

Ruapehu District Council

Drinking Water Services Assessment

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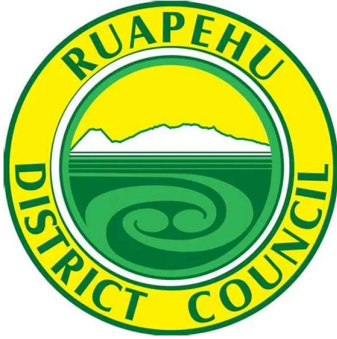
for Ruapehu District Council

Rev 0 - 26/06/2026

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Drinking Water Services Assessment



for Ruapehu District Council

Reviewed

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ATTACHMENT

SUMMARY

This Drinking Water Services Assessment provides a high-level, GIS-based evaluation of access to drinking water services across the Ruapehu District. Prepared in alignment with Sections 68–70 of the Local Government (Water Services) Act 2025, the assessment integrates council data, national datasets, and regional information to classify properties by water supply type and estimate access at both property and community levels.

The analysis identifies a clear divide between urban and rural communities. Major centres such as Taumarunui and Ōhakune demonstrate high levels of council reticulated supply, while many smaller and rural communities rely heavily on private and non-council supply arrangements. A significant proportion of these are categorised as “private unknown,” reflecting substantial gaps in available data and limited ability to confirm supply relationships.

The assessment highlights key risks to access, including reliance on decentralised supply systems, environmental pressures on water sources, limited infrastructure resilience, and incomplete supply-to-property linkage. These factors contribute to uncertainty in understanding supply reliability and community-level exposure to potential service disruption.

While this assessment provides a robust baseline for identifying patterns and gaps in drinking water access, the results are based on desktop analysis and should be considered indicative. Further work is required to validate supply arrangements through targeted surveys, improved data integration, and stakeholder engagement. The findings support prioritisation of data improvement efforts and provide a foundation for ongoing monitoring, risk assessment, and planning for sustainable and resilient drinking water services across the district.

As this is the first iteration of the assessment, it also highlights key opportunities to strengthen future assessments. This includes prioritising communities with high proportions of private and “private unknown” supply for targeted investigation, improving the systematic collection of water supply information through consent and regulatory processes, and strengthening linkage between properties and supply systems. Continued refinement of datasets combined with structured engagement will enable a more accurate and comprehensive understanding of drinking water access over time.

CONTENTS

1	BASIS AND OBJECTIVES.....	1
2	METHOD AND SCOPE	2
3	ASSUMPTIONS, INTERPRETATIONS AND LIMITATIONS	4
4	ANALYSIS OF CURRENT WATER SUPPLIES	6
4.1	Summary of Water Supplies	6
4.2	Community Summaries.....	8
4.3	Supply and Source Types.....	17
5	POTENTIAL RISKS TO ACCESS	19
6	METHODS TO IMPROVE DATA.....	21
7	ACTIONS FOR RUAPEHU DISTRICT COUNCIL	24
APPENDIX A	PROCESSED DATA	25
APPENDIX B	DASHBOARD SCREENSHOTS	26
APPENDIX C	REFERENCES & DATA SOURCES	27
APPENDIX D	DETAILED GIS ANALYSIS METHODOLOGY.....	28

TABLES

Table 1.1:	Local Government Act Requirements	1
Table 2.1:	Methodology	2
Table 4.1:	Council Supplies	6
Table 4.2:	Summary of Local Government Act Clause Requirements	8
Table 4.3:	Supply Type Summary	18
Table 4.4:	Source Type Summary	18

FIGURES

Figure 4.1:	Council Connected Supply Share by Community	7
Figure 4.2:	Private Supply Share by Community	7
Figure 4.3:	Dashboard snapshot of Kakahi Community Water Supply Status	9
Figure 4.4:	Dashboard snapshot of National Park (Waimarino) Community Water Supply Status	9
Figure 4.5:	Dashboard snapshot of National Park (Waimarino) Township Community Water Supply Status	10
Figure 4.6:	Dashboard snapshot of Ngapuke Community Water Supply Status	10
Figure 4.7:	Dashboard snapshot of Ōhakune Community Water Supply Status	11
Figure 4.8:	Dashboard snapshot of Ōhura Community Water Supply Status	12
Figure 4.9:	Dashboard snapshot of Otangiwai-Ōhura Community Water Supply Status	12
Figure 4.10:	Dashboard snapshot of Ōwhango Community Water Supply Status	13
Figure 4.11:	Dashboard snapshot of Piriaka Community Water Supply Status	13
Figure 4.12:	Dashboard snapshot of Raetihi Community Water Supply Status	14
Figure 4.13:	Dashboard snapshot of Rangataua Community Water Supply Status	14
Figure 4.14:	Dashboard snapshot of Raurimu Community Water Supply Status	15
Figure 4.15:	Dashboard snapshot of Tangiwai Community Water Supply Status	16
Figure 4.16:	Dashboard snapshot of Taumarunui Community Water Supply Status	16
Figure 4.17:	Dashboard snapshot of Waiohuru Community Water Supply Status	17
Figure 7.1:	Generalised Dashboard	26
Figure 7.2:	Close-up of Map and Singular Community	26
Figure 7.3:	Close-up of Data Sources	26

1 BASIS AND OBJECTIVES

Purpose - To inform RDC about access each community has to drinking water services, including sufficiency, safety and resilience.

Scope - This assessment covers Council-operated drinking water supplies, as well as private and community-owned or operated supplies, including both registered and known unregistered systems. It also considers non-reticulated communities at an appropriate community scale. Individual domestic self-suppliers are not assessed separately; however, information on domestic and self-supply arrangements is discussed to support understanding of non-reticulated community access and associated data gaps. Sections S68 through to S70 of the Local Government Act 2025 have been considered when writing this report.

Table 1.1: Local Government Act Requirements

Clause	Description
s68	Defines assessment of drinking water services as covering private and community-owned or operated supplies but excluding domestic self-suppliers.
s69	Requires the territorial authority to inform itself about the access each community has to drinking water services, including identifying communities, describing services and community characteristics, assessing sufficiency, describing safety and quality, assessing public health risks and consequences. An ongoing access plan is required, with the first assessment required by 1 July 2026 and subsequent assessments at least every three years or earlier if concerns arise. Opportunities for people to raise concerns at any time is needed along with ensuring the assessment covers the following: communities served by the authority or other providers, those not served by them, and all water supply arrangements including non-reticulated communities.
s70	Requires that information be made publicly available, provided electronically to the Water Services Authority, used to notify suppliers that are at risk or failing to meet obligations, and considered in related council planning and public health duties.
s72	This clause is only in effect if a water service provider becomes aware of an issue or a potential problem in one of its drinking water supplies. It requires the provider to identify immediate, temporary, and permanent solutions to the problem. It also requires that supply to affected consumers is maintained where the original supplier cannot meet requirements and no timely alternative is available. The clause allows the water service provider to consider options such as temporarily or permanently taking over management and operations. It also allows the provider to supply water by other means, which may not involve a reticulated network. If a permanent takeover occurs, the provider, regulator, former supplier, and consumers must address matters such as assets, liabilities, legal issues, and compensation. The provider may charge consumers and recover costs from the previous supplier. However, the provider must consider consumers' financial circumstances and available funding sources and be able to demonstrate this consideration if required.

Source: Local Government (Water Services) Act 2025, New Zealand Legislation.

2 METHOD AND SCOPE

This GIS assessment provides a district-wide, property-level understanding of drinking water access across the Ruapehu District to support compliance with the Local Government (Water Services) Act 2025. It identifies likely servicing arrangements and aggregates results to community level for reporting.

The analysis was completed as a desktop, best-available-data assessment, applying consistent district-wide logic and retaining uncertainty where data is incomplete. It is intended to provide a defensible baseline for regulatory reporting and planning, rather than a fully verified representation of all supply relationships. A high-level methodology for this assessment is outlined below. Please see Appendix D for detailed methodology.

Table 2.1: Methodology

Step	Process Stage	Key Actions
1	Data Integration	Compiled and aligned property, population, infrastructure, supply, bore, and regulatory datasets from national, regional, and council sources.
2	Supply Identification	Identified known and probable drinking water supplies from council data, national registers, and regional datasets, including bores and abstraction records.
3	Supply Consolidation	Combined and reconciled overlapping supply records into a single dataset of council, community, and domestic-level supplies.
4	Community Definition	Defined communities using SA2 boundaries, with adjustments where required to reflect functional settlements.
5	Property Dataset Development	Established a district-wide property layer and linked it to council rates data to provide a consistent reporting base.
6	Council Supply Identification	Classified properties as council-supplied based primarily on rates data, supported by infrastructure connection information.
7	Water Demand Determination	Identified properties likely to require drinking water using valuation improvements and building presence as indicators.
8	Supply Status Classification	Categorised properties as council supply, private supply (identified), private supply (unknown), or no supply required.
9	Property Enrichment and Aggregation	Assigned properties to communities and planning areas, enabling aggregation and reporting at community level.
10	Supply Linkage and Refinement	Linked supplies to communities and, where confidence allowed, to properties; retained uncertainty where linkage could not be reliably established.

11	Risk and Land Use Context Integration	Incorporated District Plan zoning to provide an indicator of property use and potential demand, supporting identification of higher-risk scenarios. Additional land use and land capability datasets were included in the reporting environment to support spatial interpretation of potential source risks (e.g. agricultural intensity).
12	Reporting Outputs	Produced spatial datasets and dashboard-ready outputs to support district-wide and community-level reporting of water access, including visualisation of supply risk context.

This work package provides a baseline Drinking Water Access Assessment for RDC and is intended to form the foundation for ongoing refinement and improvement over time as greater financial and resource efforts are inputted. It reflects the core scope defined in the Activity Brief, which focuses on developing a district-wide, desktop understanding of drinking water supplies, identifying communities and supply arrangements, and undertaking a high-level assessment of access, safety, reliability, adequacy, and risk across both council and non-council systems.

It is important to note that this assessment is not intended to provide detailed engineering, regulatory, or compliance evaluations. Activities such as full Drinking Water Safety Plans (DWSPs), detailed technical investigations, comprehensive verification of all private supplies, and extensive engagement with all supply owners and communities are outside the current scope. As such, this assessment should be read alongside the Activity Brief Scope and understood as a high-level, desktop-based assessment, designed to identify key patterns, risks, and data gaps, and to guide future investment in data improvement, engagement, and more detailed investigation.

3 ASSUMPTIONS, INTERPRETATIONS AND LIMITATIONS

Desktop analysis was conducted to summarise the relationship between properties, communities and drinking water supplies across the district. In doing so, several assumptions, interpretations, and classification rules were required to support a consistent and defensible district-wide assessment. Due to this, the outputs should be considered a high-level approximation of drinking water access across the district. They are suitable for identifying broad patterns, relationships and gaps but are not intended to confirm exact service connections or detailed supply arrangements at an individual property level, nor to fully resolve all supply relationships of network behaviour.

Data Availability and Quality

Data quality and completeness vary across sources, particularly for non-council datasets.

The results of this assessment should be interpreted as a robust but high-level baseline. Confidence is highest where informed by council data, and lower where classifications rely on inference. The approach deliberately retains uncertainty where it cannot be resolved, providing a transparent and defensible foundation for future refinement.

Property-Based Reporting

For this assessment, properties were adopted as the primary spatial and statistical reporting unit. Land parcels were used as a fallback for spatial analysis but not for reporting.

Council Data

Council rates data is the primary indicator of access to reticulated water; properties rated for water are assumed to have access, though not necessarily a confirmed physical connection. This was supplemented by spatial analysis of a meter or connection point within the property boundary or 2 meters off the boundary indicating likely council water service.

Determining Water Demand

A conservative approach has been applied, favouring inclusion of potentially serviced properties rather than exclusion. Properties were assumed to require drinking water if they contained relevant valuation improvements or buildings with a footprint of 30 m² or greater. This approach is based on proxy indicators and does not confirm actual occupancy or water use.

Supply Locations

Supply locations are representative only and may not reflect exact infrastructure positions.

Supply Identification and Linkage

The model does not fully identify or confirm which properties are connected to private or community supplies. While some properties could be linked to known non-council supplies using spatial proximity or available register and regulatory data, many relationships remain unverified.

Bores and abstraction records are treated as indicators of likely self-supply, but do not definitively confirm service relationships.

Properties classified as private unknown are assumed to have some form of private water supply based on a requirement for drinking water access, but the specific source and arrangement are not known.

Supply Classification

Supply types include council supply, community supply, and various domestic supply arrangements (shared and self-supply). These classifications are based on available data with some classifications remaining unknown where data is insufficient. They do not confirm legal responsibility or service arrangements, which would require further validation.

Population Data Limitations

Not all supply types have complete or reliable estimates of population served. This limits the accuracy of population-based comparisons and means that results should be interpreted as indicative rather than definitive.

Community populations were based on 2023 NZ census population at mesh block level aggregated to community boundaries.

Community Definition

Communities were treated as reporting units, not supply areas. Communities were based primarily on Stats NZ SA2 boundaries, with adjustments made where a settlement was clearly distinct, it had a stable resident population and functioned as a recognised place. These may not fully reflect functional service areas or settlement patterns and should be reviewed for suitability in formal reporting or future assessments.

4 ANALYSIS OF CURRENT WATER SUPPLIES

4.1 Summary of Water Supplies

RDC operates seven Council drinking water supplies within the dashboard dataset, while the remaining identified supply records comprise a combination of community supplies, domestic shared systems, domestic self-supply, and other domestic supply types.

Note: For the Waiouru community, RDC does not directly supply drinking water, but instead purchases and distributes water sourced from the New Zealand Defence Force.

Table 4.1: Council Supplies

Community	Council Water Supply	No. Properties Supplied by Council	No. Properties Requiring Water
National Park (Waimarino) Rural	RDC - National Park (Waimarino)	2	345
	RDC - Ōwhango	84	
National Park (Waimarino) Township	RDC - National Park (Waimarino)	336	336
Ngapuke Rural	RDC - Taumarunui	67	538
Ōhakune Township	RDC - Ōhakune	1729	1863
Ōhura Township	RDC - Ōhura	203	212
Otangiwai-Ōhura Rural	RDC - Ōhura	2	500
Ōwhango Township	RDC - Ōwhango	170	170
Piriaka Rural	RDC - Taumarunui	4	52
Raetihi Township	RDC - Raetihi	576	593
Tangiwai Rural	RDC - Ōhakune	45	735
	RDC - Raetihi	35	
	RDC - Waiouru	1	
Taumarunui Township	RDC - Taumarunui	2468	2514
Waiouru Township	RDC - Waiouru	82	93

Table 4.1, Figure 4.1 and Figure 4.2 shows a clear divide in drinking water access across the district, with major urban centres such as Taumarunui, Ōhakune, and National Park (Waimarino) Township having very high council connection rates, indicating well-established reticulated systems. In contrast, many smaller and rural communities have little to no council supply and rely heavily on private water sources, often exceeding 50% of properties.

Across these rural areas, most private supply is classified as “private unknown”, highlighting significant gaps in knowledge about actual water sources and connections. Additionally, several communities have a large proportion of properties that do not require water.

Note – Access to the Ōwhango council water supply may be constrained, as the intake is located remotely and the access route presents ongoing long-term accessibility challenges.

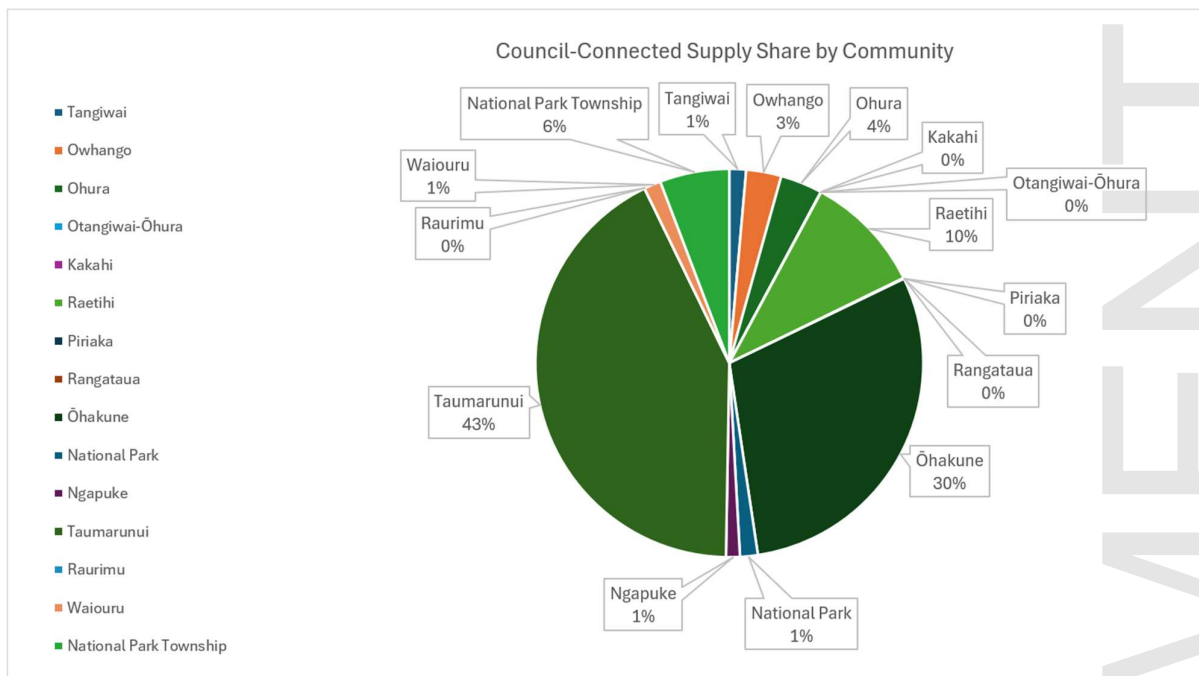


Figure 4.1: Council Connected Supply Share by Community

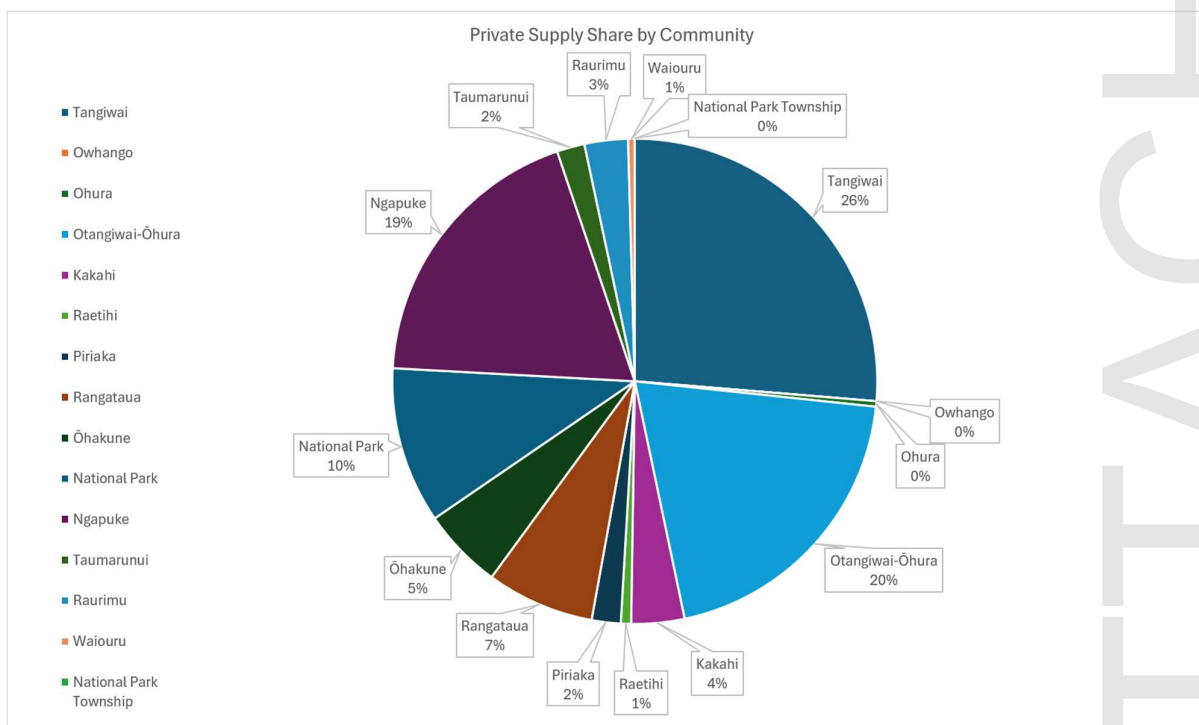


Figure 4.2: Private Supply Share by Community

4.2 Community Summaries

A summary for each community, along with supporting dashboard excerpts illustrating the supply arrangements, has been provided below in alignment with the requirements of Section 69(2) (outlined in Table 1.1). These requirements are summarised in Table 4.2 as follows:

Table 4.2: Summary of Local Government Act Clause Requirements

Clause	Requirement
69(2)(a)	Identify each community that receives a drinking water service.
69(2)(b)	Describe the nature of existing drinking water services to the community.
69(2)(c)	Describe the characteristics of the community.
69(2)(d)	Assess the extent to which the community is currently receiving, and will continue to receive, a sufficient quantity of drinking water, including consideration of existing access, foreseeable risks, and current and future demand.
69(2)(e)	Describe the safety and quality of drinking water currently being supplied to the community.
69(2)(f)	Identify and assess any other public health risks relating to the drinking water services supplied to the community.
69(2)(g)(i)	Assess the consequences if the community loses access to drinking water services or receives deficient services.
69(2)(g)(ii)	Outline a plan to provide for the community's ongoing access to drinking water services.

Note: Communities relying on council supply were assumed to have lower public health risk and increased safety due to established treatment, monitoring, and compliance frameworks. In contrast, communities dependent on private, shared, or unknown supplies were assumed to have higher potential risk due to limited oversight and unverified treatment.

Kakahi Rural

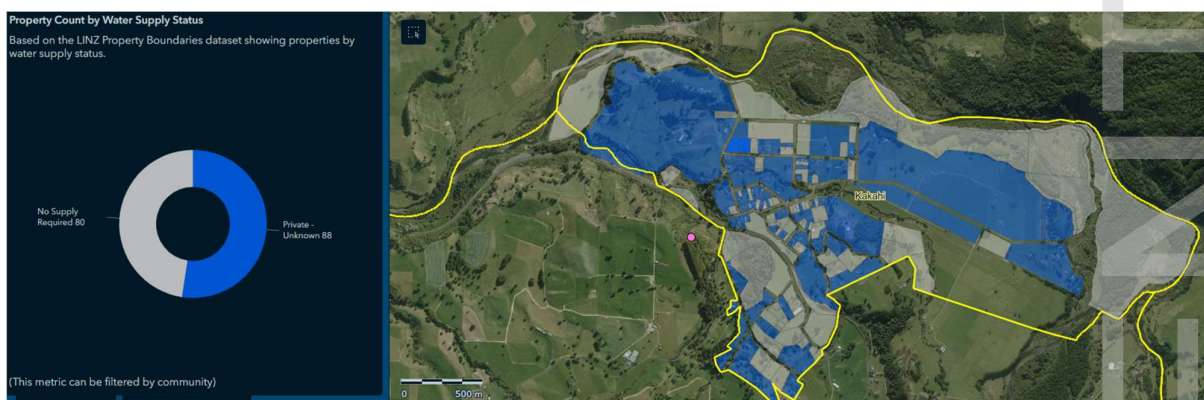


Figure 4.3: Dashboard snapshot of Kakahi Community Water Supply Status

- (a) Kakahi is a small rural community.
- (b) It is fully reliant on private supply systems.
- (c) Properties are dispersed with moderate demand.
- (d) Access is dependent on individual systems, with risks including system failure and lack of redundancy; demand is stable.
- (e) Safety and quality are uncertain.
- (f) Public health risks include supply contamination and lack of monitoring.
- (g) Loss of supply would directly affect all users; resilience improvements are required.

National Park (Waimarino) Rural

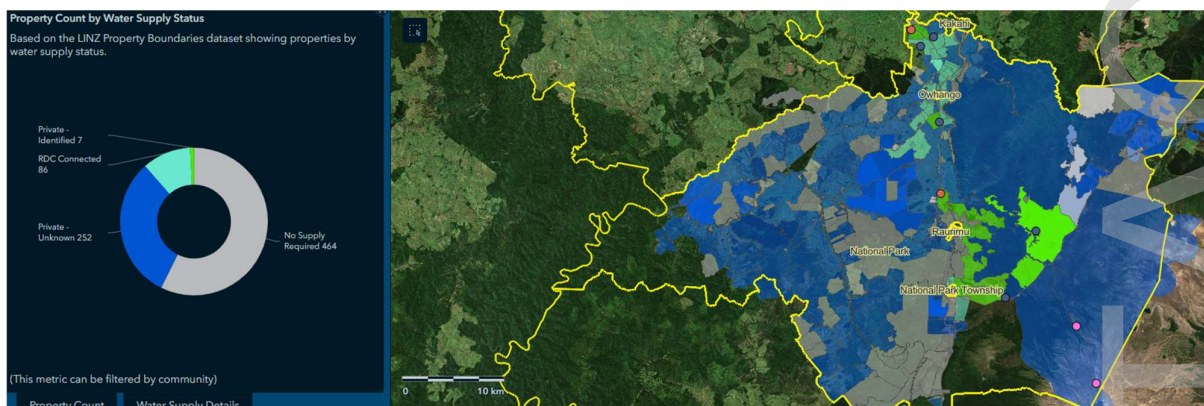


Figure 4.4: Dashboard snapshot of National Park (Waimarino) Community Water Supply Status

- (a) National Park (Waimarino) is a mixed residential and tourism-based community.
- (b) It has partial council supply with a high proportion of private unknown supply.
- (c) The community experiences seasonal population variation.
- (d) Access is variable, with risks from demand peaks, environmental factors, and unclear supply links; demand may increase seasonally.
- (e) Safety and quality are uncertain for private systems.
- (f) Public health risks include exposure to unverified supplies.

- (g) Loss of supply would impact both residents and visitors; improved supply mapping is required.

National Park (Waimarino) Township

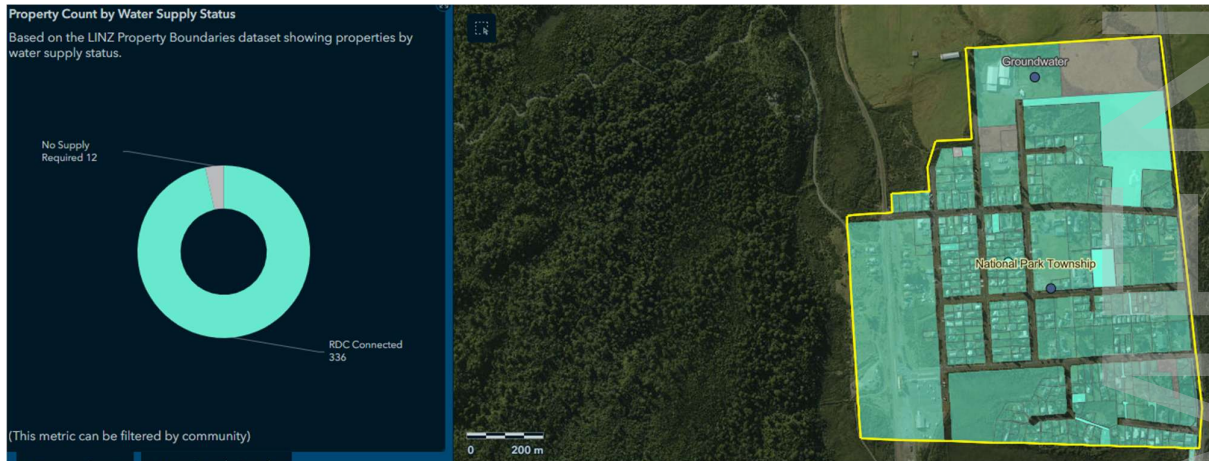


Figure 4.5: Dashboard snapshot of National Park (Waimarino) Township Community Water Supply Status

- (a) National Park (Waimarino) Township is a defined settlement.
 (b) It is fully serviced by council supply.
 (c) The community has moderate population and tourism-related demand.
 (d) Access is sufficient, with minor risks from system dependency and seasonal variation.
 (e) Safety and quality are well managed.
 (f) Public health risks are low.
 (g) Loss of supply would be disruptive; continued system monitoring and maintenance are required.

Ngapuke Rural

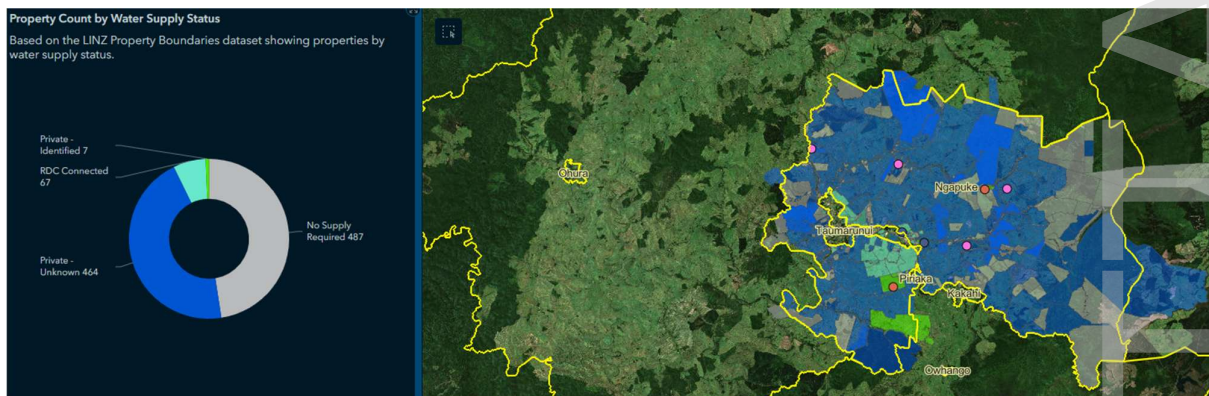


Figure 4.6: Dashboard snapshot of Ngapuke Community Water Supply Status

- (a) Ngapuke is a rural community.
 (b) It is primarily reliant on private supply systems.

- (c) The community is dispersed with moderate demand.
- (d) Access is uncertain due to limited data; risks include environmental conditions and lack of resilience; demand is stable.
- (e) Safety and quality are not well understood.
- (f) Public health risks arise from unverified supply conditions.
- (g) Loss of supply would affect households; this is a priority area for investigation.

Ōhakune Township

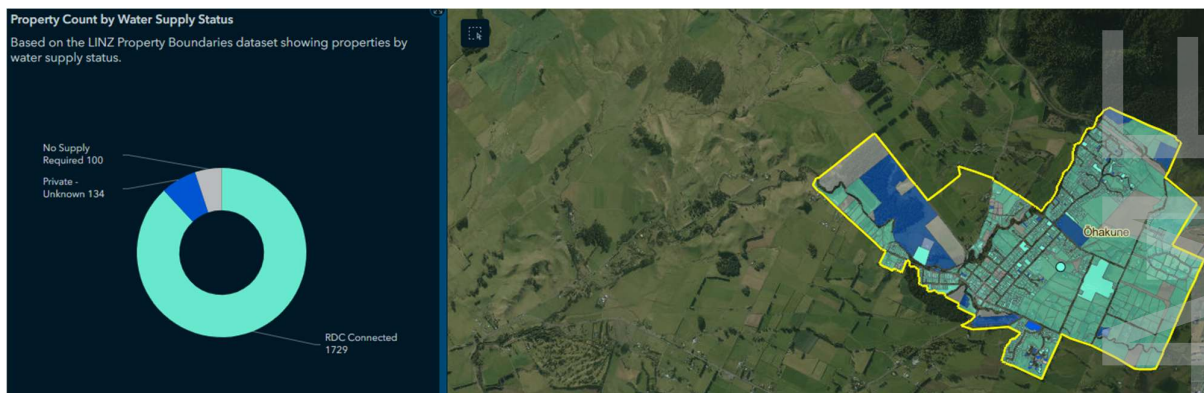


Figure 4.7: Dashboard snapshot of Ōhakune Community Water Supply Status

- (a) Ōhakune is a major urban centre.
- (b) It is predominantly served by council supply.
- (c) The community has higher density and seasonal demand variability due to tourism.
- (d) Access is sufficient, though risks include future demand increases and infrastructure capacity; demand is expected to grow.
- (e) Safety and quality are well managed.
- (f) Public health risks are low.
- (g) Loss of supply would have significant impacts; continued investment and capacity planning are required.

Ōhura Township

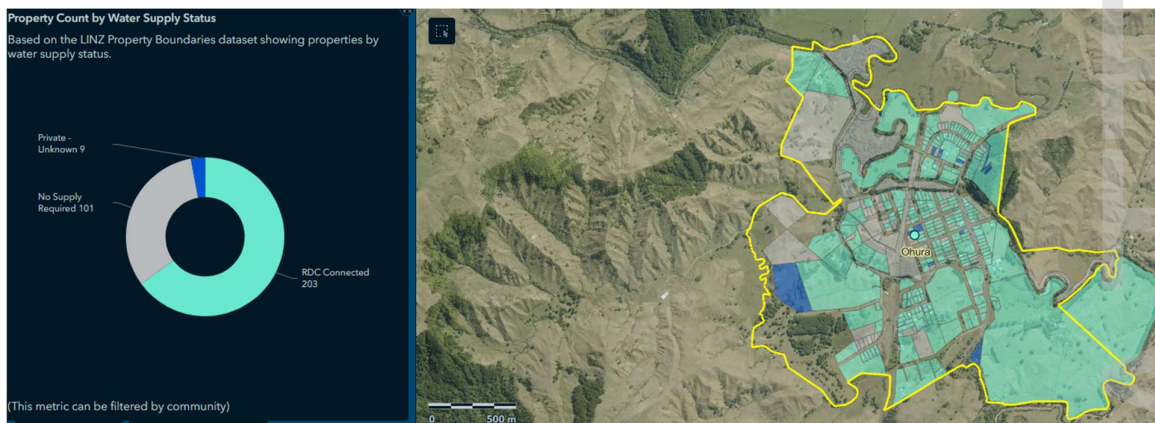


Figure 4.8: Dashboard snapshot of Ōhura Community Water Supply Status

- (a) Ōhura is a rural settlement with mixed development.
- (b) It is predominantly council supplied, with a small number of private connections.
- (c) The community includes both developed and undeveloped properties.
- (d) Access is generally sufficient, though some uncertainty exists in private supply areas; risks include environmental factors and capacity constraints, with stable demand.
- (e) Safety and quality are relatively well controlled for council supply but uncertain for private systems.
- (f) Public health risks relate to minor private supply reliance.
- (g) Loss of supply would impact residential services; ongoing access requires monitoring and validation of private systems.

Otangiwai-Ōhura Rural

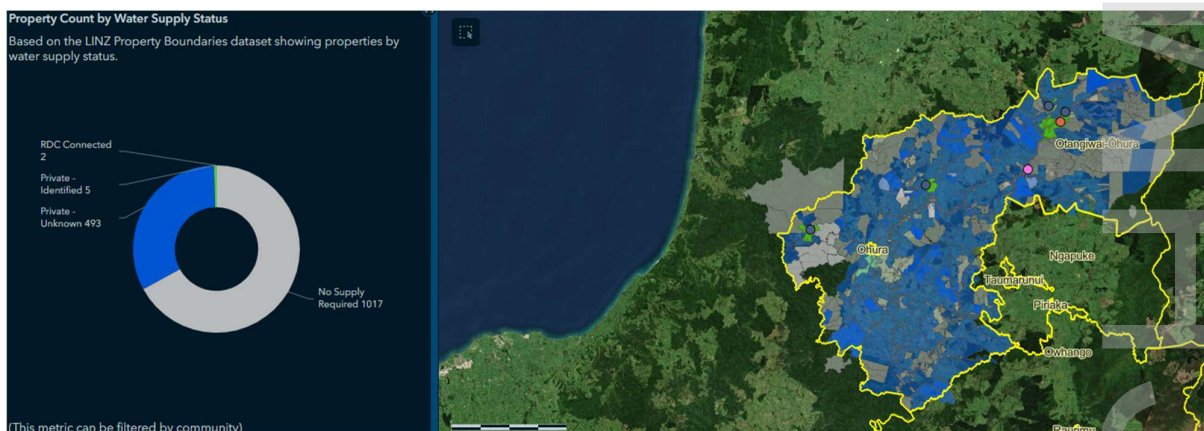


Figure 4.9: Dashboard snapshot of Otangiwai-Ōhura Community Water Supply Status

- (a) Otangiwai-Ōhura is a sparsely populated rural area.
- (b) Drinking water services are largely private with minimal council supply.
- (c) The area has low population density and a high proportion of non-demand properties.
- (d) Access is highly variable and uncertain; risks include environmental factors and lack of infrastructure, with low but dispersed demand.
- (e) Safety and quality are largely unknown.
- (f) Public health risks stem from unverified and potentially unmanaged systems.
- (g) Loss of access affects individual properties; ongoing access requires improved identification of supply arrangements.

Ōwhango Township

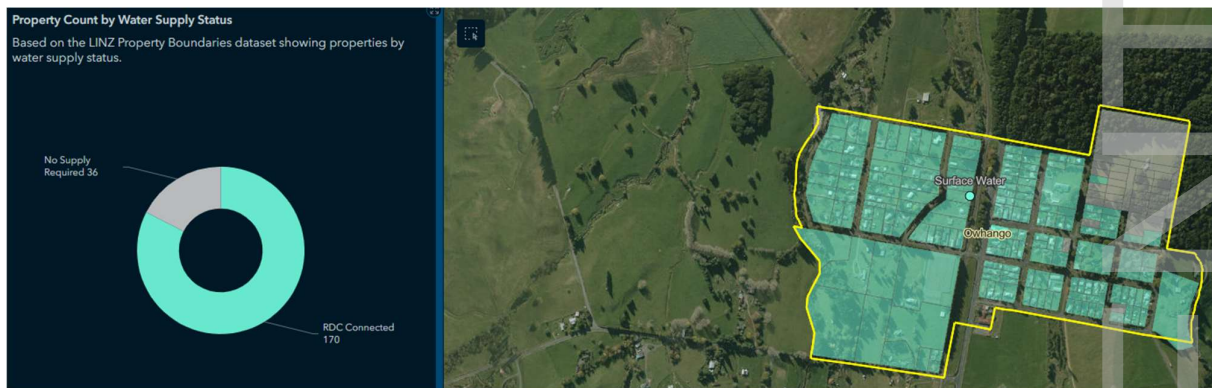


Figure 4.10: Dashboard snapshot of Ōwhango Community Water Supply Status

- (a) Ōwhango is a small, defined rural community.
- (b) It is fully supplied by a council drinking water system.
- (c) The community is compact with no reliance on private supply.
- (d) Access is currently sufficient and likely to remain stable, with minor risks associated with system dependency and future demand.
- (e) Water safety and quality are assumed to be well managed under council systems.
- (f) Public health risks are low but linked to potential system failure.
- (g) Loss of supply would affect the entire community; ongoing access depends on maintaining system reliability.

Piriaka Rural

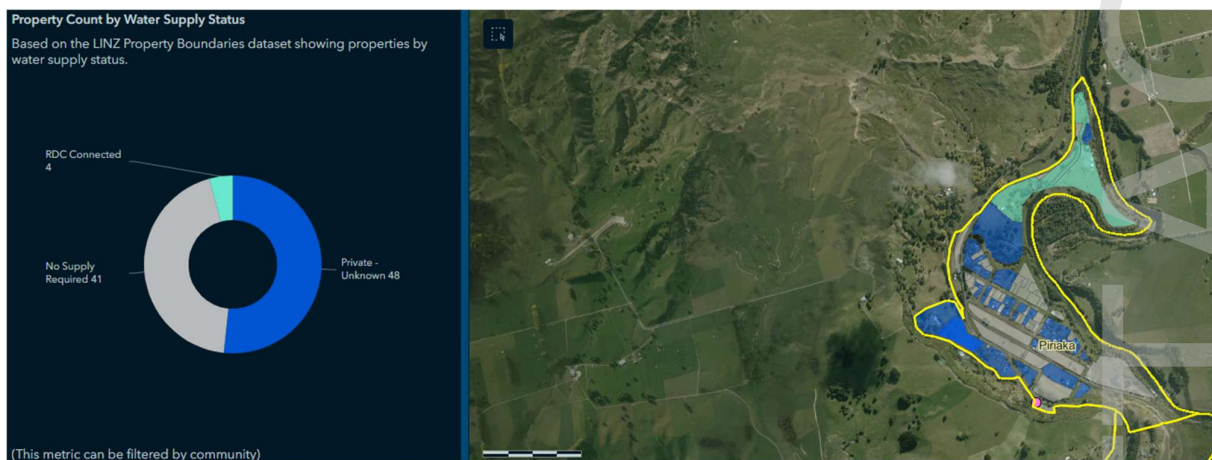


Figure 4.11: Dashboard snapshot of Piriaka Community Water Supply Status

- (a) Piriaka is a small rural settlement.
- (b) It has minimal council supply and is mostly privately supplied.
- (c) The community is dispersed with moderate water demand.
- (d) Access is variable, with risks including unknown supply arrangements and environmental pressures; demand is stable.

- (e) Safety and quality are uncertain.
- (f) Public health risks stem from unverified supply conditions.
- (g) Loss of supply would have significant impacts; improved supply confirmation is required.

Raetihi Township

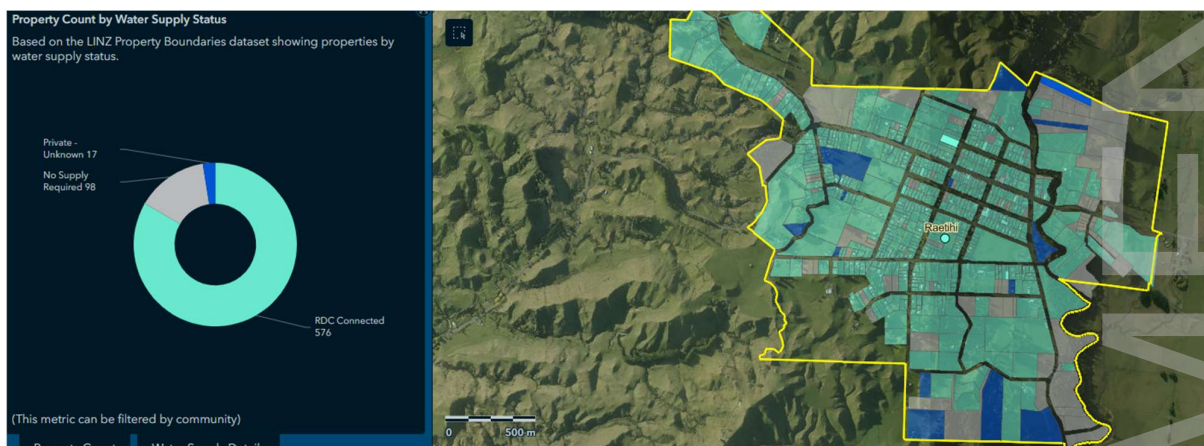


Figure 4.12: Dashboard snapshot of Raetihi Community Water Supply Status

- (a) Raetihi is a semi-urban community.
- (b) It is primarily served by council supply with minor private usage.
- (c) The community has moderate density and established infrastructure.
- (d) Access is sufficient, with risks relating to capacity and minor private supply; demand is stable with potential seasonal variation.
- (e) Safety and quality are well managed for council supply.
- (f) Public health risks are limited.
- (g) Supply loss would affect most residents; ongoing access depends on infrastructure performance.

Rangataua Township

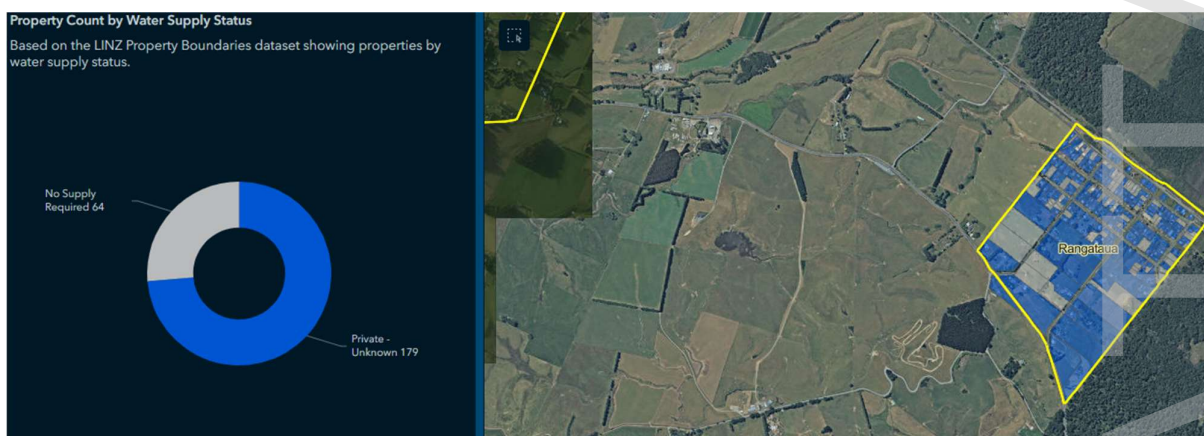


Figure 4.13: Dashboard snapshot of Rangataua Community Water Supply Status

- (a) Rangataua is a rural community.
- (b) It is fully reliant on private supply systems.
- (c) The area consists of dispersed properties.
- (d) Access is dependent on individual systems, with risks including single-source dependency and environmental factors; demand is stable.
- (e) Safety and quality are unknown.
- (f) Public health risks include contamination and lack of monitoring.
- (g) Loss of supply would directly affect all properties; resilience and identification are required.

Raurimu Rural

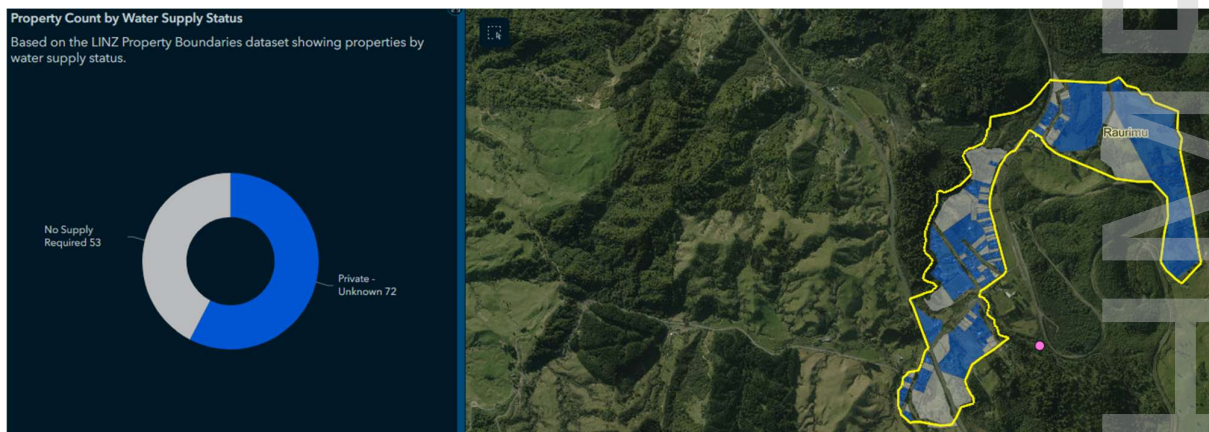


Figure 4.14: Dashboard snapshot of Raurimu Community Water Supply Status

- (a) Raurimu is a small rural community.
- (b) It is entirely reliant on private supply systems.
- (c) The community is small and dispersed.
- (d) Access is dependent on individual supply systems, with risks including isolation and system failure; demand is low but critical.
- (e) Safety and quality are uncertain.
- (f) Public health risks include contamination and lack of oversight.
- (g) Loss of supply would directly affect all users; improved data and resilience planning are needed.

Tangiwai Rural

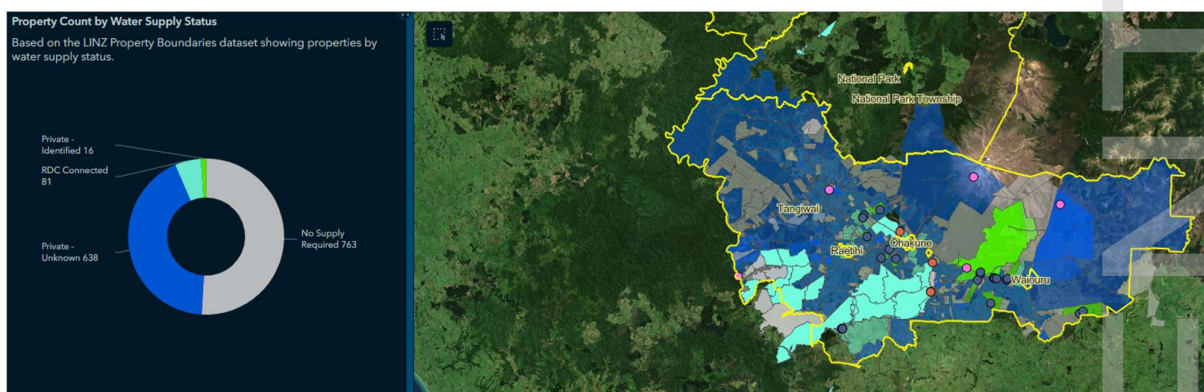


Figure 4.15: Dashboard snapshot of Tangiwai Community Water Supply Status

- (a) Tangiwai is identified as a rural community with mixed property use.
- (b) Drinking water services consist of limited council supply with a high reliance on private and unknown sources.
- (c) The community is dispersed with many properties not requiring water and low population density.
- (d) Current access is variable and uncertain; future access risks include drought, lack of redundancy, and unidentified supply arrangements, while demand is likely stable but locally dependent.
- (e) Safety and quality are uncertain due to limited confirmation of treatment or monitoring.
- (f) Public health risks include contamination from unprotected sources and limited operational oversight.
- (g) Loss or degradation of supply would significantly impact affected properties; ongoing access requires improved data validation and resilience planning.

Taumarunui Township

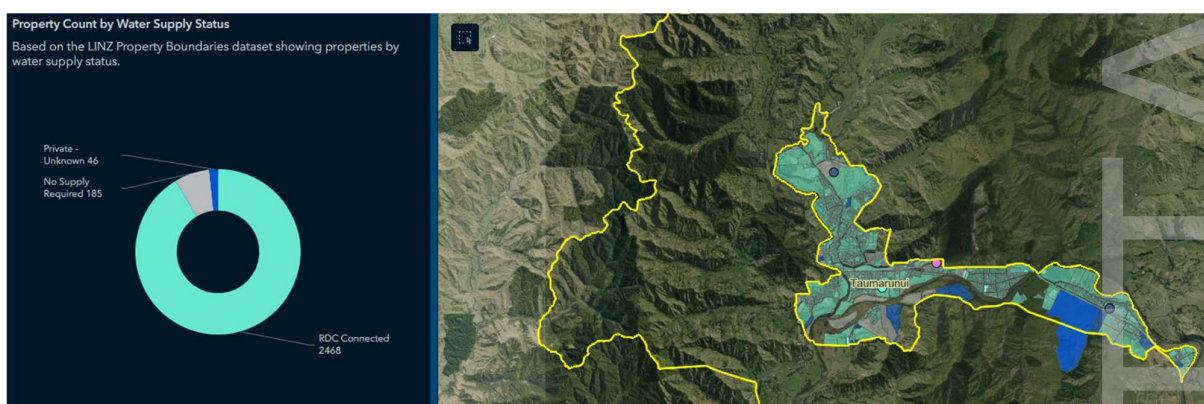


Figure 4.16: Dashboard snapshot of Taumarunui Community Water Supply Status

- (a) Taumarunui is the largest urban centre in the district.
- (b) It is predominantly serviced by council supply.
- (c) The community has higher population density and established infrastructure.

- (d) Access is sufficient, with risks relating to infrastructure capacity and future demand growth.
- (e) Safety and quality are well controlled.
- (f) Public health risks are low.
- (g) Loss of supply would have significant community impacts; ongoing access depends on system maintenance and upgrades.

Waiouru Township

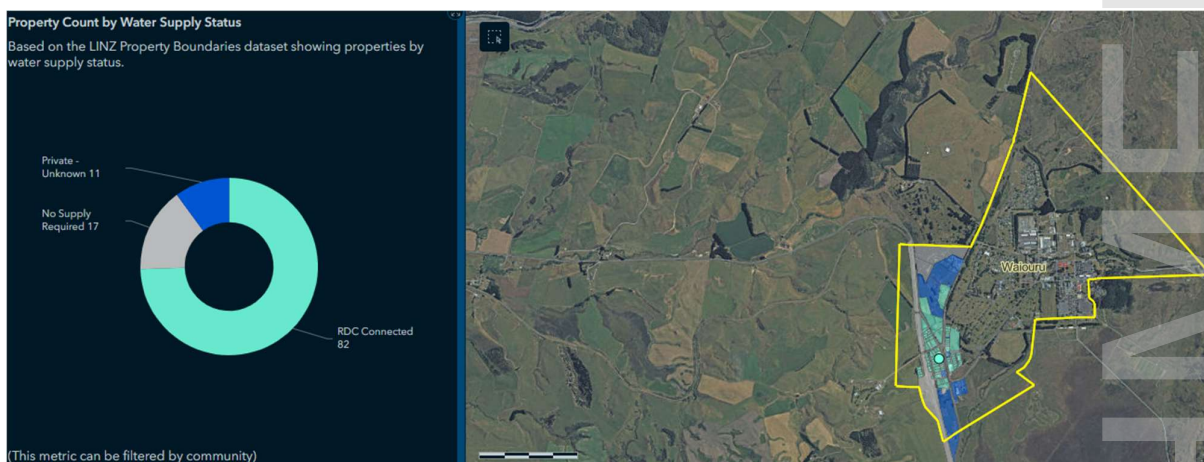


Figure 4.17: Dashboard snapshot of Waiouru Community Water Supply Status

- (a) Waiouru is a settlement supported by a bulk supply arrangement.
- (b) RDC supplies water purchased from the New Zealand Defence Force.
- (c) The community is relatively contained with reliance on a single external source.
- (d) Access is generally sufficient, but risks include dependency on the external provider and potential service disruptions; demand is stable.
- (e) Safety and quality depend on the source system.
- (f) Public health risks relate to dependency and limited control over the supply source.
- (g) Loss of access would have significant impacts; contingency planning is essential.

4.3 Supply and Source Types

A summary of the number RDC drinking water supply types and estimated population served by each is given in Table 4.3. Council operated supplies serve the largest proportion of the population, with seven supplies providing water to an estimated 9,829 people. The 18 Community supplies also serve a further 8,768 people.

Note: The “estimated population served” has reduced accuracy due to incomplete population data for some supplies.

Table 4.3: Supply Type Summary

Supply Type	Supply records	Estimated Population Served
Council Supply	7	9,829
Community Supply	18	8,768
Domestic (unspecified)	59	98
Domestic Self-supply	264	255

Groundwater is the dominant source type, accounting for the majority of supply records (51 out of 85), indicating a strong reliance on groundwater across the district. Surface water is the second most common source with 20 records, while spring and mixed-source supplies are relatively minor. A notable number of supplies (10 records) have an unknown source type. Table 4.4 summarises the RDC source types.

Table 4.4: Source Type Summary

Source Type	Supply Records
Groundwater	51
Mixed/Multiple Sources	2
Spring	2
Surface Water	20
Unknown	10

5 POTENTIAL RISKS TO ACCESS

Data Confidence and Information Gaps

A significant proportion of properties are classified as “Private – Unknown”, indicating that while water demand is present, the specific supply source and arrangement cannot be confirmed. In addition, a number of supply records are unmapped or lack reliable population and service area information.

Risk implication: Limited visibility of supply arrangements creates uncertainty in assessing service coverage, which can result in the lack of supply to certain communities, especially during disasters.

Dependence on Non-Council and Decentralised Supplies

A substantial number of properties rely on private, shared, or small community supply systems, particularly in non-reticulated areas. These supplies are often not formally registered or dependent on individual/small group management.

Risk implication: These systems may have variable levels of reliability, maintenance, and resilience, increasing the likelihood of supply interruptions or reduced service quality.

Limited Supply–Property Linkage

The current dataset does not comprehensively define which properties are served by specific private or community supplies. While council supply connections are well-understood, non-council supply relationships remain largely unverified.

Risk implication: This limits the ability to quantify affected populations in a catastrophic event or to plan targeted interventions for certain communities.

Source Reliability and Environmental Pressures

Water supplies are subject to a range of environmental constraints that can affect both availability and quality. These include reduced source yield during drought conditions, which can limit the quantity of water available. Surface water sources are also exposed to contamination risks from surrounding land use and flooding events. In addition, groundwater sources can be vulnerable to contamination, particularly from factors such as septic tank density.

Risk implication: These factors may reduce both the availability and quality of source water, particularly for smaller and unprotected supplies.

Infrastructure and Operational Resilience

Many private and small-scale supply systems are likely to have limited storage capacity, which can restrict their ability to meet demand during peak periods or disruptions. These systems often lack backup supply or redundancy, meaning there are few alternatives if the primary source fails. They may also rely on basic infrastructure or ageing assets, which can increase the likelihood of system failure. In addition, limited operational capability or governance can affect how effectively these systems are managed, maintained, and responded to during incidents.

Risk implication: This creates a higher likelihood of service interruption, reduced ability to respond to outages, and slower recovery from disruption events.

Growth and Demand Pressures

Projected population growth, subdivision, and seasonal demand (including tourism) may increase demand on existing supplies, particularly in areas without council reticulation.

Risk implication: Existing systems may become overstretched or insufficient, leading to reduced levels of service or increased reliance on ad hoc supply arrangements.

Supplier Failure Risk

Some supplies are unregistered or have lapsed registration status, which creates uncertainty around their regulatory standing. In addition, there may be limited or no evidence of appropriate treatment, monitoring, or compliance with drinking water standards. Smaller suppliers may also lack long-term operational capacity, which can affect their ability to maintain reliable and compliant water services over time.

Risk implication: There is a risk of supplier failure or non-compliance.

Single Source Dependency

Many supplies, particularly domestic and small community systems, rely on a single water source (e.g. one bore or intake).

Risk implication: This creates a single point of failure, where supply disruption directly results in loss of access with limited alternatives available.

6 METHODS TO IMPROVE DATA

The current assessment provides a robust district-wide baseline of drinking water access. Future improvement should focus on two complementary areas.

- Improving understanding of water supplies, properties, and communities, and the relationships between them.
- Improving understanding of supply risk, quality, and reliability.

Together, these will improve the completeness, confidence, and long-term value of the assessment.

Improve Understanding of Supply Risk, Quality, and Reliability

The current assessment focuses on access and supply relationships. A key next step is to strengthen understanding of supply reliability, resilience, and risk.

Future work may incorporate:

- Security of supply (reliability, redundancy, resilience).
- Community-level vulnerability.
- Broader source risk factors (e.g. septic tank density, upstream or upgradient agricultural activity).

These inputs would contribute to a more comprehensive risk framework.

Expected outcomes:

- Improved understanding of supply vulnerability and resilience.
- Better visibility of potential source risks.
- Stronger basis for prioritising further investigation and intervention

Supplier and Community Engagement

Direct engagement with supply owners, operators, and communities represents the most effective way to confirm supply arrangements. This includes:

- Targeted surveys of known and suspected supply operators.
- Community-level engagement in areas with high private reliance.
- Follow-up interviews for large or complex supplies.

This approach enables confirmation of:

- Population served.
- Supply type and ownership.
- Treatment, storage, and backup systems.
- Actual service relationships between supplies and properties.

Targeted Validation of “Private – Unknown” Properties

Properties currently classified as Private - Unknown should be prioritised for follow-up, particularly in communities with high proportions of these classifications. Validation methods may include:

- Targeted outreach to property owners.
- Cross-referencing with local knowledge and council records.

Improved Supply–Property Linkage

Current limitations in linking supplies to the properties they serve can be addressed by developing clearer service area definitions. Opportunities include:

- Mapping community and shared supply service areas.
- Linking consent records and abstraction points to parcels.
- Incorporating survey-confirmed service extents.

Review and Integration of Consent Data

Consents and regulatory records contain valuable information on supply arrangements but are not currently well linked to properties. A structured review process could:

- Extract supply descriptions and intended use.
- Identify relationships between sources and users.

Enhancement of Spatial Supply Data

Many supply records are currently represented as approximate points or are unmapped. Data quality can be improved by:

- Refining supply locations using verified infrastructure data.
- Replacing inferred points with confirmed locations.

Strengthening Data Source

Data currently originates from multiple sources with varying levels of quality and structure. To improve this the following actions can be taken:

- Standardise supply classification fields and definitions.
- An update of relevant data using the most recent available information from relevant sources.

Ongoing Data Maintenance and Update Cycle

Establishing a structured process for maintaining and updating supply data will ensure long-term improvement. This includes:

- Periodic refresh of council and regional datasets.
- Incorporation of new survey results.
- Ongoing tracking of changes in supply status or community growth.

ATTACHMENT

7 ACTIONS FOR RUAPEHU DISTRICT COUNCIL

As per S70 of the Local Government Act 2025:

Following completion of the assessment, RDC is required to make the report publicly available, provide an electronic copy to the Water Services Authority, and notify the Authority of any suppliers that appear to be failing, at risk of failing, or where there are concerns about the adequacy of drinking water services. RDC must also ensure that the findings of the assessment are appropriately considered and integrated into relevant council planning processes and public health responsibilities.

ATTACHMENT

APPENDIX A PROCESSED DATA

Table A 1:

Community	Total property records	Properties requiring water	RDC connected	Private identified	Private unknown	No supply required	Private %	Council connected %	No supply required %
Tangiwhai	1498	735	81	16	638	763	43.66	5.41	50.93
Ōwhango	206	170	170	0	0	36	0	82.52	17.48
Ōhura	313	212	203	0	9	101	2.88	64.86	32.27
Otagiwhai-Ōhura	1517	500	2	5	493	1017	32.83	0.13	67.04
Kakahi	168	88	0	0	88	80	52.38	0	47.62
Raetihi	691	593	576	0	17	98	2.46	83.36	14.18
Piriaka	93	52	4	0	48	41	51.61	4.3	44.09
Rangataua	243	179	0	0	179	64	73.66	0	26.34
Ōhakune	1963	1863	1729	0	134	100	6.83	88.08	5.09
National Park (Waimarino)	809	345	86	7	252	464	32.01	10.63	57.35
Ngapuke	1025	538	67	7	464	487	45.95	6.54	47.51
Taumarunui	2699	2514	2468	0	46	185	1.7	91.44	6.85
Raurimu	125	72	0	0	72	53	57.6	0	42.4
Waiouru	110	93	82	0	11	17	10	74.55	15.45

APPENDIX B DASHBOARD SCREENSHOTS

The screenshots are included to provide context and illustrate how the values and information presented in the assessment have been derived. A link to the dashboard is provided below:

<https://maps.btw.nz/portal/apps/dashboards/51322e29d80e4a1e9b567c82be92a88a>

Figure 7.1: Generalised Dashboard

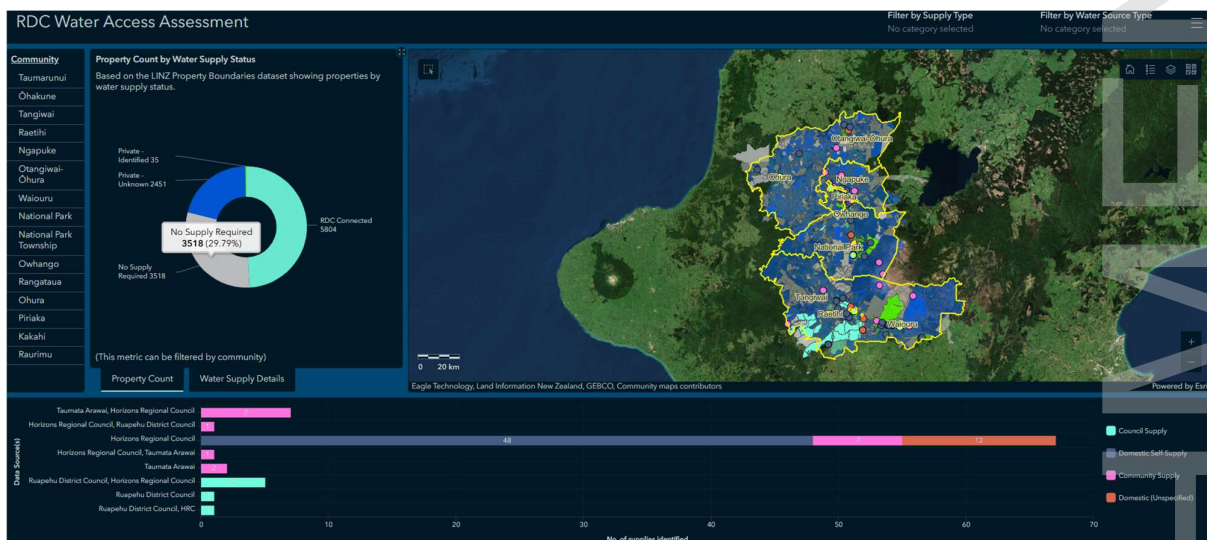


Figure 7.2: Close-up of Map and Singular Community

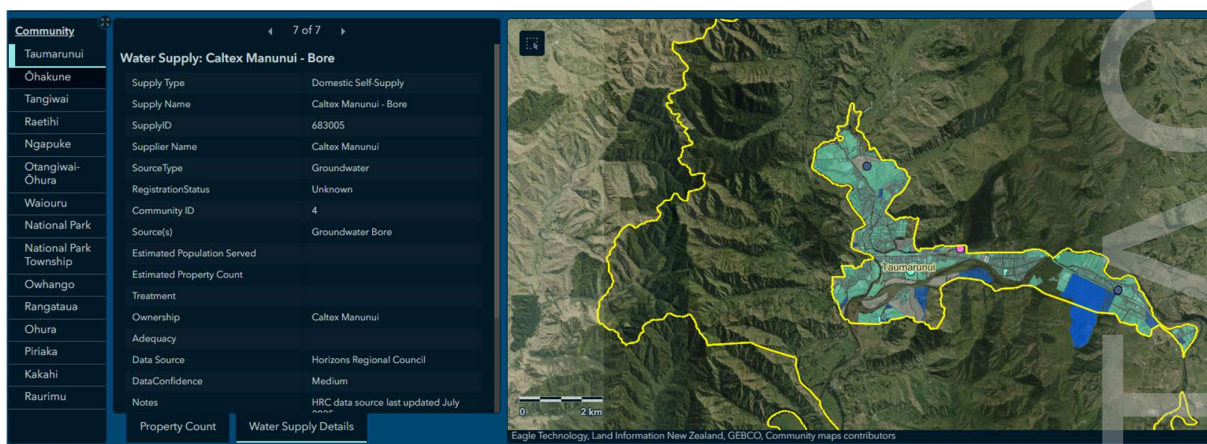
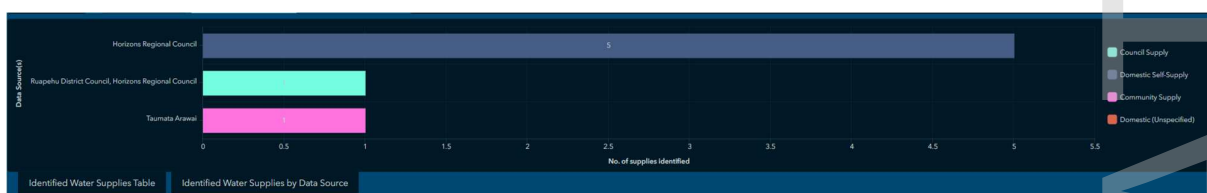


Figure 7.3: Close-up of Data Sources



APPENDIX C REFERENCES & DATA SOURCES

C.1 References

Local Government (Water Services) Act 2025, New Zealand Legislation, latest version, 26 August 2025.

C.2 Data Sources

Statistical Area 2 (SA2) Boundaries 2025, Stats NZ Geographic Data Service, latest version, 8 August 2025.

Meshblock Boundaries 2025, Stats NZ Geographic Data Service, latest version, 8 August 2025.

Census 2023 Electoral Population (Meshblock Level, 2025 Boundaries), Stats NZ Geographic Data Service, latest version, 27 May 2025.

NZ Property Boundaries, Land Information New Zealand (LINZ Data Service), latest version, 12 June 2026.

NZ Primary Land Parcels, Land Information New Zealand (LINZ Data Service), latest version, 6 June 2026.

NZ Building Outlines, Land Information New Zealand (LINZ Data Service), latest version, 18 May 2026.

Drinking Water Register, Taumata Arowai, latest version (accessed June 2026).

Property and Rates Database, Ruapehu District Council, data extract, 3 June 2026.

Water Supply and Infrastructure Data, Ruapehu District Council, data extract, 29 May 2026.

District Plan Zoning, Ruapehu District Council, current at June 2026.

Urban/Rural Classification, Ruapehu District Council, current at 2026.

Groundwater Bore Locations, Horizons Regional Council Open Data Portal, latest version, 23 July 2025.

Regulatory Activity (Resource Consents), Horizons Regional Council Open Data Portal, latest version, 1 April 2026.

Public Water Supply Layers (ESR / Abstraction / Population), Horizons Regional Council ArcGIS Services, current dataset (validated June 2026).

Source Water Risk Management Areas (SWRMA), Horizons Regional Council, data provision, 11 June 2026.

National Land Cover Dataset, Landcare Research / Ministry for the Environment, latest version.

Land Use Capability Dataset, Landcare Research, latest version.

APPENDIX D DETAILED GIS ANALYSIS METHODOLOGY

D.1 Overview

The GIS component of the Ruapehu District Council Drinking Water Access Assessment identifies, classifies, and spatially represents drinking water supply arrangements across the district at both community and property level. It supports compliance with the *Local Government (Water Services) Act 2025* and provides a district-wide desktop baseline to inform planning and reporting.

The assessment was undertaken within constrained time and budget, adopting a “**best available data first**” approach. The methodology prioritised use of authoritative datasets, consistent district-wide logic, repeatable processing, and transparent treatment of uncertainty. Outputs were designed for practical use, including dashboard-based reporting.

Core processing was undertaken using **FME (Feature Manipulation Engine)** to enable a model-driven, repeatable workflow. ArcGIS Pro was used for quality assurance, refinement, and final data preparation.

D.2 Analysis Methodology

D.2.1 Approach

This is a **district-wide desktop assessment** using the best available information. It is not intended to fully reconstruct hydraulic systems or resolve all private supply relationships, but to provide a **defensible baseline** for ongoing refinement.

The methodology emphasises:

- Consistent logic applied across the district.
- Property-level reporting.
- Retention of uncertainty where data is incomplete.

D.2.2 Identification and Mapping of Water Supplies

Water supplies were compiled from council, national, and regional sources. Existing geometries were used where available; otherwise, representative locations were derived from infrastructure, abstraction points, addresses, or other references.

All supply records were consolidated into a single dataset by removing duplicates and combining attributes. The resulting layer includes:

- Council-operated supplies.
- Registered community supplies.
- Indicative domestic (self-supply) locations.

Supply locations are **representative only** and should not be interpreted as precise infrastructure points.

D.2.3 Community Definition

Communities were defined primarily using **Stats NZ SA2 (2025)** boundaries, with refinement where these did not reflect functional settlements. Adjustments included merging SA2s or aggregating meshblocks while retaining alignment with official statistical geographies.

Each community was attributed with:

- Property count.
- Estimated population (meshblock-based).
- Building count.

Communities function as **reporting units**, not supply service areas.

D.2.4 Property-Level Analysis

The base property layer was derived from **LINZ property boundaries**, clipped to the Ruapehu District and excluding non-relevant areas (e.g. hydro).

This layer was enriched using **RDC rates data**, primarily linked by valuation number, with secondary spatial matching where required. Rates data provided key indicators of service status, property characteristics, and demand proxies.

D.2.5 Identification of Council Supply

Council-supplied properties were identified using:

- **Rates data** – properties rated or serviced for water.
- **Connection validation** – meters or connection points within or within 2 metres of a property.

Rates data was treated as the primary indicator, with infrastructure data used to validate and fill gaps.

D.2.6 Determining Water Demand

Properties not identified as council-supplied were assessed to determine whether they require water.

This used:

- **Valuation improvements** as the primary indicator (e.g. dwellings, schools → demand; minor structures → no demand).
- Building outlines ($\geq 30\text{m}^2$) as a fallback proxy.

Where neither indicator suggested demand, the property was classified as not requiring water.

D.2.7 Property Supply Classification

Each property was assigned a status:

- Council supply.
- Rivate supply (identified).
- Private supply (unknown).
- No supply required.

Where supply could not be identified but demand existed, properties were classified as **private unknown**.

Additional attributes were assigned where evidence allowed, including:

- Supply type (council, community, domestic, undefined).
- Source type (groundwater, surface water, rainwater, mixed, unknown).

D.2.8 Dataset Enrichment

Properties were further attributed with:

- District plan zones.
- Urban/rural classification.
- Community assignment (based on dominant spatial overlap).

This established relationships between land use, planning context, and water supply patterns.

D.2.9 Refinement and Linkage

Outputs from FME were refined in ArcGIS Pro.

- **Supply–community linkage** was primarily spatial, with manual adjustments where required.
- **Supply–property linkage** was completed where reliable (e.g. council connections, some bore-based supply).
- Broader linking of shared/community supplies to properties was not completed due to insufficient data.

D.2.10 Publishing

Final datasets were prepared for web delivery, including:

- Hosted layers and web maps.
- A dashboard presenting community patterns, property status, supply locations, and uncertainty.

D.3 Rules and Assumptions

3.1 General

- Properties (rating units) are the core reporting unit; parcels are used only for geometry.
- The methodology balances strict logic (high-quality data) with inclusive logic (lower-quality data).
- Unknowns are retained rather than inferred.

D.3.1 Council Supply

A property is considered council-supplied if:

- It is rated for water.
- A connection indicator is present.

Properties are assumed to have **access**, not necessarily confirmed physical connection.

D.3.2 Water Demand

Demand is inferred from:

- Valuation improvements.
- Buildings $\geq 30\text{m}^2$.

This is a proxy and may not reflect actual usage.

D.3.3 Supply Classification

Supply types include:

- Council.
- Community.
- Domestic (self/shared/unspecified).
- Unknown.

Population thresholds (indicative only):

- 1–10: Domestic self.
- 11–25: Domestic shared.
- 26+: Community

Functional use (e.g. schools, marae) overrides population thresholds.

D.3.4 Source Type

Source types describe origin (e.g. groundwater, surface water), independent of delivery (reticulated or not).

D.3.5 Supply Representation

Each supply is represented by a **single point**, based on best available reference (e.g. centroid, facility, abstraction point). These are indicative only.

D.3.6 Use of Regional Data

- Bores indicate likely self-supply.
- Consent data used selectively where verifiable.
- Abstraction points indicate source, not necessarily supply.

D.3.7 Community Definition

Communities represent **functional settlements for reporting**, not service areas.

D.3.8 Inclusion Criteria

Included:

- Residential, commercial, industrial, and institutional properties with expected demand.

Excluded:

- Clearly vacant or undeveloped land.

D.3.9 Treatment of Uncertainty

Uncertainty is explicitly retained, particularly for:

- Private and shared supplies.
- Supply–property linkages.

D.4 Data Gaps and Limitations

This is a **robust desktop baseline**, but limitations remain:

- Incomplete visibility of private and shared supplies, including lack of service area definition.
- Limited supply–property linkage, particularly for non-council supplies.
- Consent data constraints, including poor spatial linkage and limited scope for full document review.
- Reliance on demand proxies (valuation and buildings).
- Assumptions for self-supply, particularly bore usage.
- Representative (not precise) supply locations.
- Variable data quality and metadata across sources.
- Access vs connection ambiguity for council-rated properties.
- Limited assessment of risk, quality, and resilience.
- Desktop-only scope, with no field verification.

These limitations primarily affect:

- Completeness of private supply identification.
- Confidence in supply linkage.
- Ability to define exact service areas.

Results should be interpreted as **high-level, planning-grade outputs**, not definitive operational records.

D.5 Recommended Next Steps

D.5.1 Improve Supply–Property–Community Understanding

Focus on improving both individual components and their relationships through:

- Supply service area mapping.
- Improved linkage between consents, abstraction points, and properties.
- Structured extraction of consent information (potentially AI-assisted).
- Community engagement to validate real-world supply arrangements.

Outcome: Reduced unknowns and improved confidence.

D.5.2 Improve Data Quality and Integration

- Enhance spatial supply datasets.
- Improve consent linkage.
- Continue iterative updates via FME workflows.

Outcome: More consistent, aligned, and updatable datasets.

D.5.3 Improve Understanding of Risk, Quality, and Reliability

Future work should assess:

- Security and resilience of supply.
- Community vulnerability.
- Source water risk factors (e.g. septic density, upstream land use).

These are inputs to a broader risk framework.

Outcome: Better prioritisation of risk and investment.

D.6 Data Sources (Summary Reference)

Data was sourced from:

- **Stats NZ** (SA2, meshblocks, population).
- **Land Information New Zealand (LINZ)** (property boundaries, parcels, buildings).
- **Taumata Arowai** (drinking water register).
- **Ruapehu District Council** (rates, infrastructure, planning data).
- **Horizons Regional Council** (bores, consents, water supply layers, SWRMA).

Most third-party datasets are licensed under **CC BY 4.0**. Metadata availability varies; council and regional datasets often rely on source authority and extract dates rather than formal metadata.

D.7 Summary

This assessment applies repeatable GIS workflows and the best available data to classify drinking water access across the district. It combines automated processing, targeted refinement, and explicit treatment of uncertainty to produce a defensible, scalable baseline for reporting and future improvement.