Proposed Plan Change I: Increasing housing supply and choice

Transport Assessment

PALMY
PAPAIOEA
PALMERSTON NORTH CITY

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Via email: **simon.mori@pncc.govt.nz**

Dear Simon

Palmerston North City Council – Plan Change I: Increasing Housing Supply and Choice Transportation Assessment

Further to your request, I am pleased to provide below a transportation assessment for the proposed Plan Change I: Increasing Housing Supply and Choice (PC:I) involving the introduction of a Medium Density Residential Zone (MRZ) in Palmerston North. My involvement with PC:I has included:

- assisting with the briefing for the traffic model runs of the development scenarios;
- reviewing earlier assessments including the 2022 Draft Transportation Assessment prepared by WSP, and the 2023 Standards Report prepared by McIndoe Urban;
- assessing the related traffic effects of PC:I, including identifying transport-related constraints and opportunities; and
- providing advice on the proposed District Plan transport-related provisions.

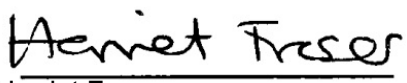
The assessment that follows includes:

- a summary of the background and planning context to PC:I;
- description of the current and future transportation environment;
- explanation of the national, regional and local transport policy and planning context;
- description of the transportation elements of PC:I;
- assessment of the transport effects of PC:I and identification of any associated mitigation measures; and
- alignment of PC:I with the national, regional and local transport policy and planning context.

In summary, the findings of the assessment show that PC:I allows for the intensification of residential development within the proposed zone, and also the individual sites in a manner which is consistent with the District Plan traffic and transportation-related objectives and policies along with the national, regional and local transport context.

Please do not hesitate to be in touch should you require clarification of any of the above.

Yours faithfully



Harriet Fraser

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1. Background

1.1 Draft Plan Change 2022

An early draft of the plan change was shared for community consultation in 2022 and included the following description for the proposed zone:

> *The Medium Density Residential Zone supports increased housing densities and built forms with a greater diversity of housing choice than the Residential Zone. The zone is a well-functioning urban environment that enables those living in it to provide for their social, economic and cultural wellbeing, and for their health and safety, now and into the future.*
>
> *As part of delivering a well-functioning urban environment, the Medium Density Residential Zone is within walking distance to a number of the places and spaces that enable people to provide for their social, economic and cultural wellbeing including public transport, parks and reserves, schools, neighbourhood centres and the city centre.*

The draft plan proposed to enable the development of up to six residential units of up to three storeys as a permitted activity, within the area shown in Figure 1. The operative District Plan allows for medium density housing in areas within 800m of the city centre. The proposed extent of the MRZ shown in Figure 1 was based on a number of parameters including the following walking distances:

- bus stops (within 500m)
- parks or reserves (within 300m)
- schools (within 800m)
- a shopping centre (within 800m)

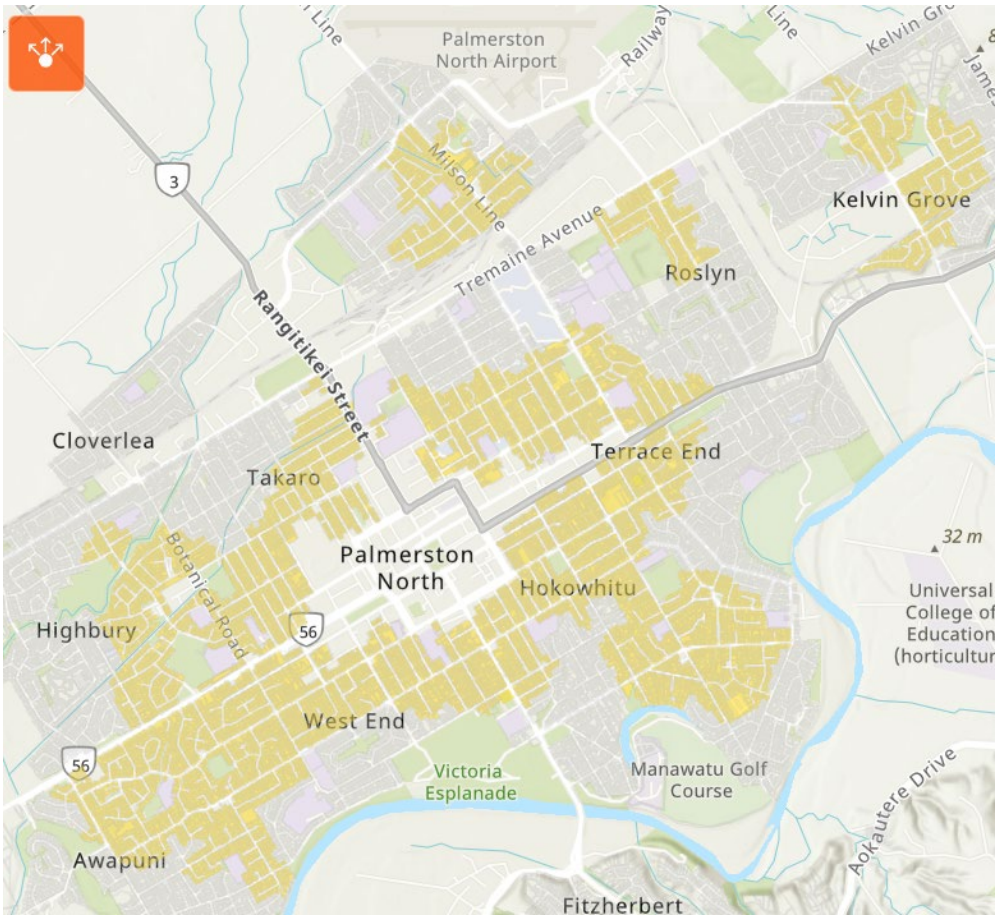


Figure 1: Proposed Extent of MRZ in 2022 Draft

Transport-related concerns raised through early public consultation on the Draft MRZ are summarised and commented on in Table 1.

Transport-related concern	**Comment**
Disagreement with the selected walking distances.	The adopted walking distances are based on extensive research as set out in pages 8-12 of the McIndoe Urban Memo #2 dated 3 October 2022.
Overspill parking including adding to parking pressure associated with kerbside commuter parking.	Council can manage the availability of parking for different road users through a variety of methods.
Kerbside parking reducing street widths including obstructing buses.	Council can add 'no stopping' lines as needed to protect paths for buses or sight lines from intersections.
Safety concerns where the MRZ interfaces with arterial roads.	Higher thresholds of design are already included in Section 20 for connections onto arterial roads.
Traffic congestion and safety concerns at already busy intersections.	There is already some congestion, and serious and fatal injury crashes occurring at intersections in Palmerston North. The traffic modelling results included later in this report indicate that changes in the performance of the transport network will be less than with forecast levels and locations of growth without PC:I.
Concerns regarding universal accessibility.	The proposed walking distances deliver an improved level of accessibility compared with much of the city but it is recognised that this does not result in all the areas be accessible for everyone.
Need for alignment with RLTP 2021-31.	PC:I has a good degree of alignment with the RLTP especially regarding encouraging increased mode share for active and public transport modes along with reduced carbon emissions from land transport.
Suggested removal of the Milson and Kelvin Grove MRZ areas and the inclusion of an MRZ area around the railway station.	The Milson MRZ area has a good level of connectivity to the transport network. This is improved in the future with the extension of the cycle facilities to the north along Milson Line. While not having good cycling access to the city centre, Kelvin Grove has good access to bus services providing an alternative to private vehicle usage. Given that the railway station does not provide a local commuter service, it is not recommended for inclusion in the MRZ.
Concerns regarding the alignment with PNITI.	As described later in this report, PNITI has objectives of improving road safety and reducing the number of congested intersections. Both PNITI and PC:I are anticipated to deliver benefits regarding the performance of the overall transport network.

Table 1: Transport-Related Concerns from Earlier Public Consultation

The feedback also indicated that providing for six units per lot as a permitted activity was not supported by many. Kāinga Ora requested that up to three units be a permitted activity and that four or more units would be a Restricted Discretionary Activity.

Horizons Regional Council raised the following matters in their feedback:

- Narrow streets are not suitable for buses or able to accommodate bus stops;
- The proposal to enable increased density in central parts of the city aligns with, and will support, public transport aspirations outlined in the Regional Public Transport Plan; and
- The re-zoning will need to align with the strategic direction of the Regional Land Transport Plan 2021-2031.

Kāinga Ora included the following transport-related matters in their feedback:

- Replace the proposed design standards with the Medium Density Residential Standards (MDRS); and
- Requested that the 300m walking catchment to parks and reserves be increased to 400m.

2. Current Transportation Environment

For the purpose of describing the existing transport environment, the proposed areas for MRZ have been divided into ten smaller areas, being:

Description	Area
1. Milson North & South	
2. Roslyn	
3. Kelvin Grove & Royal Oak	

Description	Area
4. Tremaine, Papaioea N & Terrace End	
5. Ruamahanga & Papaioea S	
6. Hokowhitu & Ruahine	
7. West End, Milverton & Esplanade	

Description	Area
8. Awapuni & Maraetarata	
9. Highbury & Westbrook	
10. Takaro	

The existing transportation characteristics for each area, including road hierarchy, cycle facilities, bus routes and crash record, are set out in Appendix 1. Major Arterials, Minor Arterials and Collector Roads are shown in blue, pink and brown respectively in the road hierarchy extracts included in Appendix 1.

The travel times included in the tables in Appendix 1 are estimates taken from Google Maps on a weekday in August 2024. Google Maps forecasts travel time using a range of measures, including crowdsourcing data from phone users who share their geographic location. Data includes the average speed of cars on a road at different times of day, collected over many years. Historically travel time data, for use in transport studies, has been collected from floating car or number plate surveys. These surveys would typically be undertaken on a single day and on a limited number of routes. While it is not common practice to use

Google Maps for travel time calculations, it is considered a useful guide within a strategic context and, given the large data sources, may be superior to traditional travel time methods.

Horizons have recently reviewed and updated the bus routes and services through the City. The new service has been in operation since March 2024. Figure 2 shows the access to a bus stop (darker grey shading) within 400m and 500m of locations throughout the City. As shown, most of the urban area is within 500m of a bus stop. While most locations are within 400m of a bus stop there are some small parts of the City which fall outside this criteria.

Figure 2: 400m (left-hand) and 500m (right-hand) Distance to Bus Stop (source Horizons website)

The existing transport characteristics in Appendix 1 can be summarised for each area as follows:

Milson N & S

- Milson Line, JF Kennedy Drive and Airport Drive are Minor Arterials in the District Plan road hierarchy, Fairs Road and McGregor Street are Collector Roads;
- Access to city-wide cycle network via Milson Line south of Purdie Place and via shared path from Milson Line to John F Kennedy Drive;
- Access to the 105 Milson - Summerhill bus route (purple) which includes stops in the city centre, and the 101 Airport – Massey bus route (red) which includes stops at the airport, hospital, city centre and Massey;
- The record of reported crashes during the most recent five-year period includes two serious crashes in separate locations. All other crashes involved minor injury or were non-injury; and
- The travel times to and from both the city centre and the southern side of the river are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Roslyn

- Tremaine Avenue is a Major Arterial in the District Plan road hierarchy, Vogel Street and Featherston Street are Minor Arterials and Rata and Haydon Streets are Collector Roads;
- No existing cycle facilities along Vogel Street through the Proposed MRZ. Access to facilities along Railway Road from the northern end of Vogel Street and to the central city network via Featherston Street;
- Access to the 102 Awapuni- Kelvin Grove bus route (green), 106 Kelvin Grove – Pioneer Highway bus route (pink) and 108 Clyde Crescent – Rugby Street (purple) bus route. All bus routes include stops in the city centre;
- The record of reported crashes during the most recent five-year period includes one serious crash. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the city centre, southern side of the river and Bennett Street commercial/industrial area are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Kelvin Grove & Royal Oak

- Roberts Line is a Major Arterial in the District Plan road hierarchy, Mihaere Drive is a Minor Arterial and Parnell Heights Drive, Fernlea Avenue, Schnell Drive, Boston Parade and Rosalie Terrace are Collector Roads;
- No existing cycle facilities providing connections to the central city network;
- Access to the 102 Awapuni – Kelvin Grove bus route (green), 106 Kelvin Grove – Pioneer Highway bus route (pink) and 104 Highbury – Kelvin Grove (yellow) bus route. All bus routes include stops in the city centre;
- The record of reported crashes during the most recent five-year period includes one serious crash. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the city centre, southern side of the river, the Bennett Street commercial/industrial area and the hospital are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Tremaine, Papaioea N & Terrace End

- Main Street is a Major Arterial in the District Plan road hierarchy, Ruahine and Featherston Streets are Minor Arterials and Albert Street, Victoria Avenue, Grey Street, Ward Street and Roy Street are Collector Roads;
- Connections to the central city cycling network via Featherston Street, Broadway Avenue, Ruahine Street, Queen Street and Victoria Avenue;
- Access to the 101 Airport – Massey bus route (red), 104 Highbury – Kelvin Grove (yellow) bus route, 106 Kelvin Grove – Pioneer Highway bus route (pink), 108 Clyde Crescent – Rugby Street (purple) bus route and 121 City East to Massey bus route (green). These bus routes include stops in the city centre, at the hospital, and at Massey;
- The record of reported crashes during the most recent five-year period includes some ten serious crashes distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- Only small variability in travel times with only travel from the Malden Street area and from Mihaere Drive during the weekday evening peaks varying by five minutes or more.

Ruamahanga & Papaioea S

- Main and Princess Streets are Major Arterials in the District Plan road hierarchy, Albert Street is a Minor Arterial and Victoria Avenue, Ferguson Street, College Street and Ruahine Street are Collector Roads;
- Connections to the central city cycling network via Church Street, Victoria Avenue and College Street;

- Access to the 101 Airport – Massey bus route (red), 103 Cloverlea – Hokowhitu bus route (burgundy), 104 Highbury – Kelvin Grove (yellow) bus route, 105 Milson – Summerhill (purple) bus route, 107 Terrace End – Westbrook (blue) bus route, 108 Clyde Crescent – Rugby Street (purple) bus route and 121 City East to Massey bus route (green). These bus routes include stops in the city centre, and at the hospital, Massey and the airport;
- The record of reported crashes during the most recent five-year period includes some ten serious crashes distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street and Malden Street commercial/industrial areas are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Hokowhitu & Ruahine

- Albert Street (N of Te Awe Awe Street) and Te Awe Awe Street are Minor Arterials in the District Plan road hierarchy, Albert Street (S of Te Awe Awe Street), Pahiatua Street, Ruahine Street and Victoria Avenue are Collector Roads;
- Connections to the central city cycling network via Te Awe Awe Street, Caccia Birch Lane, Victoria Avenue and College Street;
- Access to the 103 Cloverlea – Hokowhitu bus route (burgundy), 107 Terrace End – Westbrook (blue) bus route and 121 City East to Massey bus route (green). These bus routes include stops in the city centre, and at Massey;
- The record of reported crashes during the most recent five-year period includes four serious crashes distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street, Malden Street and Mihaere Dive commercial/industrial areas are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

West End, Milverton & Esplanade

- Pioneer Highway and Fitzherbert Avenue are Major Arterials in the District Plan road hierarchy, Park and Botanical Roads are Minor Arterials and College Street, Ferguson Street and Cook Street are Collector Roads;
- Connections to the central city cycling network via Church Street, Botanical Road, College Street; Cook Street and Fitzherbert Avenue;
- Access to the 101 Airport – Massey bus route (red), 102 Awapuni – Kelvin Grove bus route (green), 106 Kelvin Grove – Pioneer Highway bus route (pink), 107 Terrace End – Westbrook (blue) bus route, 108 Clyde Crescent – Rugby Street (purple) bus route and 122 City West to Massey bus route (cyan). These bus routes include stops in the city centre, and at the hospital, Massey and the airport;
- The record of reported crashes during the most recent five-year period includes some twenty serious crashes distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street and Malden Street commercial/industrial areas are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Awapuni & Maraetarata

- Pioneer Highway is a Major Arterial in the District Plan road hierarchy, Maxwells Line, College Street and Botanical Road are Minor Arterials and Rugby Street, Ferguson Street and Pitama Road are Collector Roads;
- Connections to the central city cycling network via Dittmer Drive, College Street, Botanical Road and Pioneer Highway;

- Access to the 102 Awapuni – Kelvin Grove bus route (green), 103 Cloverlea – Hokowhitu bus route (burgundy), 106 Kelvin Grove – Pioneer Highway bus route (pink), 108 Clyde Crescent – Rugby Street (purple) bus route and 122 City West to Massey bus route (cyan). These bus routes include stops in the city centre, and at Massey;
- The record of reported crashes during the most recent five-year period includes some thirteen serious crashes and one fatal crash distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street, Malden Street and Mihaere Drive commercial/industrial areas and across the river are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Highbury & Westbrook

- Botanical Road is a Minor Arterial in the District Plan road hierarchy and Highbury Avenue, Monrad Street, Pembroke Street and Brentwood Avenue are Collector Roads;
- Connections to the central city cycling network via Botanical Road, Ferguson Street and Pioneer Highway;
- Access to the 103 Cloverlea – Hokowhitu bus route (burgundy), 104 Highbury – Kelvin Grove (yellow) bus route, 106 Kelvin Grove – Pioneer Highway bus route (pink), 107 Terrace End – Westbrook (blue) bus route and 122 City West to Massey bus route (cyan). These bus routes include stops in the city centre and at Massey;
- The record of reported crashes during the most recent five-year period includes some fifteen serious crashes and one fatal crash distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street, Malden Street and Mihaere Drive commercial/industrial areas and across the river are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

Takaro

- Pioneer Highway and Rangitikei Street are Major Arterials in the District Plan road hierarchy, Botanical Road and Featherston Street are Minor Arterials and Bourke Street, Wood Street and Pascal Street are Collector Roads;
- Connections to the central city cycling network via Botanical Road, Featherston Street, Pioneer Highway, Wood Street, Rangitikei Street, Bourke Street, Campbell Street and Pascal Street;
- Access to the 102 Awapuni – Kelvin Grove bus route (green), 103 Cloverlea – Hokowhitu bus route (burgundy), 104 Highbury – Kelvin Grove (yellow) bus route, 105 Milson – Summerhill (purple) bus route, 106 Kelvin Grove – Pioneer Highway bus route (pink), 107 Terrace End – Westbrook (blue) bus route and 122 City West to Massey bus route (cyan). These bus routes include stops in the city centre and at Massey;
- The record of reported crashes during the most recent five-year period includes some twenty serious crashes distributed throughout the area. All other crashes involved minor injury or were non-injury; and
- The travel times to and from each of the airport, hospital, Bennett Street, Malden Street and Mihaere Drive commercial/industrial areas and across the river are variable during the weekday morning, evening and inter-peak periods. This indicates that there is existing traffic congestion on these routes.

The arterial road network within the City accommodates the busiest traffic volumes including accommodating freight movements with actual and perceived adverse safety effects for cyclists. Sections of arterial roads within or close to the proposed MRZ areas that do not have existing cycling facilities can be summarised as follows:

- **Milson N & S**: Milson Line north of Purdie Place and also on Airport Drive;
- **Roslyn**: Vogel Street;
- **Kelvin Grove & Royal Oak**: Roberts Line and Mihaere Drive;
- **West End, Milverton & Esplanade**: Park Road;
- **Awapuni & Maraetarata**: Maxwells Line north of College Street; and
- **Highbury & Westbrook**: Botanical Road to the north of Ferguson Street.

While there are not any cycle facilities along Vogel Street within Roslyn, Tweed Street provides an alternative parallel route to Vogel Street. Tweed Street is a residential street with low traffic volumes and speed humps to encourage slow vehicle speeds, providing a safe route for cyclists.

Figure 3: Tweed Street

Regarding access to bus services, all the areas have good access to bus stops within 500m and most have good access to bus stops within 400m.

All of the proposed MRZ areas have good access to either or both, cycling facilities and bus services.

3. Future Transportation Environment

3.1 Strategic Networks 2023

The Palmerston North Strategic Networks 2023 sets out how Palmerston North's transport assets will be designed, managed and operated. It sets out the priorities for programming and funding for the different travel modes and activities across the transport system. The focus for the development of the Strategic Networks was:

1. **Enabling more travel choices** by providing safe, easy to access and well-connected networks for all modes.
2. **Encouraging uptake of sustainable travel options to reduce transport emissions** by making public transport, walking and cycling appealing, safe, accessible and enjoyable.
3. **Developing a transport system where no-one is killed or seriously injured** by prioritising routes on corridors where high quality infrastructure is in place, and separating priority routes for the highest risk modes to reduce conflicts.

4. **Matching modal priorities with movement/ place functions** by prioritising general traffic and freight movements where people are less likely to spend time, while prioritising active modes and public transport in place-based areas.

Figures 4, 5 and 6 below, show the priorities for the walking, cycling and public transport networks over the short (now to 5 years), medium (5 to 15 years) and long term (15 to 30 years).

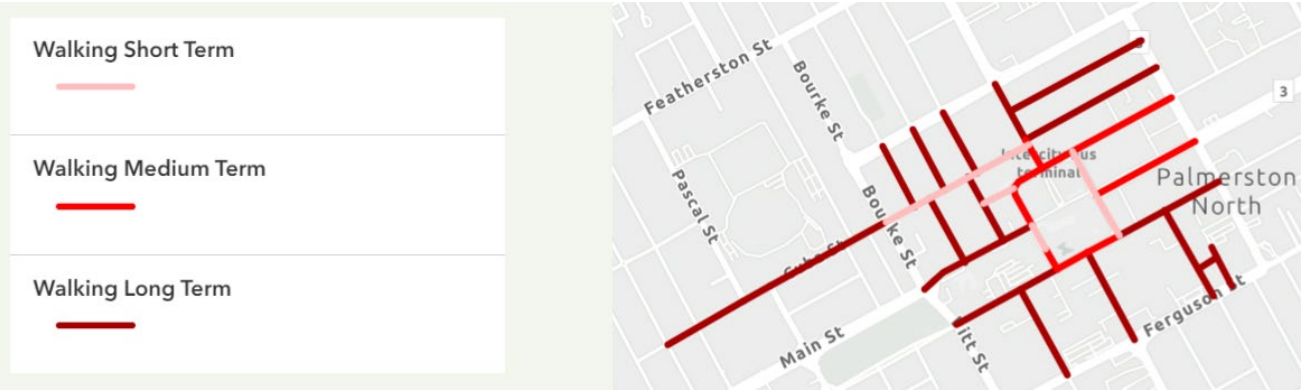


Figure 4: Strategic Networks – Walking Priorities

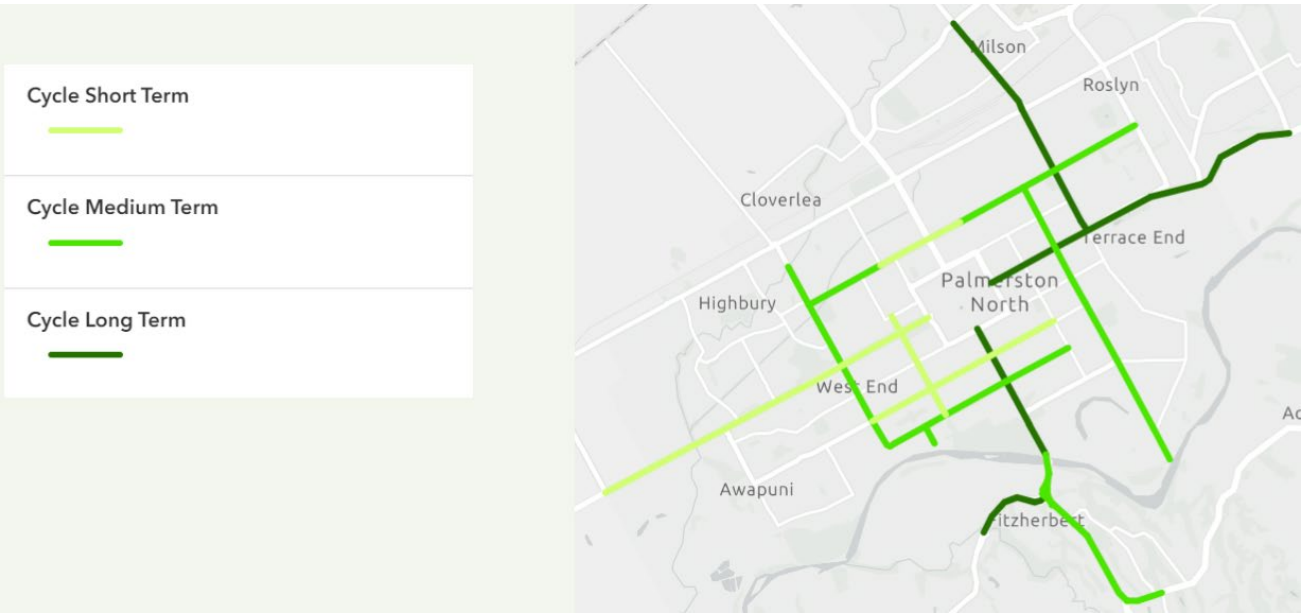


Figure 5: Strategic Networks – Cycling Priorities

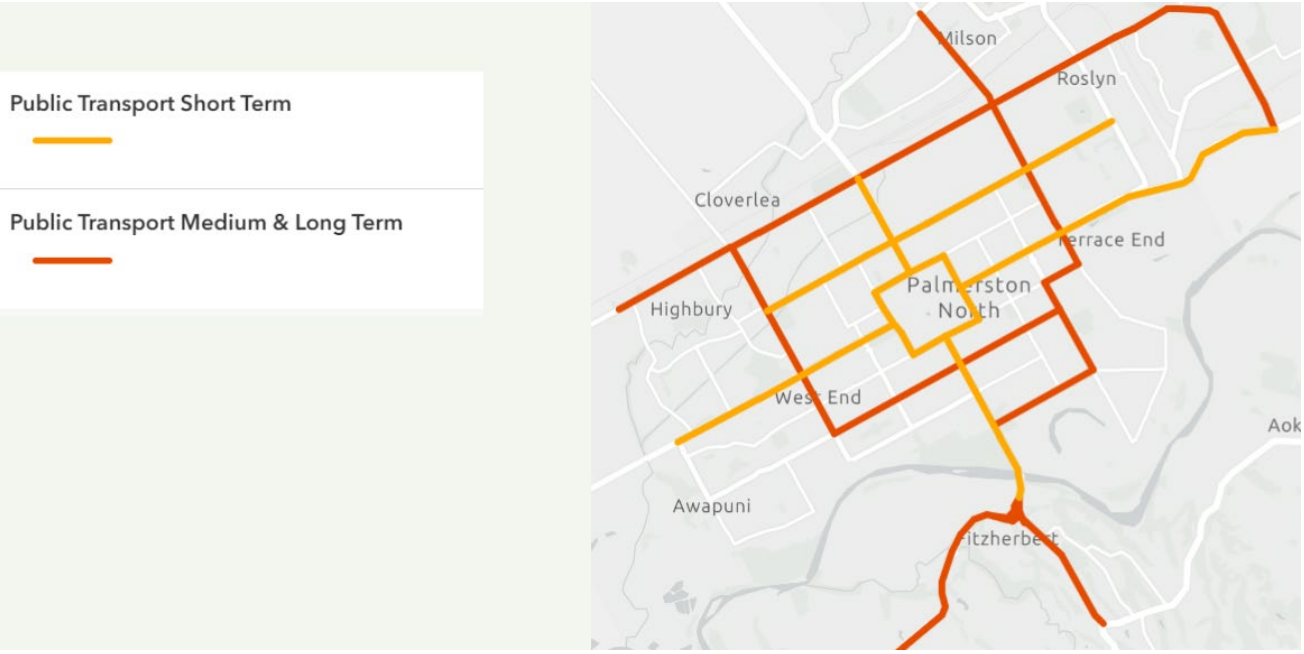


Figure 6: Strategic Networks – Public Transport Priorities

The effect of the cycling and public transport priorities on the proposed MRZ areas are:

- Improved cycle and public transport connectivity within the central city;
- Improved cycle and public transport access for **Milson**;
- **Roslyn** benefits from improved public transport services on Featherston Street and Tremaine Avenue, and improved cycle facilities on Featherston Street;
- **Kelvin Grove and Royal Oak** benefit from improved public transport services on Roberts Line, and improved cycle facilities on SH3 Napier Road;
- **Tremaine, Papaioea N and Terrace End** benefit from upgrades to the cycle network on Featherston, Ruahine, Main and Alberts Streets and improved bus services on Featherston and Ruahine Streets;
- **Ruamahanga & Papaioea S** benefit from improved cycle and bus facilities on Albert Street and Ferguson Street;
- Within the **Hokowhitu & Ruahine** area, Albert Street and Te Awe Awe Street are identified as part of the public transport priority network and Ferguson Street, College Street and Albert Street as part of the cycle priority network;
- Within the **West End, Milverton & Esplanade** the inclusion of cycle facilities along Park Road and Ferguson Street is included as part of the strategic public transport network;
- For **Highbury & Westbrook** the peripheral arterials are included in the priority network; and
- **Takaro** benefits from improved cycle and bus facilities on the peripheral arterials and on Featherston Street.

The proposed MRZ areas benefit to varying degrees as a result of their proximity to the long term public transport and cycling strategic networks.

3.2 Palmerston North Integrated Transport Initiative (PNITI)

The Palmerston North Integrated Transport Initiative (PNITI) Network Options Report January 2021, prepared by New Zealand Transport Agency Waka Kotahi (NZTA) includes a suite of programmes divided into short, medium and longer term projects. The works are intended achieve the following:

- Reduce freight movements on residential and place-based streets by up to 50%;

- Support and enable Urban Cycling Masterplan initiatives and investments…..:
- Reduce the number of congested intersections by 50% and improve journey times on key freight routes by up to 10 minutes;
- Reduce deaths and serious injuries by 35-40% across the rural freight network;
- Support economic development…; and
- Improves safety and access for new housing developments at Whakarongo, Aokautere and City West.

The Short-, Medium- and Long-Term projects as illustrated in the PNITI report are included in Appendix 2. Extracts from these images for the area included in the proposed MRZ are shown below. The short-term activities include identifying the key strategic routes by mode and places of note, with interventions sought to support the routes and balance access, place, and transport amenity. Implementation of safety projects to address high risk sites, development of new land use strategy to better separate residential and industrial areas and development of a programme of amenity, safety and access interventions within the central city to prioritise people over vehicles were also included in the short-term activities.

Medium-term activities include interventions along Ashhurst Road, Kelvin Grove Road, Kairanga Bunnythorpe Road, Rongotea Road/No 1 Line, SH56 and SH57 to prioritise a ring route away from the city for freight movements. Long-term ring road interventions include a new downstream crossing of the Manawatu River (between Longburn and Linton) to improve freight movement efficiency and remove freight traffic from the central city.

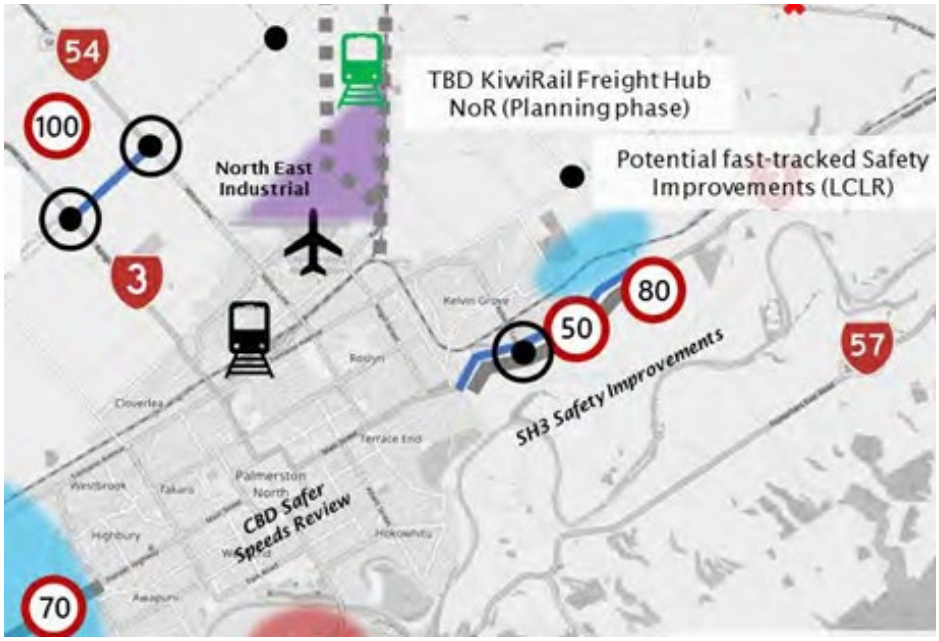


Figure 7: PNITI Short Term Works

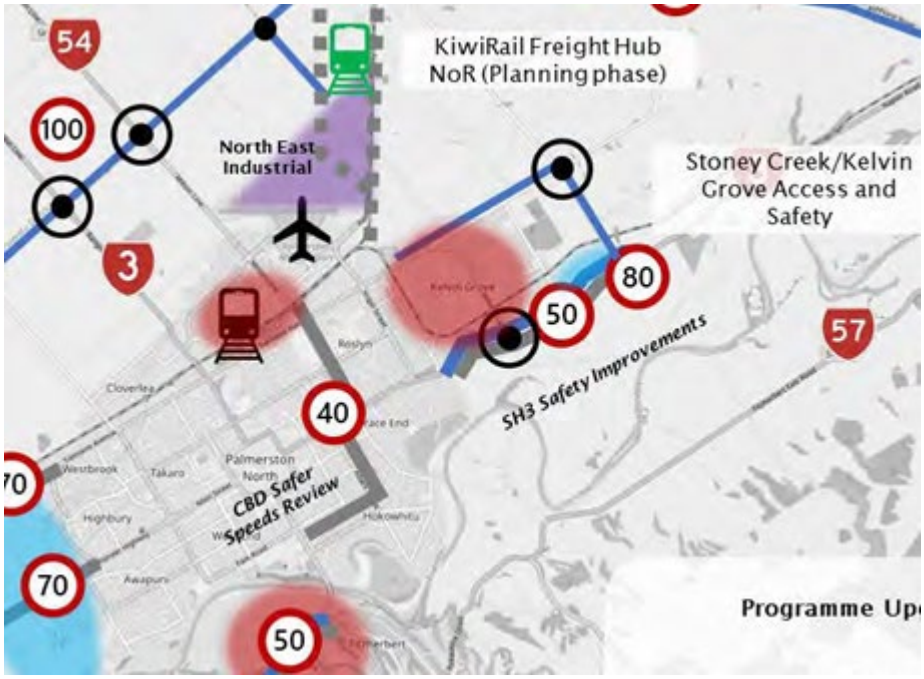


Figure 8: PNITI Medium Term Works

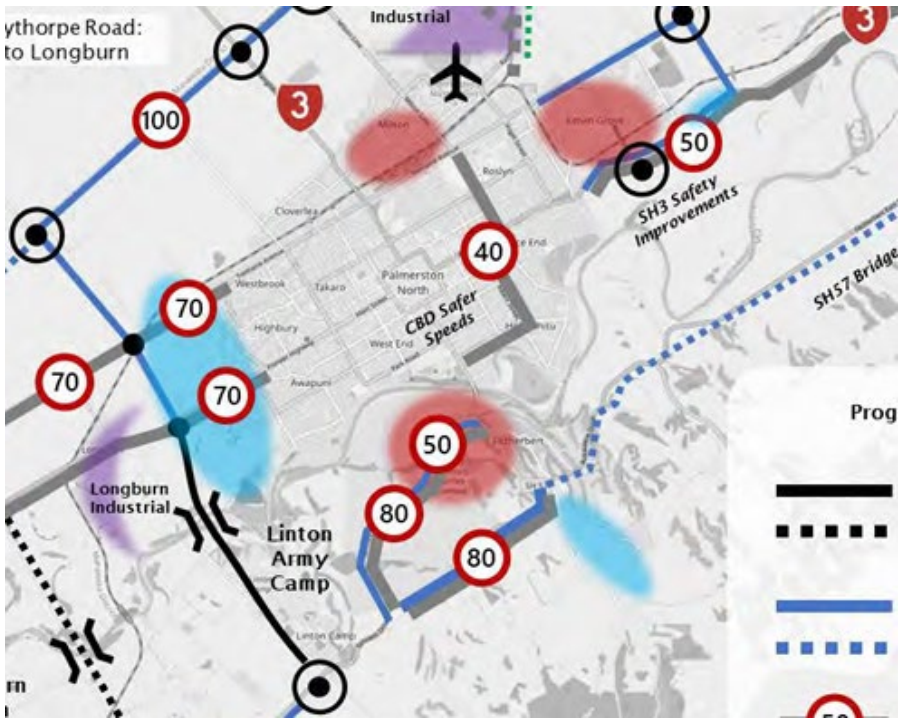


Figure 9: PNITI Long Term Works

The activities identified in PNITI can be expected to result in improved road safety in the central city. Any reduction in congestion will depend on the delivery of the freight ring road and/or a second river crossing being constructed. The Strategic Networks 2023 and the Long Term Plan both include ongoing priority and support for the PNITI works.

3.3 Future Development Strategy - 2024

Palmerston North City Council and Horizons Regional Council have recently adopted the Future Development Strategy 2024 (FDS). One of the elements of the FDS is 'Growing Up' which provides for growth in the existing urban areas through infill and intensification of housing, business and industry. Regarding land transport associated with intensification the FDS[1] includes:

> *To support growth in the existing urban environments our land transport infrastructure will likely require upgrading on an as needed basis. Programmes identified in PNITI and changes to our transport networks' priorities through Strategic networks (Network Operating Plan) will also be required to support growth and improve and protect our land transport over time.*
>
> *For all growth areas, road design and layout will be key to enabling provision of public transport services and active transport to support a well-functioning urban environment. In existing urban environments, consideration of options for public transport priority infrastructure will support our communities by enabling transport choice where possible.*

As such, some reliance is placed on existing transport programmes while also allowing for upgrades on an as needed basis in response to where growth is realised within the City.

Regarding funding of infrastructure upgrades, the FDS[2] sets out that the Council has scheduled funding in its 2024-2034 Long Term Plan and correlating growth programmes in its Development Contributions Policy, and also expects to unlock alternative funding mechanisms ahead of the growth occurring. The FDS[3] goes on to include that Council will continue to progress PNITI to ensure a well-functioning urban environment is achieved and the growth plans accommodated.

3.4 Summary

Table 2 summarises whether existing gaps in the transport network are addressed by anticipated future changes.

Gap in Existing Transport Network	Comment
Milson N & S: lack of cycle facilities along Milson Line north of Purdie Place and also on Airport Drive	Ongoing lack of cycle facilities on Airport Drive. Airport Drive is a Minor Arterial and provides access to a large area of employment.
Roslyn: lack of cycle facilities along Vogel Street	While there are not any cycle facilities along Vogel Street within Roslyn, Tweed Street provides an alternative parallel route to Vogel Street. Tweed Street is a residential street with low traffic volumes and speed humps to encourage slow vehicle speeds, providing a safe route for cyclists.
Kelvin Grove & Royal Oak: lack of cycle facilities on Roberts Line and Mihaere Drive	Roberts Line is a Major Arterial and Mihaere Drive is a Minor Arterial. Residents in the Kelvin Grove and Royal Oak MRZ area would need to cycle along these arterials to access the cycle network closer to the city.
West End, Milverton & Esplanade: lack of cycle facilities along Park Road	Cycle facilities included along Park Road as part of the strategic cycling network.
Awapuni & Maraetarata: lack of cycle facilities along Maxwells Line north of College Street	Ongoing lack of cycle facilities along Maxwells Line. It is located along the western periphery of the

[1] Future Development Strategy 2024 page 50
[2] Future Development Strategy 2024 page 110
[3] Future Development Strategy 2024 page 112

Gap in Existing Transport Network	Comment
	proposed MRZ area and therefore unlikely to have significant additional cycling activity as a result of housing intensification.
Highbury & Westbrook: lack of cycle facilities on Botanical Road to the north of Ferguson Street.	Cycle facilities included along this section of Botanical Road as part of the strategic cycling network.

Table 2: Gaps in Transport Network

As a result of the anticipated strategic transport upgrades, all the proposed MRZ areas will have a satisfactory access by cycle to the city centre through the local and collector street network with cycle facilities included on key arterials. The only exception is Kelvin Grove which will rely on public transport as the main alternative to private vehicle travel for accessing the city centre.

4. Transport Context

The following strategic documents are relevant to the traffic and transportation aspects of the Proposed Plan Change:

- Government Policy Statement Land Transport 2024("**GPS Land Transport**")
- Road to Zero – Road Safety Strategy 2020-2030 ("**Road to Zero**")
- Horizons Regional Land Transport Plan 2021-2031(2024 Review) ("**RLTP**")
- Horizons Regional Public Transport Plan 2022-2032 ("**RPTP**")
- Palmerston North Transport Plan 2021-2031 ("**PNTP**")
- Palmerston North City District Plan ("**District Plan**")
- PNCC 10 Year Plan 2024-2034

Key parts of the above documents are included in Appendix 3.

The recent GPS Land Transport has economic growth and productivity as its main strategic priority with a continued emphasis on safety but less priority to public transport and active modes compared with the previous GPS Land Transport. In February 2024, the Government announced that the Road to Zero will be replaced with an objectives document that will set out the Government's road safety priorities. The Road to Zero remains in place until the Government releases the new objectives document.

The RLTP focuses on travel choice, connectivity and efficiency, safety, climate change and resilience, and network quality and integration. The RPTP includes targets for increased travel and patronage on public transport along with reduced emissions from buses. The PNTP focuses on delivering an integrated, multimodal, and safe transport network.

As well as safety and multi-modal priorities, the District Plan transportation objectives and policies include the efficiency of the transport network as an objective. The 10 Year Plan includes city-wide road safety, public transport and active transport projects along with an ongoing commitment to the PNITI activities.

As expected, there are a lot of commonalities between the various documents. The main themes that have relevance to the PC:I can be summarised as follows:

- A transport system where no-one is killed or seriously injured (including active and public transport modes) with a target of a 40% reduction by 2030;
- Better and affordable travel options with 15% of travel in the region by active and public transport modes by 2030 (PNITI target of 30% active mode travel by 2030);
- Reduced emissions from land transport including buses;

- Road safety principles include safety as a critical decision-making priority, designing for human vulnerability, allowing for mistakes, strengthening all parts of the road transport system and shared responsibility for improving road safety;
- A reliable, integrated, accessible and sustainable public transport system with increased patronage;
- Timely provision of transport infrastructure to support city growth and economic development opportunities;
- Speed limits and traffic speeds are appropriate for the conditions throughout the transport network;
- Space is prioritised within the transport network for active and public transport;
- The safety and efficiency of land transport is protected from the adverse effects of land use, development and subdivision activities;
- Alignment with the Palmerston North City Council 10 Year Plan; and
- Alignment with the anticipated outcomes of the PNITI Network Options Report.

This summary list is used later in this assessment to review the alignment of the transport aspects of the PC:I with the various national, regional, and local statutory provisions and strategic documents.

5. MRZ Areas

The proposed provisions in the MRZ are intended to enable increased housing densities and built forms with a greater diversity of housing choice. The zone is intended to be a well-functioning urban environment that enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety, now and into the future.

The extent of the 2022 Draft MRZ, as shown earlier in Figure 1, was identified by using the following walking distances:

- Bus stops (within 500m)
- Parks or reserves (within 300m)
- Schools (within 800m)
- Shopping centre (within 800m)

These walking distances were developed based on advice set out in pages 8-12 of the McIndoe Urban Memo #2 dated 3 October 2022. The McIndoe Urban memo included 600m walk distance to bus stops, 300m with scope to extend to 400m for parks and reserves.

6. Traffic Modelling

Beca was commissioned by the Council in 2024 to undertake traffic modelling of PC:I. This modelling was undertaken using the Palmerston North Strategic Transport Model (PNSTM), a strategic multi-modal transport model of the City. Two scenarios were modelled with PC:I Scenario 1 including 4,251 additional households outside the Stormwater Overlay, and PC:I Scenario 2 including 4,251 additional households distributed inside and outside the Stormwater Overlay. The areas included in Scenario 2 inside the Stormwater Overlay were Hokowhitu East, Hokowhitu South and Ruahine as well as extended parts of Awapuni South, Hokowhitu Central and Milverton. The assumed housing yields were based on the 30 year infill forecast included in the Palmerston North Housing and Business Development Capacity Assessment 2023 (amended version March 2024). These modelled yields are larger than the most recent forecast yields.

For each scenario, the forecast growth associated with housing intensification was balanced by an equivalent reduction in growth elsewhere in the City. The PC:I Scenarios are for the year 2054 and are modified versions of the PNSTM 2054 Do Minimum Scenario.

6.1 Traffic Model Assumptions

The PC:I Scenarios use the PNSTM 2054 Do Minimum Scenario as a base. This means that all the network interventions, land use changes, and other assumptions in the PNSTM for the 2054 forecast year are maintained. The assumed parameters for the 2054 transport model include:

PNSTM Model Assumptions

- Assumed 26% growth in population between 2023 and 2054;
- Assumed 25% growth in households between 2023 and 2054;
- Assumed 20% growth in employment between 2023 and 2054;
- 2.74 people per household (same as in 2023);
- Vehicle network assumptions included in the 2054 model:
    - Te Ahu a Turanga/ Manawatu Tararua Highway open;
    - Speed limit reductions around schools;
    - Speed management in CBD and in high risk areas;
    - Cuba Street speed limit reduced to 40km/h between the arena and Rangitikei Street;
    - Long term speed management (SH3 Napier Road and Pioneer Highway)
    - KiwiRail freight hub network
    - High quality bus station at Main Street Terminal; and
    - Capital Connection rail service
    - The PNITI infrastructure changes have not been included, the most significant being a second river crossing and the freight ring road.
- Cycle network assumptions included in the 2054 model:
    - Feilding to Palmerston North (south) – new shared path
    - Featherston Street safety upgrades (east and west)
    - Manawatu River Bridge to Ashhurst cycleway
    - Manawatu River shared pathway
    - SH57 shoulder widening/ path extensions (Old West Road and Aokautere Drive)
    - Main Street West – Pioneer Highway – shared path and shared zone
    - Priority Cycle Network (as per Strategic Networks minus Featherston Street)

The above assumptions include the full extent of Palmerston North. Where the vehicle and cycle network assumptions are for infrastructure outside the central city and away from the proposed MRZ areas, they are unlikely to affect the access for the MRZ areas.

The modelled forecast performance of the transport network is as follows:

PNSTM Model Performance

- Compared with 2023 daily trips, forecast change in demand of 25% increase in vehicle trips, 31% increase in public transport trips, 45% increase in cycle trips;
- Compared with 2023 traffic network impacts, forecast 26% increase in average weekday vehicle kilometres travelled, 34% increase in average weekday vehicle hours travelled, 53% increase in average weekday delays experienced by vehicles;
- For 2023 the model shows some congestion during weekday peaks, mainly associated with intersections on the following routes/locations:
    - The City Ring Road
    - Summerhill Drive and Fitzherbert Avenue
    - SH3 from the City Ring Road to Keith Street

  - SH3 from the City Ring Road to Bennett Street/ John F Kennedy Drive
  - Tremaine Avenue and Kelvin Grove Road from Botanical Road to McLeavey Drive
  - Ruahine Street
  - Te Awe Awe Street/ Victoria Avenue intersection
  - Milsons Line/ Fairs Road intersection
- Forecast changes in congestion by 2054, beyond those listed above, include:
  - Increased congestion on Summerhill Drive and Fitzherbert Avenue at intersections either side of the river
  - Increased congestion on SH3 to the east of the City, in particular at the Keith Street and Roberts Line intersections
  - Increased congestion on SH3 to the north of the city, especially at the Flygers Line intersection
  - Increased congestion on Tremaine Avenue especially at the Botanical Road and Highbury Avenue intersections
  - Congestion on Pioneer Highway at the Maxwells Line and Longburn Rongotea Road intersections

6.2 PC:I Scenarios Model Performance

The modelling of the two PC:I scenarios has been compared with the PNSTM 2054 Do Minimum, as shown in Table 3 below, which has been sourced from the Model Report, included in Appendix 4.

Scenario	Average Daily VKT	Average Daily VHT	Average Daily Delays VHT	VKT / Person	Vehicle Trips / Person	Average Trip Length (km)	Average Network Speed (kph)
2054 DM	4,139,604	88,367	17,840	27	3.7	7.4	46.8
PCI Scenario 1	4,074,994	86,845	17,393	27	3.7	7.3	46.9
PCI Scenario 2	4,079,659	86,955	17,410	27	3.7	7.3	46.9
Percent Change on 2054 DM							
PCI Scenario 1	-1.6%	-1.7%	-2.5%	+0.0%	+0.0%	-1.4%	+0.2%
PCI Scenario 2	-1.4%	-1.6%	-2.4%	+0.0%	+0.0%	-1.4%	+0.2%

Table 3: Comparison with Do Minimum Network Vehicle Statistics

This shows both PC:I scenarios resulting in reduced average daily vehicle kilometres travelled, average vehicle hours travelled, average daily vehicle delay and average trip lengths, when compared with the Do Minimum. PC:I Scenario 1 (outside the Stormwater Overlay) performs slightly better than PC:I Scenario 2 (inside and outside the Stormwater Overlay). While the changes in forecast performance of the transport network are small, the indication is that with growth focussed closer to the city centre and local amenities, there will be a small improvement in the network performance compared with the 2054 Do Minimum. The biggest improvement is associated with average daily delay within the overall network, this would suggest that the PC:I areas avoid adding traffic to some of the key locations of forecast traffic congestion within the City.

The modelling predicts a reduction in transport emissions for both PC:I scenarios compared with the Do Minimum, mainly due to the reduction in vehicle kilometres travelled. Regarding congestion, intersections

along the main access roads to the CBD experience a slight reduction in average delay. This is mainly caused by the reduction in demand for travel into the city as a result of the location of the household growth areas in the PC:I Scenarios.

Regardless of PC:I a number of intersections will be performing poorly by 2054 with the modelling predicting that the intersections most in need of upgrading would be:

- SH3/ Roberts Line
- Kelvin Grove Road/ McLeavey Drive
- SH57 Old West Road/ Summerhill Drive
- Fitzherbert Avenue/ Hardie Street

If a second river crossing is constructed, the distribution of some traffic through the city can be expected to change, and the intersections closest to the Fitzherbert Bridge could have less congestion.

The traffic modelling forecast changes in bus and cycle use compared with the Do Minimum is similar for both PC:I Scenarios, a city-wide increase of 0.3% cycle trips and a 1.2% reduction in bus trips. It should, however, be noted that within the extent of the PC:I Scenarios, the bus use increases by nearly 2%. The city-wide reduction in bus use results from a reduction in school bus use because of the forecast population growth being closer to schools.

The traffic modelling shows both the 2054 PC:I Scenarios performing as well or better than the 2054 Do Minimum over a range of outputs. The modelling does not show any additional intersections that would need upgrading beyond those that would already be triggered for improvements due to ongoing traffic growth within the wider city.

Given the slight reduction in benefits when the area within the Stormwater Overlay is included, it is expected that if the red stormwater area had been included in the traffic modelling scenarios, it would have performed in a similar manner to the 2054 Do Minimum.

7. Individual MRZ Sites

Three individual sites have also been identified for inclusion in the MRZ. These are:

- The former Terrace End Bowling Club site at 17 Summerhays Street (Summerhays);
- The northern portion of land at 224 Fitzherbert Avenue (Huia); and
- 216-218 Ferguson Street (Ferguson Street).

These are discussed in turn below.

7.1 Summerhays Site

The site is shown in Figure 10.

Figure 10: Summerhays Site Location

Transport-related features of the site include:

- Accesses to both Ruahine Street and Summerhays Street. Both accesses are narrow and can only accommodate a single traffic lane;
- Summerhays Street is a Local Road and Ruahine Street is a Collector Road;
- Likely to be spare kerbside parking capacity on both Ruahine Street and Summerhays Street;
- Within 150m of cycle facilities on Church Street and within 300m of cycle facilities on Ruahine Street; and
- The site is within a 500m walking distance of bus stops on Ruahine Street, Albert Street, Ferguson Street and Main Street accessing several bus routes.

The site has good access to active and public transport travel modes. Property acquisition will be needed to achieve a two-way traffic width with a footpath on at least one side. For sites such as this with two frontages, it would assist with improving pedestrian connectivity, for residents of the site and the wider public, if there was a requirement through the MRZ provisions to include a public pedestrian link through the site. From a transport perspective, the site is considered suitable for including in the MRZ.

7.2 Huia Site

The site is shown in Figure 11.

Figure 11: Huia Site Location

Transport-related features of the site include:

- Legal access is from Fitzherbert Avenue and Park Road. While the site has frontage onto Huia Street it does not have legal access;
- Fitzherbert Avenue is a Major Arterial and Park Road is a Minor Arterial in the District Plan road hierarchy. The intersection of the roads is signalised;
- There are cycle provisions along Fitzherbert Avenue and through the intersections on Park Road;
- Any overspill parking from the site would likely occur on Park Road; and
- There are bus stops on Fitzherbert Avenue within around 100m of the site and on Te Awe Awe Street around 500m from the site. These stops service four routes.

The District Plan transport rules will limit the site to no more than two accesses, and these would most likely need to be onto Park Road given it is a Minor Arterial and Fitzherbert Avenue is a Major Arterial. The Park Road frontage is long enough to accommodate the required 30m access separation distance from the intersection. The site is large enough to be able to accommodate on-site vehicle turning including for rubbish trucks and emergency vehicles if needed. A requirement to provide footpaths within the site with connections to both street frontages would assist with minimising walking distances for pedestrians. From a transport perspective, the site is considered suitable for inclusion in the MRZ.

7.3 216-218 Ferguson Street

The site is shown in Figure 12.

Figure 12: 216-218 Ferguson Street Site Location

Transport-related features of the site include:

- Street frontage onto both Cook Street and Ferguson Street;
- Both Cook and Ferguson Streets are Collector Roads;
- There are cycle lanes on Cook Street;
- Any overspill parking from the site can likely be accommodated on either street frontage; and
- There are bus stops on Ferguson Street within around 130m of the site and on College and Main Streets within 500m. These stops service five routes.

The site has good access to active and public transport travel modes. The District Plan transport rule R20.4.2(a)(vi)a) may limit the site to a single vehicle access. Vehicle access can be to either frontage and will be able to comply with the 20m separation distance from the Cook Street/ Ferguson Street intersection. From a transport perspective, the site is considered suitable for inclusion in the MRZ.

8. MRZ Transport Provisions

8.1 Transport Assessment 2022 (WSP)

WSP were commissioned by Council to prepare a Traffic Assessment Report to understand the applicability of the existing District Plan Rules and Engineering Standards to PC:I. The Report included a review of:

- National Policy Statement on Urban Development 2020
- National Medium Density Design Guide
- District Plan Section 7 Subdivision and Section 20 Land Transport
- Engineering Standards for Land Development (Section 3: Roading)

The findings and recommendations of the WSP Report are set out in Appendix 5. It is recommended that the following is considered as the MRZ provisions are developed:

- For a site with a shared vehicle access serving up to three dwellings, on-site turning is only required for the on-site parking spaces;

- For a site with a shared vehicle access serving more than three dwellings, on-site turning should be provided within a common area to provide for drop-off and pick-up;
- Bicycle parking/ storage for at least one bicycle per dwelling needed for residential activities in the MRZ. This could be required through either an amendment to R20.4.2(g) or as a separate standard for the MRZ; and
- On-site bicycle parking/ storage can be in a garage provided that the space is clear of the parking envelope.

Appendix A of the WSP Report includes an assessment of whether the District Plan Section 20 Land Transport provisions can be applied to the MRZ. The assessment indicates that R20.4.2(a)(vi)a), c) and h) can be applied in the MRZ. This is discussed further in Section 8.3 below.

8.2 PNCC MRZ Standards Report 2023

McIndoe Urban were commissioned by Council to prepare the PNCC MRZ Standards Report 2023 discussing the key issues for the design of medium density housing and development in the MRZ and identify potential District Plan standards to address these. Comments on the proposed transport-related standards in the McIndoe Urban Report are set out in Appendix 6 and summarised below:

- The inclusion of a 5.5m setback for garage doors from the road boundary will minimise the risk of a stacked vehicle obstructing the footpath;
- Both R20.4.2(a)(vi)a) and c) could result in all vehicle access, for a single site with multiple dwellings, needing to be from a single shared driveway for the activity to be permitted. It is recommended that consideration is given to allowing for a second driveway such that a front dwelling has direct vehicle access to the street;
- Regarding side boundary fencing, it is recommended that if the building is set back by more than 1.5m, and up to 2.5m, that the reduced fence height for side fencing applies to up to 2.5m from the boundary to facilitate sight lines to and from the footpath and adjacent driveways; and
- For fencing along the road boundary, it is recommended that solid fences have a maximum height of 1.1m within 2m (increased from 1.8m) of a driveway to facilitate sight lines to and from the footpath.

8.3 Existing District Plan Multi-Unit Housing Transport Requirements

The existing District Plan provisions for multi-unit housing in **R10.6.3.3v**. include compliance with the following performance standards:

(g) Access and Parking

Compliance with the following performance standards of R20.4.2:

20.4.2(a)	Vehicle Access;
20.4.2(g)(i)	Cycle Parking Provision and Design

Explanation

The performance standards attempt to mitigate the effects created by the movement of vehicles in residential areas.

Consideration has been given to the implications for the proposed MRZ areas of compliance with R20.4.2(a) and is summarised below:

- **R20.4.2(a)(vi)a)** includes a maximum number of vehicle crossings per site of 1 per 30m of total frontage. For a site with a frontage of 30m or less (likely to be the case for many of the sites that can accommodate up to three dwellings), all vehicle access would be forced onto a single shared

driveway. This would not allow for the front dwelling to have separate access direct to the street, requiring more on-site space to be allocated for vehicle manoeuvring. It is recommended that in the MRZ areas, consideration is given to allowing two vehicle accesses such that a front dwelling has direct access to the street and rear dwelling(s) have access via a single shared driveway.

- **R20.4.2(a)(vi)b)** requires that where a site has frontages to both an arterial and a non-arterial road, that any vehicle access is from the secondary road frontage. This assists with ensuring safe and efficient traffic movement on the arterial routes and should also apply to the MRZ areas.
- **R20.4.2(a)(vi)c)** requires vehicle access to be off a private access if available rather than from the street. There is a risk that as per R20.4.2(a)(vi)a) above, this would not allow for the front dwelling to have separate access direct to the street, requiring more on-site space to be allocated for vehicle manoeuvring. It is recommended that in the MRZ areas, consideration is given to allowing two vehicle accesses such that a front dwelling has direct access to the street and rear dwelling(s) have access via a single shared driveway.
- **R20.4.2(a)(vi)h)** allows for an access serving up to three dwellings with a Local Road frontage to not provide a pedestrian visibility splay. It is recommended that fencing requirements for the MRZ areas provide for some inter-visibility between exiting drivers and frontage pedestrians, in the event that full pedestrian visibility splays are not provided. To avoid existing side boundary fences triggering the need for resource consent for up to three dwellings on a lot where the frontage road is a Collector or Arterial Road, consideration should be given to requiring a speed control device (speed bump) to be installed on the access some 3m back from the property boundary, to ensure slow vehicle speeds as an exiting vehicle approaches the footpath.
- **R20.4.2(a)(vi)i)** ensures that where there is a shared driveway, vehicles are not required to reverse either to or from the street. This standard does not specify whether or not turning is required in a common area. For up to three dwellings on a site, it is recommended that turning is not required in a common area. For four or more dwellings the need for turning within a common area is partly associated with the distance of the rear dwellings from the street and associated walking distance and whether there is a risk of vehicles reversing either into or out of the shared driveway for drop-off or pick-up purposes. This aligns with the guidance in NZS4404:2010 to provide turning within a common area when three or more rear dwellings are accessed off a driveway.
- **R20.4.2(a)(vi)j)** for larger sites that require on-site rubbish collection and that have frontages onto Arterial or Collector Roads, on-site turning for trucks will be required. This assists with ensuring safe and efficient traffic movement on the arterial and collector routes and should also apply to the MRZ areas.
- **R20.4.2(a)(viii)** sets out the design standards for accesses in terms of width, passing and on-site queuing. The lengths of the accesses are included in the standard. Compliance would require an access serving 2-3 dwellings to be 40m or less, serving 4-6 dwellings to be 80m or less and serving 7-20 dwellings to be 100m or less. This is not considered an impediment to development given that existing standard residential lots are unlikely to be longer than 40m. This standard requires a separate 1.5m wide footpath to be provided when there are ten or more dwellings. **R20.4.2(g)(i)** sets out cycle parking space requirements for a range of non-residential activities. There is no requirement to provide residential or residential visitor cycle parking. For the MRZ areas ensuring that residents have access to cycle parking is part of facilitating travel by active modes and reducing reliance on private vehicles for travel. A requirement for residential cycle parking in the MRZ areas is recommended.

The existing District Plan provisions for multi-unit housing do not require compliance with the balance of R20.4.2. The following existing standards in R20.4.2 should apply in the proposed MRZ areas:

- **R20.4.2(b)(i)** parking spaces for people with disabilities to be applied to non-residential activities.
- **R20.4.2(c)** provides for landscaping within parking areas to be applied to non-residential development.

- **R20.4.2(d)** provides for the satisfactory design of parking spaces and manoeuvring areas. This standard should apply to all MRZ areas with the addition of a requirement regarding the space needed to turn to and from a garage or parking space when accessed off a shared driveway. This standard could be an addition to R20.4.2(d) or a standard specific to the MRZ.
- **R20.4.2(e)** requires provision for on-site loading where there are 20 or more dwellings. This is considered reasonable for application to MRZ areas, primarily for rubbish collection purposes.
- **R20.4.2(f)** would require a dedicated truck loading bay to be provided where there are 20 or more dwellings. This rule is not considered necessary for residential activities given the requirements of R20.4.2(e).

8.4 Additional Transport Matters

Other transport matters for possible inclusion in transport-related provisions for the MRZ include:

- Ensure that there are opportunities to charge electric cars on larger sites where dwellings have on-site parking but not garages, a possible threshold might be where there are 20 or more on-site non-garaged parking spaces;
- Manoeuvring requirements to and from garages and parking spaces accessed from a side access. A figure providing for manoeuvring requirements to parking accessed from a shared driveway has been developed in conjunction with McIndoe Urban;
- Ensure provision for on-site bicycle parking/ storage. If bicycle parking is provided within a garage, it needs to be clear of the 5.4m by 3m (single garage) or 5.4m by 5.4m (double garage) parking envelope;
- Whether compliance with R20.4.2 is overly onerous for activities using an existing dwelling and there are no changes to the number of on-site parking spaces or the access provision;
- Confirmation whether the relocation of a residential unit is the movement of a dwelling within a site or the moving of a dwelling onto a site? If it refers to the moving of a dwelling onto a site compliance with R20.4.2 is considered necessary;
- For discretionary activities confirmation sought that the term ‘site layout’ includes the parking and access design;
- Recommend that specific provisions for carports or parking pads, are included separately. In particular, where there is a wall or fence along one side, 0.3m is added to the width included in Appendix 20C and 0.6m where there is a wall or fence along both sides;
- Ensure that garages for rear units are recessed from the building façade to minimise the turning area;
- Add a definition for ‘open construction’ for fences if not already included; and
- Consider including a matter of discretion for fencing of, ‘effects on the safety of all road users moving along the road frontage’.

9. National Policy Statement on Urban Development 2020 (NPSUD)

9.1 Parking

The NPSUD includes the following with regard to parking:

> *Policy 11: In relation to car parking:*
>
> *(a) the district plans of tier 1, 2, and 3 territorial authorities do not set minimum car parking rate requirements, other than for accessible car parks; and*

(b) tier 1, 2, and 3 local authorities are strongly encouraged to manage effects associated with the supply and demand of car parking through comprehensive parking management plans.

The Council removed parking minimums from the operative District Plan in line with the above direction. As set out in the above policy, the guidance is that in the event of adverse effects as a result of the policy change, councils are encouraged to manage parking through comprehensive parking management plans. Such plans can use a range of measures to manage parking, including time restrictions, paid parking, the introduction of no stopping lines or clearways, the introduction of indented parking bays, resident parking zones or the provision of additional public parking spaces.

Additional demands for kerbside parking as a result of PC:I can be accommodated without the need for a comprehensive parking management plan for the following reasons:

- existing typical street cross-sections in Palmerston North can accommodate kerbside parking on both sides while maintaining two-way traffic flow;
- where existing street carriageways are narrower, NZS4404:2010 provides for parked cars to reduce traffic flow to single-lane two-way traffic flow where traffic volumes are less than 1,000vpd;
- if local parking pressures create safety concerns such as obstructing sight lines, Council can, on a case-by-case basis, introduce no stopping lines to protect sight lines both from driveways and intersections and along roads;
- similarly, if kerbside parking restricts bus movements along a road, no stopping lines can be added to protect the path needed for buses on a particular section of road;
- the increase in houses is distributed throughout a wide area of the city and will be developed over a timeframe of many years. As such, any increase in kerbside parking in any one area will occur over time and be localised. Possible effects will be slight increases in walking distance between parked cars and origins/destinations of trips; and
- most properties currently have on-site parking, often with multiple spaces available, resulting in low kerbside parking demands.

9.2 Accessibility

The NPSUD includes the following with regard to accessibility to active or public transport:

Policy 5: Regional policy statements and district plans applying to tier 2 and 3 urban environments enable heights and density of urban form commensurate with the greater of:

(a) the level of accessibility by existing or planned active or public transport to a range of commercial activities and community services; or
(b) relative demand for housing and business use in that location.

All the proposed MRZ areas have good access to existing bus services that provide access to a range of commercial and community activities within the central city. As a result of the existing and anticipated strategic transport upgrades, all the proposed MRZ areas will have a satisfactory access by cycle to the city centre through the local and collector street network with cycle facilities included on key arterials. The only exception is Kelvin Grove which will rely on public transport as the main alternative to private vehicle travel for accessing the city centre. Accordingly, the proposed MRZ areas align well with NPSUD Policy 5 (a).

10. Alignment with District Plan Transportation Requirements

Objectives and policies included in the District Plan which have an influence on transportation matters associated with PC:I are set out and commented on in Appendix 7 and summarised below:

- the MRZ areas are located within the existing urban area and have a good level of connectivity to the road network;
- apart from gaps in cycling infrastructure in the proposed Kelvin Grove MRZ area, the MRZ areas all have good access to all travel modes;
- the existing Section 20 access provisions along with some recommended additions provide for the safe connection of individual sites with the road network;
- PC:I is not expected to change the function or maintenance requirements of the city's roads; and
- the traffic modelling shows that no additional adverse effects beyond those anticipated by ongoing traffic growth are expected as a result of PC:I.

As such, overall PC:I and the associated potential development have good alignment with the transport-related District Plan objectives and policies.

11. Alignment with Wider Transport Context

Commentary on the alignment of the PC:I with the transport context included in Section 4 of this report is provided in Table 4 below:

National/ Regional/ Local Transport Context	**Comment on Alignment**
A transport system where no-one is killed or seriously injured (including active and public transport modes) with a target of a 40% reduction by 2030	Given the distribution of the MRZ areas across the city and that the traffic modelling shows no additional adverse effects beyond those associated with ongoing traffic growth, no additional mitigation is considered necessary.
Better and affordable travel options with 15% of travel in the region by active and public transport modes by 2030 (PNITI target of 30% active mode travel by 2030)	PC:I can be expected to contribute to increased active mode and public transport use, given that the MRZ areas have been selected on the basis of walking distance to key amenities including bus stops.
Reduced emissions from land transport including buses	The traffic modelling shows that PC:I will result in reduced vehicle emissions compared with the Do Minimum scenario.
Road safety principles include safety as a critical decision-making priority, designing for human vulnerability, allowing for mistakes, strengthening all parts of the road transport system and shared responsibility for improving road safety	PC:I does not result in any new roading infrastructure. The safety of the vehicle accesses is provided for through the District Plan Section 20 access provisions.
A reliable, integrated, accessible and sustainable public transport system with increased patronage	Increasing populations within walking distances of bus stops facilitates an increase in bus patronage.
Timely provision of transport infrastructure to support city growth and economic development opportunities	The FDS includes allowance for transport upgrades on an as needed basis in response to where growth is realised within the City and states that Council will also continue to progress PNITI to ensure a well-functioning urban environment is achieved and the growth plans accommodated.
Speed limits and traffic speeds are appropriate for the conditions throughout the transport network	Both Waka Kotahi and Council can be expected to undertake ongoing speed reviews throughout the city. All areas of proposed MRZ are within 50km/h speed limit areas.

National/ Regional/ Local Transport Context	Comment on Alignment
Space is prioritised within the transport network for active and public transport	The MRZ areas have been selected based on walking distances to key amenities including bus stops. Most of the proposed MRZ areas have good access to the city's cycle network.
The safety and efficiency of land transport is protected from the adverse effects of land use, development and subdivision activities	The traffic modelling shows no additional adverse effects beyond those associated with ongoing traffic growth.
Alignment with the Palmerston North City Council 10 Year Plan	The 10 Year Plan includes city-wide road safety, public transport and active transport projects. The MRZ areas can be expected to benefit from these projects.
Alignment with the anticipated outcomes of the PNITI Network Options Report	The activities identified in PNITI can be expected to result in improved road safety in the central city benefitting a number of the MRZ areas. Any reduction in congestion will depend on the delivery of the freight ring road and/or a second river crossing being constructed.

Table 4: Alignment with National/ Regional/ Local Transport Context

As such, PC:I and the associated potential development have good alignment with the national, regional and local transport context.

12. Summary and Conclusion

The findings of this assessment can be summarised as follows:

Transport Effects

- There is existing traffic congestion within some parts of the road network resulting in variable travel times on some routes;
- The traffic modelling shows both PC:I scenarios resulting in reduced average daily vehicle kilometres travelled, average vehicle hours travelled, average daily vehicle delay and average trip lengths, when compared with the Do Minimum. PC:I Scenario 1 (outside Stormwater Overlay) performs slightly better than PC:I Scenario 2 (inside and outside Stormwater Overlay). While the changes in forecast performance of the transport network are small, the indication is that with growth focussed closer to the city centre and local amenities, there will be a small improvement in the network performance compared with the 2054 Do Minimum. The biggest improvement is associated with average daily delay within the overall network, this would suggest that the PC:I areas avoid adding traffic to some of the key locations of forecast traffic congestion within the City;
- The modelling predicts a reduction in transport emissions for both PC:I scenarios compared with the Do Minimum, mainly due to the reduction in vehicle kilometres travelled. Regarding congestion, intersections along the main access roads to the CBD experience a slight reduction in average delay. This is mainly caused by the reduction in demand for travel into the city as a result of the location of the household growth areas in the PC:I Scenarios;
- Regardless of PC:I a number of intersections will be performing poorly by 2054 with the modelling predicting that the intersections most in need of upgrading would be SH3/ Roberts Line, Kelvin Grove Road/ McLeavey Drive, SH57 Old West Road/ Summerhill Drive and Fitzherbert Avenue/ Hardie Street;

- The traffic modelling forecast changes in bus and cycle use compared with the Do Minimum is similar for both PC:I Scenarios, a city-wide increase of 0.3% cycle trips and an increase in bus use within the extent of the PC:I Scenarios of nearly 2%;
- The traffic modelling shows both the 2054 PC:I Scenarios performing as well or better than the 2054 Do Minimum over a range of outputs. The modelling does not show any additional intersections that would need upgrading beyond those that would already be triggered for improvements due to ongoing traffic growth within the wider city;
- The expectation from the NPSUD is if parking pressures arise from the removal of parking minimums that councils develop Comprehensive Parking Management Plans to manage parking, including time restrictions, paid parking, the introduction of no stopping lines or clearways, the introduction of indented parking bays, resident parking zones or the provision of additional public parking spaces;
- Additional demands for kerbside parking as a result of PC:I can be accommodated without the need for a comprehensive parking management plan with any parking issues addressed locally as needed; and
- PC:I and the associated potential development have good alignment with the transport-related District Plan objectives and policies along with the national, regional and local transport context.

Zone Extent

- All the areas have good access to existing bus stops within 500m and most have good access to bus stops within 400m;
- All the areas, except for Kelvin Grove, have good access to existing or planned cycling facilities; and
- From a transport perspective, each of the three individual sites, Summerhays, Huia Street and Ferguson Street, are considered suitable for inclusion in the MRZ.

Recommendations

- For a site with a shared vehicle access serving up to three dwellings, on-site turning should only be required for the on-site parking spaces;
- For a site with a shared vehicle access serving more than three dwellings, on-site turning should be provided within a common area to provide for drop-off and pick-up;
- Bicycle parking/ storage for at least one bicycle per dwelling needed for residential activities in the MRZ. This could be required through either an amendment to R20.4.2(g) or as a separate standard for the MRZ;
- On-site bicycle parking/ storage can be in a garage provided that the space is clear of the parking envelope, 5.4m by 3m for a single garage or 5.4m by 5.4m for a double garage;
- The inclusion of a 5.5m setback for garage doors from the road boundary will minimise the risk of a stacked vehicle obstructing the footpath;
- Both R20.4.2(a)(vi)a) and c) could result in all vehicle access, for a single site with multiple dwellings, needing to be from a single shared driveway for the activity to be permitted. It is recommended that consideration is given to allowing for a second driveway such that a front dwelling has direct vehicle access to the street;
- Regarding side boundary fencing, it is recommended that if the building is set back by more than 1.5m, and up to 2.5m, that the reduced fence height for side fencing applies to up to 2.5m from the boundary to facilitate sight lines to and from the footpath and adjacent driveways;
- For fencing along the road boundary, it is recommended that solid fences have a maximum height of 1.1m within 2m (increased from 1.8m) of a driveway to facilitate sight lines to and from the footpath;
- To avoid existing side boundary fences triggering the need for resource consent for up to three dwellings on a lot where the frontage road is a Collector or Arterial Road, consideration should be given to requiring a speed control device (speed bump) to be installed on the access some 3m

back from the property boundary, to ensure slow vehicle speeds as an exiting vehicle approaches the footpath;
- Include provision to ensure that there are opportunities to charge electric cars on larger sites where dwellings have on-site parking but not garages, a possible threshold might be where there are 20 or more on-site non-garaged parking spaces;
- Where numerous vehicle crossings could be accommodated along a road frontage, ensure that pedestrian and cyclist, safety and amenity, are provided for and that some kerbside space is available for parking;
- A figure providing for manoeuvring requirements to garages and parking spaces accessed from a shared driveway should be added to the MRZ standards;
- Consider not requiring compliance with R20.4.2 for activities using an existing dwelling and there are no changes to the number of on-site parking spaces or the access provision;
- Confirmation whether the relocation of a residential unit is the movement of a dwelling within a site or the moving of a dwelling onto a site? If it refers to the moving of a dwelling onto a site compliance with R20.4.2 is considered necessary;
- For discretionary activities confirmation sought that the term ‘site layout’ includes the parking and access design;
- Recommend that specific provisions for carports or parking pads, are included separately. In particular, where there is a wall or fence along one side, 0.3m is added to the width included in Appendix 20C and 0.6m where there is a wall or fence along both sides;
- Ensure that garages for rear units are recessed from the building façade to minimise the turning area;
- Add a definition for ‘open construction’ for fences if not already included; and
- Consider including a matter of discretion for fencing of, ‘effects on the safety of all road users moving along the road frontage’.

In summary, the findings of the assessment show that PC:I allows for the intensification of residential development within the proposed zone, and also the individual sites in a manner which is consistent with the District Plan traffic and transportation-related objectives and policies along with the national, regional and local transport context.

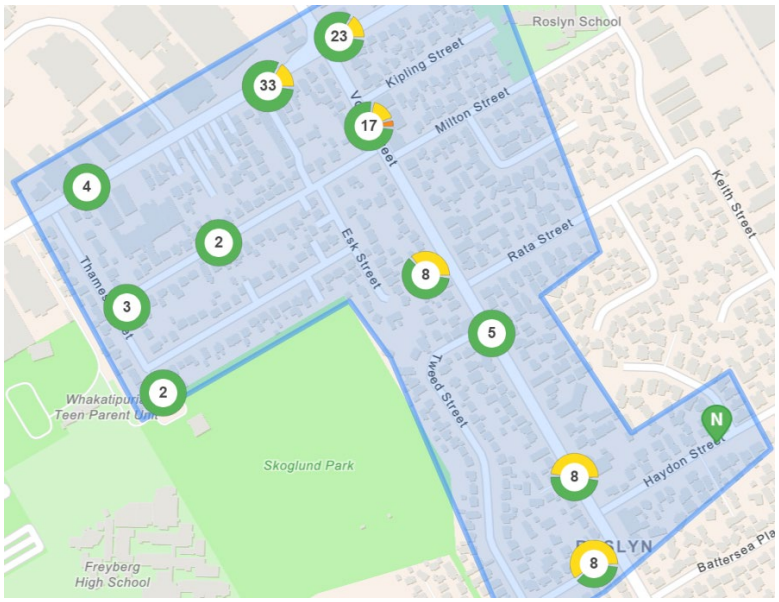
Appendix 1: Existing Transport Characteristics

1) Milson N & S

Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	**8-16** (9-12 inter-peak)	**7-14** (8-12 inter-peak)
Massey/ Linton side of River	**14-22** **(14-20 inter-peak)**	**12-18** **(12-18 inter-peak)**
Airport	3 (3 inter-peak)	6 (6 inter-peak)
Hospital	4-7 (4-6 inter-peak)	4-7 (4-6 inter-peak)
Benmore Ave/ Bennett St	4-6 (5 inter-peak)	5 (5 inter-peak)
Malden St	4 (4 inter-peak)	4 (4 inter-peak)
Mihaere Drive	**7-12** (6-9 inter-peak)	**7-12** (7-10 inter-peak)

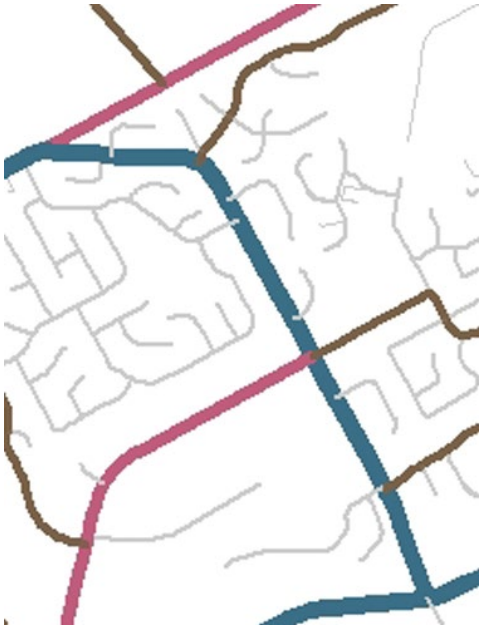
2) Roslyn

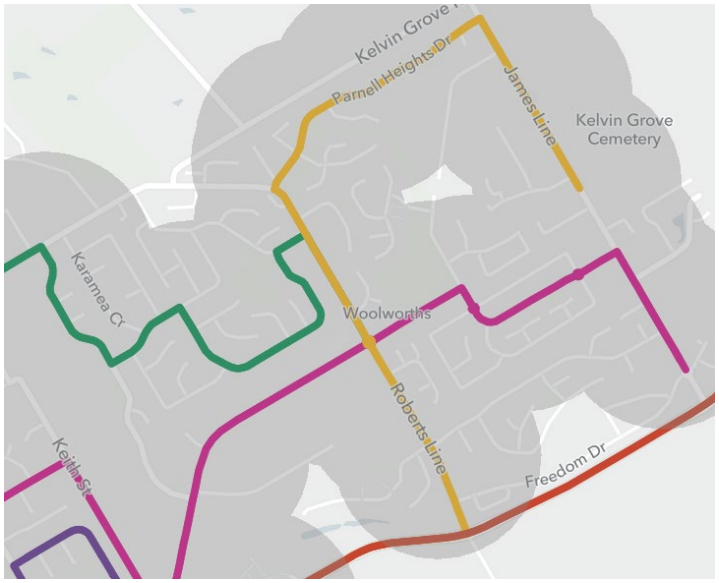


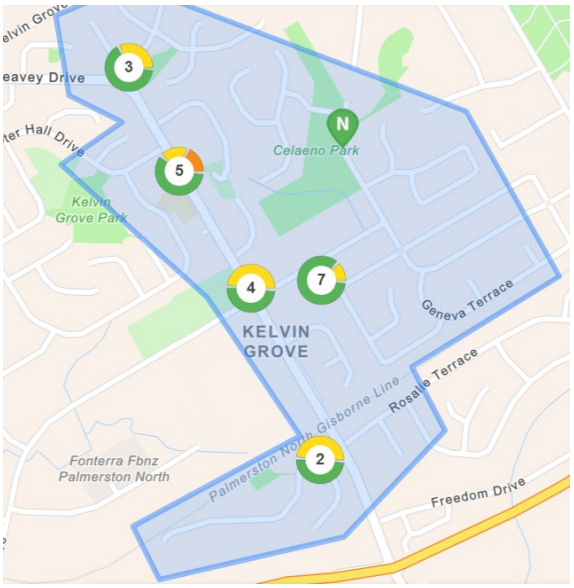
Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	8-12 (8-12 inter-peak)	**8-14** (8-12 inter-peak)
Massey/ Linton side of River	14-18 (16 inter-peak)	12-16 (12-14 inter-peak)
Airport	4 (4 inter-peak)	6-8 (7 inter-peak)
Hospital	5-8 (4-6 inter-peak)	5-7 (6 inter-peak)
Benmore Ave/ Bennett St	**7-12** **(7-12inter-peak)**	**7-12** **(7-12 inter-peak)**
Malden St	3 (4 inter-peak)	4 (4 inter-peak)
Mihaere Drive	5 (5 inter-peak)	5 (5 inter-peak)

3) Kelvin Grove & Royal Oak







Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	**8-14** (9-12 inter-peak)	**8-16** **(9-14 inter-peak)**
Massey/ Linton side of River	**14-20** (16 inter-peak)	**12-18** (12-16 inter-peak)
Airport	6-9 (6-8 inter-peak)	9-12 (9-12 inter-peak)
Hospital	**8-14** (8-12 inter-peak)	**8-14** (8-12 inter-peak)
Benmore Ave/ Bennett St	**10-18** **(10-16 inter-peak)**	**10-18** (12-14 inter-peak)
Malden St	5-9 (6-8inter-peak)	5-8 (6-8 inter-peak)
Mihaere Drive	2 (2 inter-peak)	2 (3 inter-peak)

4) Tremaine, Papaioea N & Terrace End

Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	4-6 (5-7 inter-peak)	4-6 (4-7 inter-peak)
Massey/ Linton side of River	9-12 (12 inter-peak)	8-12 (8-12 inter-peak)
Airport	5-7 (5-7 inter-peak)	9-12 (8-12 inter-peak)
Hospital	4 (4 inter-peak)	4-7 (5 inter-peak)
Benmore Ave/ Bennett St	5-9 (6-9 inter-peak)	5-9 (6-8 inter-peak)
Malden St	4-6 (4-6 inter-peak)	**4-9** (4-7 inter-peak)
Mihaere Drive	5-8 (5-8 inter-peak)	**5-10** (5-8 inter-peak)

5) Ruamahanga & Papaioea S

Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

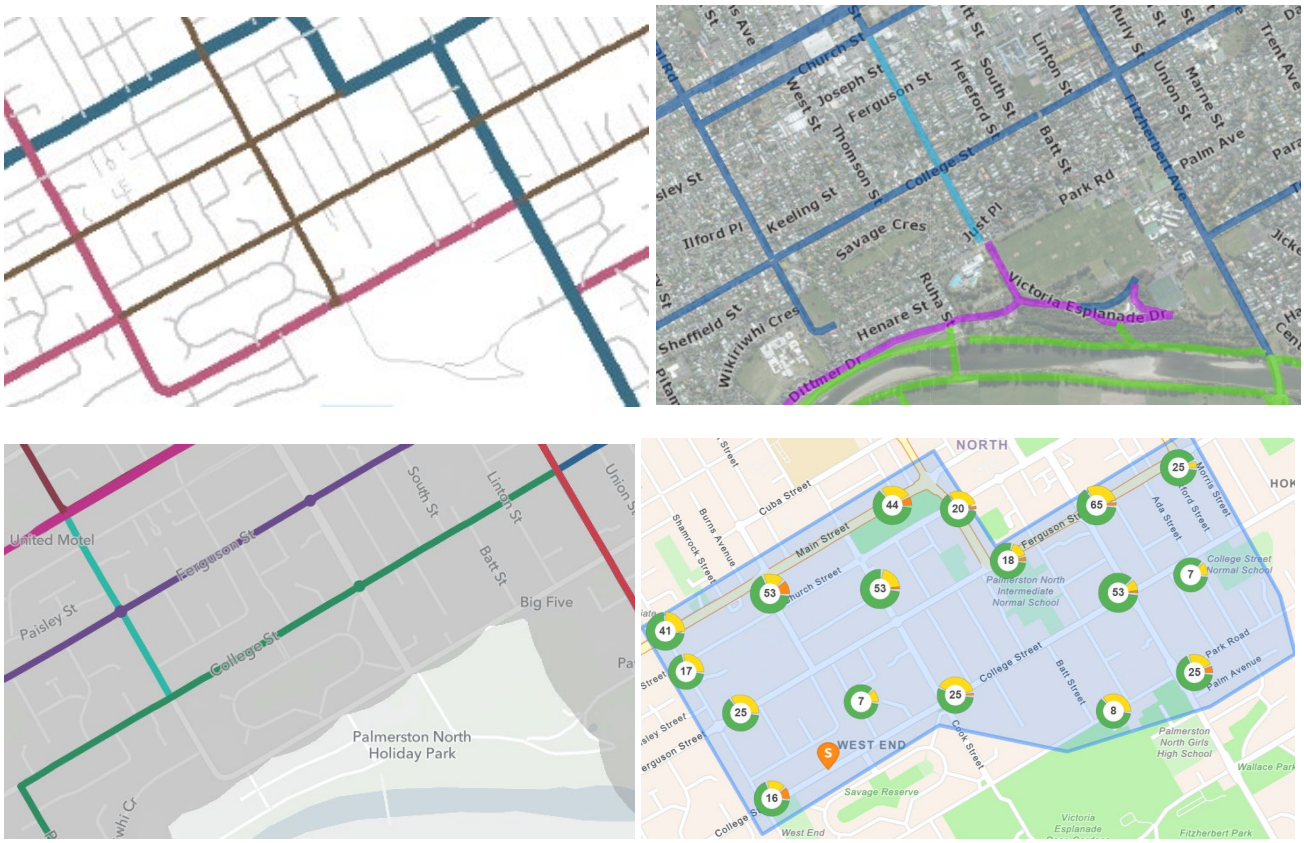
Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	4-6 (5 inter-peak)	4-6 (5 inter-peak)
Massey/ Linton side of River	8-12 (9 inter-peak)	6-8 (7 inter-peak)
Airport	**7-14** **(7-12 inter-peak)**	**10-16** **(10-16 inter-peak)**
Hospital	**5-10** (5-7 inter-peak)	**7-12** (6-9 inter-peak)
Benmore Ave/ Bennett St	**8-14** **(8-14 inter-peak)**	**8-14** (8-12 inter-peak)
Malden St	**6-12** (6-9 inter-peak)	**7-16** **(6-12 inter-peak)**
Mihaere Drive	5-8 (6 inter-peak)	5-9 (6 inter-peak)

6) Hokowhitu & Ruahine

Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	5-9 (6-8 inter-peak)	6-9 (6-8 inter-peak)
Massey/ Linton side of River	6-9 (8 inter-peak)	6-8 (7 inter-peak)
Airport	**9-16** **(9-14 inter-peak)**	**12-18** **(12-18 inter-peak)**
Hospital	**7-14** (7-9 inter-peak)	**8-14** (7-10 inter-peak)
Benmore Ave/ Bennett St	**9-16** **(9-16 inter-peak)**	**10-16** (10-14 inter-peak)
Malden St	**7-14** (8-12 inter-peak)	**8-16** **(8-14 inter-peak)**
Mihaere Drive	**7-12** (7-9 inter-peak)	**7-12** (7-8 inter-peak)

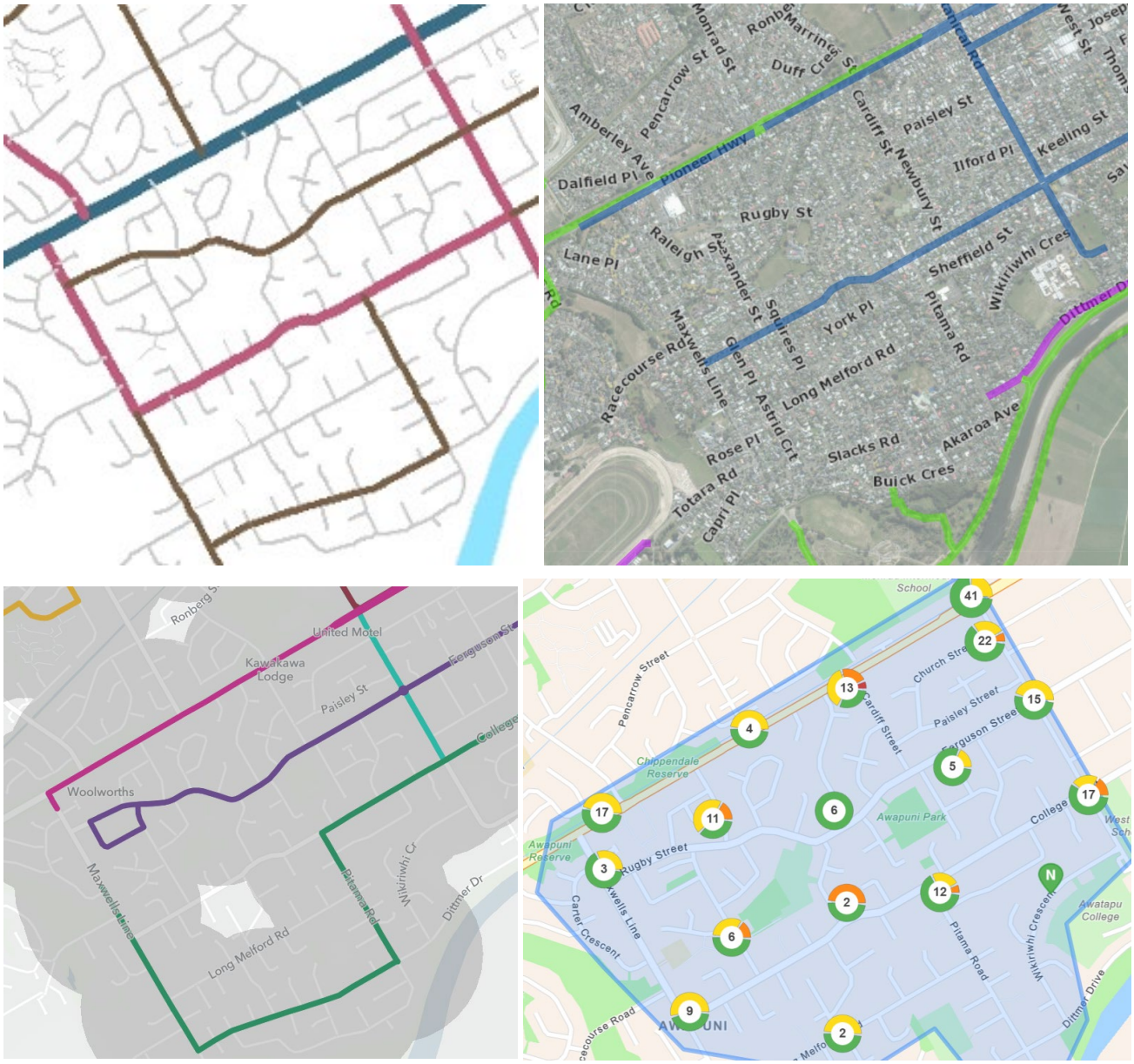
7) West End, Milverton & Esplanade



Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	4 (4 inter-peak)	5 (5 inter-peak)
Massey/ Linton side of River	7-10 (6-8 inter-peak)	5-9 (7 inter-peak)
Airport	**10-16** (10-14 inter-peak)	**14-22** **(14-22 inter-peak)**
Hospital	**8-14** (10 inter-peak)	**10-18** (9-12 inter-peak)
Benmore Ave/ Bennett St	**7-12** (7-10 inter-peak)	**7-14** **(7-12 inter-peak)**
Malden St	**9-16** **(9-14 inter-peak)**	**10-18** **(10-16 inter-peak)**
Mihaere Drive	**9-14** (10 inter-peak)	**8-14** (8-12 inter-peak)

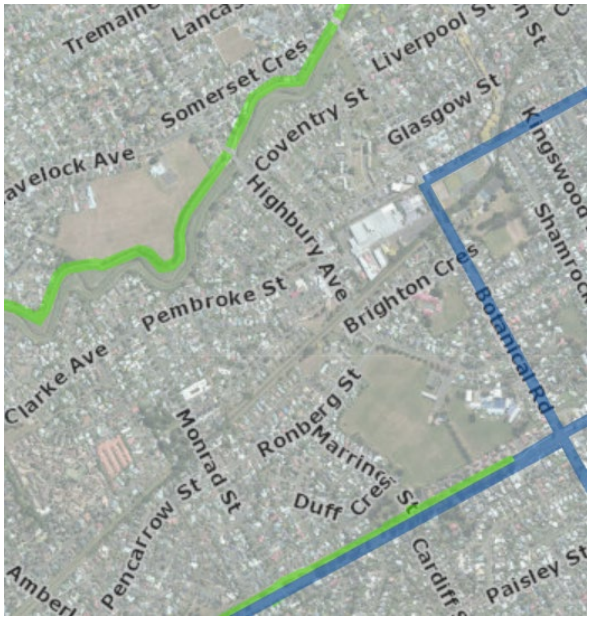
8) Awapuni & Maraetarata

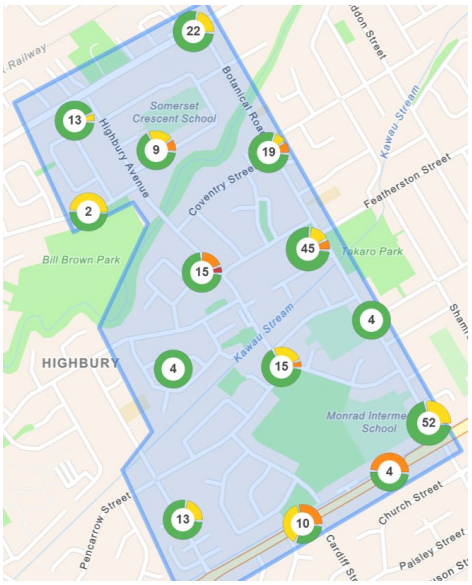


Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	6-9 (8 inter-peak)	6-9 (8 inter-peak)
Massey/ Linton side of River	**10-16** (12 inter-peak)	8-12 (8-10 inter-peak)
Airport	**12-18** (12-16 inter-peak)	14-18 (14-18 inter-peak)
Hospital	**12-18** (12-16 inter-peak)	**10-22** **(10-16 inter-peak)**
Benmore Ave/ Bennett St	8-12 (10 inter-peak)	8-12 (8-10 inter-peak)
Malden St	**10-20** (12-16 inter-peak)	**10-22** **(12-18 inter-peak)**
Mihaere Drive	**12-18** (12-16 inter-peak)	**10-20** (12-14 inter-peak)

9) Highbury & Westbrook

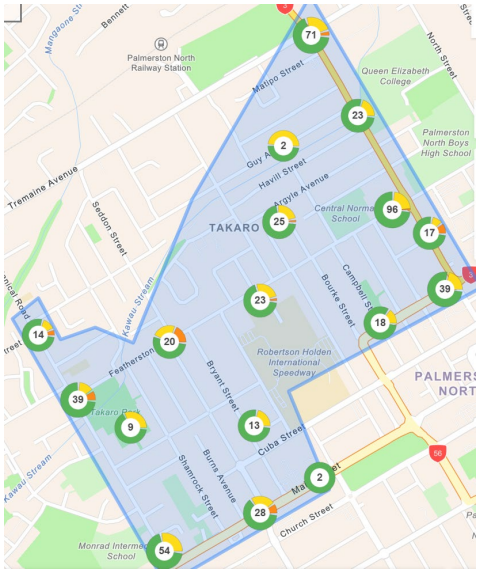




Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	6-9 (7-9 inter-peak)	6-9 (7-9 inter-peak)
Massey/ Linton side of River	**10-18** (10-14 inter-peak)	**9-14** (12 inter-peak)
Airport	**9-14** (10-14 inter-peak)	**12-20** (12-16 inter-peak)
Hospital	**9-14** (9-12 inter-peak)	**9-20** **(8-14 inter-peak)**
Benmore Ave/ Bennett St	6-7 (7 inter-peak)	6-8 (7 inter-peak)
Malden St	**8-14** (9-12 inter-peak)	**9-20** **(9-14 inter-peak)**
Mihaere Drive	**12-18** (12-16 inter-peak)	**12-20** (12-16 inter-peak)

10) Takaro



Top left: District Plan Road Hierarchy, Top right: Existing cycle network, Bottom left: Existing bus network, Bottom right: Crash records

Sample Work Locations	AM Home to Work (minutes)	PM Work to Home (minutes)
City Centre	5-7 (5-7 inter-peak)	4-6 (4-6 inter-peak)
Massey/ Linton side of River	**10-16** (12 inter-peak)	9-12 (9-10 inter-peak)
Airport	**7-12** (8-10 inter-peak)	10-14 (12 inter-peak)
Hospital	**7-12** (7-9 inter-peak)	**7-14** (6-10 inter-peak)
Benmore Ave/ Bennett St	4-7 (5-6 inter-peak)	4-7 (4-6 inter-peak)
Malden St	**7-12** (7-10 inter-peak)	**7-14** **(7-12 inter-peak)**
Mihaere Drive	**9-16** (9-12 inter-peak)	**10-16** (10-14 inter-peak)

Appendix 2: PNITI Programme

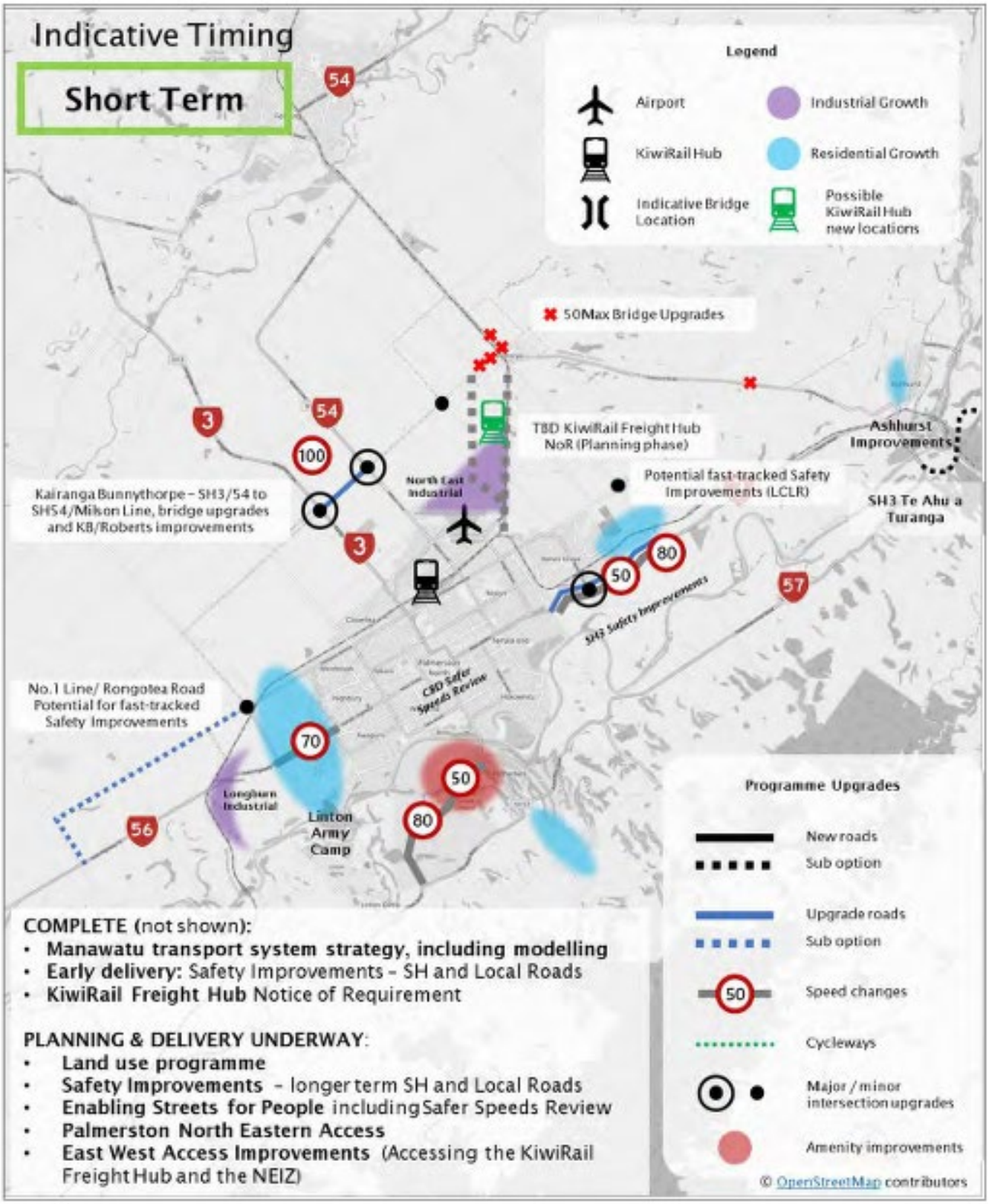


Figure 0-1: Short Term Programme

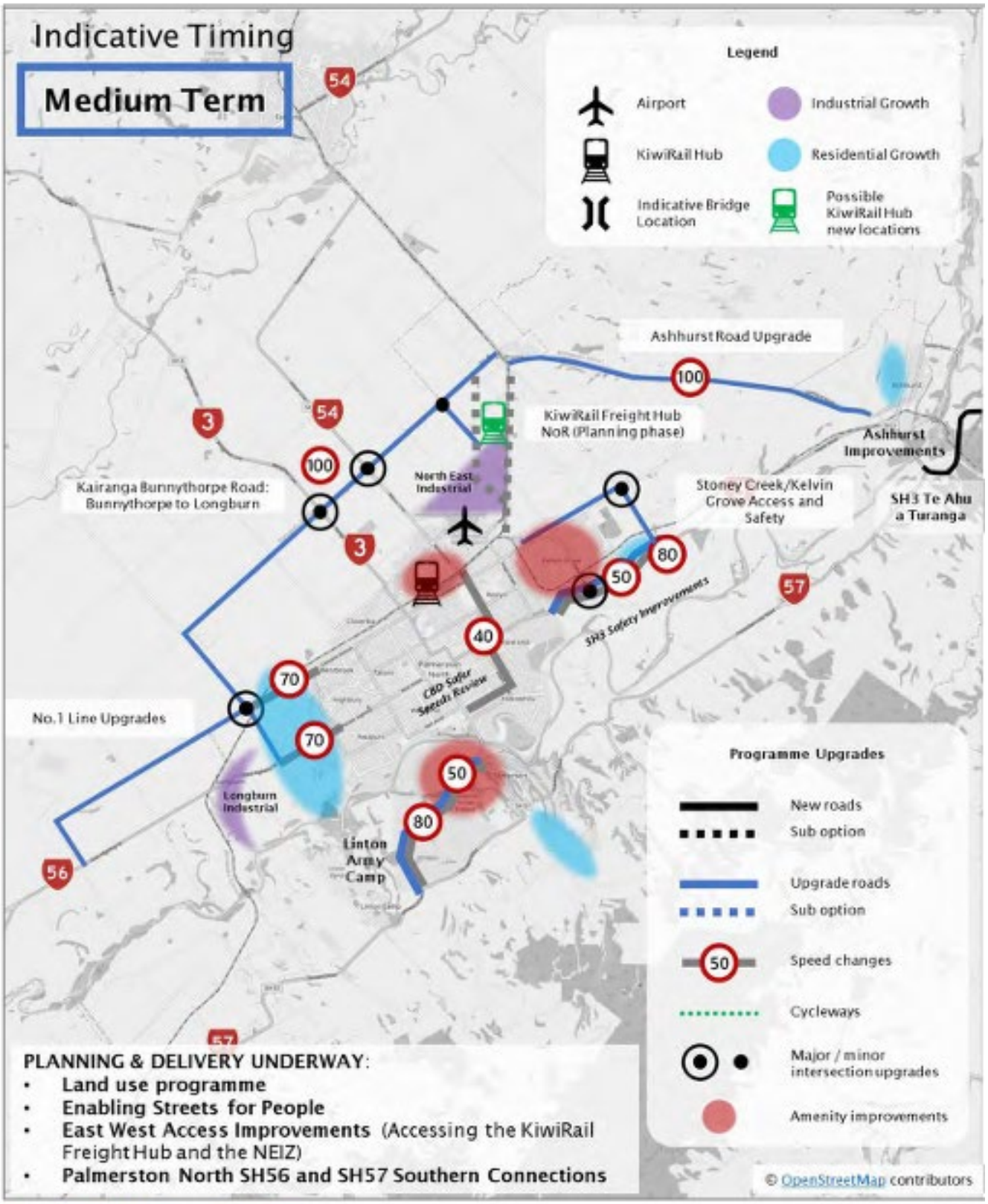


Figure 0-2: Medium Term Programme

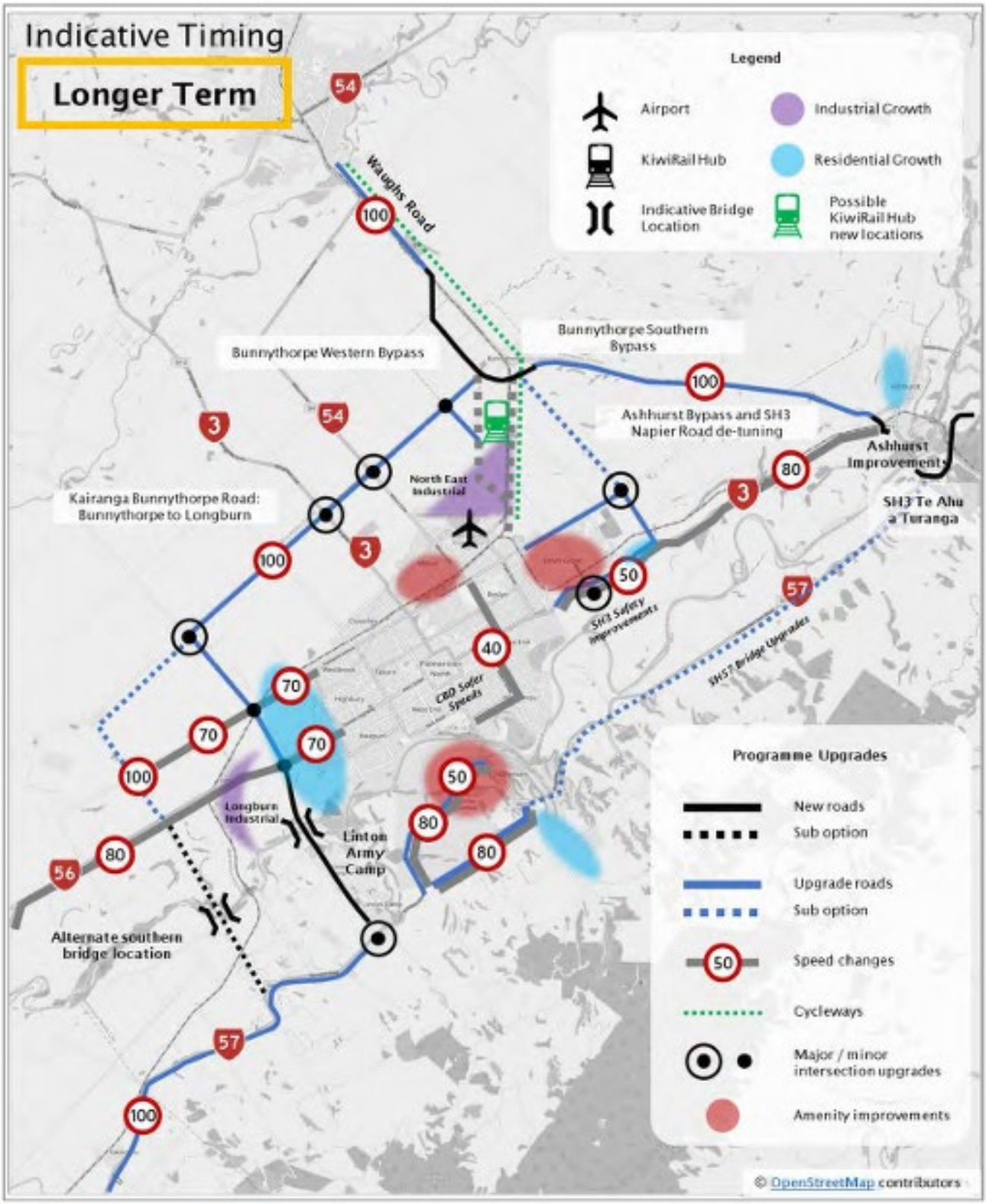


Figure 0-3: Longer Term Programme

Appendix 3: Transport Context

Government Policy Statement Land Transport 2024 (GPS Land Transport)

The Government has four strategic priorities which the GPS is intended to deliver against:

a. Economic Growth and Productivity

b. Increased Maintenance and Resilience

c. Safety

d. Value for Money

The Economic Growth and Productivity strategic priority is the overarching strategic priority for the direction of the GPS. Increased maintenance and resilience, safety and value for money are all equally weighted and intended to collectively support the delivery of a transport system that drives economic growth and productivity.

Road to Zero – Road Safety Strategy 2020-2030

The vision of Road to Zero is "a New Zealand where no one is killed or seriously injured in road crashes" and has the target reducing death and serious injuries on New Zealand roads by 40% over the next decade. The seven principles identified to guide the design of the network and for making road safety decisions are:

a. Promote good choices but plan for mistakes;
b. Design for human vulnerability;
c. Strengthen all parts of the road transport system;
d. Shared responsibility for improving road safety;
e. Actions are grounded in evidence and evaluated;
f. Road safety actions support health, wellbeing and liveable places; and
g. Safety is a critical decision-making priority.

Horizons Regional Land Transport Plan 2021-2031 (RLTP)

The RLTP has the 30-year vision of: A region that connects central New Zealand and supports safe, accessible and sustainable transport options. The objectives included in the RLTP are:

Objective 1: Travel Choice - Transport users in the region have access to affordable transport choices that are attractive, viable, and encourage multi-modal travel.

Objective 2: Connectivity and Efficiency - The regional transport network connects central New Zealand and is efficient, reliable, and resilient, and supports economic growth and productivity.

Objective 3: Safety - The transport network is safe for all users.

Objective 4: Climate Change and Resilience - The transport system is resilient, minimises climate change through reduction in emissions, and reduces adverse effects from transport on the environment.

Objective 5: Network Quality and Integration – The transport network is well maintained and integrates with current and planned land use to a level which supports a well-functioning and fit for purpose system.

The RLTP includes aspirational targets intended to signal the desire to drive change in certain areas of the regional transport system. These targets are:

Mode share: 15% of travel in the region to be active and public transport modes by 2030.

Safety: 40% reduction in deaths and serious injuries on the region's roads by 2030.

Resilience: 20% reduction in road closures on priority routes associated with natural hazards or unplanned events.

Carbon emissions: 30% reduction in regional carbon emissions from land transport by 2030.

Maintenance: The network condition of the region's roads is above the nationally set threshold for ride quality.

Horizons Regional Public Transport Plan 2022-2032 (RPTP)

The RPTP has a vision of: An attractive, integrated and convenient public transport system that connects us, enhances our wellbeing and environment, and becomes the preferred mode of transport in and between urban areas.

Objectives

1. Provide a simple, connected and convenient public transport network with wide appeal that attracts and retains customers, and encourages mode shift.

2. Provide high quality, safe and accessible public transport infrastructure and information that supports an efficient and connected transport network, and multi-modal travel.

3. Contribute to reductions in carbon emissions from transport and improved air quality through increased use of public transport and decarbonising the public transport fleet.

4. Pursue improved, equitable access to public transport across the region.

5. Provide a fares and ticketing system that is simple, affordable and attracts and retains customers while balancing user contribution with public funding.

6. Undertake an approach to procurement and monitoring of services that supports the efficient and effective delivery of services while providing good value for money.

Targets

1. At least 10% of travel in the region to be by public transport by 2032 with a baseline year of 2018-19

2. At least 70% reduction in greenhouse gas emissions per kilometre travelled for public transport bus services by 2032 with a baseline of 2022

3. At least 300% increase in public transport patronage by 2032 with a baseline year of 2018-19

4. 90% of surveyed customers and community stakeholders are satisfied with the public transport service and total mobility scheme

Palmerston North Transport Plan: Strategic Transport Chapter 2021-2031 (PNTP)

The purpose of the PNTP Strategic Transport Chapter is to provide transport infrastructure that supports day-to-day city activity and city growth in ways that integrate active and public transport. Desired outcomes of the PNTP and as relevant to this Proposed Plan Change include:

a. Palmerston North has an integrated transport network with clear priorities for all users based around place and movement principles.
b. The Palmerston North Integrated Transport Initiative (PNITI)/ Regional Freight Ring Road to be completed.
c. Palmerston North has safe streets, with zero deaths or serious injuries.
d. The urban network supports amenity outcomes, prioritises active and public transport, and directs freight to the Regional Freight Ring Road.
e. There is timely provision of transport infrastructure to support city growth and economic development opportunities.
f. Speed limits and traffic speeds are appropriate for the conditions throughout the transport network.
g. Street design is responsive to land-use, place and movement.
h. More people choose modes of transport other than motor vehicles.
i. New growth areas have well-connected, multi-modal streets.
j. Roads are designed to minimise long-term financial liabilities.

Palmerston North Transport Plan: Active and Public Transport Chapter 2021-2031 (PNTP)

The purpose of the PNTP Active and Public Transport Chapter is to increase the availability and uptake of active and public transport options. Desired outcomes relevant to this Proposed Plan Change include:

a. An integrated multi-modal transport network that connects people with destinations and place.
b. The transport network prioritises walking and cycling alongside other modes.
c. Active transport participation is increased to 15% of all journeys by 2024, to 20% by 2027; and to 30% by 2030.
d. There is increased investment in active and public transport as a proportion of the transport budget.
e. Active and public transport are genuine mode choices.
f. There is a significant mode-shift to active and public transport.
g. There are zero deaths and serious injuries from active and public transport.
h. The city has a strong cycling culture.
i. Walking and cycling journeys are safe and positive experiences.
j. An active transport network provides for commuting and recreational users.
k. People choose transport modes that reduce carbon emissions.
l. Space is prioritised within the transport network for active and public transport.
m. Traffic speeds are reduced through street design and speed limit bylaws to encourage the use of active and public transport and keep users safe.
n. There is increased investment in active and public transport.

Palmerston North City District Plan (District Plan)

The Land Transport section of the District Plan includes the following objectives and policies that apply to the Proposed Plan Change:

Objective 1 - The City's land transport networks are maintained and developed to ensure that people and goods move safely and efficiently through and within the City.

Policy 1.1 - Identify and apply the roading hierarchy to ensure the function of each road in the City is recognized and protected in the management of land use, development and the subdivision of land.

Policy 1.2 - All roads in the City have function and design characteristics consistent with their place in the roading hierarchy.

Policy 1.3 - Maintain and upgrade the existing roads in the City and provide for new roads to meet the current and future needs of the City.

Policy 1.5 - Require all new public roads, private roads and vehicle accesses to be designed and constructed to meet performance standards relating to the safety and efficiency of vehicle movement, and to ensure the safe use of the road transport network for all users.

Policy 1.6 - Encourage the development of safe and accessible pedestrian paths and cycleways, as well as convenient and accessible cycle parking, to support the opportunity for people to use active and non-vehicular modes of transport throughout the City.

Policy 1.7 - To support and encourage the provision of public transport and its use throughout the City as an integral part of the transportation system.

Objective 2 - The land transport network is safe, convenient and efficient while avoiding, remedying or mitigating adverse effects in a way that maintains the health and safety of people and communities, and the amenity values and character of the City's environment.

Policy 2.1 - To restrict the through movement of traffic where the movement has adverse visual, noise and safety effects on adjoining areas by using the roading hierarchy to direct higher volume and heavy traffic movements on identified arterial routes and discouraging this traffic from other areas, such as residential areas.

Policy 2.2 - To avoid, remedy or mitigate the impact of roads and parking areas on visual amenity values of the community by requiring the provision of landscaping.

Policy 2.4 - Avoid adverse effects on amenity and character by ensuring that new roads are well designed and visually complement the character of the surrounding areas.

Objective 3 - The safety and efficiency of the land transport network is protected from the adverse effects of land use, development and subdivision activities.

Policy 3.1 - Avoid, remedy or mitigate the adverse effects of increased traffic or changes in traffic type, which would compromise the safe and efficient operation of any road or level crossing, or the safe and convenient movement of pedestrians and cyclists on roads or at level crossings.

Policy 3.2 - Require vehicle crossing places and vehicle entrances from public roads to be located, constructed, and maintained to standards appropriate to the expected traffic volume, pedestrian movement and speed environment of each road.

Policy 3.3 - Ensure that buildings and activities do not compromise land transport network safety, including maintaining the necessary clear sight lines for road vehicles at level crossings and road intersections.

Palmerston North 10 Year Plan 2024-2034

The 10 Year Plan was adopted in June 2024 and includes the following new capital projects which are relevant to the Proposed Plan Change:

Roading

- Kelvin Grove Road and Stoney Creek Road Safety Improvements
- Whakarongo – Intersection – Safety Improvements
- Roading associated with Urban Growth in Kikiwhenua, NEIZ, Kakatangiata, Ashhurst and Aokautere
- City-wide – Car Park Infrastructure Improvements
- PNITI Strategic Corridor Improvements from 2032 onwards
- PNITI Bridge Replacements in Bunnythorpe
- City-wide Bridge Improvements
- City-wide Low Cost/ Low Risk and Road to Zero

Active and Public Transport

- City Centre – Transit Hub Redevelopment
- Tennent Drive – Safety Improvements – Food HQ and Massey
- City-wide – Cycling Network Improvements
- City-wide – Shared Pathways – New and Link Improvements
- City-wide – New Footpaths
- City-wide – Public transport – Network Improvements
- City-wide – Public Transport – Transport Choices – Additional Bus Shelters

Appendix 4: PC:I Traffic Model Report 2024

Palmerston North Strategic Transport Model

Plan Change I Modelling Report

Prepared for Palmerston North City Council
Prepared by Beca Limited

20 August 2024

Contents

Appendices

Revision History

Revision Nº	Prepared By	Description	Date
1	Ivan Velilla	First revision for client comment	05/07/2024
2	Ivan Velilla	Final Report	20/08/2024

Document Acceptance

Action	Name	Signed	Date
Prepared by	Ivan Velilla		20/08/2024
Reviewed by	Matthew Hickson		20/08/2024
Approved by	Nyan Aung Lin		20/08/2024
on behalf of	Beca Limited		

Executive Summary

Beca has been commissioned by Palmerston North City Council (PNCC) to undertake the modelling of Plan Change I (PCI). PCI is a proposed change to PNCC's district plan that aims to convert several areas in the Palmerston North urban area into medium-density residential zones. This initiative aligns with new government policies directing local councils to accommodate new housing developments by building both outwards and upwards.

PNCC tasked Beca to model two scenarios: the first scenario being a 2054 forecast with growth in the "Green[1]" medium-density zones, and the second scenario with growth in the "Green" and "Amber[2]" areas.

The modelling was undertaken using the Palmerston North Strategic Transport Model. Both PCI scenarios used the 2054 Do Minimum Scenario as a baseline, maintaining the same assumptions for the network, public transport, and cycling infrastructure. The only changes from the Do Minimum scenario are the land use modifications related to the household growth in the proposed medium-density residential zones. District-wide household projection totals are maintained by scaling down the growth across the Palmerston North District and uplifting the households in the zones affected by land use changes.

The modelling results suggest that overall travel demand remains relatively unchanged by the alternative land use assumptions, with a negligible reduction in overall trip generation. What does change are travel patterns – specifically, where people travel and how far. Increased growth in the central area results in fewer vehicles due to changes in car ownership levels. Additionally, the average trip length decreases, leading to fewer vehicle kilometres travelled. These changes in travel patterns have positive outcomes for the network, reducing overall network delay and emissions. These key network statistics are presented in **Table A** below, and the general key impacts are illustrated in **Figure A**.

Table A Key Statistics presented as the change on the 2054 Do Minimum Scenario

Scenario	Daily VKT	Daily VHT	Daily Delays VHT	$C0_2E$
PCI Scenario 1	-1.6%	-1.7%	-2.5%	-3 tonnes per day
PCI Scenario 2	-1.4%	-1.6%	-2.4%	-3 tonnes per day

The network within the central area is expected to experience increased traffic, with delays being slightly higher compared to the Do Minimum scenario. However, intersections along the main arterial roads leading to the CBD area experience a slight reduction in delay. This improvement is mainly due to a decrease in incoming demand to the city, resulting from household growth being redirected towards medium-density residential zones in the central area, rather than in greenfield areas outside the current urban limit.

[1] Zones classified as stormwater priority 1

[2] Zones classified as stormwater priority 2

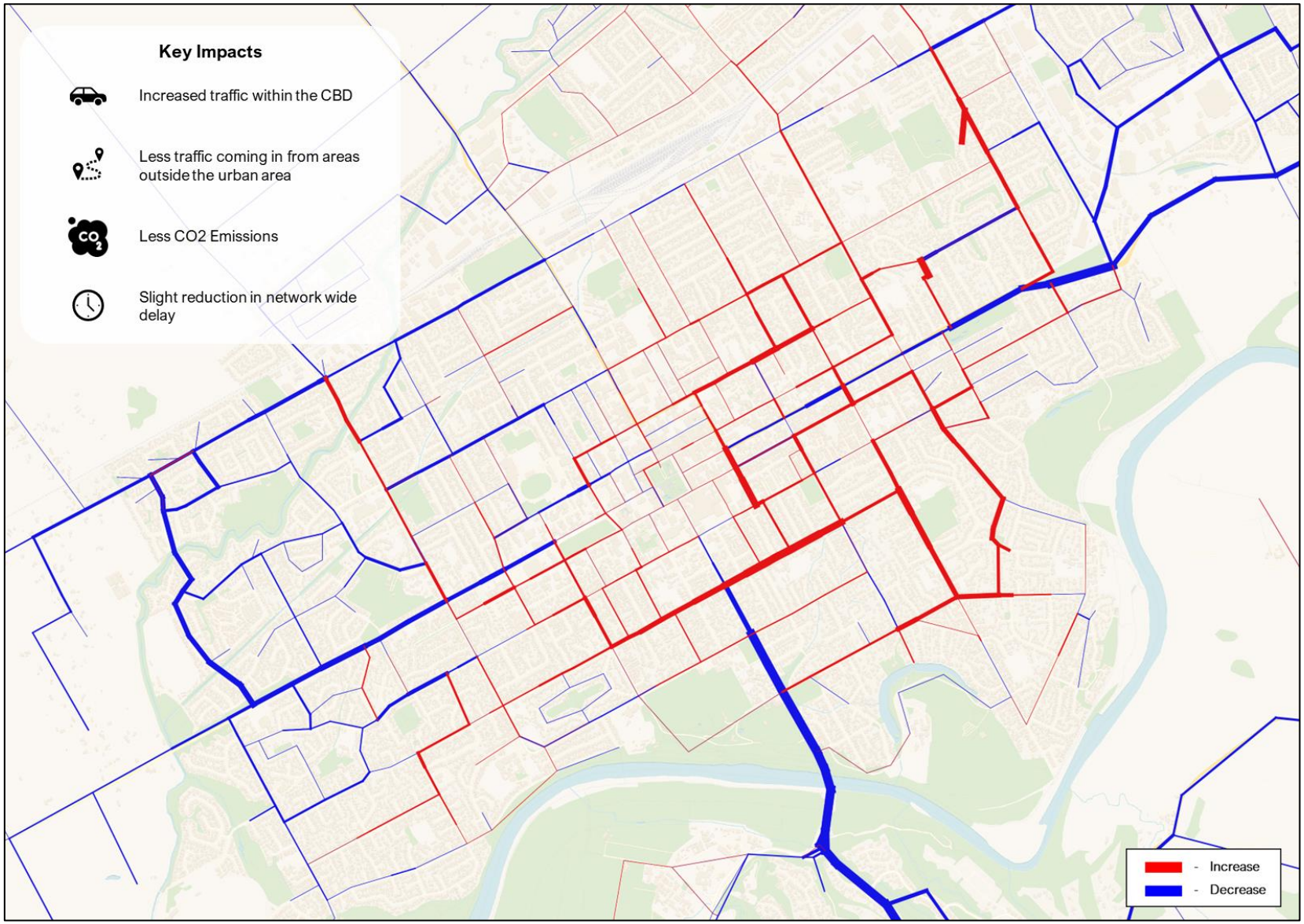


Figure A: Summary of Plan Change I Scenario 2 vs Do Minimum

1 Introduction

1.1 Background

Beca has been commissioned by Palmerston North City Council (PNCC) to undertake the modelling of Plan Change I (PCI). PCI is a proposed change to PNCC's district plan that aims to convert several areas in the Palmerston North urban area into medium-density residential zones. This initiative aligns with new government policies directing local councils to accommodate new housing developments by building both outwards and upwards.

This modelling was undertaken using the Palmerston North Strategic Transport Model (PNSTM), a strategic multi-modal transport model of the Palmerston North district.

1.2 Report Purpose

This report outlines the methodology used to prepare the land use inputs for the PCI scenarios, as well as the modelling results of these scenarios.

2 Methodology

This section details the methodology undertaken for developing the PCI models.

A strategic model has been developed to analyse traffic movements within the Palmerston North urban area. PNCC specified two scenarios for the PCI modelling, each with different distributions of household growth provided at the SA2 level, this data was then disaggregated into the model zone system. To maintain alignment with the hybrid household projection totals, growth across the Palmerston North District has been scaled down to accommodate the significant increase in certain zones that have been affected by the land use changes. The general methodology for the distribution of household growth is illustrated in **Figure 2-1,** and additional details regarding the household adjustments can be found in **Section 3.3.1**.

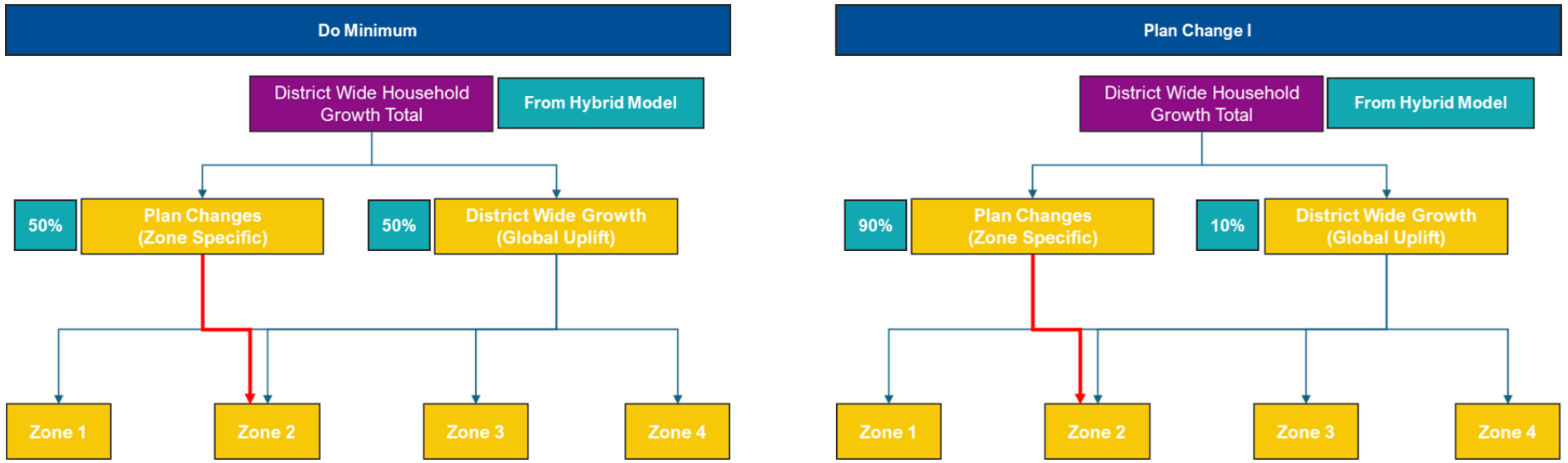


Figure 2-1 Sample Methodology for Distributing Household Growth

3 Plan Change I Scenarios

3.1 Scenario Definition

Plan Change I essentially reallocates growth from the wider Palmerston North District towards specified medium-density residential zones. PNCC provided two household growth scenarios at the SA2 level for these areas, based on their stormwater priority. The classification is as follows:

- Green – Stormwater Priority 1
- Amber – Stormwater Priority 2
- Red – Stormwater Priority 3

The following PCI Scenarios are then developed based on this classification:

- PCI Scenario 1 – More household in “Green” SA2s
- PCI Scenario 2 – More household in “Green” and “Amber” SA2s

The PCI scenarios use the 2054 Do Minimum Scenario as a base, meaning that all the network interventions, land use changes, and other assumptions as stated in the “*PNSTM Forecasting Model Report v1.0, Beca 2024*” for the 2054 forecast year will be maintained.

The PCI land use changes are assumed to occur in parallel with the 2054 Do Minimum land use changes.

3.2 Model Assumptions

The household structure model takes household size and car ownership inputs to predict different types of household categories. The car ownership level is assumed to be the same as in the base year and is held constant across the scenarios.

3.3 Land Use

3.3.1 Household Projections

Household projections for the Plan Change I areas within Palmerston North were provided by PNCC at the SA2 level. To disaggregate this into the model zone system, the medium-density residential zones from the PNCC website were overlaid on the model zone map, which is illustrated in **Figure 3-1**. This ensures that the household growth is applied only to the zones that overlap with the medium-density residential zones, and not the entire SA2. The household growth provided in a particular SA2 is then distributed to the affected model zones according to the proportion of their land area.

It is important to note that land use changes present in the 2054 Do Minimum are also considered in the scenarios, such as the Aokautere Growth Area, Kakatangiata Growth Area etc.

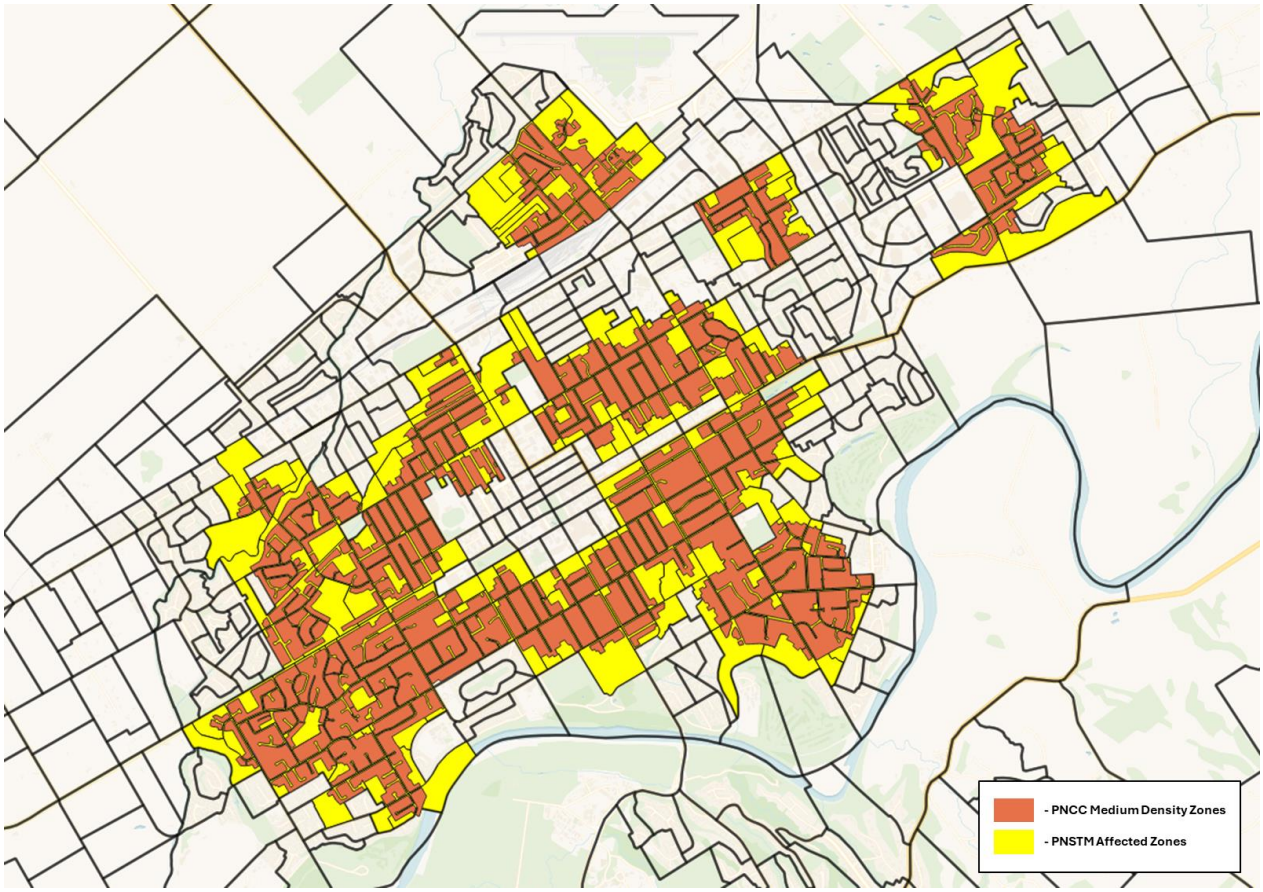


Figure 3-1 PNCC Medium Density Zones vs PNSTM Zones

Table 3-1 provides a list of SA2s that are in the "Green" or "Amber" area, the associated model zones, and their respective household increase.

Table 3-1 2054 Household Growth per SA2

SA2	PNSTM Zones	PCI Scenario 1 HH Increase	PCI Scenario 2 HH Increase
Awapuni South	110, 117, 121, 124, 132, 133, 137, 143, 149, 157, 162, 175	85	265
Esplanade	222, 228, 241, 246, 251, 255, 258, 259, 261, 264, 269, 274, 290, 292, 305	623	462
Hokowhitu Central	262, 297, 316, 333, 334, 342, 360, 375, 388, 397	74	96
Hokowhitu East	356, 361, 369, 374, 379, 400, 408, 409, 420, 438, 440, 466	0	476
Hokowhitu South	272, 298, 331, 337, 354	0	164
Kelvin Grove North	675, 676, 684, 688, 690, 692	37	24
Kelvin Grove West	670, 672, 682, 691	16	10
Milson North	606, 608, 616, 618, 624, 631	93	61
Milson South	562, 563, 574, 577, 579, 587, 588, 590, 599, 600, 602, 610, 617, 635	342	222

Milverton	280, 291, 300, 309, 320, 332, 343, 347, 348, 357, 406	243	447
Palmerston North Central	275, 287, 293, 405	49	32
Palmerston North Hospital	467, 471, 480, 488, 498, 510, 523	389	253
Papaioea North	428, 441, 444, 449, 457, 458, 463, 469, 477, 478, 485, 486, 489, 490, 494, 509, 512	533	492
Papaioea South	376, 395, 396, 412, 422, 436, 439, 445, 456, 461, 474, 475, 476, 487	124	81
Roslyn (Palmerston North City)	545, 584, 585, 586, 601, 603, 609, 612, 614, 622, 636	555	361
Royal Oak (Palmerston North City)	629, 648, 652, 663, 669, 677, 678, 685, 689	31	23
Ruahine	231, 273, 296	0	72
Terrace End	493, 504, 513, 519, 521, 525, 539	416	293
Tremaine	464, 446	18	12
West End	200, 208, 213, 217, 225, 227, 235, 237, 238, 245, 252, 256	624	406
Total		**4251**	**4251**

To maintain the district household projection totals, growth in outer areas has been scaled down, and households in the plan change areas were uplifted to meet the growth targets per SA2. **Figure 3-2** illustrates the adjustments made for PCI Scenario 1, while **Figure 3-3** illustrates the adjustments made for PCI Scenario 2. The increases and decreases depicted in these figures are with respect to the 2054 Do Minimum Scenario.

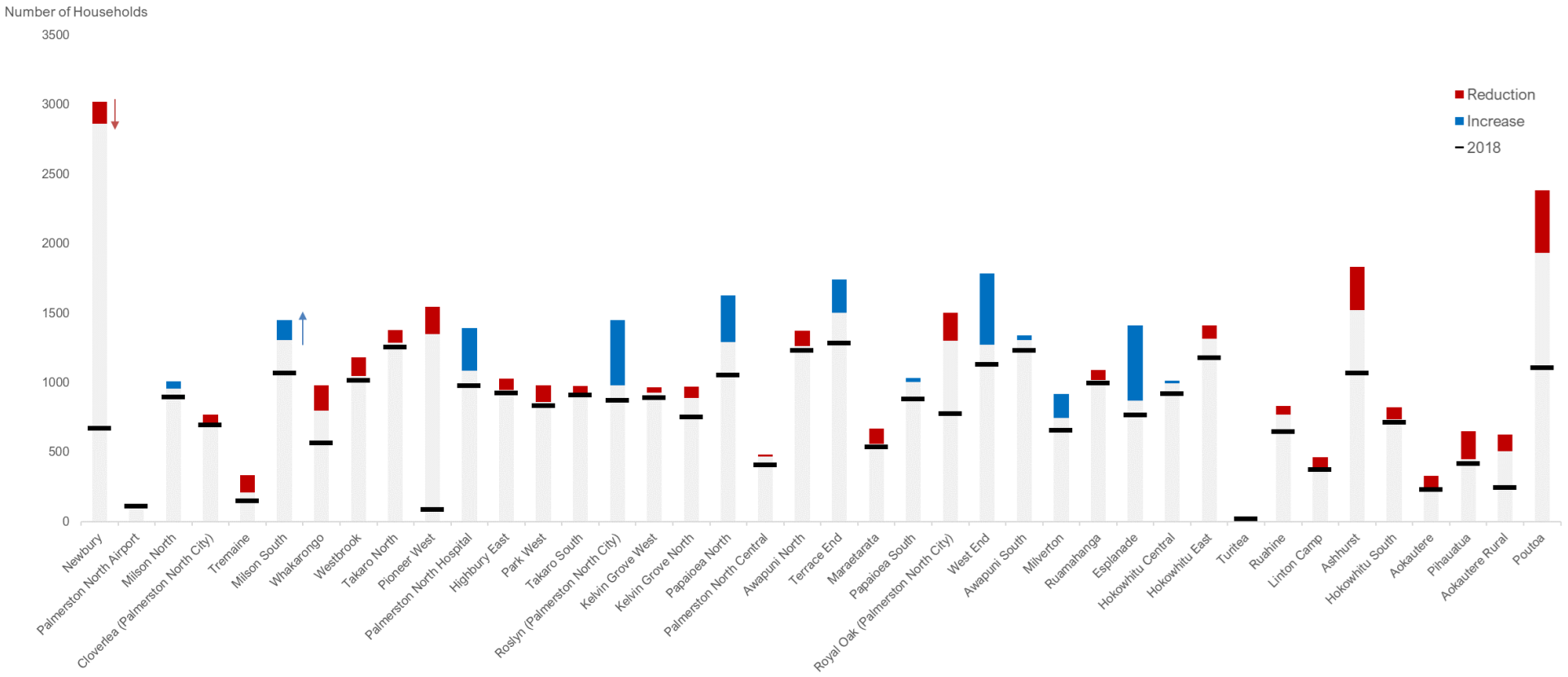


Figure 3-2 Application of Household Projections for PCI Scenario 1 vs 2054 DM (SA2 Level)

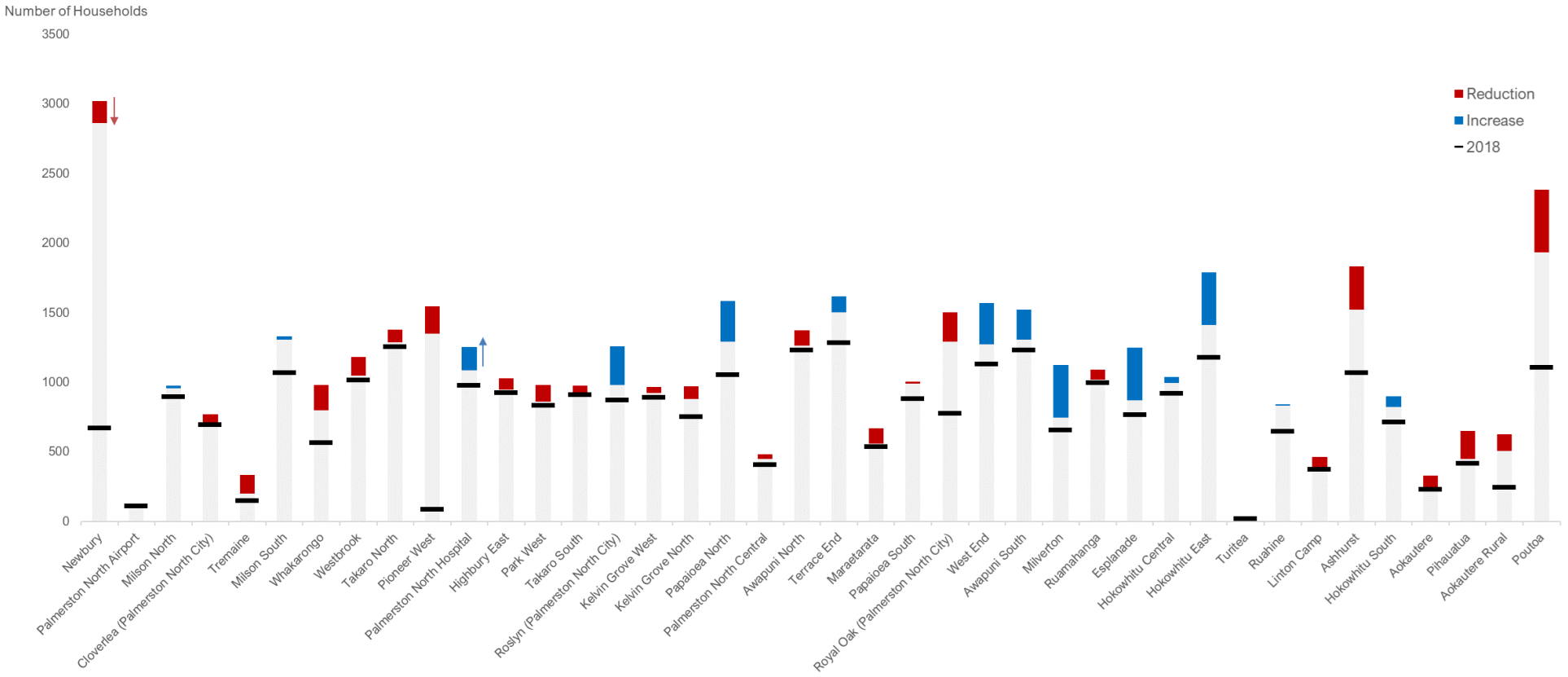


Figure 3-3 Application of Household Projections for PCI Scenario 2 vs 2054 DM (SA2 Level)

The spatial representation of the zonal household growth for both PCI scenarios, compared to the 2054 Do Minimum Scenario, can be found in **Figure 3-4** below. Note that this figure focuses on the proposed medium-density residential zones; model-wide comparisons can be found in **Appendix A**.

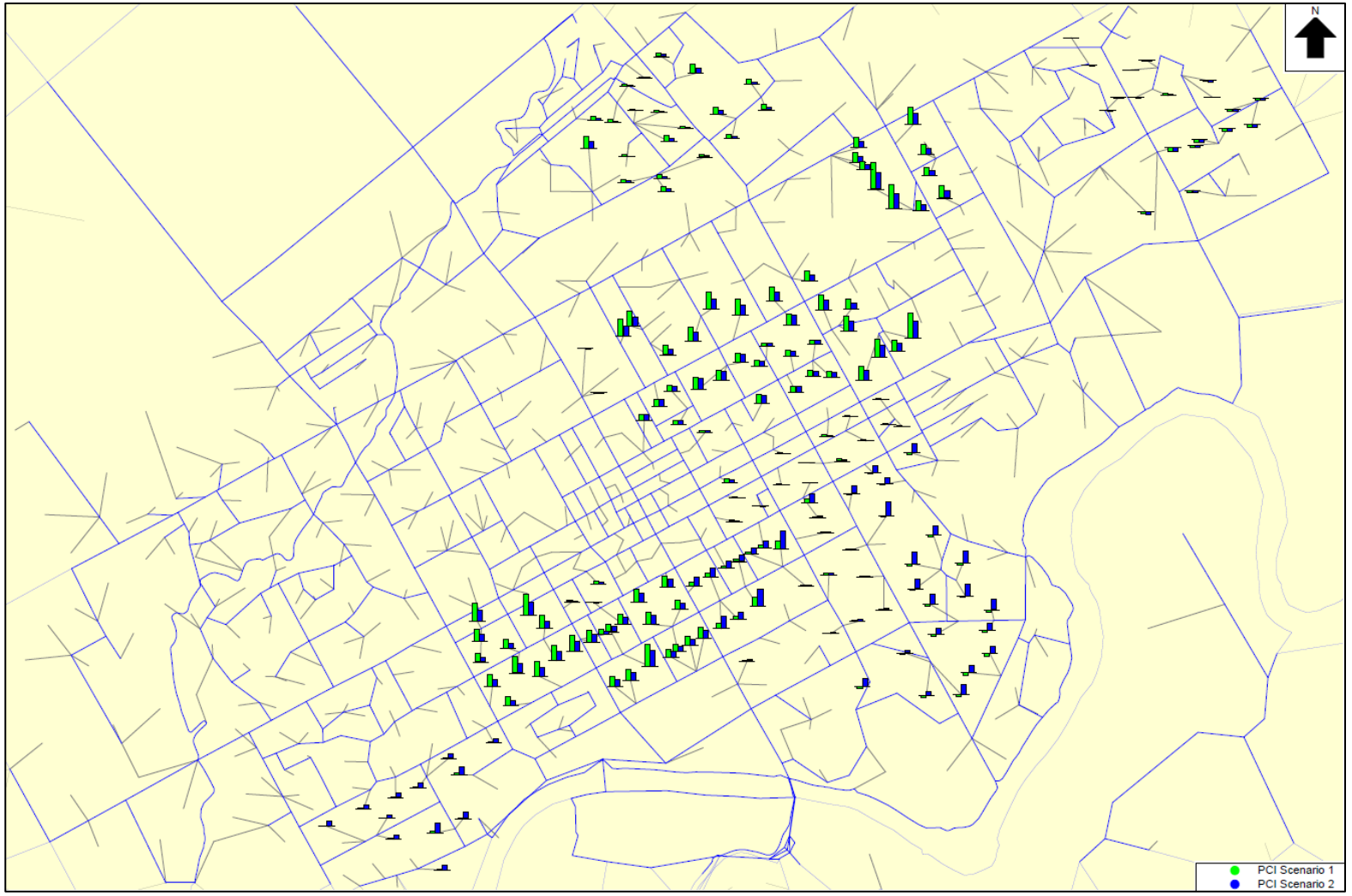


Figure 3-4 Household Growth Difference for Medium Density Zones vs Do Minimum

3.3.2 Employment

Employment projections associated with the Plan Change I scenarios were not available for modelling purposes. As a result, the employment numbers within the model area were adjusted to align with the 2054 Infometrics targets, as shown in **Table 3-2**. Employment in the zones associated with Plan Change I was uplifted proportionally to match the household and population growth. All other employment land use assumptions, such as the KiwiRail Freight Hub, Northeast Industrial Zone, and Te Utanganui, have been maintained the same as in the 2054 Do Minimum Scenario.

Table 3-2 2054 Resolved Infometrics' Employment Projections for the Model Area

2054	Infometrics' Projections					
District	**Retail**	**Agriculture**	**Industry**	**Education**	**Services**	**Total**
Palmerston North City	*12,141*	*669*	*13,521*	*7,495*	*34,533*	*68,359*
Manawatu District	*1,930*	*974*	*3,370*	*963*	*4,762*	*11,998*
Horowhenua District	*132*	*221*	*242*	*86*	*230*	*910*
Total	**14,203**	**1,864**	**17,133**	**8,544**	**39,524**	**81,268**

3.3.3 School Roll

The 2054 Do Minimum Scenario school roll total by school has been maintained across the two PCI scenarios.

4 Scenario Results

4.1 Forecast Travel Demand

Table 4-1 presents the forecast travel demand by modes represented in the model. For both PCI scenarios, there is a slight decrease in vehicle and public transport (PT) demand globally, accompanied by a modest increase in cycle trips. The global mode share appears to be unaffected; given the size of the model area and the marginal changes between the PCI scenarios and Do Minimum, this outcome is expected.

The traffic flow difference plots between Do Minimum and PCI scenarios are provided in **Appendix B**.

Further investigation into the global decrease in vehicle and PT trips revealed the following findings:

- Globally, HBE Public trips had a marginal increase since most of the areas affected by Plan Change I are covered by public transport lines. However, school services do not accommodate well in the affected area, hence the growth in school bus trips is very limited in these areas. This is further illustrated in Figure 4-1. Additionally, since the growth was taken out of other areas such as Ashhurst or Poutoa, which have many school services, this resulted in a global reduction in school bus trips.
- Due to the intensification of households in the urban area, more trips are directed towards the CBD, resulting in shorter average trip lengths. Generally, people favour cars over PT for short trips if they have access to both modes. While increased PT trips are generally expected as a result of this intensification,

the modelling does not currently show an increase in PT trips for public services globally. This can be refined in subsequent modelling by providing additional PT services around the Plan Change areas.

- In the PCI scenarios, vehicle demand slightly decreased despite the attractiveness of using cars; this is caused by the reallocation of growth towards the urban area. Households farther from the CBD generally have higher car ownership rates than those in urban areas. Allocating growth to medium-density residential zones, which have lower car ownership, results in a slight decrease in overall vehicle demand.

Table 4-1 Forecast Daily Demand by Mode and Mode Share

	Demand by Mode			Mode Share (% Person Trips[3])		
Scenarios/ Measure	**Vehicles (Vehicle Trips)**	**PT (Person Trips)**	**Cycle (Person Trips)**	**% Car**	**% PT**	**% Cycle**
2054 DM	562,746	12,798	13,820	95.9%	2.0%	2.1%
PCI Scenario 1	561,596	12,650	13,857	95.9%	1.9%	2.1%
PCI Scenario 2	561,967	12,639	13,860	95.9%	1.9%	2.1%
	Percent Change on 2054 DM			*Percent Point Change on 2054 DM*		
PCI Scenario 1	-0.2%	-1.2%	+0.3%	0.0%	-0.1%	0.0%
PCI Scenario 2	-0.1%	-1.2%	+0.3%	0.0%	-0.1%	0.0%

[3] Mode share is obtained by multiplying the vehicle trips with an occupancy factor of 1.11 for Home Based Work, 1.96 for Home Based Education, and 1.55 for Others. (to convert to vehicle occupants).

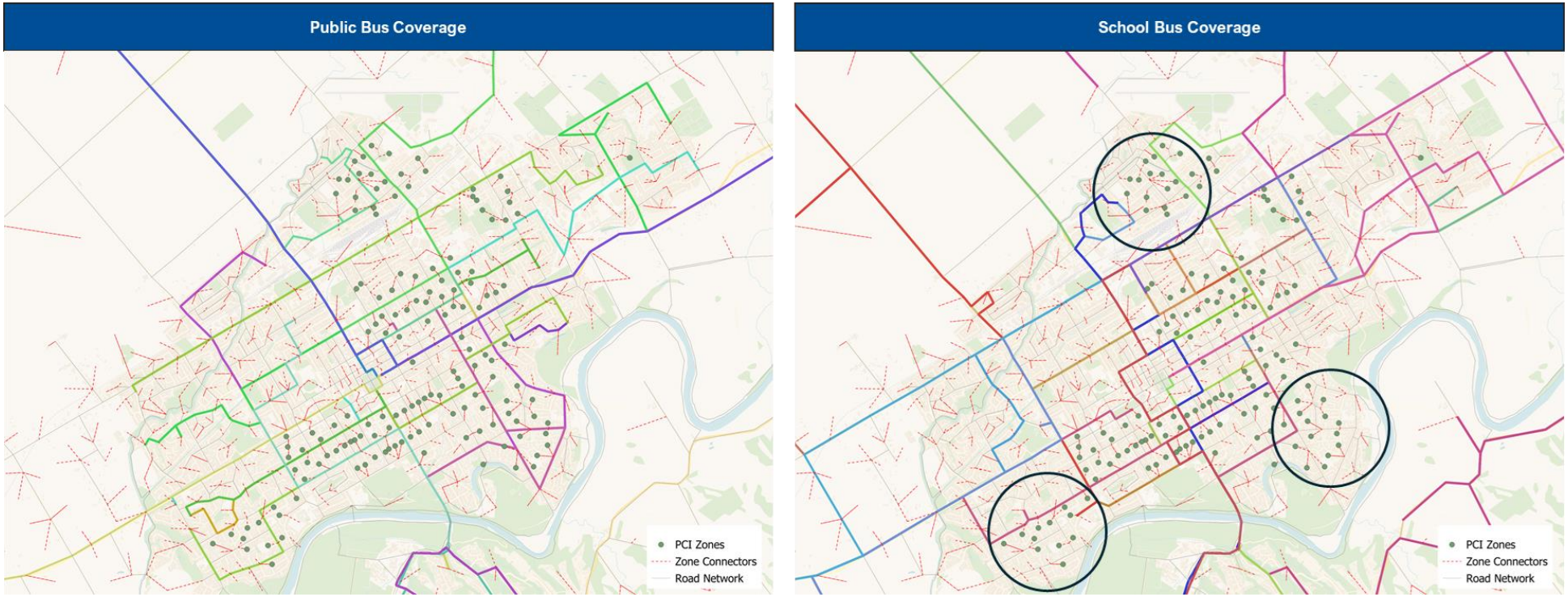


Figure 4-1 PT Coverage vs PCI Zones

Table 4-2 shows the forecast daily demand for areas that are affected by Plan Change I. In general, there is an increase in both vehicle and PT trips for the affected SA2s. The PT trip increase for these affected areas is mainly driven by public bus trips, offsetting the decrease in school bus trips. The increase is mainly driven by increased households in the Plan Change area. A further breakdown of the vehicle demand for the Plan Change I areas is shown in **Table 4-3**.

Table 4-2 Forecast Daily Demand by Mode in PCI SA2s

Scenarios/ Measure	Vehicle Demand in PCI SA2s	
	Vehicles (Vehicle Trips)	PT (Person Trips)
2054 DM	279,872	6,927
PCI Scenario 1	288,460	7,061
PCI Scenario 2	288,624	7,050
Percent Change on 2054 DM		
PCI Scenario 1	+3.1%	+1.9%
PCI Scenario 2	+3.1%	+1.8%

Table 4-3 Origin Vehicle Trips at Medium Density SA2s (to all destinations)

SA2	Vehicle Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Awapuni South	8,359	8,307	9,105	-0.6%	+8.9%
Esplanade	8,466	10,500	9,887	+24.0%	+16.8%
Hokowhitu Central	5,514	5,524	5,623	+0.2%	+2.0%
Hokowhitu East	9,284	8,784	10,719	-5.4%	+15.5%
Hokowhitu South	4,007	3,641	4,335	-9.1%	+8.2%
Kelvin Grove North	5,772	5,521	5,437	-4.3%	-5.8%
Kelvin Grove West	4,709	4,462	4,439	-5.3%	-5.7%

SA2	Vehicle Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Milson North	4,849	5,013	4,861	+3.4%	+0.3%
Milson South	7,523	8,411	7,867	+11.8%	+4.6%
Milverton	6,227	6,996	7,908	+12.4%	+27.0%
Palmerston North Central	85,327	84,645	84,844	-0.8%	-0.6%
Palmerston North Hospital	15,773	17,038	16,452	+8.0%	+4.3%
Papaioea North	11,942	13,249	13,130	+10.9%	+10.0%
Papaioea South	7,748	7,980	7,782	+3.0%	+0.4%
Roslyn (Palmerston North City)	8,790	11,117	10,180	+26.5%	+15.8%
Royal Oak (Palmerston North City)	8,915	8,274	8,248	-7.2%	-7.5%
Ruahine	9,097	8,730	9,186	-4.0%	+1.0%
Terrace End	7,485	8,847	8,246	+18.2%	+10.2%
Tremaine	52,276	50,897	50,983	-2.6%	-2.5%
West End	7,808	10,526	9,392	+34.8%	+20.3%
Total	**279,872**	**288,460**	**288,624**	**+3.1%**	**+3.1%**

Some key points to note from **Table 4-3**:

- The overall traffic growth between the two PCI scenarios is relatively consistent. This is mainly because the overall increase in households for both scenarios is the same; just the allocation is different.
- It can be noted that there is a slight decrease in the travel demand in Royal Oak, Kelvin Grove West, Kelvin Grove North, and Tremaine for both scenarios. This decrease is associated with the much lower growth assumed in these areas compared to the other SA2s (~2% of the total). Since households are being reallocated from other zones to uplift the households in the medium-density residential zones, the increase in these SA2s is not sufficient to offset the decrease.
- The SA2s with the highest growth, such as Milverton, West End, Roslyn, and Esplanade, had the most household reallocation. The households reallocated to these SA2s comprise about ~47% in PCI Scenario 1 and ~38% in PCI Scenario 2.
- A full list of SA2s is provided in **Appendix E**.

4.2 Road Network Vehicle Statistics

The land use changes Plan Change I are predicted to result in a slight decrease in vehicle delay hours across the network. Additional road network statistics, including total vehicle kilometres travelled (VKT) for both light and heavy vehicles, total hours travelled, and average trip length, are presented in **Table 4-4** below. Note that the model is an average weekday model and the daily results provided here are for weekdays only.

Table 4-4 Do Minimum Road Network Vehicle Statistics

Scenario	Average Daily VKT	Average Daily VHT	Average Daily Delays VHT	VKT / Person	Vehicle Trips / Person	Average Trip Length (km)	Average Network Speed (kph)
2054 DM	4,139,604	88,367	17,840	27	3.7	7.4	46.8
PCI Scenario 1	4,074,994	86,845	17,393	27	3.7	7.3	46.9
PCI Scenario 2	4,079,659	86,955	17,410	27	3.7	7.3	46.9
Percent Change on 2054 DM							
PCI Scenario 1	-1.6%	-1.7%	-2.5%	+0.0%	+0.0%	-1.4%	+0.2%
PCI Scenario 2	-1.4%	-1.6%	-2.4%	+0.0%	+0.0%	-1.4%	+0.2%

4.3 Vehicle Emissions

Vehicle emissions are estimated by applying Waka Kotahi's Vehicle Emission Prediction Model 6.3 (VEPM) emission rates to PNSTM outputs of flows on links by speed band and vehicle type.

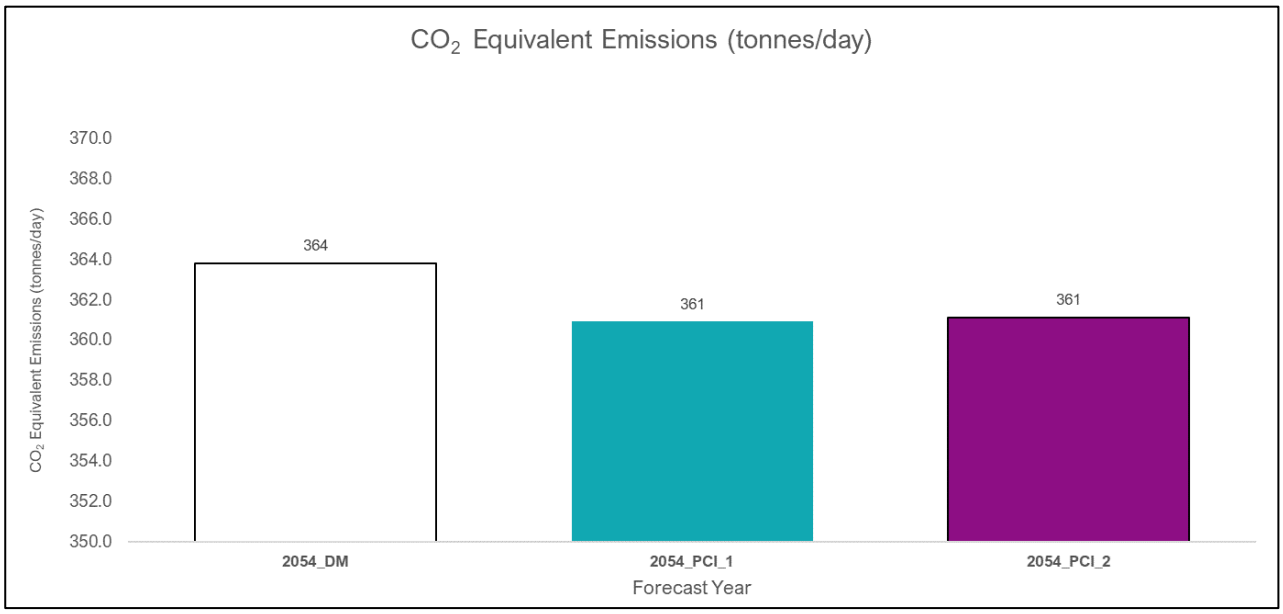


Figure 4-2 CO_2 Equivalent Emissions (Full Model Area)

The summary of vehicle emission statistics is given in **Appendix D**. A reduction in transport emissions is predicted for both PCI scenarios, mainly due to a slight reduction in VKT (~-1.5%). This reduction in VKT is also linked to the decrease in vehicle trips as discussed in **Section 4.1**.

4.4 Level of Service (LOS)

LOS plots of link and intersection have been produced for the modelled scenarios. These plots show the worst LOS in any modelled periods (i.e., AM, IP, PM). LOS plots for all modelled scenarios are provided in **Appendix C**.

The key observations from LOS plots are:

- Intersections along the main access roads to the CBD area experience a slight reduction in its weighted average delay. This is mainly caused by the reduction in demand coming into the city; since for both PCI scenarios, household growth was shifted towards the plan change zones.
- Link LOS remains mostly consistent with the 2054 Do Minimum scenario, with some minor improvements for the PCI scenarios, such as along Tremaine Avenue, and Pioneer Hwy.

5 Conclusions

This report presents the findings from modelling of Plan Change I scenarios for the Palmerston North urban area. These scenarios include land use changes based on household projections provided by PNCC. To maintain the district-wide household projection totals for Palmerston North, growth across the district has been scaled down to accommodate the significant increase in households within Plan Change zones.

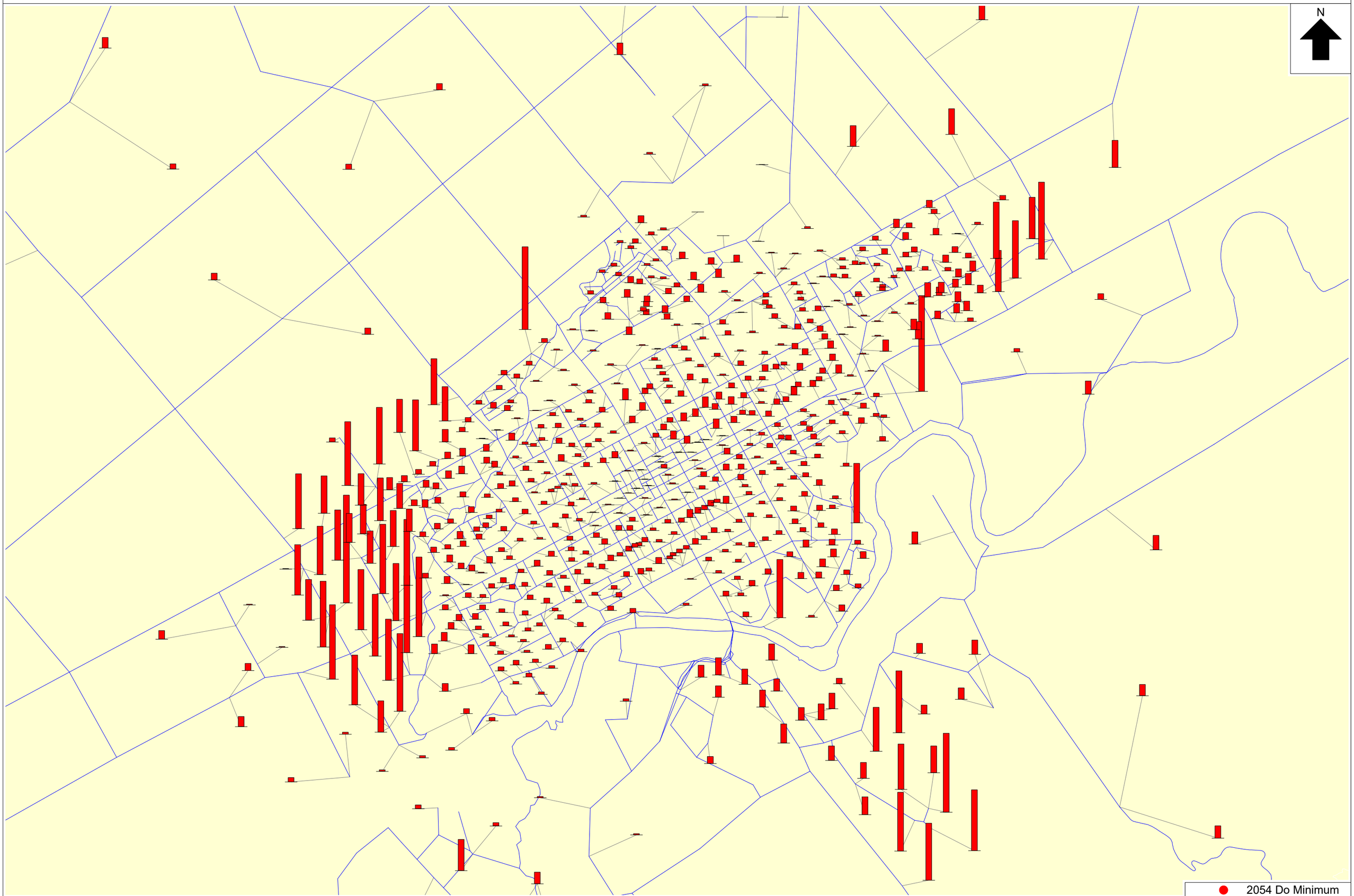
The key takeaways from the modelling are outlined below:

- The PCI scenarios indicate a slight decrease in vehicle and public transport (PT) demand globally, accompanied by a modest increase in cycle trips.
- The reduction in PT trips is primarily driven by a decrease in school bus trips, due to some gaps in school bus services in the growth area.
- While increased PT trips are generally expected as a result of this intensification, the current modelling does not reflect this. This can be refined in subsequent modelling by providing additional or frequent PT services around the Plan Change areas.
- The network within the Plan Change area is expected to experience increased traffic, with delays being slightly higher compared to the Do Minimum scenario. However, intersections along the main arterial roads leading to the CBD experience a slight reduction in delay. This improvement is mainly due to a decrease in incoming demand to the city, resulting from the reallocation of land use.
- Due to the intensification of households in the urban area, more trips are directed towards the CBD, resulting in shorter average trip lengths. This leads to fewer vehicle kilometres travelled, which has positive outcomes for the network by reducing overall network delay and emissions.

A

Appendix A – Spatial Distribution of Household Growth vs Do Minimum

Household Growth of 2054 Do Minimum vs Y2018 Base



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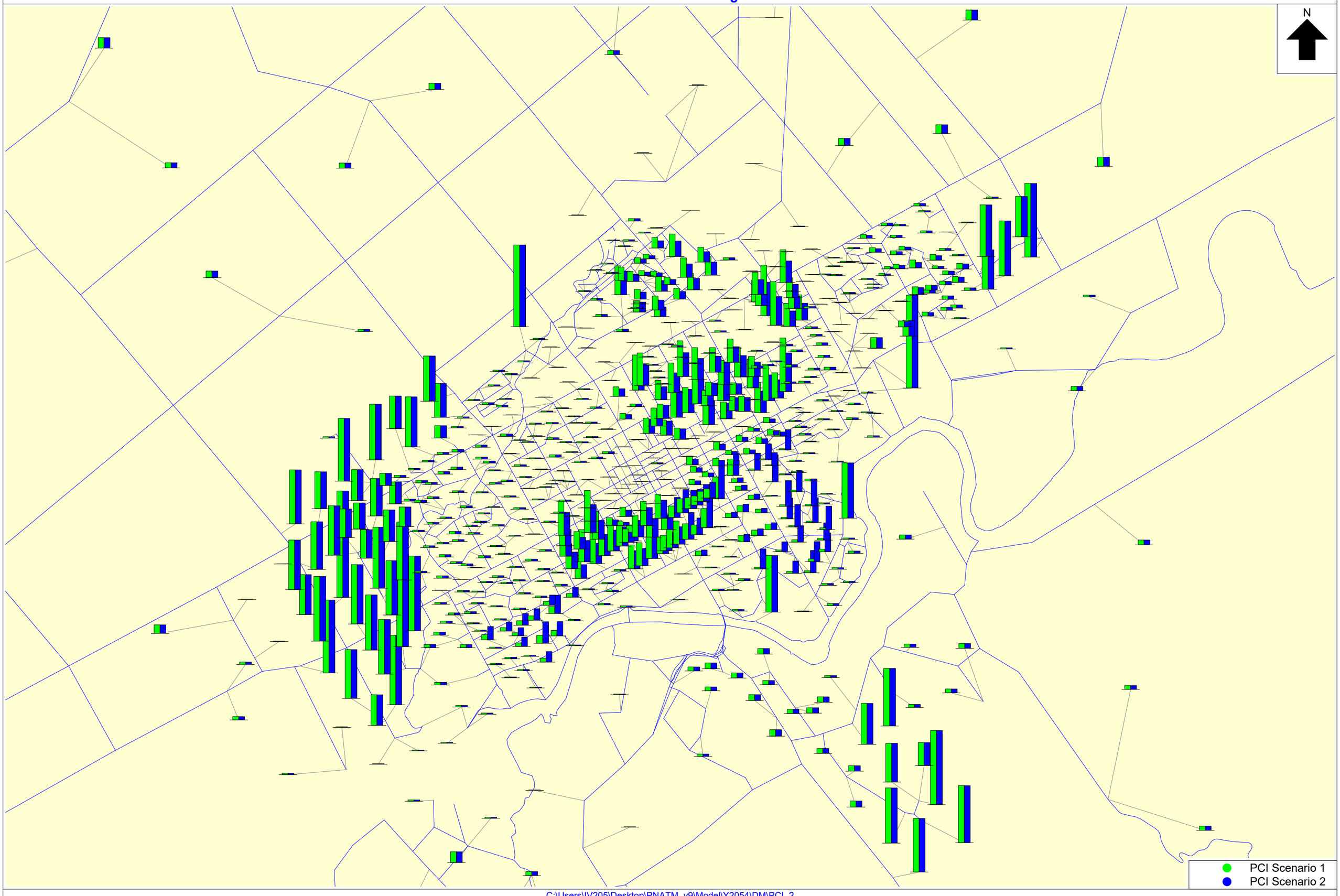
(Licensed to BECA)

Household Growth of 2054 Plan Change I vs Y2018 Base



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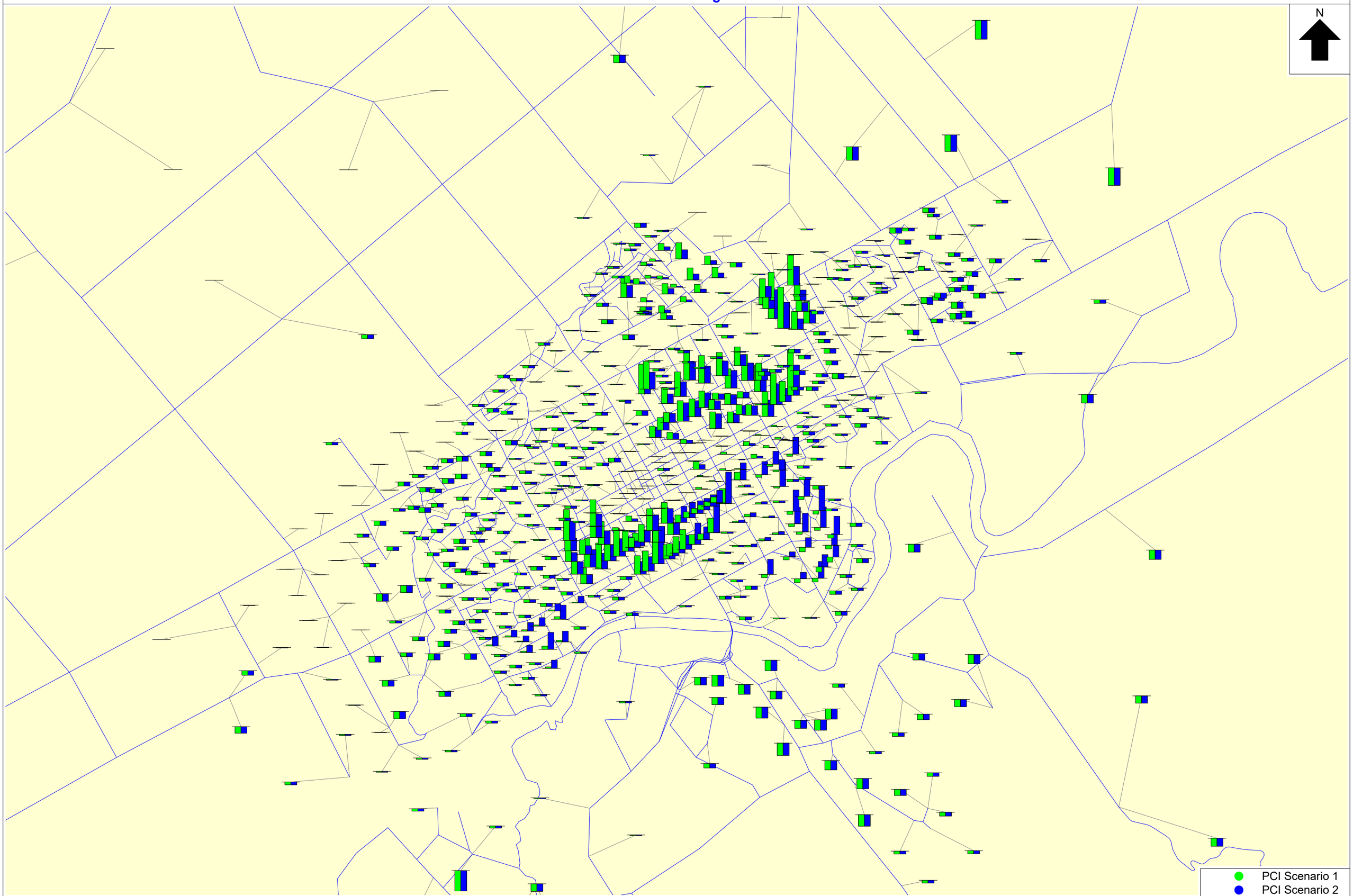
Household Growth of 2054 Plan Change I vs Y2054 Do Minimum



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B

Appendix B – Flow Difference Plots

PN_Full_Flow Difference Plot_Average Daily Traffic_PCI Scenario 1_vs_Y2054 DM

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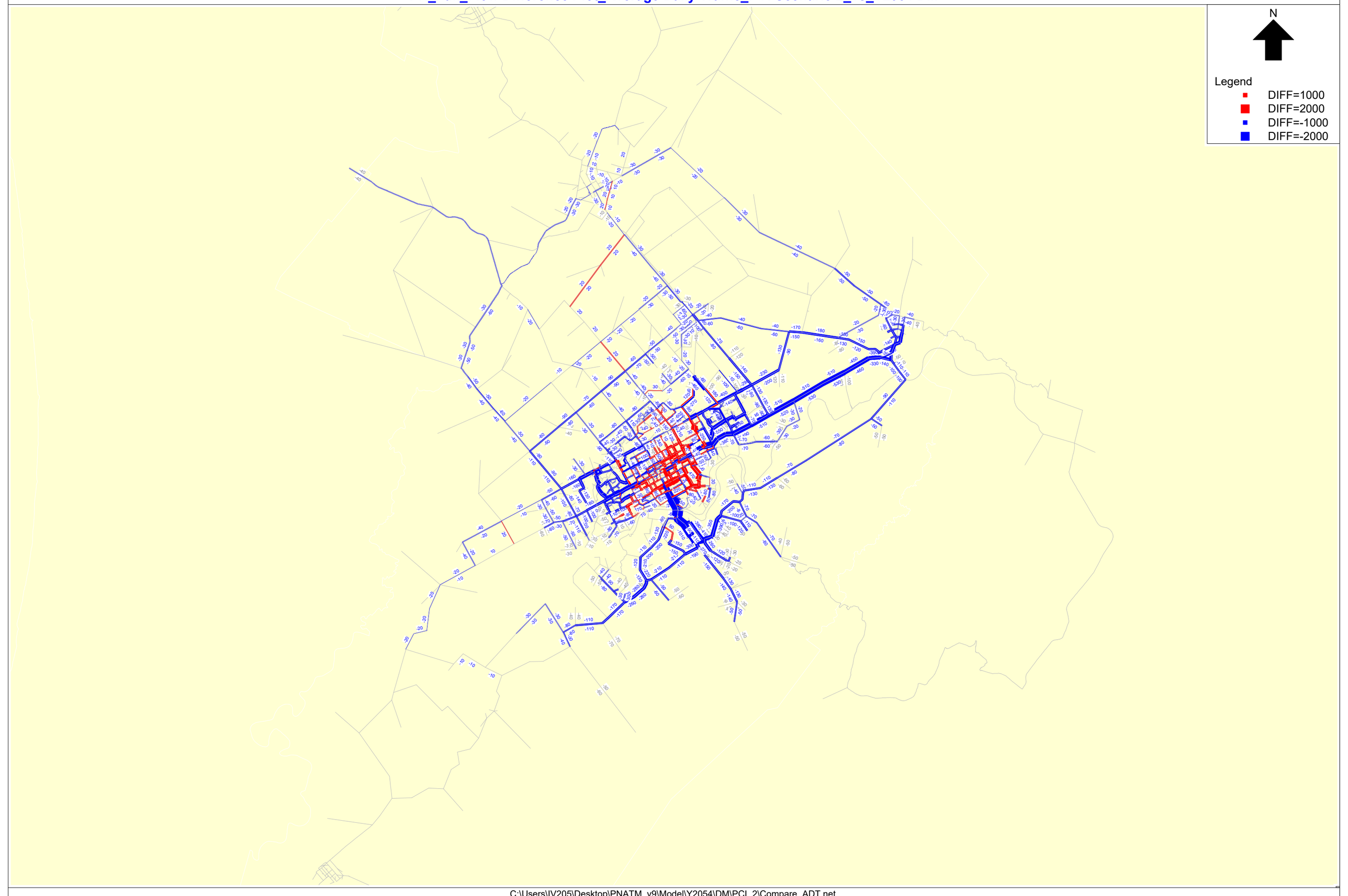
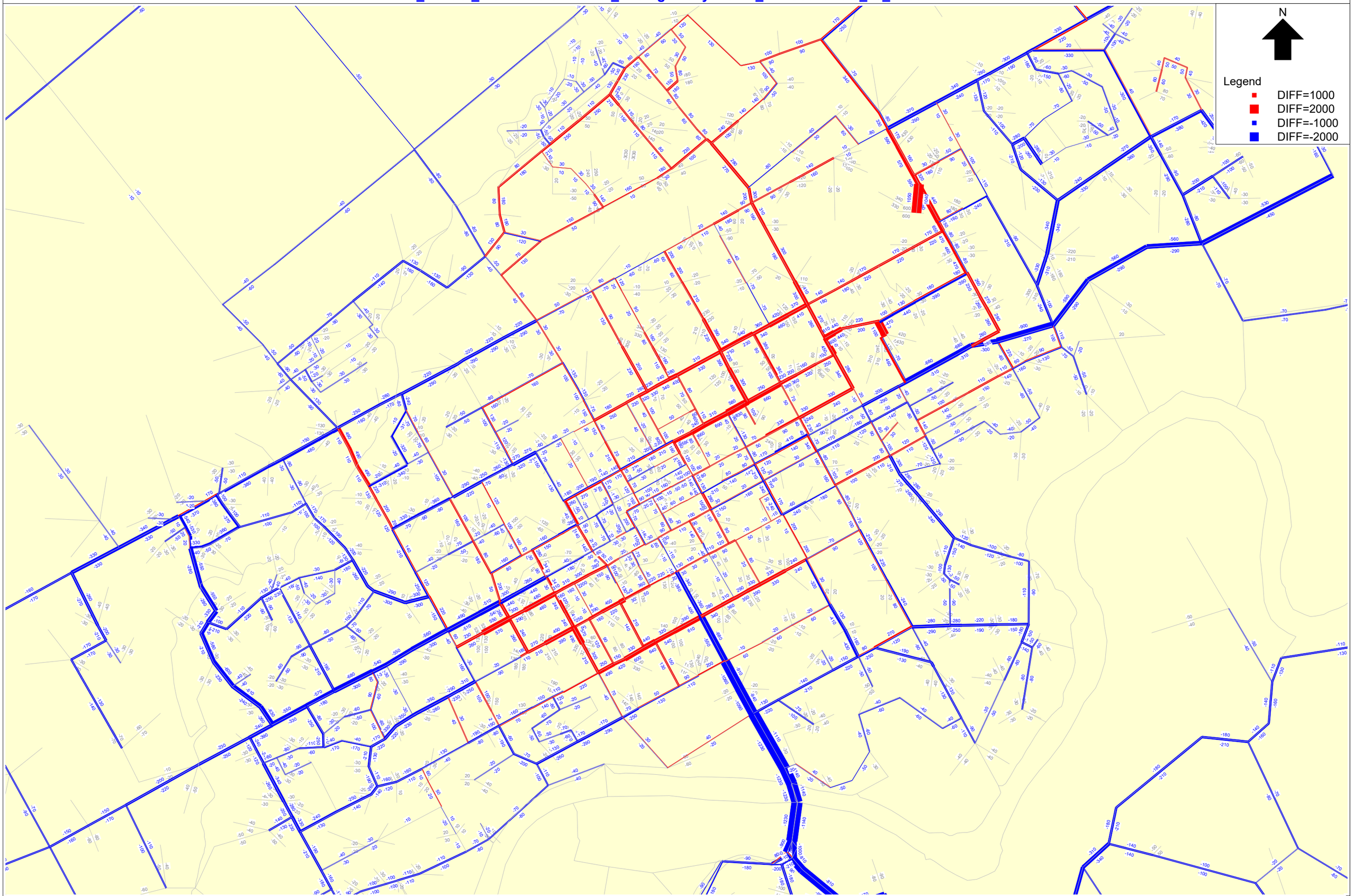
PN_Full_Flow Difference Plot_Average Daily Traffic_PCI Scenario 2_vs_Y2054 DM



PN_Central_Flow Difference Plot_Average Daily Traffic_PCI Scenario 1_vs_Y2054 DM



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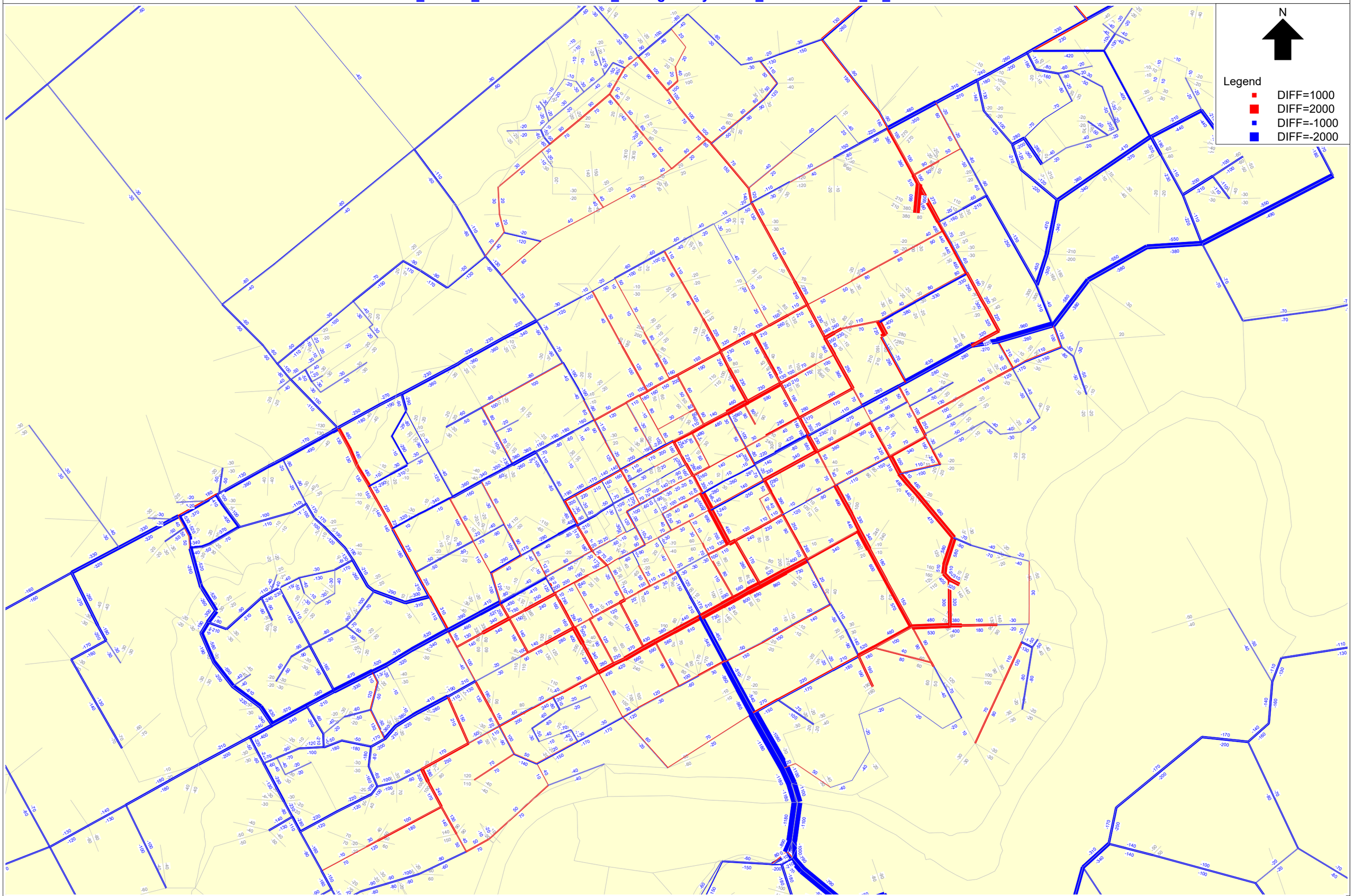
PN_Central_Flow Difference Plot_Average Daily Traffic_PCI Scenario 2_vs_Y2054 DM



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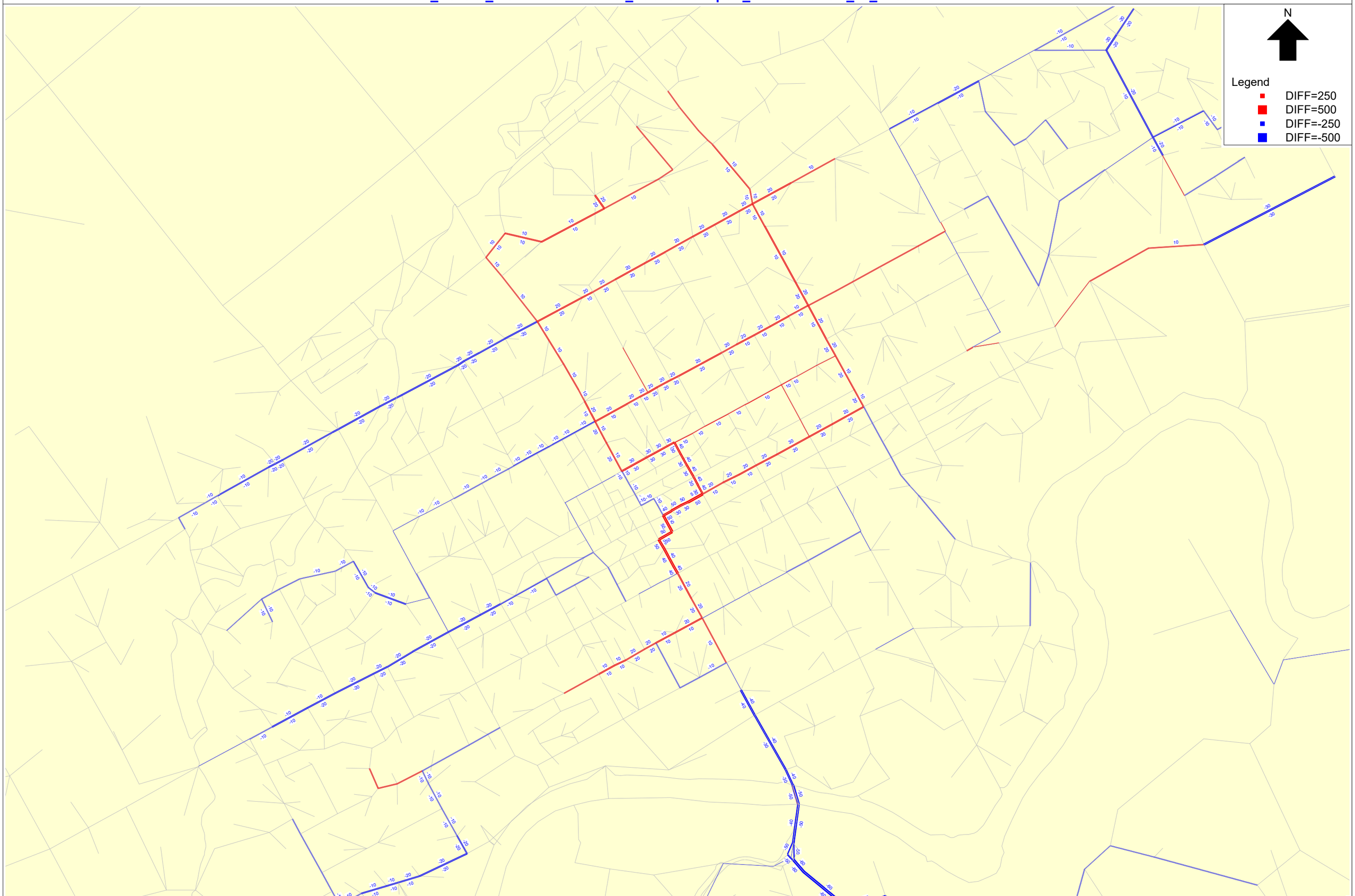
PN_Central_Flow Difference Plot_Public Transport_PCI Scenario 1_vs_Y2054 DM



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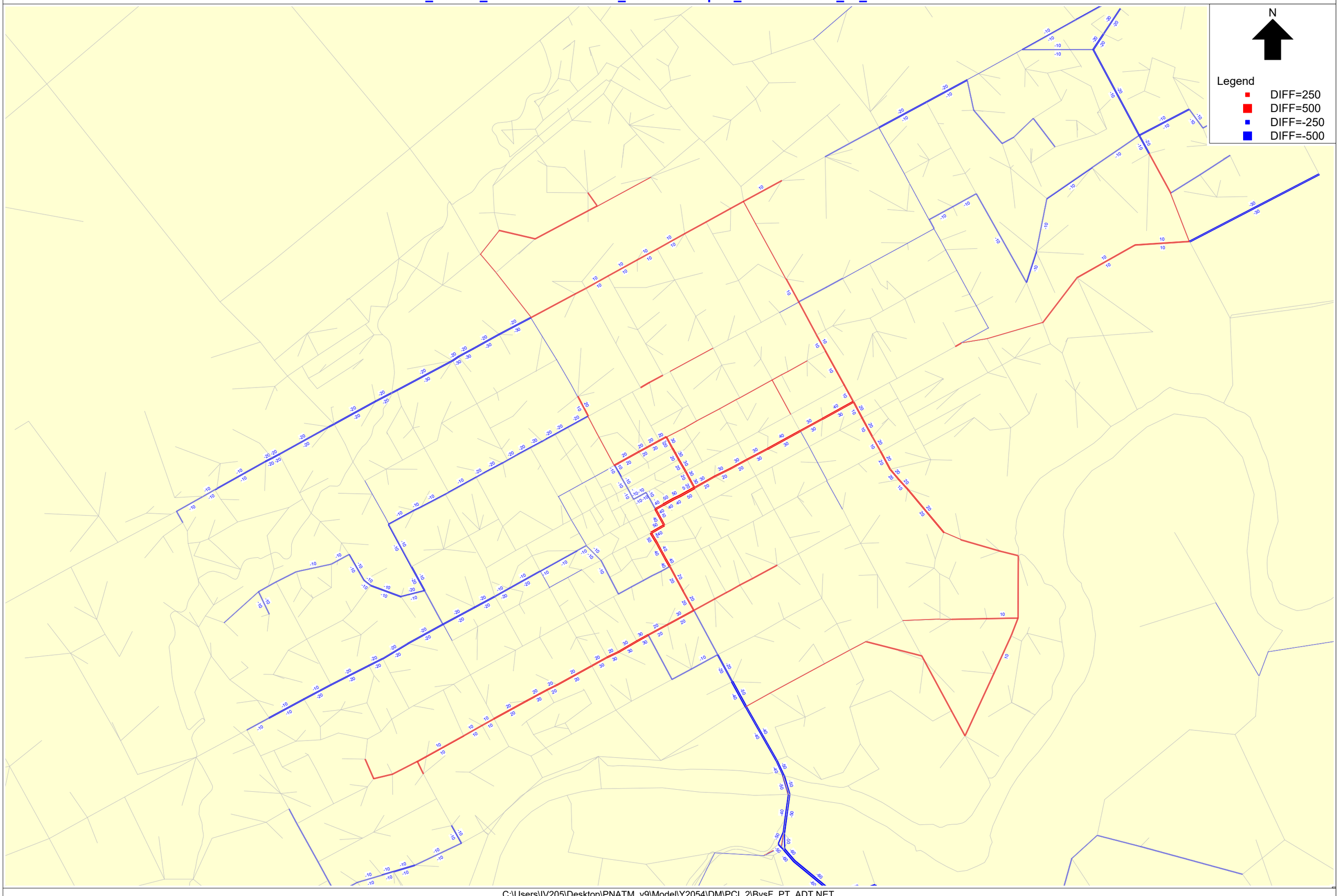
PN_Central_Flow Difference Plot_Public Transport_PCI Scenario 2_vs_Y2054 DM



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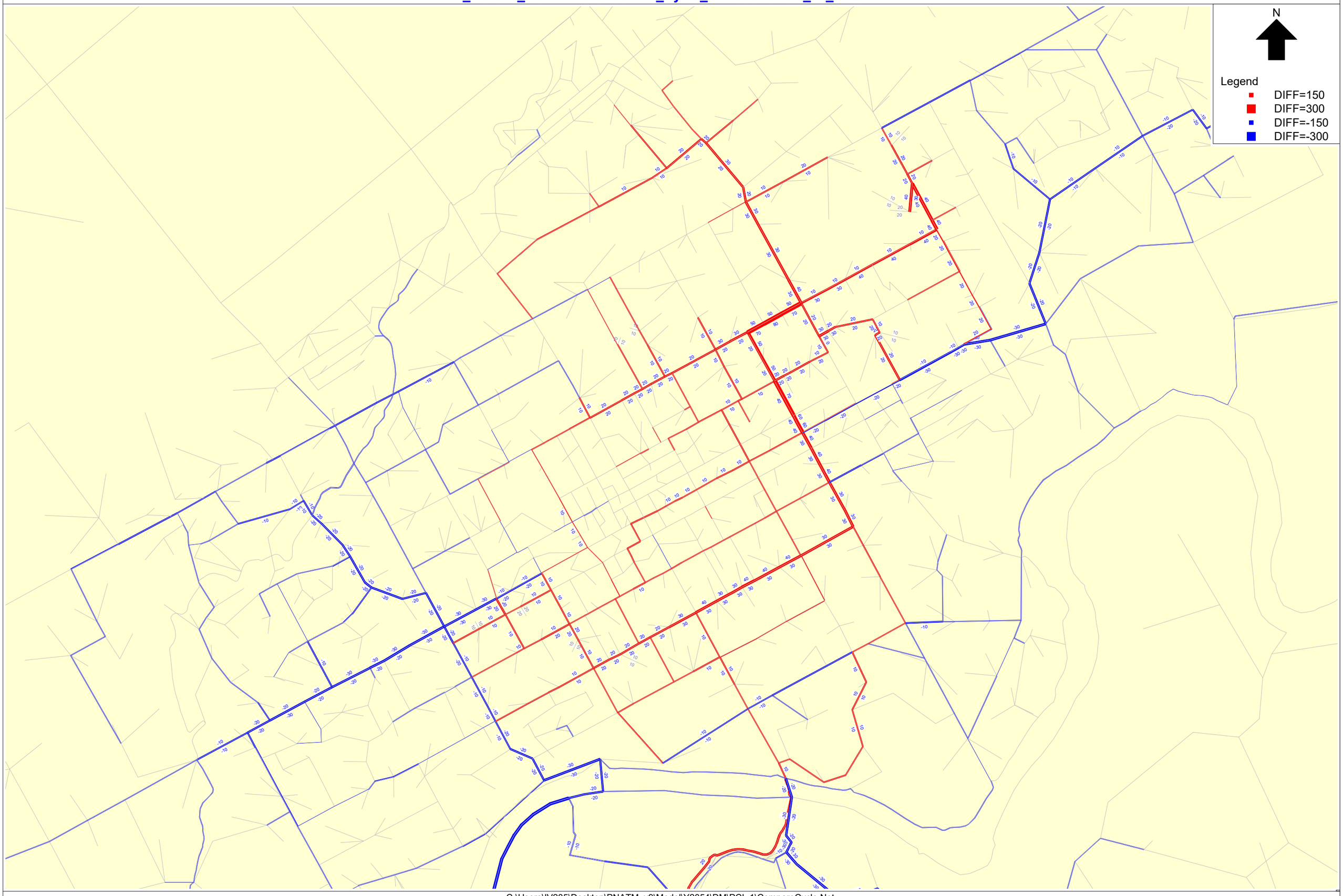
PN_Central_Flow Difference Plot_Cycle_PCI Scenario 1_vs_Y2054 DM



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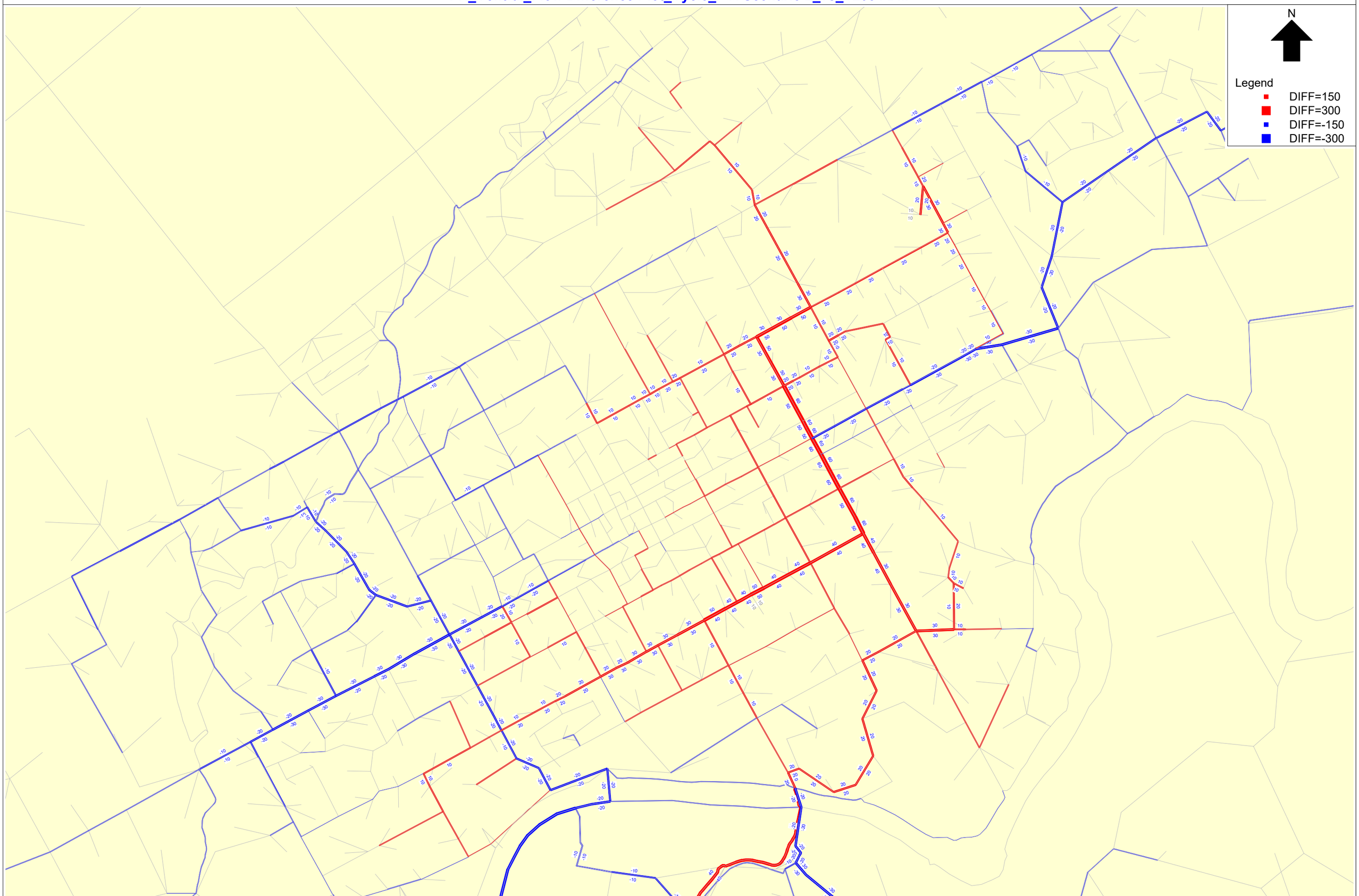
PN_Central_Flow Difference Plot_Cycle_PCI Scenario 2_vs_Y2054 DM



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C

Appendix C – LOS Criteria and Plots

Level of Service

To assess the level of congestion (for general traffic), a process was developed using weighted average delay (for intersections) and volume/capacity ratios (for links) to estimate the LOS for the whole network. The LOS criteria adopted for the analysis are shown in the table below.

LOS	Intersection[1] (Weighted Average Delay, s)	Rural [2] (V/C)	Freeway[3] (FFS<80) (V/C)	Arterial[4] & Local (V/C)
A	< 10	< 0.05	< 0.26	< 0.26
B	10 - 20	0.05 - 0.17	0.26 - 0.40	0.26 - 0.43
C	20 - 35	0.17 – 0.33	0.40 – 0.60	0.43 – 0.62
D	35 - 55	0.33 – 0.58	0.60 – 0.85	0.62 – 0.82
E	55 - 80	0.58 – 1.00	0.85 – 1.00	0.82 – 1.00
F	> 80	> 1.00	> 1.00	> 1.00

The Weighted Average Delay for intersections is the normal volume-weighted delay plus an additional weight factor (delay). This additional factor was included to place more weight on critical movements when calculating the "representative average" condition at the intersections.

The calculated LOS indicates a high-level qualitative measure to assess the combined performance of intersections and links for the model network. A more comprehensive LOS assessment is recommended for specific corridors or intersections for detailed studies. The calculated Link LOS doesn't consider queuing or delay originating at downstream intersections. Hence the performance of the network should be assessed using both link and intersection combined.

In general, LOS A-D indicates that intersections and links are performing with an acceptable level of service. LOS E indicates that intersection/links are performing at a poor level of service, and further investigation/modelling may be needed. LOS F indicates the intersections/links are over capacity.

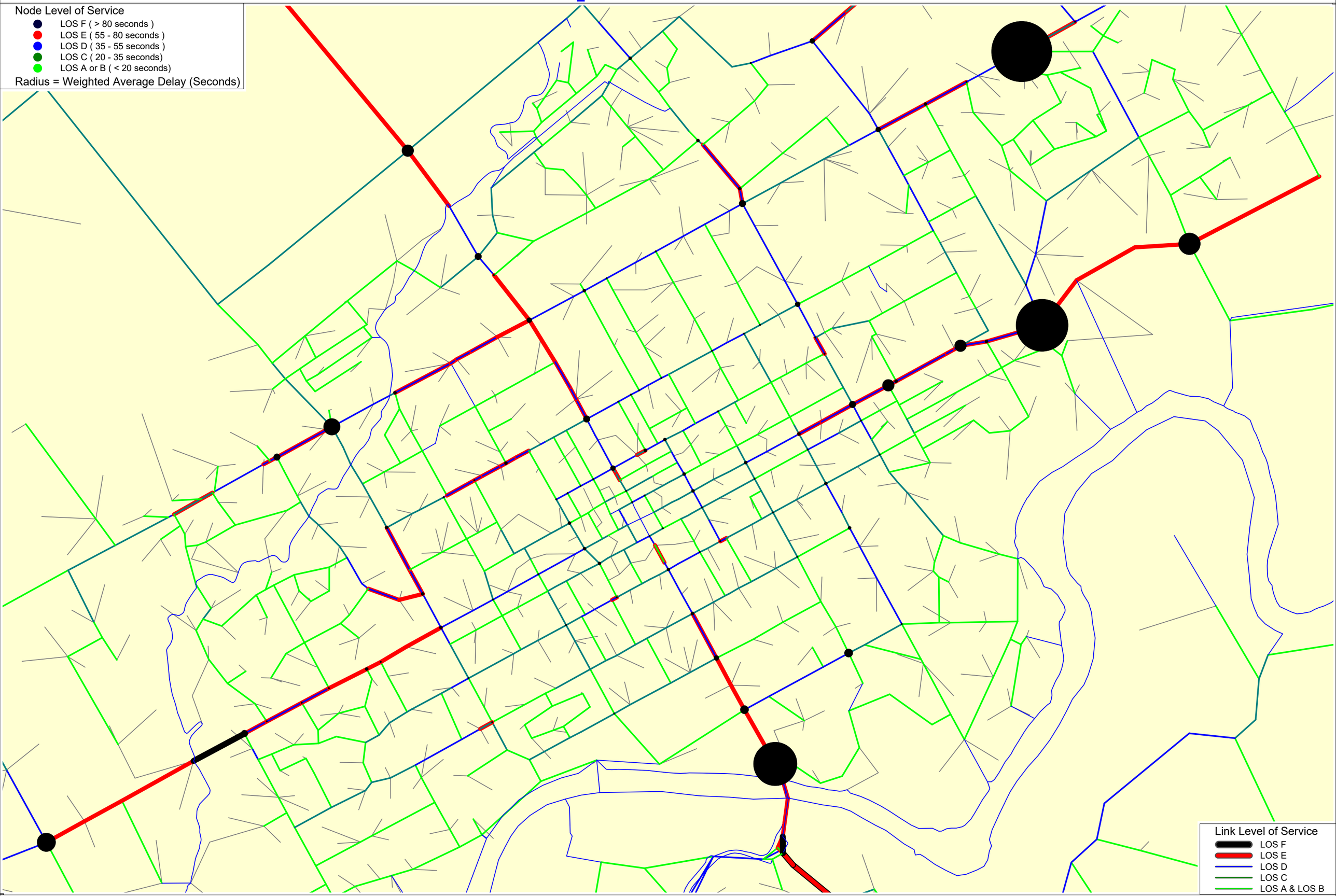
[1] HCM2000 Chapter16- Signalized Intersection.

[2] Austroad Part2- Roadway Capacity, 1988. Assumed 80% of sight distance length.

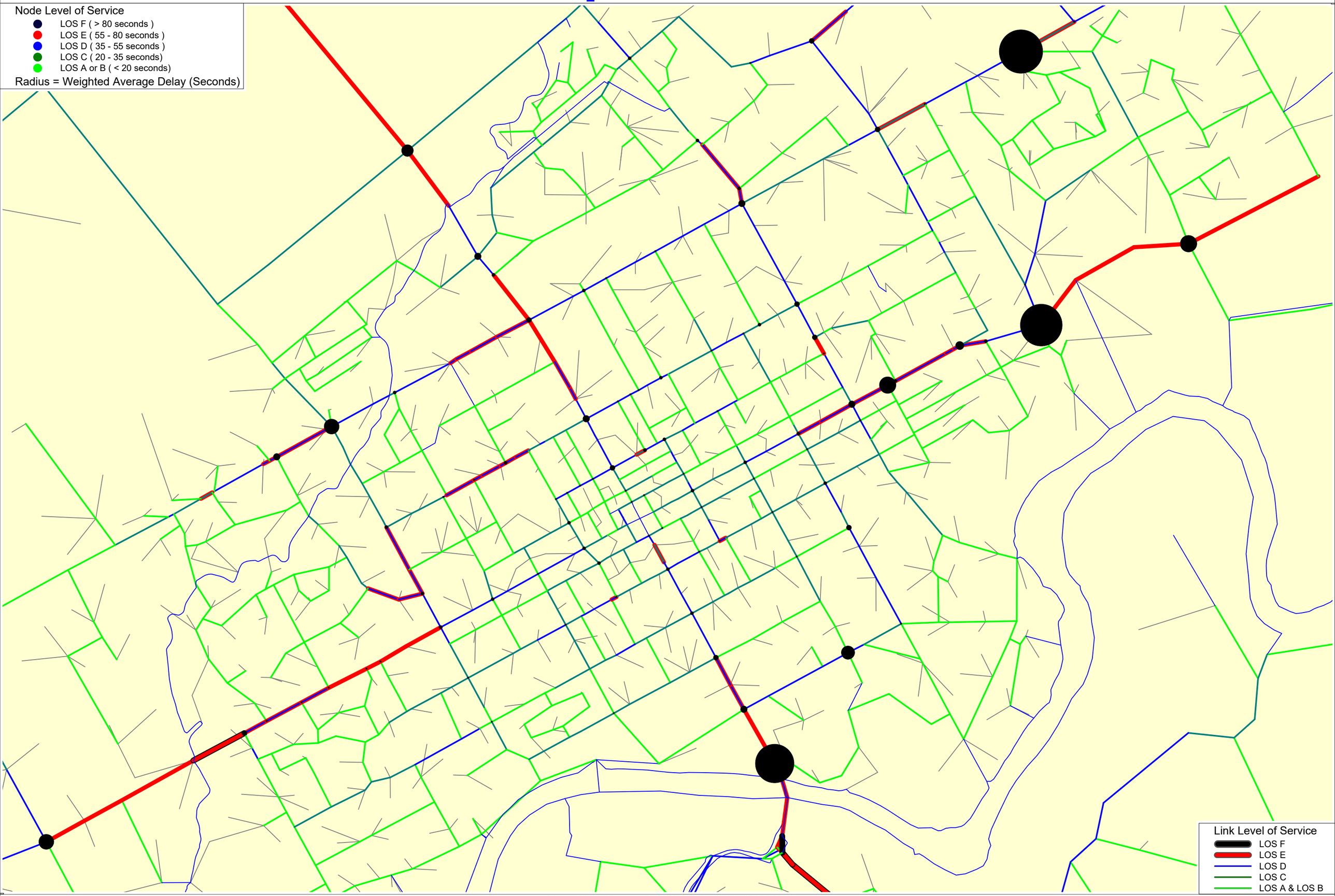
[3] HCM2000 Chapter23- Basic Freeway Segment.

[4] Technical paper "*Performance Measures and Threshold Value for Northeast Ohio Areawide Coordinating Agency's (NOACA's) Congestion Management Process, NOACA, August 2007*".

PN Central_Level of Service for Do Minimum 2054



PN Central_Level of Service for PCI Scenario 1



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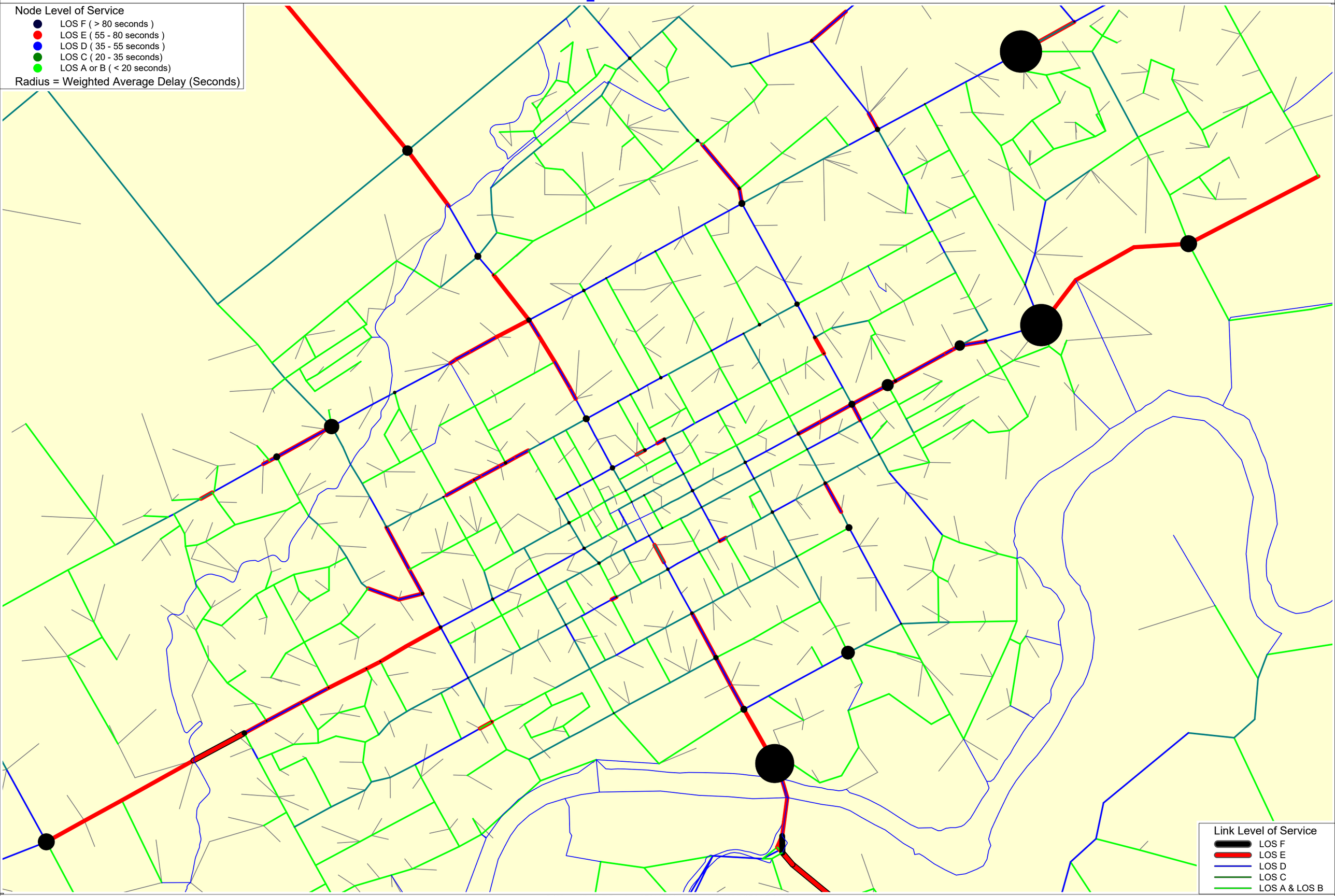
PN Central_Level of Service for PCI Scenario 2



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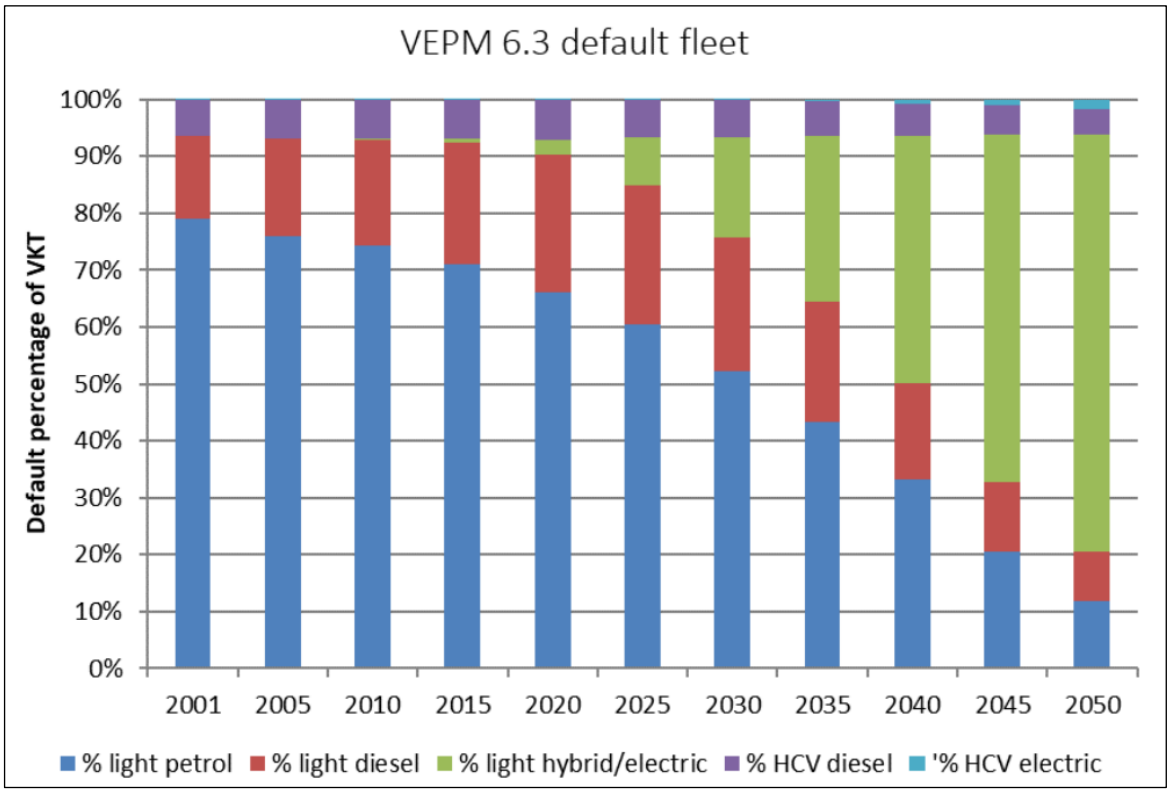
D

Appendix D – VEPM Guidelines and Outputs

Vehicle Emissions

NZ Transport Agency's VEPM version 6.3 (released in April 2022) was adopted for this study. The emission rates for the year 2051 were adopted for year 2054. Features of the VEPM 6.3 model are outlined below:

VEPM estimates vehicle tail-pipe emissions only, i.e., does not include vehicle manufacture or energy generation.
VEPM provides grams per km of travel rates, depending on average vehicle speeds.
VEPM rates are based on assumed vehicle fleet composition in future years.
VEPM provides methane (CH4) and nitrous oxide (N2O) emission factors to calculate carbon dioxide equivalent (CO2-eq) emission factors instead of carbon dioxide (CO2).



Emission Outputs

Scenarios/Measure	Carbon monoxide (CO) (kg/day)	Carbon dioxide (CO2) equivalent (kg/day)	Volatile organic compounds (VOC) (kg/day)	Nitrogen oxides (NOx) (kg/day)	Nitrogen dioxide (NO2) (kg/day)	PM2.5 E (kg/day)	PM10.0 BT (kg/day)	Fuel Consumption (L/day)	Population	CO2-eq/ Person (kg/day)
2054 DM	356	363,836	13	314	64	6	81	140,619	150,732	2.4
PCI Scenario 1	352	360,948	13	311	63	6	79	139,445	150,732	2.4
PCI Scenario 1	352	361,153	13	311	63	6	80	139,530	150,732	2.4

Percentage (%) Change in Emission Outputs

Scenarios/ Measure	Carbon monoxide (CO) (kg/day)	Carbon dioxide (CO2) equivalent (kg/day)	Volatile organic compounds (VOC) (kg/day)	Nitrogen oxides (NOx) (kg/day)	Nitrogen dioxide (NO2) (kg/day)	PM2.5 E (kg/day)	PM10.0 BT (kg/day)	Fuel Consumption (L/day)	Population	CO2-eq/ Person (kg/day)
PCI Scenario 1 vs 2054 DM	-1.3%	-0.8%	-0.5%	-0.9%	-1.3%	-0.3%	-1.4%	-0.8%	0.0%	0.0%
PCI Scenario 2 vs 2054 DM	-1.2%	-0.7%	-0.5%	-0.8%	-1.2%	-0.3%	-1.3%	-0.8%	0.0%	0.0%

Appendix E – Origin Vehicle Trips (SA2 Level)

SA2	Vehicle Daily Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Takaro South	5,450	5,134	5,139	-5.8%	-5.7%
Takaro North	10,932	10,441	10,457	-4.5%	-4.3%
Palmerston North Central	85,327	84,645	84,844	-0.8%	-0.6%
Papaioea North	11,942	13,249	13,130	+10.9%	+10.0%
Palmerston North Hospital	15,773	17,038	16,452	+8.0%	+4.3%
Papaioea South	7,748	7,980	7,782	+3.0%	+0.4%
Esplanade	8,466	10,500	9,887	+24.0%	+16.8%
West End	7,808	10,526	9,392	+34.8%	+20.3%
Milverton	6,227	6,996	7,908	+12.4%	+27.0%
Terrace End	7,485	8,847	8,246	+18.2%	+10.2%
Hokowhitu East	9,284	8,784	10,719	-5.4%	+15.5%
Westbrook	6,141	5,608	5,611	-8.7%	-8.6%
Highbury East	6,057	5,669	5,674	-6.4%	-6.3%
Awapuni North	6,967	6,433	6,438	-7.7%	-7.6%
Awapuni South	8,359	8,307	9,105	-0.6%	+8.9%
Ruahine	9,097	8,730	9,186	-4.0%	+1.0%
Hokowhitu Central	5,514	5,524	5,623	+0.2%	+2.0%
Poutoa	12,121	10,612	10,622	-12.4%	-12.4%
Maraetarata	3,556	3,138	3,141	-11.8%	-11.7%
Hokowhitu South	4,007	3,641	4,335	-9.1%	+8.2%
Aokautere	1,959	1,692	1,694	-13.6%	-13.5%

SA2	Vehicle Daily Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Ruamahanga	6,186	5,772	5,777	-6.7%	-6.6%
Roslyn (Palmerston North City)	8,790	11,117	10,180	+26.5%	+15.8%
Kelvin Grove West	4,709	4,462	4,439	-5.3%	-5.7%
Royal Oak (Palmerston North City)	8,915	8,274	8,248	-7.2%	-7.5%
Milson South	7,523	8,411	7,867	+11.8%	+4.6%
Kelvin Grove North	5,772	5,521	5,437	-4.3%	-5.8%
Milson North	4,849	5,013	4,861	+3.4%	+0.3%
Palmerston North Airport	24,532	24,434	24,479	-0.4%	-0.2%
Cloverlea (Palmerston North City)	3,883	3,635	3,637	-6.4%	-6.3%
Newbury	19,423	18,905	18,925	-2.7%	-2.6%
Pioneer West	8,070	7,444	7,453	-7.8%	-7.6%
Park West	3,945	3,540	3,543	-10.3%	-10.2%
Linton Camp	5,292	5,032	5,043	-4.9%	-4.7%
Aokautere Rural	2,796	2,532	2,533	-9.5%	-9.4%
Pihauatua	4,110	3,626	3,630	-11.8%	-11.7%
Miranui	5,254	5,256	5,257	0.0%	+0.1%
Kauwhata	5,503	5,501	5,501	0.0%	0.0%
Turitea	6,005	5,923	5,935	-1.4%	-1.2%
Whakarongo	13,626	12,781	12,803	-6.2%	-6.0%
Ashhurst	9,136	8,217	8,223	-10.1%	-10.0%

SA2	Vehicle Daily Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Taonui	4,780	4,778	4,779	0.0%	0.0%
Tokorangi	5,840	5,836	5,837	-0.1%	0.0%
Kimbolton North	9,715	9,711	9,712	0.0%	0.0%
Kimbolton South	5,553	5,549	5,551	-0.1%	0.0%
Makino	7,355	7,351	7,353	0.0%	0.0%
Mount Taylor	1,666	1,665	1,665	-0.1%	-0.1%
Kimbolton West	7,985	7,981	7,983	-0.1%	0.0%
Feilding Central	26,381	26,326	26,334	-0.2%	-0.2%
Sandon	5,764	5,759	5,761	-0.1%	-0.1%
Warwick	4,171	4,170	4,171	0.0%	0.0%
Awahuri	5,588	5,585	5,586	-0.1%	0.0%
Shannon	4,281	4,280	4,280	0.0%	0.0%
Tremaine	52,276	50,897	50,983	-2.6%	-2.5%
Makahika	5,162	5,163	5,163	0.0%	0.0%
Ohakea-Sanson	6,567	6,538	6,537	-0.4%	-0.5%
Woodville	1,868	1,874	1,874	+0.3%	+0.3%
Kiwitea	1,733	1,726	1,725	-0.4%	-0.5%
Taikorea	3,296	3,298	3,297	+0.1%	0.0%
Pohangina-Apiti	785	783	783	-0.3%	-0.3%
Mangatainoka	208	209	209	+0.5%	+0.6%
Pahiatua	1,616	1,622	1,621	+0.3%	+0.3%

SA2	Vehicle Daily Demand			Percent Change on 2054 DM	
	DM	PCI Scenario 1	PCI Scenario 2	PCI Scenario 1	PCI Scenario 2
Marton Rural	1,613	1,606	1,606	-0.4%	-0.4%
Total	**562,746**	**561,596**	**561,967**	**-0.2%**	**-0.1%**

Appendix 5: Summary and Comments on WSP Transport Assessment

WSP Transport Assessment	**Comments**
Findings	
R20.4.2(a)(vi)(i) rule restricting reversing vehicle movements is considered suitable for MDH in its current form – restricting reversing vehicle movements for sites with more than two units or six parking spaces will ensure safety and efficiency of the road is maintained.	Agree that this rule is appropriate in the MRZ. The wording of the Rule is 'two or more dwelling units' not 'more than two'. This rule ensures that when there is shared use of a driveway between dwellings that vehicles are not required to reverse along the driveway.
Engineering Standard Section 3.19.4(i-iii) is not considered suitable for MDH in its current form, given the following: o Current use of term "lot" instead of "parking space" will provide a sub-optimal outcome for access and manoeuvrability on-site. o There are no minimum car tracking specifications for turning areas. o The requirement for a common turning area for developments of 4-6 lot sizes limits the developable space.	Agree that with the potential for multiple dwellings on a single lot. The Engineering standards should be updated to refer to dwellings rather than lots. For up to three dwellings, intended MRZ-Figure 5 along with compliance with R20.4.2(d) should ensure that vehicles using on-site parking can travel to and from the street in a forward direction. It is understood that four or more dwellings will not be a permitted activity and as such the turning area provision can be reviewed through the resource consent process. Disagree that a common turning area is not needed for 4-6 lot sizes. As sites get larger and walking distances increase the ability for convenient drop-off and pick-up increases. NZS4404:2010 requires on-site turning in a common area where there are three or more rear dwellings.
R20.4.2(a)(j)(viii)) rule is considered suitable for MDH in its current form, given the following: o Vehicle access standards complies, if not exceeds, NZS4404:2010 standards o Vehicle access standards comply with National Medium Density Guidelines	Agree that R20.4.2(a) including (vii) vehicle access standards can appropriately apply to the MRZ.
R20.4.2(g) rule is not considered suitable for MDH in its current form, given the following: o There is no current provision for bicycle parking and other multi-modal transport storage options that supports people to use active and non-vehicular modes.	Agree that either bicycle parking/storage for residential activities needs to be added to R20.4.2(g) or a separate standard added to the MRZ zone.
Recommendations	

WSP Transport Assessment	Comments
1) Engineering Standard Section 3.19.4(i-iii) o Amend this standard to reflect parking spaces instead of units – i.e. “For 2-3 parking spaces,” “For 4-6 parking spaces,” and “For 7 Parking Spaces and Over.” o Subsequently, amend this standard for where less than 7 parking spaces are provided, requiring: “A turning area(s) will be provided for each parking space to enable forward vehicle movement on and off the street (accommodating the 85 percentile car tracking curves)”.	Recommend that for residential activities dwellings are referred to rather than lots and for non-residential activities that parking spaces are used. Recommend that on-site turning within a common area is included where three or more rear dwellings in line with NZS4404:2010.
2) District Plan Section 20 o That clarification be given in the District Plan as to when a private access should become a local road, based on accommodating over 20 units.	The District Plan includes provisions for how up to 20 dwellings can be accessed off a private access. If a developer chooses to provide a public road then the Engineering Standards provide the expectations for a public road.
3) R20.4.2(g) o Amend this section to include the provision of 1 bicycle parking space per residential unit is provided, in an enclosed, secure, and lockable space. Cycle parking spaces must comply with the relevant dimensions and layouts in Appendix 20D in Section 20 of the PNCC District Plan.	Agree that in the MRZ at least one secure cycle parking space per dwelling is required. This can be in the garage provided that the space is clear of any parking envelopes. It may be more appropriate for a bicycle parking rule to be added for the MRZ rather than city-wide.

Appendix 6: Summary and Comments on McIndoe Urban Standards Report

McIndoe Urban Proposed Standards	Comments
2.3 Boundary separation distance ('yards') For a garage fronting the road, the garage door setback is not less than: • 0.5m behind the frontage of the residential unit served; and • Not less than 5.5m from the front boundary.	Agree that this standard will minimise the risk of a stacked vehicle obstructing the footpath.
1.11 Relationship of garages to the street frontage	If the site is kept as a single lot with multiple dwellings and has a frontage of 30m or less, all vehicle access will need to be off a single shared driveway (see R20.4.2(a)(vi)a). Also, R20.4.2(a)(vi)c) requires access to a right of way etc if one is available rather than to the street. Recommend that consideration is given to allowing for a second driveway such that the front dwelling has direct frontage access to the street.
1.12 Carparking at the street frontage Any carparking provided at the street frontage (within 6m of the street boundary) must: • Be located perpendicular to the street on the front yard of the unit served; • Not comprise more than 50% of the width of the unit's façade; • Be a minimum of 5.5m deep; and • If the unit served has a street facing garage door, it must be located directly in front of that garage.	Again if a single lot with multiple dwellings, the combination of R20.4.2(a)(vi)a) and c) would result in all dwellings having vehicle access from a shared driveway. As per above, it is recommended that consideration be given to allowing for a second driveway such that the front dwelling has direct frontage access to the street. This will help to minimise the amount of space needed within the site for vehicle manoeuvring.
1.13 Fencing at and close to the street boundaries As per R10.6.1.7 with the below modification: (iv) Where a side fence is within the front yard or next to a driveway, and within 1.5m of the street edge, a maximum height of 1.1m applies.	Recommend that this is worded so that if the building is set back by up to 2.5m, that the reduced fence height applies to up to 2.5m from the road boundary. The proposed standard includes that along the road frontage solid fences should be a maximum height of 1.1m within 1.8m of a driveway. For consistency with the pedestrian visibility triangle of 2m to the side of a driveway and 2.5m into the site, it is recommended that the 1.8m distance is increased to 2m.

Appendix 7: Summary and Comments on Alignment with District Plan Transport-Related Objectives and Policies

District Plan Provision	Comment on Alignment
City View Objectives	
1. Planning for residential, industrial, commercial, and rural-residential growth sustains a compact, orderly, and connected urban form which avoids the adverse environmental effects of uncontained urban expansion into the rural zone.	PC:I facilitates residential development within the existing urban area where there is a good level of connectivity.
3. The integrated and efficient provision of, and access to, infrastructure, network utilities and local services is facilitated for all residents.	The MRZ areas have ready access to the city's transport infrastructure.
9. Subdivisions, buildings, and infrastructure are designed and constructed to promote a coordinated, healthy, and safe environment.	Recommendations are included to ensure the safe interaction between all road users along the street frontages of the MRZ areas. The MRZ areas have been selected to encourage active travel mode use.
23. Infrastructure operates in a safe and efficient manner, and the effects of activities which could impact on the safe and efficient operation of this infrastructure are avoided, remedied, or mitigated.	As per above comment, recommendations are included to ensure the safe interaction between all road users along the street frontages of the MRZ areas.
24. All forms of transport, including public transport, walking, cycling, and private vehicles are adequately provided for to assist with sustainable energy use and a healthy lifestyle.	The proposed MRZ areas have good access to a variety of travel modes.
25. Infrastructure and physical resources of regional or national importance are recognised and provided for by enabling their establishment, operation, maintenance, upgrading and protection from the effects of other activities.	Some of the proposed MRZ areas include frontage onto sections of urban state highway. These roads are classified as Major Arterials and the Section 20 Access provisions provide a higher threshold for access onto these roads.
Residential Zone Objective 1	
To enable the sustainable use and development of the Residential Zone to provide for the City's current and future housing needs.	
Policies	
1.3 To promote the efficient use of the urban infrastructure and other physical resources.	PC:I primarily relies on the use of the existing transport infrastructure. In particular, making use of existing spare capacity in the active mode and public transport networks.
1.4 To ensure network infrastructure and services are available to support residential development and intensification.	As above.
Land Transport Objective 1	
The City's land transport networks are maintained and developed to ensure that people and goods move safely and efficiently through and within the City.	
Policies	
1.1 Identify and apply the roading hierarchy to ensure the function of each road in the City is recognised and protected in the management of land use, development, and the subdivision of land.	The Section 20 Access provisions provide a higher threshold for access onto Collector and Arterial Roads.

District Plan Provision	Comment on Alignment
1.2 All roads in the City have function and design characteristics consistent with their place in the roading hierarchy.	PC:I is not expected to change the function of roads within the city.
1.3 Maintain and upgrade the existing roads in the City and provide for new roads to meet the current and future needs of the City.	PC:I is not expected to have maintenance implications for the city's roads.
1.4 The road network stormwater control system shall protect the road, road users and adjoining land from the adverse effects of water from roads and minimise any adverse effect on the environment.	No new roads are proposed.
1.5 Require all new public roads, private roads, accessways and privateways to be designed and constructed to meet performance standards relating to the safety and efficiency of vehicle movement, and to ensure the safe use of the road transport network for all users, particularly in respect of: *a) Road width and alignment which should be sufficient for two vehicle lanes except where traffic volumes are insufficient;* *b) The formation and surface sealing of all roads, accessways and privateways to standards appropriate to the volume of traffic expected to be carried;* *c) Provision for necessary network utility facilities within roads; and* *d) Safe design and construction of roads, road access points and intersections, including alignment, gradient, vehicle parking, manoeuvring, and turning requirements.*	No new roads are proposed. The Section 20 Access provisions will apply to new accesses.
1.6 Encourage the development of safe and accessible pedestrian paths and cycleways, as well as convenient and accessible cycle parking, to support the opportunity for people to use active and non-vehicular modes of transport throughout the City.	The MRZ areas have been selected based on walking distances to key amenities. For large sites with multiple frontages, it is recommended that providing public pedestrian connections through the site is encouraged.
1.7 To support and encourage the provision of public transport and its use throughout the City as an integral part of the transportation system.	The MRZ areas have been selected to ensure that they are within walking distance of a bus stop.
1.8 Convenient, safe, and accessible car parking, loading and manoeuvring facilities are available for residents, staff, visitors, and customers for all activities without creating congestion or conflicts with moving vehicles, pedestrians, or cyclists on adjacent roads.	Where on-site parking is provided, compliance with the Section 20 Access and Parking standards is required. Additional provisions are recommended to ensure that adequate manoeuvring space is included where garages and parking spaces are accessed from a shared driveway.
Land Transport Objective 2 ***The land transport network is safe, convenient, and efficient while avoiding, remedying, or mitigating adverse effects in a way that maintains the health and safety of people and communities, and the amenity values and character of the City's environment.*** ***Policies*** *2.1 Restrict the through movement of traffic where the movement has adverse visual, noise and safety effects on the adjoining areas by using the road hierarchy to direct higher volume and heavy traffic movements on identified arterial routes and discouraging this traffic from other areas, such as residential areas.*	PC:I does not include new public roads.

District Plan Provision	Comment on Alignment
2.2 Avoid, remedy, or mitigate the impact of roads and parking areas on visual amenity values of the community by requiring the provision of landscaping. *2.4 Avoid adverse effects on amenity and character by ensuring that new roads are well designed and visually complement the character of the surrounding area.*	
Land Transport Objective 3 ***The safety and efficiency of the land transport network is protected from the adverse effects of land use, development, and subdivision activities.*** ***Policies***	
3.1 Avoid, remedy, or mitigate the adverse effects of increased traffic or changes in traffic type, which would compromise the safe and efficient operation of any road, or the safe and convenient movement of pedestrians and cyclists on roads.	The traffic modelling shows that no additional adverse traffic effects beyond those anticipated by ongoing traffic growth are expected as a result of PC:I.
3.2 Require vehicle crossing places and vehicle entrances from public roads to be located, constructed, and maintained to standards appropriate to the expected traffic volume, pedestrian movement, and speed environment of each road.	The Section 20 Access provisions with some recommended amendments will apply to the MRZ areas to balance vehicle access with the safety and amenity for road users travelling along the street frontage.
3.3 Ensure that buildings and activities do not compromise the necessary clear sight lines for trains and road vehicles at level rail crossings, or of vehicles at road intersections.	Any development is expected within the existing property boundaries.
3.4 Ensure adequate on-site parking and manoeuvring space is provided for each type of activity in a safe and visually attractive manner.	If on-site parking is included, recommendations have been provided to ensure adequate manoeuvring space is available and that vehicles on a shared driveway can travel to and from the frontage road in a forward direction.
3.5 Ensure that buildings and activities make provision for adequate and safe on-site loading.	The existing requirement for on-site loading for sites with more than 20 dwellings remains.

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