around 3% dairy land use. Native cover and forestry make up the majority of the remaining land use.

7.28. The Whangaehu River begins at the crater lake of Mount Ruapehu on the Central Plateau and flows to the Tasman Sea, 8 km southeast of Wanganui. The Whangaehu River has two main tributaries: the Mangawhero and the Makotuku. The Turakina River generally flows southward from its source south of Waiouru, reaching the sea 20 kilometres south of Wanganui.

7.29. Total stream length in the catchment is 4,942 km, but only 14% of this is represented by large rivers (> order 4). Of the large rivers, 33% of the river length is classified as suitable for swimming under the NPS-FM.

7.30. River water quality shows primarily improving trends over ten years for ammoniacal nitrogen and bacteria (measured as *E.coli*) however, other indicators such as soluble inorganic nitrogen and water clarity are more variable. Trends in periphyton (measured as chlorophyll-*a*), dissolved reactive phosphorus and macroinvertebrate community index are likely to be degrading for the majority of sites. With the exception of ammoniacal-N, the majority of sites fail to achieve One Plan water quality targets.

7.31. There are 145 known bush remnants in the catchment, 52 known wetlands and 56 lakes greater than one hectare in size. Horizons has surveyed six of the lakes for ecological health to date and four of the six have been classified as being in a state of moderate to high ecological health – one is classified as poor and one as excellent.

7.32. Consented water allocation is mainly for horticultural and agricultural uses, as the fertile soils and climate in the upper catchment make it ideal for vegetable growing. Most of the water is used for irrigation of vegetable crops. A small proportion of the water is used for municipal supply (14%), and 11% for industry, including vegetable washing. There are two Groundwater Management Zones located in this FMU: the Turakina GWMZ is currently 5% allocated and the Whangehu GWMZ is 1% allocated.

7.33. None of the catchment's surface water management sub-zones are currently over-allocated.

Whanganui Freshwater Management Unit

7.34. The Whanganui FMU encompasses the Whanganui River and its tributaries, a number of coastal lakes, and seven estuaries.

7.35. The Whanganui catchment is the largest in the region, covering an area of 7,611km^2. More than half the catchment is covered in native bush cover and forestry (total 58.5%), with approximately a third of the land area used for sheep and beef farming. Dairy farming represents only a small portion of land use (1.8%).

7.36. The Whanganui River is the country's third longest river, and its longest navigable river. Beginning on the northern slopes of Mount Tongariro it flows north-west Taumarunui. It then flows south via the King Country, past the settlements of Pipiriki and Jerusalem, until it reaches the coast at Whanganui, which has a population of about 42,500.

7.37. Total stream length in the catchment is 11,893 km, with 1,675 km of this belonging to large rivers (> order 4). More than half (51%) of this large river length is classified as suitable for swimming under the NPS-FM.

7.38. River water quality shows variable ten-year trends for ammoniacal nitrogen and bacteria (measured as *E coli*) and macroinvertebrates. Trends in all other water quality variables (including water clarity, nutrients dissolved reactive phosphorus and soluble inorganic nitrogen) are likely to be degrading for the majority of sites. All sites achieve One Plan targets for ammoniacal nitrogen and periphyton (measured as chlorophyll-*a*), while most sites achieve the targets for macroinvertebrates. The majority of sites fail to achieve One Plan water quality targets for dissolved reactive phosphorus, soluble inorganic nitrogen, water clarity and bacteria (*E. coli*).

7.39. To date eight of the 34 lakes larger than one hectare have been surveyed for ecological health. Four have been classified as being of poor ecological state, three as moderate to high state and one as excellent.

7.40. There are two Groundwater Management Zones located in the Whanganui FMU: the Whanganui GWMZ is currently 59% allocated, while the northern Whanganui GWMZ has limited groundwater availability and no specified allocation limit. A significant portion of the surface water is diverted out of the upper catchment by the Genesis Energy for the Tongariro Power Development. Allocation limits are set accounting for this. There is currently one Water Management Sub-zone that is over allocated, seven of the 32 sub-zones are approaching full allocation, and 24 have water available. Some sub-zones are yet to have allocation limits set due to a lack of hydrological information in these areas. Consented allocation is predominately for municipal supply (66%). Agriculture and industry make up the remaining water use classification.

8. TIMELINE / NEXT STEPS

8.1. The full suite of State of Environment Report - Catchment Summaries will be made available on Horizons' website and to Council (via the hub) on Friday 6 September 2019.

8.2. Following Strategy and Policy Committee meeting on Tuesday 10 September, these documents will also be shared via our social media channels, and put into circulation for use inside Horizons.

9. SIGNIFICANCE

9.1. This is not a significant decision according to the Council's Policy on Significance and Engagement.

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ANNEXES

A Catchment Summary