Transforming Local Roads To Urban Ecological Corridors

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Disclaimer

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(Cover page: Lilian To Park, Vancouver - Photo courtesy of Jo Fitzgibbons)

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Executive Summary

This report explores the potential for transforming aging local road assets into ecological corridors in response to Vancouver's climate emergency and 11% road space reallocation target.

A series of case studies included in this report examine how municipalities around the world have approached road space reallocation. Key takeaways and lessons learned have been summarized to inform Vancouver's implementation of ecological corridors.

Building on these insights, a mapping analysis using the City's internal datasets has informed a recommended list of 17 Local Road Candidates for near-term implementation over the next 5 to 10 years.

These recommendations represent a strategic opportunity to transform aging infrastructure into resilient ecological assets advancing Vancouver's climate commitments, supporting biodiversity, and creating more livable, connected neighbourhoods.

1. Introduction

Change and Adaptation are fundamental to building climate resilience.

This project seeks to re-conceptualize road assets in the public right-of-way, specifically those at the end of their pavement life cycles as opportunities for innovation.

Rather than defaulting to traditional rehabilitation, we propose transforming these spaces into ecological corridors to support biodiversity, mitigate urban heat, and enhance community well-being.

A 100 Year Ecological Vision

Since Vancouver declared a climate emergency in 2019, the city has faced a series of escalating climate-related hazards: the 2021 heat dome, seasonal flooding, and deteriorating air quality from wildfires. These events have had far-reaching impacts on public health, biodiversity, infrastructure, and the economy.

In response, the City has launched a suite of climate action plans to initiate change through various avenues. These include, but are not limited to, a transformation in mobility patterns to reduce carbon emissions and accommodate growing travel needs and urban greening initiatives to increase tree canopy coverage to combat urban heat. In particular, the Vancouver Plan outlines a 100-year ecological vision centred on ecosystem protection and restoration.

A key strategy within this vision is the creation of ecological corridors that connect fragmented habitats, support species movements, enhance stormwater management, and provide cooling effects in dense urban areas.

A 11% Road Space Reallocation Target

As Vancouver grows denser, the need for effective management and rehabilitation of road assets becomes increasingly urgent. In May 2020, the Vancouver City Council approved a motion to reallocate a minimum of 11% of road space to non-automobile uses. The direction was further reinforced in the Vancouver Plan, which identifies road space reallocation as a Strategic Priority (City of Vancouver, 2024).

Our status quo, like-for-like rehabilitation practices for road assets, is financially and ecologically unsustainable, and simply repaving a street may not always be the best response.

Pavements typically last around 15-25 years, but their longevity is increasingly compromised by extreme weather and heavy traffic. Pavements are also subject to unexpected costs due to emergency repairs following climate events (Kenley et al., 2014), unscheduled upgrades to underground infrastructure and disruptions to predictive maintenance plans.

Recent research (Kenley et al., 2014; Haas et al., 2006; Gunarathna et al., 2014) calls for adaptive asset management that accounts for climate uncertainty, long-term functionality, and environmental impact, not just short-term cost efficiency.

From Vision to Implementation

Vancouver's public right-of-way accounts for a significant portion of the city's impermeable, heat-absorbing surface area. Rehabilitating these spaces with ecological intent can:

- Reduce urban heat through impermeable pavement removal
- Improve stormwater infiltration
- Connect fragmented green spaces and habitats
- Create vibrant public spaces for community use
- Improve conditions for people walking or rolling

This report focuses on local roads at the end of their pavement life cycle, a critical timing when rehabilitation decisions can align with broader ecological and mobility goals.

These corridors can support active transportation, biodiversity, and climate adaptation, while advancing Vancouver's C40 pledge to deliver green and healthy streets and transition to zero-emission zones by 2030 (C40 Cities, n.d.).

2. Policy Context

This section provides an overview of current plans and strategies that formulate Vancouver's long-term climate resilience and ecological vision. It highlights how **road space reallocation** and the development of **urban ecological corridors** align with and reinforce the city's climate goals across multiple policy frameworks.

Vancouver Plan (2022)

The 2050 Vancouver Plan was approved by Council in July 2022. It is a comprehensive land use plan that guides growth and change of the city over the next 30 years. It incorporates key components of other city-wide strategies and framework plans that require land use policies to advance their goals and objectives. One of its three core aspirations is Climate Protection and Restored Ecosystems.

- Part 5, Section 4 (pp. 104–105) outlines a long-term ecological vision, identifying ecological corridors as a key strategy for ecosystem restoration.
- Policy 4.2.1 calls for establish(ing) a healthy, city-wide ecological network through transforming road space...and other City-owned public property.
- Policy 4.2.4 supports …upgraded street designs to provide more space for permeability, quality soil, and increased tree canopy across the city.

These policies directly support the transformation of road assets into ecological infrastructure.

Climate Change Adaptation Strategy (2024)

The Climate Change Adaptation Strategy (CCAS) lists five main climate change related hazards facing Vancouver: extreme heat, poor air quality, drought, extreme rainfall and sea level rise. It emphasizes proactive adaptation to reduce risks and protect public health and infrastructure.

- Ecological corridors can integrate green rainwater infrastructure (GRI) to manage stormwater, reduce flooding, and improve air quality.
- Increasing tree canopy along corridors helps mitigate urban heat and supports climate resilience

Urban Forest Strategy (2025)

The Urban Forest Strategy guides the management, protection and expansion of Vancouver's urban forest with a target of reaching 30% city-wide canopy cover by 2050. As of 2022, tree canopy covers approximately 25% of the city – 8.75% is located on street right-of-way.

- A key challenge in achieving the remaining 5% target is to locate space for planting, as many low-cost planting sites have already been filled
- It calls for strategic integration of green spaces into urban design, especially in low canopy neighbourhoods and the need to negotiate with other urban infrastructure when necessary

Reallocating road space offers a critical opportunity to meet canopy targets and address equity in green space distribution.

Healthy Waters Plan (In Development)

The Healthy Waters Plan is a 50-year strategy to guide sewer and rainwater management policy, advocacy and long-range investments. It aims to address four issues, including

1. Reducing pollution from sewer and drainage services,
2. Increasing sewer capacity to accommodate population growth and related development,
3. Mitigating impacts of climate change on our sewage and rainwater system
4. Maintaining infrastructure condition and replacing aging assets.

Green rainwater infrastructure is noted as an effective tool to treat rainwater runoff and remove pollutants carried from hard surfaces such as roofs and streets.

Rain City Strategy (2019)

The Rain City Strategy provides a road map to advance rainwater management practices and services to ensure the resilience and sustainability of water resources, and the health of residents and the environment through the integration of green infrastructure.

With the potential to incorporate GRI in their designs, the creation of ecological corridors can help promote all six objectives laid out in the plan, including

1. Removal of air and water pollutants,
2. Increase permeable areas
3. Reduce pressure on sewer system
4. Harvest and reuse water
5. Mitigate urban heat island effect
6. Increase total green area.

Figure 1: Vancouver Plan 2050 and Climate Change Adaption Strategy

Transportation 2040 (2019)

Transportation 2040 is a long-term strategic plan to guide transportation and land use decisions and public investments. It sets a mode share target of having two-thirds of trips made by walking, cycling and transit by 2040.

It establishes a hierarchy of transportation modes for the City, with walking labeled as a top priority, followed by cycling, transit, shared vehicles and private auto (p.13). The plan mandates that roadway redesigns prioritize vulnerable road users.

Any opportunity to improve walking and cycling will be reviewed with existing and future roadway design. Road space reallocation for ecological corridors aligns with this hierarchy by enhancing active transportation infrastructure and public realm quality.

VanPlay: Parks and Recreation Services Masterplan (2020)

VanPlay outlines 10 goals to guide the provision of parks and recreation opportunities for Vancouver over the next 25 years. It acknowledges that not all neighbourhoods have equal access to green spaces, and that neighbourhoods are impacted by climate change to varying degrees.

Urban heat, for instance, has a disproportionately greater impact on marginalized neighborhoods, which often have less vegetative cover and resources available in the community. Delivery of resources should therefore be prioritized to neighbourhoods in need (Goal 3), where it can create the greatest relative benefit. It also calls for the creation of a green network, which would provide a pathway for the movement of urban wildlife and rainwater management (Goal 6). While the proposed urban ecological corridors will be located within public right-of-way (ROW), their proximity to parks can extend habitat connectivity and amplify recreational and ecological benefits.

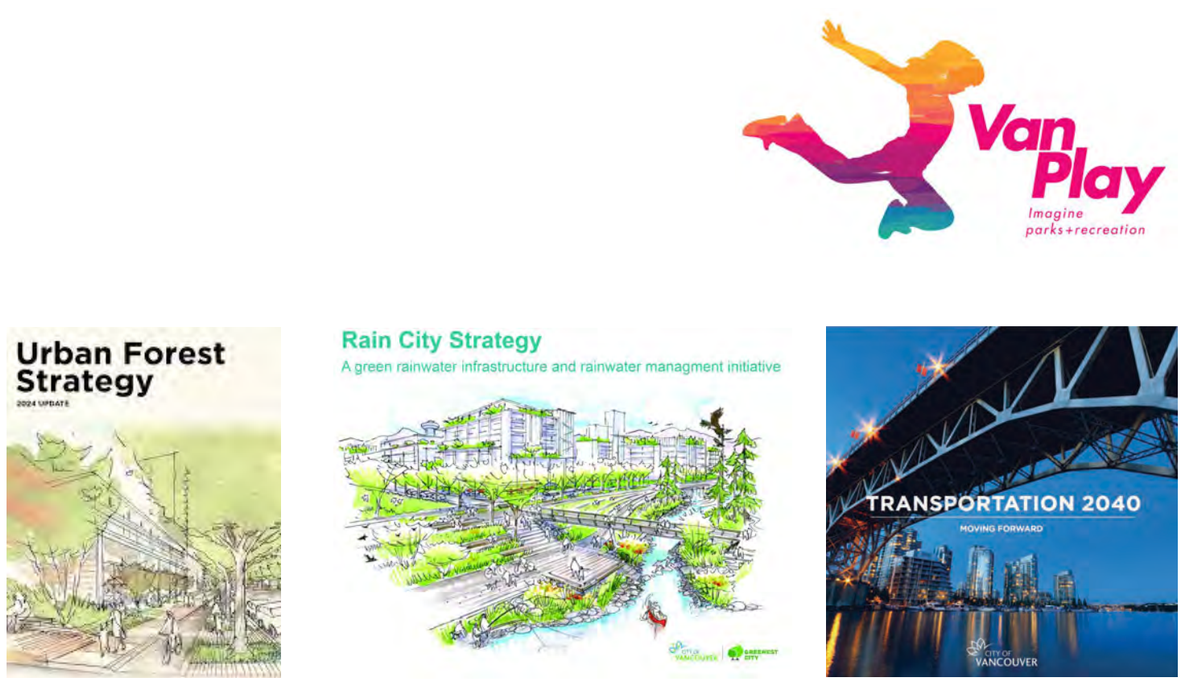


Figure 2: VanPlay, Urban Forest Strategy, Rain City Strategy and Transportation 2040

3. Case Studies

The following case studies examine how municipalities around the world have **reallocated paved road spaces for non-vehicular uses**.

Each example showcases a distinct approach to road space reallocation, through lenses such as biodiversity enhancement, climate adaptation, public health and improved mobility, demonstrating the potential of **public right-of-way** in advancing city-wide sustainability goals.

A common thread across these projects is the reduction of impervious pavement and the creation of multi-functional, resilient urban spaces.

Several cases also highlight the planning frameworks that guided those transformations, offering valuable insights for Vancouver as it develops its own criteria for identifying local road candidates for near-term conversion.

It is important to note that the case studies in this report vary widely. While some exceed the scope of Vancouver's proposed urban ecological corridor, the purpose of including such examples is to demonstrate ongoing efforts of municipalities, as well as their dedication and innovative approach to road space reallocation.

To explore potential design typologies of ecological corridors tailored to the Vancouver content, please refer to Sustainability Scholar Project 2025-043: Visualizing Urban Ecological Corridors.

CASE STUDY 1: *Montreal, QC*

Réaménagement du carré Augier ("Augier Square Redevelopment")

Project Year: 2024
Location: Intersection of Augier and Louis-Hemon Streets, Rosemont–La Petite-Patrie

Key Takeaways

- Reduction of impervious surfaces lowers urban heat and supports urban biodiversity
- Road space reallocation creates more place-making opportunities for non-car users such as pedestrians and cyclists
- Community input and/or support can guide long term success of projects
- Clear policy targets are essential for integrating green infrastructure into public rights-of-way and spaces, ensuring that environmental and urban resilience goals are effectively met.

The Augier redevelopment contributes to Montreal's broader green rainwater infrastructure target in the Borough of Rosemont-La Petite-Patire. Previously a fully paved asphalt intersection where four local roads met, the community raised concerns about pedestrian safety in the area, especially for children who often cross this intersection on their daily commute to school. The redesign centered around three primary goals:

1. Improve intersection safety,
2. Reduce traffic and
3. Enhance the urban environment.

Green Infrastructure with GI for stormwater management

Since 2015, Montreal has pursued a vision of developing urban "sponge" infrastructure and other green water management systems to safeguard the city against flooding. Here, "sponge" refers to absorbent landscape and/or permeable surface that is able to temporarily retain water during heavy rainfall, alleviating pressure on the sewer system and reducing flood risk.

The City of Montreal aims to establish at least 8,500m² of green rainwater infrastructure within public right-of-way and create 30 additional sponge parks by the end of 2025, complementing the 30 sponge parks and 400 sponge sidewalks constructed since 2022 (Ville de Montréal, 2024).

Alongside traffic-calming measures, the Borough of Rosemont-La Petite-Patrie leveraged this project to advance its Aménagements éponges et résilients ("Sponge and Resilient Developments") initiative as part of ongoing climate adaptation efforts. The redevelopment features a rain garden at the heart of the intersection and an accessible walkway, transforming the space into a pocket park. Close to half of the pavement was replaced with planting beds, contributing to stormwater infiltration and urban cooling (Ville de Montréal, 2025b).

Additionally, vegetated swales and tree pits were installed along sidewalks to collect rainwater. The redesign process was shaped through public consultations, surveys, and discussion groups held in 2022, ensuring that community input guided the final design (Arpent & Ville de Montréal, 2022).

Figure 3: View of Augier Square in 2022 (Source: L'Arpent)

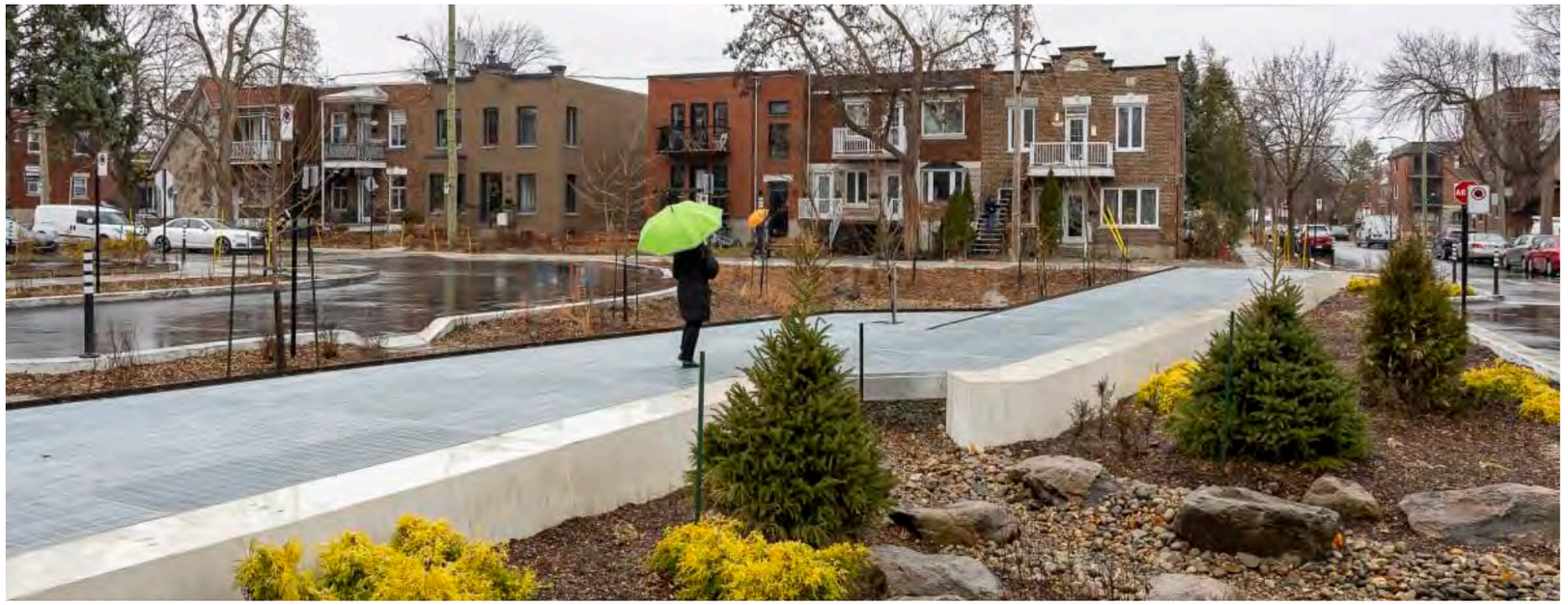


Figure 4: Central rain garden overlooking a pedestrian walkway in 2024 (Source: Borough of Rosemont-La Petite-Patrie)

Larivière Street

Project Year: Construction in 2025 Spring
Location: Between Avenue de Lorimer and Rue Parthenais, Sainte-Borough

As part of the city's efforts to incorporate more blue-green infrastructure to mitigate the risk of flooding, Montreal is also looking at large-scale streetscape conversion to integrate blue-green infrastructure to retain stormwater.

A notable example is Larivière Street in the Sainte-Marie borough, which will be redesigned as a "sponge street" with the addition of softscape and permeable pavement materials (Ville de Montréal, n.d.-a).

Before the conversion, it was a two-lane street that borders two schools and a park with curb side parking. The street was selected due to its relatively lower topography, which allowed the site to collect stormwater. It has also been a test point for traffic calming measures since 2023 in wake of a hit-and-run accident that led to the death of a seven-year-old which prompted city and provincial wide protests for better road safety (Bongiorno, 2023).

The project is expected to retain more than 900m3 of water with several surface retention basins to strengthen the climate resilience of the borough with a new drainage network installed to redirect run-off to the street (Edward, 2024; Patterson, 2023).

Figure 5: Larivière Street in July 2022 (Source: Google Maps)

Figure 6-7: The new Larivière Street will be used as a community gathering space with public art installations (Source: Ville de Montréal)

Community green spaces for gathering and activities

Place du Sable-Gris ("Gray Sand Square")

Project Year: 2019-2023
Location: Between Avenue de Lorimer and Rue Parthenais, Sainte-Borough

Since 2007, a section of Ottawa Street in Montreal has been transformed into an art space for a nearby cultural establishment every summer, with authorization from the city. Ottawa Street had one traffic lane with two parking lanes and two sidewalks.

In 2019, the Ville-Marie borough approved the permanent closure of the street to vehicular traffic to create a public square designed to host cultural activities such as performances and art exhibitions (Ville de Montréal, 2025a). Objectives of the project include:

- Establish a public square primarily dedicated to cultural activities throughout the year, while remaining open to other uses
- Incorporate sustainable development principles, including stormwater management and urban greening and
- Provide an accessible, welcoming space for all neighborhood users such as residents, workers, and visitors.

Figure 8: Ottawa Street prior to conversion (Source: Google Maps)

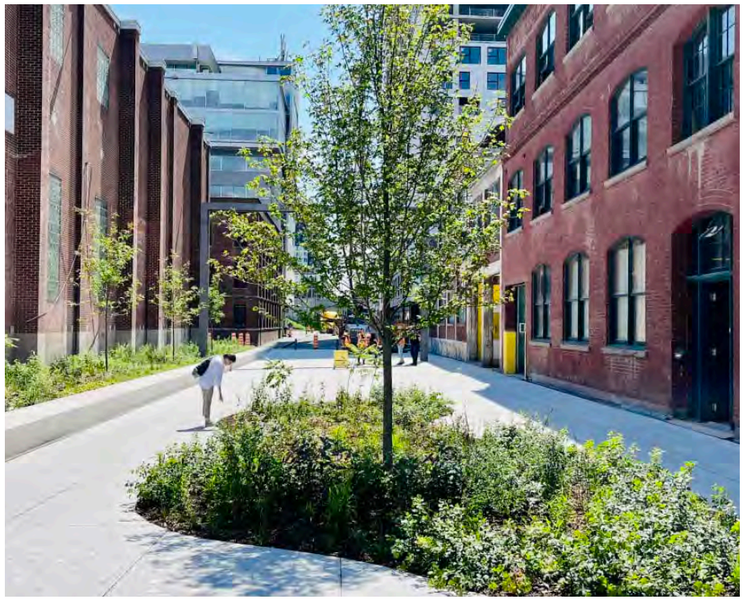


Figure 9-10: Place de Sable-Gris (Source: Daoust Lestage Lizotte Stecker)

Pedestrianized streets to support business development

The Programme d'implantation des rues piétonnes et partagées

("The Pedestrian and Shared Street Program" - PIRPP)

PIRPP was first developed by the City of Montreal to experiment with different road sharing configurations to reduce the right of way for automobiles to 60 percent of the street space (Ville de Montréal, n.d.-b).

To encourage walking and the creation of more public spaces, the program focuses on redesigning streets near areas with frequent local traffic such as, shops, schools, museums or markets. These are small, borough-led projects that include strategies such as but are not limited to: reducing speed limits, fully or partially closing streets, adding urban agriculture, and greening impervious surfaces.

Each local project takes approximately three years to complete. The first two years are spent testing and adjusting different transitional installations before a permanent installation is put in place in the third year. This gradual process allows residents and businesses to adapt to the changes and provide input to improve the project (Federation of Canadian Municipalities, 2018).

Figure 11: Terrasse Roy ("Roy Terrace Community Garden") in the Le Plateau-Mont-Royal neighbourhood (Source: Ville de Montréal)

CASE STUDY 2:
Sherbrooke, QC

Key Takeaways

- Clarity in methodology helps facilitate conversations between internal staff and communicate the rationale behind selecting candidates for road space reallocation to the public
- Not all criteria can be weighed equally. A weighted or tiered criteria list that aligns specific goals of the City can help target street candidates for early implementation opportunities while capturing other worthwhile considerations and spillover benefits of the project

Framework: Criteria for selecting street candidates for projects

The City of Sherbrooke developed a multicriteria evaluation method to support the planning and selection of shared street candidates in the municipality. The method is developed in collaboration with the city's administrative staff to assess the potential of streets to be redesigned as shared streets based on their alignment with the city's vision and priorities (Cailhier et al., 2025).

Four key dimensions are identified: Security, Accessibility, Environmental and Social. Each dimension is further broken down into different weighted aspects and is evaluated based on the qualitative or quantitative data available.

The research establishes a good and acceptable benchmark for each criterion to evaluate a street's potential for conversion. The acceptable benchmark is the minimal threshold requirement for a street to be considered for a road conversion or redesign.

For example, the acceptable benchmark for street canopy was set to 25 % for the study and the good benchmark to 20%, meaning that both would be considered for a potential redesign. Given that all things are equal, the segment with a lower canopy, the 20% one in this case, would be given higher priority for implementation.

A street candidate is ultimately selected based on the overall performance in all criteria and their weighting in the evaluation.

While the criteria list in this report does not utilize a mathematic evaluation model to select street segments candidates for conversion, this research highlights the possibility of establishing a more comprehensive framework as these road conversion projects expand in scale in the future.

The candidate selection methodology in Section 5.0 categorizes the criteria based on their level of relevance and importance to supporting the early implementation of the ecological network.

Dimension	Criteria	Criteria Weight (%)
Security	Visibility; Connectivity	10.77; 6.92
Accessibility	Public buildings and green area; public transit stops; active transportation	19.23; 9.23; 12.31
Environmental	Canopy index	8.46
Social	Housing density; Material and social deprivation; citizen engagement	13.85; 15.38; 3.85

Table 1: Summary of the criteria constructed

CASE STUDY 3:
Paris, France

Key Takeaways

- Prioritize areas with high pedestrian activity, such as local streets near recreational or institutional spaces, to maximize urban cooling, ecological benefits and community impact.
- Set measurable targets to guide implementation and ensure consistent integration of green infrastructure across the city
- Consult with various city departments to identify synergies and align infrastructure upgrades with green infrastructure objectives.

Framework: Orientations pour des espaces publics végétWalisés à Paris

("Guidelines for Greening Public Spaces in Paris")

Like Vancouver, Paris has pledged to transition to Green and Healthy Streets as part of their commitment to the C40 global mayor network. In 2022, the Paris Urban Planning Agency collaborated with the environmental consultancy Arup to develop a framework for greening public spaces across the city. The guideline outlines 8 areas of actions based on the existing street hierarchy and road typologies (Atelier parisien d'urbanisme & Ville de Paris, 2022).

These actions are broadly divided into two themes to

1. Reinforcing existing planted road network and
2. Creating Local Street Gardens.

The first theme focuses on strengthening the identity of major promenades by introducing or enhancing vegetation along wide streets. The second theme emphasizes greening local streets by transforming underutilized public spaces into planted areas and integrating green infrastructure.

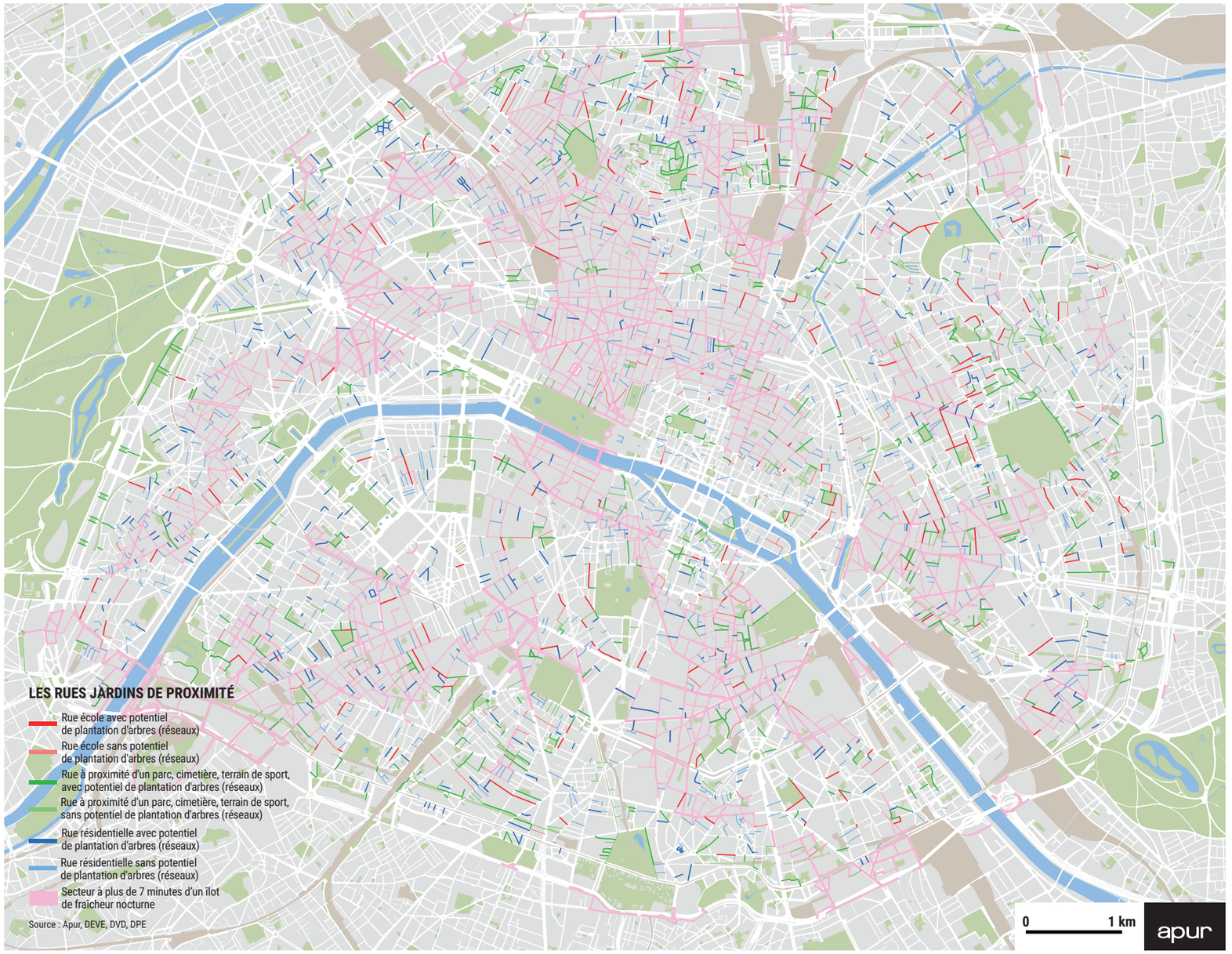
Specific Planting Target and Strategy based on Street Hierarchy:

- Within each street type, the streets are further categorized based on their potential for existing plantings and utility networks. A corresponding planting strategy is briefly outlined, along with targets for vegetation coverage defined as a percentage of total street length or surface area and an estimate of the potentially "greenable" surface.
- Streets with existing plantings can be enhanced by introducing more shrub and herbaceous layers while those with limited space for tree planting can be improved by adding short vegetation.

Prioritizing local streets with high pedestrian traffic:

- Local streets (Theme 2) are selected based on their proximity to community destinations. Specifically, this includes streets near schools (Action 6), green spaces (parks, gardens, cemeteries and sports field) (Action 7) and/ or residential streets less than 180m long (Action 8).
- Each theme includes tailored recommendations for streets with specific constraints or those located near public gathering spaces (e.g. parks, cemeteries, schools). Prioritization

near streets with frequent local traffic helps to ensure urban greenery can lower temperature in public gathering spaces and deliver the greatest community benefits.



The map uses colour coding to indicate the potential for tree planting along various local streets. It estimates that 7550 trees can be planted across 38 hectares of "greenable" surface area based on a 20% greening assumption derived from similar past projects.

Figure 12: Paris Local Garden Street Analysis (Source: Apur)

Passage des Récollets (Paris 10e) - ACTION 06

Le principe proposé :

- Scénario intégrant la piétonnisation de la voie.
- Plantation d'arbres de moyen développement sur le stationnement et création de jardinières végétalisées sur l'ensemble des trottoirs.
- Végétalisation des façades et clôtures.
- Maintien d'un parvis minéral devant l'école intégrant un stationnement vélo.
- Pose de mobilier urbain (bancs, corbeilles, fontaines, équipements ludo-sportifs, stationnement vélo...) dans les bandes végétalisées, sur strate herbacée, pavés enherbés ou dalles végétalisés.
- Suppression du stationnement, les livraisons seront assurées par la rue piétonne.
- Reprise du profil de la voie et création d'une chaussée perméable.

Largeur moyenne de la voie : 9 m
Largeur moyenne du trottoir : 1 / 2,8 m
Largeur moyenne de la chaussée : 5,2 m
1 voie à sens unique – stationnement ponctuel.
Potentiel de plantation identifié ponctuellement sur chaussée, stationnement et trottoir

Esquisse de principe

Le passage des Recollets aujourd'hui

Rue de Bruxelles (Paris 9e)

Rue de Londres (Paris 9e)

Rue du Rocher (Paris 9e)

Rue Léon Frot (Paris 11e)

Rue Paillleron (Paris 19e)

Figure 13: Example of road space reallocation near schools (Source: Apur and Atelier parisien d'urbanisme)

Rue du Général Blaise (Paris 11e) - en bordure du square Maurice Gardette - ACTION 07

Le principe proposé :
- Scénario intégrant la piétonnisation de la voie.
- Plantation d'arbres de moyen et petit développement en rive du square.
- Création d'une jardinière végétalisée de 5 m de large en moyenne, dans le prolongement du square.
- Maintien d'une voie carrossable de 5 m de large minimum, rassemblant l'ensemble des circulations : piétons, vélos, collecte des OM, défense incendie, livraisons et accès aux immeubles et équipements.
- Pose de mobilier urbain (bancs, corbeilles, fontaines, équipements ludo-sportifs, stationnement vélo...) dans les bandes végétalisées, sur strate herbacée, pavés enherbés ou dalles végétalisés.
- Maintien du stationnement PMR, livraison, 2 roues et vélo, intégré ponctuellement le long de la jardinière.

Largeur moyenne de la voie : 12 m
Largeur moyenne du trottoir : 2,4 m
Largeur moyenne de la chaussée : 7,2 m
Voie à sens unique – stationnement bilatéral.
Potentiel de plantation identifié sur le stationnement en rive de square.

© Apur
Esquisse de principe

© Apur
La rue du Général Blaise aujourd'hui


© Apur
Avenue de la Porte de Charenton (Cimetière Valmy) (Paris 12e)


© Apur
Rue Francis de Miomandre (Cimetière de Gentilly) (Paris 13e)


© Apur
Rue Adolphe Cherioux (square éponyme) (Paris 15e)


© Apur
Rue Jules Verne (square éponyme) (Paris 11e)


© Apur
Rue des Mathurins (square éponyme) (Paris 8e)


© Apur - JC Bonjid
Rue Édouard Lartet (Centre Sportif Alain Mimoun) (Paris 12e)

Figure 14: Example of road space reallocation near sports fields and parks (Source: Apur and Atelier parisien d'urbanisme)

Traffic Roundabout to Urban Forest

Place de Catalogne

Project Year: 2021-2024

Location: Intersection of Rue du Commandant René Mouchotte, Rue du Château, and Rue Vercingétorix

The Place de Catalogne is located in the 14th arrondissement of Paris in the neighbourhood of Plaisance, a few minutes away from Montparnasse Cemetery. At the centre of the former roundabout is the "Creuset-du-Temps" fountain, designed by Polish artist Shamaï Haber during the district's urban redevelopment in the 1980s.

Due to the lack of vegetation in the area, the paved surface of the fountain and the asphalt road quickly trap heat and contribute to the neighbourhood's high levels of noise and air pollution. In 2021, a proposal was put forward to redesign the plaza to address these challenges.

Improve Biodiversity and Reduce Urban Heat:

- The roundabout was replaced with a public plaza and an urban forest inspired by the natural forest of Île-de-France region. This new landscape features a mix of native and climate-resilient species.
- Of the 12,400 m² of project area, the redesign added 5,525 m² of permeable surface area. It is estimated that 54 percent of the rainwater will be managed on site with the vegetated swale.
- An addition of 470 trees provides approximately 60% canopy coverage to the site, helping to reduce local temperatures by up to 4°C.

Connect to active transportation network and surrounding green spaces:

- Half of the site has been reallocated for pedestrian and active transportation traffic on the southern side of the ring.
- A dedicated, permeable two-way bike path now crosses the plaza, enhancing connectivity for cyclists. Vehicular traffic has been restricted to the northern side, following a 2019 decision by the town hall.
- As the neighbourhood continues to evolve, the city plans to enhance the adjacent Rue du Commandant René Mouchotte in 2026 by adding more greenery to the already tree-lined boulevard. Place de Catalogne now serves as a vital green node, linking existing and planned green corridors throughout the area.

Figure 15-16: Place de Catalogne before and after transformation (Source:Ville de Paris)

Figure 17: Place de Catalogne's mini urban forest (Source: Ville de Paris)

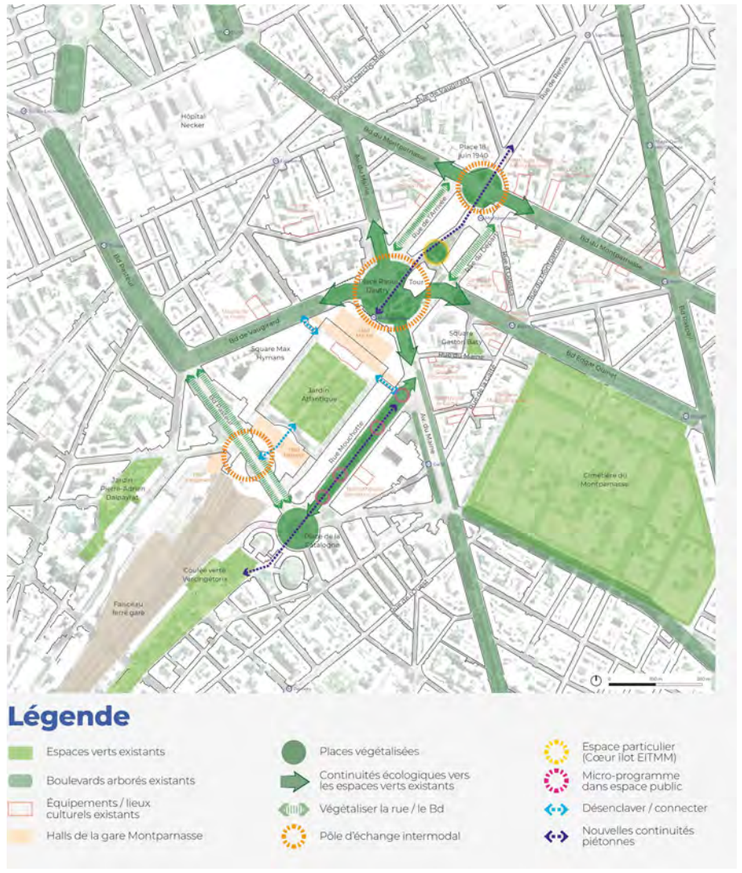


Figure 18: Continuity with surrounding green spaces (Source: Ville de Paris)

CASE STUDY 4:
Barcelona, Spain

Key Takeaways

- Leverage local street layouts to identify low-traffic or underutilized streets as early implementation opportunities.
- Prioritize neighborhoods with environmental inequities to deliver greater relative benefits and support climate justice.
- Engage in fulsome public consultation, especially for larger-scale projects, to build trust, legitimacy, and community support.
- Acknowledge political complexity and plan for contingencies by focusing on near-term, visible actions that align with long-term goals.

Framework: Superilla Barcelona – Exios Verds

("Barcelona Superblock – Green Axes")

The Barcelona superblock plan was first introduced in the Barcelona Urban Mobility Plan 2013 as a response to the city's environmental challenges.

Close to 60 percent of road space in Barcelona is allocated for vehicular use. With over 3500 premature deaths in the Metro area due to the poor environmental quality, Barcelona and Paris ranked among European cities with the highest concentration of air pollutants in the early 2010s (Pérez et al., 2009).

The Barcelona superblock plan is the city's commitment to improving citizen health by combating noise and pollution on a city-wide scale.

In the Urban Mobility Plan 2025–2030, the city evolved this vision into the Green Axes Plan, maintaining the core goals of the Superblock initiative while expanding its scale and connectivity.

It proposes to transform one of every four vertical and horizontal streets into green streets, accounting for close to one-third of the streets in Barcelona.

The redesigned green streets will expand the city's active transportation network by reducing or eliminating car traffic and reallocating road space for greenery, creating wider pedestrian paths, and adding bike lanes. They reconnect neighbourhoods by creating a network of pedestrian-friendly streets that encourage walking, cycling, and outdoor activities (Magrinyà et al., 2023).

Public Squares at Axes Intersection:

- Complementing the green axes are public squares at major intersections, providing residents with open spaces for leisure and socializing.
- Filled with trees, benches, playgrounds, and shaded areas, these squares serve also as community hubs and are crucial for increasing green spaces and improving air quality.

Evaluation for Green Space Integration:

- Similar to Paris, Barcelona has established a set of standards to evaluate and estimate the maximum amount of space available for greenery.
- It takes account of the presence of urban utilities, level of compaction, road uses (shared or pedestrian only), with adjustments based on local needs and constraints.

Figure 19-20:: Rocafort Square-Garden before and after transformation (Source: Metalocus)

Figure 21: Typical distribution of spaces in a green axis in a standard 20-m-wide street: (Source: Ajuntament de Barcelona)

Figure 22:The Green and Biodiversity Plan (2012-2020) (Source: Ajuntament de Barcelona)

The Green and Biodiversity Plan (2012-2020) directly references the Green Axes and street gardens as strategies to connect city facilities and urban green spaces and ensure access to greenery in dense areas (Magrinyà et al., 2023).

Figure 23:The green street networks in Barcelona with Green Axes (Source: Ajuntament de Barcelona)

Example: Carrer del Consell de Cent ("Consell de Cent Steet") – Green Axes

Location: District of Eixample
Project Year: 2022

The Example district, one of the most densely populated areas in Barcelona, has long struggled with elevated air pollution levels.

As part of the city's Green Axes Plan, Carrer del Consell de Cent - a major 6 km avenue traversing the district and connecting several key parks, was selected in 2022 for transformation into a green axis (Ajuntament de Barcelona, 2022).

In this phase, approximately 2.8km of the Carrer del Consell de Cent was transformed into a green street, with four public squares integrated along the corridor. Asphalt is completely removed on the street and redesigned for primarily pedestrian use. Traffic calming measures are implemented, with vehicle speeds limited to 10 km/h in most sections.

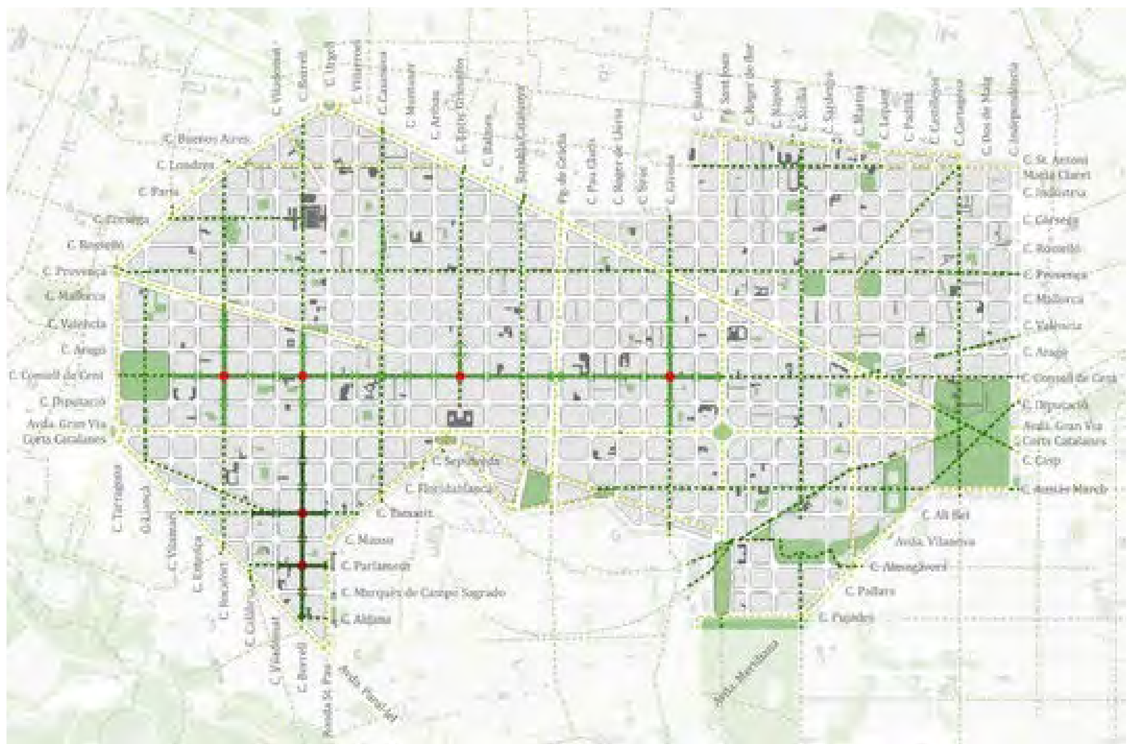


Figure 24: The proposed green axes and green squares in the L'Eixample district (Source: Ajuntament de Barcelona)

Figure 25-26: Carrer del Consell de Cent before and after transformation (Source: Ajuntament de Barcelona)

Public reception and concerns over implementation

The Barcelona Green Axes Plan has received international accolades from academia to urban designers and planners around the world, noting the city's ambition and commitment to addressing its shortage of green spaces and tackling pollution problems by prioritizing non-automobile options.

Yet like many large-scale public realm transformations, the plan has evolved significantly in response to public feedback and implementation challenges.

The following key lessons offer valuable guidance for Vancouver as it embarks on its own ecological corridor strategy:

Ensure Fulsome Consultation and Transparent Communication

- Public response to Barcelona's superblocks was highly polarized, residents tended to either strongly support or oppose the changes.
- One major factor behind the resistance was a perceived lack of meaningful public consultation and limited opportunities for local input. Policy specific beliefs and the level of legitimacy and institutional trust are also noted to influence one's attitude towards the plan.
- This highlights the importance of engaging communities early, offering clear and accessible information, and building trust through transparency. In Vancouver, ensuring that residents feel heard and involved will be key to the success of urban ecological corridors.

Embrace Adaptive implementation

- Barcelona's original superblock model organized interventions by creating 3x3 block zones, where interior streets prioritized pedestrians and greenery, while perimeter streets maintained vehicular flow.
- However, this approach encountered challenges, including: Conflicts with bus operations, fragmented neighborhood participation and limited connectivity between green spaces (Magrinyà et al., 2023). These constraints led to the evolution of the Green Axes Plan, which offers a more flexible and continuous network of green streets that better connect neighbourhoods and public spaces.
- For Vancouver, this emphasizes the value of starting with pilot projects, learning from real-world constraints, and evolving the strategy to better integrate with existing infrastructure and community needs.

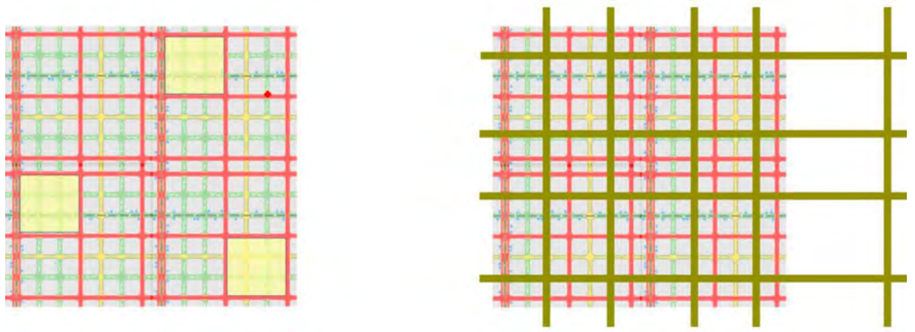
Address Unintended Spillover Effects

- While the Green Axes Plan has brought environmental and mobility benefits, concerns remain around environmental equity, traffic displacement, and potential gentrification (Nieuwenhuijsen et al., 2024).
- Although there is limited data on changes in rental prices or demographics due to the implementation of the Plan, these issues highlight the importance of monitoring unintended consequences.
- For Vancouver, incorporating equity considerations into the selection of local road candidates, such as prioritizing underserved or heat-vulnerable neighbourhoods, can help ensure that ecological corridors benefit all communities fairly.

Plan for Political Contingency

- Barcelona's example also illustrates the political sensitivity of large-scale public space transformations. Recent shifts in political leadership have led to a slowdown in superblock implementation, with new priorities emerging around greening facades and rooftops (Brown, 2025).
- This highlights the importance of pursuing near-term, visible wins that can build momentum and public support. Vancouver's focus on incremental implementation aligns well with this approach, helping to advance the city's long-term ecological vision while remaining adaptable to changing political contexts.

From a previous appraoch that is based on local actions in self -contained superblocks (interioir pedestrian zones in light yellow and vehicular traffic redirected to their perimeters) to a green axes strategy that emphasizes on continuity and connection with pre-existing green spaces



three-by-three superblocks

green axes model

Figure 27: Evolution of the intervention (Source: Ajuntament de Barcelona)

CASE STUDY 5: Seoul, South Korea

Key Takeaways

- Timing and Coordination Are Crucial: Aligning large-scale road space reallocation with broader redevelopment efforts can increase public acceptance but requires extensive interdepartmental coordination and long-term planning
- High Initial Costs Can Yield Long-Term Gains: While the project exceeded the cost of repairing the highway, it attracted significant auxiliary investment and delivered lasting ecological, social, and economic benefits.

Highway Removal for Creek Restoration/ Daylighting

Cheonggyecheon ("Cheonggye Creek") Restoration Project

Location: Jung Gu, Seoul
Project Year: 2002-2005

The Cheonggye Creek historically functioned as an early form sewerage for the city of Seoul. Following a period of rapid economic development and population growth since the 1940s, the stream was eventually buried with the Cheonggyeon freeway built over it in the late 1960s.

Although the highway served 170,000 vehicles passing daily and was heavily used by the public, three decades of high traffic volume led to severe noise pollution and congestion in the area. As part of the then mayor's urban renewal plan to promote its bus transit corridor and reduce reliance on automobiles, the municipal government proposed removing the elevated highway and restoring the lost Cheonggye Creek (Congress for the New Urbanism, 2017).

The proposal received overwhelming support from the public, with 80% of residents voting in favour of the project. It was led and funded by the metro government with a number of public agencies, research groups, citizen associations and unions involved in its implementation.

Today, the transformed area is a 9km green corridor and open space that runs across the centre of Seoul for pedestrians, cyclists and wildlife. Within three years of project completion, biodiversity significantly increased with notable rises in plant, birds and aquatic species.

The restoration also helped alleviate urban heat island effect in the area, with temperatures along the daylit stream averaging 3.3-5.9C cooler than adjacent roads (Landscape Architecture Foundation, 2011). It contributed to an increase of 15% in bus ridership and a 3% jump in subway ridership in the same period. Air pollution decreased by 10%, with a 45% drop in vehicle volume and 76% increase in pedestrian activity (Global Designing Cities Initiative, n.d.).

Despite the high cost of restoration – which exceeded the estimated cost of repairing the highway, the project's success and the influx of visitors it attracted spurred approximately $1.98 billion USD in capital investment for the redevelopment of the Cheonggyecheon area, an investment that likely would not have occurred otherwise (Landscape Architecture Foundation, 2009).

Contextual Note: While the Cheonggyecheon Restoration Project in Seoul offers a compelling example of large-scale creek restoration and road space reallocation, it is not a direct reference model for Vancouver's proposed urban ecological corridors. The scale, complexity, and technical requirements of the Seoul project are significantly greater than the scale of conversion envisioned for Vancouver's ecological corridors initiative. However, the project remains a powerful demonstration of what is possible when urban infrastructure is reimagined to prioritize ecological function, public space, and climate resilience.

Figure 28-29: The elevated Cheonggye Freeway and the restored stream after its demolition (Source: City of Seoul)

Figure 30: Remaining highway structure during construction

4. Local GI Examples

This section highlights local examples of successful green infrastructure (GI) projects that incorporate design elements relevant to the development of urban ecological corridors.

In this report, the term "ecological corridor" refers broadly to street designs that deliver ecological benefits, rather than a fixed typology. Actual corridor designs will vary based on site-specific opportunities and constraints.

St. George Rainway

Location: Along St. George St, between 5th Ave and Broadway
Project Year: 2023-2025

The St. George Rainway, located along St. George Street between 5th Avenue and Broadway (with a planned extension to Kingsway), is a community-initiated project aimed at reimagining a lost historic stream through the use of green rainwater infrastructure.

The project reallocates road space to support urban nature, stormwater management, and active transportation. Specifically, traffic is reduced to one lane with the addition of a local street bikeway and a linear rain garden on the east side of the street (City of Vancouver, 2023).

As the city's largest rain garden spanning across four blocks, effectiveness was proven during the atmospheric river in October 2024, successfully managing stormwater volumes that would have otherwise overwhelmed traditional infrastructure. Researchers have similarly noted its success and advocate for wider implementation of similar projects (Nay, 2024).

Figure 30: St. George Rainway Project Area (Source: City of Vancouver)

Figure 31: Aerial View of the St George Rainway (Source: City of Vancouver)

Figure 32: St. George Rainway after an atmospheric river event in Oct 2024 (Source: City of Vancouver)

Lilian To Park

Location: Yukon St. and W17th Ave
Project Year: 2015-2018

Lilian To Park is a 0.16-hectare pocket park located in the Mount Pleasant neighbourhood. It was established after the City acquired a residential lot at 17th Avenue and Yukon Street in 2013, alongside a street closure that restricted vehicular traffic to create space for pedestrians and cyclists.

The street closure and project design received overwhelming support from members of the public who participated in the consultation process (City Hall Watch, 2015).

A bike lane now runs over top the underground utility corridor, while the remainder of the parcel and adjacent public right-of-way have been reallocated for green infrastructure, public seating, and a playground.

Contextual Note: Lilian To led the Vancouver-based immigrant services non-profit agency S.U.C.C.E.S.S. for nearly three decades and was a longtime advocate for immigrant rights and multiculturalism in the city.

Her name was first placed on the Civic Asset Name Reserve List in the mid-2000s after her passing to identify an appropriate civic asset or street to be named in recognition of her work (City of Vancouver, 2016).

Figure 33-36: Lilian To Park transformation - before in 2011; under construction in 2016; after in 2022 (Source: Google Maps)

Figure 37-38: Bike lane running through Lilian To Park (Photo Courtesy of Jo Fitzgibbons)

5. Methodology

This section outlines the selection process for the Local Road candidates. The process primarily uses a mapping overlay method to identify areas and alignments of policy priorities by referencing the City of Vancouver's internal geospatial data.

Some of these maps, such as the Greenways map, differ from the publicly available versions as they are periodically updated by staff.

The analysis began with the 2023 pavement score dataset for all roads in the City of Vancouver.

The data then underwent three levels of filtering to focus on:

- Baseline: Public right-of-way Local Road assets suitable for intervention
- Policy Priorities: Locations within high-priority neighbourhoods based on City policies
- Near-Term Implementation: Areas with a high likelihood of implementation in the near future

1. Baseline Requirements	**Criteria**
The baseline criteria was to first identify Local Road segments that are in poor pavement condition and located along the proposed ecological corridor alignments. These segments present a near-term opportunity to reallocate road space and prioritize non-vehicular uses.	On the proposed Ecological Corridor
	In poor pavement condition
2. Policy Priorities	
This layer highlights neighbourhoods with low tree equity scores. The score is derived from two indicators: the density of disproportionately impacted populations and the tree canopy gap in the area. This step helps target neighbourhoods that would receive the greatest relative ecological and community benefits from the creation of ecological corridors.	Tree Equity Score References map from the *2025 Urban Forest Strategy* (p.40)
3. Likely Near-term Implementation	
The third set of criteria focuses on road segments that align with existing green infrastructure and transportation plans to improve walking and other active mobility infrastructure across the city.	Alignment with the Blue-green system
	Alignment with Greenways
	Located in a high walking priority area (above average score)
From a sustainability perspective, the selection process also prioritizes Local Roads built on peat soils, as they are more prone to structural damage and require more frequent maintenance due to ground instability.	Areas where typical rehabilitation practices may not be as successful in the long term e.g. areas with underlying peat soil
Local Roads in areas with high pedestrian activity and existing traffic-calming measures (e.g., near schools) are also prioritized. These areas typically have slower traffic speeds, making them more suitable for larger-scale and/or permanent closures to private vehicles. An additional benefit of implementing ecological corridors in these areas is the opportunity to use them as outdoor classrooms, helping to educate future generations on the importance of ecological protection and stewardship.	In close proximity to schools (100m radius of an ecological corridor)

Table 2: Criteria to selecting Local Road candidates

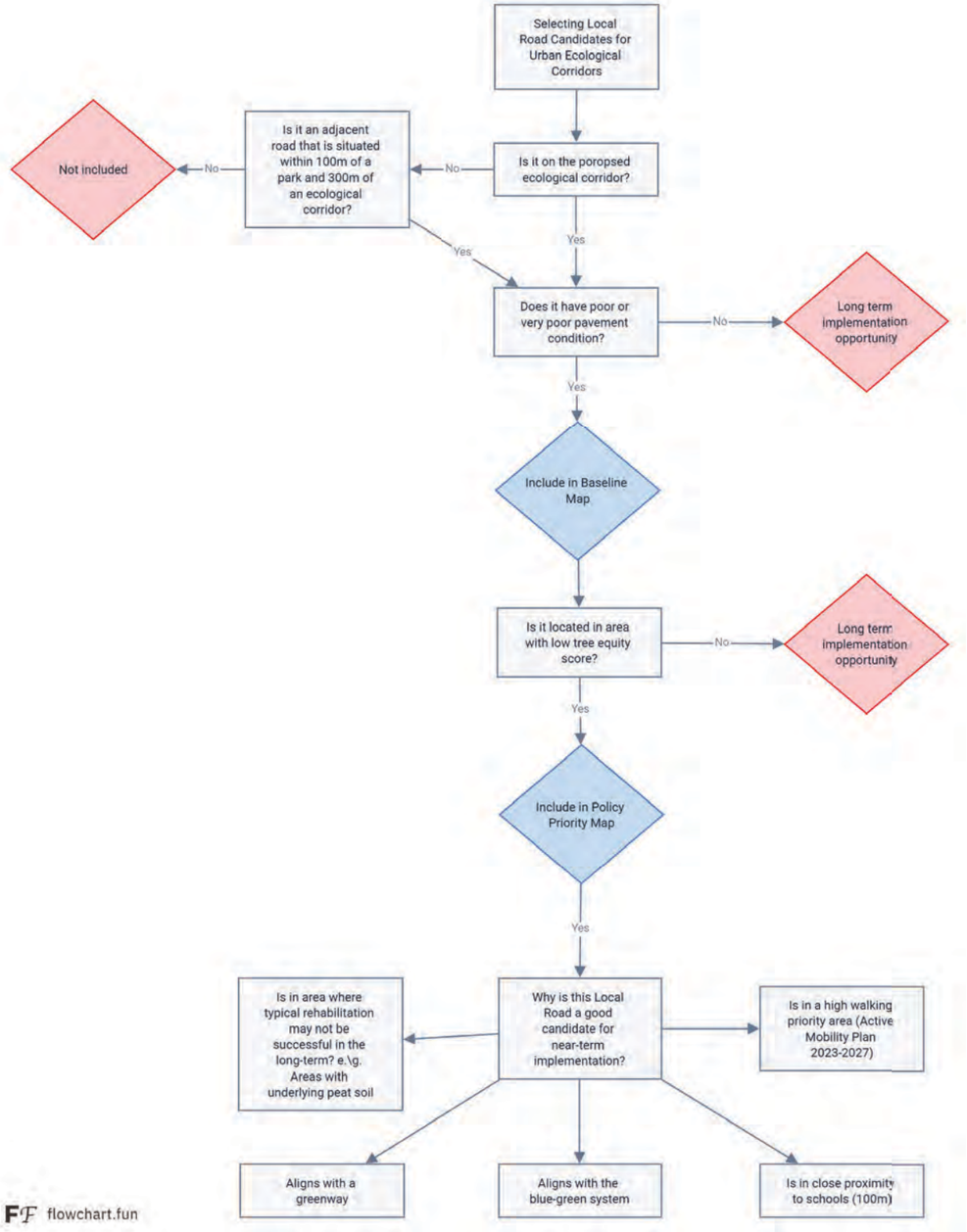


Figure 39: Local Road candidate selection flowchart

Out of Scope: Additional Site-Specific Considerations

This project identifies Local Road candidates that offer the greatest relative ecological and community benefits for early implementation of urban ecological corridors.

While these additional site-specific considerations below are important, they are not included in the selection criteria for this project due to their variability and dependence on project design and timing.

These factors often:

- Depend on the proposed design of the ecological corridor
- Arise during the construction stage
- Are difficult to generalize, as project timing must be coordinated with other departments

Examples of site-specific considerations include:

- Adopted plans or networks: Villages (see Appendix B), active transportation networks, area plans such as the Broadway Plan and Rupert-Renfrew Plan
- Timing of other capital projects: Sewer upgrades, street construction, etc.
- Land use context: Proximity to ongoing or planned residential developments (see Appendix C)
- Building Access: Emergency vehicle access, driveway or parking access, building frontages, etc.
- Technical Constraints: Underground Utilities

These constraints and characteristics will ultimately shape the specific design typology of each ecological corridor during later phases of planning and implementation.

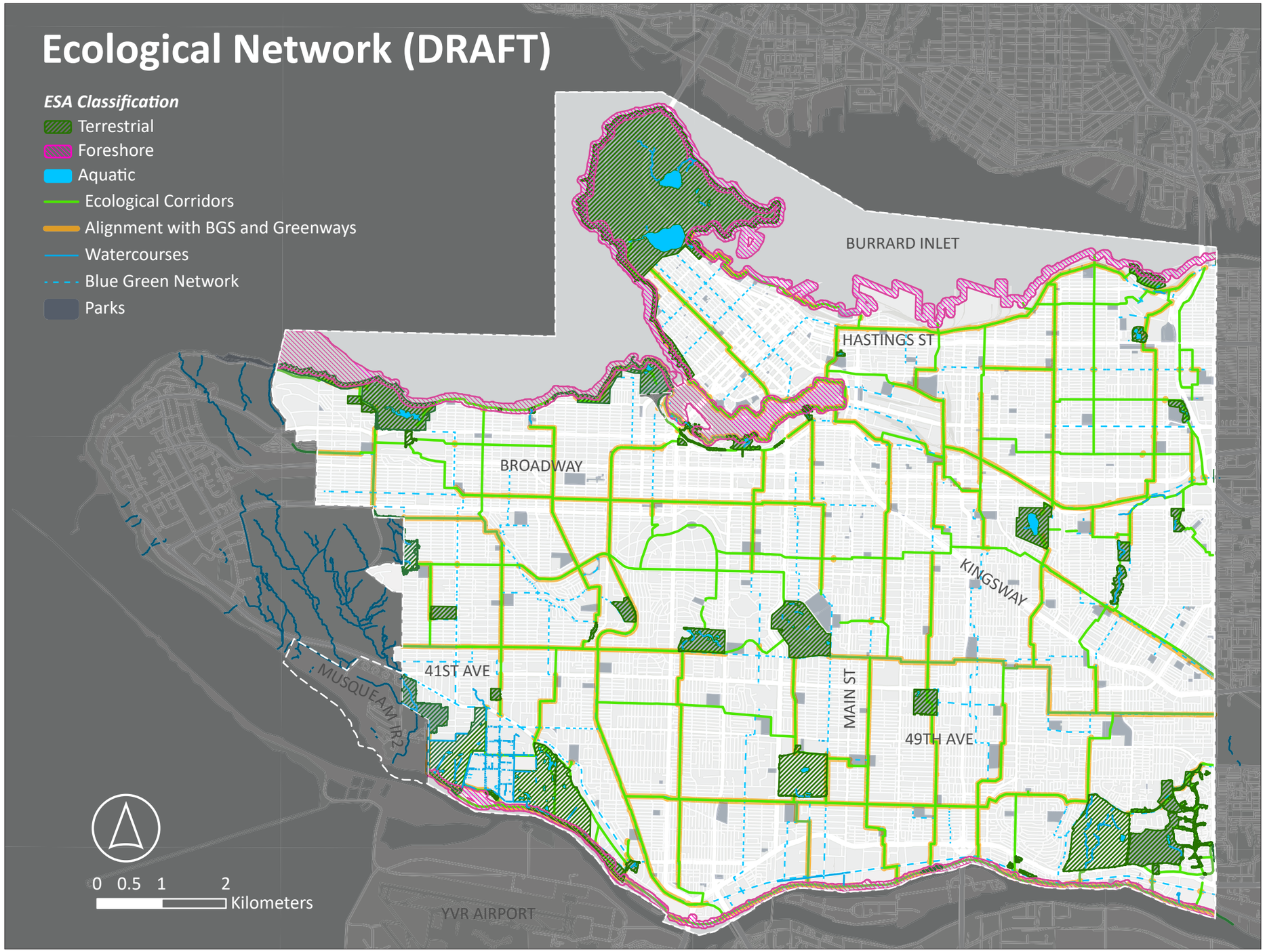


Figure 40: Ecological Network (Draft as of February 2025)

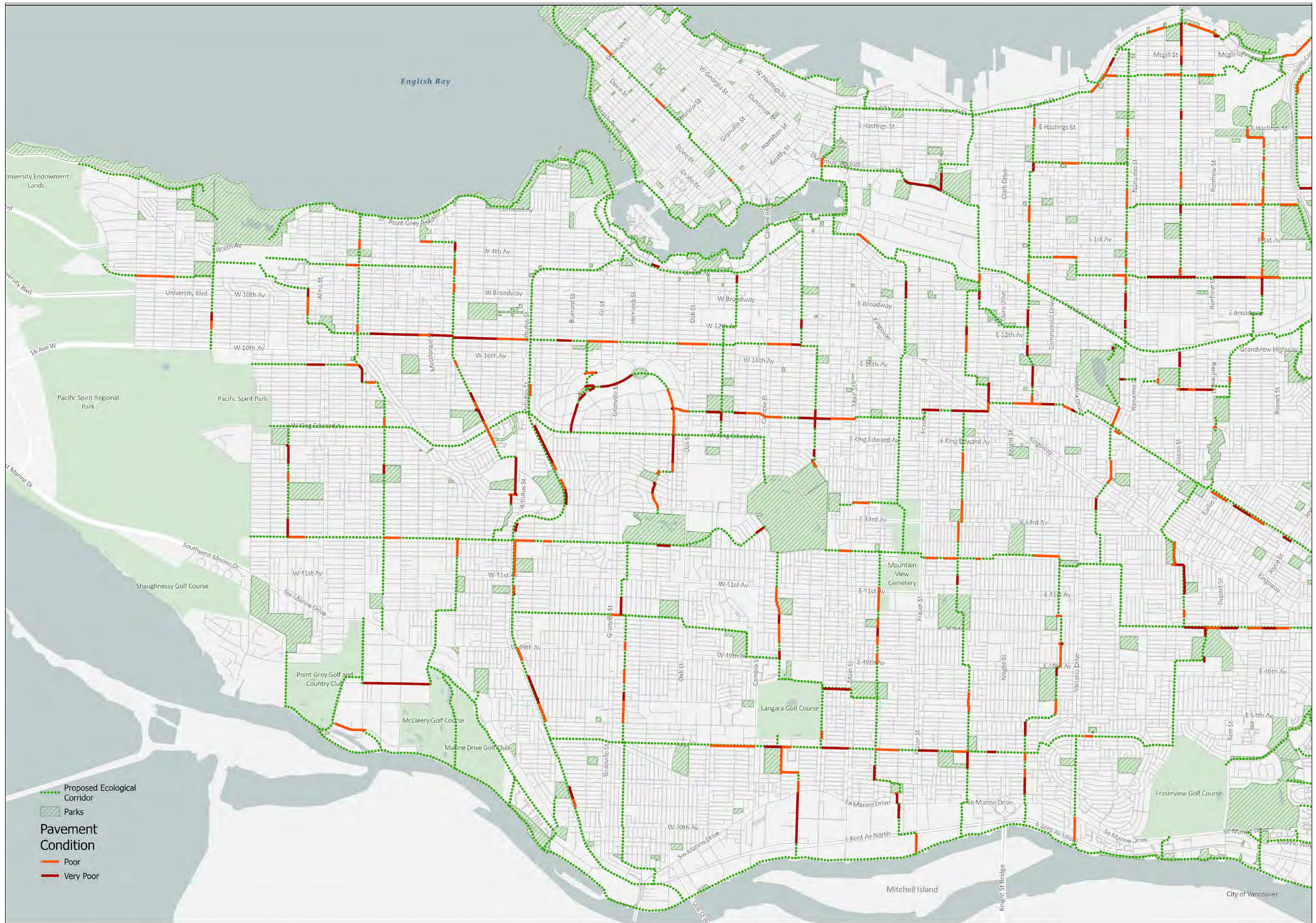


Figure 41: BASELINE - Local Roads in Poor Pavement Condition on Ecological Corridors

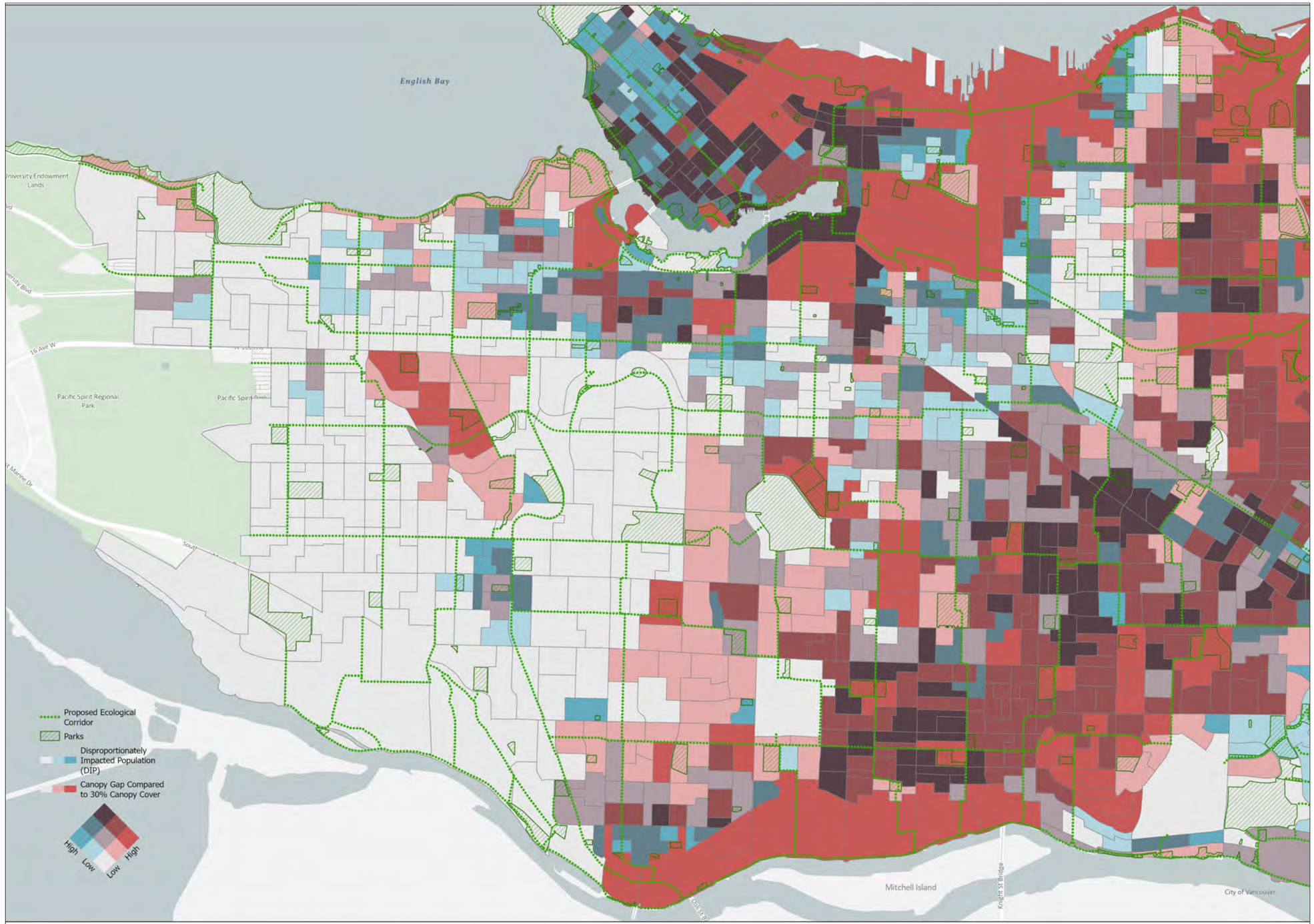


Figure 42: POLICY PRIORITIES - Tree Equity Score by Dissemination Area

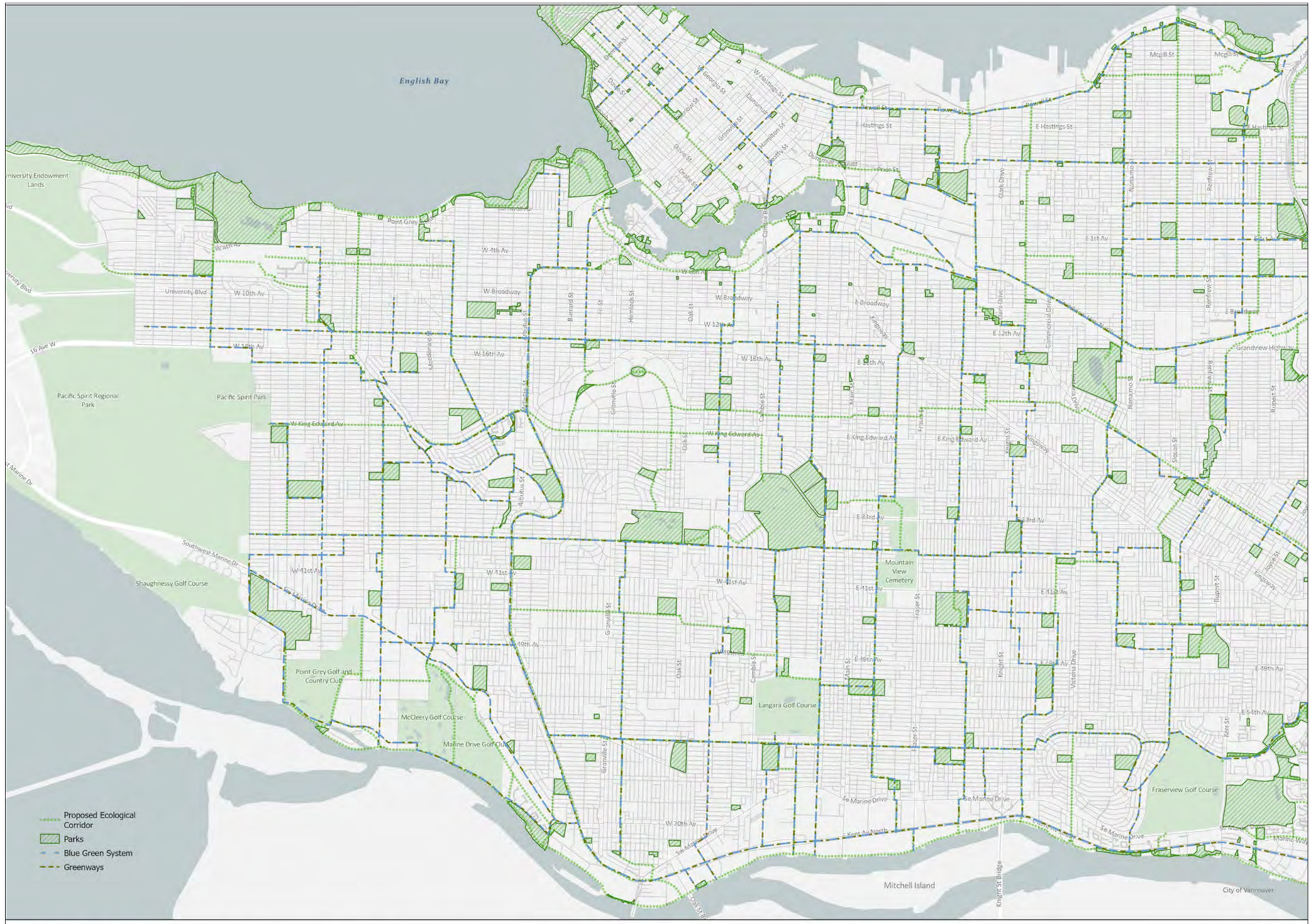


Figure 43: LIKELY IMPLEMENTATION - Blue Green System and Greenways

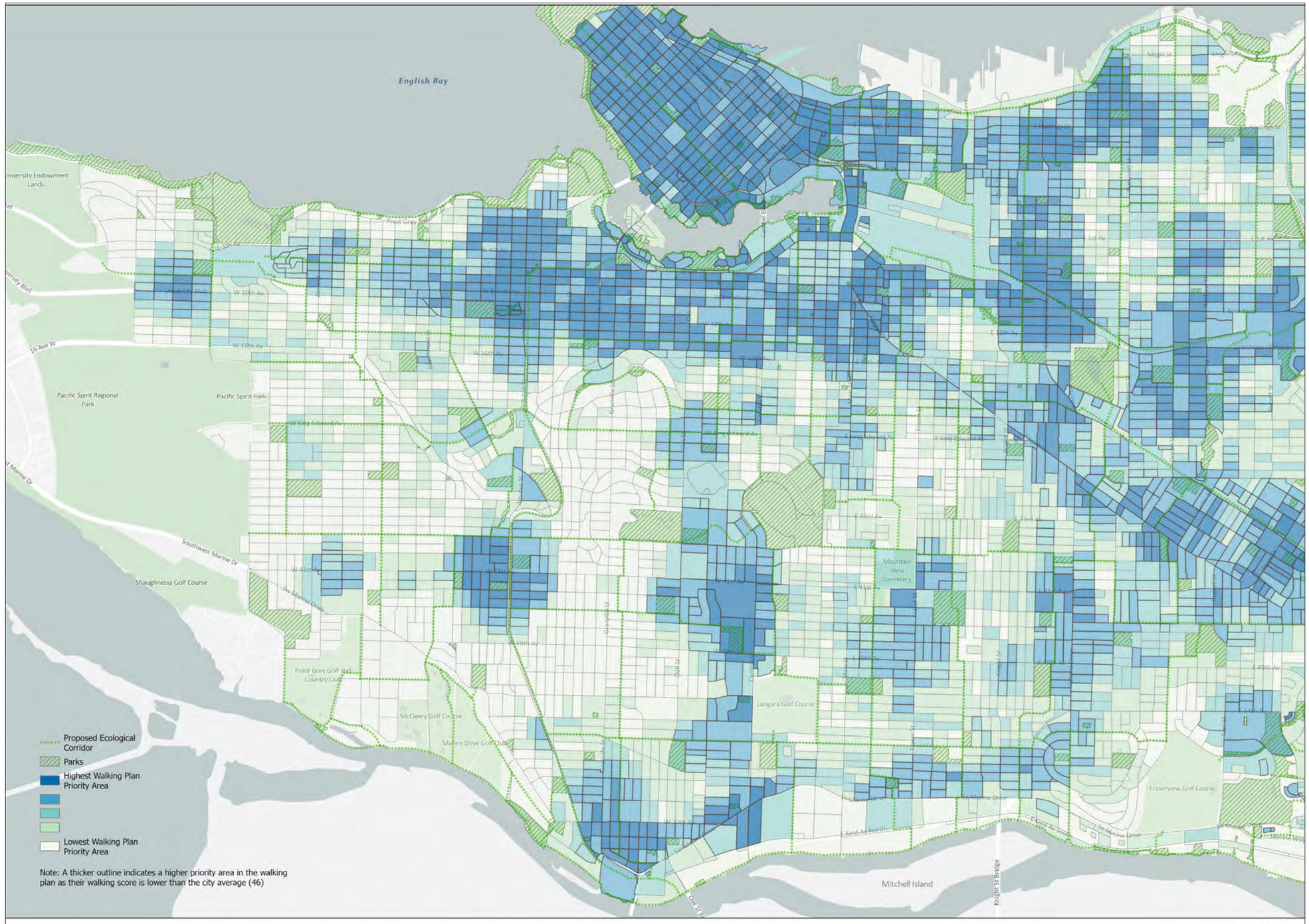


Figure 44: LIKELY IMPLEMENTATION - 5-Year Walking Plan Priority Areas 2023-2027

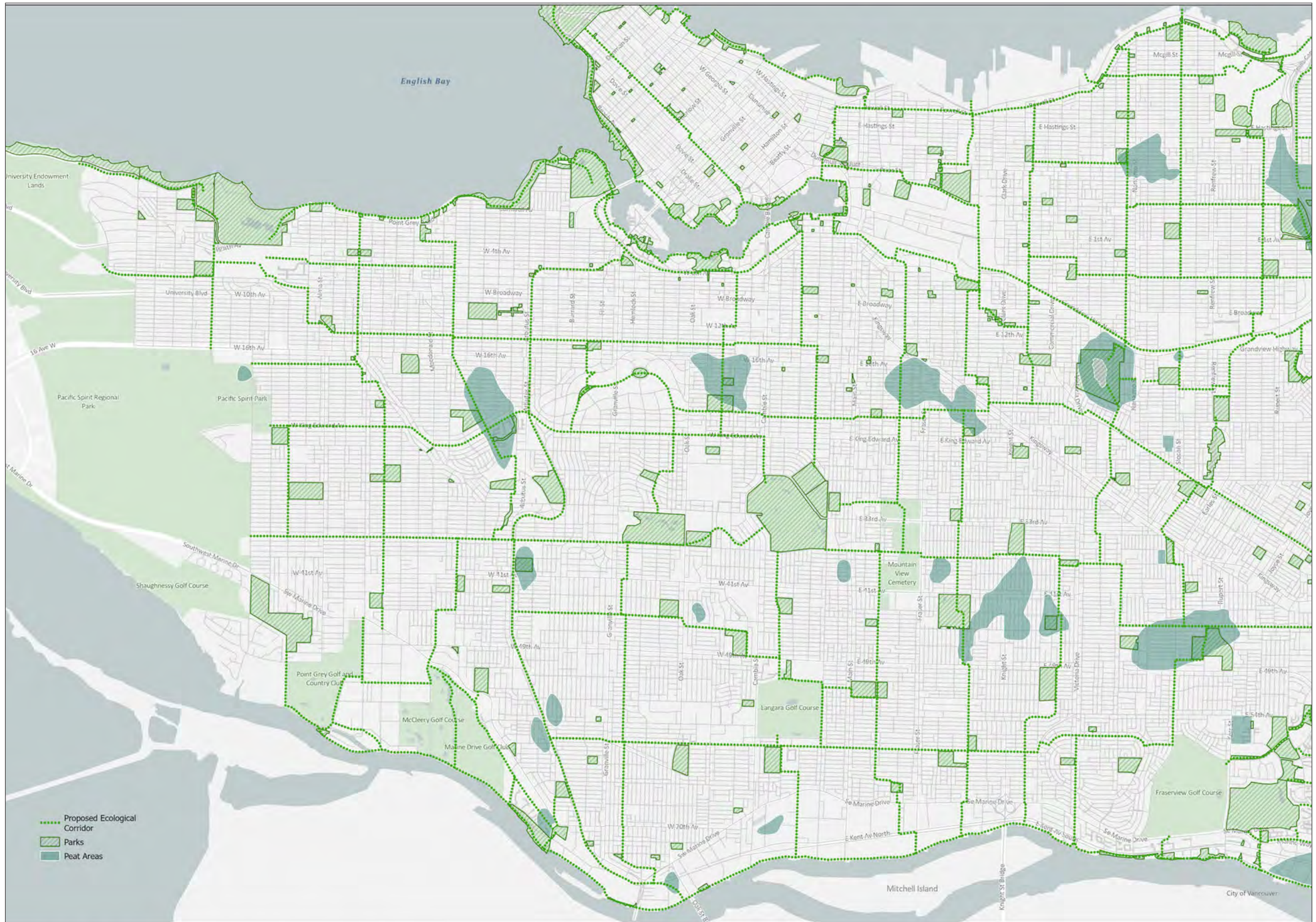


Figure 45: LIKELY IMPLEMENTATION - Estimated Areas with Underlying Peat Soil

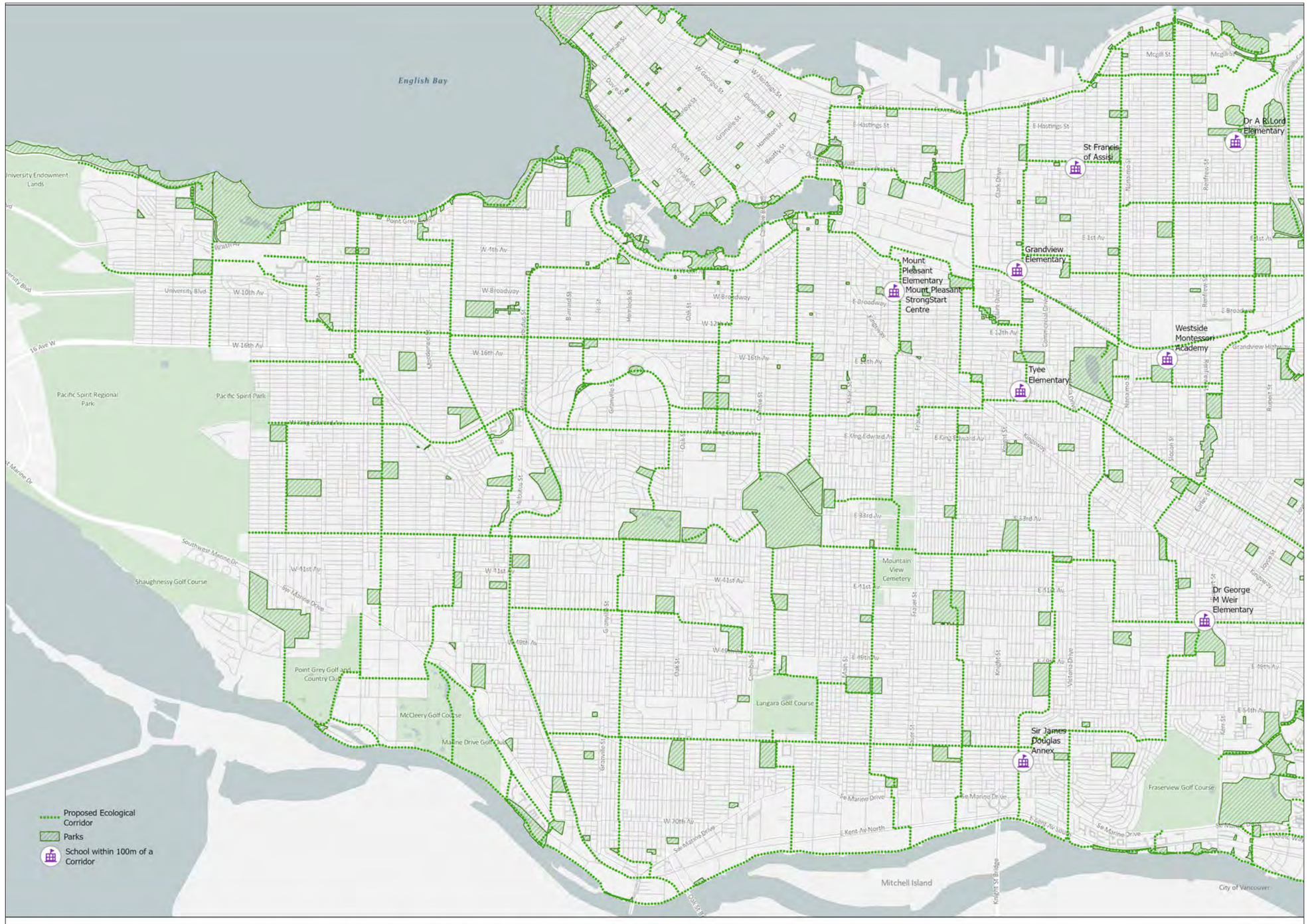


Figure 46: LIKELY IMPLEMENTATION - Schools within 100m of an Ecological Corridor

6. Local Road Candidates for Urban Ecological Corridors (17)

The analysis identified 17 local roads as candidates for near-term implementation of urban ecological corridors.

Out of all the candidates, 5 road segments are further identified as ***top priority projects****.

These local roads see a greater alignment with **at least 4 criteria listed in the likely implementation criteria list**. with each criterion weighted equally except for the walking priority score.

- Aligns with the Blue-Green System
- Aligns with a Greenway
- **Medium to high** walking priority score*
- In proximity to schools (100m)
- In an area with underlying peat soil

**Most local road candidates candidates score an above average walking priority score (>46). But only those in the high 50s or above is considered for the top priority candidates.*

And in addition to those alignments, **at least 1 adjacency to key land use or features.**

- Adjacent to park space
- Adjacent to high-rise residential area (see Appendix C)
- Adjacent roads are also in poor pavement condition

It is recognized that other factors, such as project contingencies and coordination with other departments, might lead staff to prioritize other candidates during the implementation stage.

id	**Vancouver East (5)**	Likely Implementation Opportunity
a	*2000-2200 Wall St*	• Aligns with the Blue green system • Aligns with a Greenway • High walking priority score (59-71) • Site context: Adjacent to park
b	*1800 Adanac St**	• Aligns with the Blue green system • Aligns with a Greenway • High walking priority score (65-72) • In proximity to a school • Site context: Adjacent to park
c	*500 Lillooet St (South of E Hastings and East of E Pender St),* *3200 E Pender St (East of Lillooet St West of 500 Windermere St)* *500-700 Windermere St*	• Aligns with the Blue green system • Aligns with a Greenway • Medium to high walking priority score (55-65) • In proximity to a school • Site context: Adjacent to park
d	*2100 Woodland Dr*	• Aligns with the Blue green system • Aligns with a Greenway • High to very high walking priority score (65-86) • In proximity to a school
e	*2500-2700 E 5th Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (46-63) Site context: Adjacent to park; Adjacent roads are also in poor pavement condition

Notable site context and/or adjacency of the street segments are highlighted as they provide more community and ecological benefits if converted into ecological corridors. These features and characteristics are not part of the site selection process but only assist in selecting the top priority candidates.

Table 3: Shortlisted Local Road candidates for urban Ecological Corridor

Distribution of Local Road candidates for urban Ecological Corridors

A majority of the Local Road candidates are distributed in the east and south side of Vancouver.

Vancouver East (5)

Top Priority Project:
[b] 1800 Adanac St
[c] 500 Lillooet St (South of E Hastings and East of E Pender St), 3200 E Pender St (East of Lillooet St West of 500 Windermere St), and 500-700 Windermere St

Local road candidates in East Vancouver generally show a greater need for improvements to active mobility infrastructure. Most candidates in this area score higher than average on the walking priority index, with scores reaching the high 60s*.

Vancouver Kingsway & Vancouver South (9)

Top Priority Projects:
[g] 2900-3000 Slocan St
[j] 5400 Earles St, 2800-3300 E 45th Ave
[k] 6200-6500 Commercial St

This pattern is less consistent in South Vancouver, where the two included districts cover a larger area. As a result, walking priority scores vary more widely, ranging from the mid-50s to 70s.

Local roads in these two districts are also more susceptible to peat soil (see Figure 45), which likely contributes to pavement deterioration and shortens pavement life cycles. Many of the candidates are adjacent to parks or are located in areas with a high concentration of poor pavement conditions.

As a result, more local roads in this geographic area have been selected as top priority candidates.

**Figure 44 displays only the general distribution of walking priority areas across the city but not the individual scores. The walking score of each neighbourhood can be found in the internal GIS dataset*

	Vancouver Kingsway & Vancouver South (9)	
f	*3500 Dumfries St, 1500 E 20th Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Medium to high walking priority score (51-59) • In proximity to a school
g	*2900-3000 Slocan St**	• Aligns with the Blue green system • Aligns with a Greenway • High walking priority score (56-87) • In an area with underlying peat soil • In proximity to a school Site context: Adjacent to park; Adjacent to high-rise residential area; Adjacent roads are also in poor pavement condition
h	*3000-3100, 3300 Vanness Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Medium to high walking priority score (52-63) Site context: Adjacent roads are also in poor pavement condition
i	*700-800 E 37 th Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (50-60) • In an area with underlying peat soil
j	*5400-5500 Earles St, 2800-3300 E 45th Ave**	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (47-63) • Built on peat soil • In proximity to a school Site context: Adjacent to park; Adjacent roads are also in poor pavement condition
k	*6200-6500 Commercial St**	• Aligns with the Blue green system • Aligns with a Greenway • High walking priority score (59-61) • In an area with underlying peat soil Site context: Adjacent to park
l	*7700-7900 Borden St*	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (49-62) • In proximity to a school

Vancouver West & Vancouver-Granville (3)

While many Local Roads in these two districts also experience poor pavement conditions (see Figure 41), the majority are not located in low tree equity neighbourhoods or categorized as high walking priority areas (see Figures 42 and 43).

These roads remain important for inclusion in the long-term implementation of the urban ecological network.

However, they were not prioritized in this phase of candidate selection, as the current analysis emphasizes areas where ecological corridors can deliver the greatest ecological and community benefits to neighbourhoods in need.

	Vancouver Kingsway & Vancouver South (9)	
m	*5700-6100 Alberta St*	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (45-63) Site context: Adjacent roads are also in poor pavement condition
n	*500 W 59th Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Medium walking priority score (52-55) Site context: Adjacent to high-rise residential area
	Vancouver West & Vancouver-Granville (3)	
o	*7900-8300 Manitoba St*	• Aligns with the Blue green system • Aligns with a Greenway • Average to medium walking priority score (46-54)
p	*3700-4200 Valley Dr*	• Aligns with the Blue green system • Aligns with a Greenway • Average to medium walking priority score (43-51) • In an area with underlying peat soil Site context: Adjacent to park; Adjacent roads are also in poor pavement condition
q	*200-400, 900-1000,1500-1600, 2100-2200 W 14th Ave*	• Aligns with the Blue green system • Aligns with a Greenway • Average to high walking priority score (51-72)

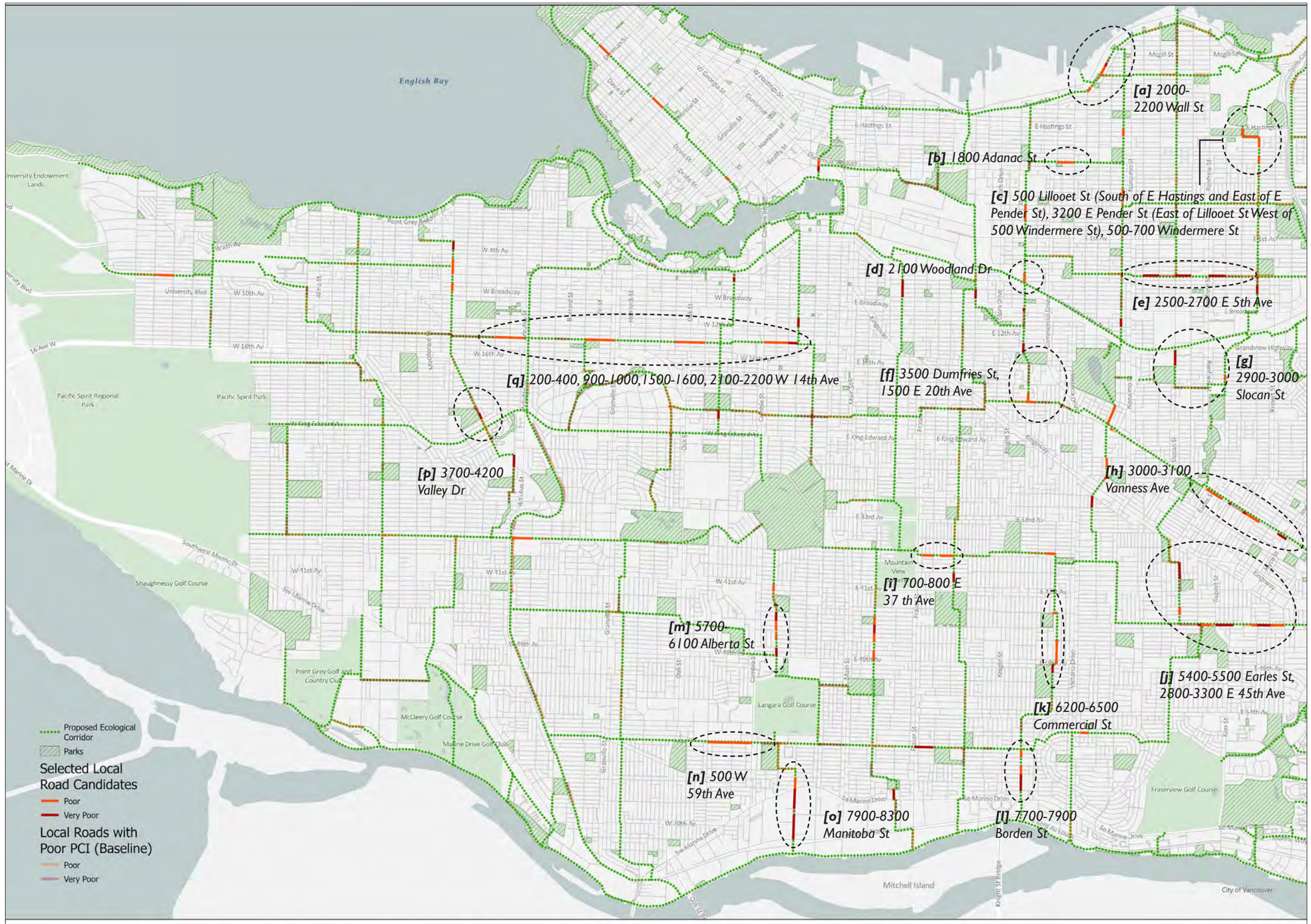


Figure 47: All Local Road Candidates for Near-term Implementation of Ecological Corridor (17)

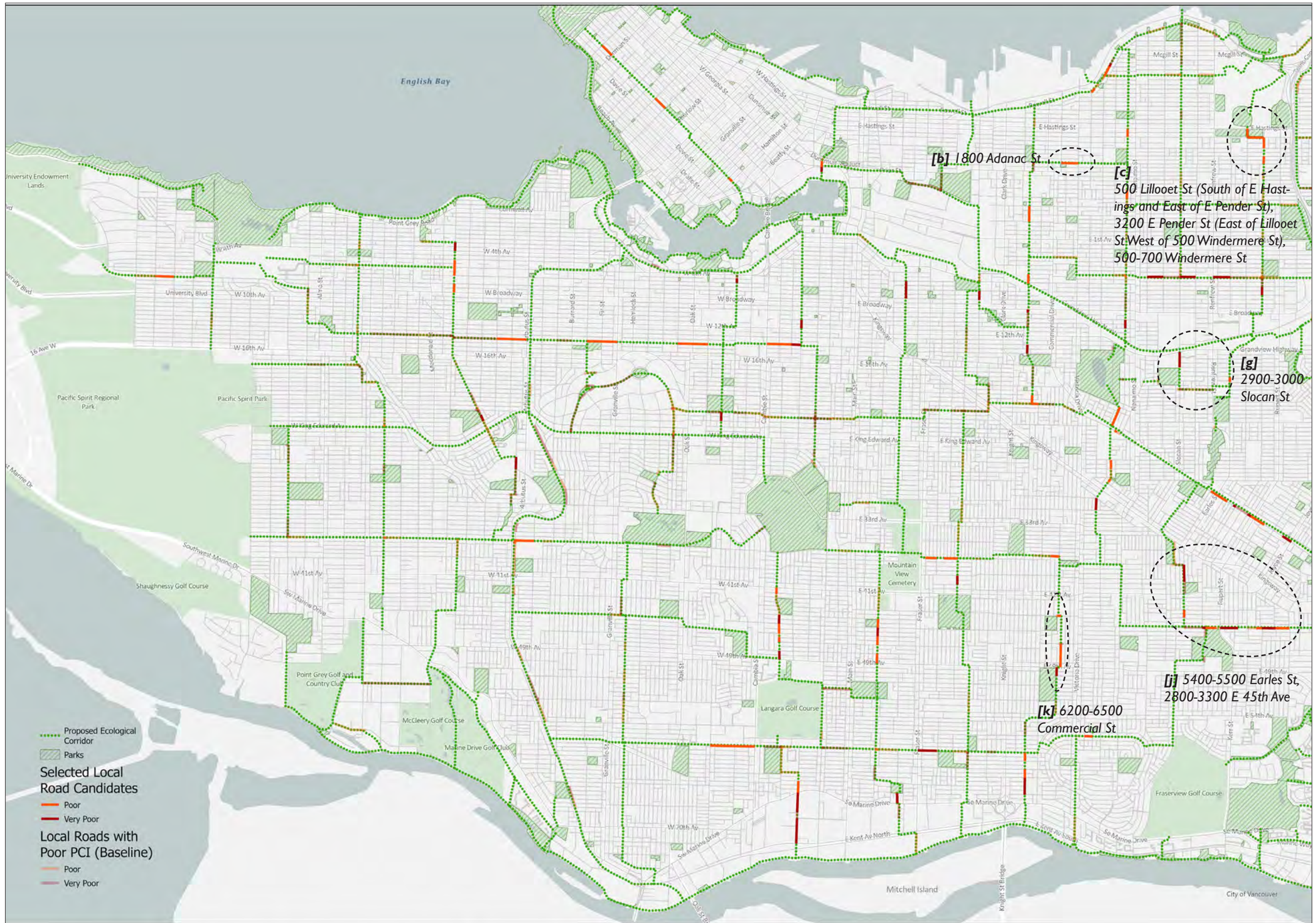


Figure 48: Top Priority Local Road Candidates (5)

7. Recommendations and Limitations

Foster collaboration amidst an uncertain financial outlook

Many municipalities in British Columbia, including Vancouver, are facing the threat of service level cuts due to tightening budgets in the current economic climate. At the same time, they are grappling with escalating costs and a growing list of competing financial commitments.

Starting new initiatives, such as implementing ecological corridors, often requires both reliable funding and additional staffing capacity.

For municipal staff, this means engaging in careful budget planning and prioritizing projects that foster interdepartmental collaboration. While this may require more time and negotiation, it enables staff to build broader support and gain the momentum needed to carry projects into implementation.

Facilitate projects through data sharing

In large municipal organizations, projects often overlap or depend on each other, making interdepartmental collaboration essential.

Visualization and mapping are powerful tools for communicating place-based ideas among staff and with the public, especially in the early planning stages. However, creating maps, sourcing datasets, and conducting spatial analysis can be time-consuming, particularly for teams lacking GIS expertise. This often leads to delays or project de-prioritization.

While this project did not encounter significant data collection challenges, that is not always the case. Many staff members juggle competing priorities, making data access a major barrier.

A better system for sharing datasets across departments and agencies could streamline workflows and support more efficient project delivery.

Research on innovative street typologies

This report explores road space reallocation projects from around the world, where municipalities have embraced innovative streetscape typologies. Cities like Paris and Barcelona based their early strategies on the structural features of their streets, such as tree-lined boulevards and the Cerda Plan.

Drawing inspiration from these examples, this report asks:

- What characteristics of Vancouver streets are worth preserving?
- How can our streets be improved to benefit people and wildlife in the city?

As one considers these questions, it is important to recognize the constraints of our existing streetscapes. What innovative street typologies have emerged that could accommodate ecological corridors or be adapted through negotiation in the design process?

Collect data on the economic benefits of Ecological Corridors

Research suggests that green rainwater infrastructure (GRI) is generally 5–30% less expensive to construct and 24% less expensive to maintain than traditional grey infrastructure (Copeland, 2016).

While the study does not specify whether streetscape costs are included, it nonetheless highlights the potential economic sustainability of ecological corridors.

Future research could benefit from a local cost-benefit analysis comparing ecological corridors to traditional street rehabilitation, using a built example from the region. This would strengthen the economic case for investing in green infrastructure.

Opportunity to refine methodology

The report's analysis relies primarily on a mapping overlay method to identify local road candidates for near-term implementation. Given the time constraint of this project (May 2025-August 2025), the report's current approach allows staff more flexibility in the selection and more collaboration with other capital work projects.

An alternative method could involve a point-based system that assigns weights to different criteria, such as walking priority thresholds based on average scores or specific quartiles. This would require more time and resources to develop but could enhance objectivity and transparency.

To partially address this gap, the report identifies "top priority" candidates by considering the number of alignments and the level of priority, in addition to the initial filtering process. These candidates are intended to guide staff attention and initiate discussions on potential project collaborations among all the selected local roads.

8. Conclusion

This report presents a list of recommended Local Road candidates, specifically those at the end of their pavement life cycle, for near-term implementation of urban ecological corridors.

As the case studies have shown, municipalities around the world have approached road space reallocation through diverse lenses, including stormwater management, sustainable mobility, and place making.

Vancouver is no stranger to this work. The success of the St. George Rainway and the broad public support it received has been recognized across North America.

Streets are the arteries and veins of a city, supporting the daily lives and commutes of Vancouverites. But they can also be more than conduits for traffic.

Our climate crisis calls for innovative adaptation in all works of the City. This project identifies a window of opportunity for the City to reimagine aging road infrastructure as a platform for building climate resilience by mitigating urban heat, expanding green space, and supporting biodiversity that the city values as part of its urban identity.

The recommended list provides staff with a strong starting point for implementing Vancouver's ecological network, while also advancing Council's 11% road space reallocation target.

Now is the time to move from vision to implementation.

References

Ajuntament de Barcelona. (2022, February 7). The new squares and green axes in Eixample will look like this. Superilles. https://ajuntament.barcelona.cat/superilles/en/content/the-new-green-hubs-and-squares

Arpent & Ville de Montréal. (2022, July). Séance d'information publique sur le projet de réaménagement du carré Augier. Ville de Montréal. https://mtl.ged.montreal.ca/constellio/?collection=mtlca&portal=REPDOCVDM#!displayDocument/00000120504

Atelier parisien d'urbanisme & Ville de Paris. (2022). Orientations pour des espaces publics végétalisés à Paris—Cahier 1: Identification des sites potentiels. Ville de Paris. https://www.apur.org/sites/default/files/espaces_publics_a_vegetaliser_cahier01.pdf?token=_JPLKMqh

Bongiorno, J. (2023, April 13). Downtown Montreal borough unveils plan to reduce traffic on residential streets following death of schoolgirl. CBC News. https://www.cbc.ca/news/canada/montreal/ville-marie-street-closures-safety-pedestrians-measures-1.6809394

Brown, R. J. (2025, February 19). Leading by Eixample: Barcelona, Spain. The Architectural Review. https://www.architectural-review.com/essays/city-portraits/leading-by-eixample-barcelona-spain

C40 Cities. (n.d.). Green & Healthy Streets Accelerator. C40 Cities. Retrieved July 31, 2025, from https://www.c40.org/accelerators/green-healthy-streets/

Cailhier, A., Abi-Zeid, I., Lavoie, R., Marleau-Donais, F., & Cerutti, J. (2025). Where to plan shared streets: Development and application of a multicriteria spatial decision support tool. European Journal of Operational Research, 322(2), 665–678.

City Hall Watch. (2015, January 21). New Park at Yukon and West 17th Avenue approved. Size doubled with street closure, bikeway retained. CityHallWatch: Tools to Engage in Vancouver City Decisions. https://cityhallwatch.wordpress.com/2015/01/20/new-park-at-yukon-and-17th/

City of Vancouver. (2016, February 10). Recognizing Lilian To. https://council.vancouver.ca/20160308/documents/a5.pdf

City of Vancouver. (2023, January 31). St George Rainway Project. https://vancouver.ca/files/cov/2023-01-31-st-george-rainway-project.pdf

City of Vancouver. (2024, December 6). Memo—Road Space Reallocation. City of Vancouver. https://vancouver.ca/files/cov/2024-12-08-memo-road-space-reallocation.pdf

Congress for the New Urbanism. (2017, July 26). Cheonggye Freeway. Congress for the New Urbanism. https://www.cnu.org/what-we-do/build-great-places/cheonggye-freeway

Copeland, C. (2016). Green infrastructure and issues in managing urban stormwater. Congressional Research Service Washington, DC, USA. http://www.nationalaglawcenter.org/wp-content/uploads/assets/crs/R43131.pdf

Edward, T. (2024, July 12). City unveils plans for Montreal's first sponge street, in Ville-Marie borough. Cult MTL. https://cultmtl.com/2024/07/city-unveils-plans-for-montreals-first-sponge-street-lariviere-in-ville-marie-borough/

Federation of Canadian Municipalities. (2018). Transportation: City of Montreal's Pedestrian and Shared Streets Program. Federation of Canadian Municipalities. https://fcm.ca/sites/default/files/documents/resources/case-studies/2018scawards-transportation-city-montreal-pedestrian-shared-streets-program-gmf.pdf

Global Designing Cities Initiative. (n.d.). Case Study: Cheonggyecheon; Seoul, Korea. Global Designing Cities Initiative. Retrieved July 31, 2025, from https://globaldesigningcities.org/publication/global-street-design-guide/streets/special-conditions/elevated-structure-removal/case-study-cheonggyecheon-seoul-korea/

Gunarathna, W., Hassan, R., & Lamborn, J. (2014). Developing a sustainability assessment framework for road transportation asset management practice. Proceedings of the 26th ARRB Conference—Research Driving Efficiency, Sydney, Australia, 20–22. https://www.researchgate.net/profile/Prageeth-Gunarathna/publication/332961364_DEVELOPING_A_SUSTAINABILITY_ASSESSMENT_FRAMEWORK_FOR_ROAD_TRANSPORTATION_ASSET_MANAGEMENT_PRACTICE/links/5cd3ac1e92851c4eab8c5291/DEVELOPING-A-SUSTAINABILITY-ASSESSMENT-FRAMEWORK-FOR-ROAD-TRANSPORTATION-ASSET-MANAGEMENT-PRACTICE.pdf

Haas, R., Tighe, S. L., & Falls, L. C. (2006). Determining Return on Long-Life Pavement Investments. Transportation Research Record: Journal of the Transportation Research Board, 1974(1), 10–17. https://doi.org/10.1177/0361198106197400102

Kenley, R., Harfield, T., & Bedggood, J. (2014). Road Asset Management: The role of location in mitigating extreme flood maintenance. Procedia Economics and Finance, 18, 198–205. https://doi.org/10.1016/S2212-5671(14)00931-9

Landscape Architecture Foundation. (2009, March). Landscape Performance Series—Cheonggyecheon Stream Restoration Project Methodology. Landscape Architecture Foundation. https://www.landscapeperformance.org/sites/default/files/Cheonggycheon%20Methodology.pdf

Landscape Architecture Foundation. (2011, December 1). Cheonggyecheon Stream Restoration Project | Landscape Performance Series. Landscape Performance Series. https://www.landscapeperformance.org/case-study-briefs/cheonggyecheon-stream-restoration-project

Magrinyà, F., Mercadé-Aloy, J., & Ruiz-Apilánez, B. (2023). Merging Green and Active Transportation Infrastructure towards an Equitable Accessibility to Green Areas: Barcelona Green Axes. Land, 12(4), Article 4. https://doi.org/10.3390/land12040919

Nay, I. P. (2024, October 26). B.C. atmospheric river a successful first test of community-led rain management project. CBC News. https://www.cbc.ca/news/canada/british-columbia/st-george-rainway-1.7363970

Nieuwenhuijsen, M., de Nazelle, A., Pradas, M. C., Daher, C., Dzhambov, A. M., Echave, C., Gössling, S., Iungman, T., Khreis, H., Kirby, N., Khomenko, S., Leth, U., Lorenz, F., Matkovic, V., Müller, J., Palència, L., Pereira Barboza, E., Pérez, K., Tatah, L., … Mueller, N. (2024). The Superblock model: A review of an innovative urban model for sustainability, liveability, health and well-being. Environmental Research, 251, 118550. https://doi.org/10.1016/j.envres.2024.118550

Patterson, K. (2023, October 10). Montreal creating 1st 'sponge street' to withstand heavy rainfall. CityNews Montreal. https://montreal.citynews.ca/2023/10/10/montreal-sponge-street-rainfall/

Pérez, L., Sunyer, J., & Künzli, N. (2009). Estimating the health and economic benefits associated with reducing air pollution in the Barcelona metropolitan area (Spain). Gaceta Sanitaria, 23, 287–294.

Ville de Montréal. (2024). Aménagements éponges et résilients dans Rosemont–La Petite-Patrie | Ville de Montréal. https://montreal.ca/articles/amenagements-eponges-et-resilients-dans-rosemont-la-petite-patrie-80103

Ville de Montréal. (2025a). La place du Sable-Gris: De la rue à la place. https://montreal.ca/articles/la-place-du-sable-gris-de-la-rue-la-place-59149

Ville de Montréal. (2025b). Réaménagement du carré Augier. https://montreal.ca/articles/reamenagement-du-carre-augier-36719

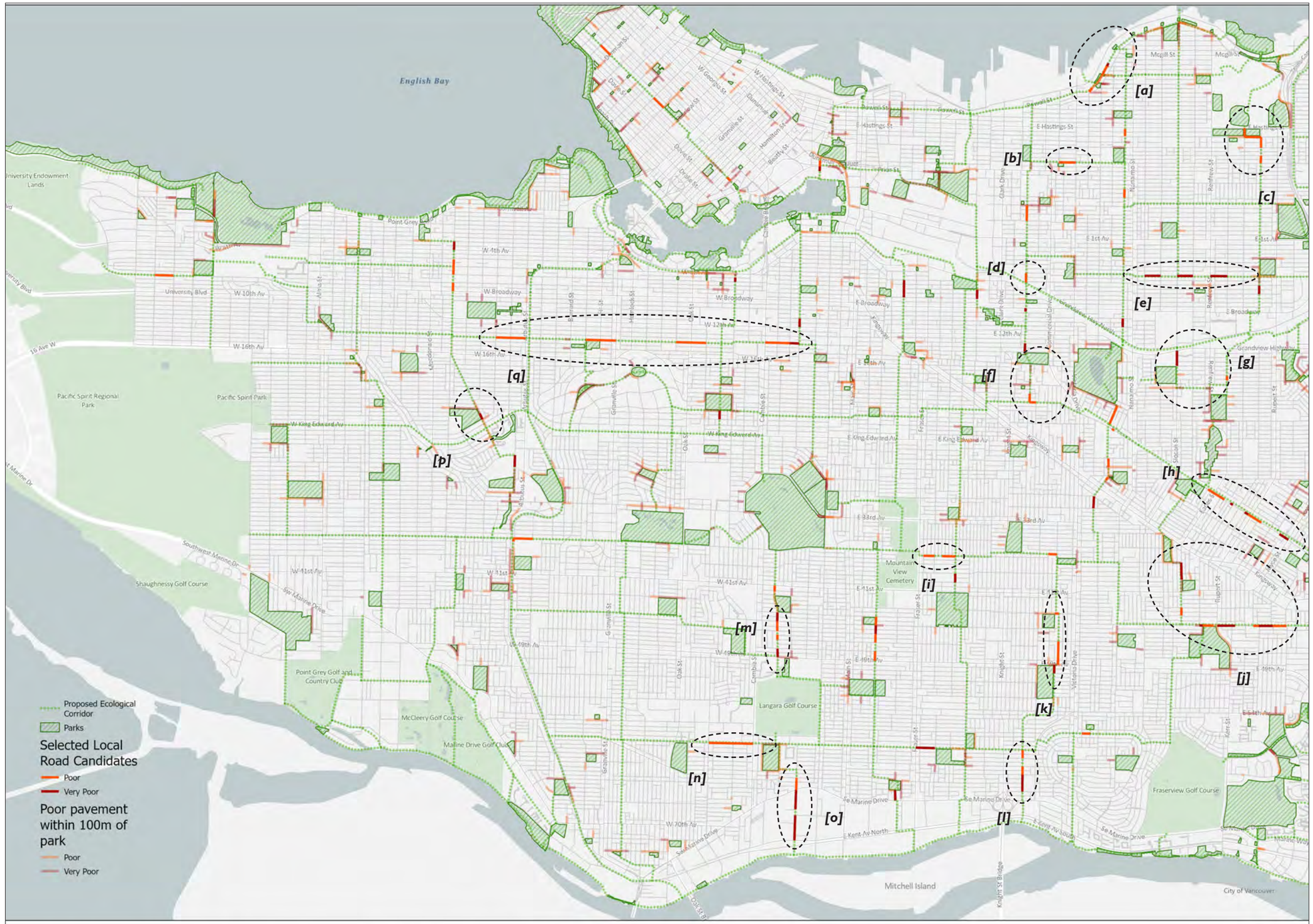
Ville de Montréal. (n.d.-a). De rue minérale, la rue Larivière deviendra une rue « éponge ». Retrieved August 1, 2025, from https://montreal.ca/articles/de-rue-minerale-la-rue-lariviere-deviendra-une-rue-eponge-58156

Ville de Montréal. (n.d.-b). FAQs | Pedestrianization of Bernard Avenue | Réalisons Montréal. Retrieved July 31, 2025, from https://www.makingmtl.ca/bernardavenue/widgets/95898/faqs#question17979:~:text=This%20program%20is%20designed%20to%20test%20different%20road%2Dsharing%20configurations%20in%20order%20to%20reduce%20the%20right%2Dof%2Dway%20for%20automobiles%20to%2060%25%20of%20the%20street%E2%80%99s%20surface%20area

Ville de Paris. (n.d.). Une forêt urbaine prend vie place de Catalogne. Retrieved July 31, 2025, from https://www.paris.fr/pages/foret-urbaine-place-de-catalogne-la-concertation-est-lancee-19389

Appendices

Appendix A: Park Adjacent (100m) Local Roads in Poor Pavement Conditions
Appendix B: Land Use Designations and Selected Local Road Candidates
Appendix C: Transit Villages and Selected Local Road Candidates



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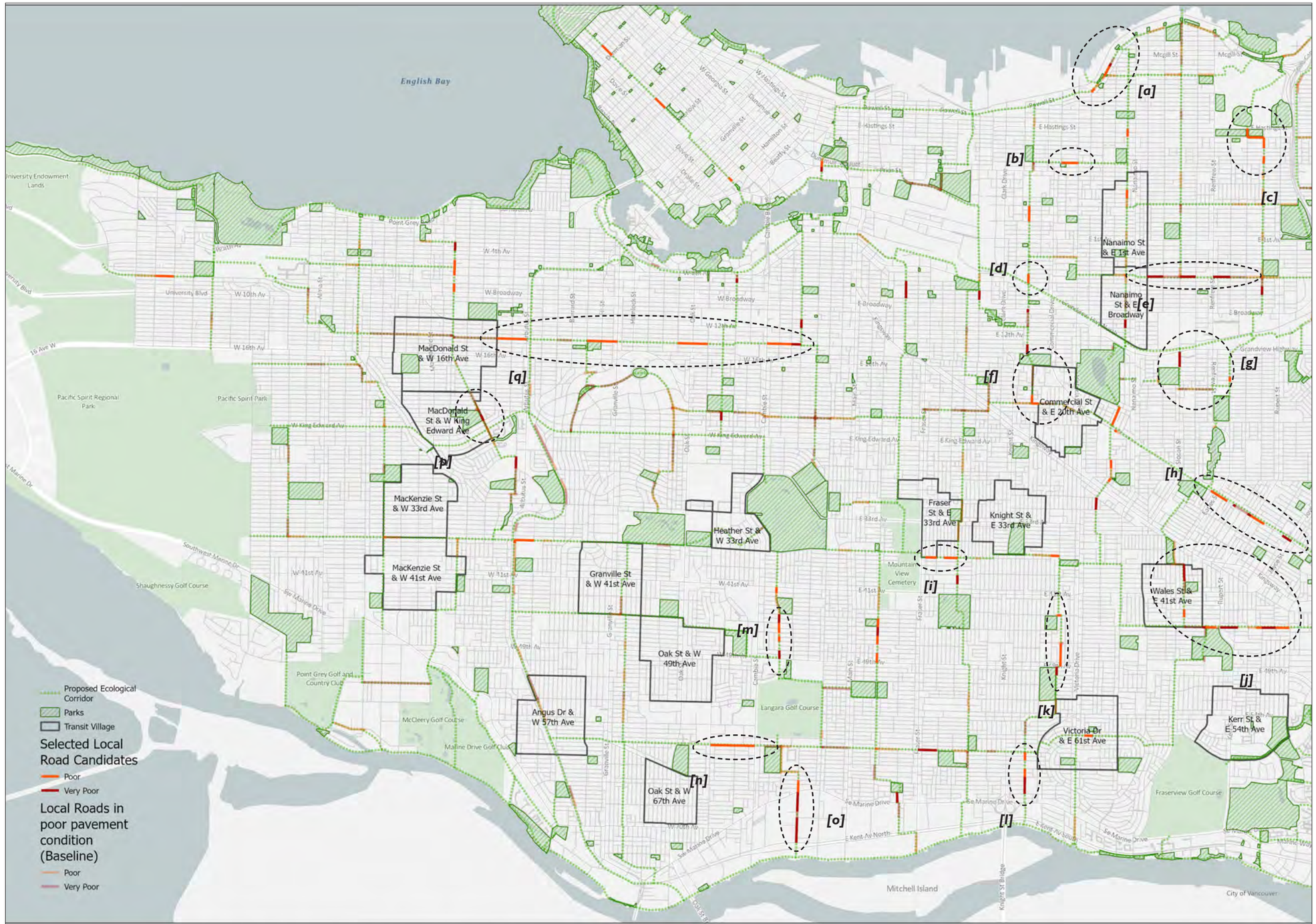
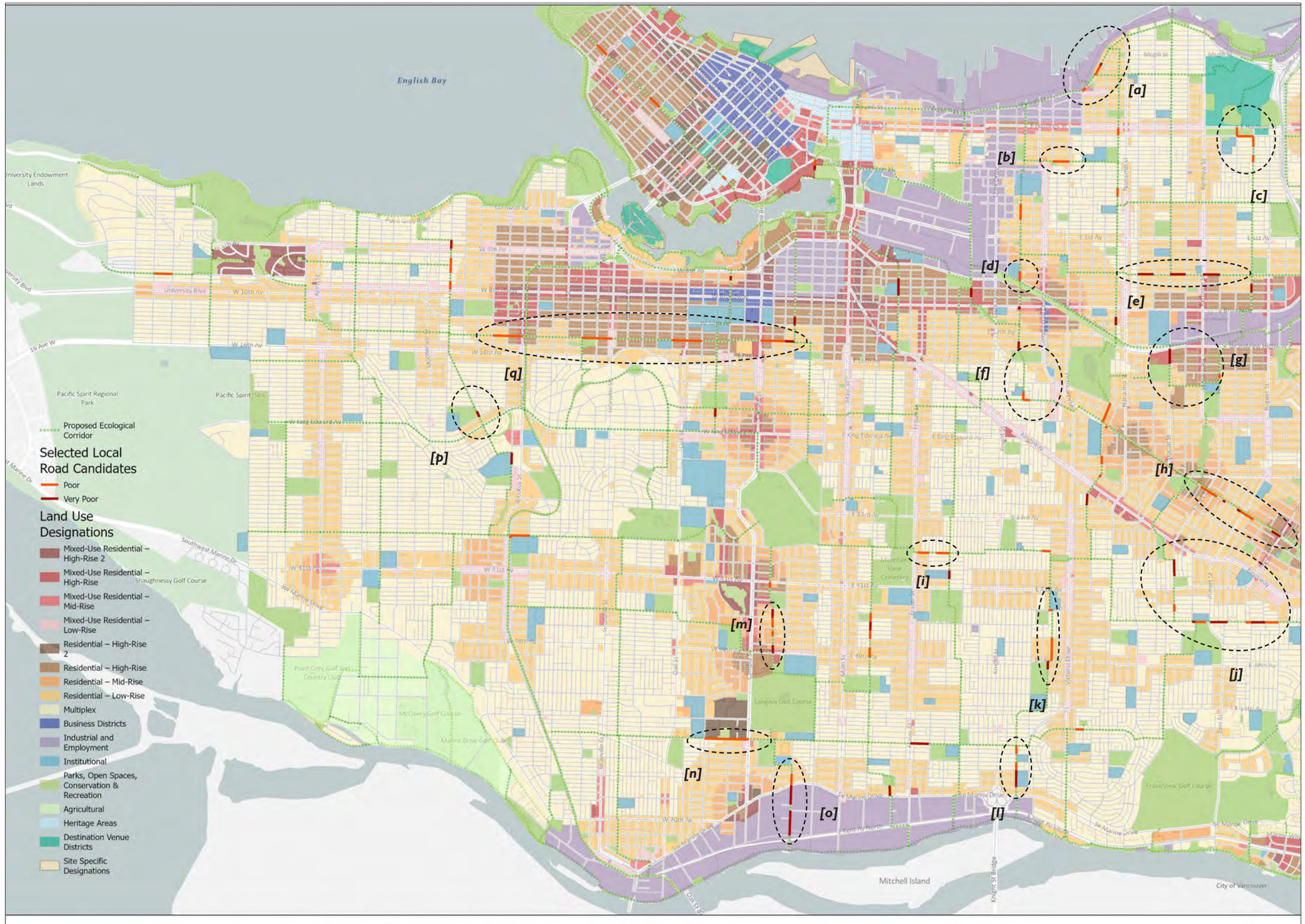


Appendix B: Preliminary Village Boundaries (Vancouver Plan) and Selected Local Road Candidates



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