

Memorandum

DATE: 24 April 2025

TO: Lisa Thorne, Taylor Planning

FROM: Rob Hayes – Manager Engineering Services, Invercargill City Council

SUBJECT: Preliminary Engineering Assessment for Housing Plan Change

1. Purpose of Memo

The purpose of this memo is to outline and assess the potential impacts on transport and the three waters systems within the proposed housing plan change to increase density in Residential 1A (RES1A) zone, and to a lesser extent within the Residential 1 zone (RES1). The plan change seeks to promote medium-density development in RES1A to support urban growth. It also proposes amendments to the RES1 zone rules to better facilitate increased density by allowing lot sizes down to 350m² as a restricted discretionary activity, while providing for higher-density developments as discretionary activities rather than discouraging them as non-complying. This memo evaluates the infrastructure's capacity to accommodate the increased demand resulting from the proposed growth, focusing on the RES1A zone as this is where most of this growth will be enabled.

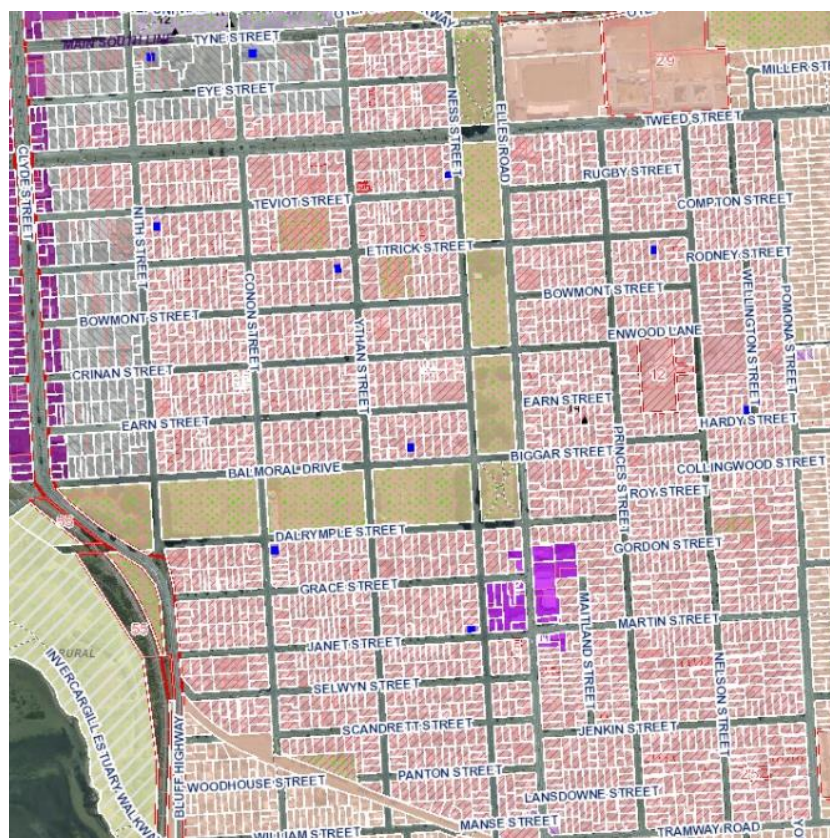


Fig 1.1: Residential 1A Zone

2. Transport Impacts

As part of the housing plan change, there are several key considerations regarding transport infrastructure:

Traffic Volume and Flow

Although the Council does not currently have an up-to-date traffic model to assess projected traffic growth, the current transport network appears to have sufficient capacity to accommodate increased demand. Roads within the RES1A zone feature carriageways between 9.0m to 14.0m in width, which should comfortably support additional traffic volumes.

While Invercargill has experienced some crash history at intersections, the anticipated increase in traffic is not expected to significantly impact the road network. As the development enabled by the plan change will occur over extended period, allowing time for the Council to monitor and address any issues that arise through routine transport planning and investment. Overall, the plan change is expected to have only a marginal effect on traffic. Minor queuing may occur at some intersections, but these impacts are unlikely to be substantial, and traffic considerations can be considered as part of an assessment of effects for resource consent.

In terms of strategic development, increased density is encouraged to the east of SH6 (Dee Street), particularly between Victoria Avenue and Avenal Street. This area offers strong connectivity to the CBD and is serviced by roads such as Lowe Street, Fox Street, Thames Street, and Thomson Street, each with a 9.0-meter-wide carriageway. The nearby Business 3 Zone generates high volumes of commercial activity, which can lead to daytime congestion and make crossing SH6 difficult. However, Kelvin Street provides a safer and more convenient alternative route both to North and South directions. It is understood that there are other considerations that need to be factored into any upzoning of this area, such as the airport noise contours.

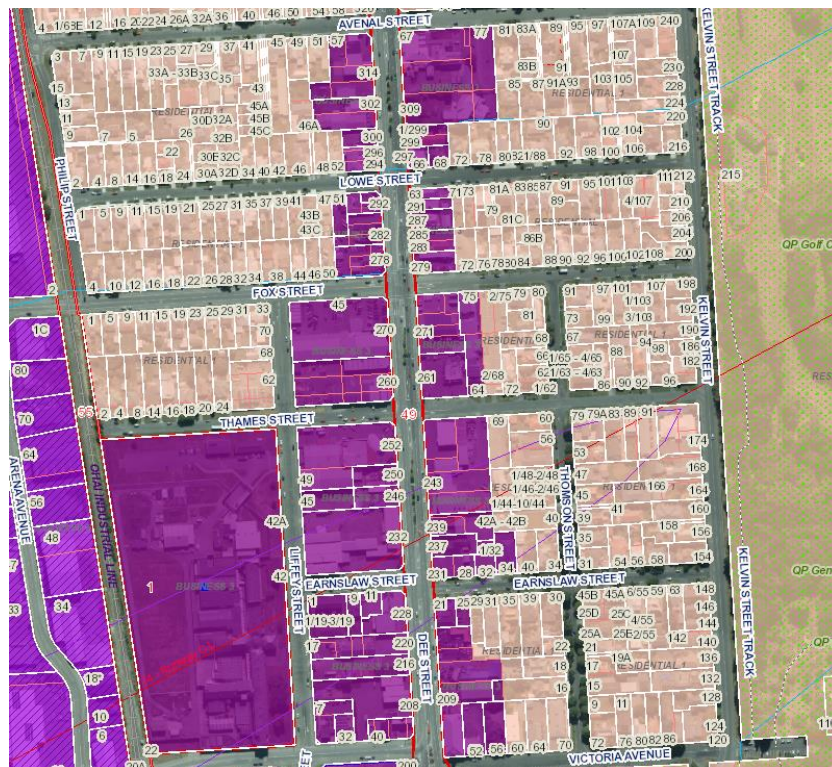


Fig 2.1: Dee Street between Victoria Avenue and Avenal Street.

Parking

On Street parking shortages are currently evident at peak time around key areas such as shopping centres and hospitals. With increased housing density, it remains unclear whether off-street parking will be provided. The existing District Plan does not mandate off-street parking for new developments. Furthermore, under the National Policy Statement on Urban Development (NPS-UD), Councils are no longer permitted to mandate on-site parking for new developments.

Increased on-street parking may create operational challenges, including maintenance and street sweeping. These impacts will need to be managed proactively.

Consideration should be given to whether recent medium-density modelling by Rational has accounted for the potential need or feasibility of on-site parking. Council has mechanisms in place to manage parking supply and demand, and a comprehensive parking strategy should be developed to support this transition.

Public Transport Access

Public transport services are available within the RES1A zone. The existing bus network operates on weekdays from 7:20 am to 5:20 pm, with reduced services on Saturdays and no service on Sundays. Key routes include Conon Street, Elles Road, Dee Street, Gala Street, and Yarrow Street. These routes reflect the current schedule. However, service hours and frequency may need to be updated in the future to meet anticipated demand.

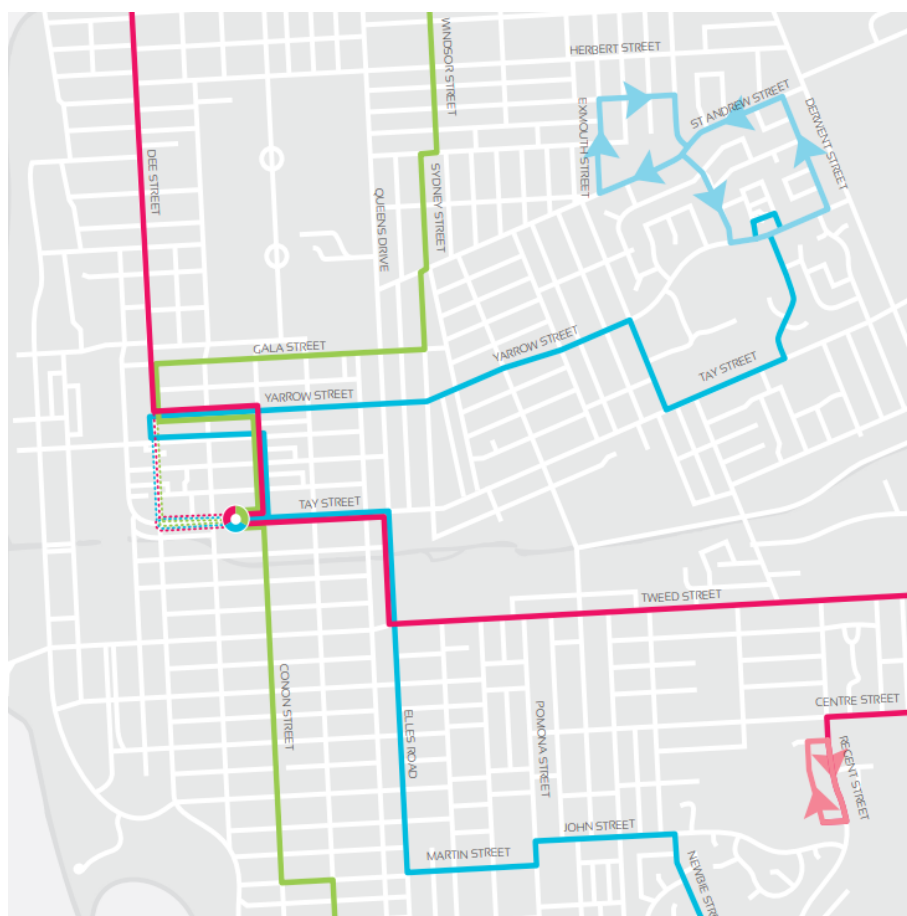


Fig 2.2: Bus Routes.

Pedestrian and Cycling Infrastructure

Medium-density development should prioritise safe and accessible infrastructure for pedestrians and cyclists to encourage active modes of transport. This includes the provision of well-designed crossings, continuous footpaths, and dedicated cycle lanes. Existing cycle infrastructure on Tweed Street, Conon Street, and Ness Street already supports cycling within the RES1A zone, while established pedestrian connections throughout the area provide a strong foundation to accommodate increased residential density.

3. Three Waters Impacts

The three waters systems—water supply, wastewater, and stormwater—will require sufficient capacity to cater for additional demand:

Water Supply

- **Water Supply Capacity and Demand:** The plan change will increase the demand for potable water. According to the 2023 report from Rational, the Braxholme water treatment plant is designed to treat 45,000m³/day. In reality, it has sufficient capacity to treat up to 47,200m³/day, and there are long-term plans to establish an alternative water supply. At this stage, there are no concerns regarding the capacity of the water treatment plant.
- **Water Network:** A review of the existing water supply infrastructure is necessary to determine if it can meet the increased demand. If required, upgrades to the water mains may be necessary to accommodate the new demand. Council is in the process of developing water modelling, which will provide accurate information regarding the capacity of the network. This modelling is expected to be completed by the end of 2026 and will then inform any necessary future upgrades to accommodate demand.

Wastewater

- **Capacity of Wastewater Treatment System:** The proposed increase in housing units will lead to a corresponding rise in wastewater generation. This increased flow is able to be processed by the existing Clifton waste water treatment plant. The 2023 report from Rational states that the wastewater discharge consent is for 80,000m³/day. In fact, the discharge consent for the Clifton Wastewater Treatment Plant is set at 90,000m³/day and is valid until 30 June 2029. Council has already commenced work on a new discharge consent and funding for the upgrading of the plant is already part of the Long-term Plan.
- **Wastewater Network:** Most of the existing wastewater network is capable of handling the growth as per Council's Long-term Plan. An in-depth review of the current wastewater infrastructure is required to assess whether it can support the additional demand. If necessary, upgrades to the wastewater mains may be required. Similar to the water network, the Council is developing Wastewater modelling, which will give a clearer picture of the network's capacity. The modelling is expected to be completed by the end of 2026, and will then inform any necessary future upgrades to accommodate demand.

Stormwater

- **Stormwater Management:** Medium density housing will increase impermeable surfaces, such as roofs and driveways, leading to an increase in stormwater runoff. The existing stormwater

infrastructure in the residential zones is designed to handle runoff based on a coefficient (C) of 0.55. Therefore, both the peak flow and total runoff volume from housing redevelopment must not exceed what would be generated using this coefficient. Any new development must ensure that additional runoff from the site is properly managed and attenuated. Developers are required to demonstrate that the development will not exceed this runoff coefficient. To mitigate the impact, we recommend maintaining a minimum of 30% permeable surface on all sites in all residential zones. This minimum permeable area requirement must not be reduced through rules in the District Plan. For the proposed development intensification, ICC encourages the use of low impact design and green infrastructure practices to promote sustainable stormwater management and reduce pressure on the existing network.

It is expected that these impacts will not occur all at once, with development unfolding over the next 30 years. If demand increases significantly during this period, the Council will upgrade the network as needed. Once the modelling is complete, the Council will be able to assess the network's capacity and, based on growth trends in specific areas, upgrade the network as required.

4. Conclusion

The proposed housing plan change presents several challenges and opportunities regarding transport and three waters infrastructure. On an operational level, we do not foresee any significant constraints or issues; however, we recommend conducting an integrated transport assessment to support the changes to the RES1A zone to ensure development is both feasible and sustainable.

The Council is currently working on developing water and wastewater modelling. While the existing infrastructure in the RES1A is adequate for the time being, a detailed three waters model must be completed, and as discussed above, is underway. If the modelling indicates that the network is nearing or under capacity, upgrades will be made to manage the increased flows to cater for additional growth over time.

The following actions are recommended to support the plan change:

1. **Impacts on the existing Transport Network** are predicated to be minor, however an Integrated Transport Assessment is required to evaluate the existing transport network and identify whether any upgrades or modifications would be required now or in the future to accommodate the proposed development.
2. **Existing Three Waters Infrastructure** is expected to have sufficient capacity to allow the proposed plan change. Separate to the plan change, detailed modelling work is already underway and due in 2026. Following that, ongoing modelling and assessment of the network's performance is required so that the upgrading can occur as and when necessary to address the cumulative impacts of development as it occurs over time. Any upgrades to water reticulation, wastewater, and stormwater systems can be programmed, prioritized and funded from renewal budgets available at that time.

It is recommended the Integrated Transport Assessment be completed prior to finalising the plan change. This will ensure that any infrastructure requirements are fully understood and addressed, thereby supporting the successful and sustainable implementation of increased housing density in the RES1 and RES1A zones.

Should you require any further information, please don't hesitate to contact me.

Yours faithfully,

A handwritten signature in blue ink, appearing to be 'Rob Hayes', with a stylized, cursive script.

Rob Hayes
Manager – Engineering Services
Invercargill City Council

Memorandum

DATE: 13 October 2025

TO: Emma Spalding and Louise Taylor, Taylor Planning

FROM: Rob Hayes – Manager Engineering Services, Invercargill City Council

SUBJECT: Engineering Addendum Assessment for Housing Plan Change

1. Purpose of Memo

The purpose of this memo is to update the assessment of potential impacts on transport and the three waters systems within the proposed housing plan change to increase density in Residential 1A (RES1A) zone, and to a lesser extent within the Residential 1 zone (RES1).

The plan change seeks to promote medium-density development in RES1A to support urban growth. It also proposes amendments to the RES1 zone rules to better facilitate increased density by allowing lot sizes down to 350m² as a restricted discretionary activity, while providing for higher-density developments as discretionary activities. This memo further evaluates the infrastructure's capacity to accommodate the increased demand resulting from the proposed growth, and is an addendum to and should be read in conjunction with the more detailed memo dated 24 April 2025.

2. Transport Impacts

Although Council does not currently have an up-to-date traffic model to assess projected traffic growth, the current network appears to have sufficient capacity to accommodate increased demand in the short and medium (10yr) term. Roads within the RES1A zone feature carriageways between 9.0m to 14.0m in width, which should comfortably support additional traffic volumes over this period.

The same conclusions that were made in April 2025 apply, having now received a more detailed ITA from WSP in September 2025, which further evaluated traffic impacts. The ITA identifies that if the full feasible development capacity is realized (which includes both the Residential 1A changes, and a scenario which accommodates the future Granny Flat changes proposed by the Government) then there will be some road and intersections that increase delays and issues with car parking. However, this will be over a longer term 30 year period, and as the development enabled by the plan change will occur over this extended period, it will allow time for the Council to monitor and address any issues that arise through routine transport planning and investment. Overall, the plan change is expected to have only a marginal effect on traffic, as outlined in the April memo.

Parking and public transport are sufficiently addressed in the April 2025 memo and the WSP ITA, and no further assessment of those is necessary.

3. Three Waters Impacts

The three waters systems water supply, wastewater, and stormwater will have sufficient capacity to cater for additional demand and these were addressed in the April 2025 memo. The September 2025 Housing Sufficiency report for the plan change has updated the modeling to refine it and to assess it against a scenario which accommodates the future Granny Flat changes proposed by the Government to provide a more complete picture of capacity. The report illustrates that existing infrastructure cannot accommodate full infrastructure enabled capacity, but this is based on a high-growth scenario over a 30 year term, and is unlikely to require intervention over the next decade.

An update to the water, wastewater, and stormwater conclusions in the April 2025 memo is below:

- **Water Supply Capacity and Demand:** The plan change will increase the demand for potable water. The Braxholme water treatment plant is designed to treat up to 47,200m³/day, and there are long-term plans to establish an alternative water supply. There remain no concerns regarding the capacity of the water treatment plant.
- **Water Network:** Water modelling as signaled in the previous memo is on track, expected to be completed by the end of 2026, and will then inform any necessary future upgrades to accommodate demand.
- **Capacity of Wastewater Treatment System:** The proposed increase in housing units will lead to a corresponding rise in wastewater generation. The discharge consent for the Clifton Wastewater Treatment Plant can accommodate 90,000m³/day and is valid until 30 June 2029, and Councils work on a new discharge consent remains part of the Long-term Plan.
- **Wastewater Network:** Most of the existing wastewater network is capable of handling the growth as per Council's Long-term Plan. As set out in the previous memo, Council is developing Wastewater modelling, expected to be completed by the end of 2026, and which will inform any necessary future upgrades to accommodate additional demand.
- **Stormwater Management:** Medium density housing will increase impermeable surfaces, such as roofs and driveways, leading to an increase in stormwater runoff. The recommendations in the previous memo to maintain a minimum of 30% permeable surface on all sites in all residential zones has been adopted in the plan change.

It is expected that these impacts will not occur all at once, with development unfolding over the next 30 years. If demand increases significantly during this period, the Council will upgrade the network as needed. Once the modelling is complete, Council will be able to assess network capacity and, based on growth trends in specific areas, upgrade the network as required, and in accordance with the LTP.

4. Conclusion

The proposed housing plan change presents several challenges and opportunities regarding transport and three waters infrastructure. On an operational level, subject to continued transport monitoring, and renewal of the Wastewater Treatment System and Wastewater modelling, we do not foresee any significant constraints or issues over the 10yr term of the district plan; and longer-term needs can be planned for.

Yours faithfully,



Rob Hayes
Manager – Engineering Services
Invercargill City Council