❒ Info Package	Date:

PC		
Dept. Manager	GM/ Director	CAO

The District of North Vancouver
INFORMATION REPORT TO COUNCIL

April 4, 2023
File: 16.8450.30/035.000

AUTHOR: Ingrid Weisenbach, Transportation Planning
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SUBJECT: **Main St Cycling Link (WB): DNV Border - Harbour Ave Preferred Solution**

REASON FOR REPORT:
To provide Council with information about what we heard from recent public engagement on design options and describe next steps for delivering westbound Main Street cycling link, from Harbour Avenue to the City of North Vancouver (CNV) border at Lynn Creek. Staff have identified a preferred solution, supported by the community, that does not reduce the number of vehicle travel lanes.

SUMMARY:
Staff continue to make headway in delivering on Council's priority cycling routes – particularly improvements near the bridgeheads. The Main Street cycling link is one such effort underway to connect people cycling to and from town and village centres to key destinations. The Main Street cycling link will help connect people cycling westbound to destinations in the District, CNV and beyond.

The project's goal is to improve westbound cycling connectivity, comfort, and safety for people cycling in the project area, while finding opportunities to minimize impact to the vehicle capacity of Main Street given its highly congested environment during peak periods.

Two options were initially developed in spring 2022 that were taken forward for public and stakeholder engagement in May 2022. 'Option A' is a long term solution that meets the desirable widths for cycling facilities and assumes that the high-powered transmission lines can be relocated. 'Option B' is a second solution that could be completed in the shorter term. This option assumes that the transmission lines and curbs stay in place, and while it meets the constrained widths for cycling along most of the segment, it does have some pinch points.

Based on the input received through engagement, the team identified a third, preferred solution (a 'Hybrid Option') that maximizes the cycle track width as well as the separation between drivers and cyclists.

Detailed reports summarizing the results of the technical work completed and the engagement activities are attached. These reports will be made public on the project's webpage.

BACKGROUND:
In 2019, the segment of Main Street between Harbour Avenue and the CNV border became a Council priority for advancing a cycling network that connects the town and village centres to key destinations. A District-wide public consultation conducted in 2020 helped inform staff in delivering priority cycling routes, including this project. From this consultation, the top three reasons reported why people do not cycle in the District are: safety, incomplete network connections and the cycling route locations. The most prevalent theme from open ended comments was the need for protected/separated cycling lanes. Engineering standards also recommend a separated facility due to motor vehicle speeds and volumes along this corridor.

This is an important link for people cycling. Similar to why drivers use this road, people cycling also use it to commute to/from work, to access businesses along the roadway or on their way to other destinations. Figure 1 depicts how this link fits into the surrounding cycling network.

Figure 1: Lynn Creek Town Centre Cycling Network with Project Site Highlighted

In the eastbound direction, Main Street has a painted cycling lane and in the westbound direction, a shared single-file vehicle/cycling travel lane. Prior to the implementation of the RapidBus along this section, the westbound curb lane was wider to accommodate a shared side-by-side vehicle/cycle travel lane. Since this change, staff hear from people cycling that they feel unsafe while cycling on this stretch of road. The project's focus is to provide a separate space for people cycling westbound.

EXISTING POLICY:
Main Street cycling link project is supported by the Official Community Plan and the Action Plan, Transportation Plan, Bicycle Master Plan, Pedestrian Master Plan, Priority Cycling Routes, Community Energy and Emissions Plan, and INSTPP. Main Street cycling route is also a part of the region's Major Bikeway Network.

ANALYSIS:
This section of Main Street is one of the District's busiest cycling corridors. In 2022, the average for both directions was 512 cyclists on weekdays and 809 cyclists on weekends, with the busiest day recording over 1,000 cyclists.

Concept Options
The project team narrowed the list of options to two design concepts that met the project goals and technical requirements. The two options feature a separated cycle track and sidewalk facilities. Option A is a solution that assumes the high-power electrical lines along Main Street and existing curb can be relocated to allow cycling and walking facilities to be designed appropriately. Option B is a solution that assumes the high-powered electrical lines and existing curbing stay in place, thereby allowing cycling and walking facilities to meet minimum standards.

Public Input
Public engagement for this project was undertaken between May 9 and 29, 2022 to build understanding for the goals and plans for this route, learn about design preferences that would ultimately inform design decisions, and to raise awareness about the District's overall vision for expanding the cycling network.

PUBLIC ENGAGEMENT SPECTRUM

Adapted and used with permission from the International Association for Public Participation (IAP2 Federation).

Inform	Listen & Learn	Consult	Involve	Collaborate	Empower
"We will keep you informed. We will provide information that is timely, accurate, balanced, objective, and easily understood. We will respond to questions for clarification and direct you to sources of additional information."	"We will listen to you and learn about your plans, views, and issues; and work to understand your concerns, expectations, and ideas."	"We will keep you informed, and listen to and acknowledge your concerns and aspirations in developing final solutions, and we will report back to you on how your input influenced the decision."	"We will work with you to ensure your concerns and aspirations are directly reflected in the alternatives developed, and we will report back on how your input influenced the decision."	"We will look to you for advice and innovation in formulating solutions, and we will incorporate your recommendations into the decisions to the maximum extent possible."	"We will implement what you decide."

This engagement was conducted at a “Consult” level on the spectrum of public engagement.

An online engagement survey using the Civil Space engagement tool launched on May 9 and ran for three weeks, closing on May 29, 2022. This engagement was supported by both print and digital communication tactics, including a letter to area businesses, signage posted on Main Street, as well as social media and a project webpage.

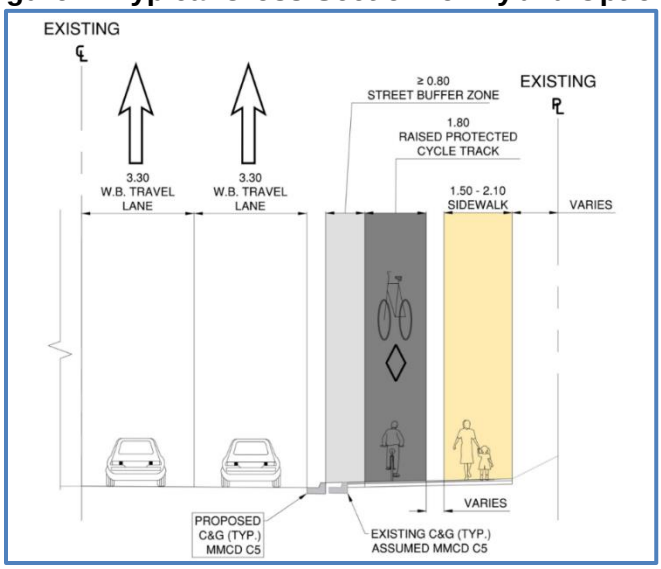
Complete details of the feedback from the online engagement survey can be found in Attachment A: What we heard. Key takeaways from the survey results include:

- **Safety** is a primary concern among respondents. The goal to provide safe and comfortable travel options for all people, whether they walk, cycle, roll, take transit, or drive was very important to 90% of survey participants. Comments further identified this segment of Main Street as an important gap in the cycling network where cyclists currently feel unsafe. Feedback on design concepts advocated for providing physical separation from motor vehicles (i.e., grade, barriers, bollards) and complete separation between cyclist and pedestrian paths.
- **Quick implementation** and short-term improvements were supported by respondents. The option to construct the short-term solution now and construct the long-term solution when the District is able was favoured by 69% of respondents, when compared to constructing only the short-term or long-term solution. This was reinforced by written comments, which emphasized the desire for improvements to be made in the near future.

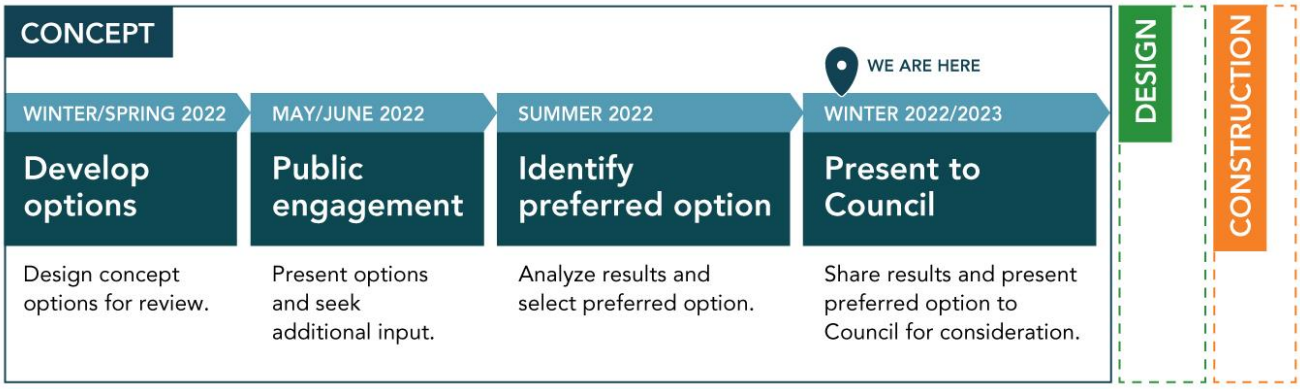
Targeted Stakeholder Engagement
The team engaged with the following stakeholders: CNV, TransLink, Coast Mountain Bus Company, North Shore Advisory Committee on Disability Issues, and HUB Cycling. The team also met with business owners at 1391-1395 Main Street and 1326-1336 Main Street (District owned).

Preferred Solution
Following public engagement and stakeholder outreach, the team refined the options into one hybrid option (shown in Figure 1) that maximizes the cycling and walking facilities widths by moving the curb while keeping the assumption that the powerlines stay in place.

Figure 1: Typical Cross-Section for Hybrid Option



Timing/Approval Process:
This project currently is concluding the concept phase and moving into detailed design. Detailed design is anticipated to be complete in 2023 with construction being possible in 2024. This will be further presented at the proposed May 15, 2023 council workshop.



Concurrence:
This work has been coordinated with others regarding future transit improvements along the corridor.

Financial Impacts:
The project's total estimated cost is $1.9M (based on a Class C estimate) which includes $150,000 for the concept stage. The concept stage will be complete once the preferred concept and engagement results are shared publicly. This project is expected to receive approximately 50% in external grants.

Liability/Risk:
The project's key goal is to improve safety and connectivity for cyclists along Main Street, one of the District's busiest cycling corridors. Improvements delivered through the project will also improve safety for pedestrians. Providing separated cycling facilities and improved pedestrian crossing facilities will decrease the risk of conflict with motor vehicle drivers.

Social Policy Implications:
Investment in active transportation networks have been shown to promote community health and social wellness, address equity concerns and provide benefit to local economies, and overall liveability. Integrated land use and transportation planning also presents opportunity for higher levels of transit, reduced car-dependency and housing diversity.

Environmental Impact:
Emissions related to the transportation sector currently make up 52% of all emissions in DNV and passenger vehicles are responsible for 96% of transportation-related emissions. Providing sidewalks, cycling facilities and accessible bus stops help people travel safely and comfortably by active modes and reduces reliance on driving. Increased active transportation supports health-related benefits and reduced air pollution.

Conclusion:
Staff will be transitioning into detailed design to deliver a project that links westbound cyclists from Harbour Avenue to Lynn Creek and CNV via Main Street. The hybrid design creates a separate space for cyclists by shifting the sidewalk northwards and the curb slightly to the south. This work, one of Council's priority cycling routes, is supported through the public/stakeholder engagement and District policy.

Respectfully submitted,

Ingrid Weisenbach
Transportation Planner

Ben Shalansky
Project Manager

Attachment A: What We Heard (Engagement) Report
Attachment B: Conceptual Design Options Technical Report

REVIEWED WITH:

❑ Community Planning		❑ Clerk's Office		External Agencies:	
❑ Development Planning		❑ Communications	X	❑ Library Board	
❑ Development Engineering		❑ Finance		❑ NS Health	
❑ Utilities		❑ Fire Services		❑ RCMP	
❑ Engineering Operations		❑ ITS		❑ NVRC	
❑ Parks		❑ Solicitor		❑ Museum & Arch.	
❑ Environment		❑ GIS		❑ Other:	
❑ Facilities		❑ Real Estate			
❑ Human Resources		❑ Bylaw Services			
❑ Review and Compliance		❑ Planning			
❑ Climate and Biodiversity					

DISTRICT OF NORTH VANCOUVER

Main Street Cycling Link (WB) Community Feedback

Survey Results
November 2022

Document Number: 5873565

Table of Contents

EXECUTIVE SUMMARY 3
Participation 3
Key Findings and Themes 3
BACKGROUND 5
Project Overview 5
Engagement Activities 5
Participation 6
WHAT WE HEARD 7

EXECUTIVE SUMMARY

The purpose of this engagement was to inform the community and collect feedback on possible approaches to completing cycling improvements on Main Street between Harbour Avenue and the City of North Vancouver border at Lynnmouth Park. The results of this engagement will inform the ultimate approach for improving cycling conditions on this segment of Main Street. The online engagement took place between May 9 and May 29, 2022. The District of North Vancouver promoted the engagement opportunities using the following methods:

- District of North Vancouver website
- Online engagement survey
- Letter mail out to area businesses
- Social media posts
- Two 4' x 4' community information signs

Participation

A total of 260 respondents participated in the community feedback survey. Initially, 268 surveys were completed, clicking through all pages to the end. However, eight of these surveys were blank with no responses to any questions. Of the remaining 260 responses, most answered all questions, and everyone answered at least one question. All questions in the survey were optional. All responses were considered as input in this report.

Key Findings and Themes

The summary of key findings and themes is below. Complete survey results are available in the "What we heard" section of this report. The input received reflects the responses and opinions of people who chose to participate in the community feedback survey.

Transportation network goals

- Most respondents (86%) agreed that building a complete network of active transportation routes is **very important** to them
- Respondents largely supported the goal of providing safe and comfortable multimodal travel options, with 90% of individuals specifying this goal is **very important** to them

Main Street Cycling Route

- Approximately two-thirds of respondents (178) preferred a **phased implementation approach**, with the short-term solution enacted first and a long-term solution applied later.
- Top reported interests in this cycling route included biking, scooting, or rolling (82%) followed by driving (71%). Walking (32%) and transit (18%) were less prevalent responses.
- Participants were also more likely to be visiting a business (68%) or commuting (65%) on Main Street than living on the corridor (20%) or using it for recreation (52%). These results are consistent with the industrial and commercial uses in the immediate surroundings.

Written Feedback (Key Themes)

- This segment is an important gap in the cycling network where cyclists currently feel unsafe
- Majority support for improvements with additional feedback on modifications to the design, including:
    - widening the cycling facility to encourage safe passing
    - adding physical separation (i.e., grade, barriers, bollards) from fast-moving motor vehicle traffic
    - increasing separation between cycling and pedestrian paths

Demographics

- In total, 215 people or 88% of respondents live in one of the North Shore municipalities.
- Response rates from the age 26-40 (30%), 41-55 (32%), and 56-65 (25%) brackets were comparable. Few responses (six, 2%) were received from individuals 25 and younger.
- Nealy half of respondents (49%) reported individual income of **at least** $90,000.
- Over three quarters (77%) of participants reported European origins.

BACKGROUND

Project Overview

The District of North Vancouver's Transportation Plan, endorsed by Council in 2012, identifies an expanded and improved cycling network that connects our town and village centres, bridges, and other key destinations, and provides safe routes for all ages and abilities.

The short segment of Main Street between Harbour Avenue and the City of North Vancouver border at Lynnmouth Park has been identified as one of our highest priority gaps in the cycling network. It is a busy stretch of arterial road with limited space, that includes curbs, hydro poles, and trees – all of which present challenges when attempting to provide safety and comfort for all users.

With intersection improvements at Main Street and Harbour Avenue to safely guide cyclists and pedestrians crossing Main Street, this segment connects to the existing shared bikeway on Barrow Street, and ultimately to the Ironworker's Memorial Second Narrows Bridge and Beyond. Travelling west, the route connects to existing cycling facilities in the City of North Vancouver on Cotton Road and Brooksbank Avenue, tying into the recently completed multi-use paths at the Mountain Highway Interchange.

To complete this gap in the cycling network, short-term and long-term solutions were developed. The purpose of this engagement was to inform the community and collect feedback on these possible solutions for providing cycling facilities in this corridor in the short- and long-term. The results of this engagement will inform the ultimate approach for improving cycling conditions on this segment of Main Street.

Engagement Activities

The purpose of this engagement was to inform the community and collect feedback on possible approaches to completing cycling improvements on Main Street between Harbour Avenue and the City of North Vancouver border at Lynnmouth Park. The results of this engagement will inform the ultimate approach for improving cycling conditions on this segment of Main Street.

Notifications

The District of North Vancouver promoted the engagement opportunities using the following methods:

Method	Dates
District of North Vancouver website	Webpage updates launched on May 9, 2022
Online engagement survey	Survey open from May 9 – 29, 2022
Letter mail out to area businesses	Mailed on May 9, 2022
Social media posts	Post on May 10, 24, 27
Community information signs	Installed on May 9, 2022

Participation

A total of 260 respondents participated in the community feedback survey. Initially, 268 surveys were completed, clicking through all pages to the end. However, eight of these surveys were blank with no responses to any questions. Of the remaining 260 responses, most answered all questions, and everyone answered at least one question. All questions in the survey were optional. All responses were considered as input in this report.

The following 'What We Heard' section provides results of responses to close-ended questions. Please see the appendices for verbatim responses to open-ended questions.

WHAT WE HEARD

A total of 260 respondents participated in the community feedback survey.

Q1. We're working to build a complete network of active transportation routes in the District, connecting town centres to key destinations, including the bridgeheads and the City of North Vancouver. How important is this to you? (n=260)

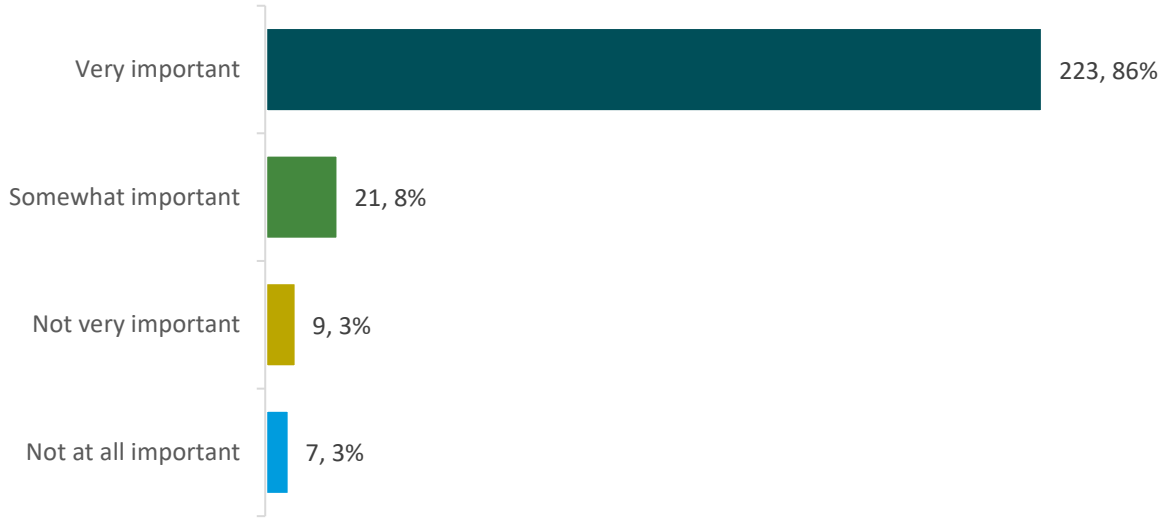


Figure 1: Importance of active transportation connections.

Q2. Our goal is to provide safe and comfortable travel options for all people, whether you walk, cycle, roll, take transit, or drive. How important is this to you? (n=260)

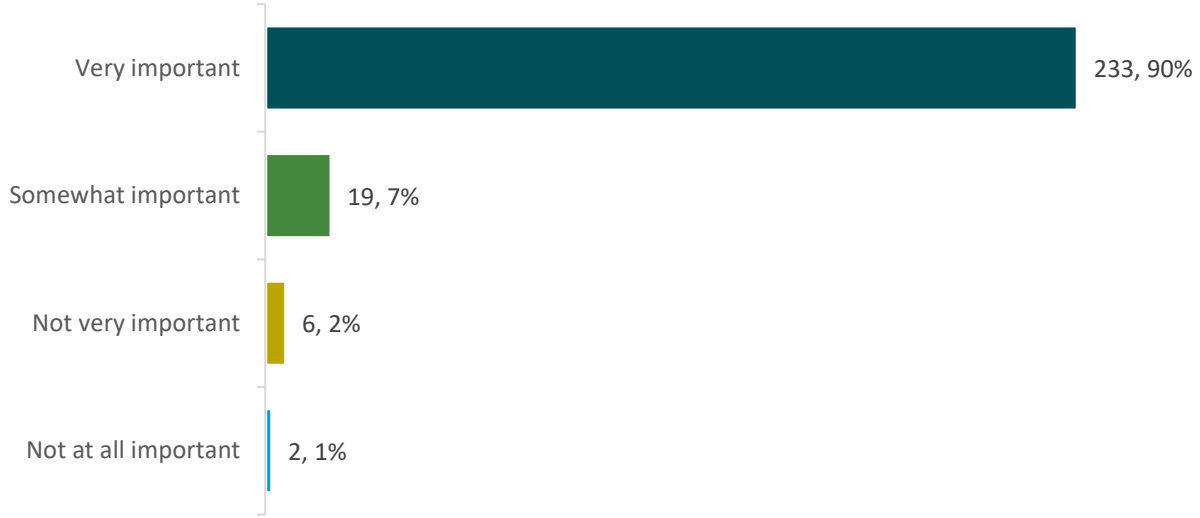


Figure 2: Importance of safe and comfortable multimodal travel.

Q3. Do you have any comments to add? (n=132)

An open-ended question was provided to gather comments on possible directions for the transportation network. In total, 132 participants provided additional written feedback. Table 1 summarizes the top three themes distilled from open ended responses, including their prevalence and key commentary.

Table 1: Key themes from transportation network goals

Key Theme	# of Mentions	% of Total	Summary of Comments
Cycling safety	31	23%	• Existing conditions in this section of Main St are very busy with motorists and cyclists having to share the road • Cyclists feel unsafe sharing the road with vehicles passing by cyclists at fast speeds • General emphasis on the importance of cycling safety • Requests for separation between cyclists, pedestrians, and motorists
User experience on the existing cycling network	31	23%	• This section of Main St is viewed as a gap in the cycling network • Users described this section of the cycling network as unpleasant for active transportation • The section is challenging for cyclists to navigate when shared with vehicles • The cycling infrastructure is not clear to cyclist at certain locations
Encouraging use of the active transportation network	23	17%	• Indication to develop cycling facilities with prioritization for cyclists • Improved active transportation facilities would encourage more new users and retain existing ones • Improving the cycling network and its access is important for current users
Miscellaneous	47	36%	• Miscellaneous

For verbatim responses please see Appendix A.

Q4. Given the benefits and limitations of the short-term solution and the long-term solution, which of the below options do you prefer? (n=257)

Participants were asked to identify their preferred approach to improving cycling conditions on Main Street between Harbour Avenue and the City of North Vancouver border at Lynn Creek Bridge. To inform their responses, participants were presented with a brief preamble describing the existing cycling conditions, as well as conceptual drawings and path dimensions for a potential short-term solution and a potential long-term solution that may require more than five years to achieve. These materials are documented in Appendix B.

Drawing on the information provided, respondents were asked to choose between the four options presented in Figure 3.

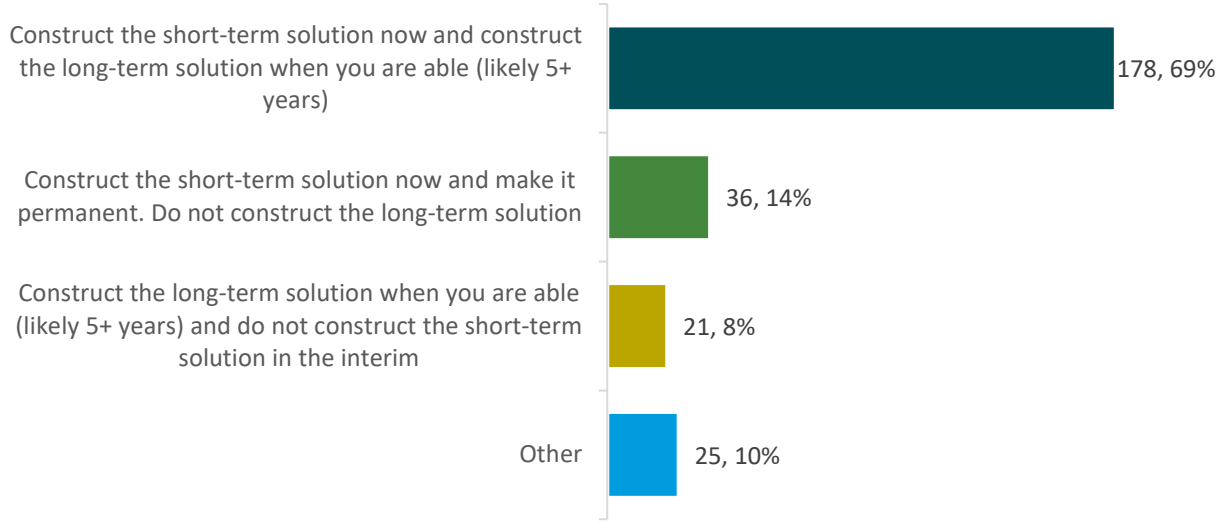


Figure 3: Preferred approach for improving cycling conditions on Main Street.

Other responses received included design specific feedback (eight responses), support for expediting the long-term solution (six responses), do nothing (four responses), and suggestions to move the cycling route to a parallel road (three responses).

Q5. Please add any additional comments. (n=116)

Participants were invited to provide additional comments on the proposed options. For respondents who provided a comment, the primary themes were:

- Support for short-term improvements
  - Desire for safety enhancements to be made in the near future
  - Earlier implementation best supports retention of current cyclists and will encourage additional cyclists to use the active transportation network
- Enhanced separation between modes
  - Request for physical separation (i.e., grade, barriers, bollards) from fast-moving motor vehicle traffic
  - Complete separation between cycling and pedestrian paths
- Other specific feedback on cycling facility design
  - Preference for wider (i.e., 2 metre) bike paths
  - Support for a consistent cycling facility with adequate grading to improve user experience
  - Further improvements on Main Street between the Phibbs Exchange and Mountain Highway to accommodate westbound cyclists coming from the Highway 1 off-ramp

For verbatim responses please see Appendix C.

Q6. Tell us about your interest in this cycling route (check all that apply). (n=259)

Respondents provided one or more interests; percent represents the proportion of respondents who identified the interest.

Table 2: Reasons for interest in the Main Street cycling route.

Interest in Project	Number of Responses	Percent of Total
I **cycle** here (bike, scooter, and/or roll)	212	82%
I **drive** here	185	71%
I **walk** here	82	32%
I take **transit** here	47	18%
I **visit businesses** in this neighbourhood	177	68%
I use this route for **commuting** to work, school, or errands	168	65%
I use this route for **recreation**	135	52%
I **live** in this neighbourhood	53	20%
I own/**operate a business** in this neighbourhood	4	2%

Q7. What are the first three digits of your postal code? (n=245)

To understand their place of residence, participants were asked to share the first three digits of their postal code. In total, 214 people or 87% of respondents live in one of the North Shore municipalities.

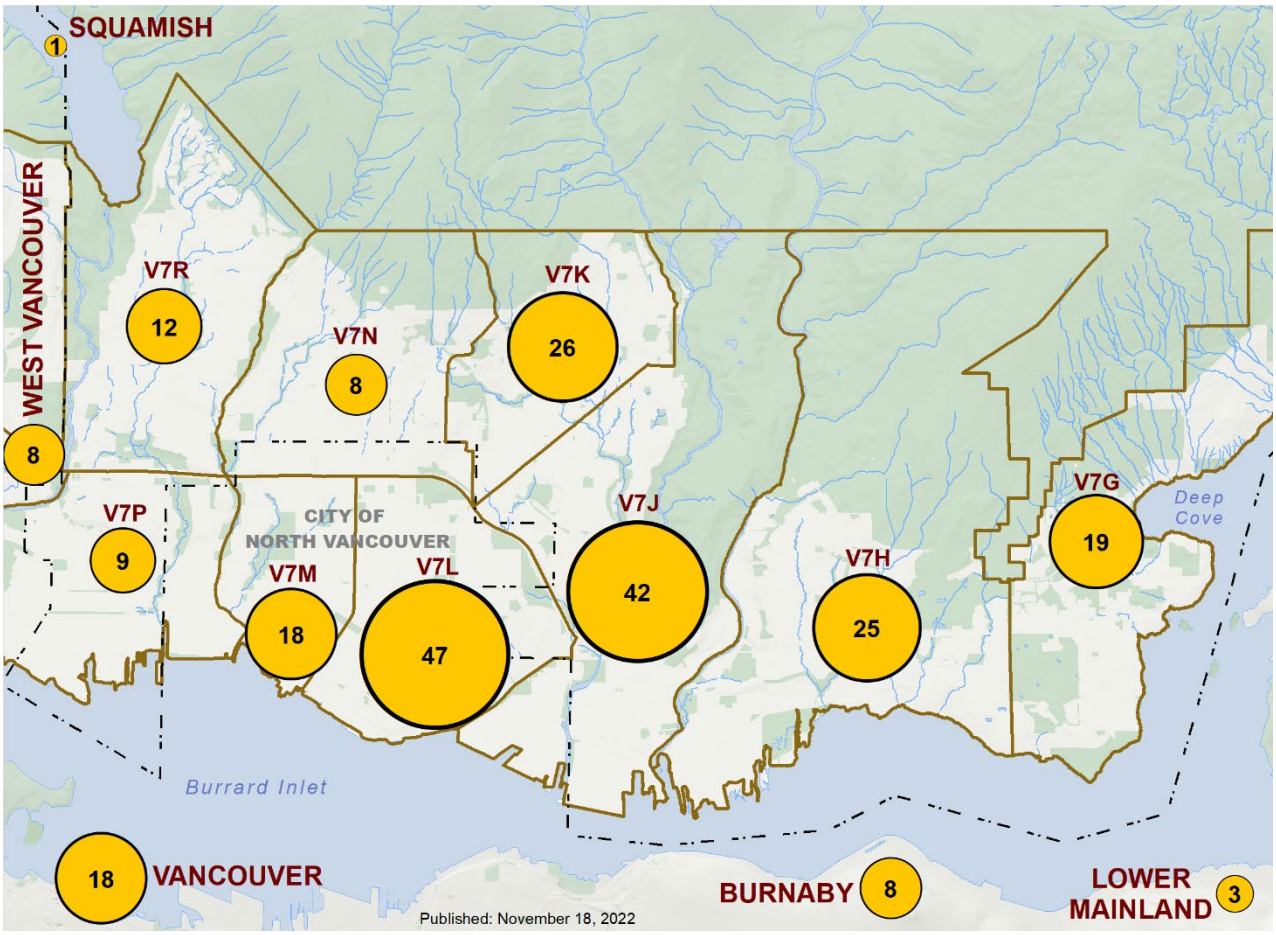


Figure 4: Location of participants based on postal code information.

Q8. What is your age? (n=256)

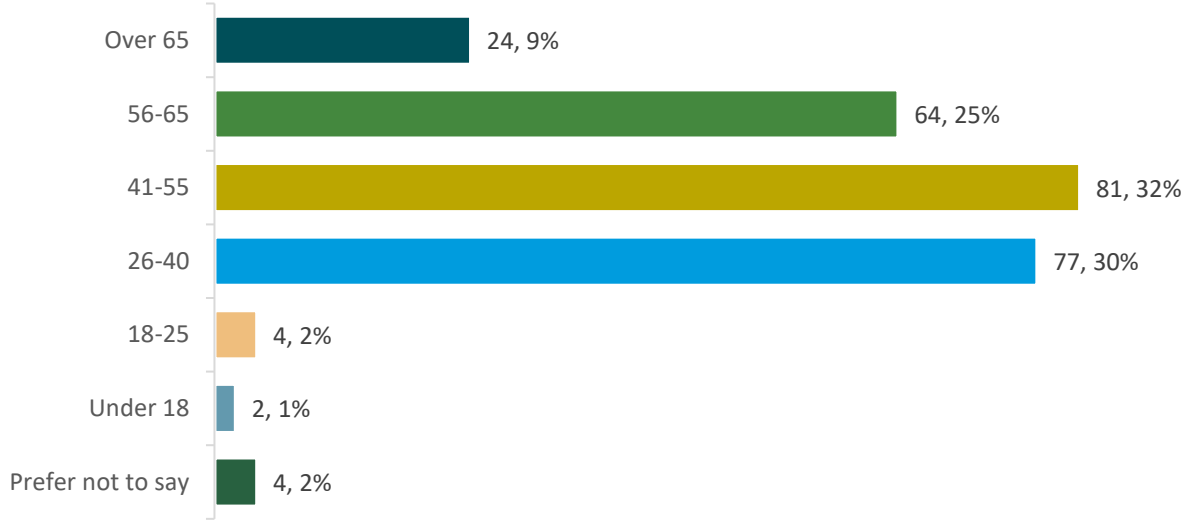


Figure 5: Respondent age distribution.

Q9. Which best describes your individual annual income? (n=258)

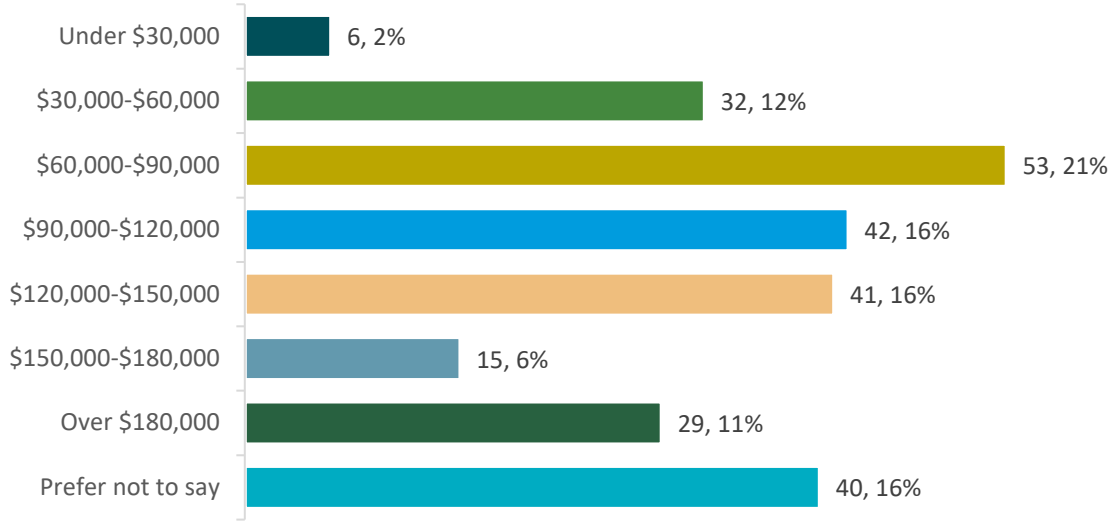


Figure 6: Respondent individual annual income distribution.

Q10. What is your ethnic origin? Check all that apply. (n=255)

Table 4: Ethnic origins of participants

Self Reported Ethnic Origin	Number of Responses	Percent of Total
European origins	197	77%
Asian origins	21	8%
North American Indigenous (e.g., First Nation, Metis or Inuit)	3	1%
African origins	2	1%
Oceania origins	2	1%
Latin, Central, and South American origins	2	1%
Caribbean origins	1	0%
Prefer not to say	35	14%

Q11. What gender do you identify with? (n=254)

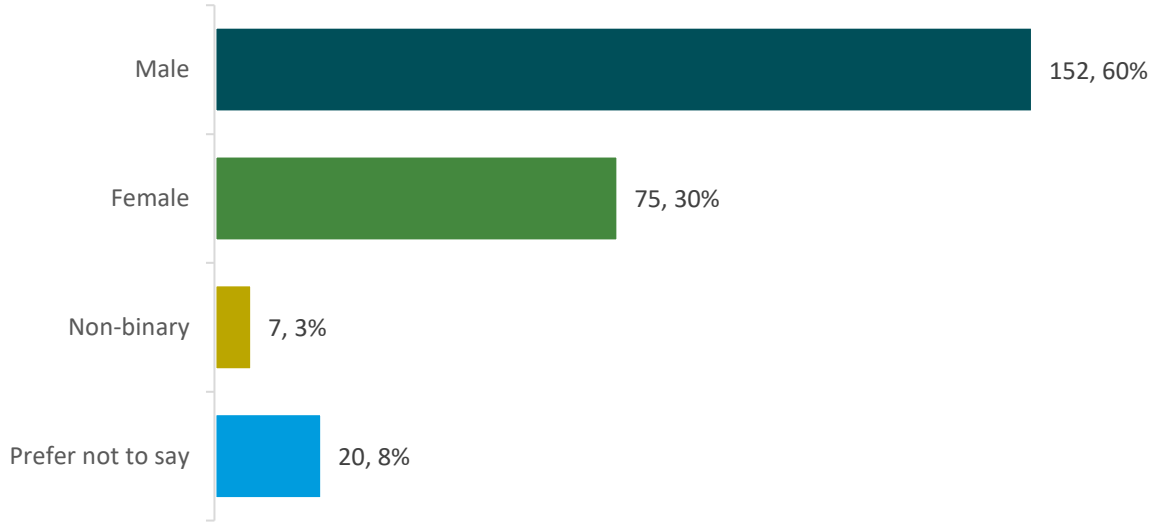


Figure 7: Gender identity of respondents.

Q12. Are you planning to purchase any of these within the next 6 months?

In total there were 249 responses for bicycle and e-bike and 237 responses for e-scooter.

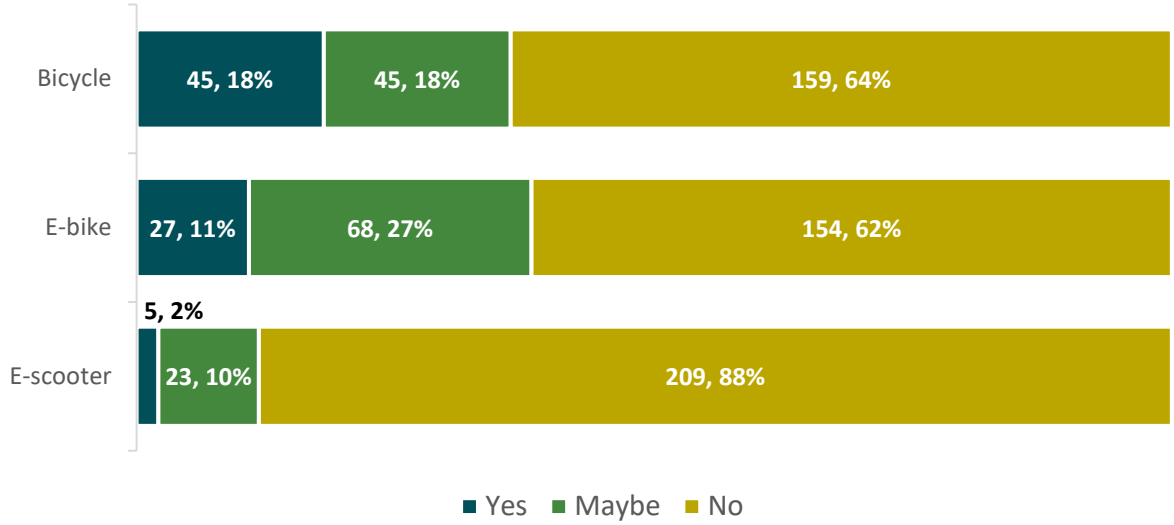


Figure 8: Plans to purchase a new bicycle, e-bike, or e-scooter in the next 6 months.

Q13. How did you hear about this engagement? Please select all that apply

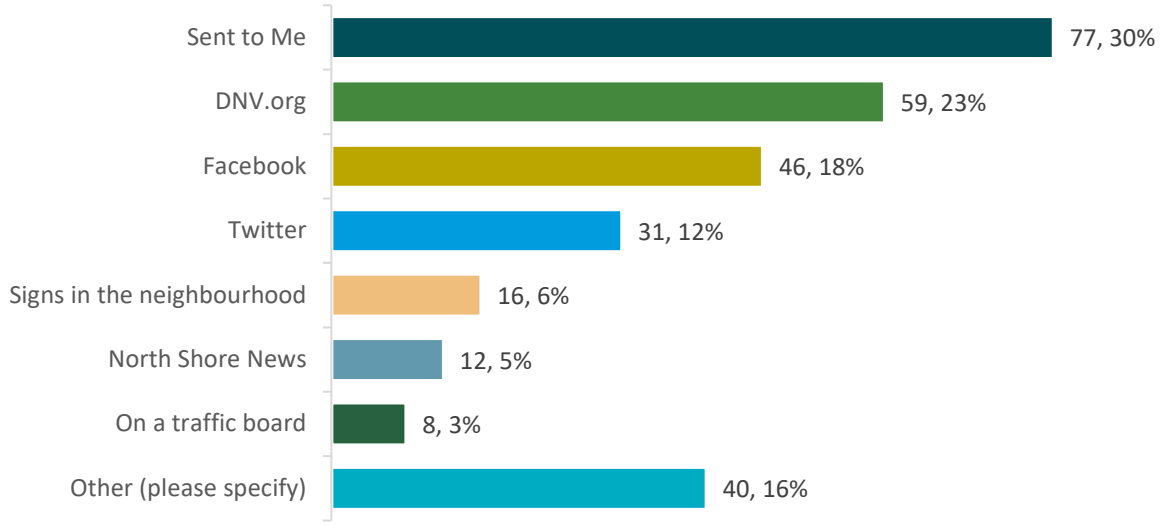


Figure 9: Sources where respondents heard about this community feedback survey.

Other responses received included HUB Cycling (21 responses), cycling group (7 responses), word of mouth (3 responses), and other DNV survey (3 responses).

APPENDIX A

Verbatim Comments

Please note that personal information and inappropriate language has been redacted.

Q3. Do you have any comments to add?
This is a great initiative and is something that needs to be completed so that experience and novice cyclists are confident in the fact that they will have safe uninterrupted routes to get them from point A to point B. The cycling infrastructure in Vancouver is good for the most part, however there are sections which have lots of room for improvement - it is these sections that must be addressed immediately so that cyclists' concerns about riding in an area new to them are eased. Without this, significant time and effort must be invested by cyclists to view satellite imagery of the routes or ask their contacts about areas they need to watch out for; this shouldn't be the case. In an ideal world, a cyclist should be able to follow their GPS (as motorists do today) and be able to reach their destination without feeling like their safety is at risk.
It would be nice to see the actual route connection to ask of these features.
I cycle this route multiple times a week, and this section is a large cap in the cycling infrastructure. I have to cycle on the side of a very busy road with cars and large trucks sharing the road and it feels very cramped
Having safe bike trails is extremely important to our community! This project would be put to great use by the many cyclists and pedestrians of North Vancouver.
Especially the 'safe' cycling/rolling infrastructure has been neglected for too long. We need fast active transportation options, not just MUPs.
This is one of the most dangerous sections of road to ride on (second only to Esplanade/Lonsdale)
In that particular area, I don't often see people using the sidewalk for walking on the South Side of the street. You could widen the existing sidewalk for the use of bikes because there is absolutely no room on the Main Street leading to the Second Narrows Bridge as it is always a bottle neck. Actually what is needed is another bridge or 2 more lanes on the existing bridge. I know one of the Engineers that designs bridges and he told me that the Second Narrows is designed to handle 2 more lanes.
As a CNV resident, it sometimes seems when I cross into DNV by bicycle, the bike lane infrastructure isn't as clear, or as safe. This is improving in recent years, but there's plenty of room for improvement in both municipalities.
Get the Bikes off BUSY streets there are more options than putting more traffic on main arteries!
Building better, safer and more accessible bike lanes for community across the District and second narrows means I won't always need to drive to work, therefor reducing traffic by 1. At the moment, I take the seabus when biking as I find it tough (lots of hills on bike routes) and scary (cars/trucks) to navigate roads and it would be great to just be able to bike the full way.
I rode this route last year as a loop with my kids last year around Burrard Inlet over the Lions Gate and 2nd Narrows. This stretch of roadway was the worst on the otherwise pretty good loop ride. It would be great to improve this section as it is the worst of the worst but more work needs to be done to connect to the Spirit Trail without too much of a detour and to Low Level Road.
A solution off Main Street seems better to me. This is a chaotic area.
The city and district have spent too much money on bike lanes and street jut outs. The condition of the roads in the district are very poor ie Upper Lynn Valley. Bus stops should be moved over to allow

easy bypass for vehicles as many impact the safe flow of traffic. Ie lower Mountain Hwy. Find a way to tax bike riders
I would like to bike safely from Park Royal to the second narrows bridge
Getting people out of their cars is the way of the future, but to do so must be safe. With ebikes becoming more popular, it is now more important than ever to create bike lines wide enough for comfortable passing to keep everyone safe and moving efficiently.
This is a very busy section, with lots of traffic into the Canadian Tire shopping and restaurant area. It is very dangerous for both cyclists and motorists along this strip of roadway.
I don't ride here as it feels very dangerous with too many trucks, fast moving cars and buses.
Please help make North Vancouver a leader in bike friendly communities
The areas of concern that i use are surrounded by great cycling pathways but there are these two gaps that make transitioning dangerous as the shoulder disappears and the narrowing causes problems for safety. East to west is better, but west to east is the concern. Coming from Phibbs, The narrowing happens at A & W. Up to Wendys. The turning lane is a concern, where does a cyclist stand at the light? If in the turning lane then you have to merge west of the light. The other one is on your map, east of the bridge, approaching MEC, there is no shoulder, and halfway across the bridge the shoulder reappears. Not sure how to solve this one but it is a problem. West of MEC there is an ample HOV/Bus lane. The east bound path is great now that the bridge west walkway has completed. A 3rd section is a lack of a shoulder narrowing on the 3 blocks west of the Iron workers (east bound). I sold my car last year due to all the biking i had been doing over the last 3 years, so i use this route alot
More separated bike lanes please!
It would be ideal if this new bike lane connected to Phibbs exchange to Spirit Trail without having to cross to the southside of Main street (stay on the westbound side of Main street the entire route).
I have witnessed near misses & accidents between bicycles and cars in that corridor. The cars are completely unaware of oncoming bikes especially when traffic is slow. Cars ignore the bike path, do not check for oncoming traffic and drive into bicycles. A physical barrier between the bike lane and car lanes is always preferable.
It should run to the bridge along Main st.
Yes. I cycle as often and as far as I can, despite some physical limitations, injuries, weather, and safe/accessible bike paths. This comes to 3800km so far in the last 54 weeks. Any improvements for bike paths to me are well worth my tax-paying dollars, let alone reduction in greenhouse gas and purchase of car fuel...
Currently I find it challenging to ride from second Narrows Bridge to Main st. Maybe needs better signage or perhaps I haven't ridden this enough to find the path
Cycling safety must be a priority as well as cycle path connectivity
Critical for access to and from IWMB and Deep Cove
I ride bridge to bridge often and feel its essential to fix these last few pain points to make North Vancouver a truly enviable and complete cycling network
Bike lanes will not get rid of congestion, people will not stop Driving so address traffic not more bike lanes to slow it Down even more.
Will be great to have a safe connection where I can take my kids by bike

I live in Vancouver and love to tour north Vancouver on my bike. This is such a scary part of the ride and I am very excited to learn that it will be redesigned with cyclists in mind.
Bikes deserve to have paths separated from both cars and pedestrians.
While I understand space is tight along Main leading to the highway, routing vulnerable users into an industrial area with mandatory rail crossings is quite far from optimal.
This section of North Van district is some of the most dangerous anywhere in all of lower mainland. Thank you for potentially fixing this
Improvements on the Main st section are long overdue. This is a particularly nasty section in the winter and in the dark.
Please don't let preservation of on-street parking overrule safe routes for people on bikes.
I have a family of 4 with 2 children who attend elementary school. We just rode through this area last week. The spirit trail to park and tilford is a great cycling path but we were so nervous cycling with the kids on this stretch along Main St as the car traffic moves fast and there is little space between the cyclists and the cars. It would be much safer if there was a physical barrier between the cyclists and cars.
travel safety is important, but district staff is running out of control with a plain "OK". It seems that too many activists are running the show, and hardly anyone with common sense
Use this route regularly. Appreciate that a safer option is being considered. Thank you.
Would love safer bike lanes for my bike commute into CNV.
Leading on green pedestrian-friendly initiatives is very important. Thank you!
People will use this area more by bike when dangerous segments like this are addressed, so this is a good initiative.
Protection from vehicles on this key bike route is really important for safety of current riders and to get more timid riders on the road.
Heading westbound from the second narrows bridge definitely needs a safe route for cyclists
We often bike from our home in [redacted] across the bridge. Connecting to other bike routes in N. Vancouver from Ironworkers has always been a challenge, and I'm very happy it's getting attention.
West bound cycling traffic from the bridge and deep cove needs to be included in this. I would argue the most dangerous point on the westbound route is along Main St. Just before Mountain Highway. It's time to start building this infrastructure the way the fish swim. Too often you have built something that is indirect, slow, or just unsafe. In turn many riders (typically roadies and commuters) don't use it which in turn angers some motorists potentially creating a dangerous situation as drivers punish pass or run riders off the road.
This route feels very unsafe right now - I ride it every day.
Gas prices go up up up, and electric bikes are becoming very common, making our many hills easy for cyclists of all abilities. I believe safe and efficient cycling routes are simply essential for long-term individual transportation.
This feels like a very very dangerous place to cycle, but there often is no other east-west alternative. I'd like to ride more like in the City, but I opt to drive more for safety.
I believe the districts role should be in encouraging the active and shared transportation methods more than individual methods like driving since our region is growing and needs to see more people get onto busses and onto bikes.

I bike in DNV often. I'm a confident rider but it is really scary. Some moments that give me the shivers to think about now, typically to do with near-misses with heavy-duty vehicles - mere feet away from their unprotected rear wheels of likely death. Sorry for the bleak picture, but honestly I have a wife and [redacted] old, and these corridors (Main St., Mount Seymour Parkway, among others) is by far the most real risk to my life. Please prioritize this, I want to get home alive
Every bike route should be safe enough to take children on without worrying about them getting crushed to death by a motorist. The DNV is unbelievably far from this basic standard.
I'm interested in doing more to get us all out of our cars and walking or cycling in our neighborhoods.
You've destroyed our city and made travel across the Northshore as frustrating as possible.
A dedicated bike lane is needed in this stretch. The light a harbour street can't be activated from the correct side of the road to turn left at main st.
I ride this stretch every day, 2nd narrows to [redacted] on Brooksbank. We have seen development after development on that section of Main St over the years but this remains unacceptably dangerous for cyclist, designed with some mistaken believe that putting 'sharrows' on the road is respected by any vehicles drivers. In 2020 I was hit by a car on Main St @ s.b. off ram, just east of this section. A colleague was 'doored' on this Main St section (across Canadian Tire) when a passenger excited from a vehicle. Apparently someone needs to die before the only east-west connection between the north shore bridges is made safe for all users.
Yes please add a bike lane to that section of Main Street as soon as possible as it is VERY dangerous for cyclists at the moment. I commute along it every day and have had several close calls with dumptrucks.
If it takes away current lanes and gives away to the few cyclists, that's I am against it. North shore traffic is bad enough as it is. We don't need more congestions. One should try go transport kids only using bicycles. Not possible!
I cycle this area multiple times a week
For people walking, cycling and taking transit, these routes also need to be convenient, direct and frequent. The most vulnerable need to be at the top of the hierarchy, whereas the car is "king" right now (the last 50 years), and road design leaves everyone else behind.
Marine drive needs some separated bike facilities!
In a climate emergency I hope it's important to you too.
the addition of a bike lane to an already confusing couple of busy blocks (bus lanes, bridge onramp still unclear) is dangerous.
A continuous network of safe, separated bike lanes through the DNV, which meshes with a similar network in the CNV, is essential to a sustainable region. Thank you for continuing to invest. Good next steps would include greater separation of existing bike lanes, like the current paint-only "separation" along Mt Seymour Parkway - all routes should be upgraded to proper concrete barriers to ensure cyclist safety.
Please do NOT put cycle lanes between cars and curbs (on the passenger side of cars). This is terrible. The lanes gunk up with debris, passengers fling open their doors, cars protrude out of driveways and roads into the bike lane, cars turning right don't see cyclists. This is not thought out by cyclists. A bike lane on the driver's side (when cars are parked along the curb) is much safer.
always been frustrating to navigate this section.
Consider using quick build materials to quickly put up infrastructure! Much more active infrastructure is needed

Has to be wide enough to support multiuse
A separated and protect bike lane is required. Traffic on this corridor is fast-moving. The current design requires cyclists to take the lane as there is no shoulder or even narrow painted bike lane. The connect to the bridge on the west and with City bike lanes needs lots of attention.
The existing cycle path in that area is dangerous. Cars do not respect the single file/share the lane signs intended to keep cyclists safe and instead blow by cyclists at full throttle splitting the lanes while holding the horn button in the on position. Please fix this asap!!!
Currently, it is very unsafe so I don't take this route. If improvements are made, I will take this route to go west.
Long waited for better cycling to commute more easily especially on the busy arterial routes at high density times.
Fully connected, safe cycling options do not currently exist in North Vancouver. There are sections of great infrastructure with poor connections between. Linking these is very important to me. I cycle across North Vancouver daily for commuting.
I would love to bike the north shore more often with more people but the current bike infrastructure is criminally negligent. It's not serving cyclists nor drivers. I am begging you to offer protected bike lanes.
Direct routes, where pedestrians and cyclists take back a larger percentage of the right-of way are equitable. Make the routes direct by taking space away from other roads, rather than leaving pedestrians and cyclists with a small percentage of the cross-section of any right of way. The diversion to barrow is a good example - why force walking & cycling to go slower and less direct. In a climate emergency, we should be prioritizing all advantages to walking & cycling.
I ride my bike from [redacted] to Lower Lonsdale (work commute) some time so a straightforward, clearly marked, safe path is important to me. The section you identify in your survey is definitely one of the parts of my commute that could be improved.
That section of Main St is very challenging to ride safely
Cycling safety has improved with the Rapid bus lane. The portion going west from Lynn Ave to the creek bridge is the most dangerous portion and most needed improvement
In the long term the bikelanes on Main Street should be connected to the bike lanes on lower Mountain Highway, and extended on to Phibbs Exchange/Iron Workers Memorial Bridge (avoiding the detour on Barrow). The bikelanes should be 2m wide where possible to allow passing. Consider a raised crossing for both the crosswalks and bikelane at the Mall entrance and Lynn Rd. Improve Barrows St as well as part of the short term fix
My job doesn't allow me to take transit or bike. I am more concerned with keeping traffic efficient and do not want to replace entire vehicle lanes that receive heavy use with bike lanes that receive virtually none. I would rather see bike routes on secondary roads that see little vehicle traffic, this benefits all users.
I used to cycle and walk along this stretch of Main Street for commuting, but I try to avoid it as much as possible due to difficulties crossing streets safely as a pedestrian, and due to how scary it is as a cyclist on the roads, trying to share the space with trucks and buses, and general vehicle traffic where drivers are in a hurry. It would really help to make it safer as a walker and as a cyclist along Main Street in order to access the various businesses, and access the Second Narrows bridge.
A safe connection between Spirit Trail in the City of North Van and Ironworkers bridge is the biggest, most dangerous gap in cycling infrastructure on the North Shore and does discourage me and my

family from cycling to/from Vancouver. So this project is greatly appreciated and will be very well used.
Drivers already are comfortable and safe, and lose nothing with improving transportation for everyone else. Streets are for moving people and goods, not cars.
This section is a dangerous gap for people on bikes on a very high use route. The section on Barrows could also use some improvement.
The cycling corridor (east and west bound) between brooksbank and second narrows bridge needs to be vastly improved! It is currently my largest hurdle to biking to work.
Please continue any improvements (separated bike lanes) on Main St past Harbour Ave all the way to the bridgehead. The detour to Barrow St is inconvenient and unnecessary.
Bike lanes are not safe between parked cars and moving vehicles.
Ensuring that bike routes are efficient and not too far off the direct path is important to me. Additionally, better signage is needed.
You really should consider the section from Phipps Exchange right thru to Lynn Ave (by McDonald's). The first section from Phipps to Mt Hwy is terribly dangerous for cyclists
Can we have a sidewalk cut on the Main St bridge just outside MEC so it will be possible to go into Bridgeman Park? The sooner the better! This is definitely a gap in the cycling infrastructure and I'm very grateful that you're addressing it!
This area has always been a problem. Glad you're addressing it.
Connecting cycling paths/bikeways in a safe and logical way is very important, especially as the Lower Lynn Creek area continues to develop.
Cycle here often
I cycle through this section of Main street a lot and it is always stressful. I have many years experience of riding in traffic but I always find this difficult with vehicles so close and turning in front of me. At certain sections along there, there is literally nowhere to go and I have to ride right on the painted line - the space is that narrow.
Ride here weekly
I avoid this area because it's a terrifying place to be on a bike at the moment.
People should be able to walk, bicycle or drive safely to wherever they are going. I don't think it is that dangerous to drive as when you are driving you are doing so in something that can kill others (especially those not in a vehicle). So really this needs to be for those walking and bicycling - where bicyclists are by far the group that is put in the most dangerous situation. A pedestrian if they keep their eyes open and look where they are going is more safe. - as long as they have a crossing. No crossing - this becomes impossible. I am also baffled about the use of the word "comfortable". Why would travel be uncomfortable. Or what would make it comfortable? Really the issue is safety. If it isn't safe - then I guess it is not comfortable because it is scary. ????
It is currently really dangerous to do anything other than driving along Mountain Highway and Main St between the Ironworkers Bridge and the creek. Sidewalks are very narrow and it's a common route for big trucks transporting goods. It even makes me nervous to walk around with the stroller.
A safe bike path along Main St is important to cyclists wishing to access the commercial facilities fronting the road. Not all cyclists have such destinations. There is a potentially excellent bypass to Main St using Haywood, Keith, and Orwell but Orwell is in very poor condition and access to Haywood from Keith westbound is awkward. A two-way path on south side of Keith would be preferable.

This is a vital connection for cyclists who commute and ride recreationally. It's extremely important that this connection provides separation between cars and bikes, as well as between bikes and pedestrians. Forcing cyclists onto paths where people walk dogs and push strollers will have the effect of moving cyclists who are travelling at close to the speed of traffic to move back to the road.
I am very interested in this route, when I cycle in Vancouver and come across 2nd narrows bridge there has not been a safe route to stay out of high speed traffic - currently use the Barrow - Harbour - Main when going west bound. the left hand light at Harbour is very short (feels like 5 seconds).
It is not safe to walk, cycle, or roll in our community and it should be. The future must deprioritize private vehicles!
cyclist and driver
In the long term the bikelanes on Main Street should be connected to the bike lanes on lower Mountain Highway, and extended on to Phibbs Exchange/Iron Workers Memorial Bridge (avoiding the detour on Barrow). The bikelanes should be 2m wide where possible to allow passing. Consider a raised crossing for both the crosswalks and bikelane at the Mall entrance and Lynn Rd. Improve Barrows St as well as part of the short term
Cars are death
Travel options should also be efficient and fast for active transport. I.e. for cycling don't make the routes circuitous and slow. Cycling paths shouldn't be shared with pedestrians and be designed for cycling speed. No barriers, smooth pavement without curb bumps. The road space for drivers is still way higher quality than the new cycling facilities built in the DNV.
I ride this route to work daily, and from my experience, this would drastically improve rider safety. This are currently does not have a bike lane, and is very busy, often with larger transports, and dump truck due to surrounding construction. I have had many vehicles pass me in very close proximity, where a less experienced rider may have been hurt. This is a great choice for an area that needs active infrastructure improvement.
bike safety paramount
Connected safe (AAA or equivalent) cycling routes across the Main Street bridge is very important to me, as the current infrastructure is prohibitively unsafe and uncomfortable, but I want to be able to cycle through this area without issue.
Looking forward to these Safety changes
Shoring up the cycling network is critical. There is a lot of confusion and risk along the district portion of main st and dollarton hwy.
As many areas where we can cycle safely and not have to travel right in traffic would be much appreciated.
The proposed upgrade to bike lanes on Marine Drive is needed before fatalities occur, I'm very glad this is being planned. As a cyclist living in the city North Vancouver and trying to transit over the Lynn Creek bridge to shop in the District and to cycle to Vancouver - the Lynn Creek section of Marine Drive is the most scary part of riding a bike to the 2nd Narrows Bridge, along with the need to cross Marine Drive to get to the 2nd Narrows. The existing painted bike lane on the North Side of Lynn Creek bridge pinches out to almost nothing making bikes having to mix with cars going several times as fast which is very scary. There is too much pedestrian traffic to ride on the side walk as it's too narrow for both pedestrians and bikes. What is needed is another vehicle / bike / pedestrian bridge over Lynn Creek at Crown - This would allow separating local N-Van business district traffic from traffic bound for Vancouver.

Riding single file along this stretch of Main St westbound is very uncomfortable, even for a regular bike commuter. Despite signage indicating that bikes can take the lane, cars drive too fast and aggressively to make this realistic. Improvements are needed to make this stretch safe for all users, especially cyclists.
I am not anti-car but cars can't always be #1, particularly as it pertains to money spent. We just spent quite a bit of money improving car movement in this area on "The Cut" project. Time to spend money elsewhere to level the playing field.
There should be as minimal interaction between people on bicycles and people in vehicles as possible. Staggered, "dutch style" intersections would help, in addition to physically separated bike lanes (concrete barriers would be best, as the speeds of traffic make it easy for distracted drivers to quickly veer into fully unprotected bike lanes.
I ride this route multiple times per week and it is the largest gap in cycling infrastructure on the North Shore.
I cycle along this stretch of road most work days from east Vancouver to [redacted]. This and the connection to the second narrows bridge is the most unpleasant stretch of road on my ride.
This stretch is currently very dangerous for people on bicycles. A full separation from automobile traffic is required to make it safe. Please avoid shared multiuse paths as these would then just lead to conflicts with pedestrians, especially as there are usually quite a few people walking at any given time. Another hazard is the mall entrance. The easiest solution might actually be too remove access to the mall for cars from Main street and just have access from Harbour and Lynn Aves.
cycling safety is my #1 goal
Preferable to connect the main street cycling lane to westbound cyclists coming from Dollarton highway. With the proposed plan a cyclist would have to cross Dollarton/Main at the east-bound offramp onto the new separate multiuse path and travel west under the bridge, then cross the southbound bridge on-ramp. Then take the current Barrow St. to Harbour Ave cycling route and finally then having to turn left onto Main to continue westbound again. Path of least resistance is critical to encouraging users of active transportation. To add a westbound bike lane starting from under the Ironworkers bridge alongside the westbound car lanes would be a better more direct routing choice than the proposed connector. The roadway is wide enough along Main St. between Phibbs Exchange and Harbour Ave. to add a westbound bike lane.
Put bike lanes on secondary parallel roads not on main arterial roads. It is safer for everyone
Again hard to comment with a small image and without the big picture. I cycle a lot, [redacted] and would like to cycle with him, but currently do not feel safe on several of the roads. I currently cycle to work into false creek over the second narrows and live[redacted] and find the commute a real challenge if I was not an avid cyclist I would not do it
This addition is great and very necessary. As an avid cyclist I use this route regularly and currently bypass by cycling through the parking lot during busy times. Most serious cyclists would not take the Harbour road route but cross Dollarton at the foot of the Ironworkers bridge and continue west from there. If the area just past the bus loop intersection and the path from the Chevron to the Wendys could be widen, would be ideal. The widening completed between mt Seymour parkway and dollarton on Riverside was the most important change in years, thank you
Make it's coordinated with CNV progress.
Both coming and going from/to the 2nd Narrows crossing is a major hassle along Main Street. It's very hard to cover the short section from Mountain Hwy to Harbour Ave as well. This should also be considered as part of this development.

Please fix up the traffic light signal to make it easier for cyclists to make a left hand turn from Harbour Avenue onto Main Street. There is a pedestrian activated signal for the crosswalk. For a cyclist to use it means having to dismount the bike, push the button and get back on the bike. Or wait for a vehicle travelling in the same direction to activate the traffic signala and then follow the vehicle as it makes the same turn. As well, please fix up the mess of a bike lane around the Phibbs exchange. It is not conducive to cycle that part at all.
Bike lanes should be physically separated from traffic and wide enough to permit passing. The detour via Barrow is indirect and inconvenient (especially for those heading East of the bridge) and should be eliminated in the long term in favour of a direct route. Raised crosswalks and bike lanes across mall entrances would be nice to see.
Protected bike lanes are a must
Thank you! There are critical gaps in the cycling route network that make cycling in DNV dangerous and unpleasant. I appreciate the efforts to add connectivity to the network.
Physical separation via curbs/boulevards/barriers between vehicles and cyclists/pedestrians is key for safety and to make people feel comfortable using alternative methods of transportation. This is a very busy section of road, and absolutely needs a protected, separated bike lane, not just a painted line between vehicles and the curb.
I will enjoy the commute with these improvements

APPENDIX B

Preamble and Conceptual Drawings

Q4. Given the benefits and limitations of the short-term solution and the long-term solution, which of the below options do you prefer? (n=257)

Participants were asked to identify their preferred approach to improving cycling conditions on Main Street between Harbour Avenue and the City of North Vancouver border at Lynn Creek Bridge. To inform their responses, participants were presented with a brief preamble describing the existing cycling conditions, as well as connections to nearby cycling routes and trails.

Every cycling project has its own set of challenges to overcome. Here are the key issues for Main Street.

Limited space – there is not a lot of room within the public right of way, as we attempt to balance the needs of all users

Utility poles – power poles owned by BC Hydro and street lighting poles owned by the CNV, both currently located within the public right of way, obstruct the preferred cycle path. Ideally, both would be relocated to permit an unimpeded route. These changes can take many years to complete.

Street trees – the designs attempt to preserve existing trees, and where feasible, allocate space for future plantings.

Some of these challenges mean that our preferred solution will take many years to construct. This is why we have developed two solutions: a short-term solution, and a long-term solution.

Conceptual drawings and path dimensions were provided for a potential short-term solution and a potential long-term solution that may require more than five years to achieve (shown in Figure A1).

Figure B1: Conceptual drawings for potential short-term (left) and long-term (right) solutions.

APPENDIX C

Verbatim Comments

Please note that personal information and inappropriate language has been redacted.

Q5. Please add any additional comments.
Given the constraints on available funding it is important that we take a long term view of upgrading infrastructure which will encourage use over the long term. Unless there is a very significant risk of injury, spending money on short term solutions should be avoided. There is an alternative route via the Spirit Trail which could be better connected to Phibbs Exchange at a small cost.
Given the immediate safety risks with the existing infrastructure and the ever increasing volume of cyclists, it is critical that some solution be in put ASAP. The Long-term solution will be required, however the short term needs should be prioritized to avoid significant injury to cyclists.
There is a narrow strip behind Petsmart/Mark's and Dollarama that parallels the railroad tracks. Could this be developed to provide at least a pedestrian walkway that would connect Barrow St. (and/or Railway St.) on the east to the Lynn Creek paths on the west? Not sure if this is wide enough to accommodate a bike lane as well but it would (might) be better than having it on Main Street.!!!
Short term solution seems tenable, however depending how cramped it feels, I may lean towards longer term solution.
You're still going to have a punch point in front of Lordco. I don't think either solution really gives enough space. Thank you for trying.
This is a dangerous area for cyclists and while I'd like to see it fixed it would be better to do it right.
We need adequate cycling connections now and recognize that there should be improvements in the long term when they can be made. Cycling on Main street today is very dangerous and we cannot wait for long term solutions.
Bike riders should have to dismount from their bikes at Pinch Points. You really want or need to spend all of this money, Tax Payers money, to construct more bike lanes? I would like to know exactly how many people actually ride their bikes to work along this route. I know that I never see bikes going up and down 29th Street hill and look how much money has been spent on that project! I am not against people riding bikes but it is extremely annoying how so many of the Bike Riders do not follow the rules of the rode - ride through red lights, run stop signs, don't ride on the side of the road, but stay in the main part so cars can't go around them, etc. My own son is a big bike rider but he would rather use his car or transit when travelling to work mainly because North Vancouver has become too crowded because of densification and the rain and snow making it dangerous to be on a bike many days of the year. I feel that bikes and cars don't mix too well together and maybe their should be different routes for bike riders. Vancouver has many streets that are designated for Bikes only. My BIG question is how many thousands of bikers ride this route everyday. I know for sure that thousands of vehicles including cars, trucks, buses, etc. use this route everyday.
Any changes to make cycling safer and more comfortable soon would be appreciated.
The route has a lot of heavy vehicles - safe intersections are a concern. The lack of adequate current infrastructure means that people often ride on the sidewalk, instead of the shared lane. It is scary to be in that lane with all the trucks!
If the short-term solution provides a better way of transport for a few years it's highly valuable for that area. If it means a couple more people start commuting on their bikes now then that's good!

A safe solution is needed now. Relocation of the poles should happen anyways as there are other benefits to this. The short term project is more important than the long term project.
With gas prices more people are biking this area so a short then long term solution would be appreciated
this may be a dangerous choice on my part as politicians are likely to consider the short term a long term solution in 5 years but we need a solution now and a better one in the future.
I don't think bikes should have to go up and down curb cuts - it's unpleasant especially for children either riding on their own or in chariots/bike seats - cars turning across the bike lane can go over the bump like a speed bump to remind them there may be cyclist traveling along the path. If riding on the cycle path is unpleasant (too many bumps) or there isn't enough room for passing on the cycle path, confident people riding bikes and ebikes will likely use the road. (think the "multiuse" paths by stong's - these are not safe for utility cycling and most cyclists use the road)
A solution is needed now, not within 5 years. I hate the thought of losing the trees, and hope they can be relocated rather than chopped down. My only real concern is the bus stop and how that impacts pedestrians and cyclists
Please help make North Vancouver a leader in bike friendly cities
my main concern is keeping cars away from me from behind me. Pedestrian choke points don't concern me as i'm not in a hurry. If i am on my fast road bike, i will ride with traffic. A concern might be ebikes going thru choke points as they may go too fast and new riders who don't ride bicycles may not understand their braking, speed and braking with a load, especially an imbalanced load. Not sure how best to add signage at chokepoints. Some flat bars may be wide, so care is needed to ensure those don't get hit. Also I am not a fan of thick metal bollards, even white ones. i try and take alternate routes when necessary, but near MEC there is no other way to get across the river.
We need safe bike lanes!
It is important to separate vehicles, bikes and pedestrians as much as possible. This is becoming more important with the increased use of e-bike which are capable of excessive speeds. Collisions with vehicles remains the single largest risk for both bikes (e-bikes) and pedestrians. Keeping bikes and pedestrians together away from vehicles should be a goal if separation for all three can not be achieved.
Construct the short term solution with a FIRM commitment within 5 years for the long term
while this section may have been identified as a 'critical gap' back in 2019, I would like to say that it is not the most critical section of Main that needs infrastructure improvements. Westbound cyclists are NOT coming from Barrow street typically. Now that the 2nd narrows bridge is back to the conventional N/S directions, cyclists are exiting the bridge east of Phibbs exchange and attempting to make it west along Main street from there. From East to West; The new grade into and out of the tunnel under the exit is helpful, but so far it doesn't lead anywhere useful, there is some semblance of a crushed gravel path that abruptly ends within the confines of the Phibbs exchange bus entrance. Then there is another small section of gravel, then a road pinch point between Phibbs and the End of the roll store.. then no usable bike box at Mountain where some traffic is trying to get into the A&W, and some trying to slip right to go North up Mountain. Then its tight for one more block in front of the Wendys up to Harbor ave. When I ride this section westbound, I actually feel safest from Harbor to The Mcdonalds entrance before Lynn ave.

I don't think money should be wasted on making an off street bikeway for this section of Main street. This section is a prime candidate for a painted bike lane with traffic lanes being narrowed to help control speeds. Putting cyclists further from Main street at the McDonalds entrance will make it harder for drivers to see them when racing in to get their morning Mcmuffin, increasing the chance for right-hook incidents.
Make a strong commitment to do the long term solution. Don't just do the short term solution.
I really don't like raised areas which have drop offs at any point along the sides, even if well signed. Sometimes it's dark, another cyclist is careless, something happens, etc and a cyclist can veer sharply to the side, and that can mean injury to bike or cyclist or passerby. Soft/curved 'drops' from the elevated path would be preferable to sharper ones, regardless of which option is selected.
Regarding the riding path please do not raise the riding path or raise the sidewalk to distinguish sidewalk. Both these designs does not allow a cyclist to bail out. These are extremely dangerous to riders. The best new paths are the current ones on Richards stand 10th Ave. The soft shoulders gives a rider bail on an emergency. I've been riding the whole city for many years., Burnaby and Vancouver
The short term solution looks great! See how it works before deciding to proceed to the long term solution as it may not be necessary
This is a very scary piece of road to ride. Early help is needed, even if it is not the ultimate solution.
The sooner that improvements can be made, the better. It's such a nasty spot we need safety improvements as soon as possible, and this includes separation from traffic (prefer barrier, raised curb at a minimum)
improve Barrows Street as well.
Any solution should include a concrete curb large enough (min. 0.5 metres tall) to deflect the largest vehicles back into traffic rather than allowing an out-of-control motor vehicle from entering the bike lane & sidewalk. Bike lanes and sidewalks are not clear zones. Road crossings/crosswalks should be raised to match the grade of the rest of the path. Riders/walkers/rollers should be given an advanced green to cut back on the chance for right/left hooks. NO RIGHT TURNS ON RED
Please also consider fixing both sides, both extremely dangerous. Makes no sense spending all the money making Second Narrows bridge fantastic and safe, and then having it super dangerous in the District section, and then again safe in the NC City parts
Any improvement is better that what is presently in place. However, currently the far more dangerous stretch for cyclists is west bound on Main from Phibbs to Mountain Highway (along the stretch from End of the Roll to A&W.). There is a cycle route indicated through the alley behind these business but it has a deadend at Mountin Hwy. Very confusing and unsafe area. This is a critical cyclists connection route for East of Seymour continuing west.
Do something now.! this is a really nasty section to ride on.
please bring us $$$ Dollar figures about these projects. Budget pricing would be good enough. It looks all OK on paper until we see the tax bill at the end. I will push this issue in coming meetings
Changing behaviours needs to start now - not later (meaning short-term action) and improving safety should always be a priority (hence the plan for a future upgrade).
Please install jersey barriers or bollards brown the bike lane and the vehicle lane. A curb is inadequate to keep people safe, as the multiple regional pedestrian deaths on sidewalks make clear.

I prefer a sooner rather than later solution as cycling has exploded in popularity and we want to encourage people to get out of their vehicles. We don't need the Cadillac of bike systems everywhere. Some areas are more conducive than others based on existing infrastructure and costs.
As per my previous comment. Building the short term solution will have many riders staying on the road which will anger some drivers. Some regular speed enforcement along this stretch particularly in the early morning commute would be helpful.
The huge great big large problem with the short-term solution is the crossing of the multiple driveways and roadways. These crossings are exceptionally dangerous for cyclists. A City of Portland study a few years back found such crossings to be the #1 cause of bicycle-motorist collisions. Motorists naturally look at the street (Main St in this case) not the bike path. For this reason putting cyclists in a lane on the main road itself is a much stronger solution. My prediction is that even if you spend the money to build the short-term solution, you will find many cyclists still using Main St westbound. As part of the short-term solution you might consider what can be done to improve cycling safety and visibility on Main St itself. Perhaps investigate what other cities in BC have done in similar circumstances.
The sooner it is after the sooner more ppl can get out of their cars and try biking for running errands, etc.
Make sure the long term solutions finances are put aside and untouchable for future changing governments. Make sure in contracts it is set with timelines so that it cannot be changed and must start within a designated number of years. Hold other stakeholders to their contracts (BC hydro must fulfill their part within 3 years for example, for moving the utility poles)
I truly appreciate the effort, and likely limited budget and barriers. However these designs all look terrifying still! Look at that massive, high-traffic, fast moving road with frequent cement trucks, 18 wheelers. Many intersections = high potential for turning cars side swiping cyclists. On a 'risk-consequence' matrix, both are high. In any other industry, this project would not move ahead for risk to human life. There HAS to be another way, an "Off Main Street" corridor, that might need a pedestrian-only bridge crossings.
Build short term solution immediately. Long term solution looks terrible and needs revision. Cyclist safety should be the number one priority, not trees or motorists. This is an unbelievably dangerous and terrible stretch of a popular biking route. Someone is going to get crushed to death by a dump truck again just like they did on Esplanade in 2018 due to the negligent, horrendously dangerous, car centric design of North Van streets. (https://www.nsnews.com/local-news/north-vancouver-man-not-guilty-of-unsafe-door-opening-in-cyclist-death-3619980) The long term solution looks terrible! It's not a protected. It's not safe for children or novice cyclists. It's a deadly negligent joke. Do better. Bike routes must be protected with physical barriers. Few people will switch to biking when the bike routes are insanely dangerous and horribly noisy. The existing lower level bike route ought to be illegal. There is a jersey barrier on the right that makes the bike route more dangerous than if it was just a ditch. When a texting or speeding driver smashes a cyclist on lower level road they will be crushed to death against the jersey barrier rather than being knocked into a ditch. That's what happened to this lucky visitor to BC who followed our "bike route" maps and were crushed to death against a jersey barrier. Patrick Johnstone sums up these sorts of 'bike routes' as "so unfriendly and dangerous that those "Bike Route" signs represent a reckless disregard for public safety. https://www.patrickjohnstone.ca/2017/11/bikes-on-the-sfpr.html

Do better. Stop making cyclists get killed to death. If you would't let a 7 year old ride it, it's not a safe bike route.
How will this tie in with rising sea level mitigation? I had thought that the entirety of Main Street will have to be elevated?
Bike lanes should not come at the cost of reduced roadways for cars. Brooksbanks Road is a joke, just like every other place you've implemented a bike route. I 100% guarantee that whatever you decide will be the worst decision possible, and at the greatest expense to the tax payers. I hate you more then anything else in the world....seriously. Loathe you [redacted].
It is critical that cyclist be removed from a major arterial roadway asap. Although my evidence is anecdotal, I know of 3 accidents in this section from from [redacted] employees on Brooksbank Ave. For that reason, any separated facility is to be preferred. Colored surfaces should be used in conflict zones. Preferably speed bumps are installed on parking lot exits as is common in the Netherlands etc in order to reinforce the right of way of cyclists in these areas.
I think this project needs to be made a high priority. 5+ years to put in two blocks of permanent bike lane is pretty ridiculous. Everyday Main Street experiences severe congestion as people commute to/from work. The only way to ease this congestion is if more people feel comfortable commuting by bike. The way Main Street is set up right now. I don't anybody feels comfortable riding along there.
There is nothing wrong with current road conditions. Stop trying to improve things that does not need to be improved.
I cycle this roadway frequently and it is the area that is most uncomfortable along my route. I try to get through it as quickly as possible and have to be careful to avoid riding next to large semi-trucks etc. I'll take any improvements asap as I think they are very necessary. This area is an accident waiting to happen.
All cycling routes should be completely separate from the walking paths. Mixed use paths and side by side paths are alway dangerous because walkers rarely recognize that a cyclist can pass by. Very dangerous at times for the cyclist avoiding unobservant people.
Lanes should be 2m as to allow safe passing. Consider a raised crossing for both the crosswalks and bikelane at the Mall entrance and Lynn Rd.
The stretch that you are working on is in absolutely dire need of improvements. It is often terrifying to ride. It needs to be extended to the Hwy 1 offramp by Phibbs, as there are extremely dangerous pavement conditions and pinch points, and no space for cyclists, travelling westbound from Phibbs. I am not going to waste time riding over to Barrow (which has a blind corner EB by the way). There are dangerous cracks in the pavement in the intersection at Harbour (I think) that could cause a serious or possibly fatal crash for a person cycling.
It needs help so anything is better!
The short term solution is needed to protect cyclists and ensure traffic flows smoothly. Due to population growth in the region, the cycle path is needed. The new bike paths in the region are fantastic and this connector will help encourage more people to cycle within the region. Given that the long term solution is more than 5 years out, making a decision at this time not to construction the long term solution seems short sighted. So much can change within the span of a few years.
The short term solution is such that many cyclists will prefer to ride on the roadway which will antagonize drivers while not providing an effective cycling route
You have to do something NOW.
Much more physical protection for vulnerable road users needed from vehicles, like barriers

Yes, short-term improvements now. Don't let perfection be the enemy of the good. Lots can be learned in the short-term that can inform the long-term solution.
That section needs some attention soon as it is a challenging space for cyclists. I am a confident cyclist and bike commute along that route daily, coming off the Ironworkers, and it is the section where I feel the most unsafe.
Need to consider ROW requirements for BIRT for long term solution. TL may also cover the cost of future utility relocation under BIRT.
It really helps to establish better traffic management patterns early and set the precedent for cyclists' rights early so they are accepted for the longer term.
This two-block section has been very stressful for cycling since the last work on Main Street which added the central bus lane. Cyclists routinely encounter aggressive vehicles when using the lane. Vehicles pass closely if a cyclist attempts to stay near the curb. This is not always an aggressive action but drivers may not be aware that the space is insufficient. When the cyclist attempts to take the lane they can expect more aggressive behaviours from vehicles such as honking, yelling, and close passes.
In the context of a climate crisis and an explosion in e-mobility devices (scooters, onewheels, e-bikes), I don't think either solution goes far enough. Let's remove a car lane to make the route more comfortable to incentivize active transit and disincentivize harmful transit (personal car use).
Review the Metral Drive cycle-paths in Nanaimo, BC - which do not dip for every road crossing, and instead stay at a constant elevation. The drawings shown and paths constructed in DNV, have very frequent dips, making the cycling very slow. Put walking & cycling on an even, steady grade, and have cars/trucks have to rise up & cross humps to cross the path of pedestrians and cyclists. Car driving should be slowed - desperately needs to be - cycling doesn't need all these dips that slow it.
This is not a comfortable stretch of road to cycle currently. Any improvement to help cyclists sooner than later is valuable!
In the long term the bikelanes on Main Street should be connected to the bike lanes on lower Mountain Highway, and extended on to Phibbs Exchange/Iron Workers Memorial Bridge (avoiding the detour on Barrow). The bikelanes should be 2m wide where possible to allow passing. Consider a raised crossing for both the crosswalks and bikelane at the Mall entrance and Lynn Rd. Improve Barrows St as well as part of the short term fix
I have two safety concerns, one bike vs cars, and one pedestrian vs. bike with what has been presented in both short- and long-term solutions. I can't tell from these presentation materials, but I presume both solutions involve narrowing the rightmost vehicle lane -- a lane that currently has sharrows on it and is used by 30-40km/hr fast-moving commuter and recreational cyclists. If that is the case, then your short-term solution does one of two things: it either a) puts the fast-moving cyclists directly in front of vehicle traffic on the road, which will lead to the typical road rage/unsafe driving situations, or b) puts the fast-moving cyclists on a raised route that weaves and dodges and puts them into conflict with pedestrians at the pinch points, and with pedestrians who don't keep to the sidewalk portion (we all know pedestrians like to sprawl out -- anywhere cycling and walking pavements are adjacent, the walkers are all over the "bike routes".) What I then fear is what we have seen in the past along the Stanley Park causeway (May 2013, before it got fencing) or the old Burrard Street Bridge raised sidewalk without fencing or a buffer to traffic (before 2009) -- a cyclist collides with a pedestrian or another cyclist, or dodges to avoid a collision on the raised sidewalk, and falls off the raised sidewalk curb down into the road and gets run over by a truck or a bus and dies.

The long-term solution you've outlined along this stretch of Main Street would presumably allow cyclists using the cycling path to better maintain speed with less chance of collision with pedestrians or poles, so that's why I prefer only the long-term solution and not waste money on something now that only partly fixes the infrastructure blockages. However, I'm not sold on the safety aspect of either design. Cyclists will misuse it and go "the wrong way" or pass other cyclists when it isn't safe to do so. Pedestrians will crowd the cycling path. All these conflicts can result in a shove and someone losing balance and falling into traffic. With that in mind, I'd like to know whether there could be a way to add a safety fence to the raised sidewalk to prevent the Burrard-Bridge or Stanley-Park-causeway death scenario? Additionally, is there a way to keep pedestrians off the cycling portion (and cyclists off the sidewalk portion) with some ground-level bumps or some kind of separators between sidewalk and bike path? Or, instead of a raised cycling path, is there a way to keep the cyclists at road level (effectively separating them from pedestrian traffic with elevation), and separate the cycling path from the road with some kind of solid concrete barrier? This would eliminate the issue of "falling from a high curb into traffic" (you're already in the view/flow of traffic, and if you fall you don't go tumbling down sideways from an additional foot or more of height). I can see the intent is to make an AAA cycling facility, but I don't think sacrificing pedestrian safety and comfort should be part of achieving that, and I don't think it can be achieved with an open curb drop beside a heavily-trafficked road with buses and trucks.
Main street is currently awful to cycle on and means many people do not feel comfortable riding there due to proximity with traffic, especially large trucks. Any solution right now is a good one and better than nothing - a long term solution would be even better.
I ride this section of road regularly and it isn't pleasant but I'm unlikely to use the short term solution as it's (probably) too slow but, I guess, it might be acceptable for less experienced cyclists/kids. However, it's difficult to judge without knowing how the connection to the new bridge in Bridgeman Park will be worked into East-West routes...
As a cyclist, I really appreciate any attempt to make this section safer in the short term. Currently there is no safe / pleasant way to connect from the bridge to areas to the west.
Although this connection is very important, the best timing and scope of this project should be set with clear consideration of other safe cycling-connection projects going on nearby namely, Hunter St bridge, Mountain Highway bike lanes, and City connections from Spirit Trail at Park & Tilford to these paths. For cyclists that insist on using Main St, this discussed project will be useful and increase safety but it is probably not the AAA route that families and anxious cyclists need in the long-term. So in that context, implementing the short-term solution is probably fine, then reassessing in a few years once other trails are set/built and once Translink's regional 10-year plan priorities and funding are set. This is a regionally critical cycling gap so hopefully Translink would prioritize and provide $$ to do this project right in the near future.
Build it now.
In the long term the bikelanes on Main Street should be connected to the bike lanes on lower Mountain Highway, and extended on to Phibbs exchange/Ironworkers Memorial Bridge (avoiding the detour on Barrow). The bikelanes should be 2m wide where possible to allow passing. Consider raised crossing for both the crosswalks and bikelane at mall entrance and Lynn Rd.

Understanding the limitations of the space, maintaining a green buffer between pedestrians and cyclists would be nice to separate the flow. Although I understand that may not be feasible due to space
This does nothing to address the issue of crossing the bridge. The sidewalk is too narrow for two pedestrians to walk abreast of each other and the "designated" cycling lane is narrow and dangerous without delineators or a physical barrier between the traffic. This proposal seems like piecemeal. Why not wait to do everything at once instead just two - three blocks. Although not in the scope of this survey, the bike lane on the west side of Brooksbank is dangerous with all the traffic accessing Park and Tilford and motorists continue to ignore the new "No Left Turn" signs by the White Spot on Brooksbank.
Short term solution needed as soon as possible. This is a VERY dangerous section of road for bikers and the main access route between second narrows and lower lonsdale. It is also a reason why i sometimes choose not to bike as biking this area during rush hour is terrifying.
The short-term solution is better since it separates cyclists from pedestrians
We need safer infrastructure for bikes in this area asap!
Gotta do something. This is so problematic that I typically ride North to Crown Street and then along until I can travel South to join main Street.
I think the short term solution would be sufficient given that there is a new bridge going in over the river near Hunter street. When that bridge is in I will mostly change my route to use that instead of this Main street route. But, the main street route needs to be changed - it is currently quite risky riding along there. I think the short-term change will provide a good solution. I am surprised you were able to make any changes there at all - it all seems so difficult to change anything there.
Why not just construct the long term solution now? Does the bike lane have a barrier between traffic? It's not obvious in the renditions.
Please consider adding bollards separating the cycle lane from the vehicle lane as part of the design to provide actual protection for those not in a car. Vehicles travel pretty fast on main and I would feel a lot safer if there was some sort of physical barrier protecting me from drivers.
The cycle path needs to be wider - more like 2.1m to 2.4m. With the addition of e-bikes on the scene there needs to be room for bicyclists to pass one another. Anything you put in now is better than nothing and a few pinch points can be dealt with as people wait for the hydro poles to be moved. Yes an onerous proposition. And stop worrying about the trees. There is no shortage of trees in North Vancouver and whatever greenery you have should be such that they do impede sight lines for safe traffic flow and are easy to maintain.
There also needs to be a safer way to come off the Ironworkers and get to this point. Currently it's dangerous and the underpass is always flooded and is really narrow.
Long term solution must anticipate e-bike use as well as the wide disparity in travelling speed among cyclists. Therefore, a 2.4 m width is needed for users to pass each other safely.
5 years is far too long to wait for the relocation of utility poles. These changes would get fast-tracked for any other road infrastructure.
I'm all about delivering value sooner rather than later. Perfect is the enemy of done.
need to make safety improvement right away and continue with the long term solution - Please.
None of these options protect cyclists with urgency. Separated with protective barriers keeps cyclists safer and will encourage more riders.
The long-term solution looks better that the short-term one.

Funds saved on only implementting short term solution can be used elsewheere in the district. As a cyclist I would use this with the pinch points for one way traffic. Only 2-3 blocks.
This section is really dangerous.
In the long term the bikelanes on Main Street should be connected to the bike lanes on lower Mountain Highway, and extended on to Phibbs Exchange/Iron Workers Memorial Bridge (avoiding the detour on Barrow). The bikelanes should be 2m wide where possible to allow passing. Consider a raised crossing for both the crosswalks and bikelane at the Mall entrance and Lynn Rd. Improve Barrows St as well as part of the short term
1.8m width is ok short term, but pretty tight long-term. How are cyclists supposed to safely pass each other without endangering each other and pedestrians? Large speed differential especially between kids on regular bikes and ebikes.
My preference would be to have a bike lane, at the same level as the road. Although having a raised bike lane at the same level as the sidewalk has some safety advantages, I have 3 main reasons against this. (Leisure cyclist may have a different opinion) 1) Regardless of markings on the route, pedestrians will still walk on the bike route, causing more hazardous circumstances. A bike route on the road will avoid this. 2) With a raised bike lane, that goes up and down the curb at each road crossing, some cyclists will choose to not take this route because it is bumpy, and they can't continually pedal. Most experienced cyclist will take any opportunity they can to get to their destination as soon and comfortably as possible, and if this means not riding on the raised bike lane, they will do that. A bike route level with the road will avoid this.
the short term solution is perfectly acceptable as I do not seeing the power poles being a problem
Thick bollards or another kind of barrier is a MUST on this road. Vehicles travel very quickly compared to many cyclists. A distracted or out-of-control driver could easily encroach on a raised cycle path that is so close to the road, even when they are not speeding.
That area is a very busy spot and vehicles have no reason to SHARE the road.
Coordinate with Lynn Creek Brodge replacement.
The short term solution is the key element. This corridor is very busy and the traffic interactions for cyclists are a big issue already.
Myself and my family members are cycling more than ever and appreciate a short term solution that will be expanded into a long term solution as time goes on rather than wait for the development of a long-term solution thank you
The costs are important factors on deciding whether I think the short-term solution should be skipped over or not.
Please also prioritize improvements to the bike lane on the North Side of the Lynn Creek Bridge, particularly on the east abutment side - this area is dangerous due to the pinching out bike lane and traffic accelerating away from the traffic light in front of Lordco.
Curb bulge at the mall entrance just west of Vancity to mitigate cars turning right striking cyclists.
Where possible, the ST solution should be 2M vs. 1.8M. Understand that is not always possible.
This is a much needed solution to a very dangerous place to cycle. The short term solution is needed ASAP but shouldn't come at the cost of a proper solution in the future.
Dedicated cycling lanes must be clearly delineated from walking paths. Many of the off road cycling paths dedicated for cyclists are regularly used by pedestrians. This is unsafe for cyclists and pedestrians. In these cases riding in the roadway becomes preferable.

The bike path should be fully separated from car traffic (i.e. physical barrier). Suggest to remove access to the mall from Main St.
As a cyclist, I see no need to relocate the Hydro Poles unless the goal is for the entire neighbourhood to put electric lines underground. I see option 1 as a totally safe way to cycle, the poles are not a problem. I like the way the two options are displayed, makes it much easier to make comparisons.
The short term solution pinch points and weaving would make it difficult to pass other cyclists, and could create conflicts with pedestrians walking in the cycle route. I would rather ride on the street as it currently is than weave. The cycle route should be separated from the sidewalk (grasses, shrubs, curbing) to ensure pedestrians don't walk in the cycle route. Even the long term solution isn't ideal when cars creep into the crosswalks turning out of the Canadian Tire parking lot.
Short-term solution is better than the current shared car/bike travel lane along main; however, having the pedestrian sidewalk adjacent to a bike lane frequently sees pedestrians walking in the bike lane. The long-term solution adds a physical reminder to both cyclists and pedestrians that both users need to remain on their respective surfaces/spaces.
the more cycle paths the better the sooner, and make improvements along the way.
The other pinch points by the bus loop and Chervon are more impactful
Serious consideration should be given to reduce space for vehicle traffic. Unless you make traveling by car less convenient you will never get people to leave their car in favour of public transit or bikes. Subsidizing commuter e-bikes might be the way to go to make this transition possible.
Many heavy trucks and other similar size vehicles use that route. To help better delineate the proposed bike lane, install some form of barrier to keep vehicle drivers in their own lane especially near intersections.
1.8m way too narrow to enable safe passing. Long term should be at least 2.5m.

MOTT MACDONALD

Main Street Cycling Link: DNV Border - Harbour Ave

Conceptual Design Options Technical Report

January 2023

EGBC Permit to Practice No. 1001591

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	2022/08/05	Joshua Cayanan Gordon Hong	Simon Mueller	Simon Mueller	Draft for Client Review
B	2022/11/04	Gordon Hong	Hannah Khosravi	Selena Wilson	Updated draft for Client Review
C	2022/12/23	Gordon Hong	Hannah Khosravi	Selena Wilson	Updated draft for Client Review
D	2023/01/13	Gordon Hong	Hannah Khosravi	Selena Wilson	Final Submission

Document reference: 514100214-003 | 0002 | D | 514100214-003-MMD-00-XX-RP-CV-0002

Information class: Standard

Contents

1 Context 1
1.1 Report Purpose 1
1.2 Naming References 1
1.3 Background 2
1.4 Challenge & Opportunity 3
1.5 Existing Policy 3
1.6 Project Specific Goals and Objectives 4

2 Existing Conditions 5
2.1 Main Street 5

3 Design Options 7
3.1 Main Street Design Options 7
3.1.1 Option A 8
3.1.2 Option B 10
3.2 Further Design Considerations 11
3.2.1 Physical Separation of Motor Vehicles, Bicycles, and Pedestrians 11
3.2.2 Passing Opportunities for Cyclists 12
3.2.3 Main Street Mall Access to Harbour Front Centre 12
3.2.4 District Operations Centre Parking Lot Retaining Wall 12
3.2.5 Signage and Turn Restrictions 13
3.2.6 BC Hydro Electrical Transmission Poles 13
3.2.7 Bus Stop #59111 WB Main Street at Harbour Avenue 13
3.2.8 Public Street Trees and Private Landscaping 14

4 Selected Design Concept 15
4.1 Selected Concept for Detailed Development 15

5 Cost Estimate 16
5.1 Price Escalation and Contingency 16
5.2 Class D Cost Estimate 16

A. Design Sketches & 3D Model Stills 17
A.1 Main Street North - 3D Stills 18
A1.1 Main Street North – 3D Stills (Option A) 18
A1.2 Main Street North – 3D Stills (Option B) 18
A.2 Main Street North – Design Sketches 29
A2.1 Main Street North – Design Sketch (Option A) 29

A2.2 Main Street North – Design Sketch (Option B) 29

Tables

Table 1.1 Naming and Referenced Term or Acronym 1
Table 3.1 Design Criteria 8

Figures

Figure 1.1: Project Extents Context Map 2
Figure 1.2: Aerial View Extents of Project (Google Maps, 2022) 2
Figure 1.3: Street Level View Looking West, Main St (Google Maps, 2022) 3
Figure 2.1: Main St Existing Partial Cross-Section 5
Figure 3.1: Option A Cycle Track and Sidewalk Alignment, Main St to Mall Access 9
Figure 3.2: Option A Typical Section 9
Figure 3.3: Option B Cycle Track and Sidewalk Alignment, Main St to Mall Access 10
Figure 3.4: Option B Typical Section 10
Figure 3.5: City of Vancouver Type E Bevel Curb and Gutter vs MMCD C5 12
Figure 3.6: Main Street Proposed Sidewalk and Cycle Track West of Lynn Ave 13

1 Context

This section establishes the project rationale and defines the problem that is being examined in the context of current policy frameworks.

1.1 Report Purpose

Mott MacDonald (Mott) has prepared this report to provide the District of North Vancouver (District) with a summary of technical findings, rationale, and feedback as it relates to the conceptual design phase of the Main Street Cycling Link project between Harbour Avenue and the City of North Vancouver (CNV) border at Lynn Creek Bridge.

The cycling link project focuses on upgrades to westbound street facilities along the north side of Main Street from the eastern limit of the Lynn Creek Bridge to Harbour Avenue. The facilities at the intersection of Main Street and Harbour Avenue, the existing painted cycling lane serving eastbound cyclists on Main Street, and the connection from Harbour Avenue to Barrow Street are beyond the scope of this assignment.

1.2 Naming References

Names of different organizations and design guides will be referenced throughout this report. **Table 1.1** summarizes the key names and the term or acronym that will used as a reference throughout the following sections.

Table 1.1 Naming and Referenced Term or Acronym

Name	Referenced Term
Mott Macdonald	Mott
The District of North Vancouver	District
City of North Vancouver	CNV
Major Road Network	MRN
American Association of State Highway and Transportation Officials	AASHTO
Transportation Association of Canada	TAC
National Association of City Transportation Officials	NACTO

1.3 Background

District Council identified the westbound cycling route on Main Street between Harbour Avenue and the Lynn Creek Bridge as a priority improvement in November 2019. The project extents are enclosed by the orange dotted lines in **Figure 1.1** below which also illustrates the current cycling route between the Second Narrows Bridge, the District, and the CNV.

Today, westbound cyclists originating from the Second Narrows Bridge use an existing multiuse path to connect to Barrow Street, make a right turn onto Harbour Avenue, and finally make a left turn onto Main Street. They then share the westbound curbside vehicle lane in single file traffic with motor vehicles.

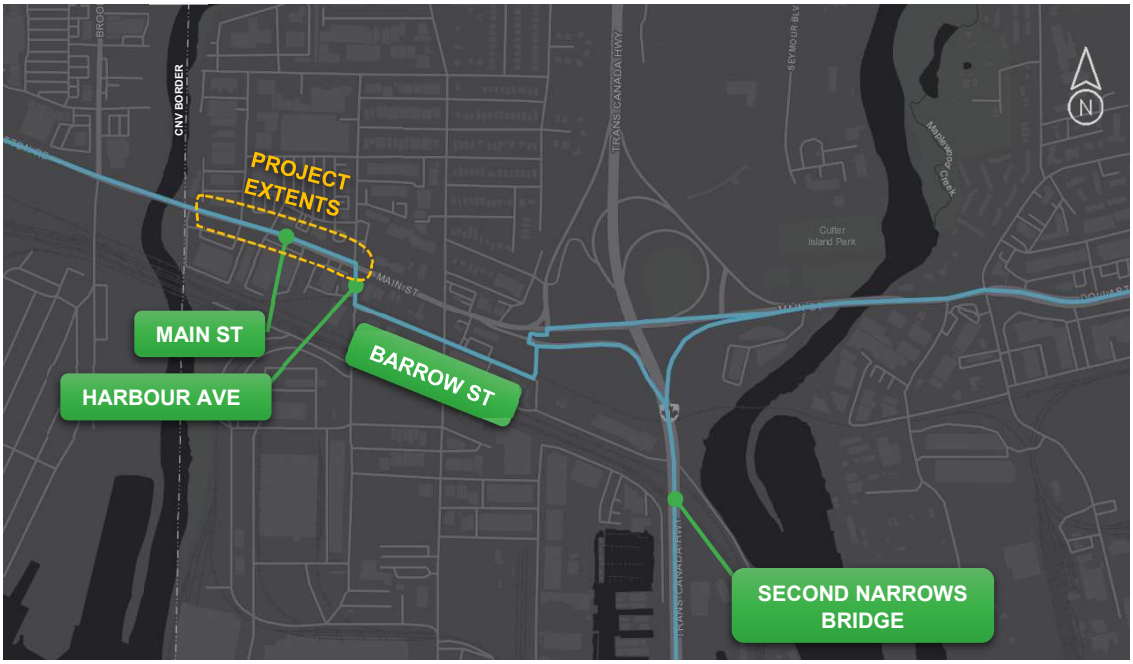


Figure 1.1: Project Extents Context Map

Figure 1.2 below, shows the westbound path, in blue, that cyclists take today, coming from Harbour Avenue and turning onto the north side of Main Street. The existing eastbound cycling lane along the south side of Main Street, which begins at the Lynn Creek bridge and ends at Harbour Avenue has been shown in orange.

Figure 1.2: Aerial View Extents of Project (Google Maps, 2022)

A street-level view of the existing condition today is also shown in **Figure 1.3** below, which defines the current westbound cycling shared route with the yellow arrow and shows the painted cycling lane treatment currently in place for eastbound cyclists.

Figure 1.3: Street Level View Looking West, Main St (Google Maps, 2022)

1.4 Challenge & Opportunity

The existing westbound cycling route along the north curbside lane of Main Street currently has no physical separation from adjacent motor vehicles, buses, or trucks. Although signage and pavement markings are provided along this westbound route indicating shared use and single file traffic along the road, many cyclists often ride in the narrow lane space between the curb and motor vehicles. Alternatively, as observed multiple times during site visits, many cyclists are also opting to ride along the sidewalk.

Given the current issues associated with the shared vehicle lane arrangement, the District has engaged Mott MacDonald to identify potential design options to improve active transportation user's comfort, convenience, and safety along the segment of Main Street between Harbour Avenue and the Lynn Creek Bridge.

1.5 Existing Policy

In 2019, District Council, in line with other municipalities in the region, declared a climate and ecological emergency to accelerate actions to address the wide-reaching impacts of human-induced climate change with three major goals in mind:

- Reduce greenhouse gas emissions as a municipality and in the wider community;
- Protect and enhance ecosystem health and biodiversity; and
- Improve resilience to climate change.

In the context of this project, developing leadership in the provision of low carbon transport options forms part of a collection of six key strategic directions to achieve the District's goals. Tying transportation planning with land use and urban form policy seeks to mitigate the significant contribution that vehicular traffic has toward greenhouse gas (GHG) emissions.

Integrating mitigation and resiliency elements identified in the *Climate Change and Adaptation Strategy*, the District's *Transportation Plan* emphasises the need to create a safe, accessible,

and connected network of active transportation routes that encourages people of all ages and abilities to walk, roll, and cycle across the District. Key goals articulated in the plan include:

- Providing transportation options for all people;
- Promoting physically active transport alternatives;
- Reducing transportation demand;
- Creating places for people, not cars;
- Making the lowest-impact transportation choice, the first choice; and
- Making a sustainable transportation system happen.

This project which seeks to improve conditions for Main Street aligns with the goals and long-term vision outlined in existing policy frameworks.

1.6 Project Specific Goals and Objectives

A key project goal is to improve westbound cycling connectivity, comfort, safety, and attractiveness for users along Main Street from Harbour Avenue to complete the Council priority route between the CNV border and the Second Narrows Bridge. Measurable objectives that may be considered for monitoring pre/post-implementation of chosen improvements include but are not limited to:

- **Cycling Volumes** – Increased westbound cycling volumes from current levels are supportive of further active network improvements

- **Underrepresented Users** - Increased proportions of underrepresented cyclists such as women, seniors, parents, children, and those residents that are interested but concerned, are indicative of latent demand for active transportation network improvements

- **Safety** – Decreased collisions, injuries, and fatalities are supportive of further active transportation network improvements

2 Existing Conditions

This section closely examines the geometric, traffic, and built-environment aspects of the existing roads that form the project extents to describe the challenges and opportunities involved in the design process.

2.1 Main Street

Main Street is a 50km/h major arterial undivided road that runs east-west in the District and is the first intersecting road with on and off-ramps to Highway 1 at the north end of the Second Narrows Bridge. Main Street is part of the regional MRN and serves an important role in linking the CNV and eastern parts of the District. Beyond the CNV border to the west, Main Street becomes Cotton Road and east of the Highway 1 interchange, it becomes Dollarton Highway.

As part of the MRN, Main Street is designated as a truck route and a major transit corridor with the R2 – Marine Dr/Phibbs Exchange and 232 – Grouse Mountain/Phibbs Exchange bus routes running along the segment of Main Street within the project extents. Main Street has two traffic lanes in each direction with dedicated bus and turning lanes at intersections within the study area. Longitudinal grades along Main Street average 1% or less making it an attractive flat route for cyclists. However, current motor vehicle, bus, and truck traffic volumes and speeds remain high, and without physical separation, pose a challenge for many cyclists.

Figure 2.1 below, shows a partial existing cross-section of Main Street, focusing on the two westbound traffic lanes along the north side of the road.

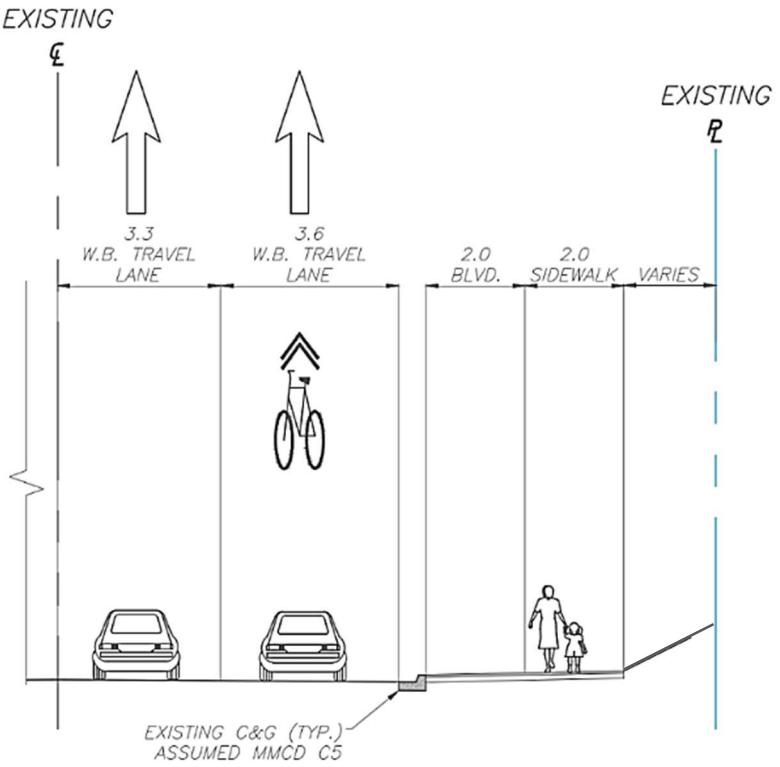


Figure 2.1: Main St Existing Partial Cross-Section

As shown in the partial cross-section, cyclists travelling in the westbound direction currently share the curbside travel lane with motor vehicles. For the area behind the existing curb, it should be noted that there are also constraints by other obstructions such as BC Hydro transmission poles and District luminaire (streetlight) poles which are discussed in more detail in section 3.

3 Design Options

The *Active Transportation Design Guide* published by the Ministry of Transportation and Infrastructure (MoTI) provides guidance on cycling facility selection based on existing roadway motor vehicle speeds and anticipated daily vehicle volumes. The *Active Transportation Design Guide* is a useful tool, compiling the latest research and best practices from various North American transport agencies such as AASHTO, TAC, and NACTO with context-sensitive examples from sources such as the District, and many others to best serve local conditions. Stakeholder input during the design process also provided key considerations for users of the proposed upgraded facilities and for those impacted by the construction of the proposed works.

3.1 Main Street Design Options

Early on in the conceptual design process, the District engaged targeted stakeholder groups to provide input on the proposed Main Street design options to better understand the needs of various users with differing needs and abilities and inform potential solutions. Based on our understanding of existing travel conditions, and the challenges posed by a constrained right-of-way (ROW) with multiple electrical transmission poles located in the boulevard, Mott MacDonald examined multiple options with varying degrees of separation between motor vehicles, cyclists, and pedestrians.

Options that did not provide a means of physical separation from motor vehicles were disqualified. For newly designed facilities, a painted cycling lane for example, is not considered a best practise solution in the context of high vehicle volumes, operating speeds, and mode shift. Any form of an on-street cycling lane adjacent to street traffic would require widening of the curbside travel lane to provide an adequately sized cycle lane that is supported by the *Active Transportation Design Guide.* This would result in high costs/impacts for little improvement in cycling conditions.

We examined multiuse path options to cater to cyclists and pedestrians simultaneously allocating a wider mixed-use space for both active transportation modes instead of two separate narrower spaces given the constrained boulevard widths. After engagement sessions with HUB Cycling and the North Shore Advisory Committee on Disability Issues, we found that there was a strong preference for separated cycling and pedestrian facilities, with rationale that included the speed differential between cycling and walking modes which may cause discomfort for users if both modes were to share the same facility.

Ultimately, two options were identified as preferred concepts for Main Street, the design sketches and 3D visualisation still images for the two Main Street design options that were presented during stakeholder engagement are included in **Appendix A**. Each sketch provides a plan and section view of the existing and proposed conditions with a tabular summary of anticipated impacts to existing features such as trees and electrical transmission poles. Both design options feature a new raised protected cycle track and a new sidewalk located along the north edge of Main Street. A small buffer is also provided between the cycle track and the roadway for additional separation from motor vehicles. The alignments for the cycle track and sidewalk for each option vary based on the presence of existing above ground utilities that may conflict with the new active transportation facilities.

Given the constraints within the existing ROW, a project design criteria was established, based on guidance from the *Active Transportation Design Guide* and *TAC,* setting out minimum design widths for the proposed active transportation facilities as well as for the roadside vehicle lane.

The design for both concepts to provide the desired geometric features is set out in **Table 3.1** below. When space permits and wherever possible, the preferred width is proposed; however, the lower bound is also provided in specific scenarios where space is constrained by existing utilities, such as BC hydro poles.

Table 3.1 Design Criteria

Facility	Minimum Width	Source Guideline
Sidewalk Width	2.1m Preferred 1.5m Minimum*	BC Active Transportation Design Guide
Cycle Track Width	1.8m Preferred 1.5m Minimum*	BC Active Transportation Design Guide
Roadside Boulevard	0.6m Preferred Minimum 0.5m Absolute Minimum*	BC Active Transportation Design Guide
Lateral Clearance from Obstructions > 0.75m in Height	0.5m Minimum	TAC
Vehicle Lane	3.3m	TAC

**Where constraints prevent the preferred minimum width from being applied, the Active Transportation Design guide provides a practical lower limit which should only be applied over a limited distance under 100m*

Both options are similar in that they propose separate unidirectional cycle tracks and bidirectional sidewalks. Differences arise due to the challenge and timelines associated with relocating the BC Hydro transmission poles.

Option A assumes that the BC Hydro power poles are relocated; however, the timeline for this relocation would not happen within the next couple of years. Option B assumes the BC Hydro power poles remain in place and could reasonably be delivered within the next few years. As such Option A is considered a long-term solution that will take much more time to actualise compared to Option B which is considered a short-term option. More details on the preferred design options are discussed in sections 3.1.1 and 3.1.2.

3.1.1 Option A

As the long-term solution, Option A assumes that the BC Hydro power poles on the north side boulevard can be relocated in a 5+ year time horizon. Option A therefore allows for a raised unidirectional cycle track alignment that follows the existing road alignment with a buffer between a new proposed curb and cyclist track as shown in **Figure 3.1** on the next page.

Wherever possible, consistent 2.0m wide sidewalks are proposed for Option A with the possibility of providing localised widenings at certain segments for additional space. As shown in the clouded callout note below, a portion of the sidewalk reduces locally to retain a passenger landing pad for an existing bus stop and shelter which will be examined further in subsequent design stages.

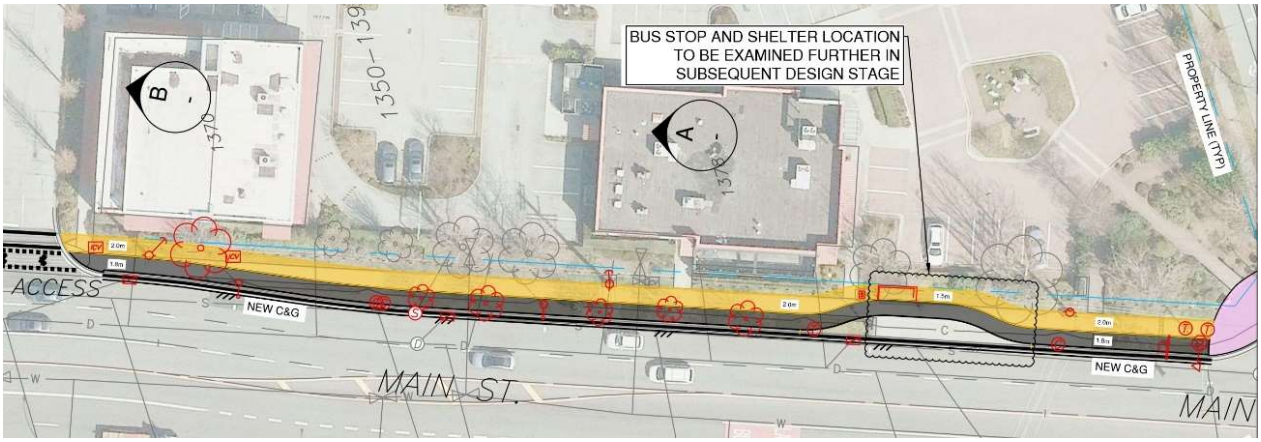


Figure 3.1: Option A Cycle Track and Sidewalk Alignment, Main St to Mall Access

The typical cross section for Option A, shown in **Figure 3.2** below, shows the proposed widths of the street buffer zones, protected cycle track, and sidewalk.

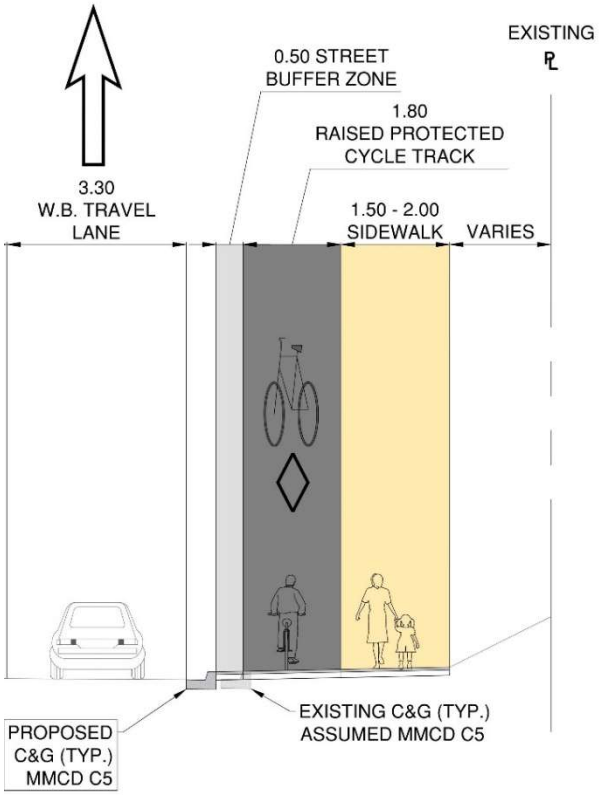


Figure 3.2: Option A Typical Section

In addition, Option A proposes reducing the existing curbside travel lane from 3.6m to 3.3m by moving the curb and gutter to allow more boulevard space for active modes. The TAC *Geometric Design Guide for Canadian Roads* advises maintaining at least 3.3m lane widths in urban conditions where trucks and buses are anticipated. This lane width is wide enough to accommodate the typical bus widths outlined in the *Translink Design Guide.*

3.1.2 Option B

As the short-term solution with a delivery time frame likely in the next five years, Option B assumes that the BC Hydro transmission poles remain in place with some allowable modifications for existing guy wire placements to facilitate pedestrian and cyclist traffic. As the electrical poles remain in place, Option B has a winding cycle track alignment to avoid power pole obstructions as shown in **Figure 3.3** below.

Like Option A, 2.0m wide sidewalks are proposed where possible, though there are many more localised pinch points where the sidewalk narrows down to 1.5m in width to avoid conflicts with the existing hydro poles. The buffer spaces between the sidewalk and the cycle track could potentially be used for additional width for landscaping.

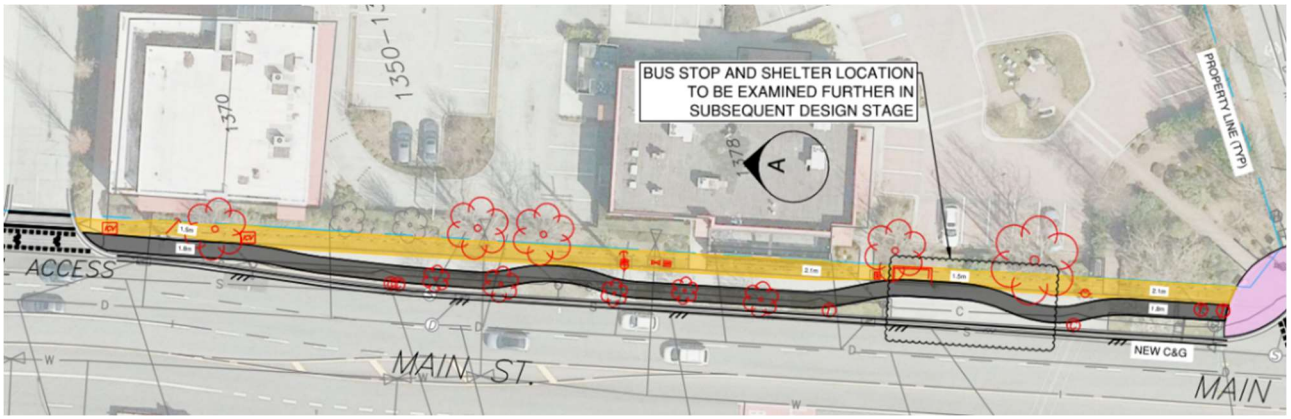


Figure 3.3: Option B Cycle Track and Sidewalk Alignment, Main St to Mall Access

The typical cross section for Option B shown in **Figure 3.4** below, shows the proposed widths of the street buffer zones, protected cycle track, and sidewalk with a varied buffer space in between the two that results from the cycle track meandering to avoid utility poles.

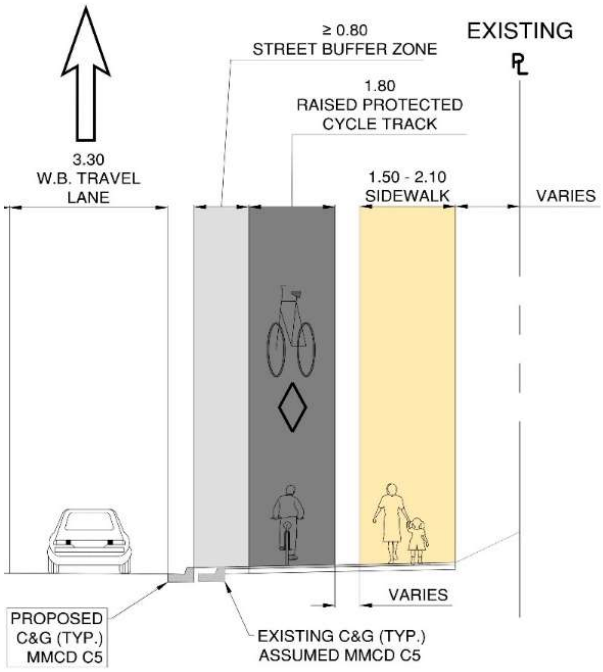


Figure 3.4: Option B Typical Section

The initial concept for Option B proposed keeping curbside travel lane at 3.6m and maintaining the existing street buffer zone. However, with the potential utility relocations required in Option B, additional space in the street buffer may be needed to accommodate some utility relocations. Because of this, Option B evolved to include new curb and gutter and reduction of the curbside travel lane from 3.6m to 3.3m like Option A to reclaim more street buffer space, providing additional separation away from the road for active modes.

3.2 Further Design Considerations

Workshop sessions with the various stakeholders yielded important design considerations to be examined in future stages of work to provide proposed solutions that can accommodate all potential users. These considerations apply to both design concepts regardless of which concept is advanced to the subsequent design stage.

3.2.1 Physical Separation of Motor Vehicles, Bicycles, and Pedestrians

The constrained ROW on Main Street and electrical pole obstructions poses a challenge in providing the desired 0.9m wide buffer space between the vehicle travel way and protected cycling facilities per the *Active Transportation Design Guide*. The designs presented work with the spatial limitations by proposing at least a 0.5m wide buffer for the cycle tracks, which meets the constrained minimum width outlined the *Active Transportation Design Guide* as per the design criteria.

As for the separation between cyclists and pedestrians, hardscaping between the cycle track and sidewalk helps to prevent pedestrians from inadvertently entering the cycle track and vice versa. Hardscaping may take the form of vegetation or different pavement treatments but at the very least, should provide some form of vertical difference that forms a perceptible linear edge along the proposed works. As much as possible, designs that have the cycle track and sidewalk at the same elevation without some form of separation should be avoided for conflict reasons.

One potential option for vertical separation is an intermediate level cycle track with a bevel curb and gutter, which drops the cycle track 50mm from the sidewalk, providing a visual and physical cue to users of the delineation between the two spaces. The bevel curb and gutter, example shown in **Figure 3.5** on the next page, would be the preferred solution for cyclist/pedestrian separation as it is more space-efficient (0.3m wide) than the traditional wide curb (0.55m wide).

An advantage of the bevel curb is that it is shallow enough that bicycles can still roll over it in an emergency event where cyclists may need to avoid hitting an object. More importantly, for people with visual impairments, a bevel curb still provides a linear edge that can be used to strike a cane against for the purpose of shore lining. The subsequent design stage will examine the existing spatial constraints to determine whether vertical separation can be implemented along the alignment.

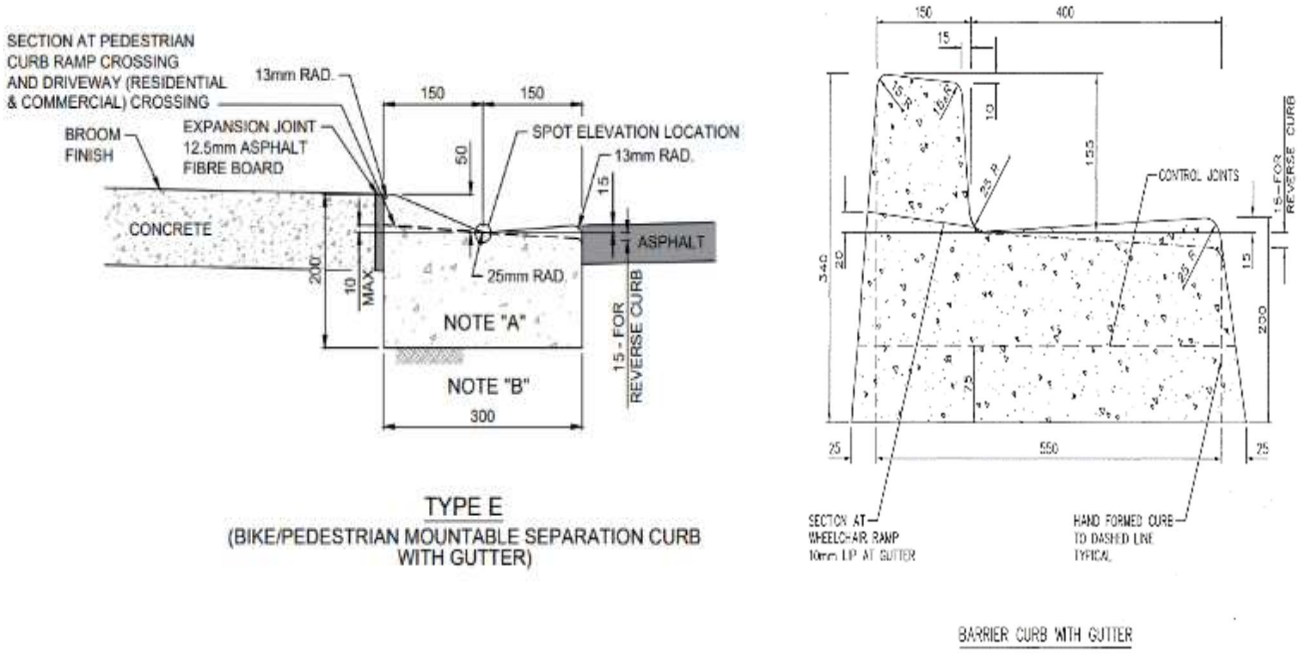


Figure 3.5: City of Vancouver Type E Bevel Curb and Gutter vs MMCD C5 Wide Base Concrete Barrier Curb

3.2.2 Passing Opportunities for Cyclists

In the design options explored for Main Street, it is recognised that 1.8m wide cycle tracks are not supportive of passing maneuvers for cyclists. The constrained ROWs posed a challenge in providing the upper-bound recommended widths for protected cycle tracks. Noting that there are localised stretches of the alignment where additional space is available, the subsequent design stage may opt to examine small segments with localised widenings to enable unidirectional passing maneuvers for cyclists.

3.2.3 Main Street Mall Access to Harbour Front Centre

The existing mall access off Main Street, near Lynn Avenue is currently a right-in/right-out driveway with curb return treatment that requires pedestrians to enter the vehicle roadway to cross. As recent practices in transportation design have opted to provide preferential treatment of active modes over motorists, there is an opportunity to explore a driveway letdown at this location in the next phase of design, to allow pedestrians and cyclists to cross without having to enter the roadway.

3.2.4 District Operations Centre Parking Lot Retaining Wall

Common to both options for Main Street is a segment of sidewalk that enters two parcels owned by the District as shown in **Figure 3.6** on the next page, the parcels owned by the District have been shaded in red for clarity. The first parcel has a low-density commercial building leased to five different clients with a small concrete retaining wall fronting the lot along Main Street that serves more of an aesthetic feature rather than soil retaining function. The retaining wall is shown in blue in the figure below and will need to be addressed in detailed design. Business owners expressed support of removing the wall as it currently impedes foot traffic and the visibility of sandwich board signs.

Figure 3.6: Main Street Proposed Sidewalk and Cycle Track West of Lynn Ave

West of the businesses is a vacant lot that is currently used as a parking lot by District Operations Centre workers. A grade break begins past the chain link fence indicated in red in the figure below. The subsequent design stage will look to re-slope the ground at this location to tie-in the new sidewalk; however, the District has noted that maintaining the parking supply is a priority. A retaining wall may be required to minimize encroachment onto the District's property should there be a significant elevation difference between the existing ground and new sidewalk.

3.2.5 Signage and Turn Restrictions

In subsequent stages of design, additional signage at intersections and crossing streets should be considered to minimise driver-cyclist conflict points. As well, signal timings and phasing should be reviewed to reflect geometric changes and potential new cycling movements. Where feasible, the addition of cyclist-specific signal heads at separated cyclist/pedestrian crossings is desirable.

To minimise cyclist-pedestrian conflicts, at intersection corners for example, pavement markings and signage combined with geometry that encourages deceleration should be considered.

3.2.6 BC Hydro Electrical Transmission Poles

Although the short-term solution for Main Street, Option B, does not propose the relocation of the transmission poles, approximately three guy wires will need to be relocated and/or reconfigured to accommodate the cycle track and pedestrian sidewalk. It is recommended that BC Hydro be engaged early as any changes to their infrastructure would require their own internal design teams and crews to action.

3.2.7 Bus Stop #59111 WB Main Street at Harbour Avenue

In the westbound direction, bus stop #59111, currently servicing the R2 – Marine Dr and 232 – Grouse Mountain bus routes, will require coordination with TransLink and CMBC in the subsequent design stages as both design options presented will require relocation of an existing bus shelter. However, with the available space in the ROW, the design will strive to propose cycle track and sidewalk alignments that can also provide a 3.0m wide passenger landing pad fronting the curb for buses which is the desired width set out in the *Translink Design Guide*.

Additional considerations during detailed design will include crossing treatments for pedestrians accessing the bus stop and the vertical profile of the cycle track through the area of interest.

3.2.8 Public Street Trees and Private Landscaping

Changes to the boulevard space necessitate impacts to existing landscaping. During the concept design phase, trees located on both public and private property were examined and assumed to be impacted or not based on the cycle track and sidewalk alignments.

In detailed design, engaging the services of an arborist will be required to confirm the number of impacted trees that will need to be removed and identify areas of the design where future plantings can be allocated in the public ROW and in concert with private property owners.

4 Selected Design Concept

Based on feedback received to-date, DNV prefers to advance the short-term solution on Main Street, Option B, to implement improvements as soon as possible.

4.1 Selected Concept for Detailed Development

Should the District move ahead with Option B for the next phase of design, the following summarizes the overall design option that will be advanced for further detailed development:

- Retention of the existing BC Hydro transmission poles along the north side of Main Street with adjustments to guy wires to accommodate the new pedestrian sidewalk
- New 2.0m – 1.5m wide bidirectional sidewalk
- New 1.8m wide unidirectional protected cycle track (which meanders around existing hydro poles)
- Minimum 0.5m wide roadside boulevard
- Reduction of the westbound curbside vehicle lane from 3.6m to 3.3m to provide additional boulevard width

The design considerations discussed in section 3.3 will be examined further in the next phase of design and may also be included with the above design components.

5 Cost Estimate

A cost estimate was prepared for Main Street's Option B design concept (short-term option) for a Class D level of accuracy as defined by Association of Consulting Engineering Companies of British Columbia (ACEC BC) and Engineers & Geoscientists British Columbia (EGBC). for a Class D level of accuracy as defined by ACEC and EGBC.

5.1 Price Escalation and Contingency

Consistent with the current level of design for this project, a Class D cost estimate is defined by the ACEC and EGBC as follows:

Class D estimate (±50%): A preliminary estimate which, due to little or no site information, indicates the approximate magnitude of cost of the proposed project, based on the client's broad requirements. This overall cost estimate may be derived from lump sum or unit costs for a similar project. It may be used in developing long term capital plans and for preliminary discussion of proposed capital projects[1] .

To determine the magnitude of the contingency to apply to this estimate, the risk of price escalation is considered. Unit price and lump sum costs for concrete, earthworks, roadway, and steel have escalated significantly in the past two years. More recently, inflationary pressures in excess of 6.6% per annum in 2022 have lifted material and labour costs further. The prices used in the estimate are informed by cost intelligence from recent or ongoing works of similar size and nature within the District, within neighbouring municipalities, and the region as a whole. Given the early design stage of this project and volatility in the construction market, we have applied the upper range contingency factor of 50%.

The cost estimate is based on 2022 rates and no escalation of rates has been applied for future years. As the project proceeds and construction timelines materialise, more detailed cost estimates should be undertaken with consideration of rates relevant to the year(s) of construction.

5.2 Class D Cost Estimate

Before the application of GST, the pre-tax cost estimate price for Main Street Option B is approximately $1.28 million, this includes a 50% contingency, expressed in 2022 Canadian Dollars. Including taxes, a total of $1.35 million is approximated.

[1] Budget Guidelines for Consulting Engineering Services, ACEC BC, 2009, pg. 25

A. Design Sketches & 3D Model Stills

A.1 Main Street North - 3D Stills

Appendix A.1 includes the 3D stills for the Main Street North design options A & B which were presented during the stakeholder engagement sessions.

A1.1 Main Street North – 3D Stills (Option A)

Long-term solution that assumes the existing BC Hydro power poles on the north side boulevard can be relocated in a 5+ year time horizon. Includes narrowing of the westbound curbside vehicle lane to provide additional space for proposed active transportation facilities.

A1.2 Main Street North – 3D Stills (Option B)

Short-term solution with a delivery time frame likely within in the next five years. Assumes that the BC Hydro transmission poles remain in place with some allowable modifications for existing guy wire placements. Includes narrowing of the westbound curbside vehicle lane to provide additional space for proposed active transportation facilities.

Main Street North – Option A

Main Street North – Option A

Main Street North – Option A

Main Street North – Option A

Main Street North – Option A

Main Street North – Option B

Main Street North – Option B

Main Street North – Option B

Main Street North – Option B

Main Street North – Option B

A.2 Main Street North – Design Sketches

Appendix A.2 includes the conceptual sketches for the Main Street North design options A & B which were presented during the stakeholder engagement sessions.

A2.1 Main Street North – Design Sketch (Option A)

Long-term solution that assumes the existing BC Hydro power poles on the north side boulevard can be relocated in a 5+ year time horizon. Includes narrowing of the westbound curbside vehicle lane to provide additional space for proposed active transportation facilities.

A2.2 Main Street North – Design Sketch (Option B)

Short-term solution with a delivery time frame likely within in the next five years. Assumes that the BC Hydro transmission poles remain in place with some allowable modifications for existing guy wire placements. Includes narrowing of the westbound curbside vehicle lane to provide additional space for proposed active transportation facilities.

IMPACTED EXISTING FEATURES			
TYPE	COUNT	TYPE	COUNT
CABLE NETWORK MAINTENANCE HOLES	4	JUNCTION BOXES	3
CATCH BASINS	4	LAMP STANDARDS	8
CONIFEROUS TREES	min. 6	LAMP STANDARDS w. TRAFFIC SIGNALS	1
HYDRO POLES	5 relocates	BUS STOP	1
HYDRO VAULT	0	SURVEY LEAD PLUG	2
IRRIGATION CONTROL VALVES	3	TELUS MAINTENANCE HOLES	3
SANITARY SEWER MAINTENANCE HOLE	1	SIGN POSTS	1

INSET - GOOGLE STREET VIEW OF
MAIN ST. AND LYNN AVE. N.W. CORNER

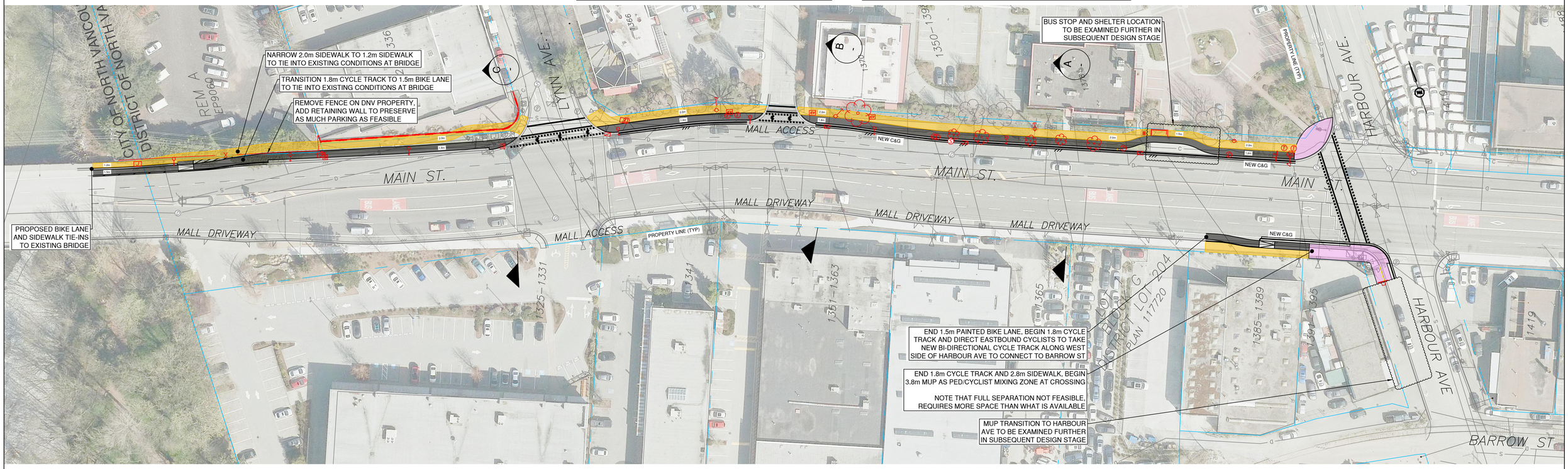
INSET - GOOGLE STREET VIEW OF
EXISTING HYDRO POLE AT MALL ACCESS

USE LEGEND:

- MULTIUSE PATH (PEDESTRIANS + BIKES + ROLLERS)
- BIKE LANE OR CYCLE TRACK (BIKES ONLY)
- SIDEWALK (PEDESTRIANS ONLY)

NOTES:

1. OPTION VIABILITY WILL CONTINUE TO BE UPDATED AS FEEDBACK IS RECEIVED AND DESIGN IS REFINED
2. HYDRO POLE AND LIGHT STANDARD DAVIT DIAMETERS TO BE CONFIRMED WITH ADDITIONAL SURVEY, IMPACTS ESTIMATED FROM AERIAL
3. IMPACTED EXISTING FEATURES SHOWN IN RED IN PLAN



PLAN VIEW
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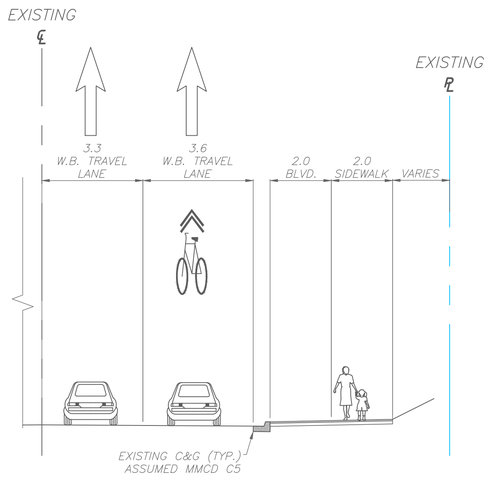

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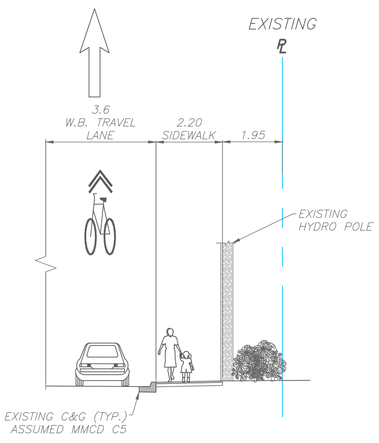
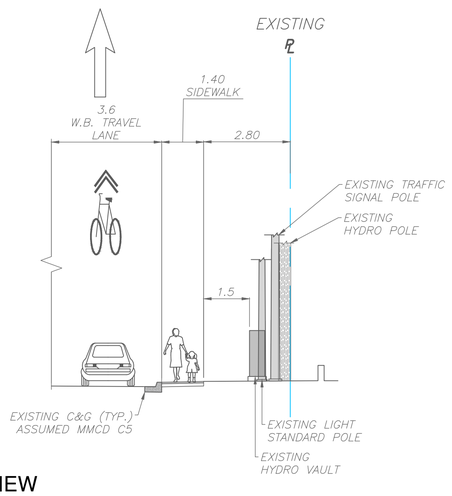
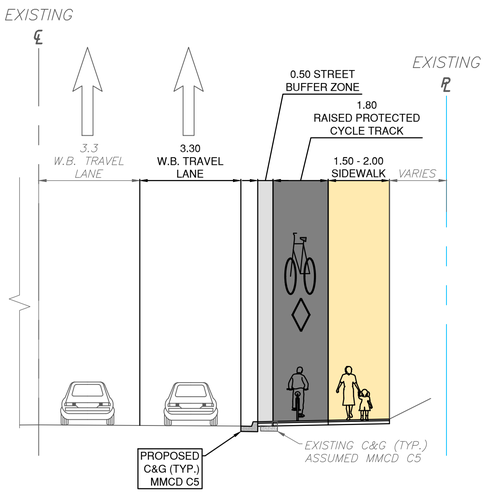


SECTION VIEW
EXISTING HYDRO POLE AT MALL ACCESS ROAD (B)
Scale: 1:100



SECTION VIEW
EXISTING N.W. CORNER OF MAIN ST. AND LYNN AVE. (C)
Scale: 1:100



TYPICAL SECTION - PROPOSED (A)
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FOR INFORMATION ONLY
January 7, 2011

MOTT MACDONALD

BENCH MARK :	No.	DATE	REVISION	DR.	CHK.
	PA	2022/04/05	DRAFT - FOR INTERNAL REVIEW	CHL	JC
	PB	2022/03/07	DRAFT - FOR INTERNAL REVIEW	JC	CHL
	PC	2022/04/05	DRAFT - FOR INTERNAL REVIEW	JC	

DESIGN : CHL
DRAWN : CHL
CHECKED :
APPROVED :

SCALE :
HOR. AS SHOWN
VERT. n/a
DATE : 2022/03/07

NORTH VANCOUVER DISTRICT
NORTH VANCOUVER DISTRICT
MUNICIPAL ENGINEERING DEPARTMENT

SEAL | PEER REVIEW | REF DWG | SURVEY BOOK

MAIN ST. CYCLING LINK
OPTION A
CYCLE TRACK - CONSISTENT 1.8 m WIDTH

DRAWING No.
C-102
SHEET 01 OF 01
NOTE: METRIC DRAWING

File : C:\pcf\d0142721\514100214-003_C-CD-P-102.dwg
Published : May 06, 2022

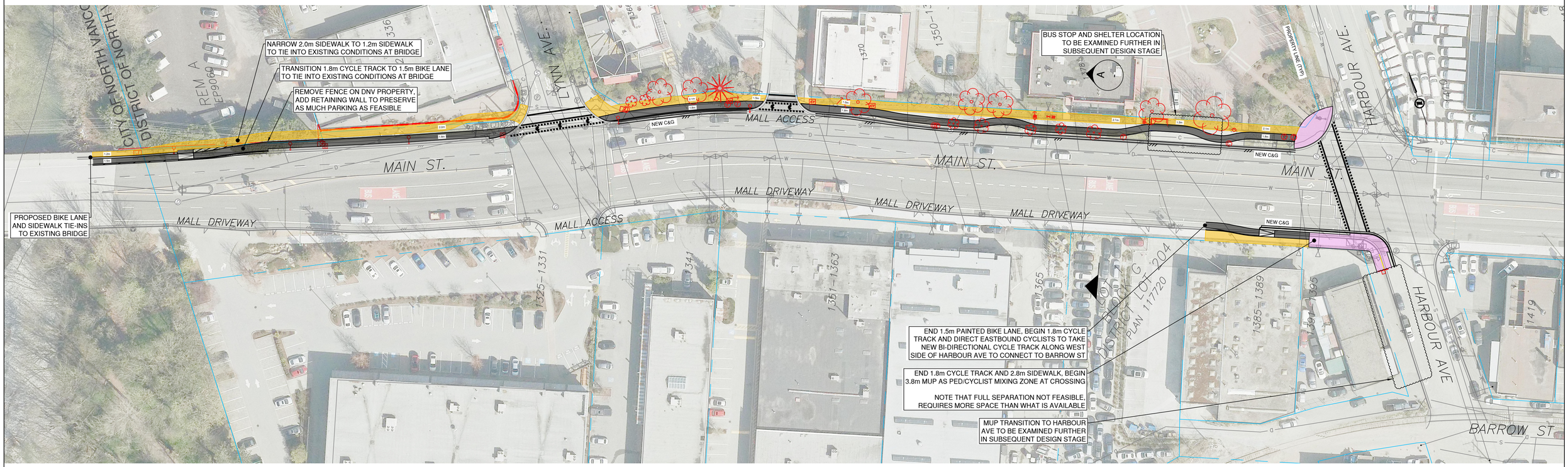
IMPACTED EXISTING FEATURES			
TYPE	COUNT	TYPE	COUNT
CABLE NETWORK MAINTENANCE HOLES	4	JUNCTION BOXES	4
CATCH BASINS	0	LAMP STANDARDS	5
CONIFEROUS TREES	15	LAMP STANDARDS w. TRAFFIC SIGNALS	0
HYDRO POLES	4 relocate + 5 guy wire adjust	BUS STOP	1
HYDRO VAULT	0	SURVEY LEAD PLUG	1
IRRIGATION CONTROL VALVES	7	TELUS MAINTENANCE HOLES	4
SANITARY SEWER MAINTENANCE HOLE	0	SIGN POSTS	2

USE LEGEND:

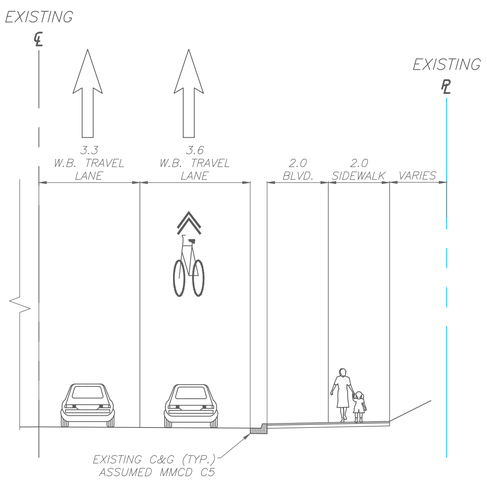
- MULTIUSE PATH (PEDESTRIANS + BIKES + ROLLERS)
- BIKE LANE OR CYCLE TRACK (BIKES ONLY)
- SIDEWALK (PEDESTRIANS ONLY)

NOTES:

1. OPTION VIABILITY WILL CONTINUE TO BE UPDATED AS FEEDBACK IS RECEIVED AND DESIGN IS REFINED
2. HYDRO POLE AND LIGHT STANDARD DAVIT DIAMETERS TO BE CONFIRMED WITH ADDITIONAL SURVEY, IMPACTS ESTIMATED FROM AERIAL
3. IMPACTED EXISTING FEATURES SHOWN IN RED IN PLAN



PLAN VIEW
Scale: 1:500



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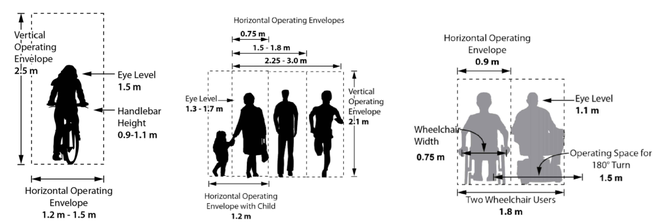
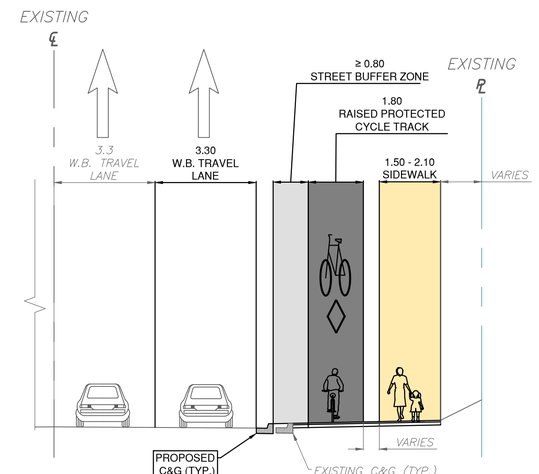


TYPICAL USER OPERATING ENVELOPES
(FROM TAC GEOMETRIC DESIGN GUIDE FOR CANADIAN ROADS)
NTS



TYPICAL SECTION - PROPOSED (A)
Scale: 1:100

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FOR INFORMATION ONLY
January 7, 2011

MOTT MACDONALD

BENCH MARK :	No.	DATE	REVISION	DR.	CHK.
	PA	2022/04/13	DRAFT - FOR INTERNAL REVIEW	JC	JC

DESIGN : JC
DRAWN : JC
CHECKED :
APPROVED :

SCALE :
HOR. AS SHOWN
VERT. n/a
DATE : 2022/04/13

NORTH VANCOUVER DISTRICT
MUNICIPAL ENGINEERING DEPARTMENT

SEAL | PEER REVIEW | REF DWG | SURVEY BOOK

MAIN ST. CYCLING LINK
OPTION B + NEW C&G
CYCLE TRACK - CONSISTENT 1.8m WIDTH

DRAWING No.
C-105
SHEET 01 OF 01
NOTE: METRIC DRAWING

File : C:\pcf\d0142721\514100214-003_C-CD-P-105.dwg
Published : Apr 12, 2022