City of Edmonton

Priority Growth Areas

MOBILITY STUDY

CIMA+ file number: Z0016285
May 2, 2025 – Review 03

City of Edmonton

Priority Growth Areas

MOBILITY STUDY

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Register of Revisions			
Issue No.	Reviewed by	Date	Description of the review
00	JN	2025-02-20	Draft report quality review.
01	JN	2025-02-21	Draft report issued for client review.
02	JN	2025-04-17	Draft executive summary issued
02	JN	2025-04-22	Executive summary issued
03	JN	2025-04-28	Final report quality review
03	JN	2025-05-02	Final report issued

Confidentiality and Ownership

Executive Summary

Overview of the Process

The City of Edmonton undertook a comprehensive multi-modal mobility assessment for the planned re-zoning of lands within five Priority Growth Areas (PGAs) including 124 Street, Wîhkwêntôwin, 156 Street, Stony Plain Road, and University – Garneau. These PGAs represent a critical component of the City's strategy to accommodate projected growth as outlined in *The City Plan* (2020). The PGAs are located along established nodes and corridors intended to accommodate higher-density, mixed-use development and facilitate a modal shift away from single-occupancy vehicle travel.

To align the technical analysis with City policies and current best practices, the quantitative mobility assessment uses both traditional Level of Services (LOS) measures that focus on motor vehicle moving capacities and Multi-Modal Level of Service (MMLOS) measures. Historically, the traditional LOS framework used for transportation planning has quantitatively reviewed vehicle travel and qualitatively considered the safety and experience of other road users such as pedestrians, cyclists, and transit users. The MMLOS framework quantitatively considers the needs and experiences of all transportation users and allows planners and engineers to contextualize the assessment to match the character of the street and supporting policy objectives. This combined approach reflects the City's broader objective of creating a vibrant, sustainable, and connected urban environment that prioritizes the movement of people over vehicles. The application and results of these different approach is highlighted in **Figure E-1**.

The mobility assessment focused on identifying the impacts of proposed land use intensification allowed by PGA re-zoning, evaluating existing mobility infrastructure, and recommending context-sensitive improvements to ensure that each PGA can support its long-term vision for growth.

Existing Conditions and Operations

The assessment of existing conditions revealed that infrastructure quality and user experiences varied considerably across the PGAs. In many areas, neighbourhood renewal programs had recently been completed, contributing to improved sidewalk conditions and pedestrian environments. However, arterial corridors and some collector streets continued to feature narrow sidewalks or missing segments altogether, particularly outside of recently renewed areas.

Cycling infrastructure was unevenly distributed. While areas like University-Garneau and portions of the 124 Street and Wîhkwêntôwin areas benefit from protected bike lanes and shared-use pathways, other PGAs — especially the 156 Street area and portions of the Stony Plain Road area — lack adequate connectivity for cyclists of all ages and abilities. Furthermore, gaps were identified between existing and planned facilities, suggesting the need for more continuous networks to support safe and convenient cycling, not just within each PGA, but across the City.

Transit accessibility was generally strong in areas served by light rail transit (LRT) and high-frequency bus corridors. However, the quality of transit infrastructure, including bus shelters, transit priority measures, and signal coordination, varied widely. In many locations, transit service operates in mixed traffic without dedicated lanes or signal priority, reducing reliability and overall user experience. The importance of transit reliability on increasing transit ridership speaks to the benefit of projects such as the Valley Line West LRT expansion and the planned implementation of the bus rapid transit (BRT) system, with B1 and B2 routes expected to run through several of the PGAs evaluated as part of this assessment.

Vehicle operations were characterized by medium to high congestion levels on arterial roadways, particularly during peak periods. This was most notable in corridors close to the downtown core and around the University of Alberta. The qualitative assessment, supported by peak-hour Google Maps congestion data, confirmed that travel conditions on these routes often deteriorated during the busiest parts of the day.

Post-pandemic travel trends were also taken into account. Compared to 2016–2017, peak-hour vehicle volumes in 2024 were consistently lower, reflecting broader shifts in commuting behaviour and work-from-home adoption. Transit ridership has recovered to pre-pandemic levels, but active transportation and e-commerce-related vehicle activity has increased, prompting the need for a flexible, multimodal approach to future planning.

Future Conditions and Operations

Looking ahead to the forecast population horizon, travel demand within the PGAs is expected to grow significantly because of population intensification and redevelopment. Targeted intensification arising from the PGA rezoning, combined with organically occurring property redevelopment, is expected to add 43,000 people (representing 80% growth) to the study area population). While traffic volumes will increase, the rate of growth will be tempered by the availability and planned expansion of sustainable transportation infrastructure. Across the study areas, trips by all modes are forecast to increase by approximately 40%, comprised of a 32% increase in vehicle trips and a 49% increase in trips by foot, bike, and transit.

The Valley Line West LRT, the City's Active Transportation Network Expansion, and broader land use changes will all play a role in shaping these outcomes. PGAs that currently exhibit lower sustainable mode shares, such as the 156 Street area, have the potential to see the greatest relative gains by addressing infrastructure deficits and land use barriers. Conversely, areas like University – Garneau, where over 60% of trips are already made by sustainable modes, will require careful attention to preserve and enhance existing multimodal infrastructure as densities rise.

The MMLOS assessment framework was used to evaluate future performance under the assumption that no additional infrastructure beyond currently funded projects would be in place. These approved projects include Valley Line West LRT, Imagine Jasper Phase 2, and planned expansions to the active transportation network in 2025 and 2026. MMLOS targets based on road classification were adjusted for each mode based on City policy and planning directives such as pedestrian priority areas outlined in the District Plan, transit corridors based on LRT and BRT planning, and the cycling network identified in the Bike Plan. This analysis revealed that while some intersections and corridors could accommodate projected growth, others would experience level of service degradation — particularly for pedestrians and transit users — without targeted improvements. Key issues included uncontrolled conflicts between pedestrians and vehicles, gaps in cycling infrastructure, limited curbside transit amenities, and delays to on-street transit when travelling in mixed traffic with other vehicles.

Recommendations

The study provides detailed recommendations to support multi-modal mobility in each Priority Growth Area, aligned with the City's broader transportation and land use objectives. Recommendations are summarized in **Figure E2** through **Figure E6**.

Pedestrian improvements are recommended at many intersections and corridors. These include the installation of:

- curb extensions,
- leading pedestrian intervals (LPIs),
- wider sidewalks,
- audible crossing signals, and
- the prohibition of right turns on red (RTOR).

These enhancements aim to reduce conflicts, shorten crossing distances, and improve the overall comfort and accessibility of the pedestrian environment, particularly in designated pedestrian priority areas.

Cycling infrastructure improvements are also identified as a priority. The report recommends filling key gaps in the network by constructing new protected cycling facilities along corridors such as:

East / West Routes

- 100 Avenue,
- 102 Avenue,
- 111 Avenue,
- 114 Avenue,
- 87 Avenue, and
- 104 Avenue.

North/South Routes

- 112 Street,
- 118/119 Street,
- 158 Street,
- 163 Street,
- 115 Street, and
- 116 Street.

These corridors will serve as district connectors, enabling residents to safely access destinations within and beyond the PGAs. Supplemental routing options are identified to create a robust cycling network, placing most residents within 400 m of a low stress cycling facility.

Transit recommendations include the implementation of:

- transit only lanes,
- queue jump lanes,
- transit signal priority, and
- the enhancement of passenger amenities such as shelters, benches, and lighting.

These changes are intended to reduce delay, improve reliability, and enhance the user experience, especially in areas served by the Valley Line West LRT and planned BRT routes. In particular, intersections along 109 Street, Stony Plain Road, and 87 Avenue are identified as high-priority locations for transit-focused investment beyond the current investment in the West Valley Line LRT.

In terms of **vehicle operations**, the report recommends optimizing signal timing and reallocating right-of-way where necessary to improve multimodal performance. In some cases, protected-only turning movements and signal timing adjustments are proposed to improve safety and reduce delay. However, consistent with the direction outlined in The City Plan, the report acknowledges that vehicle level of service may not meet the public expectations (specifically in the peak hour) at all locations and that any anticipated congestion will be managed through multi-modal investments rather than expanded roadway capacity.

The improvements suggested in this report are not solely required to support PGA redevelopment, rather, they address identified gaps in the mobility network and help to improve the overall MMLOS to optimize the potential people moving capacity of the mobility network. Some of the identified improvements align with existing long-term planning and strategy documents, such as the Bike Plan, while others can be integrated into the land development review process. Recommendations from this report should be reviewed with each future development application for opportunities to integrate infrastructure upgrades with densification. The implementation time frame may be tied to the rate at which redevelopment occurs rather than a year or City-wide population threshold.

High-level capital cost estimates for the recommended improvements total approximately $10.4 million, summarized by PGA in **Table E1**. At the pre-conceptual design stage, these costs estimates should be considered ± 50% as further assessment will be required to fully understand impacts of each project. These estimates cover a range of interventions, from minor upgrades to missing pedestrian and cyclist connections, to more substantial intersection reconstructions. Costs associated with major corridor reconfigurations (e.g., 109 Street or 82 Avenue as part of the B1/B2 BRT implementation) are excluded and will require further study and engagement.

Costs associated with improvements anticipated to be explored and implemented as part of upcoming neighbourhood renewal projects (such as Wîhkwêntôwin and Glenwood 163 Street West) have not been included in the table below. Costs within the 156 Street / Stony Plain Road area are higher than the other nodes due to a high number missing pedestrian and cycling facilities within the area. Many of the neighbourhoods in this area underwent renewal before the introduction of the City's current Complete Streets Design and Construction Standards in 2018, with many neighbourhood renewals completed in 2014 or earlier. These renewals often followed a strict "like for like" renewal program which typically did not consider implementation of cycling infrastructure or construction of missing sidewalk links.

Implementation of these improvements is recommended in a phased manner. Some small-scale improvements generally abutting redevelopment parcels necessary to support each development could become a condition of future development permits. These are localized improvements often abutting a parcel that have traditionally been undertaken as a condition of development by the property owner, including missing sidewalk connections, curb ramps, and alleyway upgrades. Short-term actions (0–5 years) would focus on high-impact, low-cost improvements such as signal timing adjustments, RTOR bans, and transit signal priority. Medium-term actions (5–10 years) would include expansion of the active transportation network and intersection reconfigurations. Long-term actions (10+ years) may involve comprehensive street reconstructions to fully align with the City's Complete Streets Design and Construction Standards.

Table E1 – High-Level Capital Costs

	124 Street / Wîhkwêntôwin	156 Street / Stony Plain Road	University-Garneau
Development Lead Initiatives	$60,000	$760,000	None
Short Term	$150,000	$500,000	$150,000
Medium Term	$840,000	$6,240,000	$1,690,000
Long Term**	• Transit oriented reconfiguration of 109 Street north of Jasper Avenue • Bi-directional cycling facilities along 111 Avenue • Bi-directional cycling facilities along 117 Avenue and 119 Avenue or 120 Avenue	• Bi-directional cycling facilities along 102 Avenue paralleling Stony Plain Road • Pedestrian realm reconfiguration of Stony Plain Road from 156 Street to 163 Street • Extension of 100 Avenue Shared Pathway to 170 Street • Extension of cycling facilities on 153 Street and 163 Street • Reconfiguration of 87 Avenue to accommodate future BRT and active modes*	• Reconfiguration of 82 Avenue and implementation of Old Strathcona Public Realm Strategy* • Reconfiguration of 109 Street from 61 Avenue to Walterdale Hill Road/Saskatchewan Drive to improve transit and pedestrian realm* • Reconfiguration of 87 Avenue to improve transit service*
Total	$1.04 million	$7.50 million	$1.84 million

Notes:

* denotes scope which is expected to be undertaken as part of B1 + B2 BRT Concept Plan work
** costs associated with long term improvements are excluded and will require further study and engagement.

In summary, the mobility assessment confirms that Edmonton's Priority Growth Areas can accommodate planned intensification with strategic, coordinated investments in multimodal infrastructure. By prioritizing people-focused design and sustainable transportation options, the City can support vibrant, connected communities that meet the goals of The City Plan, the Energy Transition Strategy, and the broader vision for a more equitable and resilient Edmonton.

Figure E1 – Comparison of LOS and MMLOS Outcomes

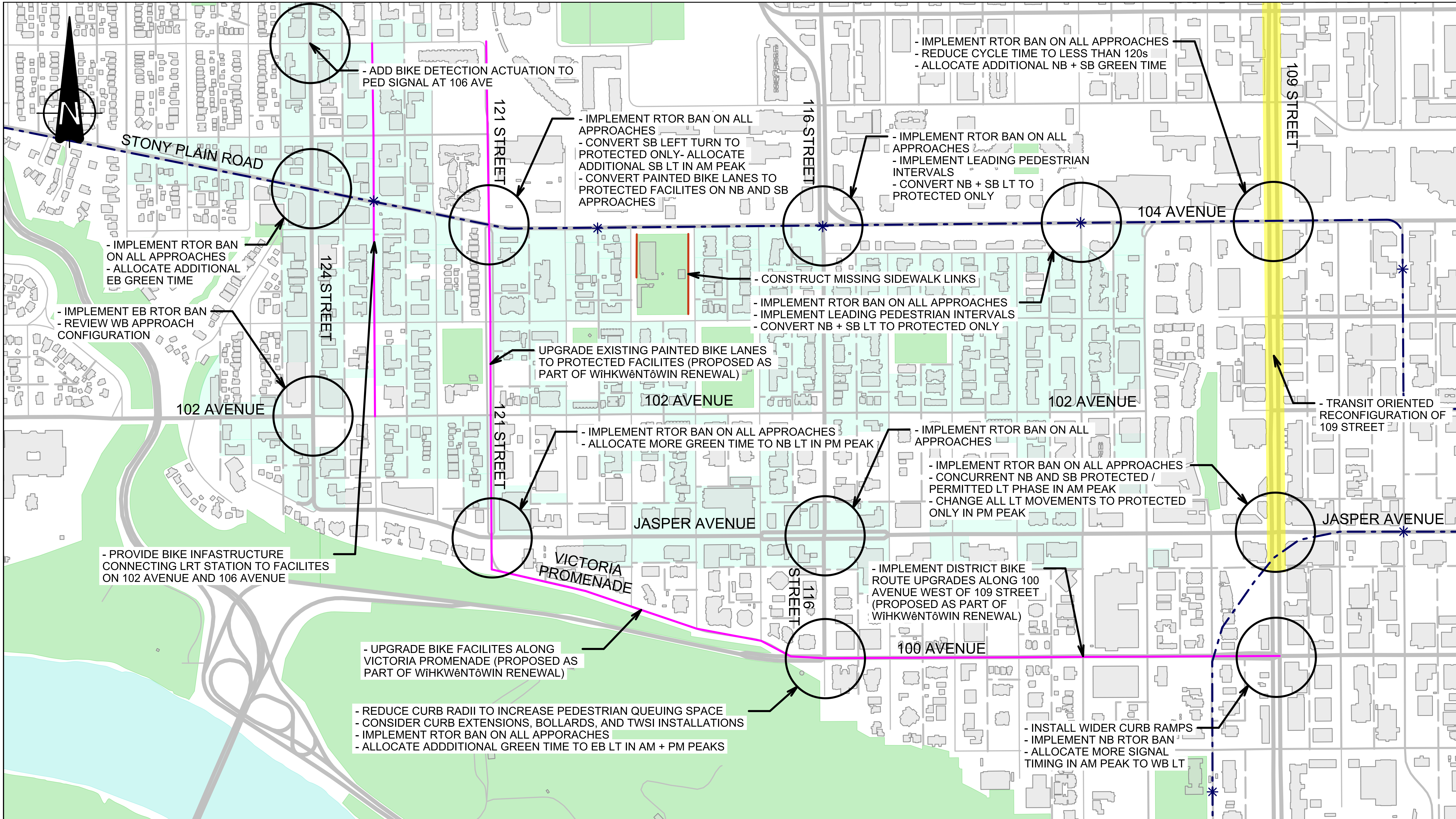
EXAMPLE – 109 Street and 87 Avenue

Located within the University-Garneau PGA, 109 Street is a commercial corridor while the intersection of 109 Street and 87 Avenue is a major access to the University of Alberta.

Based on the Scona District Plan, 109 Street and the west leg of 87 Avenue are pedestrian priority areas. The District Plan notes the following: "Enhance the pedestrian environment along 109 Street with a focus on protection, comfort and connectivity by separating sidewalks from the curb and including a treed landscaped boulevard, pedestrian-oriented lighting, public seating and improved connections and crossings".

Additionally, bus-based mass transit routes B1 and B2 are expected through this intersection. B1 transit is expected to travel along 109 Street while B2 transit is expected to travel along the south leg of 109 Street and the west leg of 87 Avenue in the future. Concept planning for the routes has been initiated and will determine the exact routing and stop / station locations. Delivery timelines will be known once design work has been completed and funding for construction is allocated.

Traditional LOS Assessment	Multi-Modal Level of Service Assessment
Traditional LOS assessment quantitatively analyzes the efficient movement of vehicles, which can often be at odds with stated policy direction and does not offer a framework to assess the qualitative experience of other uses of a street in a comparable manner. In the case of 109 Street and 87 Avenue, the vehicle demand for northbound left turns is expected to nearly double in the PM peak hour following redevelopment. A second left turn lane is theoretically needed to address this capacity issue and reduce delays to an 'acceptable' level. This solution requires property acquisition with little room for improvements to the pedestrian realm or transit infrastructure. The traditional LOS leads to design decisions that often prioritize the car above all other modes of travel. Most striking – the additional turning lane may increase the total roadway capacity by just **200 people per hour per lane (pphpl)**, which will be eclipsed as the City continues to grow to 2 million.	The MMLOS quantitative assessment allows the City to evaluate streets for a variety of travel modes, including but not limited to the car. This framework evaluates each mode by the aspects of an intersection that most impact their experiences. • Pedestrians – uncontrolled conflicts with vehicles, crossing distance, cycle length, curb ramps • Cyclist – uncontrolled conflicts with vehicles, crossing distance, cycle length, bike infrastructure • Transit – delay, pedestrian LOS, and priority measures (queue jump lanes, TSP). • Vehicle – delay, presence of dedicated turn lanes. The MMLOS targets for each mode can be adjusted based on policy and planning directives. For 109 Street, pedestrian and transit MMLOS targets were adjusted upwards to reflect the emphasis placed on these modes in the District Plan and Mass Transit Plan. Recommendations using the MMLOS framework identify that curb lanes on 109 Street should be converted to transit-only lanes. A scramble crosswalk allows pedestrians to cross all legs of the intersection without vehicle conflicts. By optimizing signal timing, delay to vehicles can be partially offset. When comparing equivalent road space, transit lanes can move significantly more people than general purpose vehicle lanes. By investing in mass transit, the theoretical capacity of 109 Street increases by nearly **1,000 pphpl**, providing additional people-moving capacity for years to come.

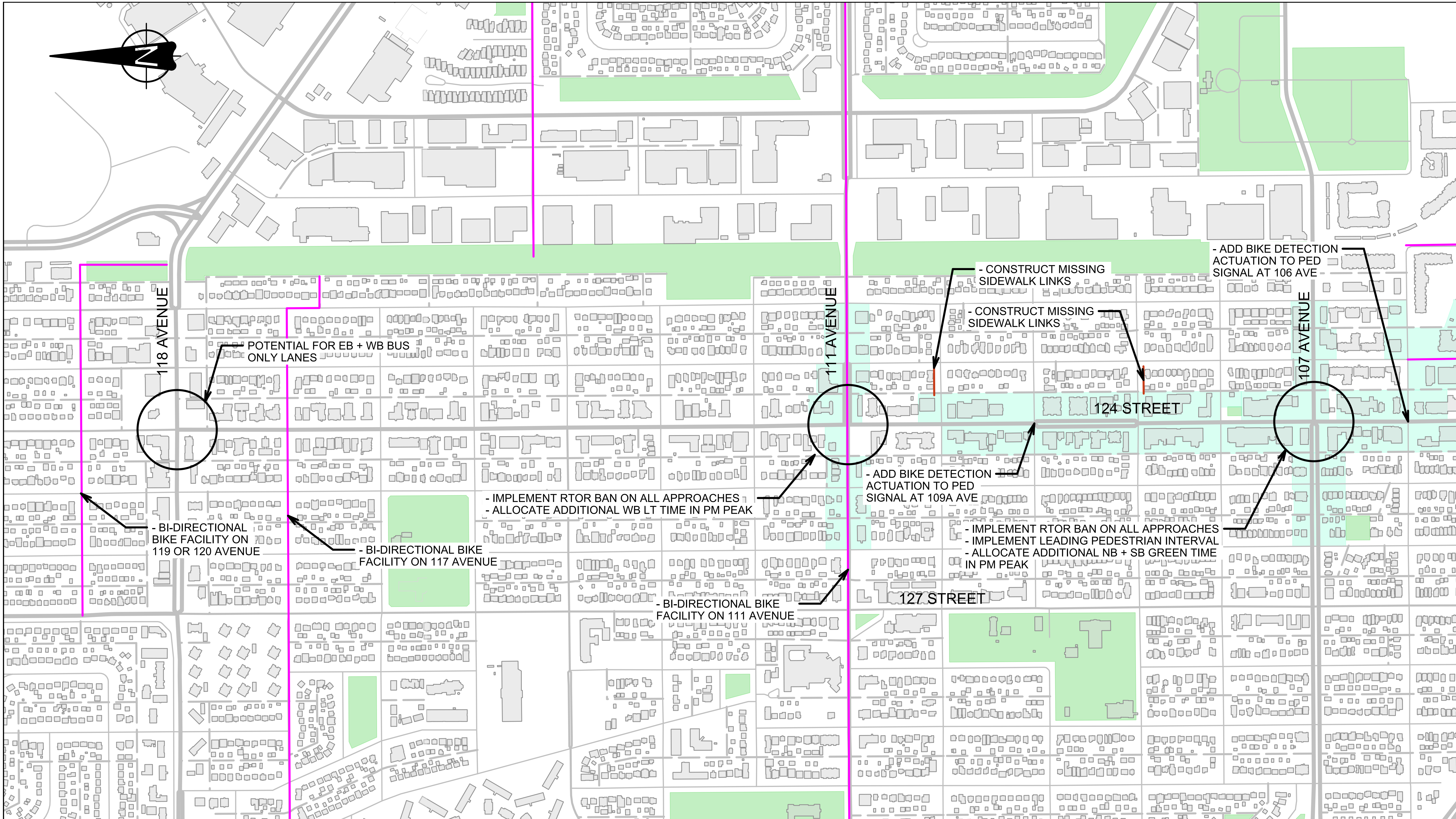


LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT ALIGNMENT
- LRT STATION
- MISSING SIDEWALK
- MISSING CYCLING CONNECTION
- CORRIDOR UPGRADES REQUIRING FURTHER STUDY

NOTE:
Detailed design on the Valley Line West corridor is in progress through the P3 contract with Marigold Infrastructure Partners. The analysis completed for this study along the Valley Line corridor is based on "Summer 2024 Look Book" drawings and preliminary signal timings. Multi-modal performance at study intersections along the Valley Line corridor are subject to changes to the design, with any major design chagnse requiring further study to understand any impacts.

FIGURE E-2 WîHKWêNTôWIN PRIORITY GROWTH AREA POTENTIAL IMPROVEMENTS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- MISSING SIDEWALK / ACTIVE MODES LINK
- MISSING CYCLING CONNECTION

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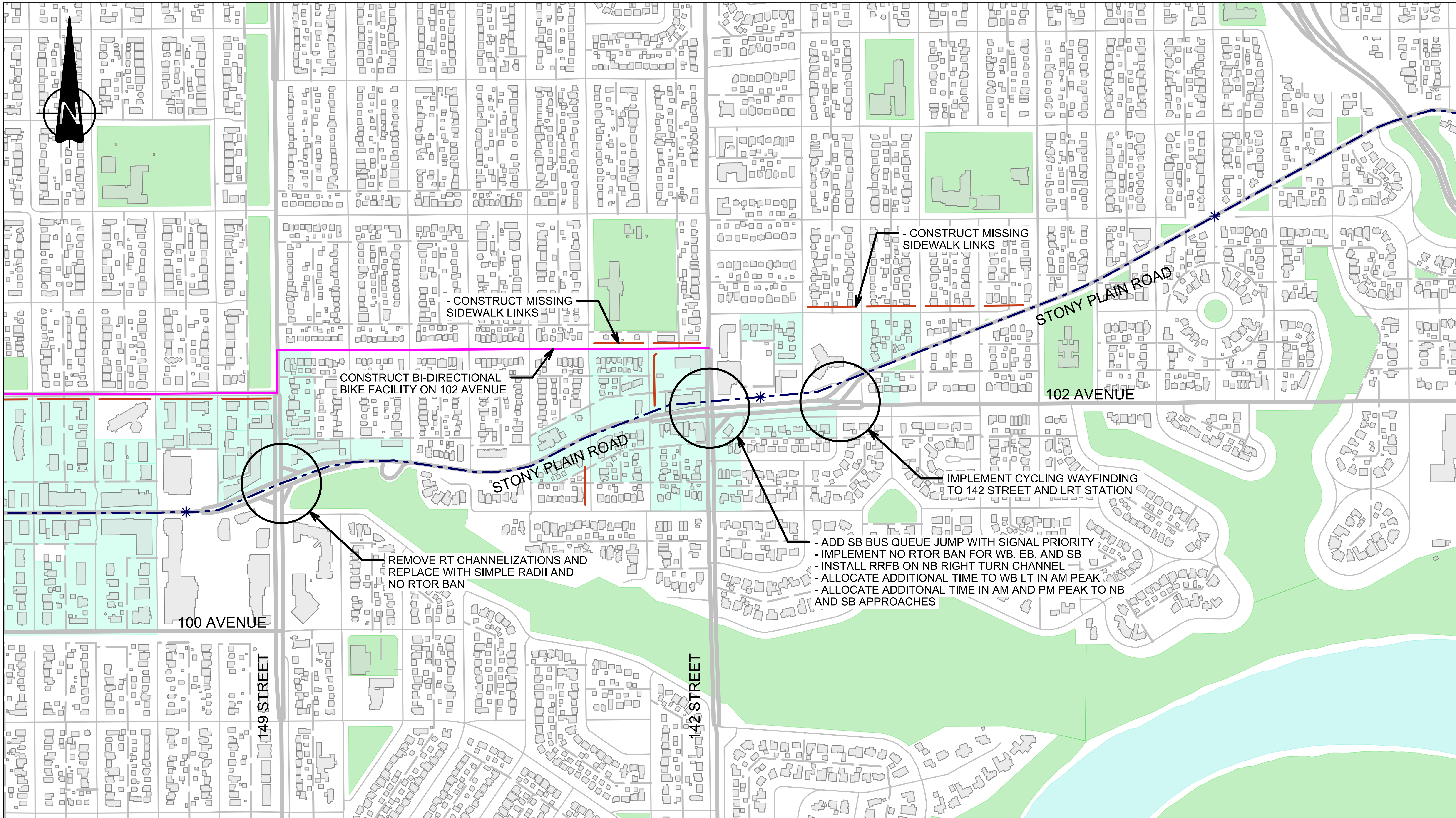
FIGURE E-3 124 STREET PRIORITY GROWTH AREA POTENTIAL IMPROVEMENTS



LEGEND
- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT ALIGNMENT
- LRT STATION
- MISSING SIDEWALK
- MISSING CYCLING CONNECTION

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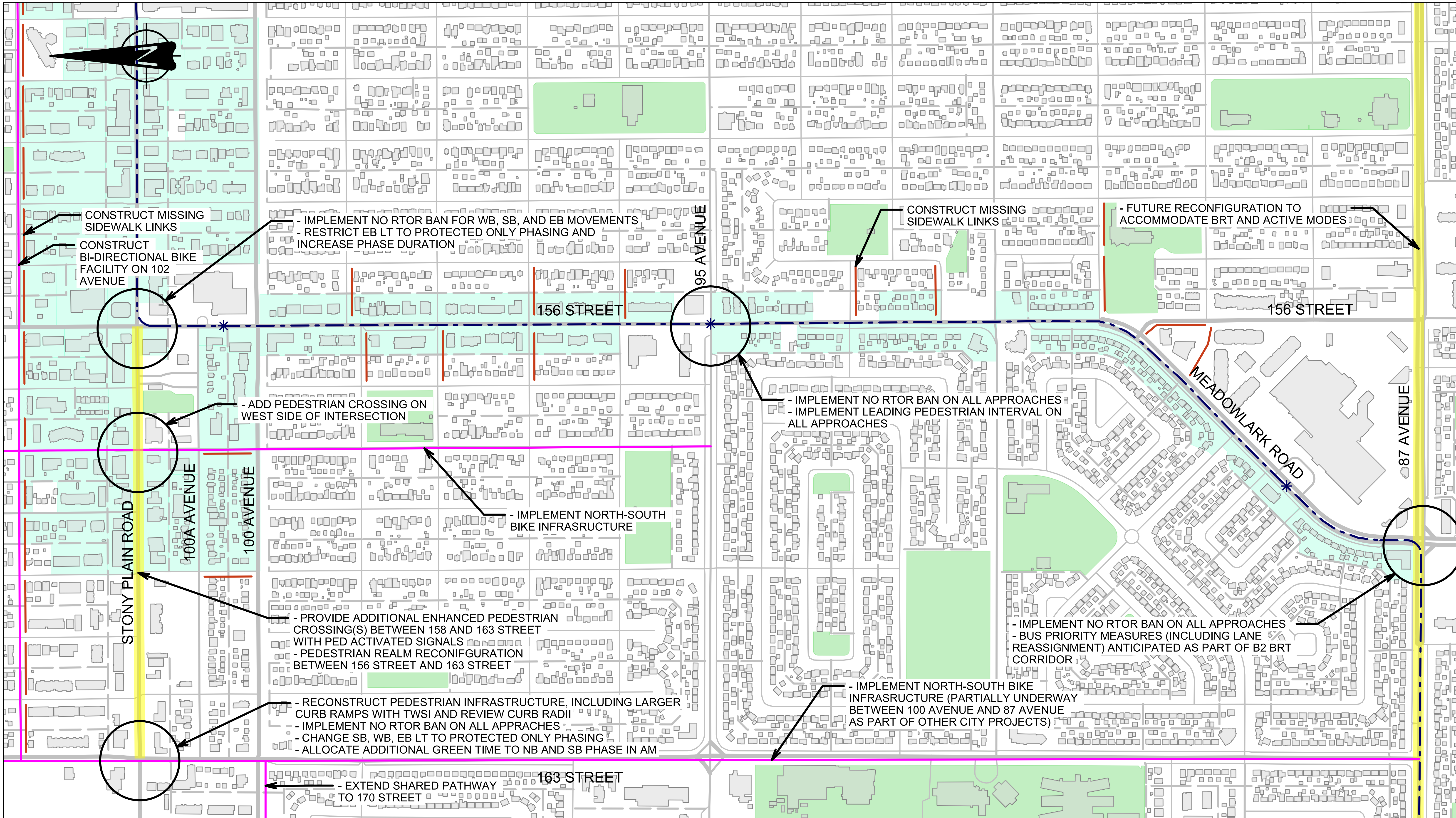
NOTE:
Detailed design on the Valley Line West corridor is in progress through the P3 contract with Marigold Infrastructure Partners. The analysis completed for this study along the Valley Line corridor is based on "Summer 2024 Look Book" drawings and preliminary signal timings. Multi-modal performance at study intersections along the Valley Line corridor are subject to changes to the design, with any major design chagnse requiring further study to understand any impacts.

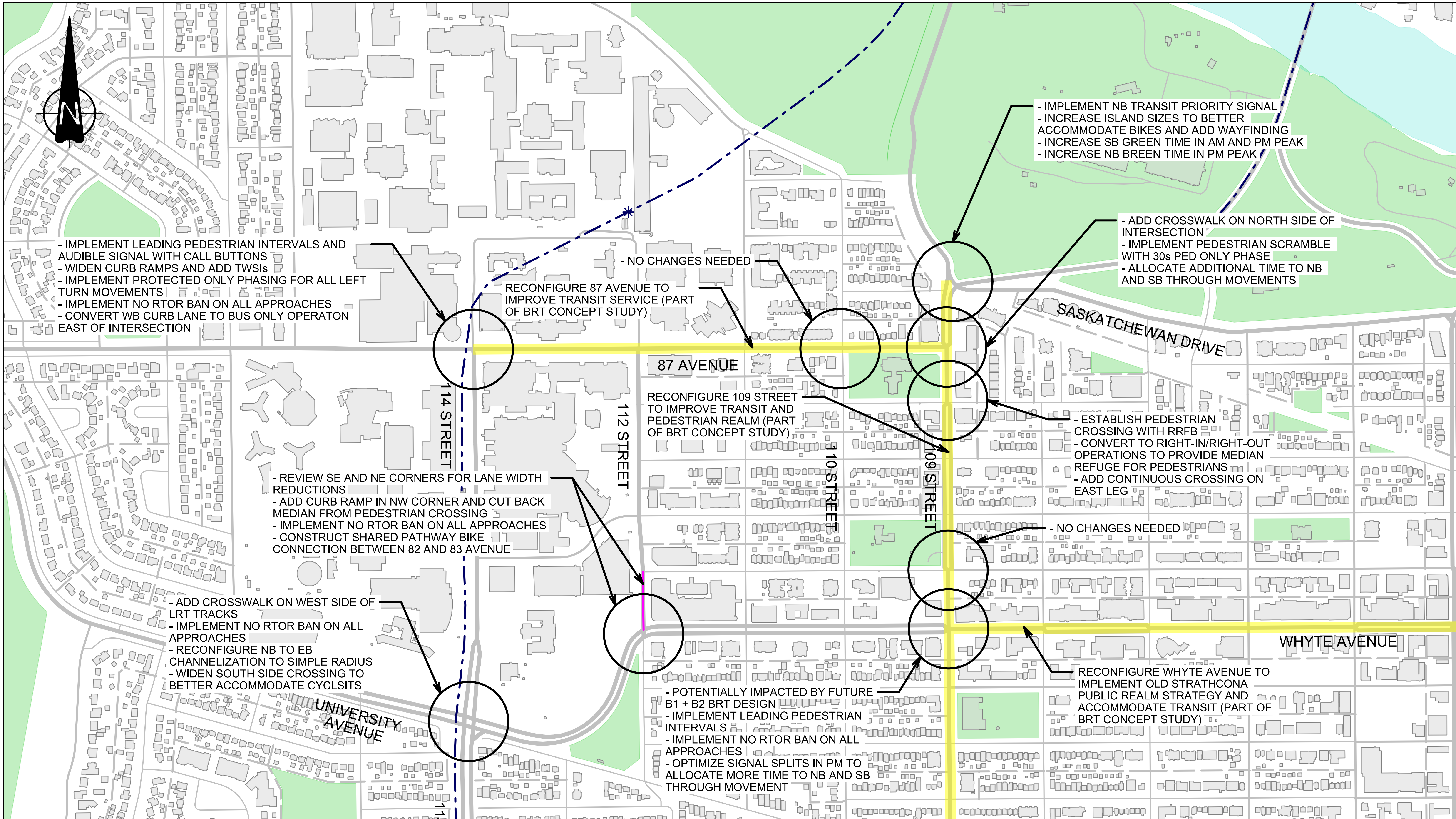
FIGURE E-4 STONY PLAIN PRIORITY GROWTH AREA POTENTIAL IMPROVEMENTS



LEGEND
- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT ALIGNMENT
- LRT STATION
- MISSING SIDEWALK
- MISSING CYCLING CONNECTION
- CORRIDOR UPGRADES REQUIRING FURTHER STUDY

NOTE:
Concept planning for the B1 and B2 BRT routes has been initiated and will determine the exact routing, street configuration, and stop / station locations. Delivery timelines will be known once design work has been completed and funding for construction is allocated.

FIGURE E-5 156 STREET PRIORITY GROWTH AREA POTENTIAL IMPROVEMENTS



LEGEND
- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT ALIGNMENT
- LRT STATION
- MISSING SIDEWALK
- MISSING CYCLING CONNECTION
- CORRIDOR UPGRADES REQUIRING FURTHER STUDY

NOTE:
Concept planning for the B1 and B2 BRT routes has been initiated and will determine the exact routing, street configuration, and stop / station locations. Delivery timelines will be known once design work has been completed and funding for construction is allocated.

FIGURE E-6 GARNEAU PRIORITY GROWTH AREA POTENTIAL IMPROVEMENTS

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List of Abbreviations

AADT	Average Annual Daily Traffic
ADG	Accessible Design Guide (City of Edmonton)
AODA	Accessibility for Ontarians with Disabilities Act
BRT	Bus Rapid Transit
CSDSC	Complete Streets Design and Construction Standards (City of Edmonton)
DTA –	Dynamic Travel Assignment Model
HCM	Highway Capacity Manual, 7th Edition
LOS	Level of Service (traditional measure of vehicle-based operation)
LPI	Leading Pedestrian Interval
LRT	Light Rail Transit
LTS	Level of Traffic Stress (measurement of cyclist comfort)
MaaS	Mobility-as-a-Service
MMLOS	Multi-Modal Level of Service
OTC	Ontario Traffic Council
PGA	Priority Growth Area
PPHPL	People Per Hour Per Lane
RIRO	Right-In, Right-Out intersection
RRFB	Rectangular Rapid Flash Beacon
RTM	Regional Travel Demand Model
RTOR	Right Turn on Red
TAC	Transportation Association of Canada
TIA	Traffic Impact Assessment
TSP	Transit Signal Priority
TWSI	Tactile Warning Surface Indicator
V/C	Volume to Capacity Ratio (traditional measure of vehicle-based operation)
VPH	Vehicles per hour
VPHPL	Vehicles per hour per lane
VLW	Valley Line West (Light Rail Transit Expansion Project)

1. Introduction

The City of Edmonton (the City) retained CIMA+ to review the multi-modal mobility impacts resulting from the planned re-zoning of lands within five Priority Growth Areas (PGAs), identify associated investments in the transportation network for all road users, and consider congestion management tools, programs or mechanisms to meet the unique needs of each of the five areas.

The Edmonton *City Plan (2020)* identifies nodes and corridors that each play a role in achieving The City Plan's vision at different stages of the City's growth to two million people. The node and corridor network has been identified for deliberate urban intensification, where the development of higher concentrations of residential, commercial and employment uses are anticipated. The nodes and corridors in the redeveloping area that are targeted to see the most growth between now and when the population reaches two million are nineteen Priority Growth Areas (PGAs). Five such PGAs have been selected to pilot City-led higher density re-zoning efforts, including:

- 124 Street,
- Centre City – Wîhkwêntôwin,
- 156 Street,
- Stony Plain Road, and
- University – Garneau.

These five pilot Priority Growth Areas are illustrated in **Figure 1-1**.

The City Plan notes that "*Edmonton will need to integrate mobility and land-use planning to ensure that we create more vibrant, well-connected, and economically prosperous districts in the future. This will mean shifting the mobility system from one that is predominantly focused on individual travel by car to one that prioritizes a broader array of movement options. An evolved mass transit system will anchor an overall mobility system of city-wide and district routes connecting all areas of the city, where those connections have historically been lacking. Transit and roadway networks that are integrated with pedestrian and cycling infrastructure will support choice throughout the mobility system.*"

These priorities are reinforced by Edmonton's *Community Energy Transition Strategy and Action Plan (2021)* which builds on the vision established in the City Plan. The Action Plan has set targets for Edmonton to become a carbon neutral community by 2050. The Energy Transition Strategy also outlines numerous pathways the City will take to reduce their carbon emissions and become a climate resilient community, one of which is a low carbon transportation system. This pathway relies on infill development, the complete buildout of the active transportation network by 2030, and 50% of trips made by sustainable modes by 2040.

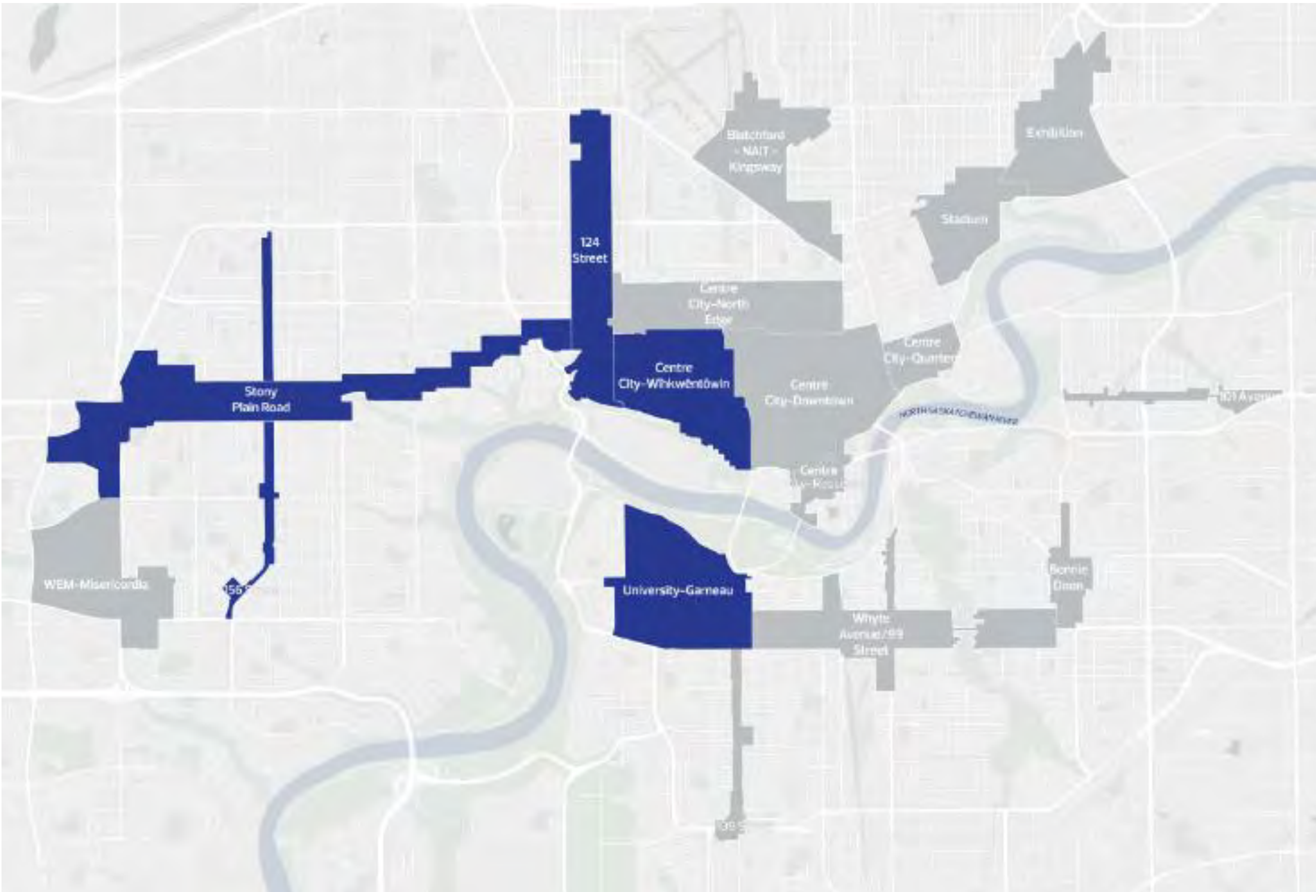


Figure 1-1 Priority Growth Areas

By putting people first, the City plans to shift long-range mobility priorities from private vehicles to a wide array of mode choices. To reflect these priorities in the mobility assessment, it is necessary to rethink traditional measures of effectiveness that centre vehicle delay and congestion. This mobility assessment focuses on moving as many people as possible in the limited right-of-way provided, not necessarily moving as many cars as possible. As such, a Multi-Modal Level of Service (MMLOS) framework lies at the core of the mobility assessment.

2. Priority Growth Areas

2.1 Overview of Anticipated Development

Based on the population growth, the City provided anticipated travel demand for the 1.25 Million population horizon from the Regional Travel Model (RTM) and Dynamic Travel Assignment model (DTA). Demographics and travel information was provided for the 'Do Nothing' baseline scenario and the Priority Growth Area redevelopment scenario. Both scenarios of the 1.25 Million population horizon model include network improvements from existing planned/on-going projects that are expected to be a part of the network at the time of PGA redevelopment.

To analyze the mobility impacts of accelerated growth concentration in PGAs, two scenarios were considered: a "Baseline" scenario and a "PGA Redevelopment" scenario. The PGA Redevelopment scenario assumed approximately 43,000 more residents within the study area than the Baseline scenario. To maintain the same CMA wide total population between the two scenarios, this additional growth in PGA areas was reallocated from developing areas within the city, reducing their population by 43,000. While this growth assumption aligns with the trend anticipated in the City Plan, this shift in growth distribution between the two scenarios resulted in changes to origin-destination (OD) travel patterns which had not been anticipated to the extent observed. However, the change in OD travel patterns was found logical (e.g., fewer residents in developing southeast and southwest areas resulted in fewer commuting trips from south Edmonton to downtown, reducing traffic on major roads accessing downtown). Therefore, despite an overall increase in travel demand in the PGA Redevelopment scenario, congestion on the road network within the PGAs and in the areas surrounding the PGAs was less than initially anticipated. Overall, the roads within PGAs and surrounding areas were found to be more congested than the Baseline, but the level of congestion was found to be less than expected as fewer road users from suburban areas were added to the model.

Notes on Population Growth Data

The intensification in the RTM and DTA assigned to the PGA was based on the proposed rezoning and associated building sizes presented to the public in the fall of 2024. Based on feedback from the public, zoning intensity and target parcels have been adjusted, but overall intensification remains the same as what was modelled.

The traffic districts from the RTM and DTA encompass more than just the identified PGA zones. As such, the population and employment information expressed here represents PGA locations and surrounding parcels of land. The growth experienced between present day and the post-development population forecast is not solely attributed to PGA zones. This study considers the population growth within the areas adjacent to the studied PGA corridors in the 1.25 Million population horizon. However, the timeframe to achieve the redevelopment and densification of the PGAs will likely be beyond the 1.25 Million population horizon.

2.1.1 124 Street / Wîhkwêntôwin

The 124 Street and Wîhkwêntôwin priority growth areas are illustrated in **Figure 2-1**. Due to their proximity interconnectivity, these two areas have been considered together. The Wîhkwêntôwin City-Centre Node and 124 Street Primary Corridor are adjacent to each other and provide the surrounding neighbourhoods with access to a diverse range of homes and businesses. Both areas were selected for the opportunity to leverage existing strong market interest and help increase population around planned Valley Line West LRT stops.

The Wîhkwêntôwin Priority Growth Area includes most of the Wîhkwêntôwin neighbourhood from the River Valley north to 105 Avenue and from Rail Town Linear Park west to 122 Street. It forms part of the Centre-City Node, Edmonton's distinct cultural, economic, institutional and mobility hub with the highest density and mix of land uses. This node includes a critical mass of housing, employment and civic activities, with many Edmontonians working, living, visiting and attending institutions in the Centre-City.

The area has seen many new residential projects in recent years and will have access to several LRT stations with the completion of Valley Line West. As Edmonton's most prominent intensification area, the Centre-City Node looks to support a minimum density of 450 people per hectare according to The City Plan.

The 124 Street Primary Corridor is found at the western boundary of the Wîhkwêntôwin neighbourhood, running from Jasper Avenue in the south to 118 Avenue in the north. It runs through the Inglewood, Westmount and Wîhkwêntôwin neighbourhoods and includes the future 124 Street Valley Line West LRT stop.

The City Plan identifies Primary Corridors as the largest, most vibrant, and most prominent urban streets in the city and region. They serve as destinations in and of themselves, but also provide critical connections between nodes, the rest of the city, and the region. Primary Corridors target a minimum density of 150 people per hectare through mostly mid and some high-rise buildings.

Based on data from the RTM, a high-level review of demographic changes in the 124 Street traffic district is summarized in **Table 2.1**. Targeted intensification arising from the PGA rezoning, combined with organically occurring property redevelopment, is expected to add 25,000 people to the 124th Street and Wîhkwêntôwin areas by the post-development population horizon.

Table 2.1 124th Street / Wîhkwêntôwin Demographics

	Baseline	With PGA Rezoning Development (Modelled)
Population	24,810	50,070
Number of Units	15,160	32,030
Daily Trips per Household	6.44	6.19
% Trips by Sustainable Modes	42.27%	45.04%

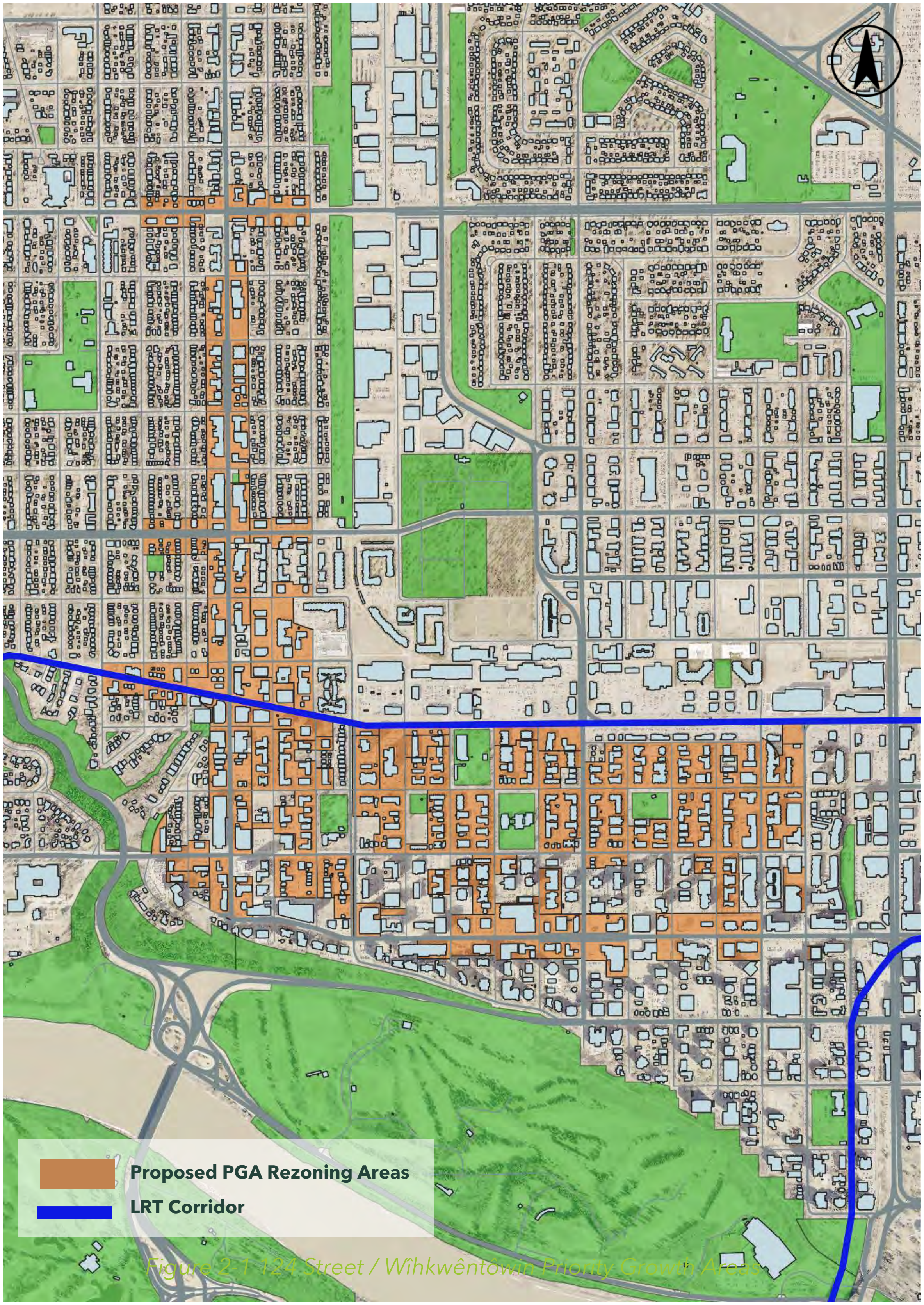


Figure 2-1 124 Street / Wîhkwêntôwin Priority Growth Areas

2.1.2 156 Street / Stony Plain Road

The Stony Plain Road and 156 Street priority growth areas are illustrated in **Figure 2-2.** Due to their proximity; these two areas have been considered together. Both the 156 Street Secondary Corridor and Stony Plain Road Primary Corridor were selected for their opportunity to increase population around planned Valley Line West LRT stops to support future ridership. The Stony Plain Road Primary Corridor was also selected to leverage existing strong market interest in the area.

The Stony Plain Road Primary Corridor runs from 126 Street in the east to 172 Street in the west. It runs through the neighbourhoods of Westmount, Glenora, Grovenor, Crestwood, Canora, West Jasper Place, Britannia-Youngstown and Glenwood.

The City Plan identifies Primary Corridors as the largest, most vibrant, and most prominent urban streets in the city and region. They serve as destinations in and of themselves, but also provide critical connections between nodes, the rest of the city, and the region. Primary Corridors target a minimum density of 150 people per hectare through mostly mid and some high-rise buildings.

The 156 Street Secondary Corridor runs from 87 Avenue in the south to 111 Avenue in the north. It runs through the neighbourhoods of Glenwood, West Jasper Place, Sherwood, Meadowlark Park, Canora, Britannia-Youngstown, Mayfield and High Park.

The City Plan defines Secondary Corridors as vibrant streets smaller in scale to Primary Corridors and with a more residential character, some commercial clusters, and local destinations for surrounding communities. Secondary Corridors target a minimum density of 75 people per hectare through low and some mid-rise buildings.

Based on data from the RTM, a high-level review of demographic changes is summarized in **Table 2.2** and **Table 2.3** for Stony Plain Road and 156 Street, respectively. Targeted intensification arising from PGA rezoning, combined with organically occurring property redevelopment, is expected to add 13,200 people to the Stony Plain Road and 156 Street areas by the post-development population horizon.

Table 2.2 Stony Plain Road Demographics

	Baseline	With PGA Rezoning Development (Modelled)
Population	8,600	19,630
Number of Units	4,370	11,730
Daily Trips per Household	7.86	6.79
% Trips by Sustainable Modes	25.28%	29.44%

Table 2.3 156th Street Demographics

	Baseline	With PGA Rezoning Development (Modelled)
Population	7,210	9,420
Number of Units	3,620	5,100
Daily Trips per Household	7.84	7.29
% Trips by Sustainable Modes	23.66%	24.80%

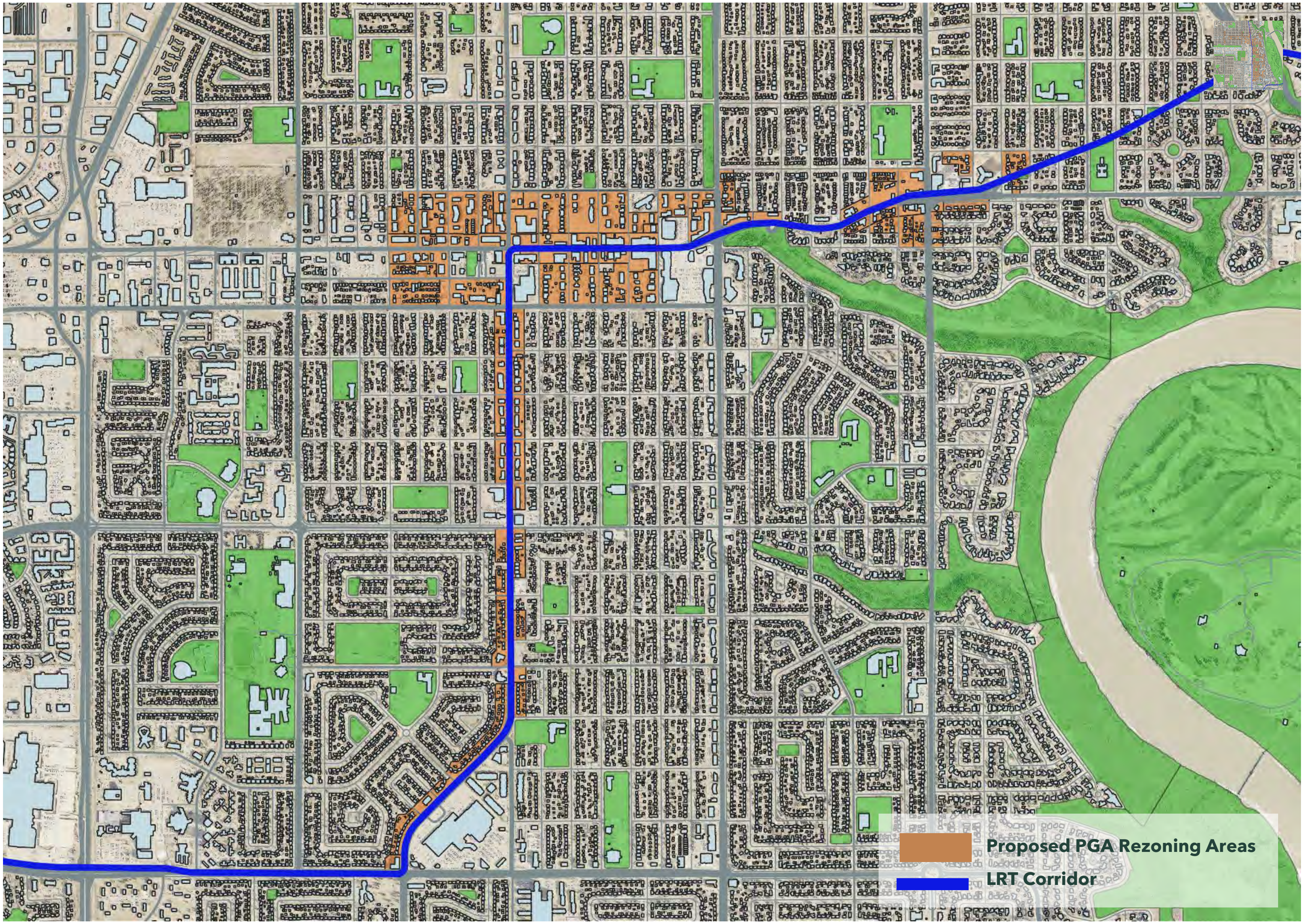


Figure 2-2 Stony Plain Road / 156 Street Priority Growth Areas

2.1.3 University – Garneau

The University-Garneau priority growth area is illustrated in **Figure 2-3**. The University-Garneau Major Node vacancy rate was around 1 percent in 2023[1]. There is a significant need to increase the amount of available housing, which is one of the key reasons this area was selected.

The University-Garneau Major Node generally extends from the River Valley south to 80 Avenue and 110 Street west to 118 Street. It is home to the University of Alberta, a significant institutional presence in the area that attracts visitors from across the local metropolitan region and beyond.

The City Plan defines Major Nodes as mixed-use destinations and urban communities which function as dense residential areas and employment hubs featuring large institutions, strategically located to serve broad catchment areas within Edmonton and the metropolitan region. A Major Node targets a minimum density of 250 people per hectare through mid and high-rise buildings

Based on data from the RTM, a high-level review of demographic changes is summarized in **Table 2.4** for the University-Garneau area. Targeted intensification arising from PGA rezoning, combined with organically occurring property redevelopment, is expected to add 5,080 people to the University-Garneau area by the post-development population horizon.

Table 2.4 University-Garneau Demographics

	Baseline	With PGA Rezoning Development (Modelled)
Population	14,300	19,380
Number of Units	8,410	11,800
Daily Trips per Household	6.64	6.35
% Trips by Sustainable Modes	58.73%	60.56%

[1] Canadian Mortgage and Housing Corporation (CMHC) Rental Market Survey

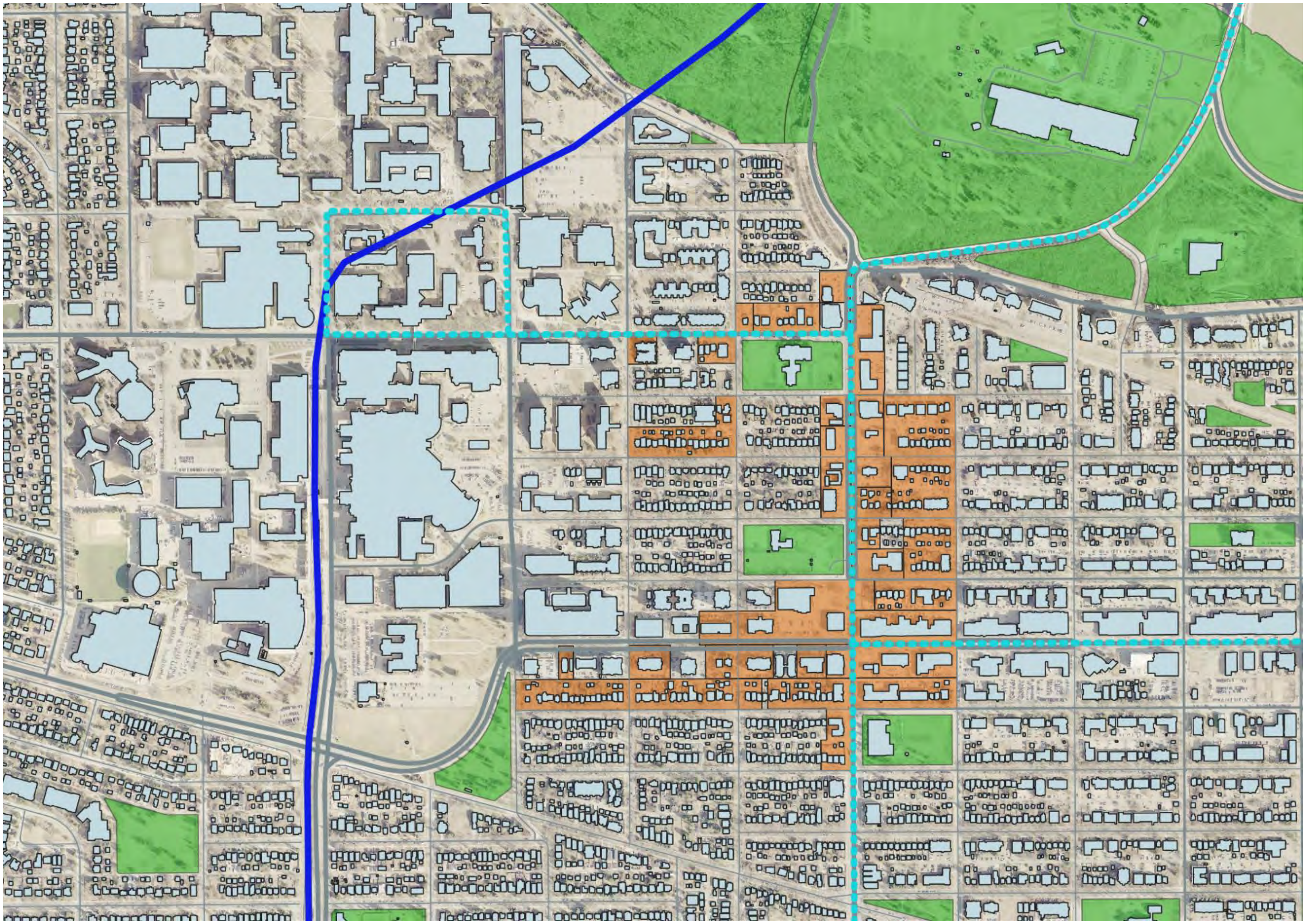


Figure 2-3 Garneau Priority Growth Areas

2.2 Travel Demand Assumptions

A number of assumptions were necessary to establish baseline and forecast scenarios.

Given that some population centres changed while employment areas were kept the same in the post-development population horizon, some travel patterns (origin / destination pairs) and modes choices are expected to change in the PGA scenario as compared to the Baseline scenario. This is a data limitation. Population growth will continue to occur in suburban neighbourhoods in addition to the PGA-related densification in core neighbourhoods; similarly, new employment centres may morph over time and may not reflect the model demographics.

It is assumed that the Valley Line West (VLW) Light Rail Transit (LRT) extension will be operational by the post-development population horizon, running along 104 Avenue / Stony Plain Road before turning south along 156 Street and west along 87 Avenue.

It is assumed that work on the Yellowhead Trail Freeway Conversion and Terwillegar Drive projects will similarly be complete, as will the Imagine Jasper Avenue project west of 114 Street. Furthermore, the demand assumptions do not consider roadway network changes from temporary closures due to construction.

It is assumed that all Active Transportation infrastructure identified in the 2024 – 2026 Active Transportation Network Expansion project list will be built by the post-development population horizon. These projects focused on connectors within Anthony Henday Drive, near-term priorities identified in the Bike Plan Implementation Guide, and routes within high bike-trip potential areas.

The mode split for households in PGA zones are much higher than citywide splits. The citywide sustainable mode split (transit and active modes) predicted in the RTM is 23.15% while the sustainable mode split in PGA zones ranges from 24.8% (156 Street) to 60.56% (University / Garneau). Priority Growth Areas were chosen based on their proximity to transit hubs, the existing and planned cycling network, and employment centres. Two insights can be drawn from these mode splits:

1. Densification in PGA will increase the demand for automobile travel, However, with better transit accessibility, availability of connected bike network, and higher proximity to amenities within the PGA, the rate of growth for vehicle travel demand is expected to be lower than typical suburban neighborhoods in Edmonton.
2. A PGA with lower mode split (such as 156 Street) indicates a neighbourhood is underserved by sustainable transportation choices and dense, mixed-use development.

2.2.1 Traffic Demand

Table 2.5 compares trips to, from, and within the 124th Street / Wîhkwêntôwin traffic districts for the post-development population horizon with and without PGA re-zoning.

Table 2.5 124th Street/Wîhkwêntôwin Trip Comparison

	Baseline	With PGA Rezoning Development	Change	Change (%)
AM Peak Vehicles Trips	16,669	22,876	6,207	37.2%
AM Peak Trips (All Modes)	31,617	47,403	15,786	49.9%
PM Peak Vehicle Trips	22,881	31,446	8,565	37.4%
PM Peak Trips (All Modes)	43,429	65,559	22,130	51.0%
% Sustainable Mode Split	42.27%	45.04%	-	6.6%

Table 2.6 and **Table 2.7** compare trips to, from, and within the Stony Plain Road and 156 Street traffic districts for the post-development population horizon with and without PGA re-zoning.

Table 2.6 Stony Plain Road Trip Comparison

	Baseline	With PGA Rezoning Development	Change	Change (%)
AM Peak Vehicles Trips	5,775	9,737	3,962	68.6%
AM Peak Trips (All Modes)	10,690	18,616	7,926	74.1%
PM Peak Vehicle Trips	7,983	12,856	4,873	61.0%
PM Peak Trips (All Modes)	13,684	23,516	9,832	71.9%
% Sustainable Mode Split	25.28%	29.44%	-	16.5%16.5%

Table 2.7 156th Street Trip Comparison

	Baseline	With PGA Rezoning Development	Change	Change (%)
AM Peak Vehicles Trips	3,791	4,703	912	24.1%
AM Peak Trips (All Modes)	6,902	8,593	1,691	24.5%
PM Peak Vehicle Trips	4,951	6,170	1,219	24.6%
PM Peak Trips (All Modes)	8,647	10,729	2,082	24.1%
% Sustainable Mode Split	23.66%	24.80%	-	4.8%

Table 2.8 compares trips to, from, and within the University traffic district for the post-development population horizon with and without PGA re-zoning.

Table 2.8 University Trip Comparison

	Baseline	With PGA Rezoning Development	Change	Change (%)
AM Peak Vehicles Trips	8,214	9,154	940	11.4%
AM Peak Trips (All Modes)	19,704	23,340	3,636	18.5%
PM Peak Vehicle Trips	13,422	14,305	883	6.6%
PM Peak Trips (All Modes)	30,158	34,323	4,165	13.8%
% Sustainable Mode Split	58.73%	60.56%	-	3.1%

2.3 Post-Pandemic Travel Behaviour

The City Plan was initially developed prior to the Covid-19 pandemic and adopted by City Council in December 2020, as we were collectively reacting to a changed societal landscape. The Plan "*is a testament to the power of […] an optimistic outlook, a willingness to shift our route to that destination as conditions change, and the reality that what happens in the world will always impact the speed with which we reach our destination*".

The way we travel was fundamentally impacted by Covid-19.

- In a study of the United States[2], work-from-home / flexible work arrangements for knowledge workers was anticipated to increase by 30% following the easing of pandemic gathering and travel restrictions. As a result, commuting by car was anticipated to drop 9% (from 71.9% to 65.5%) and commuting by transit was anticipated to drop 31% (from 10.9% to 7.5%). Though less robust, data published by Statistics Canada[3] found that, at the national level, 18.7% of employed people worked mostly from home in 2024 compared 7.1% in 2016. While transit ridership has returned to pre-pandemic levels, some auto commuting reductions may be expected in Edmonton.
- Temporal demands have shifted, resulting in peak hour spreading. This phenomenon frees previously used road capacity that could be reallocated to other users with fewer negative trade-offs to drivers.[4]
- Based on a high-level review of traffic counts within the study limits, traffic volumes in the peak periods were consistently lower in 2024 compared to 2016/2017. For example, at 124 Street and 102 Avenue, volumes for most approaches were 10% to 25% lower in 2024

[2] Javadinasr M, Maggasy T, Mohammadi M, et al. The Long-Term effects of COVID-19 on travel behavior in the United States: A panel study on work from home, mode choice, online shopping, and air travel.
[3] Statistics Canada: More Canadians Commuting in 2024 https://www150.statcan.gc.ca/n1/daily-quotidien/240826/dq240826a-eng.htm
[4] Bhagat-Conway MW, Zhang S. Rush hour-and-a-half: Traffic is spreading out post-lockdown.

compared to 2017. At 109 Street and 83 Avenue, volumes along 109 Street were approximately 20% lower in 2024 compared to 2017.

- As of late 2023, a study by the University of Toronto[5] estimates that pedestrian traffic in Edmonton's Central Business District was roughly 80% of pre-pandemic levels.
- Online shopping for commercial goods and daily needs grew during and after the pandemic. In-person grocery shopping was common pre-pandemic and while it is anticipated to remain the predominant form of grocery shopping post-pandemic it is anticipated to decrease by 8% (from 89.9% to 82.8%). The volume of commercial vehicles is anticipated to increase to reflect this demand for online shopping. [2]

Travel patterns and mode choice are not static, responding to the social and physical world around us. Via the City Plan, Edmonton is committed to provide a range of robust travel options for all road users in the future.

Overall, this means that post-pandemic highest peak hour volumes are generally lower than pre-pandemic volumes, with more peak spreading and day to day peak hour differences. This trend is reflected in available City Average Annual Weekday Traffic (AAWDT) volume data, which shows that overall daily volumes as of 2023 have began to meet or exceed pre-pandemic (2019) volumes by around 10% in developed areas.

Given that the City's modelling information is based on pre-pandemic traffic patterns, peak hour traffic volume results from the City's DTA model are anticipated to be conservative compared to real world traffic volumes. Because daily trips are not impacted by peak spreading while a decrease in commuter trips is offset by an increase in commercial trips, overall daily volumes are anticipated be consistent.

[5] Downtown Recovery | School of Cities

3. Mobility Assessment Approach

As Edmonton's population continues to grow, the traditional model of vehicle-focused road expansion is becoming increasingly unsustainable, particularly in well-established and developed areas. Instead, the City is embracing a multi-modal approach aimed at moving people, and not just vehicles, more efficiently.

The Mobility Assessment Approach introduces the Multi-Modal Level of Service (MMLOS) framework, complementing the conventional, vehicle-centric Level of Service (LOS) quantitative methods. While traditional LOS measures focus primarily on vehicle delay and congestion, MMLOS evaluates transportation performance across all modes (pedestrians, cyclists, transit users, trucks, and cars) through both qualitative and quantitative measures. This approach is more reflective of City priorities relating to safety, equity, environmental sustainability, and urban design.

Central to this new approach is congestion acceptance and management. Recognizing that some vehicle congestion is inevitable in dense, multi-use areas, the City instead aims to redistribute road space to prioritize the most efficient and equitable forms of movement. MMLOS allows for the adjustment of LOS ratings based on context, policy priorities, and user experience, acknowledging that lower vehicle LOS may be acceptable, or even desirable, when other users benefit.

The methodology employs tools and targets drawn from the Ontario Traffic Council's MMLOS Guidelines, adapted to reflect Edmonton's local street classifications as well as local policy documents including the City Plan, District Plans, Bike Plan, and Mass Transit Strategy. It evaluates corridor and intersection performance using detailed criteria for each travel mode, assigning grades from A (highest quality experience) to F (minimal acceptable standard). These grades inform design and investment decisions, ensuring alignment with broader city-building objectives.

Section 3 outlines a toolkit of mitigation measures that can improve LOS for various modes within existing right-of-way constraints, ranging from sidewalk enhancements to transit priority measures. It also compares the MMLOS process to traditional Transportation Impact Assessments (TIAs), emphasizing its more holistic and equitable lens.

Overall, the use of MMLOS provides a comprehensive and future-forward blueprint for evaluating and managing mobility in a growing, multimodal Edmonton.

3.1 Congestion Acceptance and Management

As the population of Edmonton grows towards two million residents, the total number of trips will increase substantially. In re-development areas, there isn't room to endlessly expand the roadway to maintain vehicle Level of Service (LOS) at current levels. This is reinforced by the City Plan, "*with the exception of […] future growth areas, there will be limited opportunities to build or widen roads. Continued expansion of the road network, as a general strategy, is not an efficient use of limited resources and constraint space. We will prioritize a shift away from conventional investment in road expansion towards a greater diversity of modes that move people efficiently*".

Within Priority Growth Areas, the City intends to focus on reusing current road right-of-way space to move as many people as possible, rather than as many vehicles as possible. While the movement of personal and commercial vehicles will always play a role in our mobility, the City Plan affirms that "*Edmonton will maximize the efficiency of existing road infrastructure and implement targeted improvements in the road network using innovative technology and operational improvements*". As such, right-of-way space will be re-distributed between the various forms of travel, and the remaining vehicle space will be maximized to operate as efficiently as possible. Traditional measures of vehicle LOS are anticipated to deteriorate in the future as the City and regional population continues to grow.

The City Plan sets forward clear intentions to change the way transportation Level of Service is evaluated. "*We will move past traditional ways of measuring network performance aimed exclusively at improving vehicle delay and will pursue a holistic approach that also evaluates the mobility system in terms of public health and safety, equity, impacts to climate, the natural environment and urban form. Increasing efficiency of publicly owned facilities will also mean managing and treating parking, curbside space, and roadways as strategic public assets*".

The Multi-Modal Level of Service (MMLOS) approach to the mobility assessment outlined in Section 3.2 is designed to contextualize vehicle LOS within the experiences of other road users. A level of service 'F' for vehicles calculated using traditional methodologies may realistically be adjusted to a level of service 'D' (a more acceptable level) when considered within the broader mobility context for a given street. Congestion acceptance and congestion management become key components of the transportation planning and traffic engineering toolkit to make the most out of the constrained space. The adoption of MMLOS demonstrates the City's intention to move away from traditional car-oriented transportation investments and mobility policies to multi-modal approaches that prioritizes movement of people over vehicles. However, this does not mean that the City will stop investing in roadway expansions, upgrades, and maintenance. Instead, future planning, assessment, and investment in the mobility network will consider experiences and efficiencies of all users, including non-drivers and passengers.

MMLOS Example

The primary function of a downtown street designed to support retail, restaurants, and patios might be the low-stress movement of foot traffic. When evaluated using tradition LOS methods, this street may be assigned a LOS 'F' because it fails to move as many vehicles as efficiently as possible. MMLOS challenges us to consider that the slow progression of traffic may be more valuable than efficiency in certain contexts.

Beyond infrastructure improvements which seek to utilize space more efficiently across the mobility network, additional actions and incentives should be considered as part of the City's future approach to travel demand management to encourage greater use of sustainable transportation modes towards the goal of reaching 50% of daily trips being made by walking, cycling, or transit within Edmonton. While the PGA mobility study does not consider measures beyond changes to physical infrastructure in detail, policies and programs aimed at reducing vehicle volumes can complement these changes to encourage greater use of sustainable modes. Incentives could include increasing transit frequency, reducing transit fares for all or equity-deserving groups, integrating bikeshare and rideshare programs into the City's transit network as a single Mobility-as-a-Service (MaaS) system, expanding secure bike storage at transit stations. Disincentives to driving including congestion pricing and increased parking fees. As the City moves towards a multi-modal focused approach to mobility, these and other prospective measures should be assessed further as part of future studies.

3.2 Quantitative Assessment Approach

Level of Service (LOS) has historically used the Highway Capacity Manual (HCM) methodologies. LOS reflects the anticipated amount of delay a vehicle is likely to encounter while travelling through a study intersection around the same time-period as the analysis was completed.

However, the Ontario Traffic Council (OTC) Multi-Modal Level of Service (MMLOS) Guidelines note "*Since traditional LOS evaluations focus on vehicle delay and congestion (through metrics like intersection delay and volume-to-capacity or v/c ratios), they classify intersections that enable efficient and convenient conditions for drivers as well performing and intersections that are congested as poorly performing. But this approach does not take into consideration how any other users experience the intersection or if the efficient movement of vehicles is even aligned with the intent of that intersection within a municipality's larger planning context. As a result, the traditional LOS leads to design decisions that consistently prioritize the car above all other modes of travel. In response, an MMLOS approach offers municipalities a tool to evaluate and build streets that enable and encourage travel by modes other than the car.*"

The MMLOS approach provides LOS analysis for pedestrians, cyclists, and transit vehicles (busses) in addition to cars and trucks. This methodology features a broader set of criteria (discussed in Section 3.2.3) for each mode besides delay, with each criterion (or measure) assigned a weight that is applied in the overall analysis. While the LOS values for each mode follow the same letter designation from LOS A to LOS F as conventional HCM analysis, the LOS values calculated using the MMLOS approach are independent of the LOS used in the HCM methodology. Although traditional analysis of vehicle delay will still yield HCM results, the MMLOS analysis establishes a new way to define and evaluate LOS for all roadway users rather than solely focusing on the delays and congestion encountered by private vehicles. HCM LOS results remain applicable in the development of signal timing plans and geometric changes aimed to reduce vehicle delay.

Given the multi-modal nature of this project, a methodology such as the OTC MMLOS guidelines allow consideration of the overall operation of the mobility network within each Priority Growth Area.

3.2.1 MMLOS Targets

The OTC sets MMLOS target for pedestrians, cyclists, transit, trucks, and cars based on the characteristics of the street and surrounding land use. **Table 3.1** matches City of Edmonton street classifications from the latest draft of the Complete Streets Design and Construction and Standards (CSDCS) to the street classifications used by the OTC. While some characteristics of the OTC classifications may not directly align with those of Edmonton, comparable streets are listed as examples which currently exist within the city. Additionally, many of the OTC classifications place greater priority towards pedestrian, transit, and cycle modes, which matches the City's expectations of emphasizing people-moving capacity and providing safe options for all road users.

Of note, CIMA+ is currently working with the City on an update to the CSDCS, which includes an expanded street classification and has been incorporated in the table below. The updated document is expected to be published in Q3 2025.

Table 3.1 Street Classification

Edmonton Street Classifications	Ontario Traffic Council Street Classification
Downtown Core Roadway Examples: • 104 Street • 108 Street	**Downtown Avenue** • A street through a high-activity central business area or urban core • Moves moderate volumes of cycling, transit and vehicular traffic • Priority on enhanced pedestrian environment; balances priority of other modes • Width of vehicle zone is minimized • Urban design is highest quality
Street Oriented Mixed Used / Commercial Arterial Street Examples: • Whyte Avenue • 124 Street	**Urban Main Street** • A community "Main Street" or "High-street"; adjacent land use is primarily retail or mixed-use commercial • Moves moderate volumes of pedestrian, cycling, transit and vehicular traffic; might have transit priority features or lanes • Balances priority between all modes • Public realm is typically pedestrian (people) oriented; key local community destination • Street design typically emphasizes access over mobility
Street Oriented Collector Street Examples: • Towne Centre Boulevard • Gault Boulevard	**Urban Boulevard** • A multimodal corridor through an urban neighbourhood • Moves moderate volumes of pedestrian, cycling, transit and vehicular traffic • Balances priority between all modes • Adjacent land uses vary including residential, light commercial, schools, parks and community centres
Non-Street Oriented Arterial Street Examples: • 23 Avenue • 137 Avenue	**Neighbourhood Connector** • Major mobility corridor that connects neighbourhoods • Moves high volumes of vehicles over moderate distances • Priority on vehicles and trucks; balances service to other modes • Street design ideally has dedicated facilities for Active Transportation modes
Street Oriented Mixed Use Arterial or Collector Street Examples: • Mill Woods Road • Fort Road	**Neighbourhood Main Street** • A community "Main Street" or "High-street"; street balances mobility and access • Moves moderate to high volumes of cycling, transit and vehicle movements • Balances priority of all modes • Traditionally "auto-oriented" land use, but often subject to intensification or redevelopment • Likely to have mixed, but predominantly commercial land-use

Edmonton Street Classifications	Ontario Traffic Council Street Classification
Residential Collector or Enhanced Local Street Examples: • Glenridding Boulevard • McConachie Boulevard	**Neighbourhood Boulevard** • A multimodal corridor through a suburban neighbourhood • Moves low to moderate volumes of cycling and vehicle movements • Priority on cycling and pedestrian modes, balances other modes • Adjacent land uses vary including residential, light commercial, schools, parks and community centres
Principal Roadway or Truck Route Arterial Street Examples: • 170 Street • 91 Street	**Industrial Connector** • Major mobility corridor that connects industry with the surrounding areas and regional highway/ freeway network • Moves high volumes of vehicles and trucks over moderate distances • Priority on trucks with typically limited pedestrian accommodation; balances service to other modes • Adjacent land uses are often industrial/ manufacturing
Industrial Collector Street Examples: • 99 Street • 114 Avenue	**Industrial Boulevard** • A multimodal corridor through an industrial area that connects employees to jobs • Moves moderate volumes of trucks, transit, cyclists and pedestrians • Priority on trucks, balances other modes • Adjacent land uses are often industrial/ manufacturing

Based on the comparable street classifications from the OTC, the following MMLOS targets have been adopted from the guidelines and applied to the comparable Edmonton street types as summarized in **Table 3.2**. These targets are used for the analysis undertaken in Section 5.

Table 3.2 OTC MMLOS Targets

OTC / Edmonton Street Classifications	LOS Target				
	Ped	Bike	Transit	Truck	Cars
Downtown Avenue Downtown Core Roadway	B	C	D	D	D
Urban Main Street Street Oriented Mixed Used / Commercial Arterial Street	C	C	D	D	D
Urban Boulevard Street Oriented Collector Street	C	B	D	n/a	E
Neighbourhood Connector Non-Street Oriented Arterial Street	E	D	B	D	D
Neighbourhood Main Street Street Oriented Mixed Use Arterial or Collector Street	C	C	D	D	D
Neighbourhood Boulevard Residential Collector or Enhanced Local Street	D	B	D	n/a	E
Industrial Connector Principal Roadway or Truck Route Arterial Street	E	D	D	B	D
Industrial Boulevard Industrial Collector Street	D	D	D	B	E

The description of LOS by each mode is included in **Table 3.3** as per the OTC guidelines. These descriptions align with the objectives of Edmonton's CSDCS document which emphasize safety and collision prevention in street design, with modal priority being dependent on road classification. Generally, each of the respective LOS designations imply the following for a given mode:

- **LOS A** – Provides the highest quality experience for a given mode
- **LOS B** – Provides a high-quality experience for a given mode
- **LOS C** – Provides a good-quality experience for a given mode
- **LOS D** – Provides a moderate-quality experience for a given mode"
- **LOS E** – Provides just above the minimal targeted standard for a given mode
- **LOS F** – Provides the minimal targeted standard for a given mode.

The meaning of LOS F in the MMLOS process differs from that of a conventional HCM analysis for traffic movements. Rather than being considered an outright "failure" solely based on delay, an LOS F for each mode in the MMLOS analysis reflects an extremely poor-quality, delayed, and/or unsafe experience, while still technically being traversable for users of that particular mode. Failure of a particular mode in the MMLOS context would instead mean that no facilities are provided at all. For instance, this would mean the absence of any space for pedestrians or cyclists at a given intersection, thus rendering the space impassable and resulting in the mode effectively being excluded from the MMLOS analysis process. This is discussed further in Section 3.2.3.

Table 3.3 OTC MMLOS Descriptions

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Pedestrians	• Pedestrians always have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is always optimized for pedestrians • Crossing locations are always located with sufficient frequency to minimize detour	• Pedestrians very often have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is very often optimized for pedestrians • Crossing locations are very often located with sufficient frequency to minimize detour	• Pedestrians often have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is often optimized for pedestrians • Crossing locations are often located with sufficient frequency to minimize detour	• Pedestrians occasionally have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is occasionally optimized for pedestrians • Crossing locations are occasionally located with sufficient frequency to minimize detour	• Pedestrians rarely have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is rarely optimized for pedestrians • Crossing locations are rarely located with sufficient frequency to minimize detour	• Pedestrians do not have sufficient space to walk or roll in a social manner that is removed from traffic nuisance • Crossing distance and delay at intersections is not optimized for pedestrians • Crossing locations are not located with sufficient frequency to minimize detour
Cyclists	• Cyclists always have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is always optimized for cyclists • Exposure to conflict at intersections is always minimized	• Cyclists very often have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is very often optimized for cyclists • Exposure to conflict at intersections is very often minimized	• Cyclists often have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is often optimized for cyclists • Exposure to conflict at intersections is often minimized	• Cyclists occasionally have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is occasionally optimized for cyclists • Exposure to conflict at intersections is occasionally minimized	• Cyclists rarely have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is rarely optimized for cyclists • Exposure to conflict at intersections is rarely minimized	• Cyclists do not have sufficient space to ride in a social manner that is removed from traffic nuisance • Delay at intersections is not optimized for cyclists • Exposure to conflict at intersections is not minimized

	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
Transit	• Transit riders' experience is always seamless and attractive • Transit vehicles are never impeded by other traffic • The pedestrian environment leading to transit stops provides the highest quality experience	• Transit riders' experience is very often seamless and attractive • Transit vehicles are rarely impeded by other traffic • The pedestrian environment leading to transit stops provides a high-quality experience	• Transit riders' experience is often seamless and attractive • Transit vehicles are occasionally impeded by other traffic • The pedestrian environment leading to transit stops provides a medium-quality experience	• Transit riders' experience is occasionally seamless and attractive • Transit vehicles are often impeded by other traffic • The pedestrian environment leading to transit stops provides a low-quality experience	• Transit riders' experience is rarely seamless and attractive • Transit vehicles are very often impeded by other traffic • The pedestrian environment leading to transit stops provides the minimal acceptable experience	• Transit riders' experience is not seamless or attractive • Transit vehicles are almost always impeded by other traffic • The pedestrian environment leading to transit stops is nonexistent
Trucks	• Driver is always able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers never experience delay due to congestion	• Driver is very often able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers rarely experience delay due to congestion	• Driver is often able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers occasionally experience delay due to congestion	• Driver is occasionally able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers often experience delay due to congestion	• Driver is rarely able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers very often experience delay due to congestion	• Driver is not able to navigate turns with minimal concern for infringing on other lanes or facilities • Drivers almost always experience delay due to congestion
Cars	• Drivers never experience delay due to congestion • Parking and loading options are always available where appropriate • Dedicated turn lanes are always provided when warranted	• Drivers rarely experience delay due to congestion • Parking and loading options are very often available where appropriate • Dedicated turn lanes are very often provided when warranted	• Drivers occasionally experience delay due to congestion • Parking and loading options are often available where appropriate • Dedicated turn lanes are often provided when warranted	• Drivers often experience delay due to congestion • Parking and loading options are occasionally available where appropriate • Dedicated turn lanes are occasionally provided when warranted	• Drivers very often experience delay due to congestion • Parking and loading options are rarely available where appropriate • Dedicated turn lanes are rarely provided when warranted	• Drivers almost always experience delay due to congestion • Parking and loading options are not available • Dedicated turn lanes are not provided when warranted

3.2.2 Adjusting LOS Targets

Several other City documents relate directly to the PGA mobility study, either with regards to strategic direction or planned infrastructure.

The City Plan is a combined transportation and municipal development plan that establishes a planning framework towards a future population of two million people. This plan outlines an integrated land use and mobility system centred around a series of nodes and corridors across the City which will facilitate future urban intensification and mobility options. Many of these nodes and corridors overlap with the PGA areas identified as part of this study.

The City Plan establishes the general priorities which guide infrastructure planning for the mobility network. Many of these priorities centre on a goal of reaching 50% of daily trips being made by walking, cycling, or transit within Edmonton. To help achieve this goal, future transportation infrastructure within the PGA redevelopment areas must be designed to support the various policy intentions and subsequent directions within the City Plan which relate to sustainability, efficiency, and equity within the mobility network. Some key directions include:

- Policy Intention 4.2.1:
  - 4.2.1.1 Integrate mass transit with surrounding development
  - 4.2.1.2 Plan and design active transportation and transit networks in support of nodes and corridors
  - 4.2.1.3 Adapt City operations, equipment, and infrastructure to contribute to intensification
- Policy Intention 4.3.1: Ensure that the mobility system enables the efficient movement of people and goods within Edmonton and the Metropolitan Region
  - 4.3.1.2 Accept levels of congestion in different contexts to ensure an efficient use of resources
- Policy Intention 1.3.3: Support the elimination of poverty, its root causes and disparity in Edmonton's communities.
  - 1.3.3.5 Prioritize transportation investments and operations for people experiencing vulnerability.

To align with these points in the City Plan, standard MMLOS targets applied to both intersections and corridors based on the existing road classification (see **Table 3.2**) may be adjusted to reflect the planning objectives outlined in various supporting documents, as these documents have identified future infrastructure within the PGA areas. These supporting documents include the applicable District Plans, the Bike Plan, Mass Transit Study, and the Goods Movement Network. These plans show the existing and future networks for these modes, which is an important consideration when evaluating the target LOS for a particular mode. For example, when a corridor is identified as a priority route for transit through the City Plan and the applicable supporting documents (in this case, the Mass Transit Study and District Plans), the target LOS for transit should be increased by one grade. Adjustments to Levels of Service should be limited to an increase or decrease of no more than one grade from the base LOS for the given road classification.

However, the adjustment of LOS targets is context dependent given local considerations and the baseline LOS target given by the existing road classification. For instance, if a future bike route falls on a street classified as an Urban Boulevard (or Street-Oriented Collector Street in Edmonton), this gives a default cycling target LOS of B for this road classification. In this case, adjusting the target bike LOS to A is not warranted given that an LOS B is likely acceptable for an Urban Boulevard, so long as cyclists are provided with safe passage. Adjusting the intersection or corridor configuration to give more space to bikes and achieve a LOS A may reduce the performance of other modes and thus is not necessary given the unique circumstances. Similar instances have been identified in the analysis for transit and pedestrian modes at various intersections, which are discussed in Section 5. Furthermore, considerations towards trade-offs in the assessment process are further discussed in Section 3.2.3.5.

The following sections provide further details on each of the supporting documents used in adjusting MMLOS targets, guided by the policy priorities of the City Plan.

3.2.2.1 District Plans

District Plans outline envisioned development patterns and high-level infrastructure upgrades anticipated within groups of neighbourhoods which form a total of 15 districts across the City. The plans identify specific places where density and development are encouraged but on a more local and detailed level. These plans also outline where investments or changes should be made by the City to support targeted development (or "growth activation") in certain areas in tandem with population growth horizons. For example, this may include new or upgraded parks or amenities, specific areas targeted for future rezoning, and planned upgrades to the transportation network along the corridors within each district such as bike and mass transit routes. Several of the District Plans overlap with the identified PGA areas as part of this study.

Notably, the District Plans identify pedestrian priority areas where the safety and comfort of pedestrians are the most important considerations affecting the design and use of road right of way. The Design Policy explicitly notes that pedestrian experiences should be prioritized over maximizing the movement of vehicles. Therefore, the target pedestrian LOS at intersections which fall within a pedestrian priority area were increased by one level to support the implementation of this policy. Generally, this meant adjusting the pedestrian LOS to a level 'B' if the default target based on the street classification is lower than this.

3.2.2.2 Bike Plan and Bike Plan Implementation Guide

The City's Bike Plan provides strategic direction for how the City plans, designs, implements, operates and maintains bike infrastructure and programs, with further details on implementation, timelines, and route prioritization being provided within the Bike Plan Implementation Guide. The Implementation Guide includes a map of current and future bike routes which aim to connect missing links, provide cycling access to new areas, and increase the number of trips made by cycling. These are categorized into District Connector Routes, Neighbourhood Routes, and River Valley District Connector Routes and Shared Pathways. Several of these routes fall within the PGA areas, with some considered for near-term implementation.

The target cycling LOS at most intersections with existing or future bike infrastructure identified within the bike plan was adjusted upwards by one level where cycling infrastructure currently exists or was identified in the Bike Plan Implementation guide, depending on the facility, route type, and road classification. Overall, the analysis has sought to identify suitable north-south and east-west cycling routes for each intersection, whether they exist or are planned for the respective corridor. Some cases of larger intersections with prioritization of transit and vehicle movements have been purposely excluded from considering cycling LOS so long as a suitable alternative route exists or is identified in the Bike Plan, usually within a range of one to three city blocks and for both directions.

This approach does not exclude the possibility of additional cycling infrastructure at other intersections within the study area. Some other intersections have been identified which lack any reasonable and safe alternatives to accommodate cyclists' movement in the local area. Depending on the context, additional recommendations have been made to ensure the safe and efficient movement of cyclists while making reasonable accommodations for the movement of vehicles depending on the roadway classification, the presence of planned or existing designated bike corridors, and the type of bike facility. These recommendations are captured in Section 5.

3.2.2.3 Edmonton Mass Transit Study

The Edmonton Mass Transit Study for a 1.25 million population identifies a network of current and future corridors with varying transit service depending on the level of separation from conventional traffic along with stop and schedule frequency. This includes the following categories which are designed to provide a quicker and higher capacity service compared to conventional bus services:

- Limited Stop Rapid Transit: Allows faster travel than local and frequent bus routes by stopping at strategic locations and bypassing intermediate stops. These future routes are classified as Rapid Bus Routes, with several planned for implementation within the study PGA's and possibly utilizing higher capacity vehicles and varying transit priority.
- Semi-Exclusive Routes: Allows transit vehicles, like buses, to operate in a separate lane from other vehicles for parts of the corridor and are mixed with vehicles for other parts (i.e., at intersections, driveways and/or turn lanes). These types of routes are sometimes described as bus rapid transit (BRT). Within the PGA areas of this study, semi-exclusive routes include future routes B1 and B2 through the University/Garneau PGAs.
- Light Rail Transit (LRT): A style of urban, rail-based passenger service which can provide high capacity and speed but typically travels slower and uses smaller vehicles than heavy rail systems. In Edmonton, LRT includes High Floor LRT (Capital and Metro Lines) and Low Floor LRT (Valley Line). The under-construction Valley Line is the primary transit corridor which passes through many of the intersections within the Wîhkwêntôwin, 124 Street, 156 Street, and Stony Plain Road PGA's. The Capital Line, meanwhile, interfaces with a single intersection within the University – Garneau PGA.

Although the exact routing along with the extent of traffic separation and transit priority measures for much of the future bus routes (Rapid Bus and BRT) will not be known until the design stage, the target transit LOS at most intersections along future transit corridors (including the Valley Line) have been adjusted upwards by one level to facilitate fast and efficient transit service while making reasonable accommodations for private vehicles along with pedestrians and cyclists where appropriate. Specific design features may include dedicated right-of-way space along the corridor and/or transit signal priority at intersections.

3.2.2.4 Goods Movement

The City Plan identifies a core goods movements network along Anthony Henday Drive, Yellowhead Trail, Whitemud Drive and a score of other principal roadways. These roads are anticipated to support the largest volumes of vehicular traffic. The five selected PGAs do not overlap with major roadways and goods movements routes.

Heavy vehicles and vehicles carrying dangerous goods in / through Edmonton must follow the Truck Route Network, departing only to reach their destination by the most direct road. Some of these truck routes are present within the project areas. However, most of these truck routes overlap with pedestrian priority areas, cycling routes, or transit lines. Because active modes and transit LOS are prioritized at locations that overlap with truck routes, no manual adjustments to truck LOS were proposed as part of the assessment.

3.2.3 Measuring Performance

The Ontario Traffic Council MMLOS toolkit measures performance for corridors, signalized intersections, and unsignalized intersections by considering two categories of operations:

- An active transportation design check, and
- Performance measures of evaluating Level of Service.

By separating these two elements, appropriate weight can be placed on the minimum level of safety required at facilities for vulnerable road users before congestion and delay are considered for vehicles. An intersection or corridor that does not meet the current best practice guidance for the applicable active transportation facility type will not serve users of all ages and abilities, and as such does not provide any level of service to that mode in the OTC MMLOS toolkit.

References to the Accessibility for Ontarians with Disabilities Act (AODA) within the MMLOS analysis toolkit have been replaced by accessibility criteria for the design of public spaces issued by the City to reflect best practices within the City of Edmonton. This includes the City's Access Design Guide (ADG) along with Section 3.1.3 and 3.3.4 of the City's Complete Streets Design and Construction Standards document.

A summary of the OTC MMLOS segment and intersection measures is recreated in **Table 3.4**. Cells highlighted in light green represent operational measures that provide an "indication of priority for mobility of travellers by each mode [and] reflect the conditions during peak periods". Cells without highlights are design measures and are an "indication of a more permanent state or enduring level of services for the mode of travel [and] better reflect 24-hour conditions". Details for each of these measurement criteria are provided in the OTC MMLOS Guidelines.

Table 3.4 Summary of Intersection and Segment Measures

	Walking	Cycling	Transit	Trucks	Cars
Segment	Pedestrian facility width per CSDCS target	Bike facility width per CSDCS target	Transit facility type	Width of curb lane per CSDCS target	Mid-block v/c ratio
Segment	Pedestrian buffer width per CSDCS target	Bike buffer width per CSDCS target	Presence of transit passenger amenities	Car level of service	Curb lane conflicts
Segment	Maximum distance between controlled crossings	Conflicts with other modes	Pedestrian level of service (as a measure of transit passenger access)		
Signalized Intersection	Enhanced pedestrian measures	Enhanced bicycle measures	Presence of transit priority measures	Average effective turning radius	Percentage of turning movements with dedicated lanes
Signalized Intersection	Average effective turning radius	Average effective turning radius			
Signalized Intersection	Signal cycle length[6]	Signal cycle length[6]	*Transit movement delay[6]	Car level of service[6]	Intersection delay[6]
Signalized Intersection	Number of uncontrolled conflicts[6]	Number of uncontrolled conflicts[6]	Pedestrian level of service[6]		
Unsignalized Intersection	Marked controlled crossings	Presence of bike facilities	Pedestrian level of service	Average effective turning radius	Intersection delay[6]
Unsignalized Intersection	Average crossing distance	Requirement to stop	*Transit movement delay[6]	Car level of service[6]	
Unsignalized Intersection	Average effective turning radius	Average effective turning radius			

[6] These measures are considered ONLY when completing operational analysis

* For intersections with transit priority (transit signal priority, dedicated lanes, or tracks) along an approach, transit movement delay is calculated by dividing the approach delay in half. For intersections with transit priority on multiple approaches, the total transit movement delay for the intersection is the average of the calculated approach delays.

Each measure is graded and weighted based on factors outlined in the OTC MMLOS Guidelines and the accompanying Spreadsheet Analysis Tool.

If analysis indicates that certain modes do not meet LOS targets, adjustments to the cross-section elements or design may be needed. When considering trade-offs, priority should be given to approved mode plans (such as pedestrian priority areas) identified through documents such as the City Plan and supporting documents. This is discussed further in Section 3.2.3.5.

3.2.3.1 Segment Measures

For pedestrians, the facility width is a measure of comfort and accommodation, with all pedestrian facilities considered to be bi-directional by definition. Facility widths consider the requirement for mobility assistance devises and passing / overtaking, as well as social walking (side-by-side). The buffer width reflects the comfort and environmental quality for pedestrians with separation from adjacent vehicle lanes and associated nuisance impacts (noise, splash, fumes). Maximum distance between controlled crossings is a measure of delay and convenience for pedestrians and has a considerable impact on the detour required for pedestrians when accessing amenities on the other side of the street, as well as the safety considerations of pedestrians choosing to cross mid-block without a dedicated crossing.

For cyclists, the facility width per direction of travel is a measure of comfort and accommodation for cyclists, with facilities being either uni- or bidirectional. Bicycle facility width impacts the experience of cyclists through the ability to ride comfortably within the confines of the facility and avoid any obstacles that may be present, the ability to overtake another cyclist within the same facility, and the ability to ride side-by-side with another cyclist to take advantage of the social nature of cycling. Bicycle buffer width is a measure of comfort and environmental quality for cyclists, with separation from adjacent vehicle lanes reducing nuisance impacts. Conflicts with other modes within the bicycle facility is a measure of safety and comfort for cyclists, with conflicts caused by driveway crossings on a separated facility or by in-lane conflicts with vehicles sharing (loading), crossing, blocking a lane or bus stops.

For transit, the facility type is a measure of delay (and therefore priority) for transit, while the presence of transit passenger amenities is a measure of comfort and accommodation for transit riders. Pedestrian level of service is an indicator of the experience for transit riders in the segment, reflecting the level of comfort, safety, and delay for riders who are accessing or leaving the transit system at stops in the segment and represents a significant determinant to the overall transit experience.

For trucks, the width of the curb lane is an indicator of comfort for truck drivers and safety for all vehicles, with wider curb lanes allow trucks to maintain their lanes by providing space for minor maneuvering while avoiding friction with the curb. The car level of service is an indicator of vehicle experience in the intersections, with truck safety and delay in the general stream of traffic tracking with car safety and delay.

For cars, mid-block V/C ratio is a measure of delay and convenience for cars and their occupants. Curb lane width affects curb lane conflicts and is a measure of safety and delay for cars, with conflicts in the curb lane create the potential for collisions for drivers and other modes.

The cumulative impacts of these measures, as well as an example resultant LOS score for existing facilities is summarized in **Table 3.5** below.

Table 3.5 Segment Measures

Mode	Measure	Measure Considerations	Example LOS Scoring
Pedestrians	Facility Width	Based on widths ranging from less than 1.5m to more than 3.0m	A typical PGA arterial street (i.e., 124 Street) with a 3.0m monowalk, no dedicated buffer, and approximately 175m block length results in LOS C.
	Buffer Width (Furnishing Zone Width)	Based on width ranging from less than 1.0m to more than 2.5m	
	Maximum Distance Between Controlled Crossings	Based on distances ranging from 200m or less to more than 320m	
Cyclists	Width of Facility (per direction)	Based on widths ranging from less than 1.2m to more than 2.4m per direction	A protected bicycle facility (like 127 Street) with a 3.0m bi-directional bike lane and 0.6m, buffer and few conflicts results in LOS C.
	Buffer Width	Based on whether physical measures are present and the width of the buffer (either physical or painted)	
	Conflicts with Other Modes	Based on the number of conflicts and their relative severity (including driveways, bus stops, loading zones, crossing)	
Transit	Facility Type	Whether there are dedicated bus lanes, intersection priority measures, or mixed traffic operations (and the number of mixed traffic lanes)	A typical Edmonton transit corridor with moderate amenities (shelter, seating, waste bins) at each stop, operating in mixed traffic, with pedestrian LOS C results in LOS C.
	Passenger Amenities	Relative presence of amenities such as shelters, benches/seating, shade, trees, etc.	
	Pedestrian LOS	Based on pedestrian LOS calculated above	
Trucks	Width of Curb Lane	Based on widths ranging from less than 3.4m to more than 4.0m	A typical 3.7m (3.95m) travelled lane with car LOS C results in LOS C.
	Car LOS	Based on car LOS calculated below	
Cars	Mid-block v/c	Based on traditional analysis / modelling	A typical congested arterial (v/c under 1.00) and low curb lane conflicts results in LOS C.
	Curb Lane Conflicts	Based on range from 0 to more than 9	

3.2.3.2 Signalized Intersection Measures

For pedestrians, measures that enhance pedestrian comfort and conspicuity are an indicator of experience and safety. Average effective turning radius is a measure of safety and comfort for pedestrians and has a strong influence on the speed of turning vehicles and therefore the comfort of pedestrians when crossing the roadway. The signal cycle length is a measure of delay (and therefore priority) for pedestrians, with longer signal cycle lengths indicating a strong likelihood of longer average delays for pedestrians, and pedestrians being the most heavily impacted mode by delay. Uncontrolled points of conflict are a safety and comfort concern for pedestrians, with each point of conflict presenting a potential collision location and requiring additional attention for a pedestrian navigating the space.

For cyclists, measures that enhance cyclist comfort and conspicuity are an indicator of experience and safety. Bicycle facilities also separate cyclists from vehicular traffic in time and/or space. As with pedestrians, the average effective turning radius is a measure of safety and comfort for cyclists, having a strong influence on the speed of turning vehicles which dictates cyclist comfort and safety when crossing an intersection. The signal cycle length is a measure of delay (and therefore priority) for cyclists, with longer signal cycle lengths indicate a strong likelihood of longer average delays for cyclists, and with cyclist travel experience strongly impacted by delay. The number of uncontrolled points of conflict are a safety and comfort concern for cyclists, where each point of conflict is a potential collision location and requires additional attention for a cyclist navigating the space.

For transit, the presence of transit priority measures is a measure of delay (and therefore priority) for transit riders passing through the intersection. These transit priority measures can be physical modifications, signal modifications and/or operational measures (e.g., transit exemptions from turn prohibitions). The delay experienced by vehicle movements serving transit vehicles is a measure of delay (and therefore priority) for transit riders passing through the intersection. Pedestrian level of service is an indicator of the experience of transit riders boarding or alighting at stops near the intersection, and indicates the level of comfort, safety, and delay for riders who are accessing or leaving the transit system.

For trucks, the average effective turning radius is an indicator of comfort for truck drivers executing right turns and safety for all travellers using all modes, with larger average effective turning radii allowing trucks to complete right turns at higher speeds and without tracking out of their lanes. The car level of service is an indicator of vehicle experience in the intersections, where truck safety and delay in the general stream of traffic aligns with car safety and delay.

For cars, the percentage of turning movements with dedicated lanes is an indicator of safety and delay for drivers, where dedicated lanes allow vehicles passing through an intersection to avoid conflict with turning vehicles. Turning lanes also reduce delay to vehicles passing through the intersection by separating them from vehicles slowing or waiting to make a turn. The intersection delay experienced by vehicles passing through the intersection creates a less desirable experience for drivers

The cumulative impacts of these measures, as well as an example resultant LOS score for existing facilities is summarized in **Table 3.6** below.

Table 3.6 Signalized Intersection Measures

Mode	Measure	Measure Considerations	Example Scoring
Pedestrians	Enhanced Pedestrian Measures	Based on the presence of additional measures on all crossings.	A typical PGA arterial intersection (i.e., 124 Street/107 Avenue) with uncontrolled conflicts with turning vehicles and long cycle times results in LOS D.
	Average Effective Turning Radius (m)	Based on radii ranging from less than 9.0m (a turning speed under 15 km/h) to more than 18m (turning speed of more than 30 km/h).	
	Signal Cycle Length (s)	Based on cycles ranging from less than 60s to more than 120s.	
	Number of Uncontrolled Conflicts	Based on the ability to control/eliminate uncontrolled conflicts with pedestrians (i.e., protected only left turns, no right turn on red)	
Cyclists	Enhanced Bicycle Facilities	Based on the presence of additional measure (cross rides, green conflict markings, protected intersections, bike signal leads, protected phasing).	A protected bicycle facility intersection (like 127 Street/107 Avenue) with bike heads, markings, and turn restrictions results in LOS B due to longer signal cycles.
	Average Effective Turning Radius (m)	Same as for pedestrians.	
	Signal Cycle Length (s)	Same as for pedestrians.	
	Number of Uncontrolled Conflicts	Same as for pedestrians.	
Transit	Transit Priority Measures	Based on the presence of TPMs on intersection approaches.	A typical Edmonton transit arterial corridor intersection without TPMs, operating in mixed traffic, with pedestrian LOS C results in LOS C.
	Transit Movement Delay	Based on traditional analysis / modelling for vehicles.	
	Pedestrian LOS	Based on pedestrian LOS calculated above	
Trucks	Average Effective Turning Radius (m)	Same as for pedestrians, but with scores inversed (i.e., higher radius is better).	A typical non-truck route /truck route arterial intersection (i.e., 124 Street / 107 Avenue) would result in LOS D.
	Car LOS	Based on car LOS calculated below	
Cars	% of Movements with Dedicated Turning Lanes	Based on the percentage of movements that have separated turning lanes.	A typical arterial intersection (i.e., 124 Street / 107 Avenue) with some separated turning movements and moderate congestion results in LOS D.
	Intersection Delay (s)	Based on traditional analysis / modelling	

3.2.3.3 Unsignalized Intersection Measures

For pedestrians, the presence of marked controlled crossings is a measure of delay and safety, with marked controlled crossings increasing visibility and clearly indicate to drivers that pedestrians should be expected to cross. The average crossing distance for pedestrians is a measure of comfort and safety, where pedestrians are exposed to collisions with vehicles when they are crossing intersections. The average effective turning radius is a measure of safety for pedestrians and has a strong influence on the speed of turning vehicles.

For cyclists, the presence of bicycle facilities is a measure of comfort and safety, with cyclists more comfortable and more visible at intersections with dedicated facilities. Bicycle facilities also physically separate cyclists from vehicular traffic. The requirement to stop is a measure of delay and convenience for cyclists, with the frequency of stops being a significant determinant of the cycling experience. As with pedestrians, the average effective turning radius is a measure of safety for cyclists and has a strong influence on the speed of turning vehicles.

For transit, the pedestrian level of service is an indicator of the experience for transit riders boarding or alighting transit in close proximity to the intersection, and indicates the level of comfort, safety, and delay for riders who are accessing or leaving the transit system at stops near the intersection. The delay experienced by vehicle movements serving transit vehicles is a measure of delay (and therefore priority) for transit riders passing through the intersection.

For trucks, the average effective turning radius is an indicator of comfort for truck drivers executing right turns and safety for all travellers using all modes, with larger average effective turning radii allowing trucks to complete right turns at higher speeds and without tracking out of their lanes. The car level of service is an indicator of vehicle experience in the intersections, where truck safety and delay in the general stream of traffic aligns with car safety and delay.

For cars, intersection delay experienced by vehicles passing through the intersection creates a less desirable experience for drivers.

The cumulative impacts of these measures, as well as an example resultant LOS score for existing facilities is summarized in **Table 3.7** below.

Table 3.7 Unsignalized Intersection Measures

Mode	Measure	Measure Considerations	Example Scoring
Pedestrians	Average Crossing Distance (m)	Based on the crossing distance, including medians, between curb ramps, ranging from less than 7.0m to over 11.0m.	A typical PGA arterial intersection (i.e., 124 Street/109 Avenue) with a 16.0m crossing distance and marked crossings only across one leg results in LOS D.
	Marked Crossings	Based on the number of legs with marked crossings.	
	Average Effective Turning Radius (m)	Based on radii ranging from less than 9.0m (a turning speed under 15 km/h) to more than 18m (a turning speed of more than 30 km/h).	
Cyclists	Presence of Bicycle Facilities	Based on the presence of bike facilities on each approach to the intersection.	A bicycle facility intersection (like 124 Street/106 Avenue) with no controls for bikes (without dismounting and using the adjacent pedestrian signal) and stop control results in LOS D.
	Requirement to Stop	Based on whether bikes typically need to stop at the intersection, with facilities along the major road that rarely need to stop ranking highly, while those along minor roads that need to stop nearly always ranking low.	
	Average Effective Turning Radius (m)	Same as for pedestrians.	
Transit	Transit Movement Delay	Based on traditional analysis / modelling for vehicles.	A typical Edmonton transit arterial corridor intersection without TPMs, operating in mixed traffic, with pedestrian LOS C results in LOS C.
	Pedestrian LOS	Based on pedestrian LOS calculated above	
Trucks	Average Effective Turning Radius (m)	Same as for pedestrians, but with scores inversed (i.e., higher radius is better).	A typical non-truck route /truck route collector or local street intersection (i.e., 124 Street / 109 Avenue) would result in LOS D.
	Car LOS	Based on car LOS calculated below	
Cars	Intersection Delay (s)	Based on traditional analysis / modelling	A typical arterial intersection (i.e., 124 Street / 109 Avenue) would result in an overall LOS C.

3.2.3.4 Mitigation Measures Toolkit

Based on the measures and criteria, it becomes possible to build a toolkit to address deficiencies on a corridor or intersection level for all modes. As the PGA corridors all have limited availability to expand right of way, the recommendations herein consider the of reallocation of existing available right of way between modes to maximize the people moving capacity and experience at each location.

Working within the existing right of way constraints, a potential "toolkit" of localized improvements which could be considered to improve the overall LOS for each mode is summarized in **Figure 3-1**.

Figure 3-1 Mitigation Measures Toolkit

Mode	Potential Improvements
Pedestrians	• Construction of missing links • Addition of missing crosswalks • Addition / widening of curb ramps • Addition of marked crosswalks • Addition of tactile warning surface indicators (TWSI) • Removal of right turn channelization • Implementation of no right turn on red • Implementation of protected only left turns. • Implementation of scramble crosswalks • Addition of crosswalk protections (RRFB, signals) • Widening of sidewalks • Upgrades of crosswalks to continuous crossings • Wayfinding signage
Cyclists	• Construction of missing facilities • Upgrades to existing facilities • Crossing improvements (pavement markings, bike signals) • Wayfinding signage
Transit	• Addition of TPMs • Bus stop amenity improvements • Reallocation of lanes (parking or through) to transit-only operations
Truck	• Same as improvements for cars.
Cars	• Redesignate lanes for between movements. • Revisions to signal timing operations. • Addition of protected left turns. • Restriction of movements (i.e., conversion to right-in/right-out)

The above localized improvements can be complimented with large scale, corridor level improvements along major routes, including exploring reconfiguration of street cross sections to reallocate space between various modes. These projects are generally big-picture activities that have impacts beyond the PGA and align with the long-term City building vision and include initiatives such as implementation of the Old Strathcona Public Realm Strategy or the B1/B2 Bus Rapid Transit corridors. These projects require multi-year engineering studies (from conceptual design through detailed design), complete with public engagement., with implementation of these changes can also be coordinated with street rehabilitation to maximize investment returns.

3.2.3.5 Trade Off Considerations

As mentioned in Section 3.2.2, achieving the target LOS for a particular mode at a single intersection may require trade-offs within the range of mitigation measures that will negatively affect the LOS of other modes, occasionally to the point of the target LOS not being achieved. This issue is predominant at many of the intersections within the PGA study area due to the constrained environment. When considering trade-offs, priority should be given to approved mode plans (such as pedestrian priority areas) identified through documents such as the City Plan and supporting documents.

At most of these intersections, the assigned road classification means that the target LOS assigned to the pedestrian, cyclist, and transit modes tend to be higher than that of vehicles. In these instances, this means that the proposed improvements recommended as part of the assessment prioritize these modes over vehicles, which reflects the City's overall approach regarding congestion acceptance. While this approach increases vehicle delay, adjustments to signal timing parameters tend to be the most useful and easiest measure for mitigating this delay without compromising the LOS of the remaining modes.

Other situations result in additional trade-offs between the remaining modes. For instance, at many intersections, parallel streets are identified as suitable alternatives for cycling corridors rather than recommending bike infrastructure be installed directly within the intersection, as this may take up space allocated for transit operations and pedestrians. In other cases, it may be impractical to add additional measures to improve the LOS of a particular mode either due to constructability issues or conflict with other parameters such as signal timing, delay, intersection geometry, and conflict points. Overall, these are situations where the target LOS for some modes may be unattainable, and where users of that mode may continue to face substandard conditions (i.e. inadequate pedestrian realm or transit being forced to remain in mixed traffic).

Overall, the approach to balancing an achievable LOS amongst all modes is context dependent based on the type, location, and unique characteristics of the intersection or corridor. Generally, the recommendations made are intended to be practical and to minimize required road reconstruction (particularly along the under-construction Valley Line), while balancing with the need to achieve the target LOS set by the MMLOS analysis.

3.2.4 Traditional Transportation Impact Assessments and MMLOS

Traditional Transportation Impact Assessments (TIAs) focus predominantly on the intersection performance as it pertains to single occupancy vehicles. Regardless of the software used (Synchro, Vistro, or others), the resulting analysis outputs focus on vehicle operations (LOS, delay, queues, v/c). MMLOS analysis takes the processes and outputs from a traditional TIA and adds additional layers focusing on a more fulsome analysis of user experience for all modes. While the overall process is similar between the two analyses, **Figure 3-2** below highlights how and where the two processes differ.

Figure 3-2 Traditional TIA vs MMLOS Analysis

	Traditional TIA	MMLOS Analysis
1	Establish Site Context	
	Includes high level qualitative analysis of roadway, transit, and active modes networks (i.e., travel lane allocation, presence of sidewalks / pathways / bike lanes, presence and frequency of transit). Identify missing links.	More in-depth review and ranked analysis of all existing modes – pedestrians, cyclist, transit, single occupancy vehicle, goods movement – size and type of facilities (type and width of walk, pathway, bike facility), frequency and type of transit). Identify missing links.
2	Volumes	
	Establish existing vehicle traffic volumes.	If available, also establish pedestrian, cyclist, and transit volumes.
3	Pre-Development Corridor Operations	
	Use traditional approaches (i.e., HCM method in Synchro/Vistro) to establish vehicle operations.	Adjust traditional results to account for all modes using OTC MMLOS approach, which provides overall people moving capacity and accounts for interaction between modes.
4	Establish Future Development Scenario	
	Provide overview of future development, calculate trip generation volumes, make modal split adjustments.	
5	Establish Baseline Future Network	
	Determine what the base case future network will look like, usually focused on vehicles only.	Determine what the future network will look like for all modes (including pedestrian, cyclist, and transit upgrades).

Step	Traditional TIA	MMLOS Analysis
6	**Establish Post-Development Corridor Operations**	
	Use traditional approaches to establish vehicle operations.	Adjust traditional results to account for all modes using OTC MMLOS approach as above.
7	**Identify Deficiencies and Upgrades**	
	Use HCM outputs (LOS, delay, queues, v/c) to identify constraints and potential upgrades.	Use adjusted MMLOS outputs to identify improvements for all modes to improve overall people moving capacity, noting interaction between modes. Focus heavily on safety and pedestrian / cyclist experience, and away from upgrades that solely benefit single occupancy vehicles.
8	**Analyze Post Development Network Operations with Recommended Improvements**	
	Use traditional approaches to establish vehicle operations.	Adjust traditional results to account for all modes using OTC MMLOS approach.
9	**Recommend Upgrades & Staging Triggers**	
	Review trigger points for implementation of upgrades/changes.	

Compared to the traditional TIA process with its sole quantitative consideration of vehicle LOS, applying MMLOS methodology to mobility assessments offers several advantages:

- Analyzing the pre-development transportation network with a multi-modal lens permits a broader understanding of how all users experience existing mobility infrastructure compared to vehicle users. In addition to vehicle delay, the MMLOS process considers additional parameters to measure the user experience of pedestrians, cyclists, and transit users with regards to safety and accessibility.
- The MMLOS guidelines set out pre-determined LOS targets for each mode under each street classification. The process provides flexibility to adjust these targets in either direction to reflect priorities based on local context, planned projects, or policy direction.
- The MMLOS toolkit shows how parameter adjustments influence each mode. This allows for an in-depth understanding of the interaction between modes and greater consideration of the trade offs involved in adjusting parameters to benefit one mode while negatively affecting another. For instance, adding additional pedestrian enhancements may reduce vehicle LOS, depending on the extent.

- Given the greater focus on improving user experiences for pedestrians, cyclists, and transit users under the MMLOS framework, the mitigation measures stemming from a typical MMLOS analysis trend towards a greater allocation of space and enhancements to these modes over single-occupancy vehicles. This matches the overall direction of emphasizing people moving capacity over private vehicles, aligning with the City's objectives of utilizing existing public right-of-way more efficiently for mobility.
- The MMLOS methodology shows a clear representation of the LOS performance of each mode at an intersection or along a segment between existing and forecast conditions. This provides additional justification towards the decision-making process for mobility infrastructure, with a clear outline of what mitigation measures could be implemented to achieve the target LOS for a selected mode.

Overall, integrating MMLOS principles into the City's mobility planning process will help prioritize people-focused design and sustainable transportation options, which is key to offering greater mode choice across the mobility network and meeting the priorities of Edmonton's City Plan and Energy Transition Strategy.

3.3 Qualitative Assessment Approach

In addition to the traditional quantitative assessment of pre-development intersection operations, a qualitative assessment of the existing mobility network was also undertaken to establish the baseline conditions to assist in the MMLOS analysis as well as to begin identifying potential pinch points within the mobility network which may need to be addressed to better accommodate development within each PGA.

The qualitative assessment was split into the core modes – pedestrians, cyclists, transit, and motor vehicles (including goods movement).

Pedestrian Facility Assessment

Existing pedestrian facilities were evaluated based on their type (monolithic or separate walkway) and width compared to the City's targets in the Complete Streets Design and Construction Standards (CSDCS). Different width targets were established for the two sidewalk types, which acknowledges the role a furnishing zone plays in pedestrian comfort, safety, and capacity.

For separate walks, the widths were assessed as follows:

- Poor: Less than 1.5m width

  These are sidewalks that represent the pre-CSDCS standards and do not allow for two people walking side by side to pass another person, or two people using mobility devices / strollers to pass each other.
- Fair: Between 1.5m and 2.5m

  Generally, these are sidewalks that have been upgraded with renewal and reconstruction to meet newer standards. While the CSDCS identifies 1.8m as the target width for the pedestrian through zone in non pedestrian oriented developments, existing constraints in mature neighbourhoods (including trees, utilities, and private landscaping) often limit the ability to widen older, substandard sidewalks to the full 1.8m, with 1.5m often selected as a compromise in these constrained areas.

- Good: Greater than 2.5m

  These are sidewalks that meet the desired target within CSCS for street-oriented developments.

For monolithic walks, the widths were assessed as follows:

- Poor: Less than 3.5m width:

  These are sidewalks that fall below the desired minimums for monolithic walks outlined in the CSCDS when considering the width of the pedestrian through zone and furnishing zone. CSDCS identifies the target width of the furnishing zone at 1.7m in order to accommodate trees, streetlights, signage, utility cabinets, waste bins, other appurtenances, and vehicle egress for curbside parking. When combined with a desired 1.8m pedestrian through zone, it results in a 3.5m minimum width (measured from the face of curb). Of note, many new monowalks installed in residential areas are approximately 2.1m in width, falling short of this target. The 2.1m width is sufficient to accommodate lower volume pedestrian travel and vehicle egress, particularly as streetlights, trees, and utilities are typically set behind the walk, however, they may feel congested when pedestrian volumes are high.

- Fair: Between 3.5m and 4.5m

  These sidewalks provide adequate space for a quality pedestrian experience, providing a larger pedestrian through zone that meets the CSDCS targets for street-oriented development, and include a frontage zone adjacent to buildings.

- Good: More than 4.5m

  These sidewalks meet and exceed the targets within CSCS for pedestrian priority areas.

Missing sidewalk links were also identified to highlight gaps within the network which may need to be addressed to accommodate future densification. For example, development of a parcel abutting a segment of roadway without sidewalk could trigger the requirement for construction of the missing sidewalk as part of the development whereas multi-block stretches of roadway without sidewalk may necessitate capital investment from the City.

Sidewalk widths were established through a review of existing City base file mapping, combined with aerial imagery, Google Streetview, and design drawings. The sidewalk assessment considers any known improvements that are currently underway or will begin construction in 2025. This includes the Valley Line West LRT and Imagine Jasper Avenue projects, where sidewalk widths were taken from the latest design packages. Project still in the design phase, such as the Wîhkwêntôwin neighbourhood renewal, are not reflected in the assessment as the final width of facilities are not known.

The City Plan pedestrian priority areas were overlaid overtop of the assessment to further highlight facilities that fall within areas of high anticipated pedestrian volumes.

Cyclist Facility Assessment

Cyclist facilities were evaluated based on the facility type and the level of protection and separation offered between cyclists, motor vehicles, and pedestrians, generally aligning with the facility classifications used by the City within the published bike map as well as the "Level of Traffic Stress" (LTS) for cyclists as defined in the City's Bike Plan.

Facilities were assessed into three categories:

- Protected and separated facilities:

  These include dedicated cycling facilities which are physically separated from other modes including pedestrians and motor vehicles.
- Shared pathway facilities:

  These include most pathways throughout the City which are shared between pedestrians and cyclists, but are separated from motor vehicles.
- On-street facilities:

  These include shared street and painted bike lanes that separate pedestrians and cyclists, but offer little to no separation between cyclists and motor vehicles.

Cycling facilities were assessed through a review of existing City base file mapping, combined with aerial imagery, Google Streetview, and design drawings. The cycling facility assessment considers any known improvements that are currently underway or will begin construction in 2025. This includes Valley Line West LRT and the Active Transportation Network Improvement Projects (including any planned routes in 2025 and 2026). Projects still in the design phase, such as the Wîhkwêntôwin neighbourhood renewal, are not reflected in the assessment as the final alignment and facility type are not known.

Transit Facility Assessment

Transit facilities were assessed on two components: presence of mass transit and frequency of transit routes along corridors. The mass transit assessment consisted of identifying three components:

- Existing LRT:

  Corridors and stops including a 400m and 800m "walking circle" surrounding each stop. This includes the existing Capital Line, Metro Line, and Valley Line SE LRT
- The under-construction Valley Line West LRT:

  Corridor and stops, including the 400m and 800m "walking circle" surrounding each stop.
- "B1" and "B2" Bus Based Mass Transit:

  The currently anticipated routing for the "B1" and "B2" Bus Based Mass Transit (BRT) corridors was considered within the post-development population horizon. Concept planning for the routes has been initiated and will determine the exact routing and stop / station locations. Delivery timelines will be known once design work has been completed and funding for construction is allocated.

Transit frequency along the existing corridor was also examined. Total directional peak hour bus volumes were analyzed, which included total AM and PM peak bus/hour in both direction along all bus route corridors. From the data, the highest peak hour bus volume direction for the corridor was selected as the basis for the assessment. This represents the "best case" level of existing transit service along the corridors during peak hours. As off-peak frequency data was not readily available, this assessment does provide somewhat limited insight into the frequency and reliability of transit service.

Studies show that the longer the headway (the lower the frequency), the more inconvenient transit service becomes, both because passengers have to plan their trip around transit service and because they incur more unproductive time during their trip. At headways of less than 10 minutes (more than 6 buses per hour), passengers are able to arrive without worrying about schedules, encouraging the decision to use transit over a personal vehicle, supporting a car-free lifestyle.[7]

Bus volumes were then grouped assessed into three categories:

- Low Frequency: Less than 6 buses per hour (i.e., a bus every 10 minutes or more) – these are corridors where even peak hour bus services is low
- Fair Frequency: 6 to 12 buses per hour (i.e., a bus every 5 to 10 minutes) – these are corridors where peak hours bus service starts to align with the frequency needed to support a car free lifestyle.
- Good Frequency: More than 12 buses per hour (i.e., a bus every 5 minutes or less) – these are corridors where peak hour bus service starts to exceed the frequency needed to support a car free lifestyle.

Motor Vehicle Facility Assessment

While operational assessments were undertaken at the intersection level as part of the overall analysis, a corridor level motor vehicle facility assessment was also undertaken. To qualify the data in a format that is commonly understood, Google Maps peak hour travel information was used to assess existing major corridor level operations. The assessment was specifically based on the highest observed PM peak hour congestion along a corridor (based on assessing travel in both directions) on a typical Tuesday. The assessment was limited to major roadway corridors (typically roadway classified as arterials and higher) due to limitations around the data available in Google Maps.

[7] National Academies of Sciences, Engineering, and Medicine. 2013. *Transit Cooperative Research Program (TCRP) Report 165: Transit Capacity and Quality of Service Manual, Third Edition*. Washington, DC: The National Academies Press. https://doi.org/10.17226/24766.

Corridor operations were assessed into four categories, aligning with the chromatic scale used by Google:

- No Congestion corresponding to green in Google Maps
- Low Congestion corresponding to yellow in Google Maps
- Moderate Congestion corresponding to light red in Google Maps
- Heavy Congestion corresponding to dark red/maroon in Google Maps

While this approach does not provide a definitive quantitative representation of corridor travel time or speed, it provides a high-level overview of corridor congestion levels and potential bottleneck locations. Furthermore, it corresponds to a scale that is generally intuitive and well known by the public.

Overall Qualitative Assessment

The resulting qualitative assessment thresholds applied to the project are summarized in **Table 3.8.**

Table 3.8 Qualitative Assessment Threshold Summary

	Pedestrians	Cyclists	Transit	Vehicles
Below Threshold	No sidewalk present	No cycling facility present	No transit service present	Dark red / maroon in Google Maps in PM peak hour
Low	Monolithic: Less than 3.5 m to face of curb Boulevard: Less than 1.5 m	Painted bike lanes or shared streets	Less than 6 buses per hour per direction in PM peak (a bus every 10 minutes)	Light red in Google Maps in PM peak hour
Middle	Monolithic: 3.5 m to 4.5 m to face of curb Boulevard: 1.5 m to 1.8 m	Shared pathways	Between 6 and 12 busses per hour per direction in PM peak (a bus every 5 to 10 minutes)	Orange in Google Maps in PM peak hour
High	Monolithic: More than 4.5 m to face of curb Boulevard: More than 2.5 m	Protected, separated facilities	More than 12 buses per hour per direction in PM Peak (a bus every 5 minutes or less) or within 400 m of an LRT station/stop.	Green in Google Maps in PM peak hour

4. Existing Mobility Network Qualitative Assessment

Qualitative assessments were undertaken for the areas surrounding each PGA. The pedestrian and cyclist assessments were encompassed an expanded area around each PGA, extending several blocks beyond the immediate PGA boundaries. The transit assessment focused on existing bus and LRT routes (including those currently under construction), while the vehicle assessment focused on arterial roadways (as classified in the Transportation System Bylaw).

Detailed design and construction on the Valley Line West corridor is in progress through the P3 contract with Marigold Infrastructure Partners. The analysis completed for this assessment along the Valley Line corridor is based on preliminary signal timings along with the lane geometry and cross-section elements provided in concept drawings, which is sufficient for the analysis completed.

The purpose of this study has been to identify the overall multi-modal impacts as a result of PGA rezoning. The traffic analysis completed is not intended to be a detailed operational analysis of the intersections along the Valley Line LRT and such a study would require final designs and operational signal timing plans. While multi-modal performance at study intersections along the Valley Line corridor are subject to minor changes to the final design, these are not expected to impact the study findings from the multi-modal quantitative assessment. Any major design changes would require further study to understand any impacts.

4.1 124 Street / Wîhkwêntôwin

While the assessment focuses on existing conditions, it does consider the planned improvements currently under construction as part of the Valley Line West LRT, as well as the Imagine Jasper Avenue implementation west of 114 Street. Of note, as planning and design work is still underway for the Wîhkwêntôwin neighbourhood renewal (comprising of the areas west of 109 Street, south of Grant MacEwan, and north of the river valley), with construction expected in 2026 to 2028, the assessment does not consider the future state conditions within the neighbourhood as discussions are still underway regarding potential implementation of cycling and pedestrian infrastructure, which will in turn impact other modes within the community.

The Westmount neighbourhood renewal, comprising the areas between Groat Road and the former CN tracks west of 121 Street, and between 111 Avenue and Plain Road, as well as the areas between Stony Plain Road and the Groat Ravine west of 124 Street, was completed in 2017. Inglewood neighborhood renewal, comprising of the areas between Groat Road and the former CN tracks west of 121 Street, and between 111 Avenue and 118 Avenue, was completed in 2021. As such, outside of the arterial roads which are renewed through a separate program, the existing pedestrian, cyclists, transit, and vehicle infrastructure within these communities is not anticipated to undergo any immediate further changes.

4.1.1 Pedestrians

As shown in **Figure 4-1** and **Figure 4-2**, aside from several isolated pockets, most streets within the area have sidewalk infrastructure on both sides of the street. Sidewalks along local and collector streets tend to be separated, with widths of 1.5 to 1.8m, resulting in a score of "fair". Sidewalks along arterials tend to be monolithic, with those along some corridors falling into the "poor" rating, especially along the streets branching off from the pedestrian priority areas. Sidewalks within pedestrian priority areas tend to vary in dimensions, and consideration should be given to reallocation of space to enhance the pedestrian realm with future renewal efforts, as is being done as part of the Imagine Jasper Avenue project.

4.1.2 Cyclists

As shown in **Figure 4-3** and **Figure 4-4,** cycling infrastructure in these areas consists of a mix of on-street painted facilities, shared roadways, shared pathway, and dedicated protected facilities. The 127 Street and 102 Avenue protected bike lanes, along with the former CN rail corridor shared pathway west of 122 Street provide the backbone of the bike network in the area, with on-street facilities along 121 Street, 106 Avenue, 100 Avenue/Victoria Promenade, 112 Street, and 110 Street, and 105 Avenue providing additional connectivity. Together, these facilities provide a network of bike infrastructure within three blocks (or less) of any potential redevelopment.

With construction of the Valley Line West LRT, consideration should be given to providing dedicated direct cycling connections between the cycling network and station locations.

4.1.3 Transit

As shown in **Figure 4-5** and **Figure 4-6**, the area is well served by transit, including both bus based and LRT service. The Capital Line/Metro Line runs along 110 Street and Valley Line West runs along 104 Street / Stony Plain Road, putting a vast majority of the Wîhkwêntôwin area and the southern half of the 124 Street area within 800 metres of an LRT station.

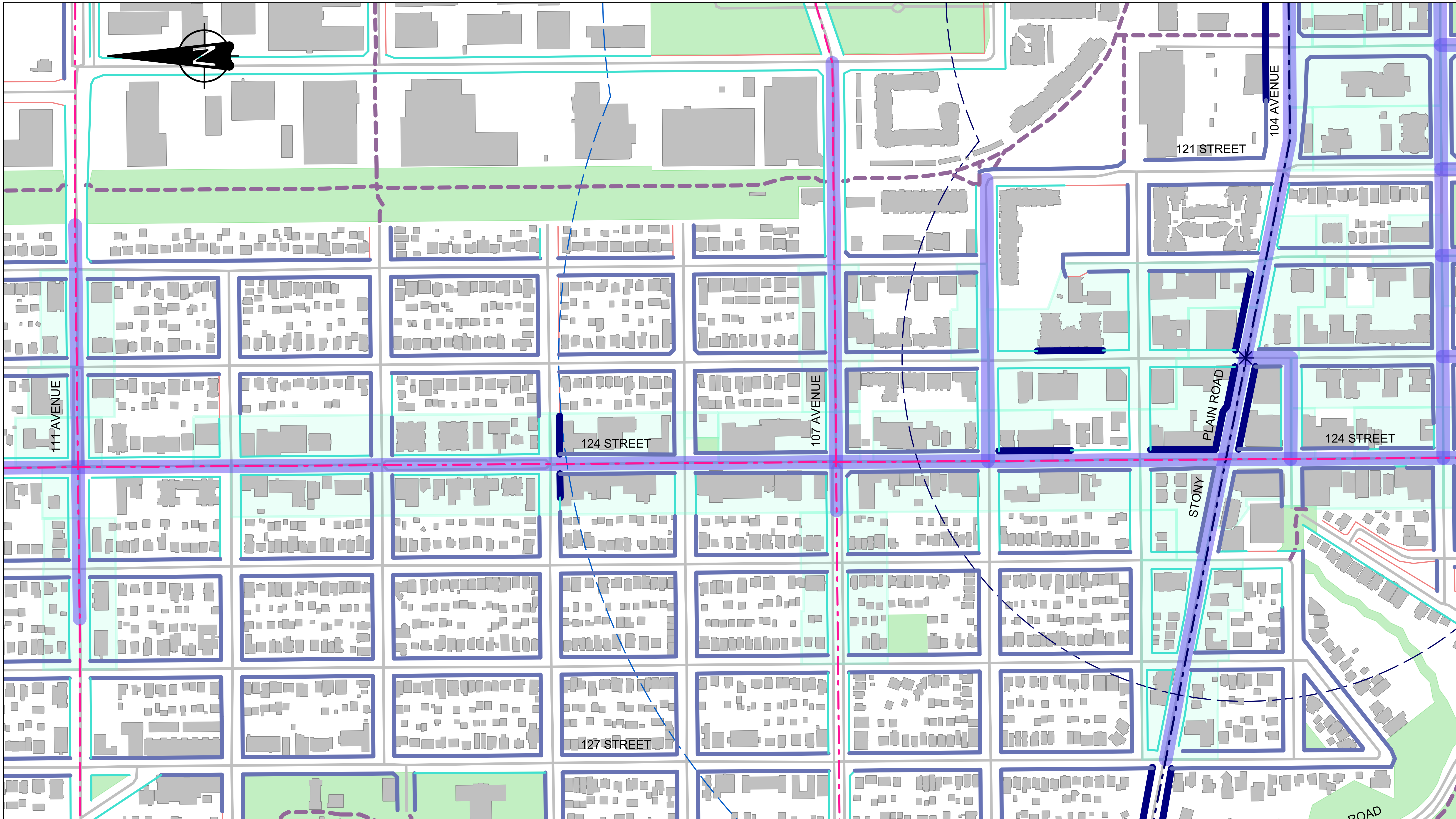
LRT service is complimented with the availability of multiple bus routes along 124 Street, 107 Avenue, 109 Street, and Jasper Avenue.

4.1.4 Vehicles

As shown in **Figure 4-7** and **Figure 4-8**, many of the arterial roadways within the PGA area experience medium to high congestion during peak hours. Because each intersection tends to experience higher volume during the PM peak hour, this was deemed to be a more suitable analogy for representing overall peak period congestion in these figures. AM peak period congestion, on the other hand, can reasonably be assumed to occur in the reserve direction. This is expected given the proximity to the downtown core and associated employment and education centres and is the focus of the network assessments discussed later in this report.

4.1.5 All Modes

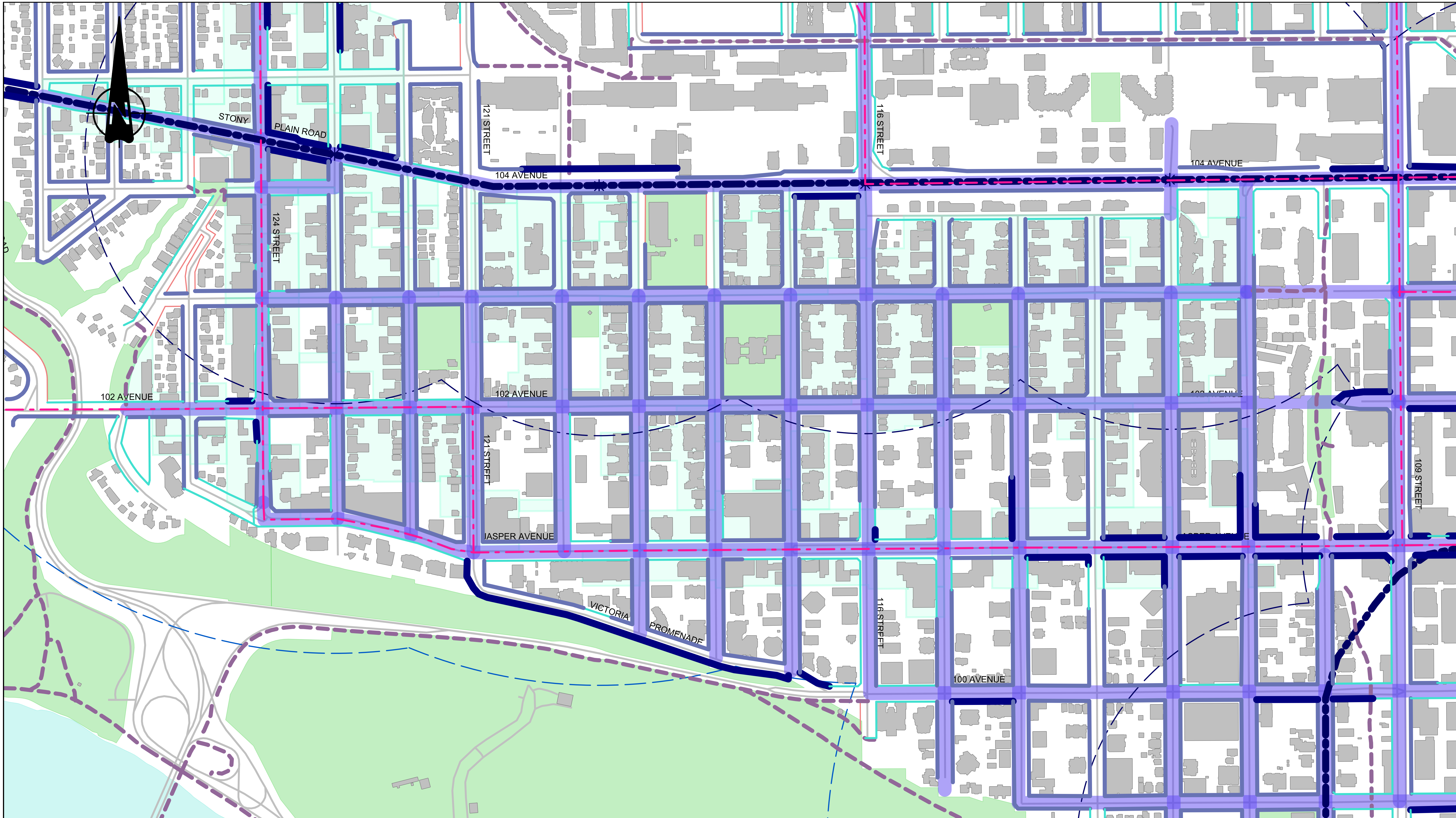
Figure 4-9 and **Figure 4-10** show the combined results of the mobility network assessments for all of the modes listed above. When overlaid together, this highlights the overlapping importance of 124 Street, 107 Avenue, Stony Plain Road/104 Avenue, and Jasper Avenue to pedestrians, transit, and vehicles.



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- SHARED PATHWAY
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE

FIGURE 4-1 124 STREET PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- SHARED PATHWAY
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE

FIGURE 4-2 WîHKWêNTôWIN PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS

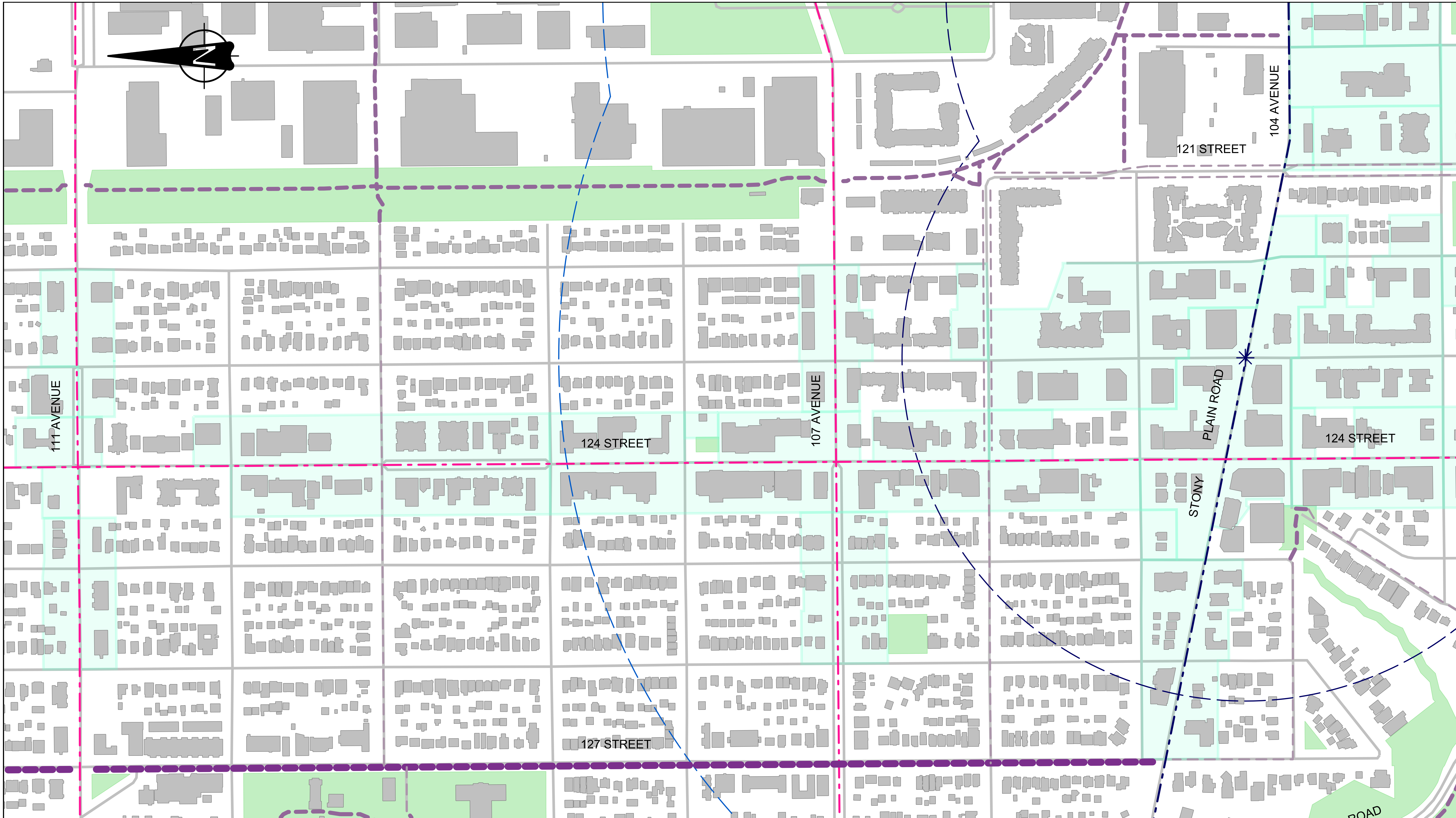
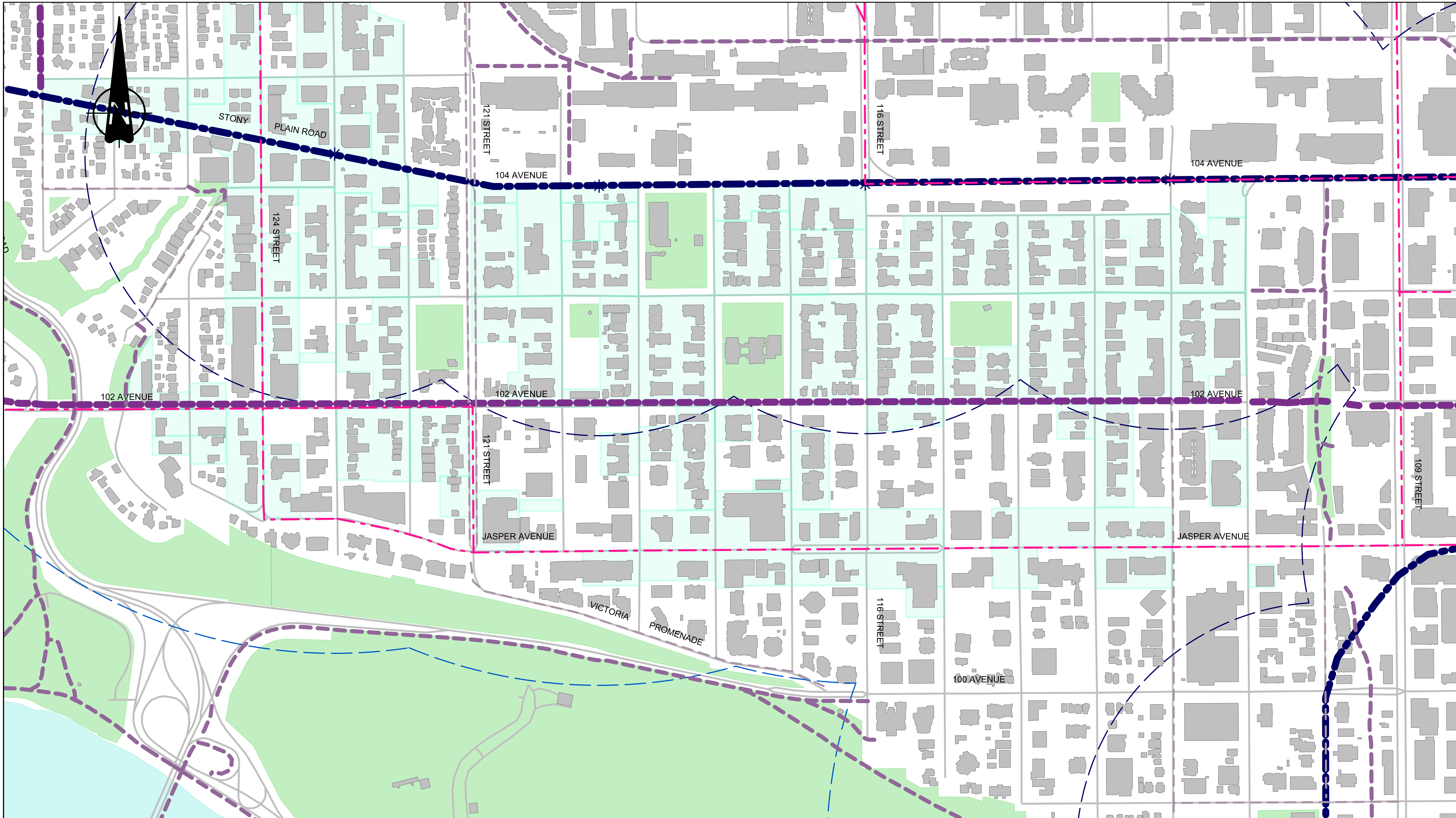


FIGURE 4-3 124 STREET PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS



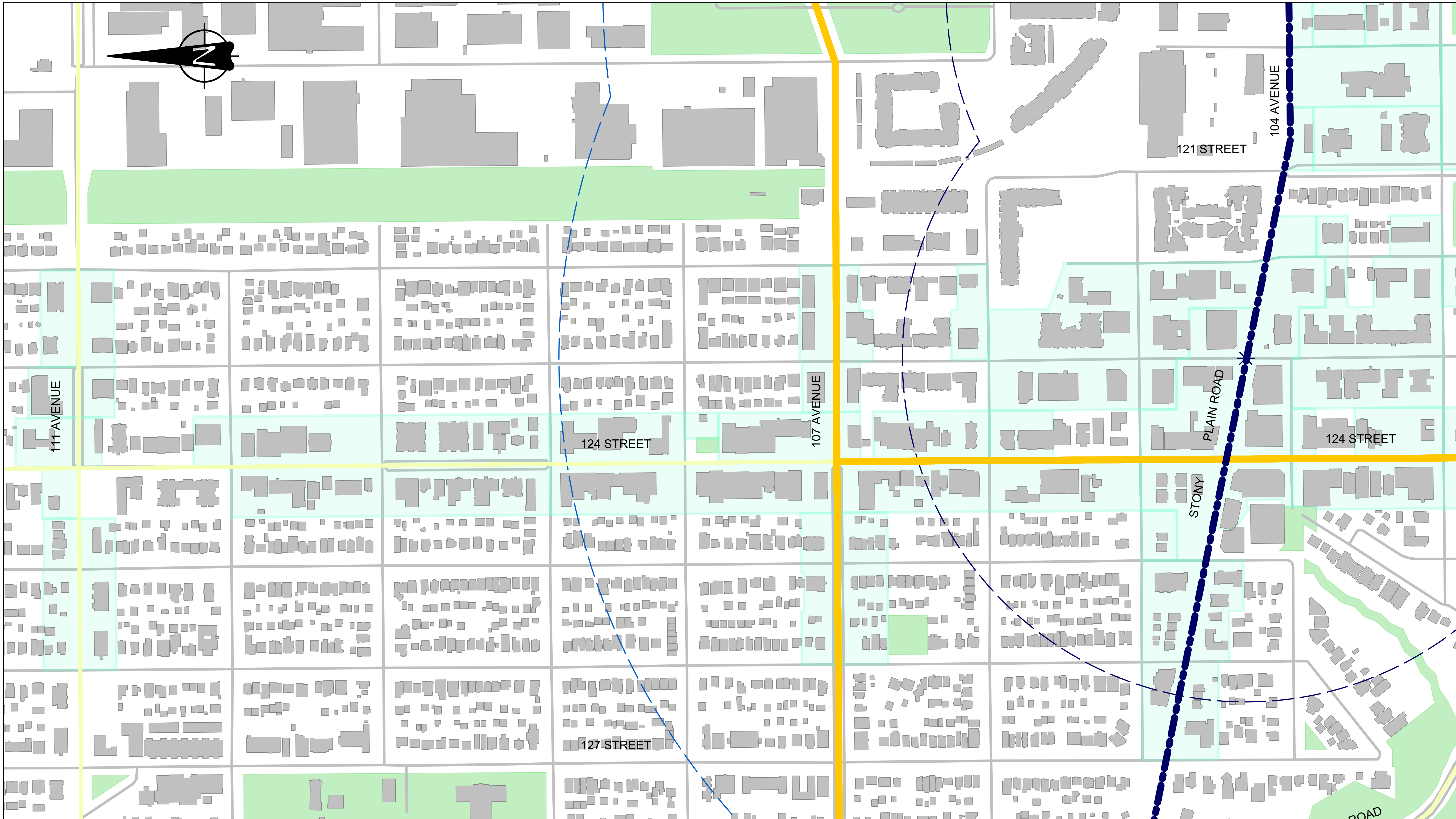
LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED

Edmonton

CIMA+

FIGURE 4-4 WîHKWêNTôWIN PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS



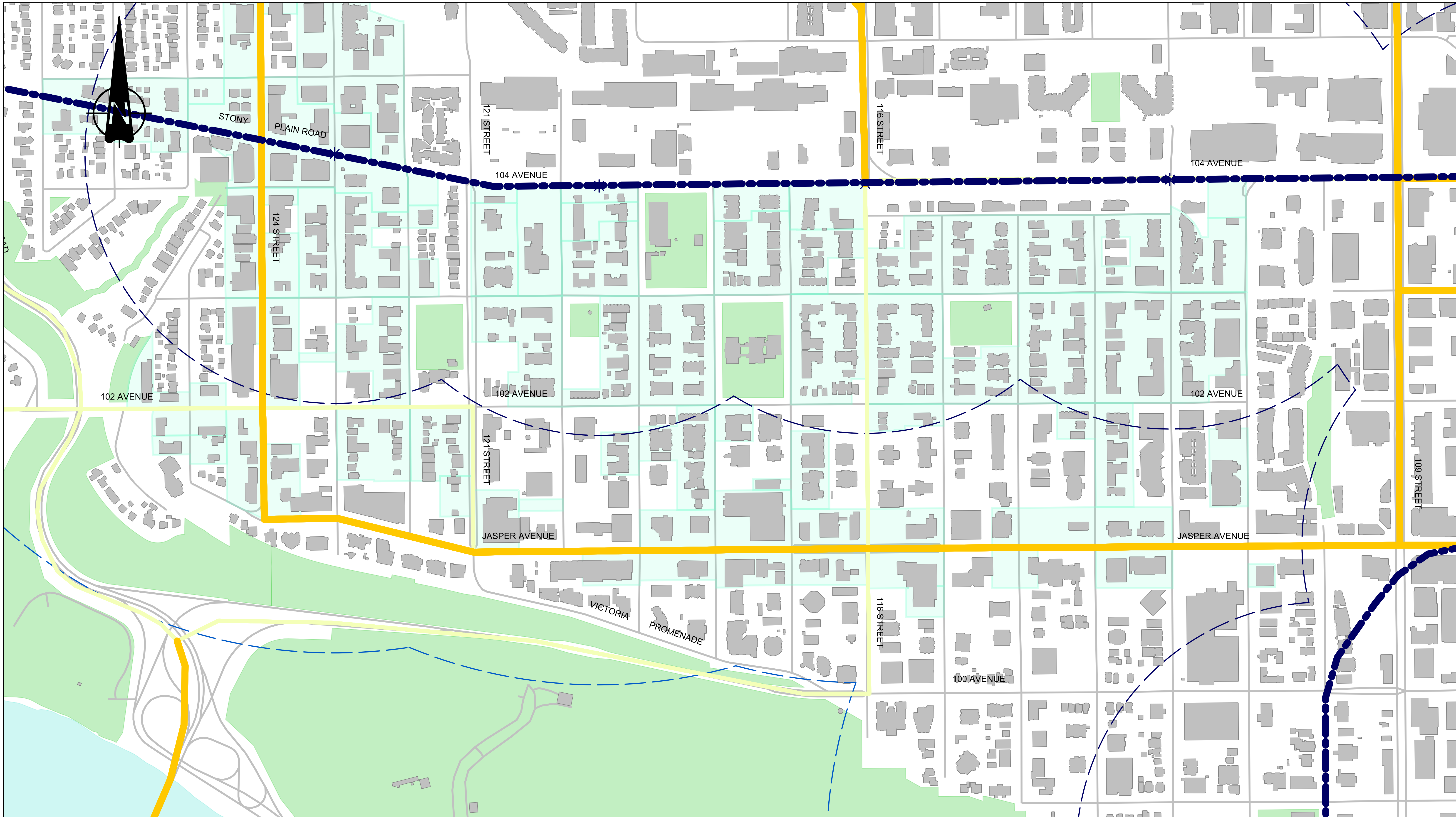
LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

Edmonton

CIMA+

FIGURE 4-5 124 STREET PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS

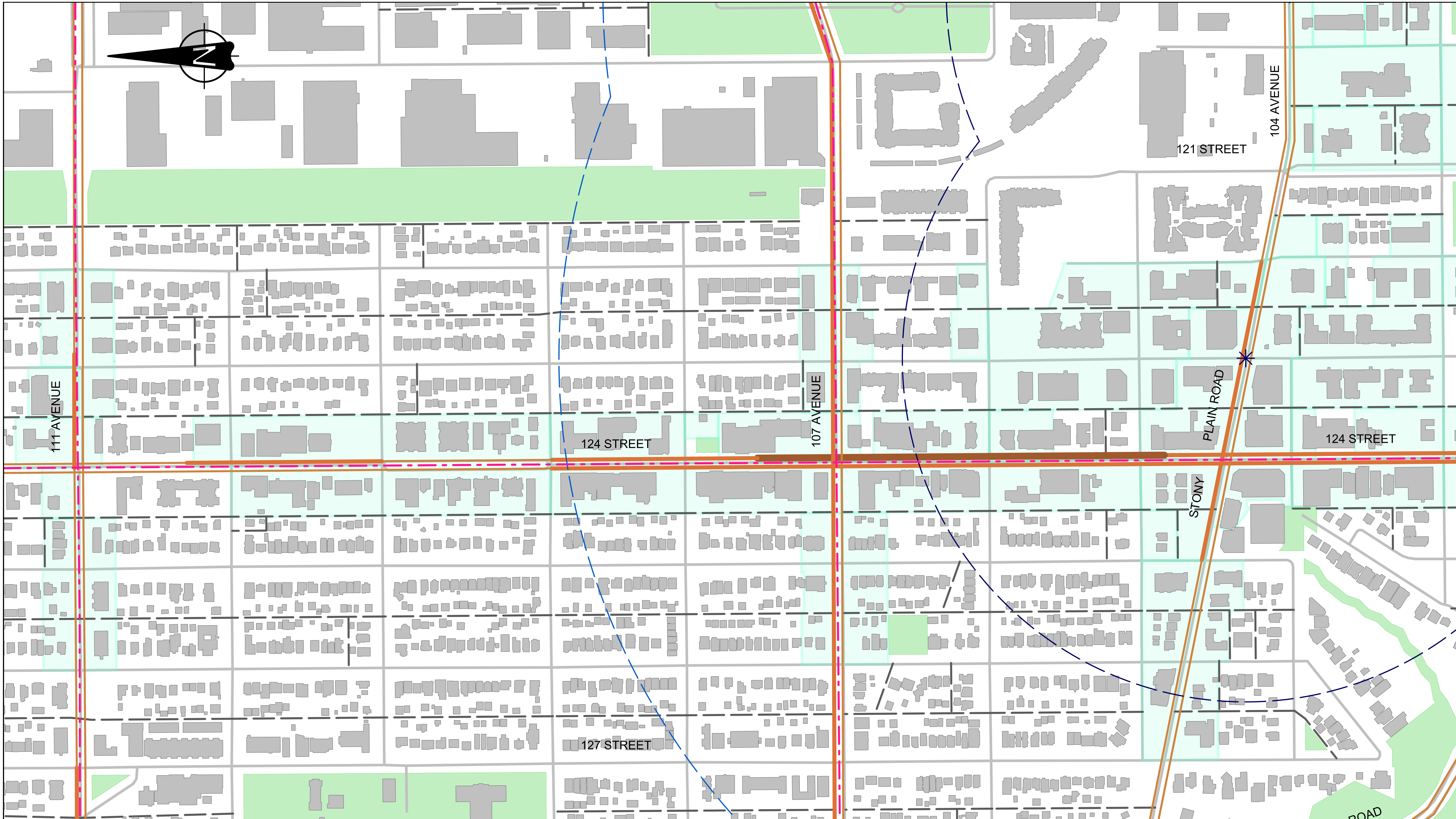


Edmonton

CIMA+

LEGEND
- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

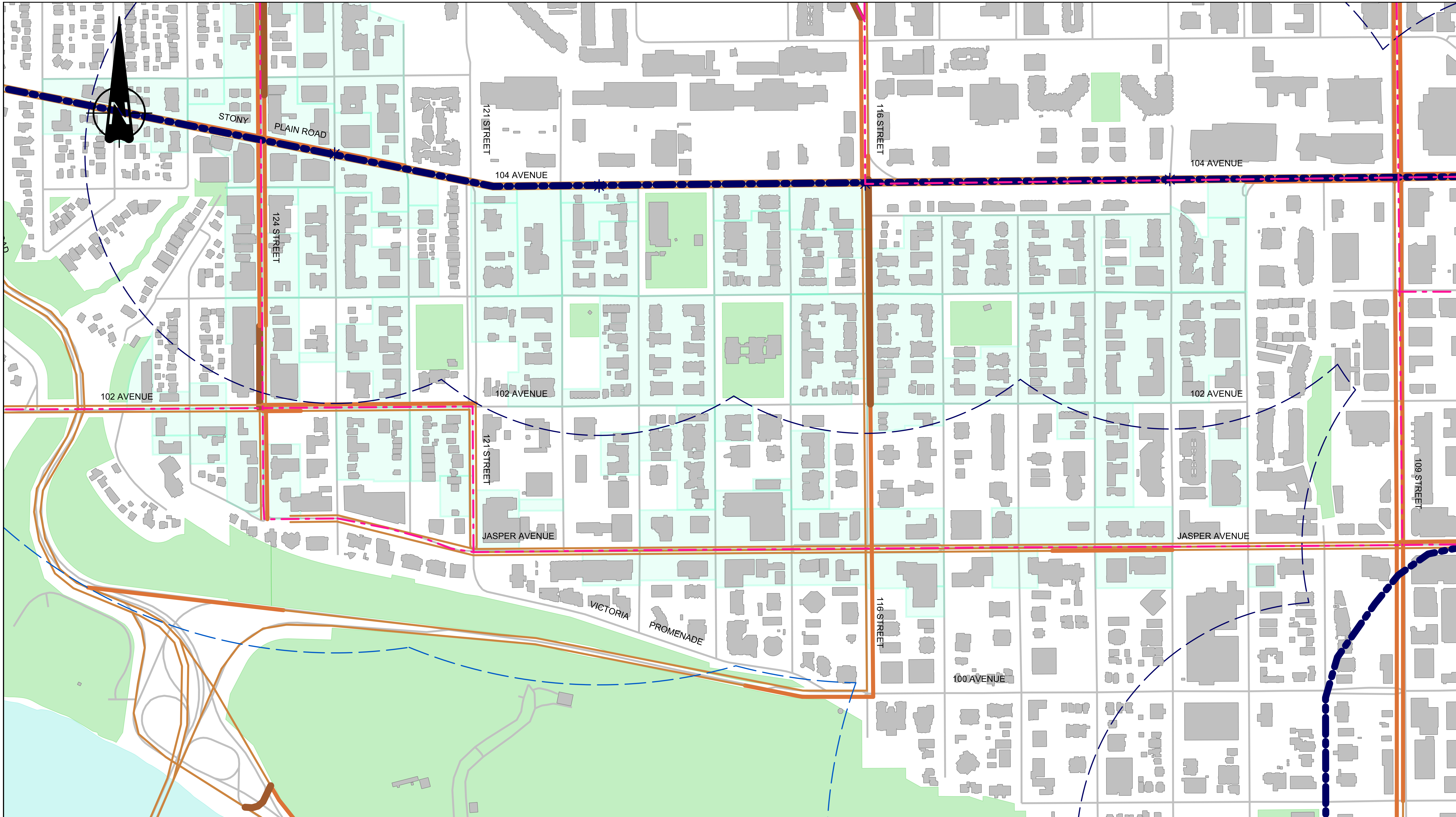
FIGURE 4-6 WîHKWêNTôWIN PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ALLEYWAY
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH

FIGURE 4-7 124 STREET PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)



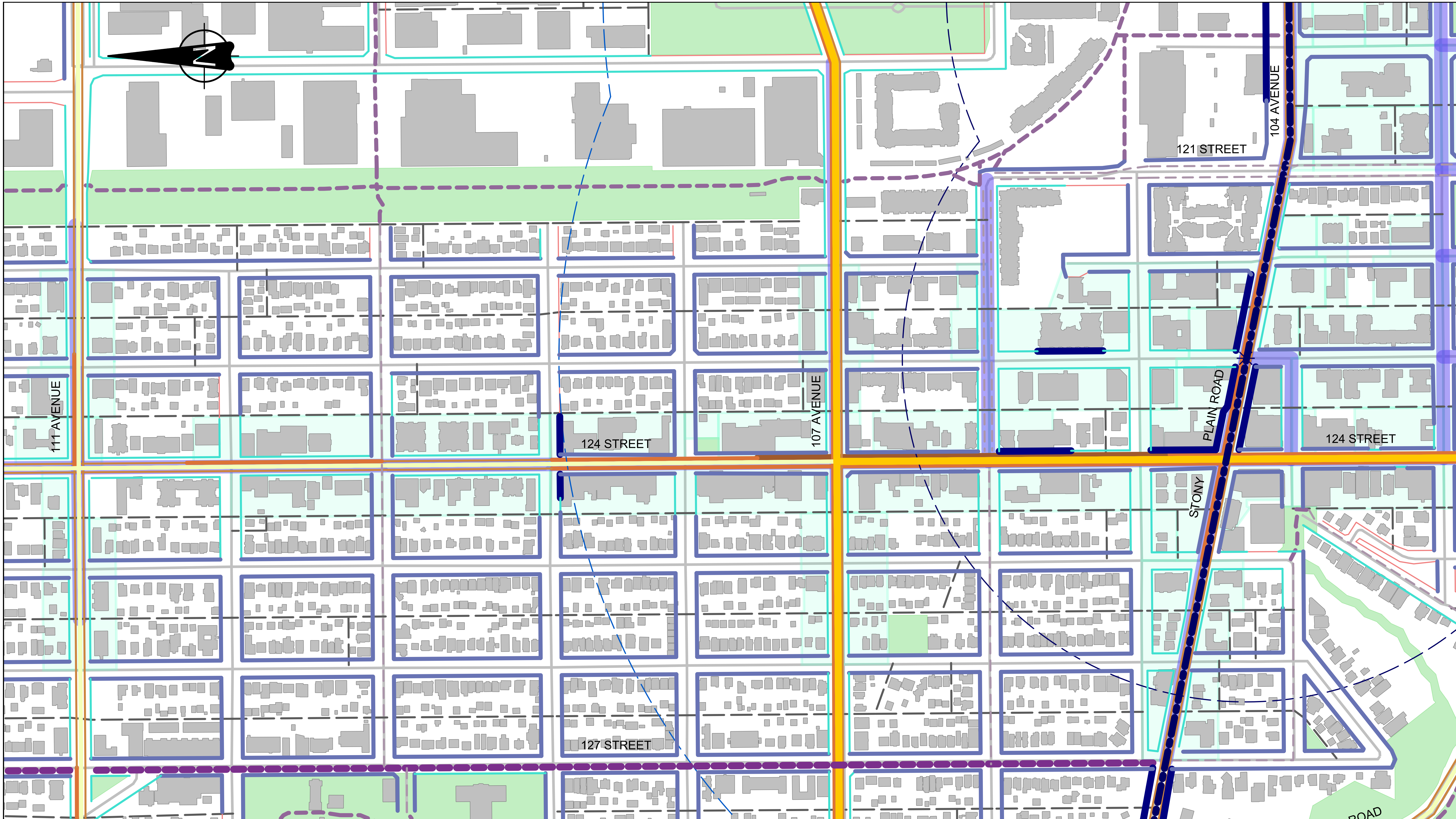
Edmonton

CIMA+

LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH

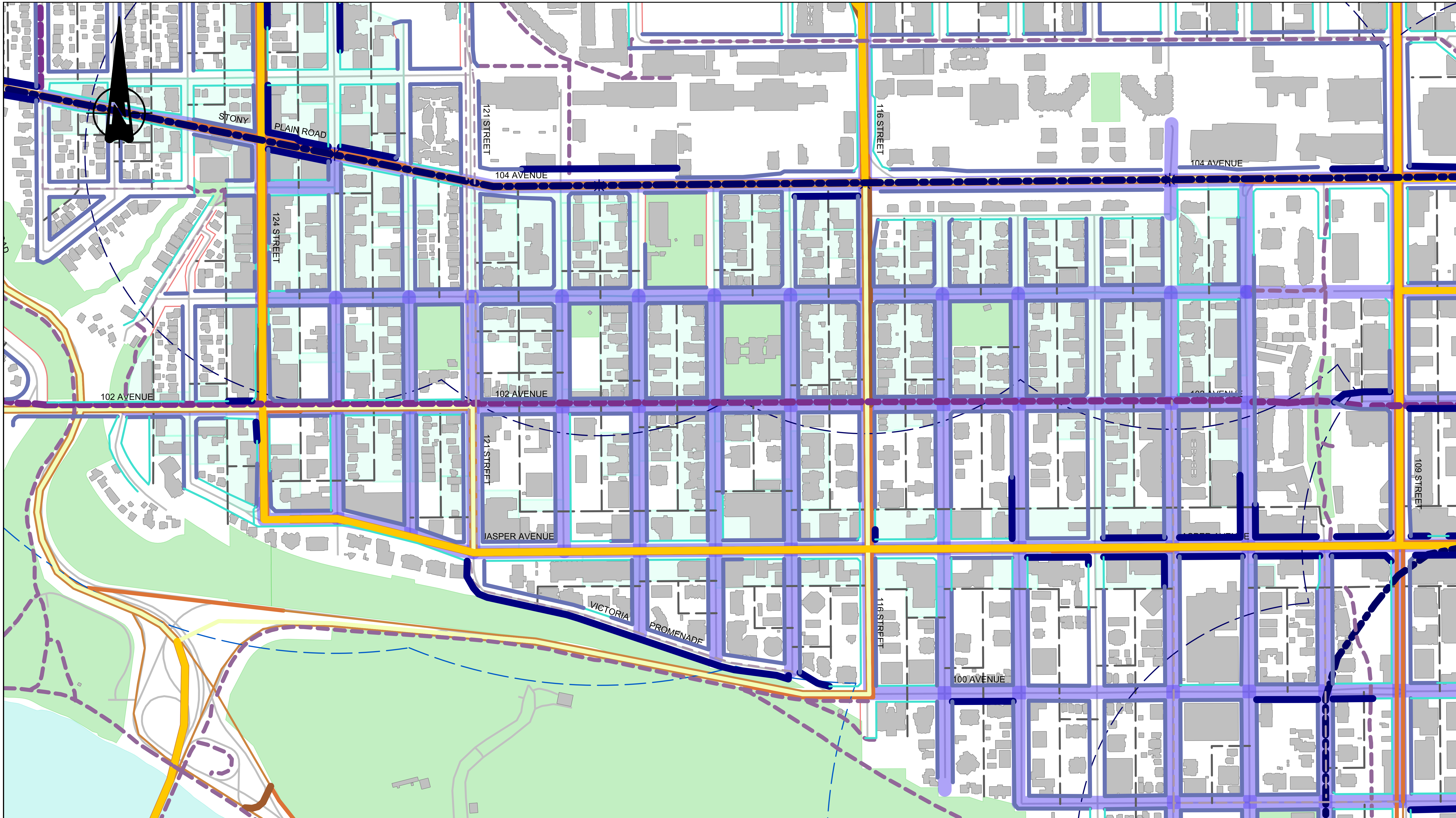
FIGURE 4-8 WîHKWêNTôWIN PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

FIGURE 4-9 124 STREET PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

FIGURE 4-10 WîHKWêNTôWIN PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS

4.2 156 Street / Stony Plain Road

While the assessment focuses on existing conditions, it does consider the planned improvements currently under construction as part of the Valley Line West LRT.

Of note, multiple neighbourhood renewal projects have been completed within this area over the last 10 to 15 years, including:

- Glenora completed in 2016
- Grovenor completed in 2014
- Canora completed in 2013
- West Jasper Place (south of 100 Avenue) completed in 2012
- West Jasper Place (north of 100 Avenue) completed in 2020
- Meadowlark Park completed in 2010

Furthermore, many of the remaining neighbourhoods in the area underwent renewal prior to 2009, including:

- Britannia Youngstown
- Glenwood (east of 163 Street)
- Sherwood
- Jasper Park

As such, outside of the arterial roads which are renewed through a separate program, the existing pedestrian, cyclists, transit, and vehicle infrastructure within these communities is not anticipated to undergo any immediate further changes.

4.2.1 Pedestrians

As shown in **Figure 4-11**, **Figure 4-12** and **Figure 4-13**, there are several stretches of roadways where sidewalk exists only on one side. Most notably as it relates to the PGA areas, this includes:

- 103 Avenue between 143 Street and Stony Plain Road
- 102 Avenue between 144 Street and 142 Street and between 149 Street and 163 Street
- 101 Avenue between Ravine Drive and 142 Street
- Portions of 143 Street, 144 Street, and 145 Street approaching Stony Plain Road
- Portions of 91 Avenue, 92A Avenue, 93A Avenue, 96 Avenue, 97 Avenue, 98 Avenue, 99 Avenue approaching 156 Street
- 156 Street between Meadowlark Road and 90 Avenue
- 90 Avenue between Meadowlark Road and 156 Street

The remaining neighbourhood roads have sidewalk on both sides of the street, with a varied mix of monolithic and boulevard sidewalks, generally with widths of 1.5 to 1.8m, resulting in a score of "fair" for boulevard sidewalks and "poor" for monolithic sidewalks.

Sidewalks along arterials tend to be monolithic, with many along corridors outside of Stony Plain Road falling into the "poor" rating. Sidewalks within pedestrian priority areas tend to vary in dimensions, and consideration should be given to reallocation of space to enhance the pedestrian realm with future renewal efforts.

4.2.2 Cyclists

As shown in **Figure 4-14**, **Figure 4-15**, and **Figure 4-16**, cycling infrastructure in these areas consists predominantly of shared pathways that follow the river valley and ravine system, along with a limited mix of on-street painted facilities, shared roadways and shared pathway. The 102 Avenue corridor east of 138 Street provides a connection into downtown, while the 100 Avenue shared pathway provides some east-west connectivity. On-street facilities along 148 Street, 104 Avenue, and 95 Avenue further expand the cycling infrastructure, however, the quality of the infrastructure is less than that in other areas of the City.

Notably, the City's Active Transportation Network Expansion program includes enhancements to facilities along 148 Street, 144 Street, 104 Avenue, 95 Avenue, and 107 Avenue, which are expected to be constructed in 2026.

Overall, however, gaps exist within the active transportation network, with a lack of north-south connectivity paralleling the 156 Street corridor, and with no connectivity to between the cycling network and Valley Line LRT station locations.

4.2.3 Transit

As shown in **Figure 4-17**, **Figure 4-18**, and **Figure 4-19**, the area will be well served by LRT service, with Valley Line LRT running along Stony Plain Road and 156 Street, putting the 156 Street and Stony Plain corridors within 800 metres of an LRT station.

LRT service is complimented with the availability of bus routes, albeit with mixed service frequency, along parts of Stony Plain Road west of 156 Street, 87 Avenue, and to a lesser degree, along 95 Avenue, 149 Street, and 142 Street.

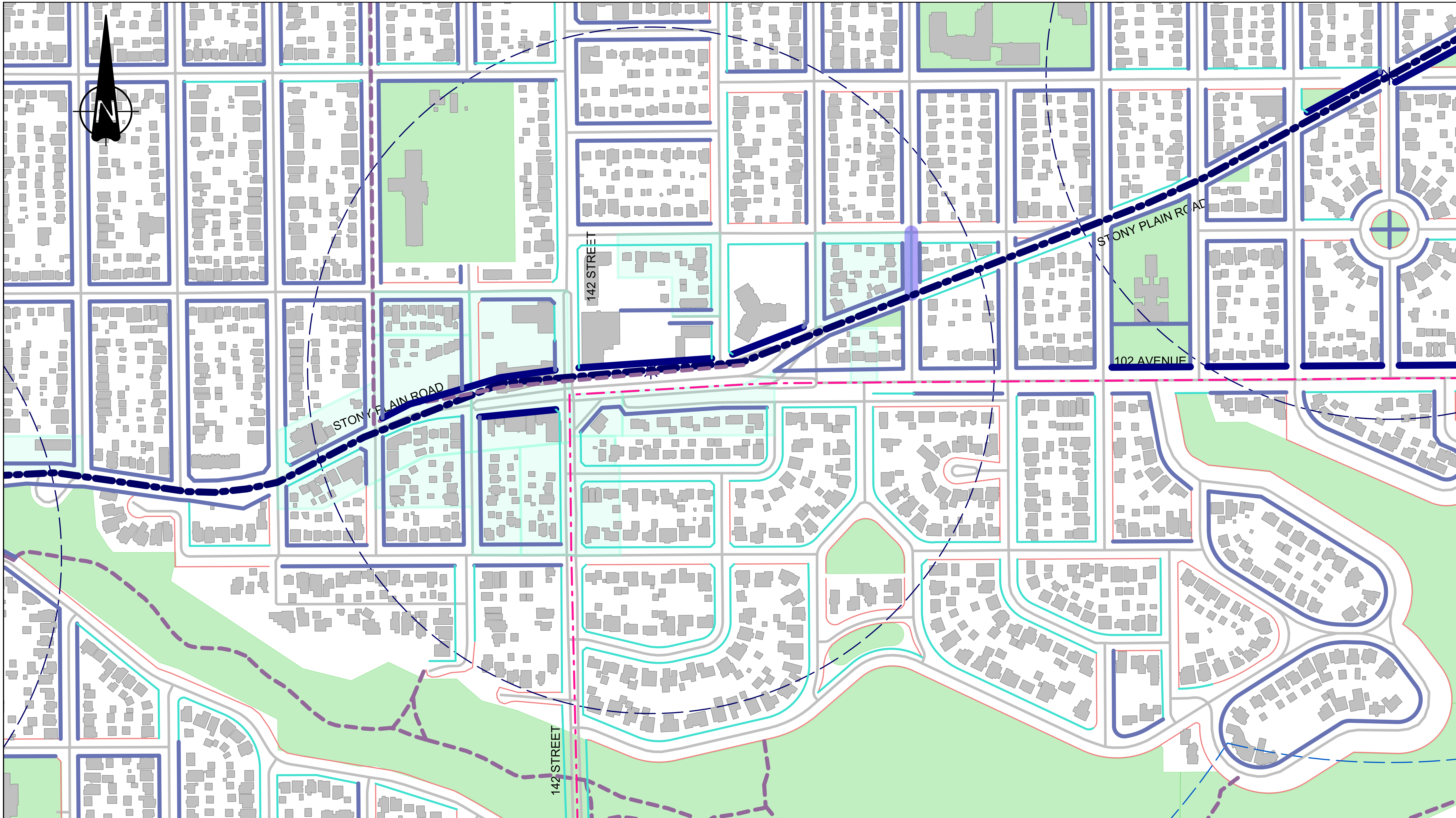
Overall, the transit users in this area would be expected to primarily utilize LRT service.

4.2.4 Vehicles

As shown in **Figure 4-20**, **Figure 4-21**, and **Figure 4-22**, many of the arterial roadways within the PGA area experience medium to high congestion during peak hours. Because each intersection tends to experience higher volume during the PM peak hour, this was deemed to be a more suitable analogy for representing overall peak period congestion in these figures. AM peak period congestion, on the other hand, can reasonably be assumed to occur in the reserve direction. This is expected given that the corridors serve as a commuter route to the downtown core and associated employment and education centres and is the focus of the network assessments discussed later in this report.

4.2.5 All Modes

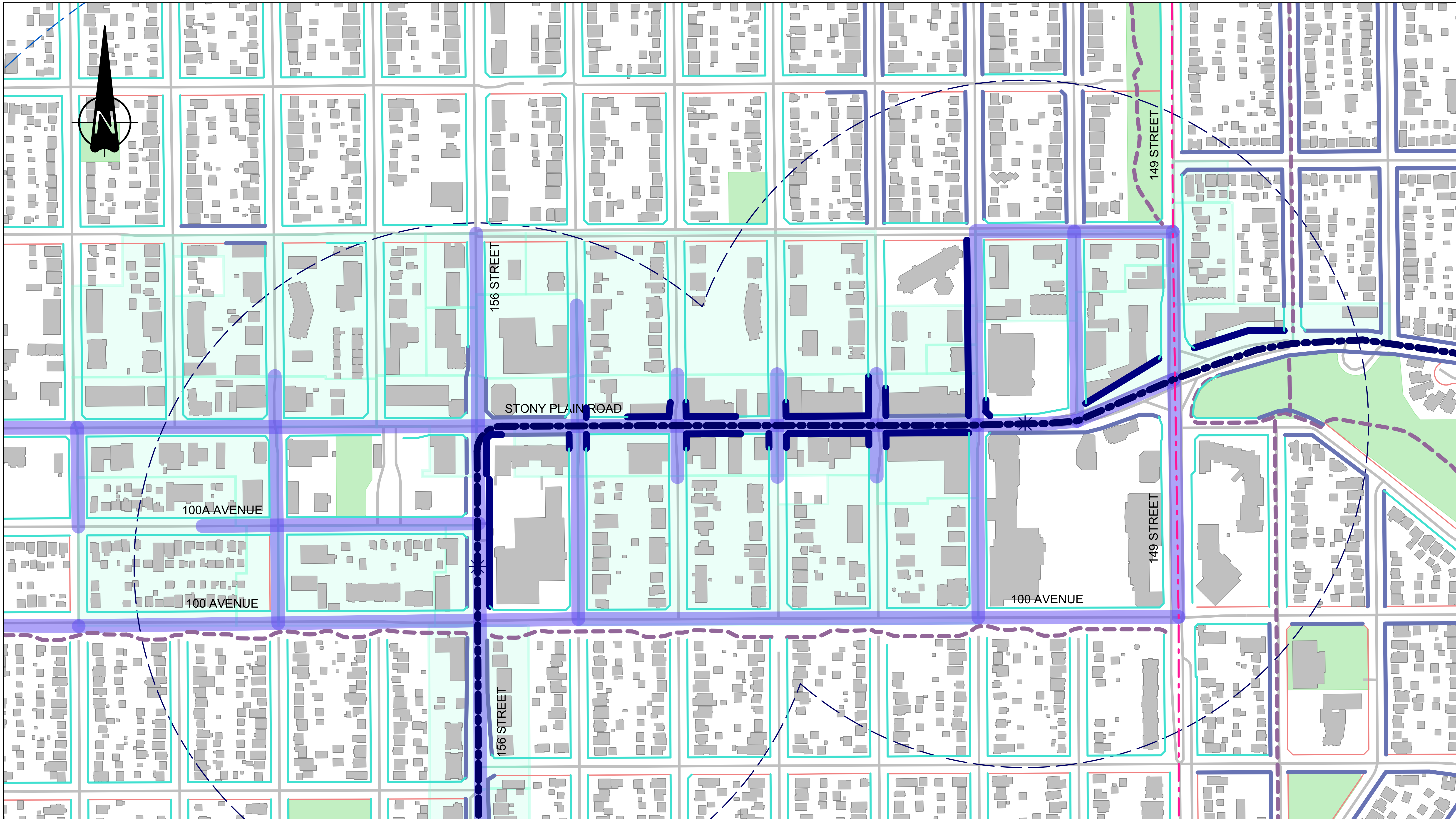
Figure 4-23, **Figure 4-24**, and **Figure 4-25** show the combined results of the mobility network assessments for all of the modes listed above. When overlaid together, this highlights the overlapping importance of 102 Avenue east of Stony Plain Road as an important cycling, vehicle, and transit corridor, as well as of Stony Plain Road west of 149 Street as an important transit, pedestrian, and vehicle corridor.



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- SHARED PATHWAY
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE

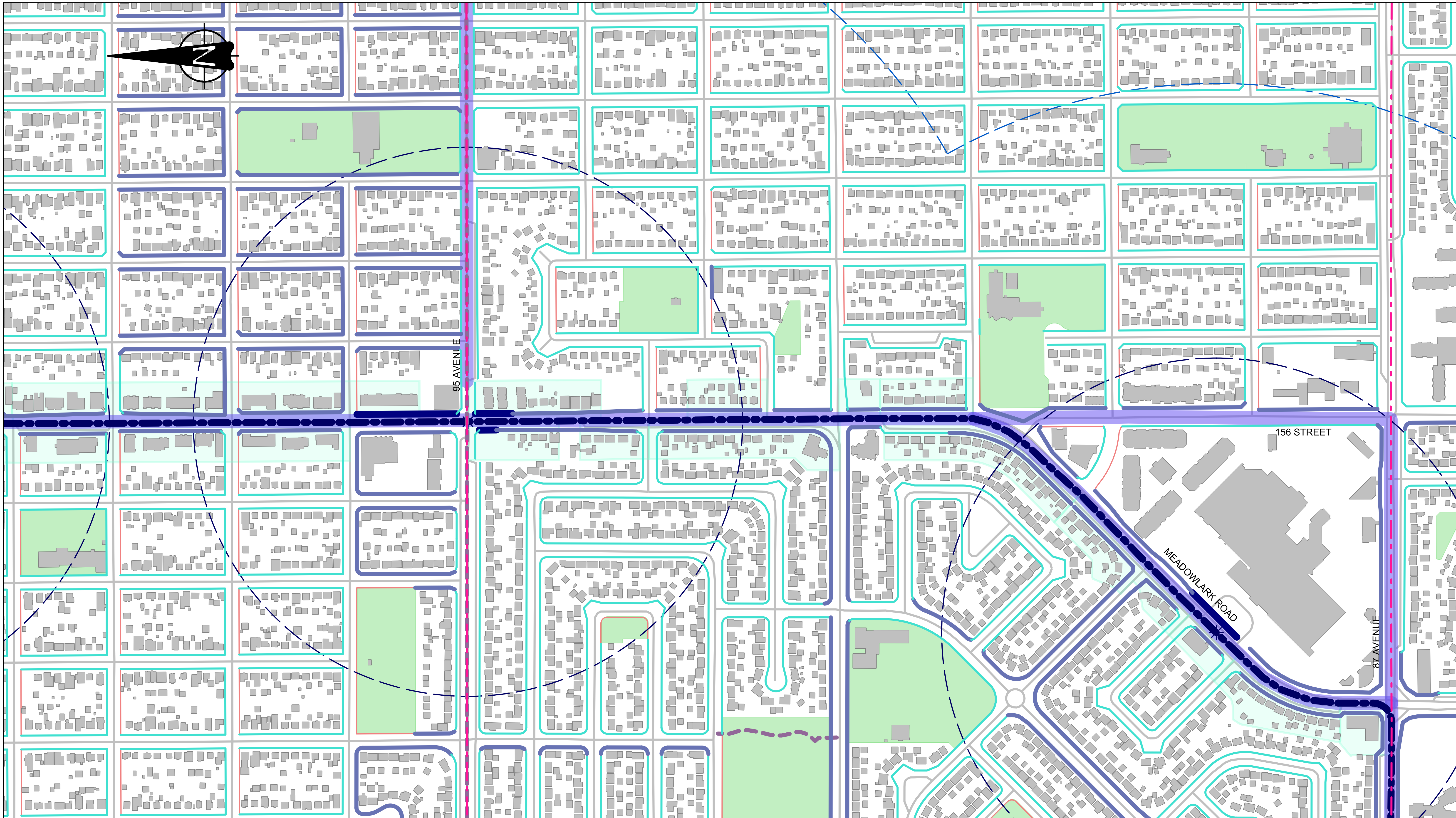
FIGURE 4-11 STONY PLAIN E. PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- SHARED PATHWAY
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE

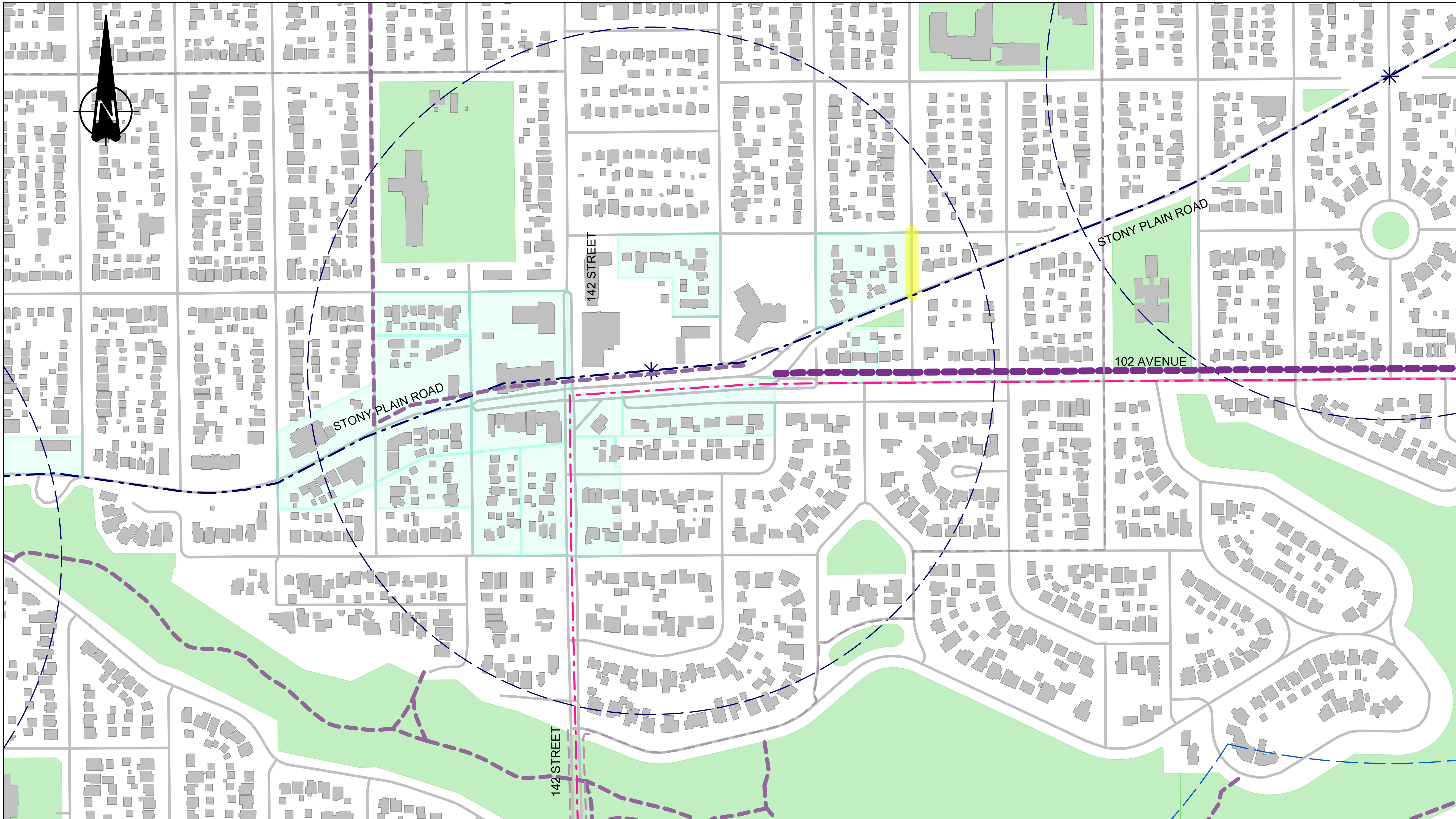
FIGURE 4-12 STONY PLAIN W. PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- SHARED PATHWAY
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE

FIGURE 4-13 156 STREET PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED

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FIGURE 4-14 STONY PLAIN E. PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS

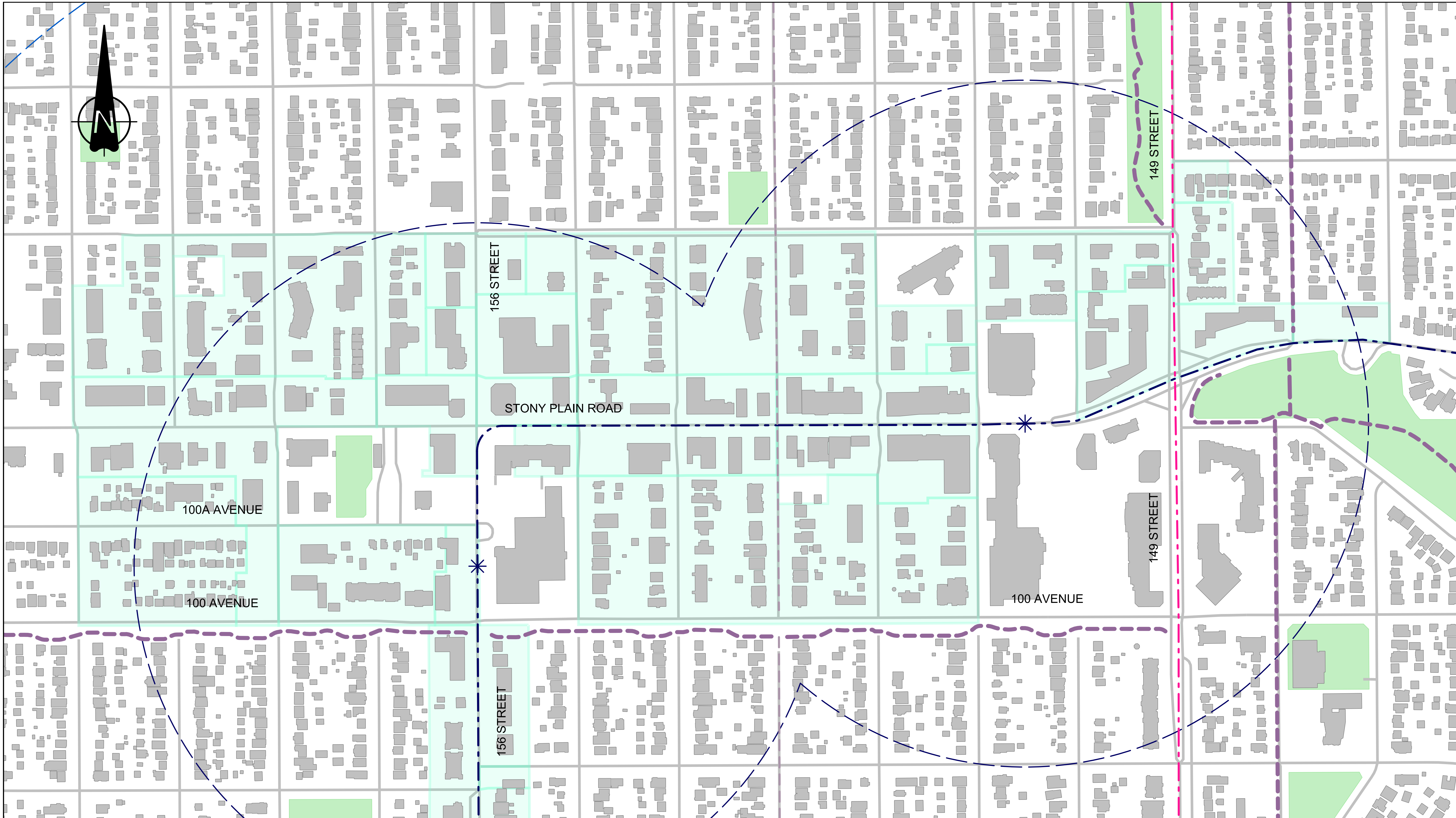

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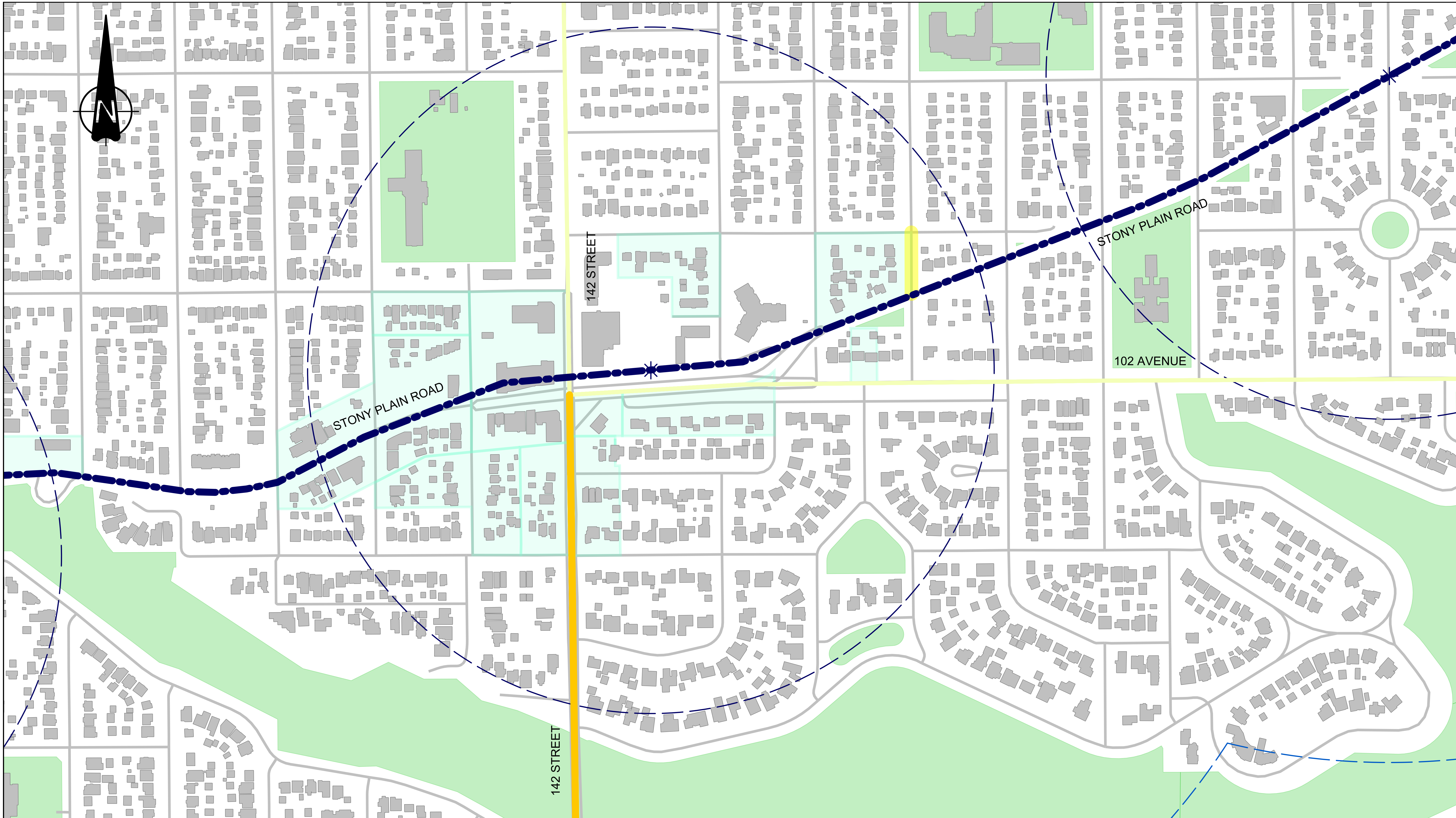
FIGURE 4-15 STONY PLAIN W. PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS

LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED

FIGURE 4-16 156 STREET PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

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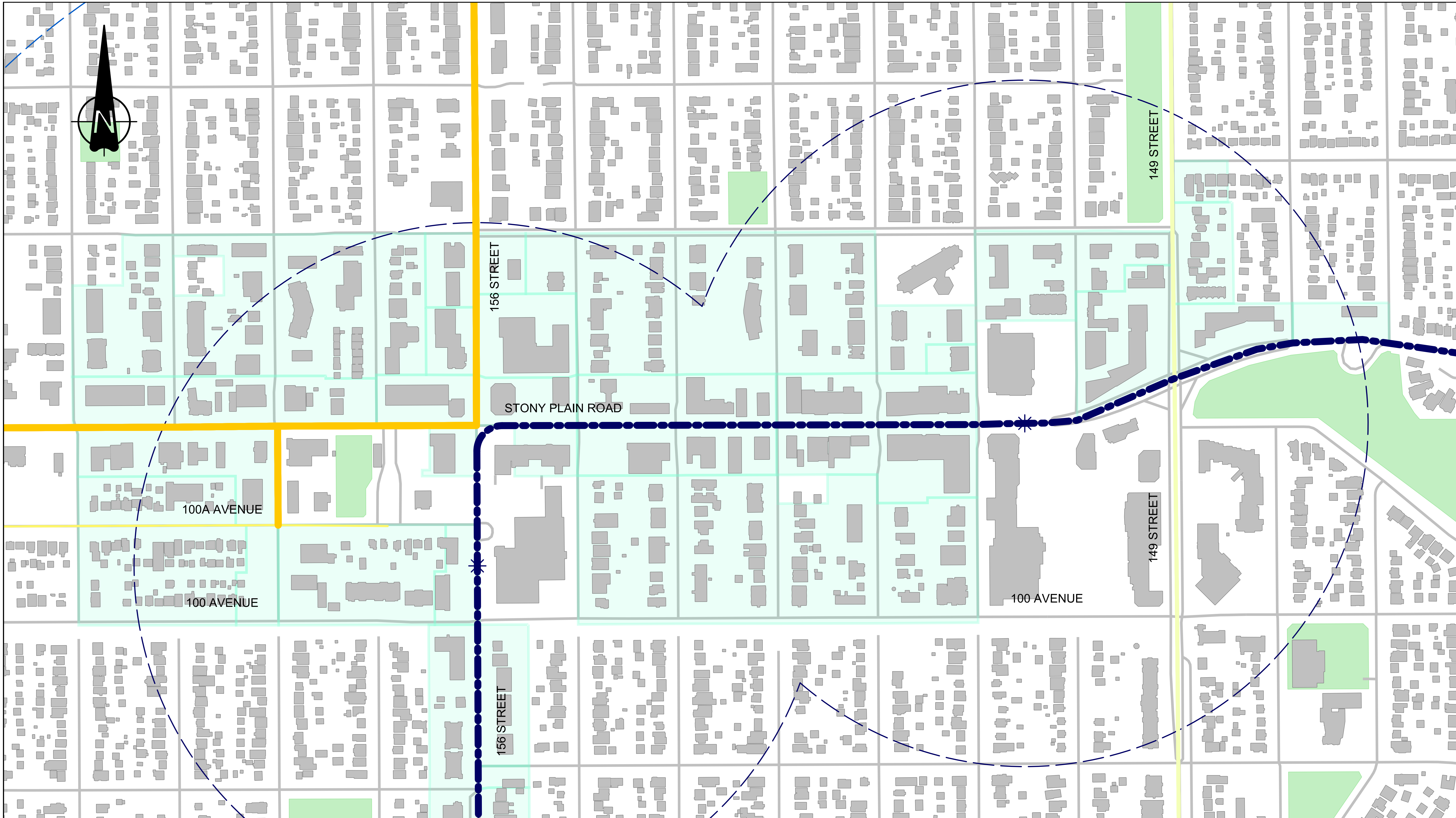
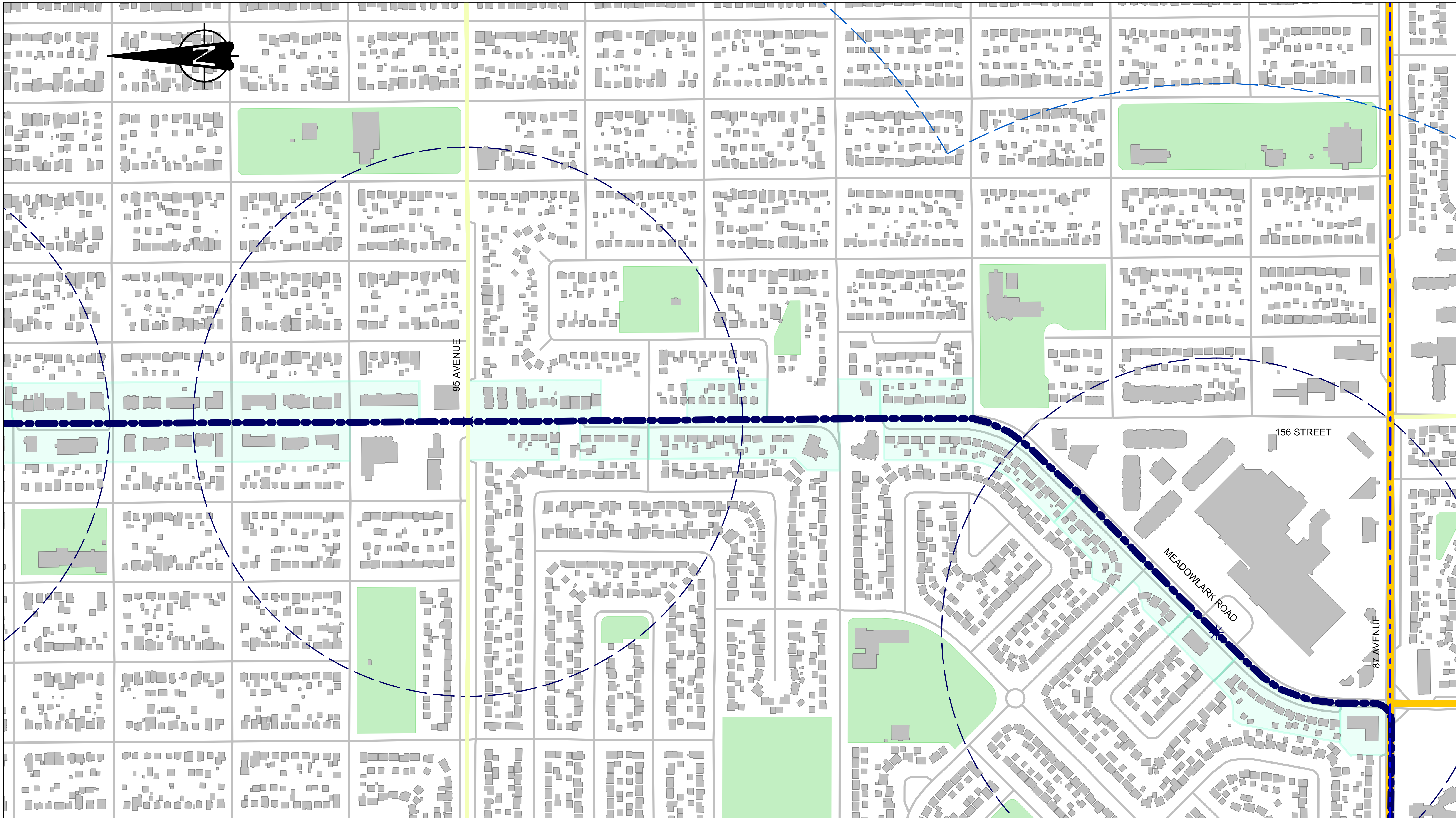
FIGURE 4-17 STONY PLAIN E. PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

FIGURE 4-18 STONY PLAIN W. PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS



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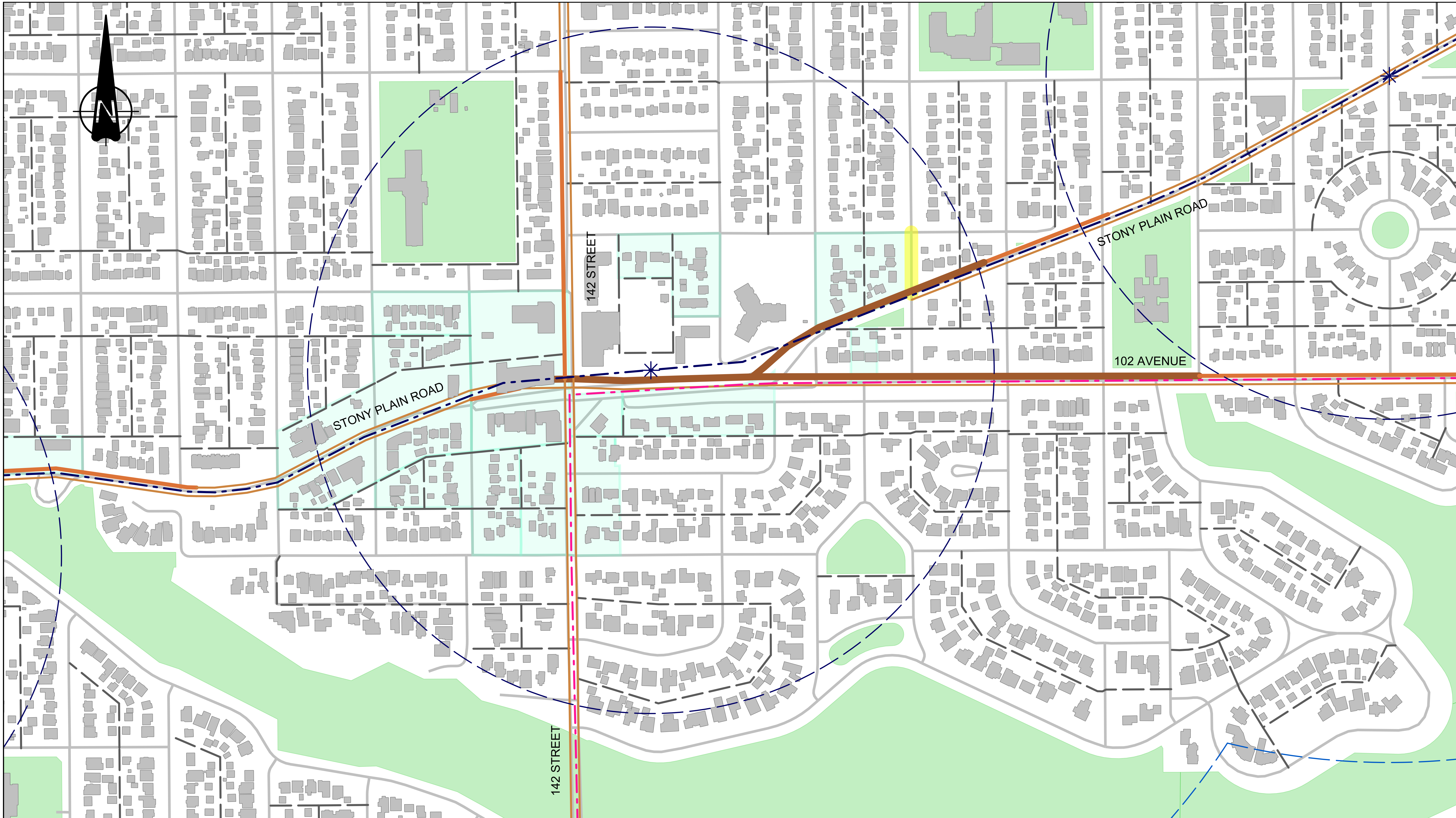
LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- FUTURE BRT CORRIDOR
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

FIGURE 4-19 156 STREET PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ALLEYWAY
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH

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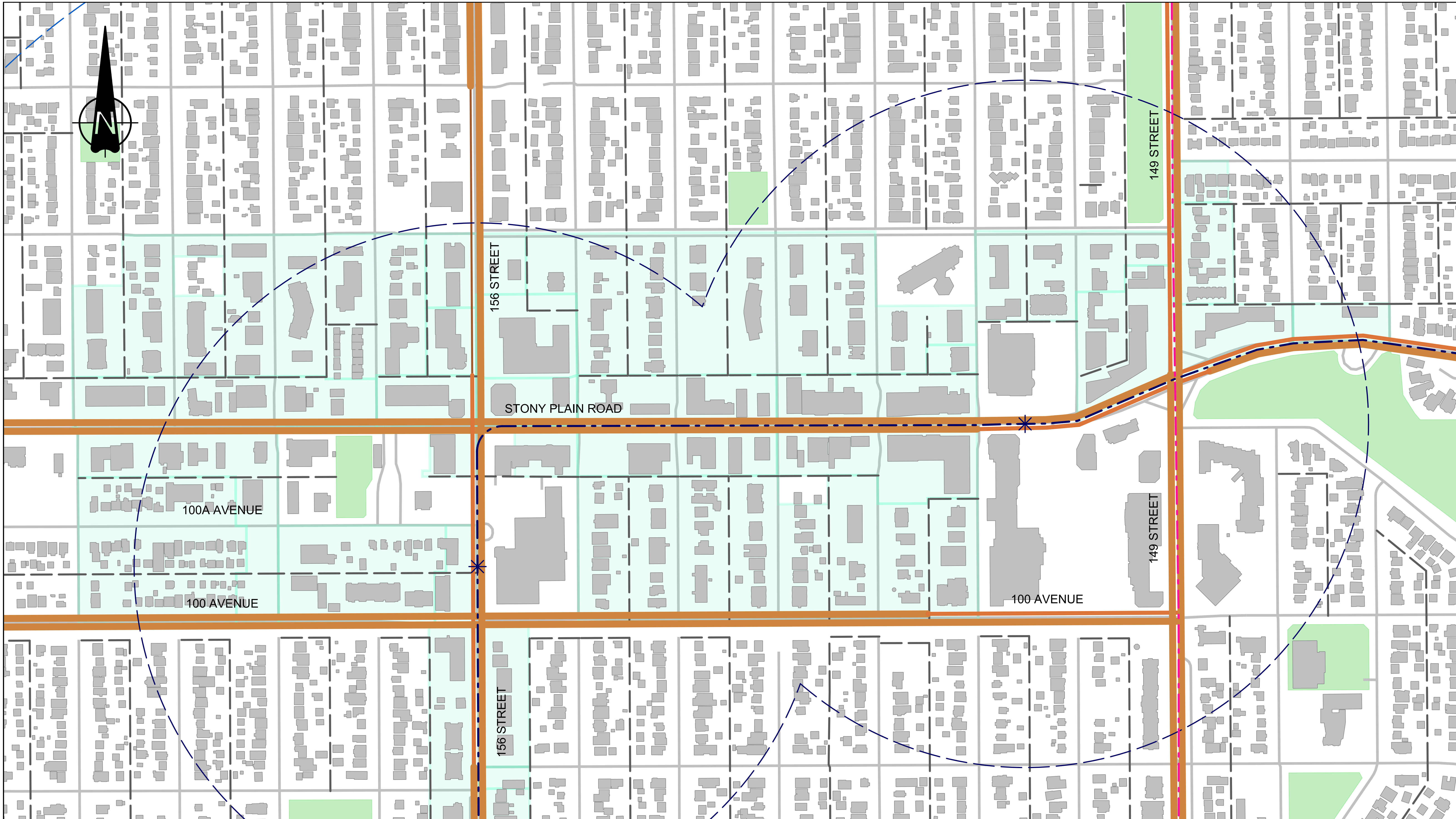
FIGURE 4-20 STONY PLAIN E. PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH

FIGURE 4-21 STONY PLAIN W. PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)

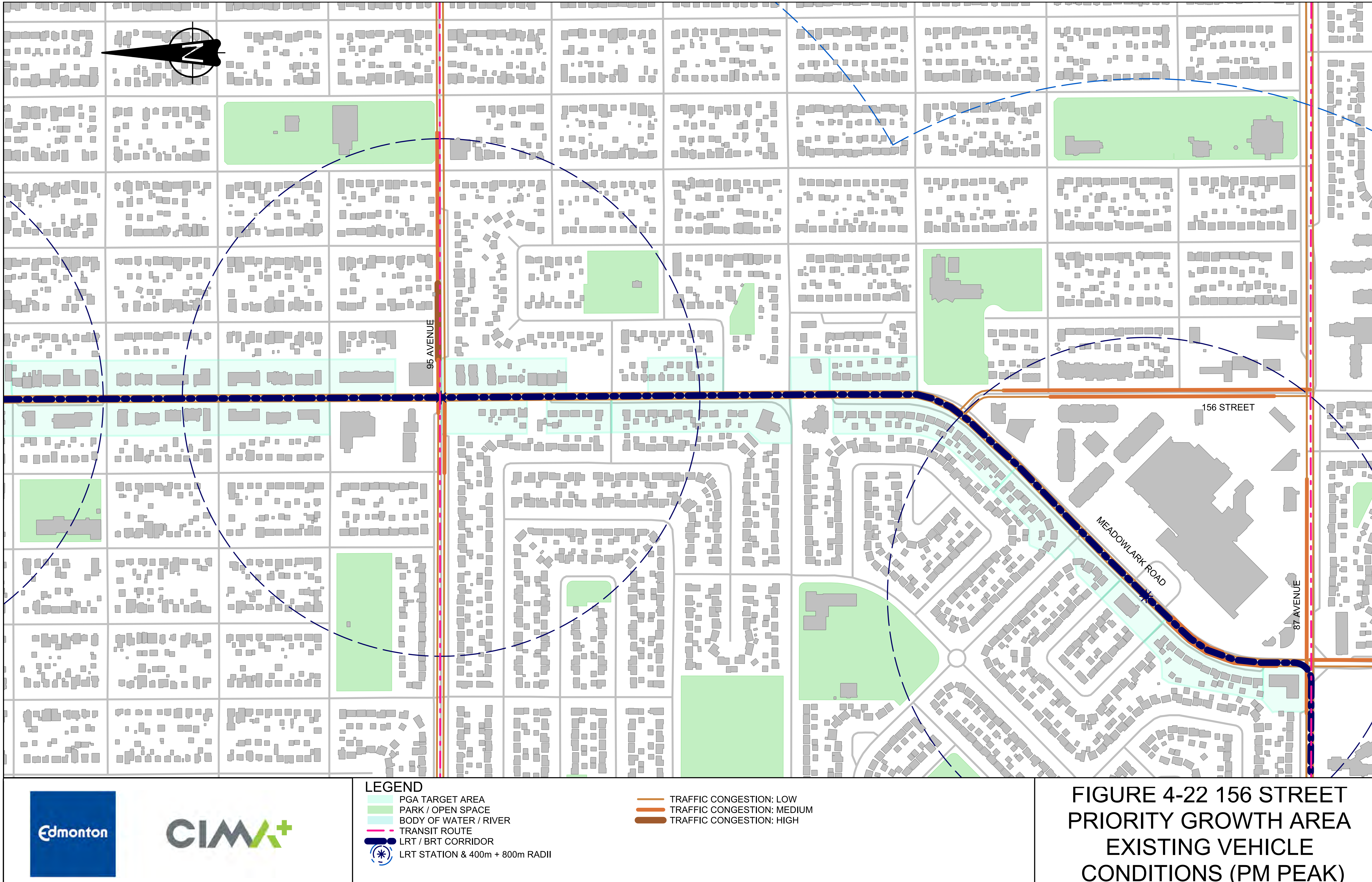
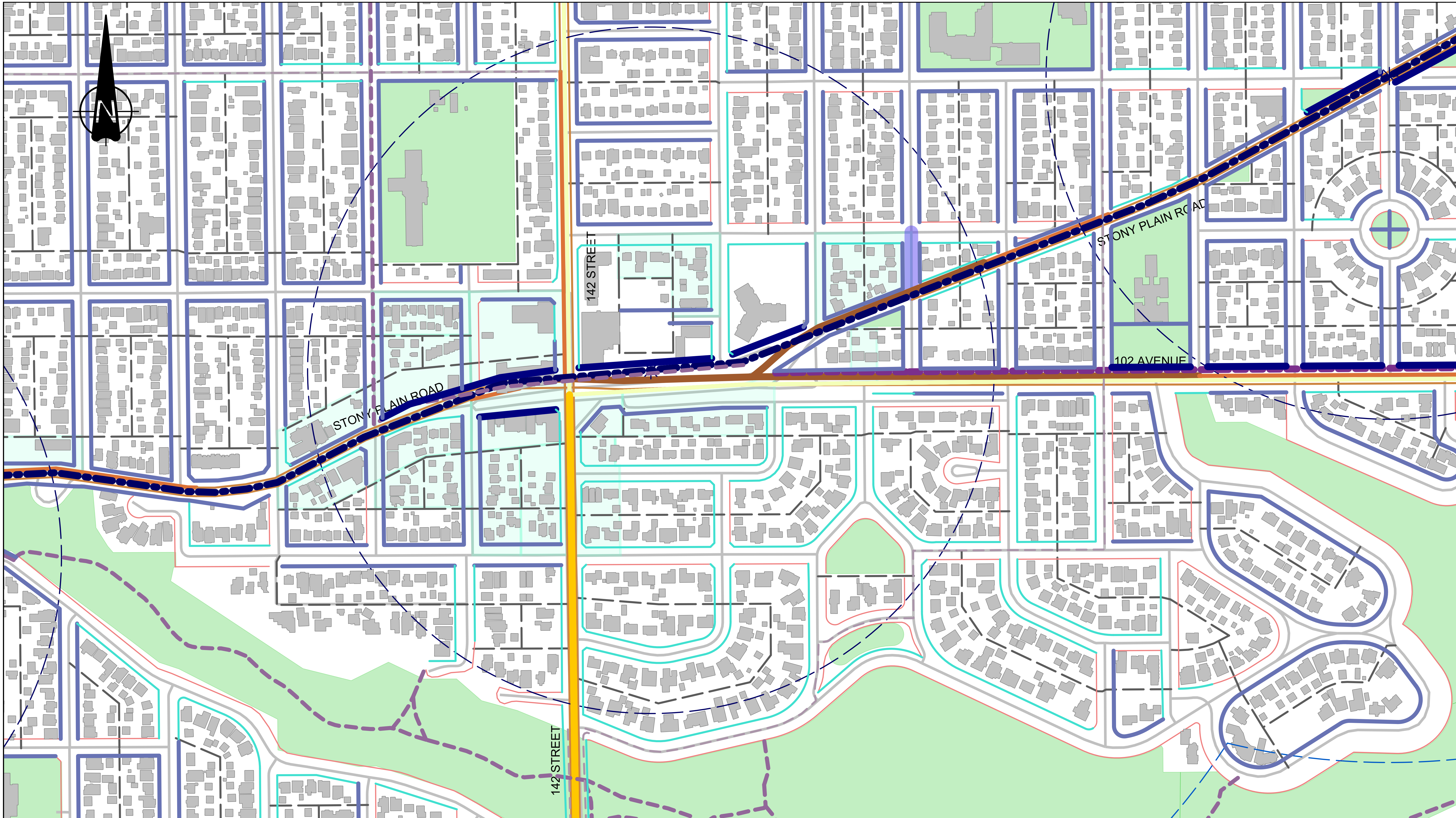


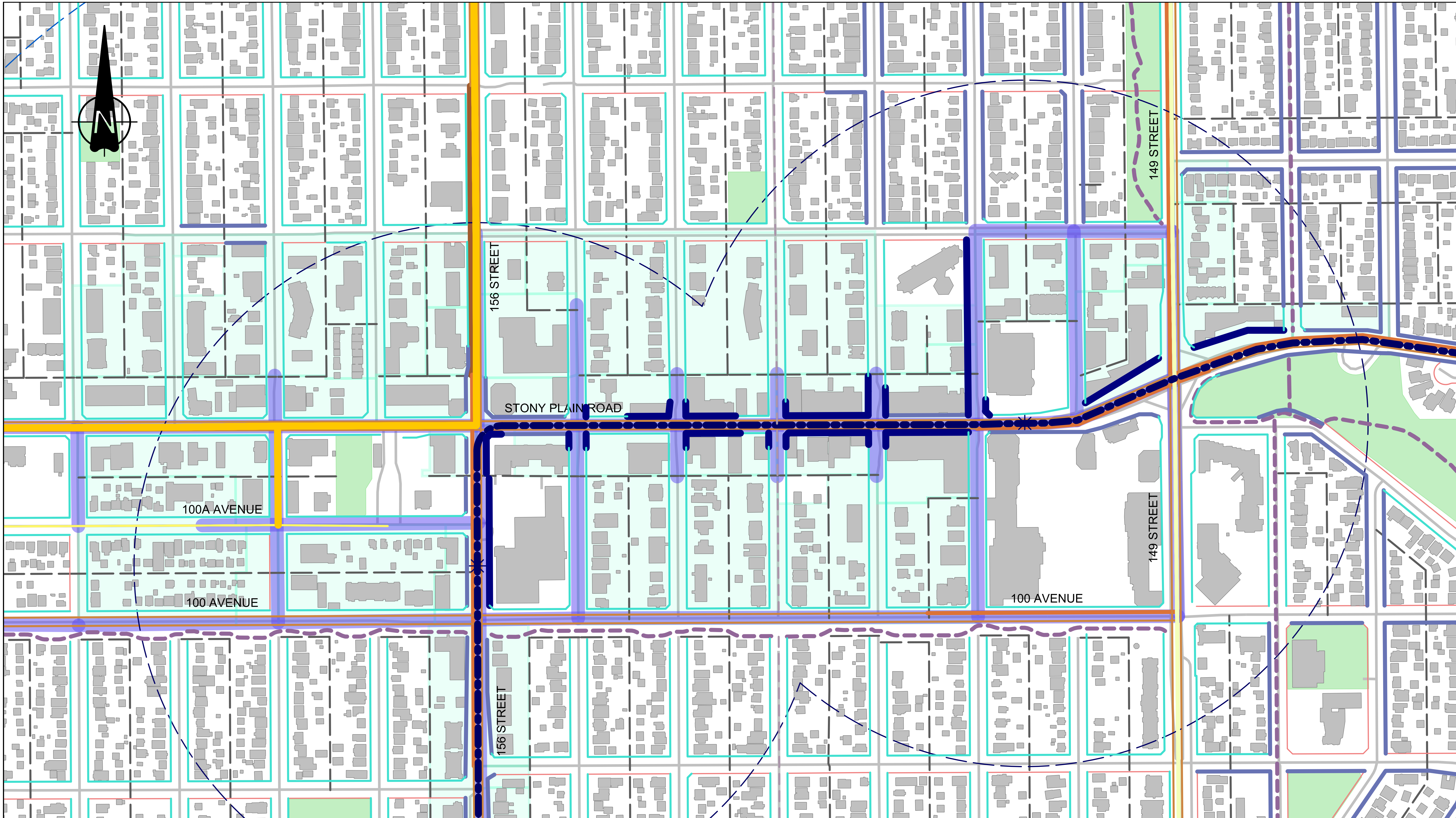
FIGURE 4-22 156 STREET PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

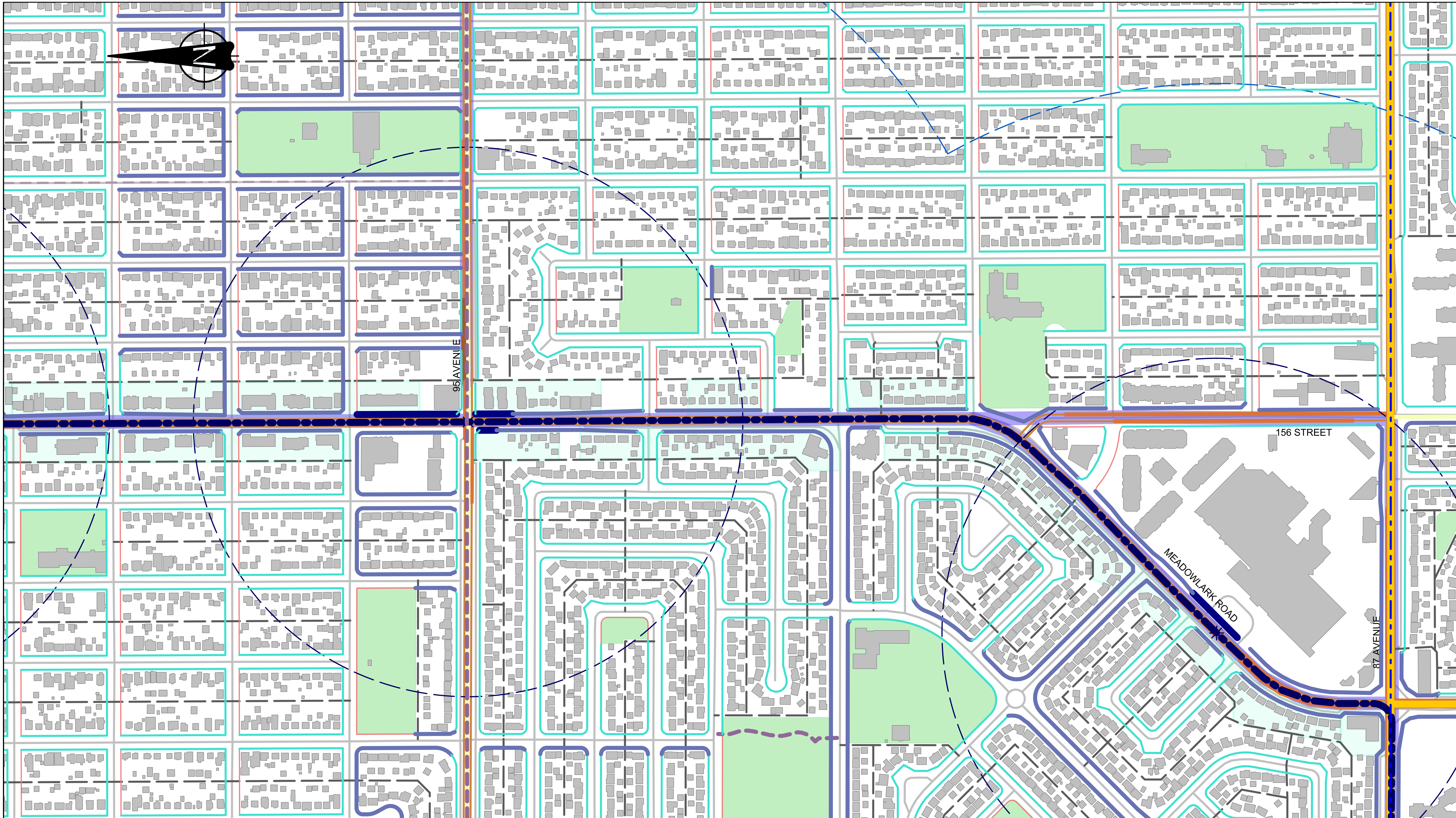
FIGURE 4-23 STONY PLAIN E. PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

FIGURE 4-24 STONY PLAIN W. PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

FIGURE 4-25 156 STREET PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS

4.3 University – Garneau

As the assessment focuses on existing conditions, and as there is no imminent approved capital investment by the City anticipated in this area, there were no future project considered in the assessment.

The Garneau neighbourhood completed renewal in 2023, with renewal of the neighbouring communities completed in 2021 for Strathcona, 2018 for McKernan, and 2017 for Queen Alexandria. As such, outside of the arterial roads which are renewed through a separate program, the existing pedestrian, cyclists, transit, and vehicle infrastructure within these communities is not anticipated to undergo any immediate further changes.

4.3.1 Pedestrians

As shown in **Figure 4-26**, the area is very well served by sidewalk infrastructure on both sides of the street. Sidewalks along local and collector streets tend to be separated, with widths of 1.5 to 1.8m, resulting in a score of “fair”. Sidewalks along arterials tend to be monolithic, with those along some corridors falling into the “poor” rating, particularly along some stretches of 109 Street and Whyte Avenue west of 109 Street. The area does also have several locations with sidewalk widths assessed as “good”. As noted in the Old Strathcona Public Realm Strategy, and other planning documents, and consideration should be given to reallocation of space to continue to enhance the pedestrian realm with future renewal and capital efforts.

4.3.2 Cyclists

As shown in **Figure 4-27**, cycling infrastructure in the Garneau area is extensive, consisting of a mix of shared roadways, shared pathway, and dedicated protected and separated facilities. The 83 Avenue and 110 Street bikeways provide the immediate backbone of the bike network in the area, with on-street and shared pathway facilities along portions of 112 Street, 84 Avenue, 85 Avenue, the CP Rail / Edmonton Radial Railway Street Car Line, Saskatchewan Drive, 88 Avenue, and into the River Valley (including along 109 Street and Walterdale Hill Road).

Together, these facilities provide a network of bike infrastructure generally within one block of any potential redevelopment.

4.3.3 Transit

As shown in **Figure 4-28**, the area is well served by transit, including both bus based and LRT service. The Capital Line/Metro Line runs through the University of Alberta to the west, putting the western half of the area within 800 metres of an LRT station. Future B1 and B2 BRT is also planned along Whyte Avenue and 109 Street, with potential connectivity to the University of Alberta along 87 Avenue. Concept planning for the routes has been initiated and will determine the exact routing and stop / station locations. Delivery timelines will be known once design work has been completed and funding for construction is allocated.

Existing LRT service is complimented with the availability of multiple bus routes along 109 Street, 112 Street, and Whyte Avenue, providing good connectivity through the area, and into downtown.

4.3.4 Vehicles

As shown in **Figure 4-29**, many of the arterial roadways within the PGA area experience medium to high congestion during peak hours. Because each intersection tends to experience higher volume during the PM peak hour, this was deemed to be a more suitable analogy for representing overall peak period congestion in these figures. AM peak period congestion, on the other hand, can reasonably be assumed to occur in the reserve direction. This is expected given the proximity to the downtown core as well as the University of Alberta, and associated employment and education centres, and is the focus of the network assessments discussed later in this report.

4.3.5 All Modes

Figure 4-30 shows the combined results of the mobility network assessments for all of the modes listed above. When overlaid together, this highlights the overlapping importance of 109 Street and Whyte Avenue to pedestrians, transit, and vehicles, as well as the extensive cycling network that parallels these two corridors in the area.

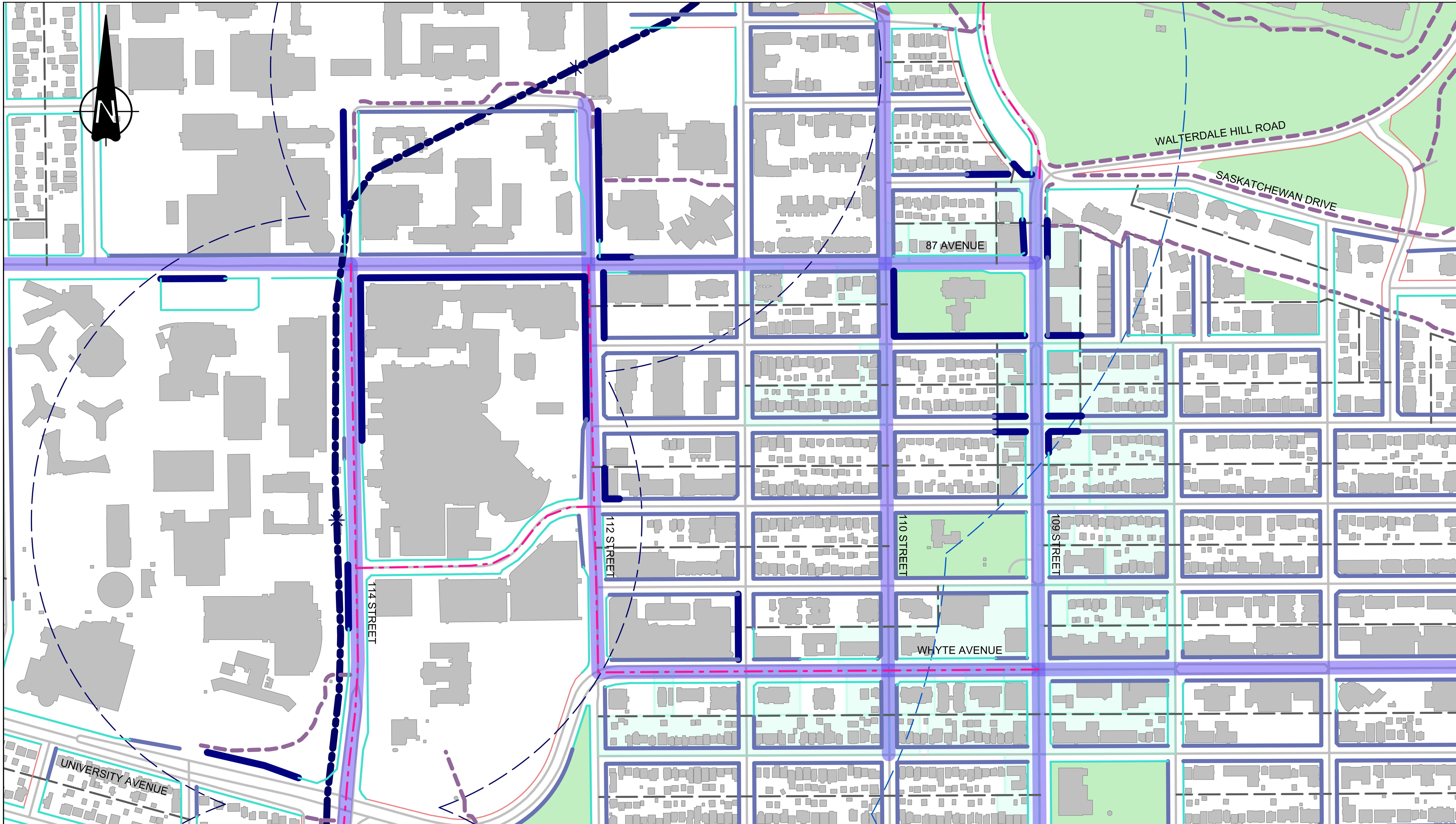


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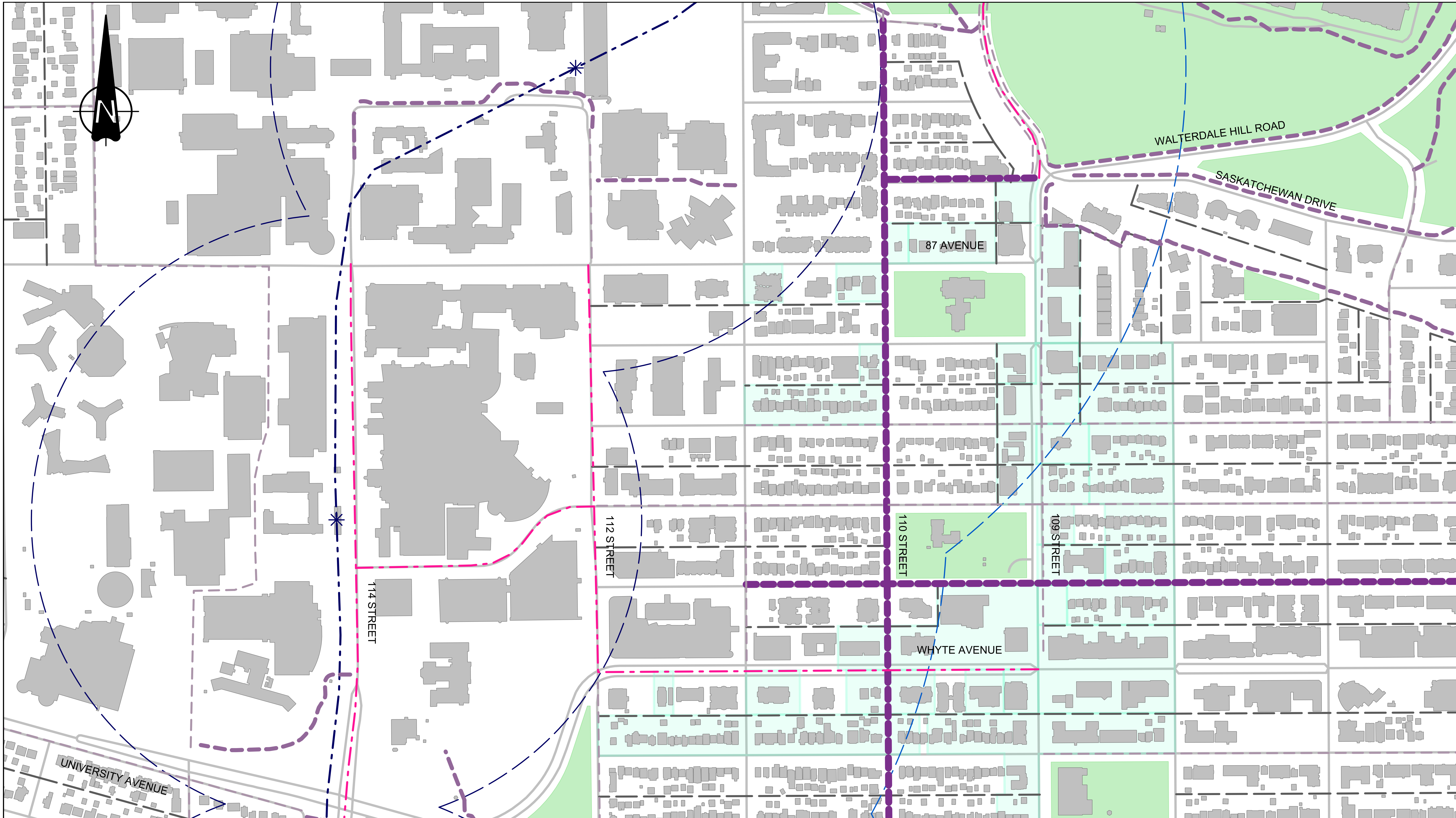
FIGURE 4-26 GARNEAU PRIORITY GROWTH AREA EXISTING PEDESTRIAN CONDITIONS



LEGEND
- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- TRANSIT ROUTE
- LRT / BRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED

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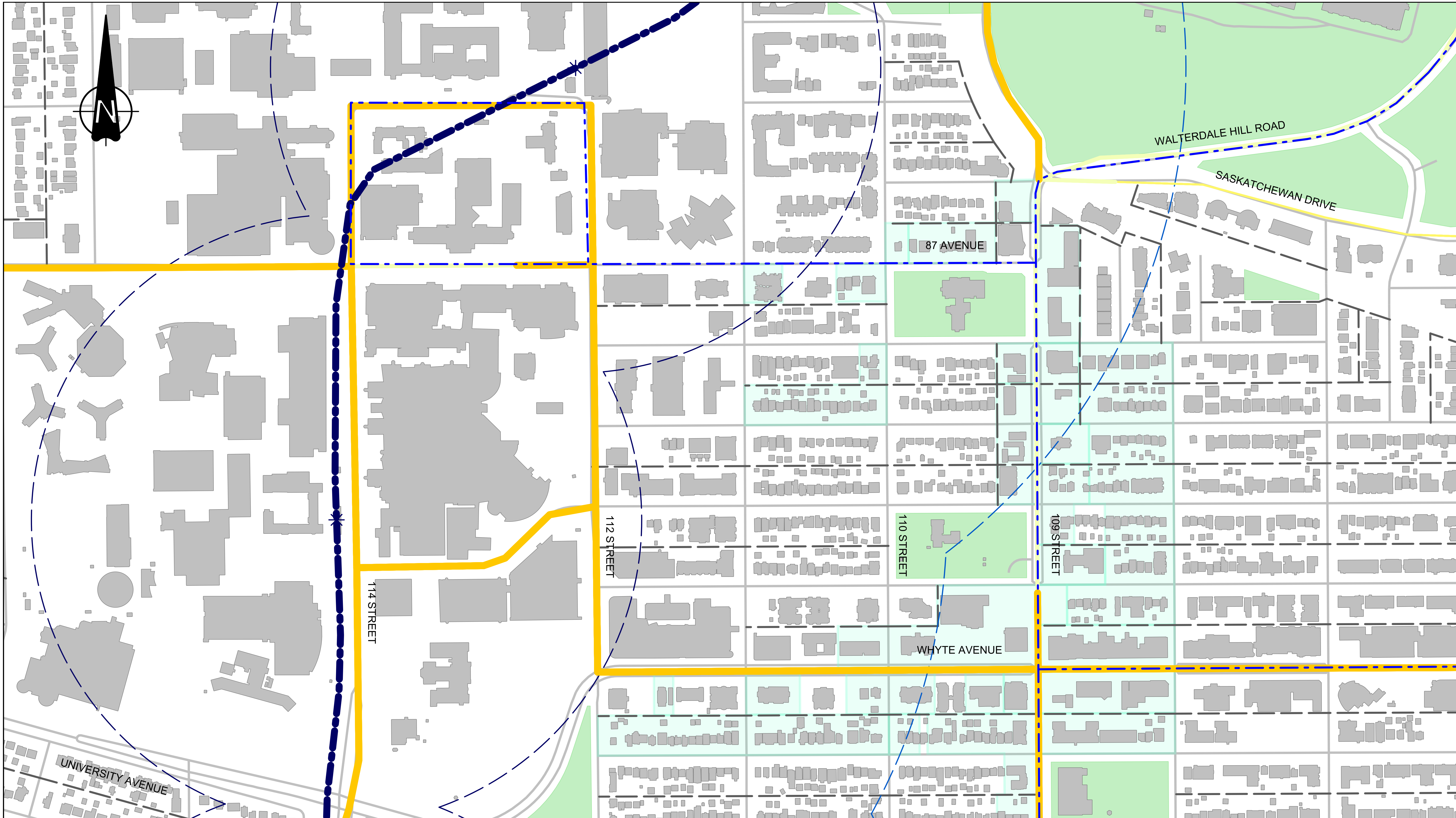
FIGURE 4-27 GARNEAU PRIORITY GROWTH AREA EXISTING CYCLING CONDITIONS



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- FUTURE BRT CORRIDOR
- LRT CORRIDOR
- LRT STATION & 400m + 800m RADII
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY

FIGURE 4-28 GARNEAU PRIORITY GROWTH AREA EXISTING TRANSIT CONDITIONS

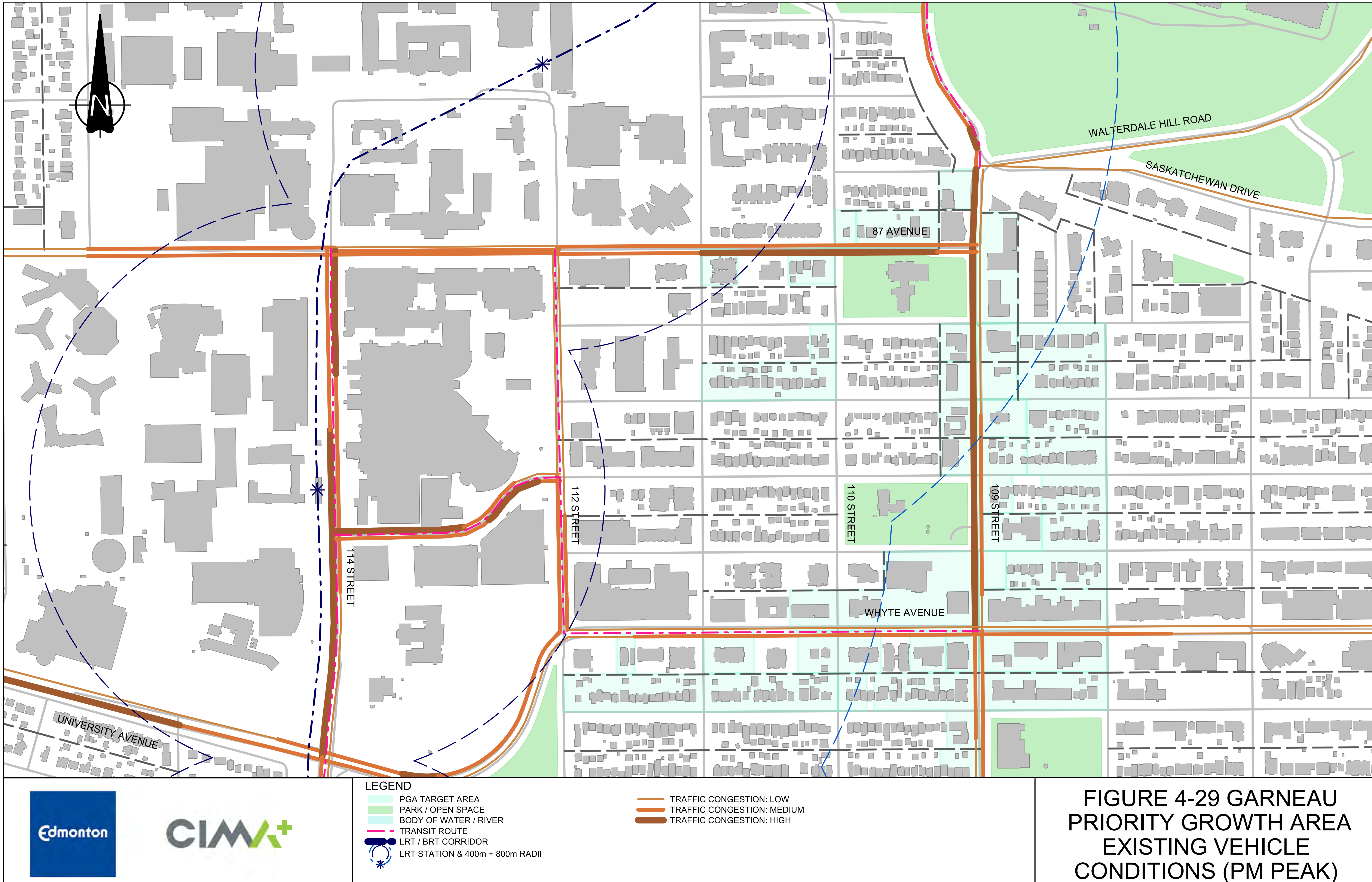


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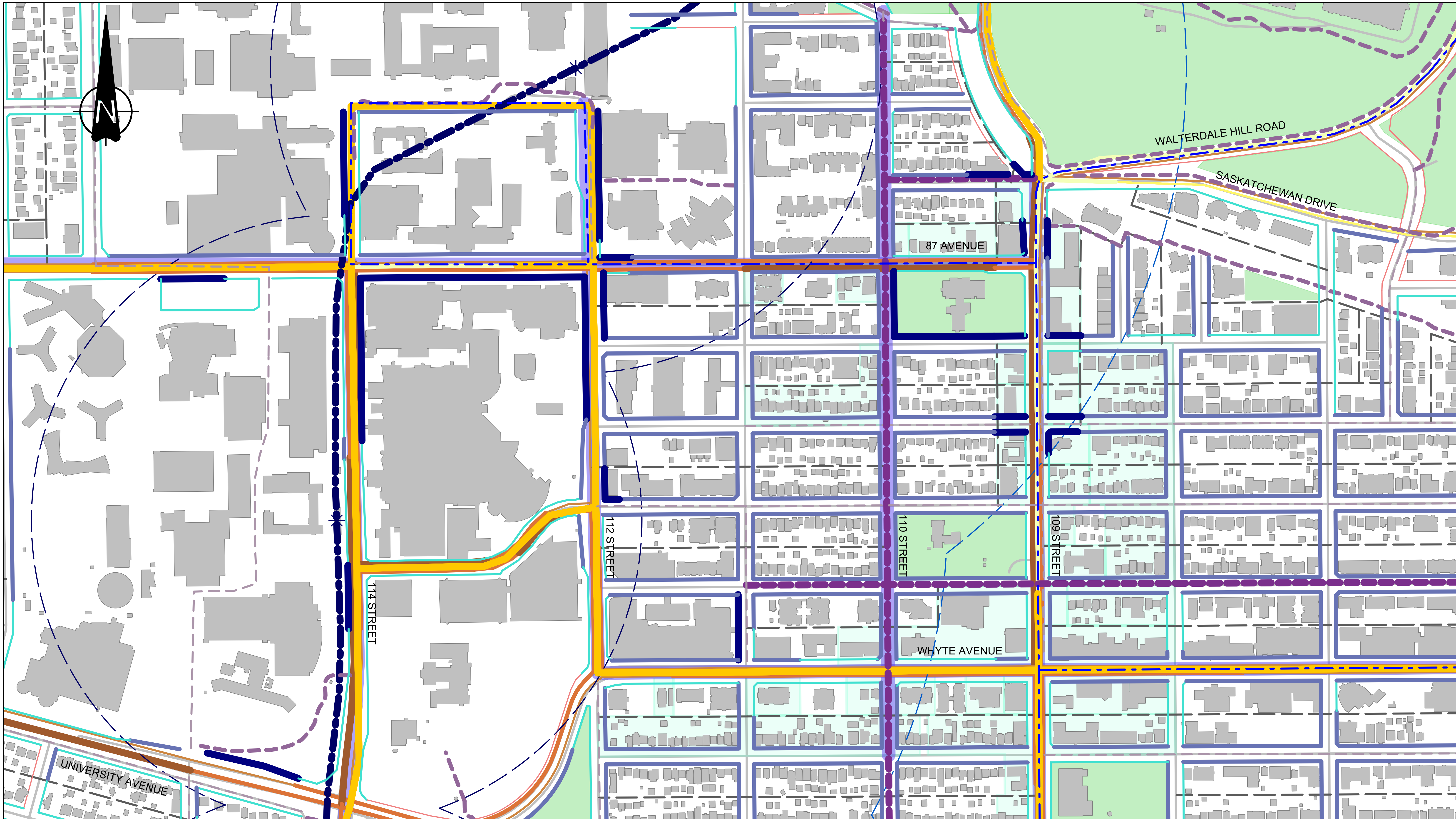
FIGURE 4-29 GARNEAU PRIORITY GROWTH AREA EXISTING VEHICLE CONDITIONS (PM PEAK)



LEGEND

- PGA TARGET AREA
- PARK / OPEN SPACE
- BODY OF WATER / RIVER
- PEDESTRIAN PRIORITY AREA (PER DISTRICT PLAN)
- LRT / BRT CORRIDOR
- TRAFFIC CONGESTION: LOW
- TRAFFIC CONGESTION: MEDIUM
- TRAFFIC CONGESTION: HIGH
- ETS: LOW FREQUENCY
- ETS: MEDIUM FREQUENCY
- ETS: HIGH FREQUENCY
- BIKE: PROTECTED, SEPARATED
- BIKE: SHARED PATHWAY
- BIKE: SHARED ROADWAY OPERATIONS/PAINTED
- SIDEWALK: POOR (<3.5m MONO OR <1.5m SEPARATE)
- SIDEWALK: FAIR (3.5m TO 4.5m MONO OR 1.5 to 1.8m SEPARATE)
- SIDEWALK: GOOD (>4.5m MONO OR >1.8 SEPARATE)
- SIDEWALK: NONE
- LRT STATION & 400m + 800m RADII

FIGURE 4-30 GARNEAU PRIORITY GROWTH AREA EXISTING ALL MODES CONDITIONS

4.4 Alleyways

As shown in the qualitative assessment figures, most parcels within all five PGA areas are served by both a front street and a rear alleyway. In many instances, future redevelopment will be required to take access to parking areas and waste collection from the alleyways, rather than the fronting street.

The condition of existing alleys varies throughout the PGA areas and includes gravel surfaced alleys, paved alleys, and fully hard surfaced alleyways, all typically set in a 6.0m right of way. Current City of Edmonton standards specify a 4.0m hard surfaced driving area for low density residential alleys (Figure 4-31, Standard Drawing 2040) and a 6.0m hard surfaced driving area, with a thicker pavement structure, for higher density residential and commercial alleys (Figure 4-32, Standard Drawing 2041). Both alley types require one vehicle to yield to another, oncoming vehicle.

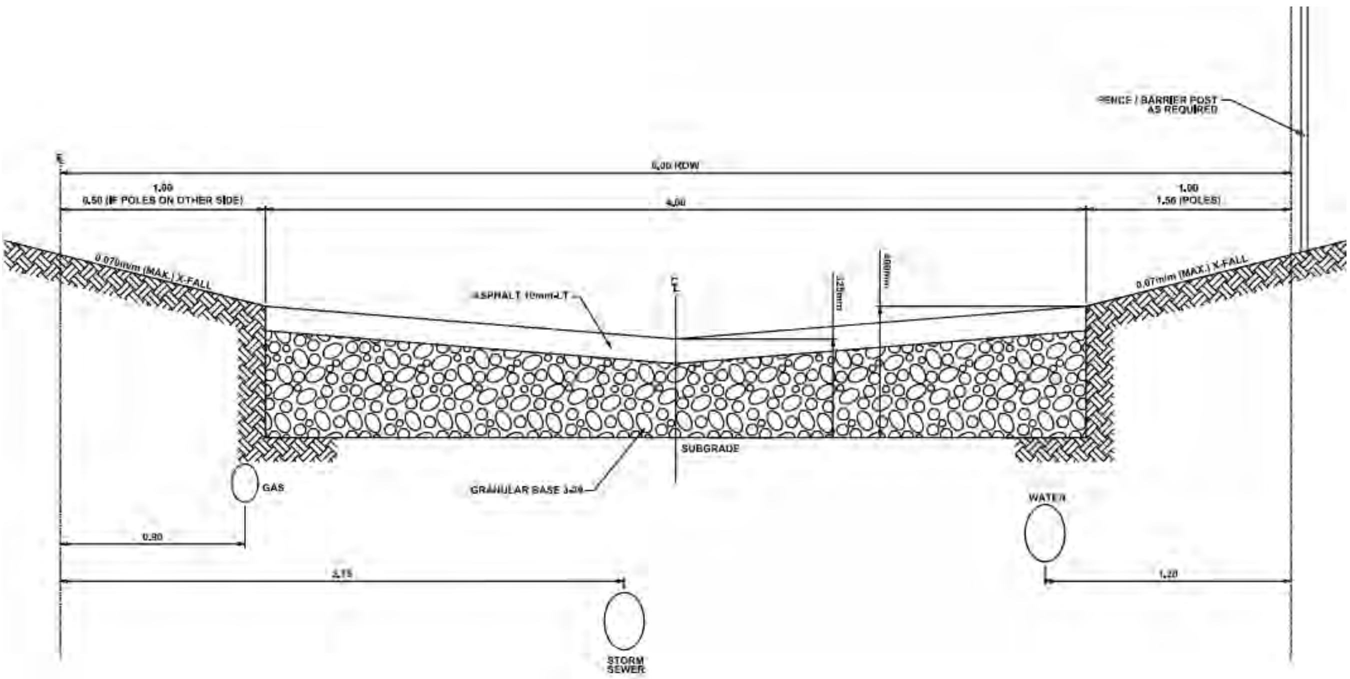


Figure 4-31 Typical City of Edmonton Residential Alley – Standard Drawing 2040

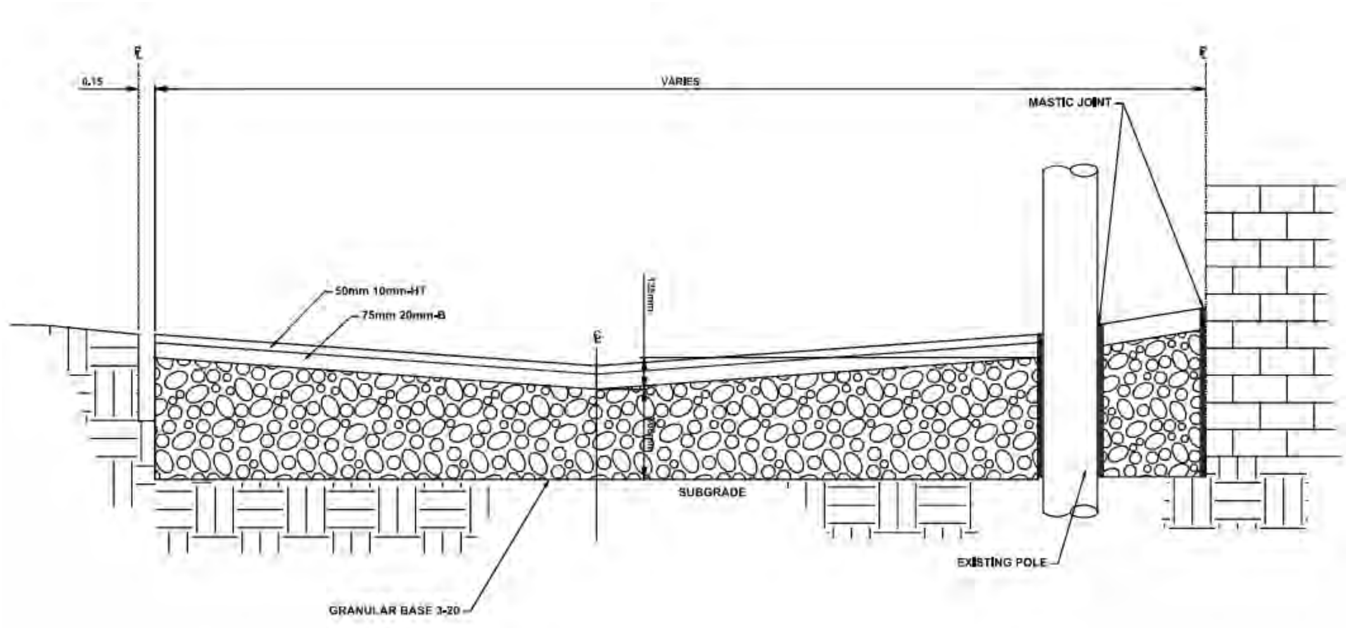


Figure 4-32 Typical City of Edmonton Commercial Alley – Standard Drawing 2041

Generally accepted typical volumes for alleyways are lower in residential alleys and higher for commercial alleys (which are also utilized for higher density residential developments), which is reflected in the width and pavement structure for typical residential and commercial alley standards. Increasing densification combined with rear alley access can result in increasing traffic volumes which may necessitate upgrades.

The potential increase in traffic volumes along the rear alleys can be mitigated by upgrading existing gravel and paved residential alleys to a commercial alley standard, both in width and pavement structure, combined with:

- Alleys can be converted to one-way operations to remove the conflict of vehicles travelling in opposing directions. However, enforcement of this conversion can often be difficult.
- Developments can be required to provide additional setbacks from the rear property line to any building envelopes or parking areas to provide additional passing space for oncoming vehicles.
- Along local streets, access to parkades and parking areas can be provided from the front street rather than the alley.

In addition to the above measures, existing alleys may require upgraded pavement structures to accommodate higher vehicle volumes and loading.

Depending on the scope of the changes, alley upgrades could potentially be pursued through the City's Alley Renewal Program in areas such as Business Improvement Districts.

4.5 Summary of Qualitative Analysis

The qualitative analysis provides the basis for the existing conditions considered in the post-development mobility assessment. In many cases, gaps identified from the qualitative analysis became the basis for recommendations made to improve the corridors and intersections within each PGA, tying into the MMLOS assessment process for each mode. While the roadway and transit mobility networks are fairly robust, the qualitative analysis provided an initial identification of locations where congestion should be anticipated in the traditional LOS analysis. The mobility network for pedestrians and active modes users, on the other hand, experiences more pronounced gaps, such as missing sidewalk connections or absent cycling corridors, which prohibit ease of movement. Filling these gaps become the baseline for improvements to the mobility network.