Planning | Surveying | Engineering | Environmental

A24315 – Donald Road and Allen Bell Drive, Kaitaia

Infrastructure Assessment Report

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1 Introduction

This Infrastructure Assessment Report has been prepared to support a submission to the Proposed Far North District Plan for the rezoning of Part Lot 1 DP 173052 (Donald Road, Kaitaia) from Rural Residential to General Residential. The proposed rezoning will enable the development of approximately 500 residential lots, substantially intensifying land use. The purpose of this report is to assess the capacity and suitability of the existing wastewater and water supply infrastructure to service the proposed development, and to identify any necessary upgrades or additional infrastructure requirements to accommodate future demand.

The assessment provides infrastructure context and technical analysis, drawing on the Far North District Council's (FNDC) Engineering Code of Practice, Long Term Plan, and 2024 Infrastructure Strategy. FNDC's strategic planning identifies Kaitaia as a key growth area, with the Council actively upgrading water and wastewater networks in the Donald Road area to support new housing. The Infrastructure Strategy highlights the importance of planning for long-term (30+ years) growth and delivering bulk infrastructure accordingly.

This report evaluates the existing water supply and wastewater infrastructure servicing the site and estimates future flows and demands using FNDC's engineering standards. Based on this analysis, it outlines a range of servicing options, including direct connection, staged development, and alternative solutions. The assessment has been informed by a review of publicly available infrastructure records, a site visit to observe local conditions, and engagement with FNDC's Waters Team, including a meeting at FNDC's Kerikeri office. Several follow-up emails were sent to obtain further detail; however, the responses provided have been limited in scope and detail.

In light of this, the assessment draws on our professional understanding of the local network constraints and FNDC's planned upgrade projects. Particular attention has been given to known infrastructure limitations in Kaitaia, as well as the identification of existing and potential future connection points to Council's networks. Where constraints are identified, the report sets out feasible servicing solutions that respond to current network conditions and align with FNDC's infrastructure planning. Consideration is also given to how the timing and staging of the development could be coordinated with planned infrastructure improvements. The findings are intended to inform the future design, consenting, and delivery of infrastructure works associated with the proposed rezoning.

2 Existing Environment

2.1 Project Location

The subject site is located at Part Lot 1 DP 173052, Kaitaia, within the Far North District. It is currently zoned Rural Residential under the Proposed Far North District Plan. This report has been prepared to support a submission to rezone the site to General Residential, which would align with the existing zoning of adjacent land immediately to the north and west.

The site is bounded by Donald Road to the north and Allen Bell Drive to the west. The surrounding environment includes predominantly residential development to the west and north, along with a mix of commercial and industrial land uses in close proximity. A commercial hub has been established along State Highway 1 to the west, approximately 1 kilometre from the site and near the Kaitaia town centre. This area has experienced increasing development activity in recent years, contributing to rising demand on the local

wastewater and water supply systems. An established industrial precinct is also situated to the northwest of the subject site. Refer to Figure 1 for a locality plan.

The subject site lies in close proximity to Council's existing wastewater and water supply networks, with surrounding residential areas already serviced by reticulated infrastructure. The local wastewater network ultimately conveys flows to the Kaitaia Wastewater Treatment Plant located on Bonnets Road, approximately 5 kilometres southwest of the site. Potable water for the township is sourced from the Awanui River, treated at the Okahu Road Water Treatment Plant, and distributed via the reticulated network, including through a Council-operated treated water reservoir located directly on the northern boundary of the subject site. This reservoir forms a critical storage and distribution asset for the local water supply system.

The proposed rezoning would enable residential development that integrates with established urban infrastructure, supporting efficient use of existing public services. This report therefore considers the servicing context of the site, including opportunities for connection to Council's water and wastewater networks, and how development staging may align with planned infrastructure upgrades to manage additional demand.

Figure 1: Locality Plan

2.2 Existing Infrastructure

The subject site is situated adjacent to established urban infrastructure on the eastern side of Kaitaia township. It lies within an area identified for growth and is well positioned to connect to both existing water supply and wastewater networks. FNDC has been actively investing in infrastructure upgrades in this

part of Kaitaia to accommodate future residential development, with major works either underway or planned within close proximity to the site.

In terms of wastewater servicing, the site is located within the Donald Road catchment, an area currently undergoing significant upgrades. Kaitaia's wastewater is conveyed via a rising main system along Donald Road and North Road to the Kaitaia Wastewater Treatment Plant. In late 2024, FNDC commenced construction of a 1.6 km sewer pipeline, two bulk wastewater storage tanks (400 m^3 combined), pump stations, and manholes within this corridor. Council procurement documents from this project confirm that these works are directly intended to support new housing development in the area, specifically referencing Donald Road as a target location for growth.

Further improvements to address capacity and overflow issues in the wider network are also outlined in FNDC's 2024 Infrastructure Strategy, with construction scheduled for the 2025 financial year. Collectively, we believe that these investments provide a clear pathway to enable future connection of the future residential development of this site.

The area is also well served by FNDC's reticulated water supply network, which sources water from the Awanui River and the Sweetwater bore (commissioned in 2022) to improve supply resilience. The site lies close to existing water infrastructure, and notably, part of the subject site was acquired by FNDC in 2011 for water-related purposes. This acquisition included provisions for water storage and pipe easements, indicating that the site is strategically located near essential network components. This proximity supports the efficient extension of water services to the proposed development.

Stormwater within the wider area is managed through a combination of roadside channels, open drains, and piped infrastructure. The subject site sits at the upper end of a natural catchment that drains predominantly westward via gullies and open channels towards the Awanui River. Recent NRC regional flood modelling confirms that flood risk on the site is minimal, limited to low-lying open channel areas along the western boundary. An existing overland flow path also enters from the north and follows the site's natural topography to adjoining land. The balance of the site benefits from elevated ground levels and natural fall, enabling future stormwater management via overland flow and reticulated or detention systems. A detailed Stormwater Management and Flood Risk Assessment has been prepared separately to provide a more comprehensive outline of the stormwater strategy for the proposed development.

In summary, the current infrastructure context is as follows:

- **Wastewater**: The site falls within both the Donald Road and Allen Bell Drive sewer catchments. FNDC is currently constructing a 1.6 km sewer trunk main and two 200 m^3 storage tanks in this area. These upgrades are intended to support new residential development in the area and provide a clear servicing opportunity for the proposed rezoning.

- **Water Supply**: The site is adjacent to FNDC's Kaitaia water reservoir and associated infrastructure. The network is supplied from the Awanui River, with supplementary capacity provided by the Sweetwater bore. On-site Council landholding for water storage indicates strong potential for connection and integration into the reticulated network.

- **Stormwater**: The site is located at the upper end of a catchment draining west to the Awanui River, with overland flow paths identified along the northern boundary and open channel areas on site. The 1% AEP flood extent mapping confirms minimal flooding risk within the development area.

3 Potential Development

The submission seeks to rezone the subject site at Part Lot 1 DP 173052, Kaitaia, from Rural Residential to General Residential under the Proposed Far North District Plan. The intention of the rezoning is to enable residential development that supports the continued growth and consolidation of Kaitaia's urban area, aligning with the district's broader planning objectives.

The site comprises approximately 62 hectares; however, due to areas of steep topography, it is anticipated that between 50% and 70% of the site will be developable. Based on this, the future development is expected to yield approximately 500 residential lots. A masterplan layout has been prepared to guide the proposed development, with the rezoning intended to enable a conventional urban residential pattern consistent with adjacent General Residential-zoned areas. The potential development of this site is anticipated to include a mix of residential allotments, internal roads, and areas designated for open space and stormwater management, in accordance with the Far North District Council's Engineering Standards and District Plan provisions. The indicative masterplan layout is provided in Figure 2 below for reference.

Figure 2: Masterplan Layout

The ultimate scale and staging of development will be determined through subsequent resource consent and engineering design processes. However, it is recognised that the anticipated yield would result in a moderate increase in demand on existing wastewater and water supply infrastructure. As such, this report

assesses potential connection points, known network constraints, and the feasibility of staging lot releases to align with planned infrastructure upgrades and available capacity.

The servicing strategy for the development will prioritise connection to FNDC's reticulated wastewater and water supply networks, subject to detailed capacity assessments and coordination with the timing of network improvements currently underway in Kaitaia.

4 Wastewater Servicing

4.1 Existing Wastewater Infrastructure

The Kaitaia township is serviced by a Council-operated reticulated wastewater network, which conveys wastewater via gravity mains, pump stations, and rising mains to the Kaitaia Wastewater Treatment Plant (WWTP), located approximately 5 kilometres southwest of the subject site on Bonnets Road.

The subject site lies within the Donald Road wastewater catchment, which currently drains via a 150mm AC gravity main along Donald Road, adjacent to the northern boundary of the site. This line increases to a 200mm AC main past the Allen Bell Drive intersection, continuing west to Pump Station SP764 at the intersection of Donald Road and North Park Drive. A secondary catchment to the west of the site drains via a 150mm AC network to Pump Station SP293, discharging south via a 300mm rising main. The arrangement of these catchments and their associated infrastructure is shown in Figure 3 below.

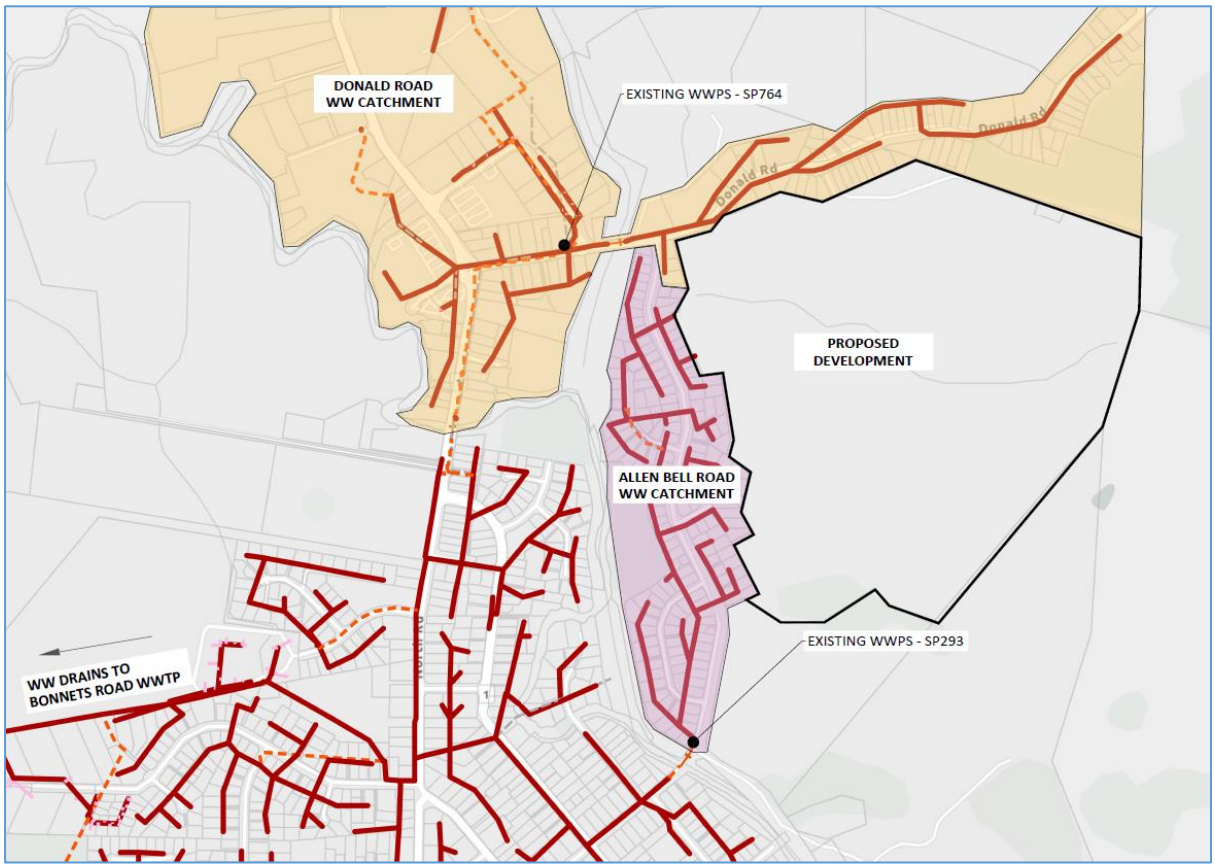

Figure 3: Existing wastewater catchments

The FNDC 2024 Long Term Infrastructure Strategy identifies aging wastewater assets, wet-weather overflow issues, and growth pressures in Kaitaia as critical risks to network capacity and environmental compliance. Specific to this area:

- The Strategy programs $8.7m of wastewater network upgrades in Kaitaia over 2024–2027, including capacity and overflow management works at the WWTP and network pumping stations.
- Detailed design to reduce wet-weather overflows in the Kaitaia network, particularly in Donald Road, was completed in 2023, with construction scheduled to commence in FY2025.
- The Donald Road upgrade includes 1.6 km of new gravity and rising mains, two new 200m³ emergency storage tanks, and new pump stations — specifically noted by Council as enabling new residential development in this area

4.2 Wastewater Demand Calculation

Based on the proposed 500 residential lots, using FNDC's Engineering Standards assumptions of 200 L/person/day and 4 persons/lot, the following wastewater flows are anticipated:

Flow Type	Value (L/s)	Notes
Average Dry Weather Flow (ADWF)	4.63	500 lots × 4 × 200 ÷ 86,400
Peak Dry Weather Flow (PDWF)	11.57	ADWF × 2.5
Peak Wet Weather Flow (PWWF)	23.15	ADWF × 5

Table 1: Wastewater Demand Calculations

These figures confirm that the development will generate a peak wet-weather flow in the range of 23 L/s. This is within the capacity envelope anticipated by the Donald Road upgrade works, given the inclusion of 400m³ of emergency storage (buffering over 5 hours of PWWF) and new rising mains sized for future residential growth.

4.3 Wastewater Servicing Options

Based on the existing infrastructure environment and the anticipated demands associated with the proposed rezoning, three feasible wastewater servicing options have been identified.

4.3.1 Option 1: Connection to the Existing Wastewater Network

This option involves connecting the proposed development to the existing reticulated wastewater network via the 200mm AC gravity main along Donald Road, located immediately adjacent to the northern boundary of the site. Wastewater from the development would flow westward through this main towards Pump Station SP764 at the intersection of Donald Road and North Park Drive, discharging via the upgraded rising main to the Kaitaia Wastewater Treatment Plant.

In addition to the Donald Road main, there is an opportunity for the development to partially connect to the western catchment that drains via a 150mm AC gravity main along Allen Bell Drive to Pump Station SP293. This would enable a split-discharge strategy, distributing flows between SP764 and SP293 to balance loading and manage available capacity.

The feasibility of this option is dependent on the available hydraulic capacity of both the Donald Road gravity main and SP764, as well as the Allen Bell Drive gravity main and SP293. Further hydraulic modelling and capacity confirmation with FNDC would be required to verify the ability of these systems to accommodate the increased flows generated by the proposed 500-lot development, particularly during peak wet weather events.

This option provides flexibility in servicing strategy by potentially splitting or staging wastewater flows across two existing catchments, thereby reducing reliance on a single pump station and main, and better aligning with Council's staged capacity upgrades within the Kaitaia network.

4.3.2 Option 2: Staged Development to Align with Planned Network Upgrades

Given the scale of the proposed development, it is anticipated that construction and occupation would occur progressively over multiple stages, rather than as a single, complete build. This option involves staging the release of lots in alignment with the delivery of planned FNDC wastewater infrastructure upgrades, including:

- Donald Road storage and capacity upgrade project
- Puckey Avenue – Bonnets Road overflow reduction works

To manage wastewater flows from initial stages ahead of full network capacity availability, temporary on-site storage facilities with controlled off-peak discharge to the public network could be implemented. This would assist in managing cumulative flows, reduce peak loading on the existing system, and maintain compliance with capacity constraints until the planned upgrades are completed.

This approach provides flexibility to commence development while ensuring wastewater servicing remains in line with the availability of network capacity and Council's wider infrastructure programme.

4.3.3 Option 3: Targeted Infrastructure Upgrades to Increase Network Capacity

Should capacity constraints remain after planned upgrades or if early development demand exceeds available capacity, targeted upgrades could be undertaken in consultation with FNDC, including:

- Upsizing the 150mm AC gravity main along Donald Road to a 225mm or 300mm diameter to improve conveyance to SP764.
- Increasing pump and rising main capacity at SP764, including additional emergency storage capacity.
- Downstream upgrades at SP293 and associated network sections, depending on potential catchment balancing or redirected flows.

4.4 Wastewater Feasibility Summary

Option 1 is the preferred solution given Council's committed infrastructure upgrades. The Donald Road sewer enhancement, budgeted and programmed for 2024–2025, specifically targets growth enablement in this catchment, aligning perfectly with this rezoning. The anticipated flows are well within the capacity of the upgraded mains and storage tanks. Option 2 is feasible with clear staging and temporary management measures. Option 3 provides flexibility but involves higher capital outlay and complex consenting.

The FNDC Infrastructure Strategy explicitly prioritises "investing in wastewater capacity upgrades to manage growth and reduce wet-weather overflows in Kaitaia" — this development's servicing options directly support that strategy.

5 Water Supply Servicing

5.1 Existing Water Supply Infrastructure

The subject site is situated adjacent to a significant asset in Kaitaia's water supply network — a Council-operated treated water reservoir (FNDC Asset ID: 20091218154756) located directly on the northern boundary of the site. This reservoir forms a critical component of the town's potable water system, distributing water via 250mm diameter trunk mains along Donald Road and through the northern edge of the site. The location of this infrastructure is shown in Figure 4 below.

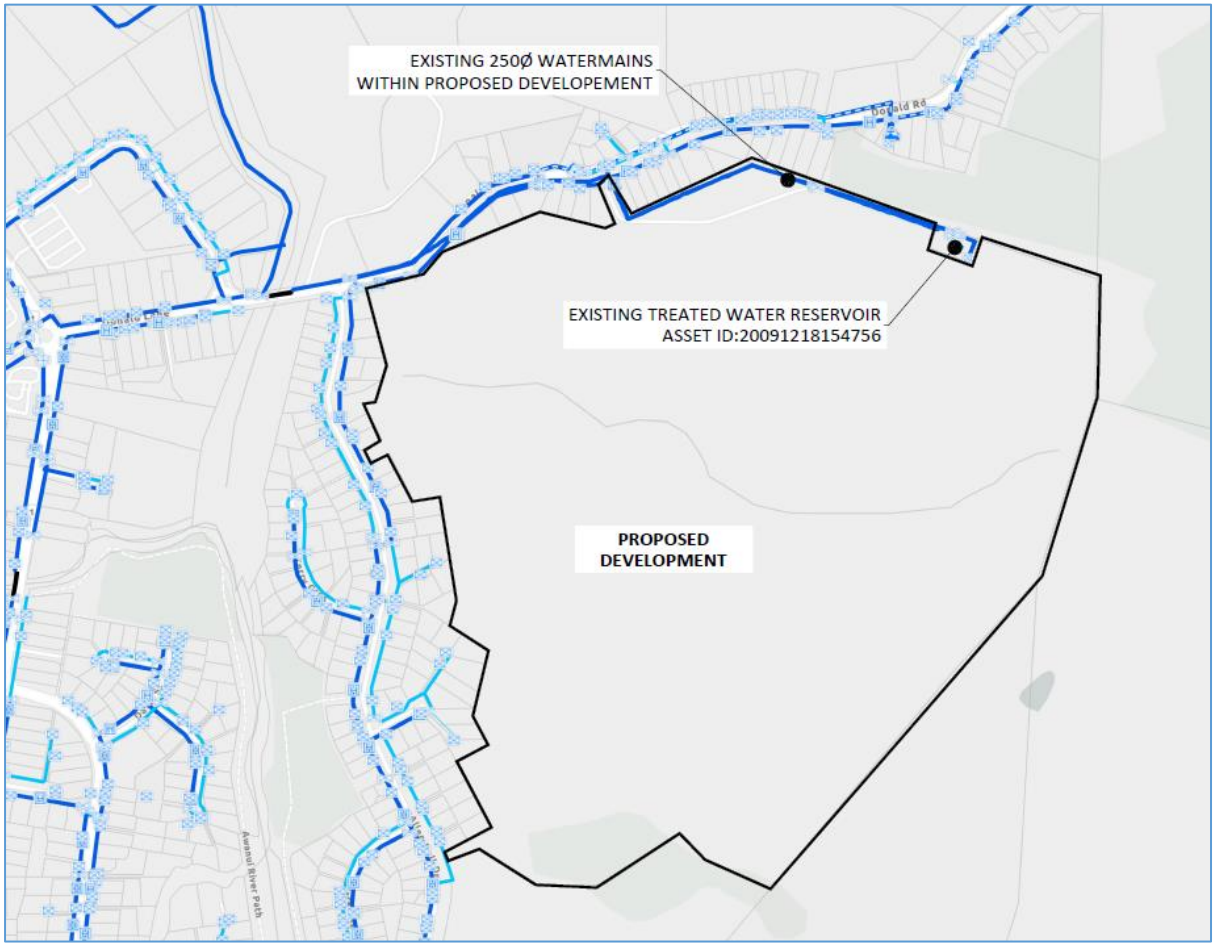

Figure 4: Existing water supply assets

Kaitaia's water supply is sourced from the Awanui River, treated at the Okahu Road Water Treatment Plant, and distributed through the town's reticulated network, including to this reservoir. The Okahu Road facility is the primary treatment plant for Kaitaia, supplying the wider urban area via multiple reservoirs and trunk mains.

The surrounding residential areas are currently supplied via this reticulated network. While no major planned upgrades for the immediate area are recorded in the current Long Term Infrastructure Strategy, FNDC acknowledges increasing demand pressures in Kaitaia due to ongoing residential growth and recent commercial developments, with water supply security remaining a priority under initiatives such as the Sweetwater pipeline project.

5.2 Water Supply Demand Calculation

Based on the proposed 500 residential lots, using FNDC's Engineering Standards assumptions of 300 L/person/day and 4 persons per lot, the following water supply demands are anticipated:

Post-Development Water Demand:

Demand Factor	Value	Notes
Average Daily Demand (AAD)	600,000 (L/d)	500 dwellings @ 4 EP, 300 L/p/d
Peak Daily Demand (PPD)	1,200,000 (L/d)	600,000 × 2 = 1,200,000 L/day (1,200 m^3/day)
Peak Hourly Demand (PHD)	69.44 (L/s)	1,200,000 ÷ 24 × 5

Table 2: Water Supply Demand Calculations

5.3 Water Supply Servicing Options

Based on the existing infrastructure environment and the anticipated demands associated with the proposed rezoning, two feasible water supply servicing options have been identified.

5.3.1 Option 1: Connection to the Existing Reticulated Water Supply Network

The preferred servicing option involves connecting the development directly to the 250mm trunk mains along Donald Road and through the northern site boundary. This would enable straightforward integration into the existing potable water network, providing a high-capacity, high-pressure supply source.

Internal reticulation within the development would be designed in accordance with FNDC Engineering Standards, ensuring adequate pressure through booster installations where required, fire-fighting capacity, and operational performance.

Hydraulic modelling and capacity confirmation with FNDC will be required to verify the ability of the existing network to service the proposed development, particularly given the anticipated scale of approximately 500 residential lots.

5.3.2 Option 2: Staged Development to Align with Network Capacity Availability

Given the anticipated scale of the development, it is expected that construction and occupation would occur in stages over time. Should existing water supply capacity in the network be constrained at the time of development, a staged approach would be adopted to progressively manage demand on the system in line with available capacity.

To further support network capacity management and align with Policy GRZ-P6 of the Proposed Far North District Plan, which applies to the General Residential Zone, the use of on-site water storage within the development could be encouraged. This would assist in reducing peak demand on the public network, promote more sustainable and efficient use of water resources, and provide additional resilience during high-demand periods or drought conditions.

This approach would allow early stages of the development to proceed while ensuring continuity of supply to both new and existing customers, maintaining compliance with Council's infrastructure standards. Additional capacity would be incorporated as it becomes available through Council's operational management or routine network upgrades.

5.4 Water Supply Feasibility Summary

Direct connection to the existing 250mm trunk mains along Donald Road is the preferred servicing option, providing a high-capacity, efficient supply solution supported by the adjacent FNDC water reservoir.

Preliminary calculations indicate sufficient capacity, subject to confirmation through hydraulic modelling. If constraints are identified, a staged development approach can be adopted to manage demand until additional capacity becomes available through routine network upgrades. Both options align with FNDC's infrastructure planning for growth in Kaitaia.

6 Stormwater Management

6.1 Existing Stormwater Environment

The subject site is located at the upper extent of a catchment that drains westward toward the Awanui River via gullies, open drains, and piped culverts. Current stormwater management relies on natural overland flow paths and minor channels, with runoff converging at two main discharge points adjacent to Allen Bell Drive.

Regional flood mapping by the Northland Regional Council confirms minimal flood risk on the site, with inundation confined to lower-lying channels along the western boundary and further towards the Kaitaia township. An overland flow path also enters from the northern boundary. No formal stormwater treatment or attenuation systems currently exist within the site.

6.2 Proposed Stormwater Management Strategy

Stormwater management for the proposed development will build on the site's natural drainage patterns while achieving compliance with FNDC's Engineering Standards. A separate, detailed Stormwater and Flood Risk Assessment prepared by CKL confirms the stormwater strategy in detail.

The proposed approach includes:

- Retaining and enhancing key overland flow paths within green corridors.
- Attenuating post-development peak flows to pre-development levels for 2-year and 10-year events, and to 80% of pre-development rates for the 100-year event where needed.
- Providing water quality treatment through a combination of on-lot devices (e.g. rain gardens, permeable paving) and communal systems (e.g. swales, bioretention, wetlands) integrated into green spaces.
- Managing sub-catchments in line with site topography, with piped conveyance in road corridors and open channels within green reserves.
- Upgrading existing downstream culverts where necessary to accommodate additional flows.

This strategy ensures stormwater effects are appropriately mitigated while supporting the site's medium-density residential masterplan.

7 Conclusion

This Infrastructure Assessment has confirmed that the proposed rezoning of Part Lot 1 DP 173052, Donald Road, Kaitaia, from Rural Residential to General Residential is feasible from a three waters servicing perspective, provided the development is appropriately coordinated with planned and programmed infrastructure upgrades currently underway in Kaitaia.

The site is strategically located adjacent to significant Council water supply and wastewater infrastructure, including proximity to FNDC's Kaitaia water reservoir and active construction works within the Donald Road wastewater catchment. FNDC's Infrastructure Strategy 2024 identifies Kaitaia as a growth area and explicitly prioritises bulk water and wastewater network upgrades in this location to accommodate anticipated residential growth.

Wastewater servicing for the proposed 500-lot development can be achieved through direct connection to the reticulated network via the Donald Road gravity main to Pump Station SP764, with an alternative or supplementary connection to the Allen Bell Drive catchment (SP293) available to balance flows and manage staging flexibility. The programmed Donald Road sewer upgrade, including 1.6 km of new mains and increased emergency storage, is appropriately sized to support this level of additional demand, with further options for staged connection or targeted capacity upgrades identified if required.

Water supply demand generated by the development has been calculated at 600m³/day average, with peak hourly demand of 69.44 L/s. The site benefits from immediate adjacency to a key water storage reservoir and 250mm trunk mains along Donald Road, providing a robust opportunity for direct integration into the existing reticulated network. A staged approach may be implemented if required, with capacity confirmation to be finalised through hydraulic modelling and detailed design at the subdivision consent stage.

Stormwater will be managed through a comprehensive strategy aligned with FNDC's Engineering Standards, incorporating retention and enhancement of natural overland flow paths, on-site attenuation to pre-development discharge rates for 2, 10 and 100-year storm events, and water quality treatment via on-lot and communal stormwater management devices. A detailed Stormwater Management and Flood Risk Assessment has been prepared to support this Plan Change and inform subsequent design processes.

It is important to note that while the rezoning would enable provision for approximately 500 residential lots, the development is expected to be delivered progressively over an extended period, rather than as a single, large-scale build. The rate of lot release and construction will be influenced by market demand, infrastructure delivery timeframes, and subdivision staging. It is anticipated that development will occur in multiple phases, carefully coordinated with Council's planned infrastructure upgrades and available network capacity at each stage. This will ensure a managed, coordinated, and sustainable expansion of Kaitaia's residential catchment.

Overall, this report demonstrates that the proposed rezoning is well-supported by both the existing infrastructure context and Council's strategic planning framework. Servicing can be delivered through a combination of committed Council upgrade projects and localised network connections, ensuring the development can be fully integrated into Kaitaia's reticulated water, wastewater and stormwater networks while managing capacity and environmental effects.

8 Limitations

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