Enabling three-storey development on most residential land: Infrastructure capacity constraints (Auckland example)

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Abstract

The Productivity Commission's Housing supply regulation Interim report includes Reform direction 2.1, 'Allow up to 3-storey developments across most residential land'. Together with related Reform directions 2.3 and 2.6, which seek to facilitate smaller lot sizes, relax built-form controls and enable all dwelling types, such 'upzoning' would support higher dwelling densities as infill on most residential land.

The Interim report also includes Reform directions 3.1, 4.1 and 4.2. Overall, those seek upfront coordination of strategic planning for infrastructure and housing and sequencing of infrastructure upgrades as required to align with upzoning. In some cases, trunk infrastructure may be adequate to accommodate incremental infill growth for a period. However, to the extent the higher dwelling densities accommodated under Reform direction 2.1 require supporting infrastructure upgrades, there is scope for a fundamental conflict between these two sets of Reform directions. The exceptions provided for under Reform direction 2.1 do not currently include areas with insufficient infrastructure capacity.

As the most cited example of broad-scale upzoning for medium density residential infill, the circumstances of Auckland are investigated to identify any related infrastructure capacity constraints, to inform the scope of conflict between the Reform directions. Key findings include:

- *the Mixed housing zones under the Auckland Unitary Plan provide for 2- or 3-storey development. They have enabled a very high rate of development of particularly townhouses since 2017, likely contributing to crossing or approaching more infrastructure capacity thresholds in recent years;*
- *various iterations of water supply and/or sewerage infrastructure capacity issues have been identified since 2022 that, to some extent, constrain the expected type of development on up to about half of the Mixed housing zone areas in Auckland;*
- *the existence of those constraints, resulting refusal of infrastructure connections on some appropriately zoned and approved sites, and varying public expression of the constraints over time, has created more uncertainty for development;*
- *the level of concentration of townhouse building consents across Auckland, e.g. 82 per cent of consents being on 51 per cent of relevant statistical areas, indicates that some upzoned areas have provided limited additional dwelling yield. So, high yields might have been achieved without the same extent of broad-scale upzoning; and*
- *Auckland enables three or more storeys on at most 32 per cent of residential land, so the Interim report's proposal to enable 3-storey development on most residential land may give rise to more areas with infrastructure capacity issues in Australia's cities.*

As the Mixed housing upzoning in Auckland has given rise to infrastructure capacity issues in some areas, this evidence supports expanding the exceptions under Reform direction 2.1 to include areas with infrastructure capacity constraints. This would help provide greater upfront certainty for development and better align with the infrastructure-related reform directions of the Interim report.

Introduction

The Housing supply regulation Interim report, released by the Australian Government Productivity Commission (PC) for public consultation on 27 July 2026, includes a total of 14 Reform directions. This paper focuses on Reform direction 2.1, i.e. 'Allow up to 3-storey developments across most residential land', and related directions to facilitate smaller lot sizes, relax built-form controls and enable all dwelling types. Together, those Reform directions support higher dwelling densities on most residential land.

The objective here is to consider how such reform directions may conflict with those for strategic infrastructure planning and sequencing. Such conflict may arise to the extent higher dwelling densities relate to all residential land with limited exceptions. Such exceptions do not currently include areas with insufficient infrastructure capacity, and yet sequencing of infrastructure upgrades implies not all areas will be suitable for upzoning at the same time.

Of course, three storeys does not provide for a particularly high dwelling density, perhaps up to about 80 dwellings per hectare. So, given also the incremental nature of infill development, it may be that the trunk infrastructure capacity in many areas, for at least some infrastructure networks, can accommodate such higher densities for some period of growth.

This paper therefore considers the experience of Auckland, the most commonly cited example of broadscale medium-density residential upzoning. That experience informs the need for integration of infrastructure capacity and cost issues into any implementation of Reform direction 2.1

This paper first outlines and explains the relevant Reform directions of the PC Interim report. It then describes the relevant residential zonings in Auckland and considers the related infrastructure capacity issues, focussing on the water supply and sewerage networks. Conclusions are then drawn with implications for the implementation of the PC Interim report's reform directions.

Relevant Reform directions

The Reform direction 2.1 provides that:

> *State and territory governments should allow up to 3-storey developments across all residential land, with exceptions made for areas with environmental protection, hazard-related overlays or heritage listed buildings only where the benefits of exceptions outweigh the costs.* (Productivity Commission 2026, p.7)

In association with this, reform directions 2.3 and 2.6, respectively, seek to 'Reduce or remove minimum lot sizes' and 'Relax or remove built-form controls that limit flexibility and choice for households'. Relevant details of those reform directions include:

> *State, territory and local governments should recognise where minimum lot size requirements are reducing commercially feasible capacity, particularly in high demand areas, and remove or reduce requirements in those places. Subdivision requirements need to be permissive to enable this reform to have its full effect.*
>
> *State, territory and local governments should identify and reduce or remove built-form controls that limit the range of dwelling types available to households. …*
>
> - ***Modify controls as required to enable townhouse and apartment reform.*** *In areas suitable for townhouses and apartments, controls such as site*

coverage ratios, setback requirements and height restrictions should be modified to enable reform uptake. …

- ***Remove restrictions on housing types**. State, territory and local governments should avoid restricting certain dwelling types as desired outcomes can be better managed by other built-form controls. …*

(Productivity Commission 2026, Pp. 8-9)

In combination these reform directions would enable higher dwelling densities, e.g. townhouses and apartments up to three storeys, across most residential land. Such higher dwelling and associated population densities will increase the load on, and may require upgrading of the capacity of, supporting infrastructure.

These reform directions therefore need to be considered in the context of those related to planning for infrastructure, which include:

Reform direction 3.1 – Consider infrastructure requirements and trade-offs associated with development early through strategic planning

State and territory governments should seek to lift the burden from approvals by assessing development conditions and determining trade-offs efficiently and upfront rather than through the development approval process. This includes:

- *identifying suburbs and localities where there is a high expected demand for new housing, and making it an explicit performance goal for councils, relevant agencies and regulated infrastructure service providers to facilitate new housing in these areas …*
- *fully consider how any required housing-enabling infrastructure will interact with existing infrastructure, including by engaging with referral agencies or owners of existing infrastructure to identify potential barriers to development early (in conjunction with reform directions 4.1 and 4.2)*
- *incorporating the outcomes of these assessments into planning schemes as clear and codified requirements for development, and avoiding site specific assessments of trade-offs where possible.*

Reform direction 4.1 –Coordinate strategic planning for infrastructure with housing objectives

State, territory and local governments should improve their infrastructure planning by:

- *documenting how infrastructure planning supports housing objectives, including any interdependencies with third parties such as infrastructure service providers. This should be prioritised for areas identified as having high expected demand for new housing (reform direction 3.1) …*

Reform direction 4.2 – Improve infrastructure sequencing with housing development

State and territory governments should improve how infrastructure is sequenced with housing. This includes:

- *ensuring the timing of rezoning and infrastructure planning accounts for the lead times of each and that is reflected in infrastructure plans, to ensure land for housing is released once a plan to deliver timely supporting infrastructure has been made*

- *ensuring infrastructure upgrades to support additional housing coincide with required changes to support housing, such as upzoning …*

(Productivity Commission 2026, Pp.10-12)

Implicit in these infrastructure reform directions is the recognition that supporting infrastructure is expensive and it is generally not practical to simultaneously fund infrastructure upgrades across many/most catchments in an area. It is a clear financial and efficiency objective to prioritise and sequence infrastructure upgrades over the long term. (Infrastructure Australia 2018; Spiller and Forrest 2017)

So, the need to prioritise infrastructure expenditure will be likely to make it less practical to sequence infrastructure to align with such a broad-scale upzoning as envisaged by Reform direction 2.1. In this regard Reform direction 2.1 would be likely to conflict with Reform direction 4.2, which implies that not all areas will be able to be upzoned at the same time.

However, to the extent the existing trunk infrastructure has the capacity to accommodate the incremental infill development that would arise from Reform direction 2.1, for a significant period, this is less of a problem. The following sections therefore consider the experience of Auckland, which provides the most cited example of such broad-scale upzoning, to assess actual infrastructure implications in that case.

The Auckland experience

The planning provisions

The Auckland Unitary Plan (AUP) was adopted nearly 10 years ago in November 2016. As at March 2022, within residential zones it provided net additional capacity of 946,000 dwellings, compared with 241,000 dwellings under the previous planning regime (as at May 2012) (Balderstone *et al.* 2023; Fredrickson and Balderstone 2013).

In terms of allowing for townhouses and walk-up apartments, the key residential zones in Auckland are the Mixed Housing Suburban (MHS) and Mixed Housing Urban (MHU) zones. Those two zones provide for medium density housing development as follows:

- Mixed Housing Suburban (MHS)

  The zone is intended for predominantly two-storey detached and attached housing. Three dwellings are permitted as of right on any site subject to compliance with relevant standards, e.g. for building height, building coverage and outdoor living area. Resource consent[1] is required for more than three dwellings, still subject to the same building height standard, but not those for building coverage or outdoor living area.

- Mixed Housing Urban (MHU)

  This zone is intended for predominantly detached and attached housing and low-rise apartments up to three storeys. Again, three dwellings are permitted as of right on any site subject to compliance with building standards. Resource consent is required for more than three dwellings, still subject to the same building height standard, but not those for building coverage or outdoor living area. (Auckland Council 2026b)

[1] Broadly, resource consents in New Zealand are the equivalent of planning approvals in Australia.

Table 1 below shows the proportions of land included in the identified residential zones overall as at July 2026 (Auckland Council 2026a; LINZ 2026). In addition to the MHS and MHU zones described above, the other zones provide for development as follows:

- the Terrace Housing and Apartment Buildings (THAB) Zone provides for higher housing densities, up to seven storeys in some cases;
- the Single House (SH) Zone permits two dwellings as of right on sites that had an existing house in 2013, but otherwise is intended for only one dwelling per site;
- the Large Lot Zone (LL) has large minimum lot sizes and limits the intensity of development due to a lack of reticulated services and landscape issues; and
- the Rural and Coastal Settlement Zone (RCS) also limits the intensity of development due to servicing, accessibility and landscape issues. (Auckland Council 2026b)

Table 1: Proportions of land area and properties by residential zone, AUP, July 2026

Residential zone	% of land area[2]	% of properties[3]
Mixed Housing Suburban (MHS)	38	44
Mixed Housing Urban (MHU)	21	25
Single House (SH)	22	18
Terrace Housing and Apartment Buildings (THAB)	7	11
Large Lot (LL)	8	1
Rural and Coastal Settlement (RCS)	5	1

The development outcome

While the MHU Zone does, the MHS Zone does not provide for three-storey development as proposed by the PC Interim report for most residential land in Australia's cities. However, it is included in this analysis because it is the most extensive residential zone in Auckland which has been a core part of the planning system that enabled a boom in townhouse construction over the last 10 years.

The scale of the townhouse boom since 2017 is illustrated in Table 2 below which shows building consents by dwelling type in Auckland over the 2017-2026 period compared to the two previous decades (Stats NZ 2026a). Townhouse building consents for the 2017-2026 period:

- exceed those for all other dwelling types, including houses, in any period;
- are nearly 10 times the townhouse consents in the 2007-2016 period prior to the adoption of the AUP; and
- are more than three times the apartment consents for the 2017-2026 period, whereas they were less than the apartment consents in each of the previous two decades.

[2] Area of relevant zone polygons from Auckland Council (2026a).

[3] Extracted based on properties (LINZ 2026) that have their centre in the relevant zone polygons (Auckland Council 2026a). Excludes road and hydro parcels. The properties aggregate all spatialised titles associated with a Rating Unit into a single property.

Table 2: Building consents in Auckland, by housing type and decade, 1997-2026[4]

Decade	Houses	Townhouses[5]	Apartments	Retirement village units
1997-2006	59,846	13,392	19,943	2,263
2007-2016	39,169	7,217	8,479	4,303
2017-2026	53,375	69,286	22,446	5,822

The impact of the planning changes made with the adoption of the AUP can also be seen from the fact that the number of house consents and the number of apartment consents are comparable for the 1997-2006 and 2017-2026 construction boom periods. In contrast, the number of townhouse consents in the 2017-2026 period is more than five times that for the 1997-2006 period. This is consistent with townhouses going from being relatively constrained under the planning regime prior to 2017, to a situation where they are now the major dwelling type enabled by the AUP (Anstey 2024).

As a spatial illustration of this, Figure 1 below broadly compares the distribution of townhouse and apartment building consents by Statistical Area 2 (SA2) over the last 10 years to the MHS, MHU and THAB zones, for most of Auckland.[6] (Auckland Council 2026a; Stats NZ 2026a)

It is noted 82 per cent of townhouse building consents, i.e. 56,203 out of 68,161 on SA2s with 20 or more consents, are located in just 51 per cent of the SA2s (241 out of 473). Apartment building consents are more concentrated, with 82 per cent of consents, i.e. 17,679 out of 21,564 on SA2s with 20 or more consents, located in 47 per cent of SA2s (79 out of 168), including 4874 in inner Auckland.[7]

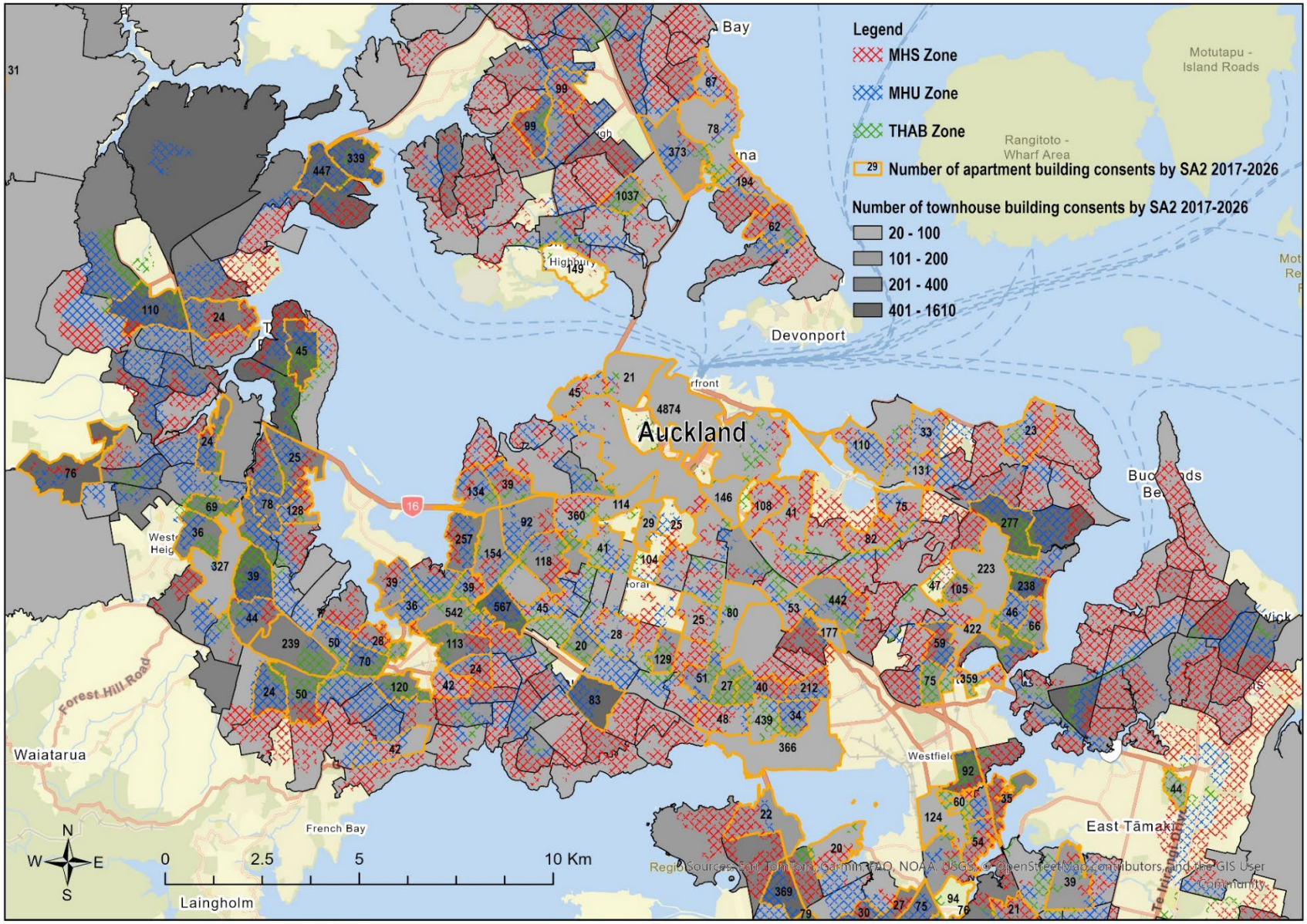
[4] These are calendar years, with the exception of 2026 which is only up to June due to data availability at the time of retrieval from StatsNZ.

[5] 'Townhouses' here refers to the 'townhouses_flats_units_other' category of building consents, which is differentiated from the 'houses', 'apartments' and 'retirement_village_units' categories (Stats NZ 2026a).

[6] For clarity, only SA2s with 20 or more townhouse and/or apartment building consents and only the core parts of Auckland are shown.

[7] Twenty-two small SA2s in inner Auckland and related building consents are combined on Figure 1, again for clarity at the map scale.

Figure 1: Building consents by SA2, Auckland, 2017-2026, compared to higher density housing zones (as at July 2026)



Infrastructure capacity issues

Given available information, this section focuses on issues with water supply and sewerage infrastructure capacity in Auckland.

As part of the preparation and evaluation of Proposed Plan Change 78 (PC78) (notified in August 2022), the Council identified 'Water and Wastewater Servicing Constraints'. That report identified nearly 46,000 sites then affected by water supply and/or wastewater servicing constraints. Most of the areas affected are identified in Figure 2 below (top left side).[8]

A key thing to note about the areas shown is that they were mostly zoned SH under the AUP, but were proposed to be upzoned to enable medium density residential development as part of PC78. Areas already zoned MHS or MHU were therefore generally not captured.[9]

The main purpose in identifying these areas was to '…provide Council with the ability to decline resource consent for additional dwellings in cases where the effects on the water and wastewater network are not able to be appropriately managed.' (p.4). It was also identified as important to inform owners/developers of the infrastructure limitations upfront, as removal of the constraint was not expected within 10 years. (Auckland Council 2022a)

Pending PC78, in 2024 issues were being raised by the development sector about water supply and/or sewerage infrastructure capacity constraints effectively preventing development, including some that had received resource consents. Such constraints were initially denied by Watercare, Auckland's main water network provider. (Gilligan 2024)

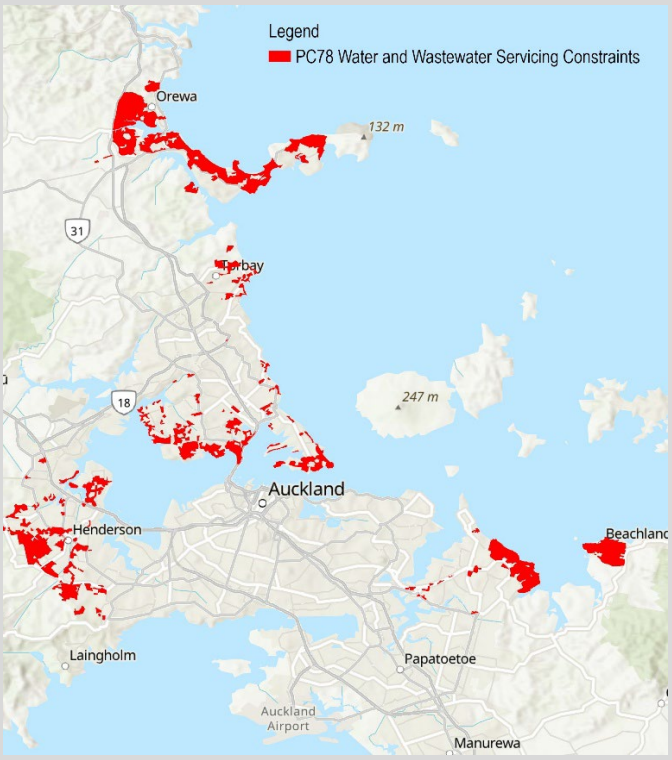
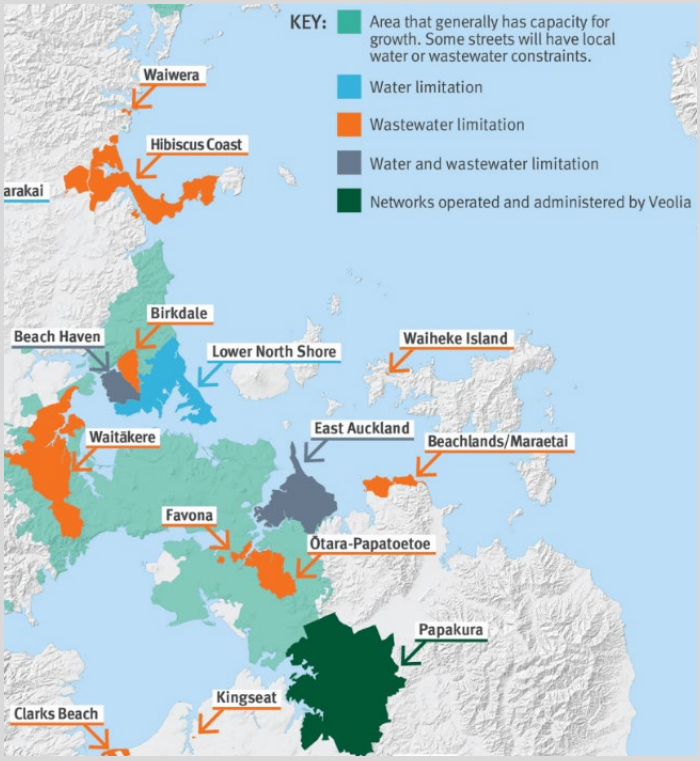
Then, in November 2024, Watercare published their first 'Network capacity in Auckland' map, identifying areas with limitations or no capacity at present, and those with no capacity long term, as shown in Figure 2 (top right side). This was followed in June 2025 by updated maps showing quite different circumstances to 'clarify development potential across Auckland', also shown in Figure 2 (bottom left side). Most recently, in June 2026, the map has again been updated as shown in Figure 2 (bottom right side). (Watercare 2024, 2025, 2026a)

The Watercare mapping of areas with some limitation, or at least qualification, of capacity is more extensive than the PC78 mapping, but generally incorporates the areas shown in the latter. To a large extent this is because the PC78 mapping related to proposed changes to the AUP and therefore did not generally capture areas already zoned MHS or MHU, but the relevant areas of the Watercare mapping do (for comparison see Figure 3 below). However, there are also significant differences between the iterations of the Watercare mapping over time, which is undesirable from the point of view of providing certainty to the development sector.

[8] As the base GIS parcel-level data was unavailable from Auckland Council, this mapping is an approximation of the PC78 mapping based on 2026 meshblocks that appeared, using a manual, visual comparison and selection process, to have about half or more of their area comprising relevant parcels (Auckland Council 2026c; Stats NZ 2026b). The isolated area of Waiuku is not shown to provide a readable scale similar to the other maps in Figure 2.

[9] To the extent it related to medium density residential standards as a permitted activity, PC78 was withdrawn in October 2025 (Auckland Council 2025).

Figure 2: PC 78 Servicing Constraints and Watercare ‘Network capacity in Auckland’ maps

<table>
<tr><th>August 2022</th><th>November 2024</th></tr>
<tr><td> 
</td><td> 
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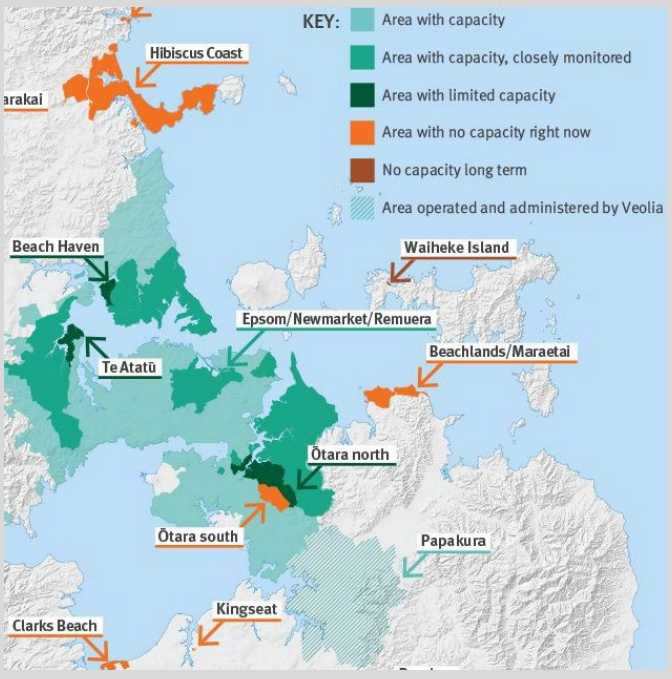
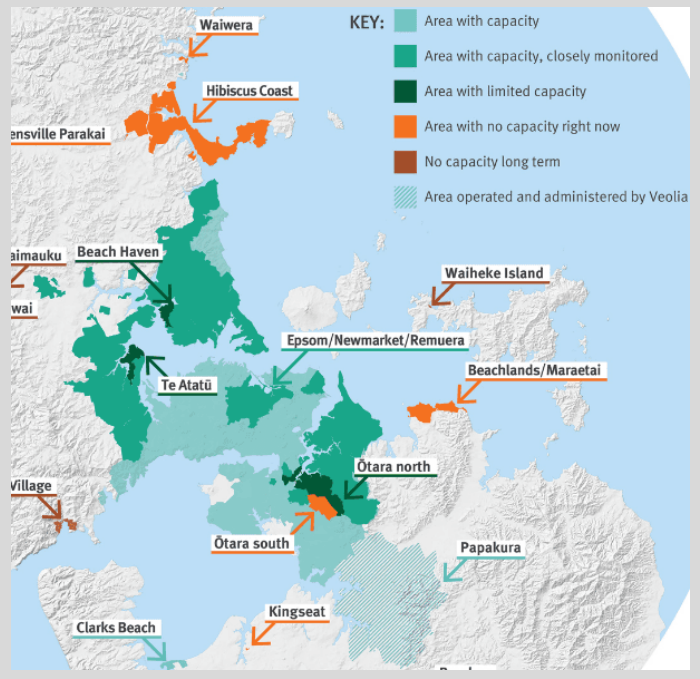
<tr><th>June 2025</th><th>June 2026</th></tr>
<tr><td> 
</td><td> 
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The summary effect, for development in the respective areas, of the current June 2026 Watercare mapping is as follows:

a. Area with capacity

   The trunk infrastructure[10] (treatment plants and large pipes at the suburb level) generally has capacity to support growth, with no infrastructure upgrades identified. Some individual streets may have bottlenecks in the pipe network.

b. Area with capacity, closely monitored

   There is generally capacity in the trunk infrastructure, but some larger developments[11] may be declined depending on the specific location and impact to the networks. Proposed infrastructure upgrades are identified for these areas. Some individual streets may have bottlenecks in the pipe network.

c. Area with limited capacity

   Trunk infrastructure capacity in these areas is limited. Proposed infrastructure upgrades are identified, but in the interim developments equivalent to more than five additional standard houses will be declined. In addition, some individual streets may have bottlenecks in the pipe network.

d. Area with no capacity right now

   Trunk infrastructure in these areas is at or nearing capacity. Infrastructure upgrades are identified with varying timeframes. In the interim, although developments with approvals can generally proceed, no new approvals are being given.

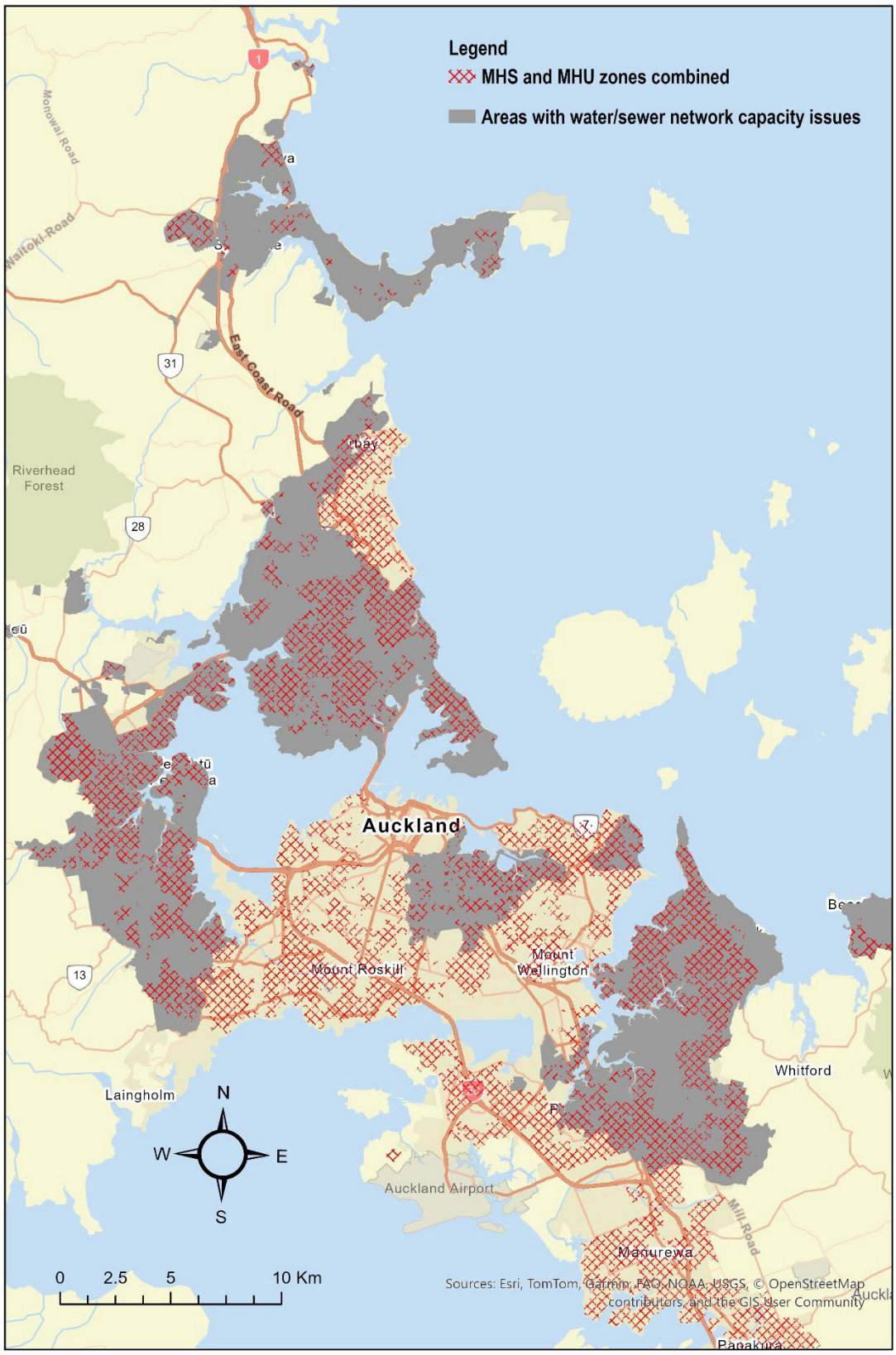
Areas with 'No capacity long term' have no medium density residential zonings and are not relevant here. Infrastructure capacity issues have not been identified for the part of the water network area in Papakura which is administered by Veolia. (Watercare 2026a)

The effect of the June 2026 Watercare mapping has been translated into Figure 3 below. It shows 'Areas with water/sewer network capacity issues', i.e. where new developments will or may be declined due to trunk water supply or sewerage infrastructure capacity, based on criteria b, c and d above, combined. They are compared to the combined area currently zoned MHU or MHS. (Auckland Council 2026a; Watercare 2026b). About half of the total area of the combined zones, including those zones in Papakura which is not covered by the Watercare mapping, is located in areas with such infrastructure capacity issues. Although most such areas are in the least constrained 'Area with capacity, closely monitored' category, it is important to recognise the degree of uncertainty for development in those areas also.

The emergence of the Watercare mapping in recent years, and the water supply and sewerage capacity constraints that have given rise to it, may be related to the unprecedentedly high level of townhouse development over the last 10 years (see Table 2 and Figure 1 above). Such a high rate of growth, and in particular areas, may not have been expected at the time of preparation of the AUP (Gilligan 2024).

[10] The term 'trunk' infrastructure is used, in place of the term 'bulk' infrastructure used in the Watercare source document, to align with common Australian usage.
[11] For example, in one instance developments larger than 10 standard houses are treated differently than smaller developments.

Figure 3: Mixed housing zones with water/sewer network capacity issues in Auckland, 2026



Discussion and conclusions

The experience of Auckland is an example of the tension that exists between the PC Interim report's Reform directions to enable three-storey development across most residential areas, and the Reform directions that seek to align any upzoning with infrastructure sequencing.

Nearly 10 years after being upzoned for medium density residential development, large areas of Auckland are now subject to an overlay of sometimes uncertain constraints on further development due to water supply and/or sewerage infrastructure capacity issues. The exact nature of those constraints and the approach to resolving them was not made clear upfront and different guidance and explanations for them over time have generated more uncertainty for development. Of course, the very high rate of particularly townhouse development since 2017, and its implications for infrastructure capacity in some areas, may not have been foreseen at the time of preparation of the AUP.

In any case, the outcome in Auckland is contrary to the objective under Reform direction 3.1 to integrate infrastructure assessments '…into planning schemes as clear and codified requirements for development, …avoiding site specific assessments of trade-offs where possible.'

Given the other extensive areas of upzoned land that have adequate bulk water and sewerage network capacity to support growth, there was the scope from the beginning in Auckland to limit the area of upzoning to align with existing and planned infrastructure. At least from the perspective of the water and sewerage networks, that approach would have been more consistent with the PC Interim report's Reform directions 3.1, 4.1 and 4.2.

Also, the level of concentration of townhouse building consents across Auckland (see Figure 1) indicates that some upzoned areas have provided limited additional dwelling yield, indicating that high yields might be achieved without such broad-scale upzoning.

Overall, the various ways in which it has been proposed to limit additional dwellings, in recognition of the water/sewerage capacity constraints in Auckland, indicate the likely need to limit 3-storey development in some areas as part of strategic planning. The need for this is in the Australian context of the Interim report is emphasised by the fact that Auckland enables three or more storeys on only 28 per cent of residential zoned land (32 per cent if you exclude the LL and RCS zones as being residential due to their relative lack of reticulated services). This is far from being 'all with limited exceptions' or 'most' residential land as proposed by Reform direction 2.1, so applying that approach in Australia's cities may give rise to infrastructure capacity issues in more areas than in Auckland.

Of course, other infrastructure network capacities and upgrading costs also need to be considered in defining areas suitable for upzoning. For example, PC78 in Auckland also identified transport and stormwater constraints in some areas (Auckland Council 2022b, 2022c). Social infrastructure such as schools and parks should also be considered.

Reform direction 2.1 limits the extent of the proposed upzoning for 3-storey residential development by suggesting exceptions could be made for areas with environmental protection, hazard-related overlays or heritage-listed buildings. In recognition of the financial impetus to sequence infrastructure upgrades over time, those exceptions should be expanded to include areas with infrastructure capacity constraints, to better align with Reform directions 3.1, 4.1 and 4.2.

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