BEFORE THE HEARING COMMISSIONERS

IN THE MATTER	of the Resource Management Act 1991 ("the Act")
AND	
IN THE MATTER	of submissions by Waka Kotahi NZ Transport Agency (submitter 275 and further submitter 2103) on Proposed Christchurch City Council Plan Change 14

STATEMENT OF EVIDENCE OF JOHN ANDREW FALCONER ON BEHALF OF WAKA KOTAHI NZ TRANSPORT AGENCY

20 September 2023

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1. INTRODUCTION

1.1. My full name is John Andrew Falconer. I am a Director of QTP Limited, specialist transport planning consultants with particular expertise in transport modelling. As a Director of QTP Limited, I am responsible for providing transport planning and traffic modelling advice to central government agencies (such as Waka Kothi), local government (primarily Christchurch City Council (**CCC**) and Environment Canterbury (**ECan**), other engineering consultancy firms and (occasionally) private developers.

1.2. I hold a Bachelor of Engineering Degree in Civil Engineering from the University of Canterbury (1995). I have 27 years' experience in traffic engineering and transport planning. I am a member of the Institution of Professional Engineers New Zealand (CMEngNZ) and a Chartered Professional Engineer (CPEng), registered under the Chartered Professional Engineers New Zealand Act 2002.

1.3. I have been involved in transport planning and landuse forecasting for the Greater Christchurch area since 2001, where I had a key role in developing the original Urban Development Strategy as a transport planner for CCC, before joining Beca Infrastructure Ltd as an associate from 2005-2009.

1.4. Since forming QTP in 2009 with two other Directors, I have continued to work on transport projects predominantly in the Greater Christchurch Area. This includes:

(a) regular application and updates to the CTM[1] and CAST[2] regional transport models;
(b) post-earthquake recovery 'An Accessible City' transport modelling and economics for CCC and Christchurch Earthquake Recovery Authority (CERA):
(c) preparing landuse forecast scenarios and transport modelling for the Greater Christchurch Partnership (e.g. OurSpace and the draft Greater Christchurch Spatial Plan (**GCSP**));
(d) Modelling and economic assessments for many Christchurch bus-lanes and major cycle routes.

1.5. I have also been an expert witness at the Environment Court and Council hearings associated with various Plan Changes and the Christchurch Proposed Replacement District Plan Hearings.

[1] Christchurch Transport Model – Regional four stage traffic model implemented in CUCE Voyager software.
[2] Christchurch Assignment and Simulation of Traffic – Mesoscopic traffic assignment model implemented in SATURN software.

1.6. Currently I am part of a team of consultants[3] led by WSP that Waka Kotahi commissioned to prepare a series of Business Cases relating to enhancing public transport for Greater Christchurch, including an Indicative Business Case (**IBC**) for Mass Rapid Transit (**MRT**). My specific role was to undertake transport modelling to estimate likely patronage, economic evaluation in accordance with Waka Kotahi's Monetised Benefits and Costs Manual, and quantification of Key Performance Indicators (**KPIs**) used to determine the effectiveness of the preferred option in meeting the investment objectives.

1.7. As a result of this work, I have been engaged by Waka Kotahi to provide evidence in relation to how Plan Change 14 (**PC14**) Qualifying Matters (**QM's**) could affect the development of MRT and associated land use intensification along a proposed route identified in the IBC.

2. SCOPE OF EVIDENCE

2.1. The scope of my evidence is to demonstrate how PC14 QM's, including CIAL's submission relating to a revised noise contour, might affect the transport corridor along Riccarton Road, including the viability of the outcomes identified in the MRT IBC, which relies upon significant landuse intensification along the preferred route.

2.2. My evidence addresses the following matters:

(a) MRT background and planning framework;
(b) The impact that PC14 QMs have on MRT IBC landuse inputs; and
(c) The implications for MRT IBC outcomes and objectives.

3. CODE OF CONDUCT

3.1. I confirm that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2023 and that I agree to comply with it. I confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that this evidence is within my area of expertise, except where I state that I am relying on the evidence of another person.

4. MRT BACKGROUND AND PLANNING FRAMEWORK

4.1. Waka Kotahi recently (July 2023) endorsed the MRT IBC for Greater Christchurch. This identified a preferred MRT corridor which travels along Main North and Papanui Roads to the north, and Riccarton and Main South Roads to the west. The north and south

[3] Including WSP, Aurecon, Boffa Miskell and QTP

routes are connected through the central city using Tuam, Manchester, Kilmore and Victoria Streets.

4.2. The IBC follows on from the Public Transport Futures (**PT Futures**) Single Stage Business Case, which seeks to enhance bus services and infrastructure on key routes (which is currently being implemented, including on Riccarton Road), as a steppingstone paving the way for MRT to achieve the longer-term desired city-shaping long-term outcomes.

4.3. The IBC identified three main drivers for investment in MRT:

(a) City-shaping - Increased proportion of the population within key prioritised locations and along identified transport corridors within Greater Christchurch with improved access to Christchurch's Central City by 2051;
(b) Transport choice and accessibility - Improved journey time and reliability of public transport services relative to private vehicles within Greater Christchurch by 2051; and
(c) Climate change - Reduce emissions from transport movements across Greater Christchurch by 2051.

4.4. These objectives align with the Government's Transport Policy Statement on Land Transport 2021/22 (and draft 2024/25 document) (**GPS**).

4.5. The PT Futures programme (Foundations, Rest of Network, and MRT Business Cases) are specifically mentioned in the Canterbury Regional Land Transport Plan (**RLTP**) (2021), along with transport and land use integration and the need to develop a well-functioning urban environment.[4]

4.6. Importantly, all these drivers (and the need for MRT) are integral to achieving the National Policy Statement - Urban Development 2020 (NPS-UD) and the Resource Management (Enabling Housing Supply and Others Matters) Amendment Act 2021 which seek to enable more development in the city's existing urban areas with even greater building development of both residential and commercial to be allowed within and around the central city, suburban commercial centres and planned high-frequency and high-capacity public transport.

4.7. The NPS-UD includes the concept of a 'well-functioning urban environment' which has a focus on more people living in areas with good public transport links, along with the supporting built form development within walking distance of transit. Planning decisions are also required to contribute to the differing needs of the business sector, provide

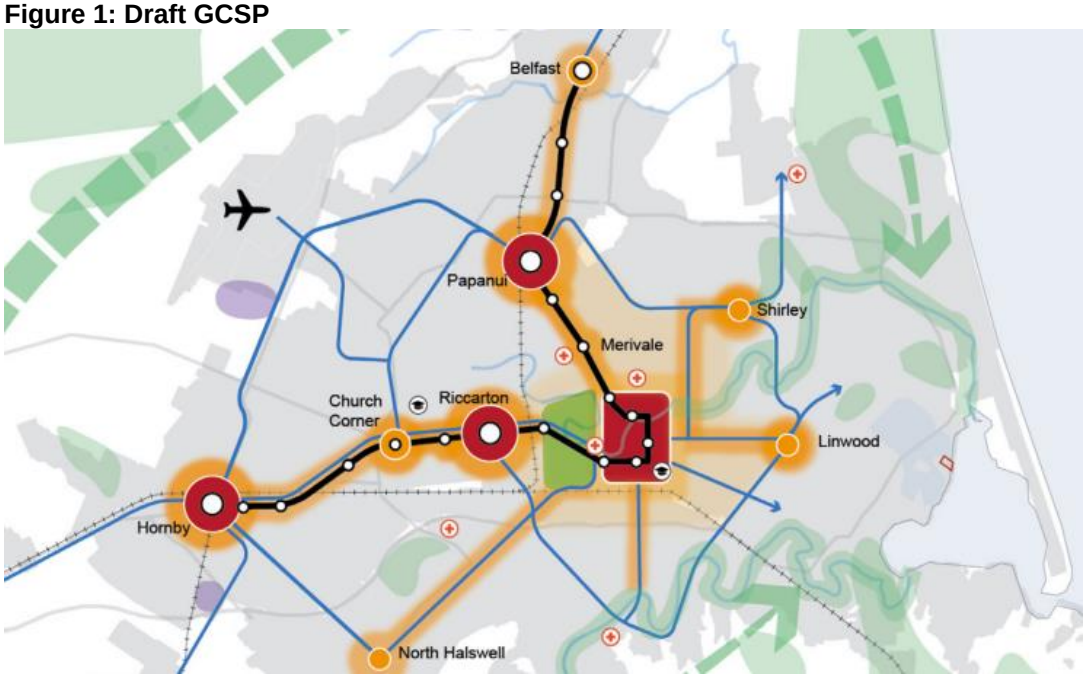
[4] As defined in the NPS-UD

good accessibility for all people including use of public and active modes to support reductions in greenhouse gas emissions and resilience to climate change.

4.8. Policies 3 and 4 of the NPS-UD are particularly relevant to MRT. These set out the urban environment outcomes in relation to Tier 1 local authorities (which is applicable to Christchurch), with specific considerations for the scale and density of development in relation to existing and planned rapid transit stops. Specifically, Policy 3 sets out that building heights of at least 6 storeys within at least a walkable catchment of planned rapid transit stops are to be enabled.

4.9. The draft GCSP sets out a blueprint for how to accommodate future population and business growth and sets a desired urban form in accordance with the NPS-UD and RLTP for a projected population of 700,000 (to 2051) and beyond to 1 million people to ensure Greater Christchurch is future proofed. The GCSP includes a key direction to focus growth through targeted intensification in urban and town centres and along PT corridors and outlines a MRT system as a 'key move' (see Figure 1 below) to achieve this outcome. It also includes a commitment to significantly improve PT connections between key centres.

Figure 1: Draft GCSP



(source: GChc Partnership [5])

4.10. In particular, the Riccarton Road corridor was a key consideration in developing a long-term PT strategy due to its strategic importance of currently being the busiest public

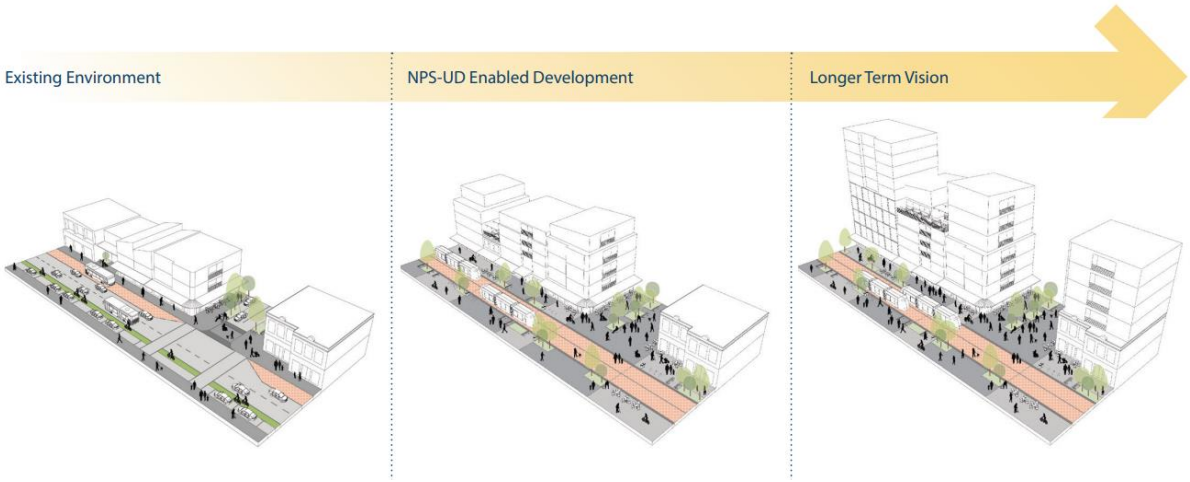
[5] https://greaterchristchurch.org.nz/assets/Documents/greaterchristchurch-/Draft-GCSP/Greater-Christchurch-Summary-Document.pdf
[5] As defined under the RMA.

transport corridor in Christchurch, with 9[6] out of the city's 28 bus services using at least a portion of the mixed land use corridor.

4.11. It is noted that the proposed MRT Riccarton station aligns with the Key Activity Centre (KAC) which is of particular importance in the hierarchy of commercial centres across Greater Christchurch.

4.12. Figure 2 sets out the difference in the built form outcomes from the current day, and the desired future state under the NPS-UD (and GCSP) to support MRT as part of a well-functioning urban environment. This identifies the scale of buildings and densities well beyond the timescales of the Operative District Plan.

Figure 2: Built form outcomes anticipated in support of MRT in the longer term



(source: Boffa Miskell)

4.13. PC14 is the mechanism that will bring the District Plan in alignment with government direction via the NPS-UD and the Resource Management (Enabling Housing Supply and Other Matters) Act.

4.14. As part of PC14, a series of QM's are proposed which means the rules enabling increased development will be modified to the extent necessary to maintain and protect values or manage various effects. These relate to matters including outstanding landscapes, sites of ecological and cultural significance, heritage, sunlight access, significant utility and infrastructure overlays, and areas at risk from natural hazards.

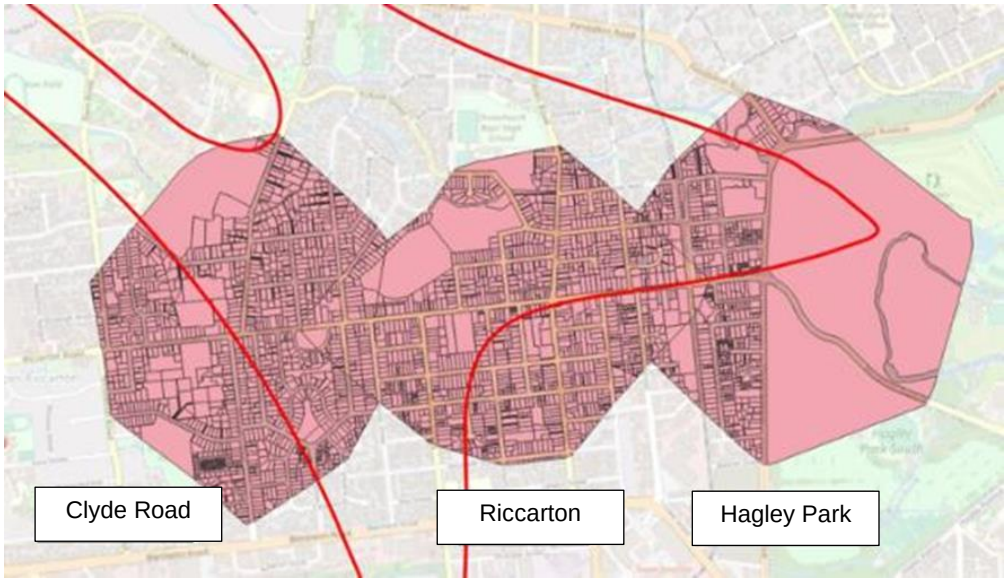
4.15. Where these QM's intersect the proposed MRT station catchment areas (an area 800m walkable catchment from the proposed station), it may impact on the residential densities that are achievable, and in turn affect the effectiveness of MRT (noting the IBC predated PC14 and the development of QM's). This is addressed further in Section 0 of my evidence.

[6] Routed 3, 5, 80, 86, 100, 120, 130,140, Orbiter.

4.16. In addition to the QM's described above, the Christchurch International Airport Limited (**CIAL**) submission on PC14 includes a revised 50dB Ldn airport noise contour that extends over the Riccarton Road MRT corridor. If adopted, this will limit the density of development that can occur (to no more than the Operational District Plan) and therefore reduce the extent of future uplift at the Hagley Park, Riccarton and Clyde Road MRT stations and the walkable catchments (within 800m of each station). Figure 3 sets out the extent of overlap between the station catchments and the extended contour which is shown as a red line:

- Clyde Road - 54% of the station area is affected by the contour.
- Riccarton - 68% of the station area is affected by the contour.
- Hagley Park - 45% of the station area is affected by the contour.

Figure 3: Extended Airport Noise Contour and Station Locations



4.17. The CIAL submission sets out that the extent of development directed by PC14 and the NPS-UD is inappropriate within the 50dBA Ldn airport noise contour. As such, the submission outlines that the existing planning framework pre PC14 would prevail, i.e., the current zoning as set out in the operative District Plan. The impact of this on MRT is also assessed in Section 5 of my evidence.

4.18. Three land use scenarios were developed for the MRT IBC as an input to the transport modelling that was used to assess many of the projects Key Performance Indicators and economic evaluation:

(a) Scenario 1 – Assumed PC14 Baseline – this was based on prioritising development of the most feasible sites within the station catchments and forecast growth to 2051.

(b) Scenario 2 - PC14 Total Enabled Capacity - this was not modelled because it clearly provided excess capacity relative to growth for the 2051 horizon.

(c) Scenario 3 - Bespoke Landuse - this was an attempt to provide a practical middle ground between Scenario 1 & 2 that increased densities in the station catchments but was more relevant to the forecast year of 2051. This is the main scenario used for assessment of MRT.

4.19. It is important to note that these scenarios predated much of the PC14 work by the City Council, and as such, they do not necessarily reflect a capacity assessment of the various zoning types now proposed (or still being considered) by PC14.

4.20. Rather, the uplift provided for in Scenario 1 was based on the potential for uplift based on a selection of sites within the 800m walk-up catchments that are the ripest for the type of development likely to be permitted by PC14 in the short to medium term based on:

a The age of dwellings (i.e., those nearing the end of the current lifecycle);

b The capital to land value ratio (i.e., those where land value is close to or exceeds the dwelling value); and

c Section size (number of new dwellings than could be provided on the site).

4.21. Scenario 1 was formed by adjusting the base 2051 land use forecast to include this additional growth within the station 800m catchments. Growth was scaled back growth at other locations (not within any station catchments) to maintain the original base city-wide forecast totals.

4.22. For Scenario 3, which forms the main basis for assessing MRT, a summary of appropriate target residential densities for each station was determined (based on its role and function identified by Boffa Miskell) and what was likely to realistically be achievable by 2051 with MRT being a driver for accelerated private investment. For example, the Riccarton station is categorised as a ‘Town Centre’ and therefore is required to achieve a much greater density of development than either Clyde Road or Hagley Park stations, which are classified as ‘Neighbourhood’ and ‘Urban Centre’ respectively.

4.23. The density (households/ha) values adopted for each station are directly included in the transport modelling for the IBC, and summarised in Table 1 below for each MRT walkable catchment:

Table 1: MRT IBC assumed density targets (circa 2051)

MRT STATION	CATEGORY	HOUSHOLDS/HA[7]
Dickeys Road	Neighbourhood	15
Belfast	Neighbourhood	6
Northwood	Urban centre	20
Northcote Road	Neighbourhood	15
Prestons Road	Neighbourhood	15
Papanui	Town Centre	60
Tomes Road	Neighbourhood	20
Merivale	Urban centre	45
Central City	City Centre	100
Hagley Park	Urban centre	45
Riccarton	Town Centre	55
Clyde Road	Neighbourhood	20
Church Corner	Urban centre	45
Upper Riccarton	Neighbourhood	20
Springs Road	Neighbourhood	15
Neill Street	Neighbourhood	16
Hornby	Town Centre	60

The resulting numbers of residential dwellings for each station resulting from these

[7] *Applied to residential site area.*

4.24. Table 1 densities are included in **Appendix A**, along with a comparison with the assumed limits for residential capacity based on the operative District Plan and then the potential uplift enabled by the IBC Scenario 1 (prior to any Qualifying Matters being applied).

4.25. The key numbers from **Table A1** in **Appendix A** are summarised below:

(a) There are currently 21,600 households within the corridor, of which 3,500 (16%) are within the three8 Riccarton Stations (with an average density of 19 HH/Ha9).
(b) Under the Operative District Plan, by 2051 this could increase to 37,600 households within the corridor, of which 7,000 (19%) are within the three Riccarton Stations (resulting in an average density of 38 HH/Ha).
(c) With the IBC Scenario 1 (prior to application of any QMs), by 2051, identified feasible development could increase this further to 49,500 households within the corridor, of which 8,800 (18%) are within the three Riccarton Stations (resulting in an average density of 49 HH/Ha over the three stations).
(d) For the IBC Scenario 3 adopted in the IBC, there are 42,600 households within the corridor, of which 7,100 (17%) are within the three Riccarton Stations (resulting in an average density of 46 HH/Ha over the three stations, with the Riccarton Station at 55 HH/Ha).

4.26. From these numbers, the following conclusions can be drawn:

(a) Under the operative district plan, the number of households in the corridor (and within the Riccarton Stations) is expected to almost double (by 2051). For the Riccarton Stations, this would increase average residential densities from 19 HH/Ha to 38HH/Ha.
(b) Additional development enabled by MRT IBC Scenario 1 (representing PC14 prior to application of any QMs) provides significant additional uplift in the corridor (including the Riccarton Stations), which would increase the average residential density in the Riccarton Stations to around 49 HH/Ha.
(c) The MRT IBC Scenario 3 assumes a very similar level of uplift by 2051 as Scenario 1 (PC14 prior to application of any QMs), resulting in an average density of 46 HH/Ha over the three stations, with the main Riccarton Station achieving 55 HH/Ha).

The IBC found that MRT generally achieves a Benefit Cost Ratio (**BCR**) greater than one if the residential densities in

[8] Hagley Park, Riccarton and Clyde Road.
[9] Households per Hectare, based on net residential land area only, within the three Riccarton Stations. I am making this distinction because it is also common to express Households per Hectare using gross area (which would yield different numbers).

4.27. Table 1 (aligning with MRT Scenario 3) are adopted. The analysis indicates that PC14 (prior to application of any QMs) would easily allow this to occur.

THE IMPACT THAT PC14 QUALIFYING MATTERS HAVE ON MRT IBC LANDUSE INPUTS

4.28. All Individual residential land parcels within each of the above MRT station walk-up catchments were spatially cross-referenced with all QMs using GIS[10] mapping. This enabled the creation of a reliable estimate of the affected residential site areas for each QM, followed by a reduction in the development potential of the site based on the type(s) of QM.

4.29. The resulting impact of the QMs on each MRT walk-up catchment, with a focus on Scenario 1 used in the IBC (representing PC14), is summarised in **Table B1** of **Appendix B**. Outputs for the CIAL proposed noise contours and other QM's are shown separately and then combined.

4.30. The key numbers from **Table B1 in Appendix B** relating to the three Riccarton station 800m walkable catchment areas combined, are summarised below:

a Carried forward from Table A1, Table B1 reaffirms the base case for PC14 (prior to application of any QMs), which enables up to 49,500 households (including 8,800 within the Riccarton Stations), which would increase the average residential density in the Riccarton Stations to 49 HH/Ha.

b The CIAL noise contour (by itself) would reduce this by approximately 3,300 households, all within the Riccarton Station catchments. This is a reduction of 7% for the corridor as a whole, and a 37% reduction in the Riccarton Station catchments, reducing the average density from 49 HH/Ha to 31 HH/Ha.

c The other QM's (i.e., excluding noise contour) would result in a reduction of approximately 3,700 (7%) households across the whole corridor, including a 2,100 reduction all within the Riccarton Station catchments, which is a 23% reduction for this area and reduces the average density from 49HH/Ha to 37 HH/Ha.

d When the CIAL noise contour and other QM's are combined, this results in a reduction of approximately 5,100 (10%) households across the whole corridor, including a 3,500 reduction all within the Riccarton Station catchments, which is a 39% reduction for this local area and reduces the average density from 49 HH/Ha to 30 HH/Ha.

[10] Geographic Information System

4.31. It is apparent that there is some overlap between the noise contour and other QM's which lessens (to a degree) the combined effect (for example in Riccarton, the larger area of Deans Bush coincides with the CIAL noise contour), however in either case, the noise contour results in the greatest restriction to development.

4.32. Based on the NPS-UD, Key Activity Centres (such as Riccarton) are expected to have suitable mixed use development equating to a gross density range of 40-90 HH/Ha[11]. It is clear from the numbers above that this is unlikely to be achieved (even without QM's) by 2051, and hence a much longer timeframe (beyond that assumed on the IBC) is required for full development potential to occur.

5. IMPLICATIONS FOR MRT OUTCOMES AND OBJECTIVES

5.1. The previous Section indicated that there will be a loss of 23% of potential uplift of residential households across the three Riccarton catchments circa 2051 as a result of the QM's, excluding the airport noise contour. With the potential expansion of the airport noise contour included, this would reduce the potential uplift further to a loss of 39%.

5.2. However, these reductions could be compensated for by increasing densities elsewhere in the MRT corridor, especially at the neighbourhood stations-, where there is still likely to be plenty of spare capacity at 2051. Although this is less desirable than maximising densities at the Riccarton town centre (KAC) station.

5.3. Based on the assessment of residential capacity with and without QM's, the economic assessment and overall quantum of patronage numbers estimated in the IBC (to 2051) are likely to remain at a similar overall scale but will be distributed differently along the corridor, with increases in the neighbourhood stations at expense of the urban centre and town centre stations. There are a few important factors to consider:

a Total forecast residential growth in urban Christchurch between 2021 and 2051 is between 30,000 and 40,000 thousand households. The MRT corridor could accommodate between 28,000 (no QMs) and 23,000 (all QMs including noise contour) households. This means that the MRT corridor can accommodate between 58 and 70 percent of all forecast residential growth to 2051. It is likely that growth will be dispersed much more widely across the city during this timeframe, based on current capacity under the operative District Plan (including greenfield development) and further (city-wide) uplift enabled by PC14.

[11] From MRT IBC Figure 4-8. Note that these are gross densities, while many of the other numbers in this report relate to densities applied to just residential site area (and therefore may appear higher relative to gross densities).

b The economic assessment applied in the IBC uses a methodology prescribed by Waka Kotahi to assess conventional transport system improvements in a consistent way (typically over a 40-year period). The primary purpose of these assessments is to prioritise similar projects competing for the same pool of funding. As a result, the significant longer-term benefits that are anticipated are not captured in the assessment.

c Long term quantitative assessments tend not to be done, because these are likely to be highly unreliable, being limited by significant uncertainty in input variables (such as employment levels by industry, GDP, taxes and societal changes etc.)

5.4. It is apparent that the IBC reasonably reflects what is possible based on growth projections for Greater Christchurch through to 2051, which (by that time) are only just starting to generate the 'preferred' densities for MRT (i.e., densities beyond 40-90 hh/ha) enabled by the NPS-UD.

5.5. Although they are unable to be reliably quantified over such a long period (potentially hundreds of years), significant city shaping benefits are expected to be realised over the very long term, including:

a Access advantages to a wide range of destination opportunities established in the corridor for people who are living and working and visiting the corridor.

b Agglomeration benefits through economies that can be gained by the new density and mix of land uses that are facilitated by the project.

c Amenity benefits associated with a whole package of quality design changes creating walkable urban areas.

d The unlocking of private development in new activity centres, noting that these are unlikely to occur unless development is well integrated with the amenity-creating, value-creating power of MRT. This also eliminates traditional barriers to private development (such as resource consents and adverse transport effects).

e Avoidance of infrastructure costs and related benefits that are associated with urban regeneration that would otherwise occur in low density car-based development on the urban fringe.

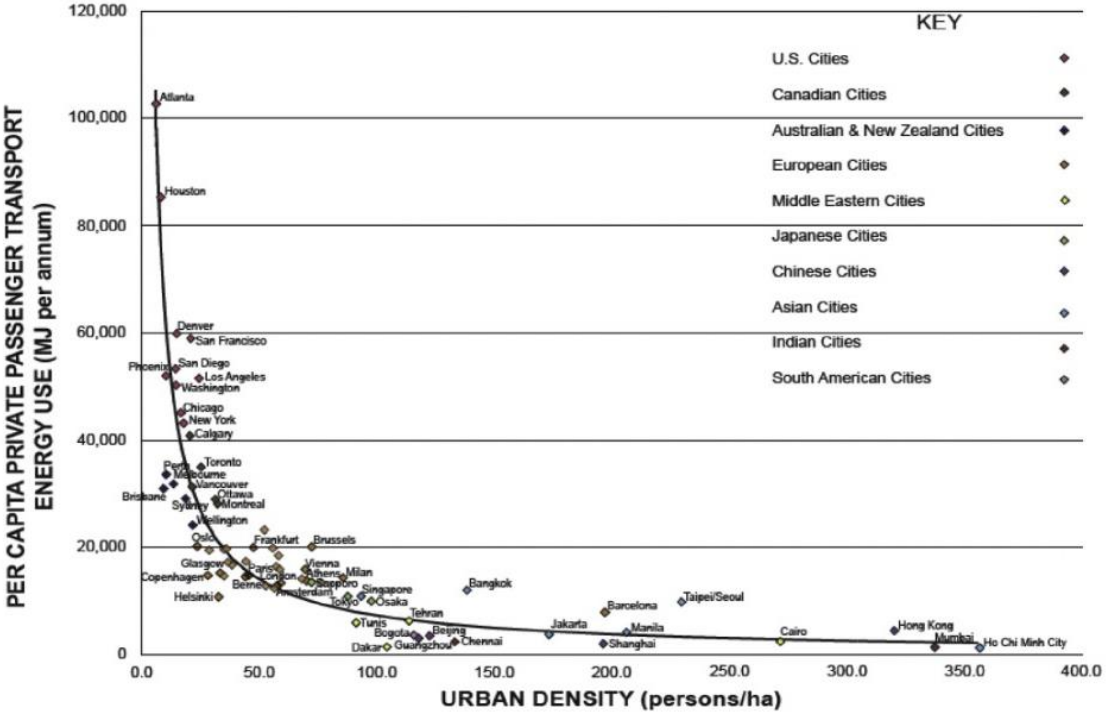
5.6. Therefore, the QM's may not necessarily impact at the assessed (40 to 60 years) economic (Waka Kotahi) viability level, but they are likely to impact over the much long term and at the well-functioning city level, especially in relation to the Key Activity Centre of Riccarton where urban transformation through significantly increased housing density is not enabled at a level that is anticipated by government policy direction.

5.7. While a single MRT corridor is currently being considered for intensive development in Christchurch, longer term it is possible that this will become the model for other corridors, replicating all the benefits at scale at other locations.

5.8. Interestingly, during initial investigations of MRT for Christchurch, a route between the Airport and the City was considered. It was discarded due to (in part) the current noise contour in the RPS limiting the necessary intensification needed to support MRT. This (along with ongoing problems experienced in Auckland when trying to secure a Light Rail corridor) highlights the need for the planning framework to assist with future proofing key corridors, such as those identified in the PT Futures Business Cases and GCSP, as early as possible.

5.9. To better understand how critical high residential densities are in achieving the desired outcomes, Figure 4, sets out private passenger transport energy use per capita vs urban density in 73 global cities with lower densities equating to greater energy consumption.

Figure 4: Transport Energy versus Urban Density



(source: Newman and Kenworthy, 2015)

5.10. This demonstrates a strong relationship between household density and transport energy use (which in turn relates directly to emissions, where even a small change in average density has a major impact on transport energy use (which is also a good proxy for all the other benefits listed above in para 5.5).

5.11. For context, car based urban density is indicated as 35 persons per hectare, with transit city urban density from 50 persons per hectare and walking cities beyond this at 100+ persons per hectare.

5.12. The Christchurch City urban density currently sits at around 17 persons per hectare. Using the IBC do-minimum land use scenario (i.e., what would occur without MRT), this is estimated to increase to 20 persons per hectare by 2051.

5.13. With MRT added, and adopting the IBC MRT Scenario landuse, it is estimated to increase further to 22 persons per hectare by 2051. While this may appear to be a modest change in average density, it is important to note that it all comes from a single corridor but results in an increase at almost twice the rate compared to the do-minimum (without MRT).

5.14. Based on the curve displayed in Figure 4, then even the small change from 17 to 22 persons per hectare would result in energy use per capita reducing from 40,000 MJ p.a.to 24,000 MJ p.a. (a 40% decrease).

6. CONCLUSIONS

6.1. The QMs (especially the CIAL proposed airport noise contour) may not necessarily impact at the assessed (40 to 60 years) IBC economic viability level, but they will impact at the long term well-functioning city level at some locations, especially in the Key Activity Centre of Riccarton where urban transformation through significantly increased housing density will not be possible over the longer term at a level that is anticipated by government policy direction NPS-UD.

6.2. Regardless of whether MRT proceeds, Riccarton Road already is, and will continue to be, an important transport corridor for PT. Achieving the high densities set out in the NPS-UD is critical to achieving a well functioning urban environment in this location. This is also reflected at the local level in the draft GCSP, which specifically identifies Riccarton Road as a focus for growth through targeted intensification along the PT corridor.

6.3. During initial investigations of MRT for Christchurch, a route between the Airport and the City was considered. It was discarded due to (in part) the current noise contour in the RPS potentially limiting the necessary intensification needed to support MRT. This (along with ongoing problems experienced in Auckland when trying to secure a Light Rail corridor) highlights the need for the planning framework to assist with future proofing key transport corridors, such as those identified in the PT Futures Business Cases and GCSP, as early as possible.

6.4. There is a strong relationship between household density and transport energy use that indicates that even a small change in average density has a major impact on transport energy use (which in turn relates to emissions and is also a good proxy for accessibility and travel costs). The greater the densities become, the more each of these benefits will ultimately be realised. This is the key to the success of land use and PT integration along Riccarton Road and any MRT project over the longer term.

John Andrew Falconer

20 September 2023

Appendix A Future Household Baselines assumed for MRT IBC

Table A1: Potential Household Capacity Limits for 2051 Future Year Scenario

ASSIGNED STOP	STOP CATEGORY	2021	CDP_T	CDP_M	MRT S1	MRT S3
Dickeys Road	Neighbourhood	338	571	369	515	349
Belfast	Neighbourhood	600	3,146	2,833	1,146	1,121
Northwood	Urban centre	972	1,896	1,301	1,268	1,569
Northcote Road	Neighbourhood	1,128	2,507	1,582	1,991	1,119
Prestons Road	Neighbourhood	1,415	2,296	1,481	1,874	1,428
Papanui	Town Centre	1,476	5,308	3,324	3,335	5,069
Tomes Road	Neighbourhood	1,061	1,823	1,159	3,069	1,455
Merivale	Urban centre	1,767	6,832	4,444	5,949	4,177
Central City	City Centre	5,126	12,921	8,420	14,042	10,297
Hagley Park	Urban centre	721	2,884	1,753	1,385	1,647
Riccarton	Town Centre	1,739	5,137	3,186	4,073	4,036
Clyde Road	Neighbourhood	1,015	2,988	2,028	3,378	1,427
Church Corner	Urban centre	1,649	3,266	2,192	3,298	4,191
Upper Riccarton	Neighbourhood	736	1,107	704	1,624	885
Springs Road	Neighbourhood	451	753	476	666	446
Neill Street	Neighbourhood	380	590	375	593	378
Hornby	Town Centre	993	3,062	1,984	1,336	3,035
TOTAL		**21,567**	**57,089**	**37,612**	**49,542**	**42,628**
Riccarton Stations*		**3,475**	**11,009**	**6,968**	**8,836**	**7,110**

*Hagley Park, Riccarton. Clyde Road

Source: BM19936H_002f_Airport_Noise_QM_Impacts_Report_Final_Draft_20230914 (Sept 2023 Boffa Miskell & QTP)

The above residential dwelling capacity assumed limits for residential capacity based on a range of approaches to understand the implications:

- The theoretical maximum possible under the operative Christchurch District Plan (referred to as **CDP_T**) given the various types and areas of Residential zoning within each station catchment.
- A practical upper limit[12] possible under the operative Christchurch District Plan, similar to the above, but modified to what is reasonably expected to be realised based on observed patterns of development (referred to as **CDP_M**). This has been used as the fallback position where a QM removes any potential for intensification.
- A scenario based on PC14 enabled capacity for feasible development based on a number of general assumptions around development costs and opportunities (**MRT_S1**). This has been used to estimate potential residential uplift from CDP_M (with and without QM's) that PC14 will enable.

[12] *Based on "Greater Christchurch Housing Development Capacity Assessment March 2023" Table 37: Christchurch Residential Density Assumptions*

- The assumptions used for the MRT IBC ‘Scenario 3’ (referred to as **MRT_S3**) land use, which is based on the following average density targets for each of the stations as per Table 1 of main evidence.

Appendix B IBC Scenario 1 (PC14) Total Households, with and without Qualifying Matters

Table B1: Potential Household Limits for 2051 Scenario 1 (PC14 with and without QMs)

STATION	TOTAL HHS				
	Type	MRT S1 (PC14) No QM	MRT S1 Noise Contour	MRT S1 All Other QM's	MRT S1 All QM's
Dickeys Road	Neighbourhood	515	515	490	490
Belfast	Neighbourhood	1,146	1,146	1,139	1,139
Northwood	Urban centre	1,268	1,268	1,253	1,253
Northcote Road	Neighbourhood	1,991	1,991	1,925	1,925
Prestons Road	Neighbourhood	1,874	1,874	1,858	1,858
Papanui	Town Centre	3,335	3,335	3,215	3,215
Tomes Road	Neighbourhood	3,069	3,069	2,958	2,958
Merivale	Urban centre	5,949	5,949	5,680	5,680
Central City	City Centre	14,042	14,042	13,347	13,347
Hagley Park	Urban centre	1,385	1,224	1,323	1,190
Riccarton	Town Centre	4,073	2,327	3,172	2,293
Clyde Road	Neighbourhood	3,378	1,997	2,273	1,872
Church Corner	Urban centre	3,298	3,297	3,128	3,127
Upper Riccarton	Neighbourhood	1,624	1,624	1,591	1,591
Springs Road	Neighbourhood	666	666	608	608
Neill Street	Neighbourhood	593	593	585	585
Hornby	Town Centre	1,336	1,336	1,328	1,328
Full Corridor	**TOTAL**	**49,542**	**46,253**	**45,874**	**44,461**
	Change	**NA**	**-3,289 (-7%)**	**-3,668 (-7%)**	**-5,081 (-10%)**
Riccarton*	**TOTAL**	**8,836**	**5,548**	**6,768**	**5,355**
	Change	**NA**	**-3,289 (-37%)**	**- 2,068 (-23%)**	**-3,481 (-39%)**

*Hagley Park, Riccarton, Clyde Road

Source: BM19936H_002f_Airport_Noise_QM_Impacts_Report_Final_Draft_20230914 (Sept 2023 Boffa Miskell & QTP)