



**AGENDA FOR THE REGULAR MEETING OF COUNCIL TO
COMMENCE AT 6:00 PM, IN THE COUNCIL CHAMBER, CITY
HALL, 141 WEST 14TH STREET, NORTH VANCOUVER, BC, ON
MONDAY, SEPTEMBER 9, 2019**

**MONDAY, SEPTEMBER 9, 2019
COUNCIL MEETING – 6:00 PM**

“Live” Broadcast via City Website www.cnv.org/LiveStreaming
Complete Agenda Package available at www.cnv.org/CouncilMeetings

CALL TO ORDER

APPROVAL OF AGENDA

1. Regular Council Meeting Agenda, September 9, 2019

ADOPTION OF MINUTES

2. Regular Council Meeting Minutes, July 22, 2019

PROCLAMATION

Prostate Cancer Awareness Month – September 2019

PUBLIC INPUT PERIOD

CONSENT AGENDA

Items *3, *4, *5 and *6 are listed in the Consent Agenda and may be considered separately or in one motion.

CORRESPONDENCE

- *3. Board in Brief – Metro Vancouver Regional District, July 26, 2019

BYLAWS – ADOPTION

- *4. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727”
(DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment)
- *5. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729”
(Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street)
- *6. “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734”



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DELEGATION

Reid Shier, Executive Director, The Polygon Gallery – Project Update and Funding Request

Item 7 refers.

CORRESPONDENCE

7. Reid Shier, Executive Director, The Polygon Gallery – Project Update and Funding Request, August 30, 2019

REPORT

8. Joey Restaurant Shipyards Food Primary Liquor Licence Application: #110-125 Victory Ship Way

PRESENTATION

Walk CNV Framework – Deputy Director, Planning and Development, and Transportation Planner

Item 9 refers.

REPORT

9. Walk CNV – Pedestrian Plan Framework

NOTICE OF MOTION

10. Noise Control Bylaw Update – Councillor Valente

PUBLIC CLARIFICATION PERIOD

COUNCIL INQUIRIES

NEW ITEMS OF BUSINESS

NOTICES OF MOTION

CITY CLERK'S RECOMMENDATION

THAT Council recess to the Committee of the Whole, Closed session, pursuant to the *Community Charter*, Sections 90(1)(a) [personal information] and 90(1)(e) [land matter].

REPORT OF THE COMMITTEE OF THE WHOLE (CLOSED SESSION)

ADJOURN



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CALL TO ORDER

APPROVAL OF AGENDA

1. Regular Council Meeting Agenda, September 9, 2019

ADOPTION OF MINUTES

2. Regular Council Meeting Minutes, July 22, 2019

PROCLAMATION

Prostate Cancer Awareness Month – September 2019

PUBLIC INPUT PERIOD

The Public Input Period is addressed in sections 12.20 to 12.28 of “Council Procedure Bylaw, 2015, No. 8500.”

The time allotted for each speaker appearing before Council during the Public Input Period is two minutes, with the number of speakers set at five persons. Speakers’ presentations will be audio and video recorded, as well as live-streamed on the Internet, and will form part of the public record.

To make a submission to Council during the Public Input Period, a person must complete the Public Input Period sign-up sheet at City Hall prior to the Regular Council Meeting. A person who fails to complete, or only partially completes, the Public Input Period sign-up sheet will not be permitted to make a submission to Council during the Public Input Period. The sign-up sheet will be available on the table in the lobby outside the Council Chamber from 5:30 pm until 5:55 pm before a Council meeting.

When appearing before Council, speakers are requested to state their name and address for the record. Speakers may display materials on the document camera at the podium in the Council Chamber and provide written materials to the City Clerk for distribution to Council, only if these materials have been provided to the City Clerk by 4:00 pm on the date of the meeting.

The Public Input Period provides an opportunity for input only, without the expectation of a response from Council, and places the speaker’s concern on record.

Speakers must comply with the General Rules of Conduct set out in section 5.1 of “Council Procedure Bylaw, 2015, No. 8500” and may not speak with respect to items as listed in section 12.25(2).

Speakers are requested not to address matters that refer to items from a concluded Public Hearing/Public Meeting and to Public Hearings, Public Meetings and Committee meetings when those matters are scheduled on the same evening’s agenda and an opportunity for public input is provided when the particular item comes forward for discussion.

Please address the Mayor as “Mayor, followed by his/her surname” or “Your Worship”. Councillors should be addressed as “Councillor, followed by their surname”.



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CONSENT AGENDA

Items *3, *4, *5 and *6 are listed in the Consent Agenda and may be considered separately or in one motion.

RECOMMENDATION:

THAT the recommendations listed within the “Consent Agenda” be approved.

START OF CONSENT AGENDA

CORRESPONDENCE

- *3. Board in Brief, Metro Vancouver Regional District, July 26, 2019
– File: 01-0400-60-0006/2019

Re: Metro Vancouver – Board in Brief

RECOMMENDATION:

THAT the correspondence of Metro Vancouver, dated July 26, 2019, regarding the “Metro Vancouver – Board in Brief”, be received and filed.

BYLAWS – ADOPTION

- *4. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727”
(DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment)

RECOMMENDATION:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727”
(DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment) be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.

- *5. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729”
(Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street)

RECOMMENDATION:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729”
(Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street) be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.



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CONSENT AGENDA – Continued

BYLAWS – ADOPTION – Continued

- *6. “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734”

RECOMMENDATION:

THAT “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734” be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.

END OF CONSENT AGENDA

DELEGATION

Reid Shier, Executive Director, The Polygon Gallery

Re: Project Update and Funding Request

Item 7 refers.

CORRESPONDENCE

7. Reid Shier, Executive Director, The Polygon Gallery, August 30, 2019
– File: 15-7780-20-0002/2019

Re: Project Update and Funding Request

RECOMMENDATION:

THAT the correspondence from Reid Shier, Executive Director, The Polygon Gallery, dated August 30, 2019, regarding the “Project Update and Funding Request”, be received with thanks.



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REPORT

8. Joey Restaurant Shipyards Food Primary Liquor Licence Application:
#110-125 Victory Ship Way – File: 09-4320-50-0002/2019

Report: Manager, Business and Community Partnerships, August 21, 2019

RECOMMENDATION:

PURSUANT to the report of the Manager, Business and Community Partnerships, dated August 21, 2019, entitled “Joey Restaurant Shipyards Food Primary Liquor Licence Application: #110-125 Victory Ship Way”:

THAT the proposed Food Primary Liquor Licence application with a 1:00 am Friday and Saturday closing time for Joey Restaurant Shipyards be approved subject to the following conditions being placed on the Business Licence and/or the Outdoor Dining Permit:

- Signage be posted in conspicuous locations to advise restaurant patrons to be respectful of neighbours when leaving the premises;
- Outdoor patios be closed at 11:00 pm in accordance with existing policy;
- Music on the patios be turned off at 10:00 pm;
- The restaurant management work with the Manager, Shipyards and Waterfront, to agree on a suitable volume level for patio music; and
- Restaurant staff be trained to mitigate potential impacts of patrons leaving the restaurant later in the evening.

Approval granted on the basis that:

- The impact of noise on the community in the immediate vicinity of the establishment and the community in general is expected to be minimal if managed appropriately;
- The proposed extended liquor serving hours are consistent with the vision for The Shipyards as a vibrant waterfront destination;
- The proposed extended liquor serving hours will not result in the service area being operated in a manner that is contrary to the primary purpose of the business; and
- The results of the public input conducted by City staff and the Joey Restaurant Group found a majority of respondents in favour of the proposed liquor serving hours but with some concerns expressed about potential noise from patrons.



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PRESENTATION

Walk CNV Framework – Deputy Director, Planning and Development, and
Transportation Planner

Item 9 refers.

REPORT

9. Walk CNV – Pedestrian Plan Framework – File: 16-8330-09-0001/1

Report: Transportation Planner, August 26, 2019

RECOMMENDATION:

PURSUANT to the report of the Transportation Planner, dated August 26, 2019,
entitled “Walk CNV – Pedestrian Plan Framework”:

THAT the Walk CNV Pedestrian Plan Framework, dated July 2019, be endorsed;

THAT the Walk CNV Vision be carried forward as the pedestrian plan vision
within the upcoming Mobility Strategy;

THAT an internal staff committee be formed to ensure the plan is moved forward;

AND THAT staff report back to Council with annual progress updates.



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NOTICE OF MOTION

10. Noise Control Bylaw Update – File: 10-4900-01-0001/2019

Submitted by Councillor Valente

RECOMMENDATION:

WHEREAS the City of North Vancouver and its Council have a goal of being the “healthiest small city in the world”;

WHEREAS the 2018-2022 Council Strategic Plan includes a vision for a Vibrant City where dynamic public spaces and places provide opportunities for connection and enable residents to engage with their community;

WHEREAS research into the health impacts of noise has advanced since 2009, when the World Health Organization Regional Office for Europe, including a Toronto Public Health report entitled “How Loud is too Loud”, identified the permitted level for outdoor noise during the day was insufficient to prevent health impacts, including cognitive impairment, sleep disturbance mental health and cardiovascular effects;

WHEREAS the City of North Vancouver’s Noise Bylaw was last reviewed and updated in 2011;

WHEREAS people operating vehicles under rapid acceleration and deceleration can have direct impacts on public safety while generating peak noise levels;

AND WHEREAS other Canadian municipalities have taken action on noise by successfully enabling enforcement, implementing new technologies and engaging their communities;

THEREFORE BE IT RESOLVED THAT staff investigate and report back to Council with a plan to:

- Review and recommended amendments to the Noise Control Bylaw, 1987, No. 5819;
- Consider and recommend enforcement options for noise related infractions;
- Consider and provide other mitigation strategies to minimize noise in the community; and
- Pilot and utilize crowd-sourcing and other existing technology solutions to monitor noise across our community, such that problem areas can be identified.



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PUBLIC CLARIFICATION PERIOD

The Public Clarification Period is limited to 10 minutes in total and is an opportunity for the public to ask a question regarding process or clarification on an item on the Regular Council Agenda. The Public Clarification Period concludes after 10 minutes and the Regular Council Meeting reconvenes.

COUNCIL INQUIRIES

NEW ITEMS OF BUSINESS

NOTICES OF MOTION

CITY CLERK'S RECOMMENDATION

THAT Council recess to the Committee of the Whole, Closed session, pursuant to the *Community Charter*, Sections 90(1)(a) [personal information] and 90(1)(e) [land matter].

REPORT OF THE COMMITTEE OF THE WHOLE (CLOSED SESSION)

ADJOURN

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MINUTES OF THE REGULAR MEETING OF COUNCIL HELD IN THE COUNCIL CHAMBER, CITY HALL, 141 WEST 14TH STREET, NORTH VANCOUVER, BC, ON **MONDAY, JULY 22, 2019**

PRESENT

COUNCIL MEMBERS

Mayor L. Buchanan
Councillor H. Back
Councillor D. Bell
Councillor A. Girard
Councillor T. Hu
Councillor J. McIlroy
Councillor T. Valente

STAFF MEMBERS

L. McCarthy, CAO
K. Graham, City Clerk
C. Baird, Deputy City Clerk
J. Peters, Assistant City Clerk
B. Themens, Director, Finance
L. Garber, Deputy Director, Finance
B. Johnson, Revenue Accountant
B. Pearce, Director, Strategic and Corporate Services
R. Skene, Manager, Facilities and Real Estate
S. Antoniali, Section Manager, Real Estate
M. Epp, Director, Planning and Development
S. Galloway, Manager, Planning
E. Macdonald, Planning Technician 2
H. Evans, Community Planner
M. Friesen, Planner 1
G. Penway, Acting Director, Community and Partner Engagement
D. Koep, Chief Librarian

The meeting was called to order at 6:00 pm.

APPROVAL OF AGENDA

Moved by Councillor Bell, seconded by Councillor McIlroy

1. THAT the Regular Agenda of July 22, 2019 be amended by removing the following items:
 - Item #4 – “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8636” (Michael Fournogerakis / Raymond Letkeman Architects Inc., 117-125 West 23rd Street, CD-713);
 - Item #9 – “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8618” (Urban Systems / IMH 151 E Keith Apartments Ltd., 151 East Keith Road, CD-702);
 - Item #10 – “Housing Agreement Bylaw, 2018, No. 8622” (Urban Systems / IMH 151 E Keith Apartments Ltd., 151 East Keith Road, CD-702, Rental Housing Commitments);
 - Item #11 - “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8665” (GWL Realty Advisors / Rositch Hempill Architects, 210-230 East 2nd Street, CD-715);
 - Item #12 – “Housing Agreement Bylaw, 2018, No. 8666” (GWL Realty Advisors / Rositch Hempill Architects, 210-230 East 2nd Street, CD-715, Rental Housing Commitments);

AND THAT the Agenda, as amended, be approved.

CARRIED UNANIMOUSLY

ADOPTION OF MINUTES

Moved by Councillor McIlroy, seconded by Councillor Valente

2. Regular Council Meeting Minutes, July 15, 2019

CARRIED UNANIMOUSLY

Moved by Councillor McIlroy, seconded by Councillor Valente

3. Special Regular Council Meeting Minutes, July 17, 2019

CARRIED UNANIMOUSLY

PROCLAMATION

Mayor Buchanan declared the following proclamation:

Pride Week – July 29 to August 5, 2019

PUBLIC INPUT PERIOD

- Ron Sostad, 231 East 15th Street, North Vancouver, spoke regarding socialism views.
- George Orr, 324 East 14th Street, North Vancouver, spoke regarding his candidacy for the Green Party in the next federal election.
- Connie Smudge (Chris Bolton) and Gary Fluffer Woods, North Shore Pride Alliance, North Vancouver, spoke regarding Pride Week and announced an all-ages event to take place at the Shipyards and a flag raising ceremony at City Hall, on July 30, 2019.
- Steve Tornes, 309 West 14th Street, North Vancouver, spoke in support of the Notice of Motion regarding AAA active transportation infrastructure corridors.

CONSENT AGENDA

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT the recommendations listed within the “Consent Agenda” be approved.

CARRIED UNANIMOUSLY

START OF CONSENT AGENDA

BYLAWS – ADOPTION

- *4. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8636” (Michael Fournogerakis / Raymond Letkeman Architects Inc., 117-125 West 23rd Street, CD-713)

Item 4 was removed from the agenda.

CONSENT AGENDA – Continued

BYLAWS – ADOPTION – Continued

- *5. “Highway Closing Bylaw, 2019, No. 8712” (Closing and removal of highway dedication on portions of road in the 100 and 200 Blocks of Semisch Avenue)

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT “Highway Closing Bylaw, 2019, No. 8712” (Closing and removal of highway dedication on portions of road in the 100 and 200 Blocks of Semisch Avenue) be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.

(CARRIED UNANIMOUSLY)

- *6. “Highways Stopping Up and Closing Bylaw, 1974, No. 4743, Repeal Bylaw, 2019, No. 8731”

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT “Highways Stopping Up and Closing Bylaw, 1974, No. 4743, Repeal Bylaw, 2019, No. 8731” be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.

(CARRIED UNANIMOUSLY)

- *7. “Highways Stopping Up and Closing Bylaw, 1975, No. 4795, Repeal Bylaw, 2019, No. 8732”

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT “Highways Stopping Up and Closing Bylaw, 1975, No. 4795, Repeal Bylaw, 2019, No. 8732” be adopted, signed by the Mayor and City Clerk and affixed with the corporate seal.

(CARRIED UNANIMOUSLY)

END OF CONSENT AGENDA

CORRESPONDENCE

8. Livable Cities Forum, October 28-30, 2019 – File: 01-0400-01-0001/2019

Re: Livable Cities Forum, October 28-30, 2019, Victoria, British Columbia

Moved by Councillor Bell, seconded by Councillor Girard

PURSUANT to the correspondence received July 10, 2019, from the City of Victoria, regarding the “Livable Cities Forum”:

THAT Council members be authorized to attend the Livable Cities Forum, to be held October 28-30, 2019, in Victoria, British Columbia;

Continued...

CORRESPONDENCE – Continued

8. Livable Cities Forum, October 28-30, 2019 – File: 01-0400-01-0001/2019 – Continued
- THAT expenses be paid in accordance with City Policy;
- AND THAT funds be provided from the Conference Education Travel Account.

CARRIED UNANIMOUSLY

BYLAWS – ADOPTION

9. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8618” (Urban Systems / IMH 151 E Keith Apartments Ltd., 151 East Keith Road, CD-702)

Item 9 was removed from the agenda.

10. “Housing Agreement Bylaw, 2018, No. 8622” (Urban Systems / IMH 151 E Keith Apartments Ltd., 151 East Keith Road, CD-702, Rental Housing Commitments)

Item 10 was removed from the agenda.

11. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2018, No. 8665” (GWL Realty Advisors / Rositch Hempill Architects, 210-230 East 2nd Street, CD-715)

Item 11 was removed from the agenda.

12. “Housing Agreement Bylaw, 2018, No. 8666” (GWL Realty Advisors / Rositch Hempill Architects, 210-230 East 2nd Street, CD-715, Rental Housing Commitments)

Item 12 was removed from the agenda.

REPORT

13. 2018-2022 Council Strategic Plan – File: 01-0620-02-0001/1

Report: Director, Strategic and Corporate Services, and Planner, July 12, 2019

Moved by Councillor Bell, seconded by Councillor Girard

PURSUANT to the report of the Director, Strategic and Corporate Services, and Planner, dated July 12, 2019, entitled “2018-2022 Council Strategic Plan”:

THAT Council adopt the 2018-2022 Council Strategic Plan as attached to the report;

AND THAT Council direct staff to use the 2018-2022 Council Strategic Plan to inform and guide future initiatives, projects and plans, including the Corporate Business Plan.

CARRIED UNANIMOUSLY

Moved by Councillor Valente, seconded by Councillor Girard

THAT Items 17 to 21 be brought forward for consideration.

CARRIED UNANIMOUSLY

REPORT

17. Rezoning Application: 2205 St. Andrews Avenue (Morez Design Inc., RT-1)
– File: 08-3360-20-0446/1

Report: Planner, July 10, 2019

Moved by Councillor McIlroy, seconded by Councillor Girard

PURSUANT to the report of the Planner, dated July 10, 2019, entitled “Rezoning Application: 2205 St. Andrews Avenue (Morez Design Inc., RT-1)”:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8728” (Morez Design Inc., 2205 St. Andrews Avenue, RT-1) be considered and the Public Hearing be waived;

AND THAT notification be circulated in accordance with the *Local Government Act*.

CARRIED UNANIMOUSLY

BYLAW – FIRST AND SECOND READINGS

18. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8728” (Morez Design Inc., 2205 St. Andrews Avenue, RT-1)

Moved by Councillor McIlroy, seconded by Councillor Girard

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8728” (Morez Design Inc., 2205 St. Andrews Avenue, RT-1) be given first and second readings.

CARRIED UNANIMOUSLY

REPORT

19. A Bylaw to Repeal Air Pollution Control Bylaw, 1971, No. 4303
– File: 09-3900-01-0001/2019

Report: Manager, Bylaw Services, July 10, 2019

Moved by Councillor McIlroy, seconded by Councillor Valente

PURSUANT to the report of the Manager, Bylaw Services, dated July 10, 2019, entitled “A Bylaw to Repeal Air Pollution Control Bylaw, 1971, No. 4303”:

THAT “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734” be considered.

CARRIED UNANIMOUSLY

BYLAW – FIRST, SECOND AND THIRD READINGS

20. “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734”

Moved by Councillor McIlroy, seconded by Councillor Valente

THAT “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734” be given first and second readings.

CARRIED UNANIMOUSLY

Moved by Councillor McIlroy, seconded by Councillor Valente

THAT “Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734” be given third reading.

CARRIED UNANIMOUSLY

REPORT

21. Library Terrace Enclosure Project – Funding Reallocation – File: 02-0890-20-0003/1

Report: Manager, Facilities and Real Estate, and Chief Librarian, July 12, 2019

Moved by Councillor McIlroy, seconded by Councillor Bell

PURSUANT to the report of the Manager, Facilities and Real Estate, and the Chief Librarian, dated July 12, 2019, entitled “Library Terrace Enclosure Project – Funding Reallocation”:

THAT \$275,000 of existing funding from Harry Jerome Community Recreation Community Centre project be reallocated to fund the Library Terrace Enclosure project;

THAT (Funding Appropriation #1929) an amount of \$275,000 be appropriated from the Civic Amenity Reserve Fund (Harry Jerome Community Recreation Centre Provision) for the purpose of funding the Library Terrace Enclosure project;

THAT should any of the amount remain unexpended as at December 31, 2022, the unexpended balance shall be returned to the credit of the Civic Amenity Reserve Fund;

AND THAT the Harry Jerome Community Recreation Centre Provision be replenished as part of the Revised Financial Plan process in Fall 2019.

CARRIED UNANIMOUSLY

PUBLIC HEARING – 1126 Heywood Street

Moved by Councillor Bell, seconded by Councillor Girard

THAT the meeting recess to the Public Hearing regarding “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729” (Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street).

CARRIED UNANIMOUSLY

The meeting recessed to the Public Hearing at 7:01 pm and reconvened at 7:18 pm.

BYLAWS – THIRD READING

14. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729” (Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street)

Moved by Councillor Valente, seconded by Mayor Buchanan

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729” (Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street) be given third reading.

CARRIED UNANIMOUSLY

15. “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727” (DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment)

Moved by Councillor McIlroy, seconded by Councillor Bell

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727” (DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment) be given third reading.

CARRIED UNANIMOUSLY

MOTION

16. Development Variance Permit No. DVP2019-00003 (230 West Keith Road)
– File: 08-3090-20-0246/1

Moved by Councillor McIlroy, seconded by Councillor Bell

THAT Development Variance Permit No. DVP2019-00003 (230 West Keith Road) be issued to the Board of Education of School District No. 44, in accordance with Section 498 of the *Local Government Act*;

AND THAT the Mayor and City Clerk be authorized to sign and seal Development Variance Permit No. DVP2019-00003, following adoption of “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727” (DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment).

CARRIED UNANIMOUSLY

REPORTS

22. Permissive Tax Exemption Policy Update and Review – File: 05-1970-07-0001/2019

Report: Deputy Director, Finance, July 10, 2019

Moved by Mayor Buchanan, seconded by Councillor Bell

PURSUANT to the report of the Deputy Director, Finance, dated July 10, 2019, entitled “Permissive Tax Exemption Policy Update and Review”:

THAT the Permissive Tax Exemption Policy presented as Attachment #2 be endorsed for one year;

AND THAT staff return to Council with options to limit the long-term financing impacts to the City.

CARRIED UNANIMOUSLY

23. Request to Abandon “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8714” (The Herb Co. / Scott Hamilton, 1717 Lonsdale Avenue, CD-721)
– File: 08-3360-20-0494/1

Report: City Clerk, July 16, 2019

Moved by Councillor McIlroy, seconded by Councillor Valente

PURSUANT to the report of the City Clerk, dated July 16, 2019, entitled “Request to Abandon “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8714” (The Herb Co. / Scott Hamilton, 1717 Lonsdale Avenue, CD-721)”:

THAT “Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8714” (The Herb Co. / Scott Hamilton, 1717 Lonsdale Avenue, CD-721) be abandoned.

CARRIED UNANIMOUSLY

NOTICE OF MOTION

24. Mobility Lanes – File: 16-8480-03-0001/2019

Moved by Councillor Valente, seconded by Councillor McIlroy

WHEREAS the City has long-term, key cycling routes identified in the North Vancouver Bicycle Master Plan;

WHEREAS Council has identified active transportation as a key priority in this term;

WHEREAS the Provincial government recently completed a British Columbia Active Transportation Design Guide to help guide communities in building safe, effective active transportation infrastructure, and highlighted the importance of All Ages and Abilities (AAA) infrastructure, which is important for positive health, climate action and economic growth;

Continued...

NOTICE OF MOTION – Continued

24. Mobility Lanes – File: 16-8480-03-0001/2019 – Continued

AND WHEREAS AAA active transportation infrastructure can be referred to as “mobility lanes” providing protection and separation from people walking and motor vehicle traffic for active modes, like bicycles and other people-powered and electric assist devices;

THEREFORE BE IT RESOLVED that staff review the City portion of the North Vancouver Bicycle Master Plan and identify priority AAA active transportation infrastructure corridors and report back to Council by early Fall with a phased implementation plan and budget implications for each phase.

CARRIED UNANIMOUSLY

PUBLIC CLARIFICATION PERIOD

Mayor Buchanan declared a recess at 8:04 pm for the Public Clarification Period and reconvened the meeting immediately after.

COUNCIL INQUIRIES

25. Traffic Safety Improvements – File: 01-0220-01-0001/2019

Inquiry by Councillor Bell

Councillor Bell inquired of Mayor Buchanan an update regarding Traffic Safety Improvements on East 29th Street.

The CAO advised that an Information Report will be provided to Council.

Mayor Buchanan acknowledged the first 9 months of the new Council's term, thanked Council and staff for all of their work and wished everyone a restful break over summer.

NEW ITEMS OF BUSINESS

Nil.

NOTICES OF MOTION

Nil.

ADJOURN

Moved by Councillor Bell, seconded by Councillor Girard

THAT the meeting adjourn.

CARRIED UNANIMOUSLY

The meeting adjourned at 8:06 pm.

"Certified Correct by the City Clerk"

CITY CLERK



PROCLAMATION

PROSTATE CANCER AWARENESS MONTH

- WHEREAS** prostate cancer is the most common cancer to affect Canadian men and is the third leading cause of death from cancer in men in Canada, with one in seven diagnosed with the disease in his lifetime; and
- WHEREAS** men with a family history of the disease are at a greater risk of developing prostate cancer; and
- WHEREAS** Prostate Cancer Canada recommends that men over 40 get a DRE and PSA test, as the survival rate for prostate cancer can be close to 100 per cent when detected early;
- NOW THEREFORE** I, Linda Buchanan, Mayor of the City of North Vancouver, do hereby proclaim **September 2019** as **PROSTATE CANCER AWARENESS MONTH** in the City of North Vancouver, the traditional territories of the Squamish and Tsleil-Waututh Nations.

So proclaimed on Monday, September 9, 2019

Mayor Linda Buchanan

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For Metro Vancouver meetings on Friday, July 26, 2019

Please note these are not the official minutes. Board in Brief is an informal summary. Material relating to any of the following items is available on request from Metro Vancouver. For more information, please contact Greg.Valou@metrovancover.org or Kelly.Sinowski@metrovancover.org

Metro Vancouver Regional District

E 1.1 Electoral Area A Zoning Bylaw Review – Scope of Work and Engagement Process**APPROVED**

The Board approved the scope of the proposed Electoral Area A Zoning Bylaw Review and authorized staff to proceed with the engagement process as presented. In addition to OCP-related issues, the zoning bylaw will be reviewed to incorporate improvements to language and formatting identified by staff, and other issues identified through the engagement process. Meetings with residents, property owners, and business operators in Howe Sound, Indian Arm/Pitt Lake and Barnston Island in the summer, fall and winter 2019 are the principle engagement methods proposed for this review.

E 1.2 Barnston Island Agricultural Viability Study – Action Plan**ENDORSED**

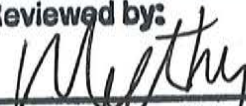
The Board endorsed recommendations and proposed follow up actions to improve and enhance the viability of farming on Barnston Island. Conducting a study to explore ways to improve the long-term viability of agriculture on the island was an action item identified through the development of the OCP.

E 2.1 Appointment of External Auditors**APPROVED**

The Board approved the re-appointment of BDO Canada LLP as external auditors for the fiscal years 2019-2023. Legislation requires that Metro Vancouver's financial statements be audited annually by an external audit firm appointed by the Boards of the respective entities. BDO Canada LLP has been the external auditor for Metro Vancouver for the past five fiscal years. The fixed fee cost for external audit services provided by BDO Canada LLP over the five-year contract period will be \$592,465.00 (exclusive of taxes).

E 3.1 Where Matters: Health and Economic Impacts of Where We Live Final Report**RECEIVED**

The Board received for information a report on the results of the "Where Matters: Health and Economic Impacts of Where We Live" study and an associated Policy Brief. The study findings demonstrate strong associations between high levels of walkability and high levels of park access with better health outcomes. The Board will forward the report and its attachment to member jurisdiction Mayors and Councils for information.

Reviewed by:  CAO



E 3.2 Metro 2050 Engagement Plan

REFERRED

The Board referred the recommendation as presented back to staff to report back to the Board through the Regional Planning Committee with further information. The Board also referred the consideration of holding three public hearings, with at least one south of the Fraser.

The Metro 2050 Engagement Plan provides opportunities for plan signatories, non-signatory stakeholders, First Nations and the public to provide input into the comprehensive update to Metro 2040. The engagement plan is intended to meet the requirements of the Local Government Act and to align with Metro Vancouver's Public Engagement Policy.

E 3.3 Housing Needs Reports – A Regional Approach

RECEIVED

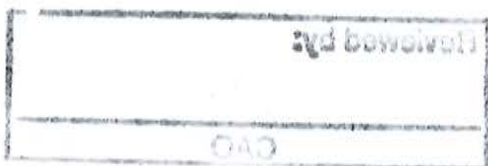
The Board received for information a report on how the Regional Planning Division intends to support member jurisdictions in its completion of Housing Needs Reports, as required by recent updates to provincial legislation. The Housing Needs Reports are intended to strengthen the ability of local governments to understand and respond to the long-term, community-specific housing needs, and to ensure that local policies, plans, and development decisions are prepared based on recent documented data.

E 3.4 2019 Agriculture Awareness Grant Recommendations

APPROVED

The Board awarded a total of \$45,000 in Agriculture Awareness Grants to the following 13 non-profit organizations:

- BC Agriculture in the Classroom Foundation, "Take a Bite of BC" project - \$6,000
- BC Chicken Grower's Association, "Poultry in Motion Educational Mini Barn" project - \$4,000
- Delta Farmland & Wildlife Trust, "Day at the Farm" event - \$2,000
- DRS Earthwise Society, "Tomato Festival" - \$2,000
- FarmFolk CityFolk, "Climate and Food Story Series" - \$4,500
- Growing Chefs Society, "Classroom Gardening and Cooking Program" - \$5,000
- Haney Farmers Market Society, "The Market Goes to the Farm" event - \$500
- Langley Environmental Partners Society, "Langley Eats Local" project - \$4,000
- Maple Ridge Agricultural Advisory Committee, "Booth-in-a-Box" display - \$2,250
- North Shore Neighbourhood House, "Edible Garden Seed Saving Project" - \$5,750
- Public Health Association of BC, "Farm to School BC Learning Circles: Growers to Sowers" - \$3,000
- The Sharing Farm, "10th Annual Garlic Festival" - \$3,000
- Vancouver Urban Farming Society, "8th Annual Urban Farming Forum" - \$3,000



E 4.1 Collaborative Regional Flood Management Strategy**ENDORSED**

The Board endorsed a collaborative approach for the Fraser Basin Council's Lower Mainland Flood Management Strategy between all levels of government in the Lower Mainland and requested that the Fraser Basin Council share the Flood Management Strategy with the Integrated Partnership for Regional Emergency Management (IPREM).

The Board also referred the strategy to Metro Vancouver staff to review Metro Vancouver's potential role under the Lower Mainland Flood Management Strategy.

E 5.1 Boundary Bay Park Association Contribution Agreement**APPROVED**

The Board approved a Contribution Agreement between the Metro Vancouver Regional District and the Boundary Bay Park Association for a one-year term in the amount of \$7,000, commencing January 1, 2020 and ending December 31, 2020. The Boundary Bay Park Association utilizes Metro Vancouver funding to provide a level of coordination for the park association, and to provide capacity to serve the people and communities it reaches through its initiatives.

E 5.2 Burnaby Lake Park Association Contribution Agreement**APPROVED**

The Board approved a Contribution Agreement between the Metro Vancouver Regional District and the Burnaby Lake Park Association for a one-year term in the amount of \$13,000, commencing January 1, 2020 and ending December 31, 2020. The Burnaby Lake Park Association utilizes Metro Vancouver funding to provide a level of coordination for the park association, and to provide capacity to serve the people and communities it reaches through its initiatives.

E 5.3 Colony Farm Park Association Contribution Agreement**APPROVED**

The Board approved the Contribution Agreement between the Metro Vancouver Regional District and the Colony Farm Park Association for a one-year term in the amount of \$5,000, commencing January 1, 2020 and ending December 31, 2020. The Colony Farm Park Association utilizes Metro Vancouver funding to provide a level of coordination for the park association, and to provide capacity to serve the people and communities it reaches through its initiatives.

E 5.4 Derby Reach Brae Island Parks Association Contribution Agreement**APPROVED**

The Board approved the Contribution Agreement between the Metro Vancouver Regional District and the Derby Reach Brae Island Parks Association for a one-year term in the amount of \$15,000, commencing January 1, 2020 and ending December 31, 2020. The primary purpose of these funds is to provide a level of coordination for the park association and to provide capacity to serve the people and communities it reaches through its initiatives.



E 5.5 Minnekhada Park Association Contribution Agreement

APPROVED

The Board approved the Contribution Agreement between the Metro Vancouver Regional District and the Minnekhada Park Association for a one-year term in the amount of \$13,000, commencing January 1, 2020 and ending December 31, 2020. The primary purpose of these funds is to provide a level of coordination for the park association and to provide capacity to serve the people and communities it reaches through its initiatives.

E 6.1 Aligning Climate 2050 with the IPCC Special Report on Global Warming of 1.5°C

ENDORSED

The Board endorsed proposed amendments to the Climate 2050 Strategic Framework to reflect a commitment to a carbon neutral region by 2050, and an interim target of reducing greenhouse gas emissions by 45% from 2010 levels by 2030. Staff were also directed to bring forward a proposed amendment to Metro 2040, the regional growth strategy, to the Metro Vancouver Board for consideration, to incorporate revised greenhouse gas reduction targets (including interim targets).

E 7.1 2019-2022 Board Strategic Plan

APPROVED

The Board approved the 2019-2022 Board Strategic Plan, which will guide the work of staff over the next four years and will assist in communicating the important role of Metro Vancouver in the region among the public, member jurisdictions, government and key stakeholders of Metro Vancouver. Members of the MVRD Board met on April 26-27, 2019 to set strategic directions for the organization over the next four years, within a 30-year planning context.

E 8.1 Metro Vancouver 2019 Appointments to External Agencies – Amendment for Lower Mainland Local Government Association

APPROVED

The Board appointed Director Neil Belenkie as the 2019 Metro Vancouver representative to the Lower Mainland Local Government Association for the remainder of 2019 term. The appointment will ensure that inter-agency relations are sustained and that Metro Vancouver will have continued representation and input on discussions affecting its interests.

G 1.1 City of New Westminster – Metro Vancouver Regional District Security Issuing Bylaw No. 1288, 2019

APPROVED

At the request of the City of New Westminster, the Board approved the adoption of a Security Issuing Bylaw No. 1288, 2019 to authorize a borrowing request in the amount of \$22,145,000 for Construction and Improvements to Civic Infrastructure, Fibre Optic and the Purchase of Land for inclusion the Fall 2019 MFA long term debt issue. The bylaw will be forwarded to the Inspector of Municipalities for Certificate of Approval.



G 1.2 City of Port Coquitlam – Metro Vancouver Regional District Security Issuing Bylaw No. 1289, 2019 **APPROVED**

At the request of the City of Port Coquitlam, the Board adopted a Security Issuing Bylaw No. 1289, 2019 to authorize a borrowing request in the amount of \$52,000,000 for Construction of the Port Coquitlam Community Recreation Complex for inclusion in the Fall 2018 MFA long term debt issue. The bylaw will be forwarded to the Inspector of Municipalities for Certificate of Approval.

G 1.3 Township of Langley – Metro Vancouver Regional District Security Issuing Bylaw No. 1287, 2019 **APPROVED**

At the request of the Township of Langley, the Board approved the adoption of a Security Issuing Bylaw No. 1287, 2019 to authorize a borrowing request in the amount of \$19,950,000 for Construction of various facility capital works and various transportation capital works for inclusion in the Fall 2019 MFA long term debt issue. The bylaw will be forwarded to the Inspector of Municipalities for Certificate of Approval.

H 1 Notice of Motion **DEFEATED**

Director Kim Richter provided the following Notice of Motion on July 9, 2019 for consideration at the next regular MVRD Board meeting:

Procedure Bylaw Amendment

"Whereas Section 9.1 of the MVRD Procedure Bylaw Number 1205, 2014 (the "Bylaw") states that any Director desiring to bring before the Board any new matter, other than a point of order or privilege, shall do so by way of motion;

"And whereas Part 10 of the Bylaw sets out the procedure for reconsidering "a matter";

"And whereas section 9.1 may be interpreted or used to prevent directors from bringing forward motions regarding matters that are related to but separate from "a matter" that has been before the Board;

"And whereas Directors should be free to bring forward to the Board matters that are not subject to Part 10 of the Bylaw;

Therefore Be It Resolved that the MVRD Board request staff to bring forward an amendment to the MVRD Procedure Bylaw Number 1205, 2014 to delete the word "new" in Section 9.1."



I 1 Committee Information Items and Delegation Summaries

RECEIVED

The Board received delegation summaries and information items from Standing Committees.

George Massey Crossing Task Force – June 27, 2019

Delegation Summary:

- **3.1 Roderick V. Louis**

Electoral Area Committee – July 3, 2019

Information Items:

- **5.2 Electoral Area A Building Administration Bylaw – Permit Fees**
This report provides information on proposed revisions to the building permit fee schedule of GVRD Electoral Area A Building Administration Bylaw, No. 1043, 2006, which are part of a series of revisions to be considered by the Electoral Area Committee and MVRD Board as a single bylaw amendment at a later date. Three main areas for review have been identified: bylaw language and regulations, permit fees, and service area boundaries.

Performance and Audit Committee – July 4, 2019

Information Items:

- **5.2 Interim Financial Performance Report – April 2019**
This report provides information on the projected results of 2019 operations generating an estimated surplus of \$15.9 million, approximately 1.9% of the overall Metro Vancouver 2019 budget. This projected surplus would be available in future years to either avoid debt or pay for regional projects.
- **5.3 Capital Program Expenditure Update as at April 30, 2019**
This is the first report for 2019 on the financial performance of the capital program for the four months ending April 30, 2019. Updates on the capital program and its expenditures keep members informed on Metro Vancouver's financial performance and include the actual financial progress of Metro Vancouver's capital expenditures compared to the approved spending limits. Three updates are planned for the fiscal year 2019, which is consistent with the Performance and Audit Committee Terms of Reference.
- **5.4 Investment Position and Returns – January 1 to April 30, 2019**
This report provides investment performance and related information for receipt by the Board. Investment updates are brought to the Board to keep members informed on Metro Vancouver's investments. The Corporate Investment Policy requires that an investment update report be presented to the Committee three times per year. This is the first report for 2019.
- **5.9 Tender/Contract Award Information – March 2019 to May 2019**
This report provides the Board with information regarding contracts handled through the Purchasing and Risk Management Division, with a total anticipated value at or in excess of \$500,000 (exclusive of taxes).

Regional Planning Committee – July 5, 2019

Information Items:

- **5.4 2016 Urban Centre and Frequent Transit Development Area Data Profiles and Dashboard**
This report conveys the 2016 Urban Centre and Frequent Transit Development Area Data (FTDA) Profiles and provides an overview of the new Urban Centre and FTDA Dashboard. The Urban Centre and FTDA Policy Review project began in 2016 as an initiative to consider opportunities to enhance the existing Urban Centre and FTDA policies. Creating new Urban Centre and FTDA Data Profiles using 2016 Census data and the creation of the new online dashboard are components of the Policy Review that will help to inform a potential update to the growth framework and inform discussions related to updating the centre types, criteria, and targets with stakeholders as part of the Policy Review.
- **5.5 Urban Centre and Frequent Transit Development Area Policy Review Update**
This report provides the Regional Planning Committee with a summary of stakeholder engagement conducted in the spring of 2019 as part of the Metro 2040 Urban Centre and Frequent Transit Development Area (FTDA) Policy Review, and the Growth Framework Background Paper.
- **5.6 Metro Vancouver and TransLink Collaboration on Land Value Capture Study**
This report provides a progress update on the collaboration between Metro Vancouver and TransLink exploring land value capture. Metro Vancouver and TransLink staff have developed a plan to collaborate on a land value capture study that will inform the preparation of appropriate policy options for consideration in Metro 2050 and Transport 2050. Land value capture is seen as a potential approach to reinvest a portion of the increased land value derived in part from regional transportation investments back into the regional transportation system or other regional priorities such as affordable rental housing.
- **5.8 Housing Agreements Workshop 2019**
This report provides a summary of the proceedings of the Housing Agreements Workshop held at Metro Vancouver Head Office on April 11, 2019. It proposes some directions for potential next steps. The workshop brought together municipal housing planners and other key partners to share and discuss the issues and emerging best practices for entering into, administering and enforcing Housing Agreements (as per Section 483 of the Local Government Act).
- **5.10 Agricultural Land Use Planning Policy Forum Results**
This report provides information about highlights from the Agricultural Land Use Planning (AgLUP) Policy Forum held on April 3, 2019, and the next steps in moving forward with the Metro 2040 Agriculture Policy Review. The purpose of the forum was to have an introductory dialogue to support a Metro 2040 Agriculture Policy Review and to help establish a provincial AgLUP Policy Lab being led by Dr. David Connell, from University of Northern British Columbia (UNBC).



Regional Parks Committee – July 10, 2019

Information Items:

- **5.7 Regional Parks Land Acquisition and Capital Development Funding Options**
This report outlines the financial implications associated with various options that could advance the implementation of the Regional Parks Land Acquisition 2050 strategy. The report also compares the scope and scale of the MVRD regional parks program to that of other regional district park programs in British Columbia.
- **5.8 Brunette Fraser Regional Greenway - Cumberland Point Potential Habitat Compensation Project**
This report provides information on the potential habitat compensation project at the Brunette Fraser Regional Greenway's Cumberland Point, as a result of the Pattullo Bridge Replacement. Cumberland Point is envisioned as a picnic area and rest point along the Brunette Fraser Greenway. The 0.8-hectare site has room to accommodate habitat compensation works and a picnic area. This project may help advance public access to this site ahead of what can be accommodated in the current capital budget.

Climate Action Committee – July 12, 2019

Information Items:

- **5.3 Metro Vancouver's Climate Actions and Carbon Neutral Progress in 2018**
This report provides an update on Metro Vancouver's climate actions and carbon neutral progress for 2018. It includes a comprehensive list of actions to reduce GHG emissions and adapt to the changing climate in our region.
- **5.4 Strata Energy Advisor Pilot Program Update**
This report provides an update and summary of the results to date of the Strata Energy Advisor Pilot Program. The Pilot Program is on track to achieve the implementation targets, which include 300 registered strata buildings, 88 energy audits, and over 60 building tune-ups or smart building upgrades. The program will run until November 30, 2019 and staff intend to bring a final report to the Climate Action Committee in early 2020 with recommendations on any future iterations of the program.
- **5.5 Update on Metro Vancouver's Grow Green Website**
This report provides an update on the Grow Green website that provides residents throughout the region with guidance on how to grow an eco-friendly lawn or garden, regardless of gardening skill or space constraints. Web-traffic data collected in 2018 indicates Grow Green is growing in popularity (58% increase in web traffic in 2018 compared to 2017; 85% new visitors), with high levels of engagement on social media.

Greater Vancouver Water District**E 1.1 Appointment of External Auditors****APPROVED**

The Board appointed BDO Canada LLP as external auditors for the fiscal years 2019 to 2023. The fixed fee cost for external audit services provided by BDO Canada LLP over the five-year contract period will be \$592,465.00 (exclusive of taxes).

E 2.1 Award of Section 1 of Phase C, Construction Engineering Services for the Kennedy Newton Main and Annacis Main No. 5 South**APPROVED**

The Board approved the award of a contract for Phase C, Construction Engineering Services – Section 1 – Kennedy Newton Main 84th to 72nd Avenue, in the amount up to \$1,520,088 (exclusive of taxes) to the Phase A and B project consultant, CH2M Hill Canada Limited, for the Kennedy Newton Main and Annacis Main No. 5 South; and authorized the Commissioner and the Corporate Officer to amend the contract.

E 2.2 Award of Contract Resulting from Tender No. 19-129: Construction of Kennedy Newton Main 84th to 72nd Avenue**APPROVED**

The Board approved the award of a contract in the amount of \$21,485,800 (exclusive of taxes) to Matcon Civil Constructors Inc. resulting from Tender No. 19-129: Construction of Kennedy Newton Main 84th to 72nd Avenue; and authorized the Commissioner and the Corporate Officer to execute the contract.

I 1 Committee Information Items and Delegation Summaries**RECEIVED**

The Board received an information item from the Water Committee.

Water Committee – July 11, 2019

Information Item:

- **5.2 GVWD Capital Program Expenditure Update to April 30, 2019**

This report provides an update on the financial performance of the capital program ending April 30, 2019. This is the first in a series of three reports on capital expenditures for 2019. The Water District is projecting to be under spent for both ongoing and completed capital projects. It is anticipated that in aggregate, ongoing capital projects will be slightly under spent because the full contingency is not required.



Greater Vancouver Sewage and Drainage District

E 1.1 Appointment of External Auditors

APPROVED

The Board appointed BDO Canada LLP as external auditors for the fiscal years 2019 to 2023. The fixed fee cost for external audit services provided by BDO Canada LLP over the five-year contract period will be \$592,465.00 (exclusive of taxes).

E 2.1 Liquid Waste Services Capital Program Expenditure Update as at April 30, 2019

RECEIVED

The Board received a report on the status of the Liquid Waste Services' capital program for the period ending April 30, 2019.

Liquid Waste Services is projecting to under spend its annual Capital Budget by \$229 million (40%). The variance is primarily due to construction delays with a major project and obtaining third party approvals in a timely manner.

E 2.2 Award of Contract Resulting from Request for Proposal No. 19-011: Annacis Island Wastewater Treatment Plant Trickling Filter Media, Rotary Distributor and Ducting Replacement

APPROVED

The Board approved the award of a contract for an amount of up to \$32,870,400 (exclusive of taxes) to Maple Reinders Constructors Ltd., resulting from Request for Proposal No. 19-011: Annacis Island Wastewater Treatment Plant Trickling Filter Media, Rotary Distributor and Ducting Replacement.

E 2.3 Regional Sewerage Services – Village of Anmore

APPROVED

The Board approved a recommendation directing staff to review the GVS&DD Cost Apportionment Bylaw No. 283, 2014 with respect to how growth charges would be calculated and apportioned to the village of Anmore if it becomes a GVS&DD member to determine if the formula is equitable within the context of the principles of membership within the GVS&DD or, alternatively, whether some adjustments to the bylaw may be appropriate.

E 3.1 Organics and Paid Recyclables Management at Metro Vancouver Transfer Stations**APPROVED**

The Board approved a funding and service model for organics and paid recyclables (including yard trimmings, clean wood, new gypsum and mattresses) at Metro Vancouver transfer stations.

The Board:

- a) approved setting tipping fees for paid recyclables to recover operational costs, except where the risk of illegal dumping or other negative impacts exist, alternate fees structures will be considered;
- b) approved providing municipal organics transfer services upon request and under contract with full cost recovery;
- c) directed staff to initiate procurement for processing services for municipal organics from the North Shore Transfer Station; and
- d) directed staff to develop a business case for the provision of commercial organics transfer services at Metro Vancouver transfer stations and report back on options.

E 3.2 Initiating Procurement for Bottom Ash Beneficial Use**APPROVED**

The Board approved a recommendation directing staff to initiate a procurement process for bottom ash beneficial use. Approximately 42,000 tonnes of bottom ash are produced at the Waste-to-Energy Facility annually. Bottom ash is used beneficially in many jurisdictions, and a range of beneficial uses for the bottom ash are possible. A key requirement is that a beneficial use of the ash will not lead to human health or environmental impacts. Any beneficial use of the bottom ash would require approval of the Ministry of Environment and Climate Change Strategy.

E 3.3 Support for Municipal Jurisdiction to Regulate Single-Use Items**APPROVED**

The Board approved a recommendation resolving to write a letter to the Province of BC and the Union of British Columbia Municipalities in support of municipal jurisdiction to regulate single use items, as it relates to the June 24, 2019 District of West Vancouver Council resolution.

G 1.1 Proposed Amendments to GVS&DD Cost Apportionment Bylaw No. 283, 2014**APPROVED**

The Board approved a recommendation to give first, second and third readings to Greater Vancouver Sewerage and Drainage District Cost Apportionment Amending Bylaw No. 328, 2019, and later passed and finally adopted said bylaw. The bylaw amendments allow for the direct application of Development Cost Charge (DCC) revenues, the allocation of revenue from Tier I and Tier II capital projects, and the establishment of a cost apportionment formula for the purpose of applying growth charges to the University of British Columbia (UBC) to cover their proportionate share of the liquid waste system growth costs within the Vancouver Sewerage Area.



I 1 Committee Information Items and Delegation Summaries

RECEIVED

The Board received delegation summaries and information items from the Zero Waste Committee.

Zero Waste Committee – July 12, 2019

Delegation Summaries:

- 3.1 Nicholas Ponce and Jim Hutchinson, Republic Services

Information Items:

- **5.4 Alternative Fuel and Recyclables Recovery Project Update**
The report provides an update on the scope of a business case for an alternative fuel and recyclables recovery project approved by the Board in March 2019. The business case will focus on processing small vehicle waste, a material that has high potential fuel value, and has characteristics similar to construction and demolition waste. The business case will consider the Coquitlam Landfill, adjacent to the new transfer station, as a potential site for the facility, with the development of the facility subject to all municipal statutory approvals. The project has the potential to result in 70,000 to 85,000 tonnes per year in greenhouse gas emission reductions.
- **5.5 2018 Single-Use Items Waste Composition Study**
This report contains the results of the 2018 single-use items waste composition study, which provides a baseline for the number of single-use items disposed of annually. Common single-use items: retail bags, cups, takeout containers, straws and utensils represent about 2.4% of the overall waste stream and approximately 1.1 billion single-use items disposed each year. Retail bags and takeout containers were more prevalent in multi-family waste and cups; straws and utensils were more prevalent in commercial/institutional waste. Metro Vancouver will continue to monitor single-use items in the years to come to help analyze the impact of programs and policies targeted at single-use item diversion and reduction.
- **5.6 Status of Solid Waste Services Capital Expenditures to April 30, 2019**
The Board received an update on the status of its utilities capital expenditures for the Solid Waste Services Department. Solid Waste Services is projecting to underspend its capital budget by approximately \$342,000 for ongoing and completed projects to April 30, 2019.

Metro Vancouver Housing Corporation

E 1.1 Appointment of External Auditors

APPROVED

The Board appointed BDO Canada LLP as external auditors for the fiscal years 2019 to 2023. The fixed fee cost for external audit services provided by BDO Canada LLP over the five-year contract period will be \$592,465.00 (exclusive of taxes).

THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8727

A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8727” (DA Architects + Planners, 230 West Keith Road, CD-558 Text Amendment)**.
2. Part 11 of Division V: Comprehensive Development Regulations of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by:
 - A. In Section 1100, within the designation “CD-558 Comprehensive Development 558 Zone”, deleting Page 2 of Schedule 86 in its entirety and replacing it with the Page 2 of Schedule 86 attached to this bylaw.

READ a first time on the 8th day of July, 2019.

READ a second time on the 8th day of July, 2019.

READ a third time on the 2nd day of July, 2019.

ADOPTED on the <> day of <>, 2019.

MAYOR

CITY CLERK

CD-558 Amendment Bylaw No. 7935	Schedule 86	Page 2 of 2
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721 CHESTERFIELD AVENUE

DENSITY RECORD

The following table records the density assignment for 721 Chesterfield Avenue (The “Donor Site”), which is zoned CD-558. As per section (B1) of the CD-558 Zone, the maximum density within the CD-558 Zone (Site A) is 1.0 times the lot area (14,979.69 sq. m. / 161,240 sq. ft.), excluding buildings listed in the City’s Heritage Registry. This table maintains a record of any residual density on Site “A” (Donor Site) transferred from Site “A” to a Recipient site through a rezoning process.

The following table lists the total density approved for Site A, density transfers approved and the remaining residual density potential on Site A.

Donor Site	Total CD-558 Site A Permitted Gross Floor Area (1.0 FSR)	On-site Built Gross Floor Area	Residual Site A Density
721 Chesterfield Avenue/ Queen Mary School (Site A)	14,979.69 sq. m. (161,240 sq. ft.)	262.4 sq. m. (2,824 sq. ft.)	14,717.3 sq. m. (158,416 sq. ft.)

RECORD OF DENSITY TRANSFER

Recipient Sites Approved Through Density Transfers	Transferred Gross Floor Area	Zoning Amendment Bylaw #	Remaining Residual Density on Site A (Donor Site)
721 Chesterfield Avenue (Site B)	554.45 sq. m. (5,968 sq. ft.)	7935	14,162.8 sq. m. (152,447 sq. ft.)
721 Chesterfield Avenue (Site C)	693.52 sq. m. (7,465 sq. ft.)	7935	13,469.3 sq. m. (144,982 sq. ft.)

THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8729

A Bylaw to amend “Zoning Bylaw, 1995, No. 6700”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as “**Zoning Bylaw, 1995, No. 6700, Amendment Bylaw, 2019, No. 8729**” (Behrouz Aghai / Bill Curtis & Associates Design Ltd., 1126 Heywood Street).
2. Division VI: Zoning Map of Document “A” of “Zoning Bylaw, 1995, No. 6700” is hereby amended by reclassifying the following lots as henceforth being transferred, added to and forming part of the RS-2 (One-Unit Residential 2) Zone:

Lots	Block	D.L.	Plan	
3	8	272	18329	from RS-1

READ a first time on the 8th day of July, 2019.

READ a second time on the 8th day of July, 2019.

READ a third time on the 22nd day of July, 2019.

RECEIVED APPROVAL FROM THE
MINISTRY OF TRANSPORTATION ON THE
14th DAY OF August, 2019.

ADOPTED on the <> day of <>, 2019.

MAYOR

CITY CLERK

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THE CORPORATION OF THE CITY OF NORTH VANCOUVER

BYLAW NO. 8734

A Bylaw to repeal “Air Pollution Control Bylaw, 1971, No. 4303”

The Council of The Corporation of the City of North Vancouver, in open meeting assembled, enacts as follows:

1. This Bylaw shall be known and cited for all purposes as **“Air Pollution Control Bylaw, 1971, No. 4303, Repeal Bylaw, 2019, No. 8734”**.
2. “Air Pollution Control Bylaw, 1971, No. 4303” and amendments thereto, are hereby repealed.

READ a first time on the 22nd day of July, 2019.

READ a second time on the 22nd day of July, 2019.

READ a third time on the 22nd day of July, 2019.

ADOPTED on the <> day of <>, 2019.

MAYOR

CITY CLERK

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August 30, 2019

Dear Mayor and Council,

On behalf of its Board of Directors, The Polygon Gallery gratefully requests the opportunity to appear as a delegation to City of North Vancouver Council on September 9, 2019.

Our presentation is in follow-up to our last appearance at Council, on September 24, 2018, when our request for an increased contribution was deferred. As part of its decision to defer, Council asked that The Polygon first direct our request to the North Vancouver Recreation and Culture Commission (the NVRCC).

Over the course of 2019 we have worked closely with staff at the NVRCC, who ultimately recommended an increase to The Polygon Gallery's annual level of support. Unfortunately, on June 26, 2019 this recommendation was not supported by a vote of the Commission.

The Polygon's presentation on September 9th is, therefore, to update the new Council on our work with the NVRCC since last year, and to once again request an increase to the City of North Vancouver's annual contribution to The Polygon Gallery.

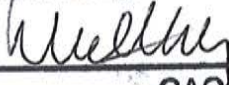
Our delegation will be brief, and will cover the following topics:

- a summary of our recent work with the NVRCC
- an overview of The Polygon's annual operating budget
- a discussion of some comparable funding levels for other institutions, and
- a renewed request for operational support

Since beginning our work on this visionary project, we have successfully raised \$20 million for the construction of The Polygon Gallery, seeded an Endowment Fund to fund operations on a yearly basis, and completed the construction project on time and under budget. We are grateful for the City of North Vancouver's strong support and partnership in making The Polygon Gallery a reality, and we are now working hard to ensure it is well positioned for future sustainability. This is a vision that has been decades in the making.

Sincerely,

Reid Shier

<p>Reviewed by:</p>  <p>CAO</p>
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 Division Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**
COMMUNITY & PARTNER ENGAGEMENT DEPARTMENT

REPORT

To: Mayor Linda Buchanan and Members of Council

From: L. R. Orr, Manager, Business and Community Partnerships

Subject: JOEY RESTAURANT SHIPYARDS FOOD PRIMARY LIQUOR LICENCE
APPLICATION: #110-125 Victory Ship Way

Date: August 21, 2019 File No: 09-4320-50-0002/2019

The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.

RECOMMENDATION:

PURSUANT to the report of the Manager, Business and Community Partnerships, dated August 21, 2019, entitled "Joey Restaurant Shipyards Food Primary Liquor Licence Application: #110-125 Victory Ship Way":

THAT the proposed Food Primary Liquor Licence application with a 1:00 am Friday and Saturday closing time for Joey Restaurant Shipyards be approved subject to the following conditions being placed on the Business Licence and/or the Outdoor Dining Permit:

- Signage be posted in conspicuous locations to advise restaurant patrons to be respectful of neighbours when leaving the premises;
- Outdoor patios be closed at 11:00 pm in accordance with existing policy;
- Music on the patios be turned off at 10:00 pm;
- The restaurant management work with Manager, Shipyards and Waterfront to agree on a suitable volume level for patio music; and
- Restaurant staff be trained to mitigate potential impacts of patrons leaving the restaurant later in the evening.

Approval granted on the basis that:

- The impact of noise on the community in the immediate vicinity of the establishment and the community in general is expected to be minimal if managed appropriately;
- The proposed extended liquor serving hours are consistent with the vision for The Shipyards as a vibrant waterfront destination;
- The proposed extended liquor serving hours will not result in the service area being operated in a manner that is contrary to the primary purpose of the business; and
- The results of the public input conducted by City staff and the Joey Restaurant Group found a majority of respondents in favour of the proposed liquor serving hours but with some concerns expressed about potential noise from patrons.

ATTACHMENTS:

1. Background provided by Joey Restaurant Group (document #[1814482](#))

PURPOSE:

The purpose of this report is to seek Council input on a Food Primary Liquor Licence application received from the new Joey Restaurant Shipyards that proposes extended hours. Staff originally reported to Council on February 25, 2019 with this request but the staff report was withdrawn based on Joey's request to conduct a public information meeting with area residents.

BACKGROUND:

Under the current provincial liquor licensing regulations, restaurants can apply for a Food Primary Liquor Licence to serve liquor up to midnight without the requirement for input from local government. For liquor service beyond midnight, provincial licensing regulations provide the opportunity for local government input (local government also has the option to opt out of providing input if there are no issues anticipated). If the local government chooses to provide comments, they are required to seek public input and provide a Council resolution supporting or denying the request.

The new Joey Restaurant Shipyards has applied to the Liquor and Cannabis Regulation Branch (LCRB) for a Food Primary Liquor Licence with extended hours until 1:00 am on Fridays and Saturdays. Liquor service for Sunday to Thursday will be to midnight.

The location of the Joey Restaurant is at the south-east corner of Shipyards Common in The Shipyards at the corner of South and East Wallace Mews (see subject site identified by the red box in the photo below).



The two-story restaurant is located below the new Executive Hotel and across East Wallace Mews from the Cascade at the Pier condo building. The restaurant will have two south-facing patios on the main and second levels.

Public Input

In accordance with the provincial government recommendation for public consultation on liquor licence applications and changes, staff posted signage on the south and east facing construction fencing, adjacent to the Joey Restaurant location on Lot 5, from January 3 to 21, 2019 to seek public input regarding the proposed extended hours. Fourteen emails in opposition and five e-mails of support were received regarding the proposed extended hours.

Those opposed to the extended hours cited the potential impact on area residents with noisy patrons leaving the restaurant late at night. The new Executive Hotel owners provided one of the letters of support, but indicated that the extended hours should not apply to the outdoor patios. For Council's information, in accordance with City policy, patios must close at 11:00 pm. Staff are also working with Joey Restaurant Shipyards to include design elements to help reduce noise from the two patios affecting the hotel and residential building to the east.

Some of the emails received from the City consultation suggested consideration of this application to be postponed until the Cascade building was occupied so new owners could have an opportunity to comment. As of the date of this report the Cascade building is nearly fully occupied.

Following the initial City consultation, Joey Restaurant Group proposed to conduct their own public information meeting with area residents. Attachment #1 provides a summary of that meeting which occurred in the Pipe Shop from 5:30pm - 7:30pm on June 18, 2019. Joey Restaurant Group sent out 722 invitations to adjacent residential buildings in postal walk LC0077 shown in green on the map below.



The meeting was attended by 120 people. Seventy-one letters were signed by residents in support of the proposed extended hours. The primary concerns raised by meeting attendees consisted largely of potential noise from patrons leaving the restaurant and noise emanating from the patios. The applicants believe these issues will be addressed by the restaurant operational plan, good neighbour agreement and steps taken to mitigate potential noise coming from the restaurant. The attached report also highlights the additional sound mitigation measures that will be instituted to reduce sound from the patios and that restaurant staff will be assigned to manage the exit of customers to ensure they are respectful of the neighbours when leaving the restaurant.

Joey Group staff and the City's Manager, Shipyards and Waterfront who attended the open house, confirm that there were very few attendees who outright opposed the extended serving hours and those who had initial concerns were satisfied with the measures that Joey Group proposed to address those concerns.

DISCUSSION:

As Council is aware, in addition to restaurants, shops and a hotel, The Shipyards is an active event space that will become more animated over time, with the appointment of a Central Waterfront Team that will be actively programming the space year round. Events in The Shipyards are currently governed by the Shipbuilders Square Events and Rental Policy, which requires events to finish by 10:00 pm Sunday to Thursday and 11:00 pm Friday and Saturday. Exemptions to the closing time can be granted by Council on a case by case basis.

There are a number of restaurants in the vicinity with Food Primary Liquor Licenses that have provincial approval to serve alcohol past midnight, including:

- Pier 7 (application in process to serve to 1:00 am Friday and Saturday)
- Tap and Barrel Shipyards (to 1:00 am Friday, Saturday and holidays)
- Cheshire Cheese (to 1:00 am Monday - Saturday)
- Colosseum Pizza (to 2:00 am Monday - Saturday)
- Raglan's Bistro (to 1:00 am Monday - Sunday)

- Colosseum Pizza (to 2:00 am Monday - Saturday)
- Raglan's Bistro (to 1:00 am Monday - Sunday)
- Gusto Di Quattro (to 2:00 am Monday - Sunday)
- Anatoli Souvlaki (to 1:00 am Monday - Saturday)
- Finch and Barley (to 1:00 am Monday - Saturday)
- Mythos (to 2:00 am Monday - Saturday)
- Boston Pizza (to 1:00 am Monday - Saturday)
- Yahachi Sushi (to 1:00 am Monday - Saturday)

Staff are not aware of any neighbourhood concerns about the later serving hours at these restaurants.

It should be noted that under current Liquor Licensing regulations, patrons are allowed to stay 30 minutes after last call, which occurs just before the approved end serving time (e.g. 1:30 am if the licence allows service to 1:00 am.)

Staff believe the proposed extended hours of liquor service is reasonable and consistent with the vision for The Shipyards as a vibrant waterfront destination. The proposed extended hours of service is also consistent with a number of area restaurants. Although the results of the public consultation revealed general support for the extended hours some concerns were raised by participants regarding the potential for noise emanating from the restaurant and patios and from patrons leaving the establishment at night. As noted in this report, the applicant has proposed a number of extraordinary measures to help address these concerns. If Council is supportive of this application but would like more assurances that the necessary steps are being taken to reduce the potential for issues, approval could be granted with specific conditions applied to the Business Licence or Outdoor Dining Permit.

There are a number of options for Council's consideration.

OPTIONS:

1. Approve the extended hours with conditions – Recommended

Although staff believe the applicant is committed to taking sufficient measures to address concerns raised by area residents, Council could approve the extended hours of service with conditions to further help reduce the potential for issues. For this option the proposed motion would be:

THAT the proposed Food Primary Liquor Licence application with a 1:00 am Friday and Saturday closing time for Joey Restaurant Shipyards be approved, subject to the following conditions being placed on the Business Licence and/or the Outdoor Dining Permit:

- *Signage be posted in conspicuous locations to advise restaurant patrons to be respectful of neighbours when leaving the premises;*
- *Outdoor patios be closed at 11:00 pm in accordance with existing policy;*

- *Music on the patios be turned off at 10:00 pm;*
- *The restaurant management will work with The Manager, Shipyards and Waterfront to agree on a suitable volume level for patio music and*
- *Restaurant staff be trained to mitigate potential impacts of patrons leaving the restaurant later in the evening.*

Note: Staff have authority under the Business License Bylaw to introduce additional conditions on the Business License should issues arise at a later date. The Liquor and Cannabis Regulation Branch (LCRB) also monitor complaints about business operations for businesses with Provincial Liquor Licenses and can take actions if warranted.

2. Approve extended liquor service to 1:00 am Friday and Saturday – **Not Recommended**

If Council is satisfied with the results of the public input and feel the applicant has proposed sufficient measures to address potential issues identified by area residents, Council may wish to approve the extended hours of service outright.

If this is the preferred option, the proposed motion would be:

THAT the Food Primary Liquor Licence application with a proposed 1:00 am Friday and Saturday closing time for Joey Restaurant Shipyards at #110-125 Victory Ship Way be approved on the basis that:

- *The impact of noise on the community in the immediate vicinity of the establishment and the community in general is expected to be minimal given the operational measures proposed by the Joey Group to address potential noise and neighbourhood impact;*
- *The proposed extended liquor serving hours are consistent with the vision for The Shipyards as a vibrant waterfront destination;*
- *The proposed extended liquor serving hours will not result in the service area being operated in a manner that is contrary to the primary purpose of the business; and*
- *The results of the public input conducted by City staff and the Joey Restaurant Group found a majority of respondents in favour of the proposed liquor serving hours.*

Note: If this option is chosen these specific bullet points are required in the Council resolution by LCRB.

3. Deny the extended hours at this time – **Not Recommended**

Staff do not recommend this option as the long-standing vision approved by Council for The Shipyards is a vibrant waterfront destination and gathering place for people with a mix of retail, restaurants, accommodation (hotel and residential) and events. There are also a number of food primary restaurants in the vicinity that have

operated with a later serving time for a number of years with little to no impact on the neighborhood.

However, should Council prefer this option, the proposed motion would be:

THAT the Food Primary Liquor Licence application with a proposed 1:00 am Friday and Saturday closing time for Joey Restaurant Shipyards be denied at this time, given the potential negative impact of noise from patrons on adjacent residential uses.

FINANCIAL IMPLICATIONS:

There are no financial implications resulting from this report.

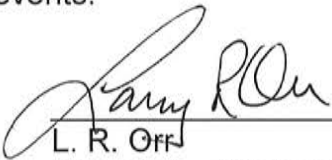
INTER-DEPARTMENTAL IMPLICATIONS:

This report and recommendation has been reviewed and is supported by the Manager, Shipyards and Waterfront. The Manager, Shipyards and Waterfront attended the Joey neighbourhood meeting and reported that the majority of those in attendance were supportive of the extended hours once they were aware of the measures the Joey Group would take to reduce potential neighbourhood impact.

STRATEGIC PLAN AND/OR POLICY IMPLICATIONS:

Later serving hours for Joey Shipyards restaurant will not only contribute to the success of the business itself but also the vibrancy of The Shipyards. This is consistent with the Vibrant and Prosperous City Priorities in the 2018-2022 Strategic Plan. Additionally, the long-standing Vision approved by Council for The Shipyards is a vibrant waterfront destination and gathering place for people with a mix of retail, restaurants, accommodation (hotel and residential) and events.

RESPECTFULLY SUBMITTED:



L. R. Off
Manager, Business and Community
Partnerships

LRO/jb



JOEY RESTAURANTS

City of North Vancouver
Attn: Larry R. Orr
Manager, Business and Community Partnerships
141 W 14th Street,
North Vancouver, BC
V7M 1H9

June 21, 2019

Re: Application for extended operating hours, JOEY Shipyards
110 – 125 Victory Ship Way, North Vancouver, BC, V7L 0G5

Dear Mr. Orr,

This report is to address the concerns that have been raised by the city regarding our request to extend JOEY Shipyards hours from 12:00am to 1:00am on Friday and Saturday evenings. We truly appreciate the opportunity to work through these concerns with the city and to work together on solutions to appease all stakeholders.

In this document we have included;

- A. The findings from the Resident Open-House that we hosted on June 18th.**
- B. The steps we have taken to mitigate noise and any disruption to the residents.**
- C. Review of restaurants open till 1am on Fridays and Saturdays in Lower Lonsdale.**

It is our intent that the below information will address the city's concerns for us operating until 1:00am on Friday and Saturday evenings and that the city staff will be able to support our application.

Being a great neighbour is of the utmost importance to us and I hope that the information that we have included here proves this commitment.

Best Regards,


Jeff Fuller
C.E.O.
JOEY Restaurant Group

A. The findings from the Resident Open-House that we hosted on June 18th.

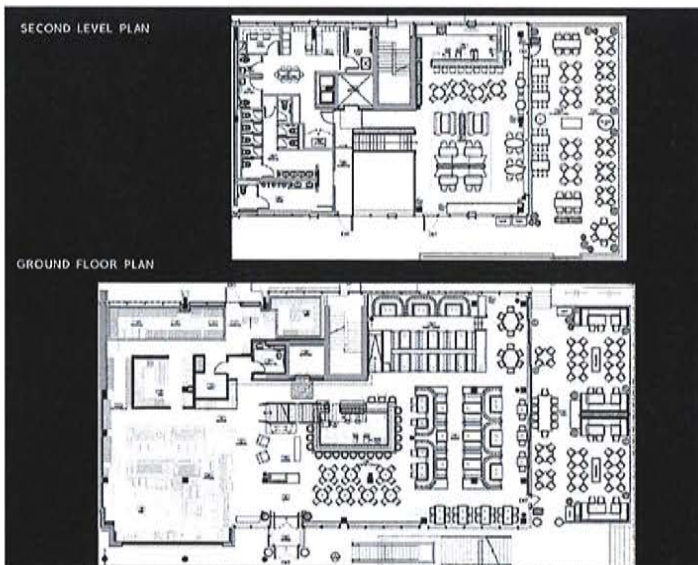
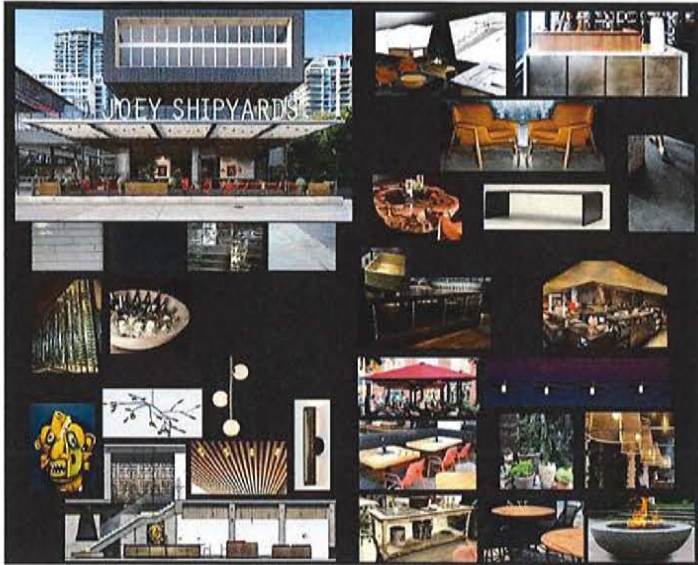
On Tuesday, June 18th from 5:30-7:30pm JOEY Restaurants hosted an Open-House for our neighbours to discuss the plans for our restaurant and to address any concerns that our neighbours had regarding noise and our operations. We sent out invitations to the event to all units in the V7L – LC0077 postal walk. Of the 722 invites that were sent out, we received 140 residents RSVP's to the open house with 120 guests attending.


During the Open-House, we walked residents through the overall restaurant design and key features, the steps we have taken to mitigate any noise, our great neighbour agreement and the menu offerings of the restaurant.

We had an overwhelmingly amount of support from the neighbours with over 80 letters signed by residents in favour of us extending our hours from 12:00am to 1:00am on Friday and Saturday evenings. *These letters are attached to this document.* The concerns that were brought up by the residents were addressed by our operational plan, good neighbour agreement and the steps we have taken to mitigate any noise coming from our restaurants. *We have included the boards in Appendix.* These concerns included;

- Guests being loud while leaving the restaurant. They are currently experiencing this as a result of the other restaurants in the neighbourhood and walking past the residences. Concerns were also raised about the noise from people coming off the seabus and walking through. To help address this concern with our customers, we are committed to having a Team Member who will manage the exit of our guests to ensure that they are respecting our neighbours when leaving the restaurant.
- As more businesses open in Lower Lonsdale, residents have a concern that there will not be parking available for guests that visit them. We have confirmed that our development has additional parking available for our patrons.
- The biggest concern that was addressed was not the noise coming from our operations but rather the noise levels that are currently coming from the Seaspan yard. Many residents voiced their frustration regarding the noise level and the work that is going on through the evening hours.

Materials from the Neighbour Open-House on June 18th, 2019





JOEY SHIPYARDS

GREAT NEIGHBOUR AGREEMENT

At JOEY we are committed to being a great neighbour and community partner. This commitment comes with specific actions and policies that each JOEY partner must uphold with respect to the residential/commercial dynamic of our neighbourhood relationships, including:

- Our mission is to ensure that our neighbors feel respected and are pleased to have us in the community. We promise to operate within our rights as a restaurant and follow all bylaws laid forth by the city.
- Ensuring that noise emissions from our restaurant do not disturb the surrounding community;
 - Music played at our restaurant is no louder than the decibel level approved by the city for restaurant operations.
 - Music will remain off when not in use.
- Scheduling deliveries only within times outlined by city bylaws.
- Ensuring guests are not smoking or loitering outside of our entrances.
- Assigning a Team Member to ensure all of our guests are respectful of our environment and neighbours on a nightly basis.
- A commitment to listen to our neighbours' feedback and responding to their feedback within 24 hours.

If at any time a member of the public feels that JOEY is not meeting these standards, please email joeyshipyards@joeyrestaurants.com so that we can address any concerns immediately.

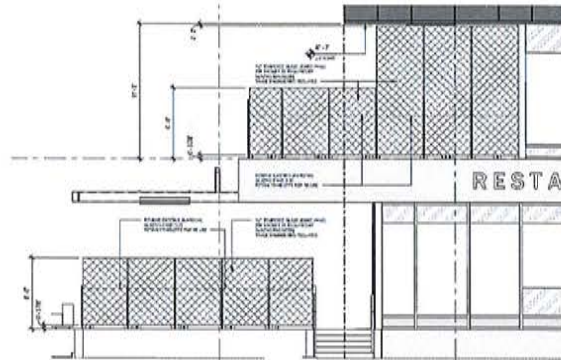
B. The steps we have taken to mitigate noise and any disruption to the residents.

To ensure that noise emissions from our restaurant do not disturb the surrounding community, we are committed to the following;

○ **Glazing (glass wall) increased in height on the patios:**

This has been reviewed and recommended by an acoustical consultant to help reduce the noise levels from our patio to other buildings.

- LVL1 increase east glazing to 6'
- LVL2 have 3 full height panels with 6' height on the rest



○ **Acoustical treatments:**

We will be putting mineral wool around the level 2 soffit per the acoustical consultant recommendation. Further, speakers will be hung on vibration isolators per the request of the acoustical consultant.

○ **Music volumes:**

Music played at our restaurant will be no louder than the decibel level approved by the city for restaurant operations.

○ **Speaker quantity:**

We increased the number of speakers inside to ensure that we can have adequate sound coverage without needing to increase the volume. This has also proven to have an impact on overall ambient volume as people do not need to try and talk over the music like they would with more of a loudspeaker system.

○ **Auto sound system shutoff:**

We have added the ability to program a shutoff so that the outside speakers are always off when intended to be.

Further to the steps we have taken above to address noise emissions, we are also committed to the following operational practices to ensure that our neighbours are not negatively impacted by our restaurant;

- Always adhering to bylaws laid forth by the city.
- Scheduling deliveries only within times outlined by city bylaws.
- Ensuring guests are not smoking or loitering outside of our entrances.
- Assigning a Team Member to ensure all of our guests are respectful of our environment and neighbours on a nightly basis.
- A commitment to listen to our neighbours' feedback and responding to their feedback within 24 hours.

C. Review of restaurants open till 1am on Friday and Saturday in Lower Lonsdale.

In reviewing hours of operations of restaurants in the vicinity of JOEY Shipyards we identified the following businesses to be open until 1:00am on Friday and Saturday evenings;

- Tap & Barrel
- Raglan's Bistro
- The District Brasserie
- Boston Pizza

Screen shot of the hours of operation are below.

It is our position that not being able to stay open until 1:00am on Friday and Saturday evenings puts us at a disadvantage against competitive restaurants.

Tap & Barrel

[Website](#) [Directions](#) [Save](#)

4.1 ★★★★★ 1,707 Google reviews

\$\$ · Restaurant

Contemporary pub offering Pacific Northwest fare, craft brews & a sprawling patio with scenic views.

Address: 8 Lonsdale Ave, North Vancouver, BC V7L 0B2

Hours:

Thursday	11a.m.–12a.m.
Friday	11a.m.–1a.m.
Saturday	10a.m.–1a.m.
Sunday	10a.m.–12a.m.
Monday	11a.m.–12a.m.
Tuesday	11a.m.–12a.m.
Wednesday	11a.m.–12a.m.

Raglan's Bistro

[Website](#) [Directions](#) [Save](#)

4.2 ★★★★★ 276 Google reviews

\$\$ · Restaurant · 3.9 km

Informal hangout with a tiki vibe, cocktails & menu of comfort classics nachos.

Address: 15 Lonsdale Ave, North Vancouver, BC V7M 2E4

Hours:

Thursday	3p.m.–12a.m.
Friday	12p.m.–1a.m.
Saturday	10a.m.–1a.m.
Sunday	10a.m.–12a.m.
Monday	4:30p.m.–12a.m.
Tuesday	4:30p.m.–12a.m.
Wednesday	3p.m.–12a.m.

The District Brasserie

[Website](#) [Directions](#) [Save](#)

3.6 ★★★★★ 297 Google reviews

\$\$ · European restaurant · 3.9 km

Intimate, wood-paneled eatery with a patio, offering rare Belgian European fare.

Address: 13 Lonsdale Ave, North Vancouver, BC V7M 2E4

Hours:

Thursday	3p.m.–1a.m.
Friday	12p.m.–1a.m.
Saturday	10a.m.–1a.m.
Sunday	10a.m.–12a.m.
Monday	3–11p.m.
Tuesday	3–11p.m.
Wednesday	3–11p.m.

Boston Pizza

[Website](#) [Directions](#) [Save](#)

3.7 ★★★★★ 297 Google reviews

\$\$ · Family restaurant

Address: 88 Chesterfield Ave, North Vancouver, BC V7M 0B3

Hours:

Thursday	11a.m.–12a.m.
Friday	11a.m.–1a.m.
Saturday	11a.m.–1a.m.
Sunday	11a.m.–12a.m.
Monday	11a.m.–12a.m.
Tuesday	11a.m.–12a.m.
Wednesday	11a.m.–12a.m.

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Walk CNV Framework

Presented September 9, 2019
Planning & Development



COUNCIL'S VISION AND PRIORITIES

A City for People 

A Liveable City 

A Vibrant City 

A Connected City 

A Prosperous City 



Vision

“Walking will become the preferred way to move around the City of North Vancouver, thanks to a strong culture of health and wellness and a commitment to great design, comfort, accessibility and safety.”

How We Got Here





Current State of Walking

11% walking mode share

Actions to encourage more walking:

- Improve intersection safety
- Complete missing sidewalks and paths
- Calm street environments
- More lighting

Walk CNV Action Plan

Improve and Enhance the Pedestrian Experience

Make Walking Safe and Comfortable

Increase Awareness of the Benefits of Walking

Inform and Guide Future Planning

Improve & Enhance the Pedestrian Experience

- Expand placemaking
- Reduce crossing barriers
- Develop streetscape standards
- Deliver more pedestrian amenities
- Wayfinding strategy
- Integrate nature and parks



Make Walking Safe and Comfortable

- Reduce speeds
- Enhance pedestrian lighting
- Data monitoring program
- Support education and enforcement
- Ensure accessible detours, bus stops



Increase Awareness of the Benefits of Walking

- Celebrate new infrastructure
- Work with partners and researchers to raise awareness of benefits and address barriers
- Enhance the Safe and Active School Travel Program



Inform and Guide Future Planning

- Use age, gender and accessibility lenses
- Initiate a Walk CNV monitoring plan
- Engage children, youth and seniors
- Measure health outcomes
- Secure land through redevelopment



Next Steps




- Inter-departmental staff committee
 - Prioritisation
 - Implementation of action
 - Future projects
 - Annual reporting
- Mobility Strategy



A photograph of two women walking across a crosswalk on a paved road. The woman on the left is wearing a dark purple puffer jacket, glasses, and pink sneakers. The woman on the right is wearing a light pink puffer jacket and dark pants. They are walking towards the camera. In the background, there is a grassy area, a blue building, and a yellow and black striped pole. A green rectangular box is overlaid on the left side of the image, containing the text "Thank you." in white.

Thank you.



 Division Manager	 Director	 CAO
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The Corporation of **THE CITY OF NORTH VANCOUVER**
PLANNING & DEVELOPMENT DEPARTMENT

REPORT

To: Mayor Linda Buchanan and Members of Council

From: Daniel Watson, Transportation Planner

Subject: WALK CNV – PEDESTRIAN PLAN FRAMEWORK

Date: August 26th, 2019 File No: 16-8330-09-0001/1

The following is a suggested recommendation only. Refer to Council Minutes for adopted resolution.

RECOMMENDATION:

PURSUANT to the report of the Transportation Planner, dated August 26th, 2019, entitled "Walk CNV – Pedestrian Plan Framework":

THAT the Walk CNV Pedestrian Plan Framework, dated July 2019, be endorsed;

THAT the Walk CNV Vision be carried forward as the pedestrian plan vision within the upcoming Mobility Strategy;

THAT an internal staff committee be struck to ensure the plan is moved forward;

AND THAT staff report back to Council with annual progress updates.

ATTACHMENTS:

1. Walk CNV – Pedestrian Plan Framework, dated July 2019 (Document #1801195)
2. Walk CNV – The Current State of Walking in the City of North Vancouver, dated November 2017 (Document #1801194)

PURPOSE

This report was prepared to seek Council's endorsement of the Walk CNV - Pedestrian Plan Framework.

BACKGROUND

Walking is the most common form of transportation, as every trip begins and ends on foot. The Walk CNV - Pedestrian Plan Framework (Walk CNV) is a strategy that directs the City towards increasing the walking mode share.

The previous Pedestrian Plan was a chapter of the Long-Term Transportation Plan (2008) that focused on three areas: Pedestrian Areas & Generators, Pedestrian Treatments and Greenways. Walk CNV builds upon work in the former plan and advances new ideas based on emerging best practices. These new ideas will be further refined in the City's forthcoming update to the Long-Term Transportation Plan known as the Mobility Strategy, which will be integrated with new policy work on environmental sustainability and community well-being, and includes supportive design tools. Walk CNV also looks at walking conditions such as barriers and motivations, pedestrian behaviours and preferences, safety, encouragement and education, while establishing connections to health and the sense of place. Walk CNV provides guidance for the upcoming Mobility Strategy as well as near-term actions to be implemented over the next two years.

DISCUSSION

Process

The development of Walk CNV was an iterative process that included multiple touchpoints with the community and stakeholders and refinement to the policy content and actions. Some of the specific tasks completed through this process included:

- A review of the existing pedestrian related infrastructure and policies;
- A review and inventory of existing infrastructure including sidewalks, curb ramps/let downs, signalized crossings, special crosswalks and grade separated crossings;
- A safety review (collision data analysis for collisions that involved pedestrians);
- A review of City demographic data, such as age and population growth trends; and
- A research review into the relationship between walking and health.

Based on the comments received from the public through the initial consultation, and a technical review, a report entitled "Walk CNV: The Current State of Walking in the City of North Vancouver" was prepared (Attachment #2).

Based on the technical report, the Steering Committee drafted strategies and actions to take to the public in the second round of consultation and staff review. The draft strategies and actions were also taken before Council for discussion in March 2018, where Council directed staff to prepare a Pedestrian Plan for Council Consideration.

Framework

The decision in 2018 to proceed with an update to the City's *Long-Term Transportation Plan* (2008) altered the scope of the pedestrian plan. The Walk CNV Pedestrian Plan was re-envisioned as a framework and a near-term implementation guide. This Pedestrian Plan Framework will be further refined and incorporated into the forthcoming Mobility Strategy, which will take an integrated look at all modes of transportation.

The draft Walk CNV Pedestrian Plan Framework (Attachment #1) provides a concise and well-informed outline of the current state of walking in the City and the actions the City can take to increase the walking mode share while improving pedestrian safety, comfort and enjoyment. Highlights from the Framework are outlined below.

Vision

A vision statement was developed to describe the broad aspirations for the future of walking in the City. The vision statement builds on the commitments outlined in a number of the City's overarching plans and strategies, including the Long Term Transportation Plan (LTTP) and Official Community Plan (OCP). The vision states that:

Walking will become the preferred way to move around the City of North Vancouver, thanks to a strong culture of health and wellness and a commitment to great design, comfort, accessibility and safety.

Actions

Walk CNV builds on the goals & objectives included in the OCP, LTTP, Parks and Greenways Strategic Plan and the Social Plan. Walk CNV includes four action areas, which, when combined, deliver a comprehensive approach to improving the walking mode share in the City of North Vancouver:

- Improve and Enhance the Pedestrian Experience;
- Make Walking Safe and Comfortable;
- Increase Awareness of the Benefits of Walking; and
- Inform and Guide Future Planning.

Implementation

Walk CNV contains both near-term and long-term actions. The near-term actions have been included in a Framework document as an action plan to guide staff in improving walking conditions in the City.

Following endorsement an inter-departmental internal staff committee will be struck. This committee will prioritise the actions in the framework and develop cost estimations. Projects based on the prioritised actions will then be put forwards in subsequent project plans for council consideration.

Community Engagement

The development of Walk CNV included two rounds of public engagement, which elicited over 1,300 comments through a range of tools and tactics. These included online surveys and community events, consultation with Council advisory bodies, and group meetings with Sutherland Secondary School students, the Seniors Coalition and the Lionsview Seniors Planning Society. The process was overseen by a Steering Committee, which included representatives from Communications, Planning & Development, Engineering, Parks and Environment, Finance, GIS and Vancouver Coastal Health.

FINANCIAL IMPLICATIONS

Following endorsement, an inter-departmental staff committee will be struck, this committee will prioritise the actions identified in the Walk CNV Pedestrian Plan Framework. Actions that can be incorporated into ongoing procedures and practices will be implemented. Cost estimates for actions requiring additional funding will be developed and brought for Council's consideration in future Project Plans.

The long-term actions that have been identified will be considered further in the forthcoming Mobility Strategy.

Staff will continue to seek improved pedestrian amenities and infrastructure through development projects and apply for matching senior government funding for both ongoing and new actions proposed in the project plan.

INTER-DEPARTMENTAL IMPLICATIONS

Key internal stakeholders will play an integral role in the implementation of the near-term actions, monitoring and reporting to Council on an annual basis. These include Engineering, Parks & Environment, Community & Partner Engagement and Strategic & Corporate Services.

CORPORATE PLAN AND/OR POLICY IMPLICATIONS

Walk CNV has been developed in accordance with the OCP goals:

- GOAL 1.3: Enhance the distinctive sense of place and livability of the City through high quality design and maintenance of urban form.
- GOAL 1.4: Enhance quality of life through the provision of amenities.
- GOAL 2.1 Prioritize walking, cycling, transit and goods movement over single-occupancy vehicles.
- GOAL 2.2 Integrate Land Use and Transportation Planning to reduce the need for car travel.
- GOAL 2.3 Support a safe, accessible, resilient, and affordable transportation system.
- GOAL 3.1: Enhance well-being and quality of life for all community members.
- GOAL 3.5: Support the independence and well-being of older City residents.
- GOAL 4.3: Engage the community to promote more sustainable behaviours.

RESPECTFULLY SUBMITTED:



Daniel Watson, MSc (Eng),
Transportation Planner

DW:eb:rf



PEDESTRIAN PLAN FRAMEWORK



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Prepared by the City of North Vancouver with support from Urban Systems Ltd.
The Walk CNV Framework was endorsed by the City of North Vancouver in July, 2019.

Cities across the globe are looking for solutions to make transportation options healthy, accessible and equitable.

In spite of the new options that come with automation and micro-mobility, there is no easier and fairer way to move around than walking – especially when cities do their part in making sure the conditions are safe, comfortable and enjoyable.

Purpose

The purpose of Walk CNV is to increase transportation choices by establishing strategies and actions that encourage walking. Walk CNV builds off policy directions outlined in the Official Community Plan (OCP), Long-Term Transportation Plan and the City’s newly adopted emissions reduction target of net zero by 2050. Through the development of Walk CNV the City is working to reduce automobile dependence and greenhouse gas (GHG) emissions, increase physical activity to improve public health outcomes, increase accessibility and social connections, and reduce transportation infrastructure demands.

Our Framework

The Walk CNV framework provides a high-level vision for walking in the City of North Vancouver. It compiles an investigation into the benefits of walking and best practices for walking infrastructure, as applied to the unique demographic and geographic characteristics of our city. Together, these findings provide guidance on increasing walking mode share and helping achieve our vision of becoming Canada’s healthiest small city.

The Walk CNV framework will be used to set interim guidance for the development of capital projects and priority areas for investment and further study. Longer-term Walk CNV policy directions will live within the upcoming Mobility Strategy set to replace the City’s 2008 Long-term Transportation Plan.



Policy Context and Vision

Relationship to the OCP

The Official Community Plan (OCP) provides a long-term vision and direction for the development of the City, expressed through a series of Community Directions related to land use, transportation, parks and greenways, recreation, economic development, and the natural environment.



Each Community Direction has a list of Goals and Objectives through which the City will manage future planning and development.

Goal 1.1 in the OCP is to “Develop a compact, complete community that meets the needs of its diverse residents and businesses” walking is a key part of delivering this complete community since all trips begin or end on foot.

Walk CNV is also linked many of the OCP’s other Community Directions but has the strongest relationship with the Goals and Objectives outlined under Transportation, Mobility & Access:

- GOAL 2.1:** Prioritize walking, cycling, transit and goods movement over single-occupancy vehicles
- GOAL 2.2:** Integrate Land Use and Transportation Planning to reduce the need for car travel
- GOAL 2.3:** Support a safe, accessible, resilient, and affordable transportation system

Walk CNV will inform the forthcoming OCP implementation strategies for Mobility, Environment, and Community Well-Being. Together, these will provide longer-term guidance to help us meet our OCP goals and emissions reduction targets, and will include setting mode share targets for walking. As part of this work, the City will be revising our guidelines for street design, and the knowledge gained from Walk CNV will provide guidance to deliver a walkable community.

The Mobility Strategy in particular will further the vision and actions developed through Walk CNV. The following vision statement describes the broad aspirations for the future of walking in the city, and builds on the commitments outlined in the City’s overarching plans and strategies.



OUR VISION

// Walking will become the preferred way to move around the City of North Vancouver, thanks to a strong culture of health and wellness and a commitment to great design, comfort, accessibility and safety. //

Benefits of Walking

An increase in the number of trips made by walking helps to promote a more balanced transportation system that encourages healthy and active living, creates a more livable community, and offers more cost-effective and efficient solutions in community infrastructure investments.

Economic

Promoting walking can contribute to the development of a healthy and diverse local economy in North Vancouver. A city designed to support walking can encourage more residents to walk to local businesses, instead of driving to services further away in adjacent communities. Additionally, a walk-friendly atmosphere can attract more visitors to neighbourhoods, who will in turn be patrons of local services and amenities. Walking can reduce transportation costs for a household, and the City, since walking infrastructure comes at a lower cost than road infrastructure.

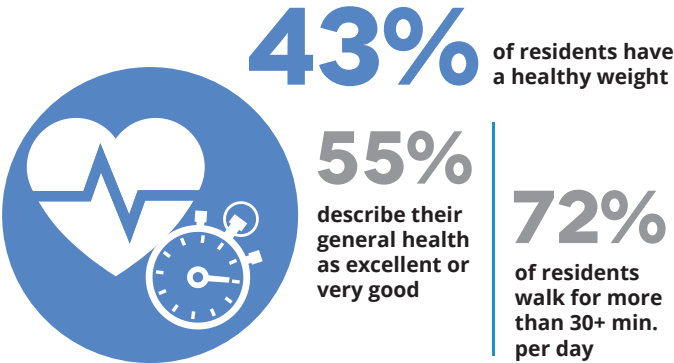


Societal

A high level of walking in a community is viewed as a good indicator of both sustainability and livability. Walking creates opportunities for face-to-face interactions with members of the community and builds trust, respect, understanding and a sense of co-operation amongst members of the community. These social interactions have been shown to diminish when traffic levels increase and walking infrastructure decreases. These social connections are found to be particularly important for both children and seniors.

Environmental

Walking has numerous environmental benefits, such as reducing the number of motor vehicle trips, traffic congestion, and air pollution, in turn reducing GHG emissions for everyone. Land use is the single biggest determinant of how much carbon we will emit because it determines our proximity to services and amenities. In a city designed for walking, many of our consumption-heavy habits can become obsolete, by removing vehicle trips all together, as opposed to switching to different fuel types. Walking helps to reduce GHG emissions by limiting the use of personal automobiles and walking itself has a low environmental impact, as the act of walking generates virtually no GHG emissions or air pollution, and minimal noise and light pollution.



Health

Research has shown time and again the importance of physical activity on an individual's health and the relationship of activity levels to land use planning. Regular physical activity, even at a moderate intensity, reduces the risk of early death and numerous chronic diseases, many of which are costly to treat for society. Physical activity has been shown to improve psychological well-being and strengthen community bonds by growing participation in community projects and increasing trust in neighbours.

Safety

The key to successful walking environments is that they are made safe, useful, comfortable and interesting. Walkable environments make the presence of people walking more visible and commonplace, resulting in reduced risk of collisions. Streets that are designed for slower vehicle speeds feel safer for people walking. Research suggests that the places with the highest levels of people walking are also the safest places to walk, this is known as the "safety-in-numbers" principle.



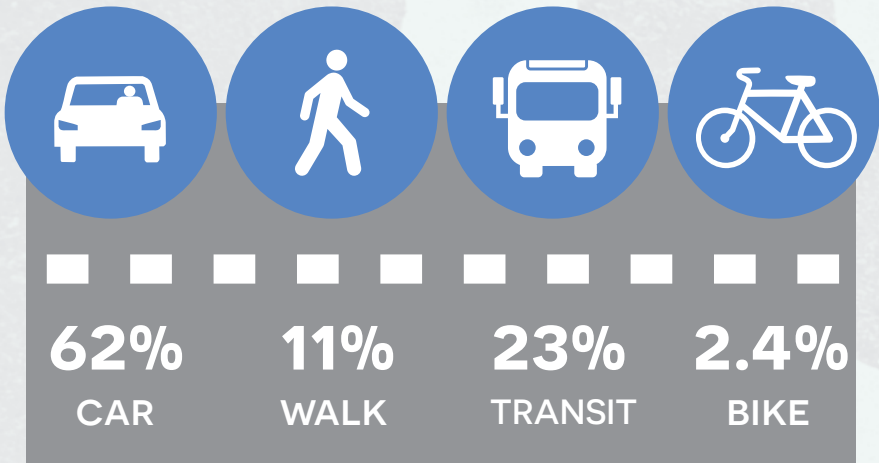
More details on the benefits of walking can be found in the Walk CNV discussion paper "The Current State of Walking in the City of North Vancouver" found at www.cnv.org/walk.

Walking in the City Today

Understanding the existing conditions for walking in the city today sets the context for the actions outlined in the Walk CNV Framework. This section is a summary of the information presented in the Walk CNV supporting document titled “The Current State of Walking in the City of North Vancouver,” which can be accessed at cnv.org/walk. The information below provides an overview of the land use and demographic trends, and the existing conditions for walking today.

MODE SHARE

Data from the 2016 Census (commuting trips only)



63%
OF ALL WALKING
TRIPS ARE UNDER
1KM

YOUTH AND SENIORS WALK MOST

Walking trips are highest among individuals aged 5 to 19, as 26% of trips taken by this age group are made by walking. Walking levels decline over the age of 20, with a slight increase among the 30 to 39 age group, and among those 80 years of age or over.



COLLISIONS

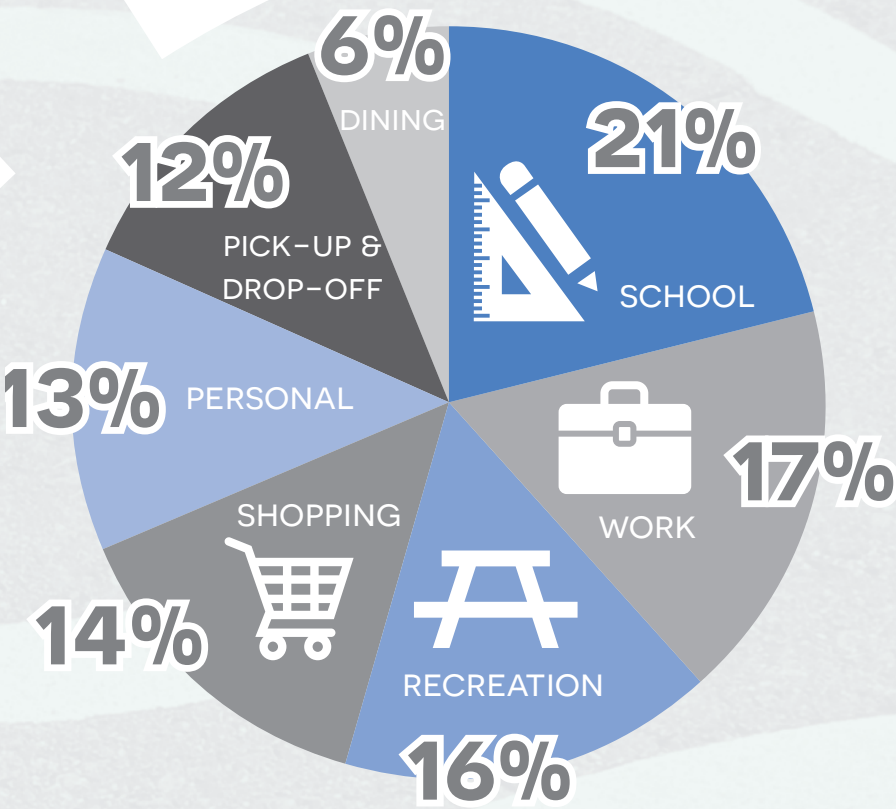
33
Recent data shows an average of 33-36 pedestrian collisions each year in the City.

56%
Over half of collisions take place during the winter, from November to February.

ZERO FATALITIES OR SERIOUS INJURIES
is our goal

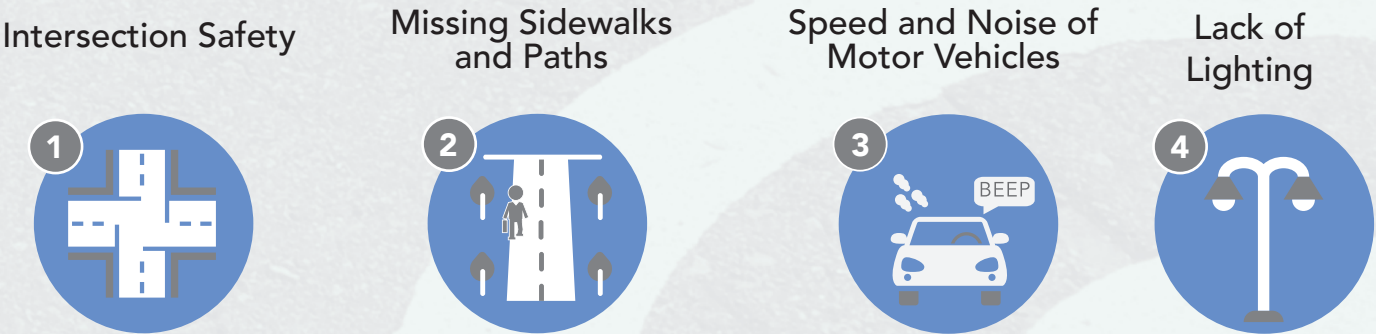


Why Do People Walk?



What We Heard

“WHAT ISSUES PREVENT YOU FROM WALKING?”



“WHAT CITY ACTIONS WOULD ENCOURAGE YOU TO WALK MORE?”



Actions

The framework for Walk CNV consists of four themes, each with a series of actions to enhance and improve the walking environment. Developed through community engagement and analysis, the actions address a variety of identified strengths, opportunities, challenges and concerns with walking-related infrastructure, policies, standards and support programs. The implementation of these strategies and actions will help achieve the Walk CNV vision.

Improve and Enhance the Pedestrian Experience

Make Walking Safe and Comfortable

Increase Awareness of the Benefits of Walking

Inform and Guide Future Planning



Improve and Enhance the Pedestrian Experience

NETWORK SCALE ACTIONS: Network connectivity is important for providing a safe and comfortable walking trip. The existing network of streets, greenways and trails provides a strong walking network which can be built upon to provide additional connections between key destinations throughout the City.

- 1

Complete an inventory of sidewalk quality, prioritize updates and upgrade sidewalks
- 2

Develop and provide a high-quality pedestrian network that connects destinations
- 3

Reduce walking barriers across creeks, ravines, highways and rail corridors
- 4

Develop experiential street character guidelines
- 5

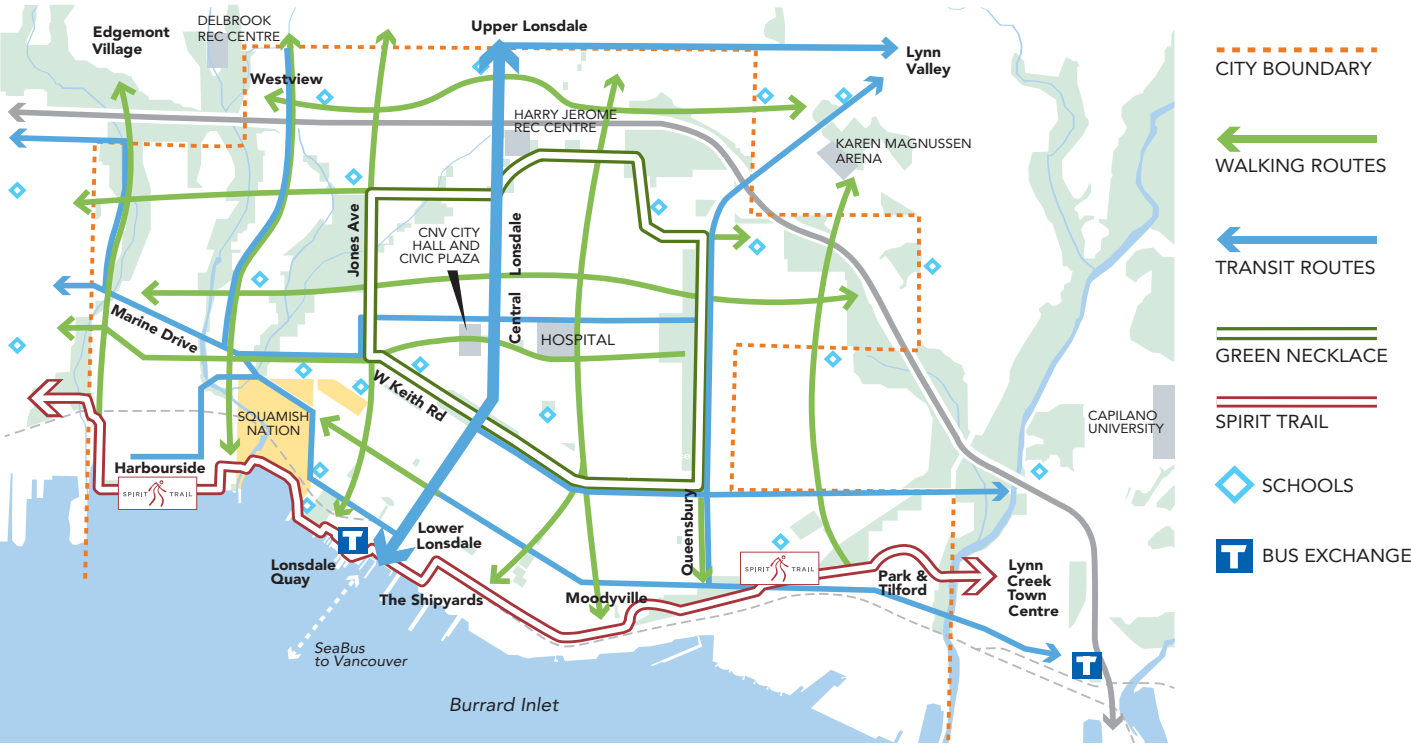
Develop a public awareness campaign to inform residents about sidewalk snow and ice clearing requirements
- 6

Develop streetscape standards for different street types
- 7

Review and establish maximum controlled crossing spacing standards and guidelines for multi-lane arterials

EMERGING PEDESTRIAN NETWORK

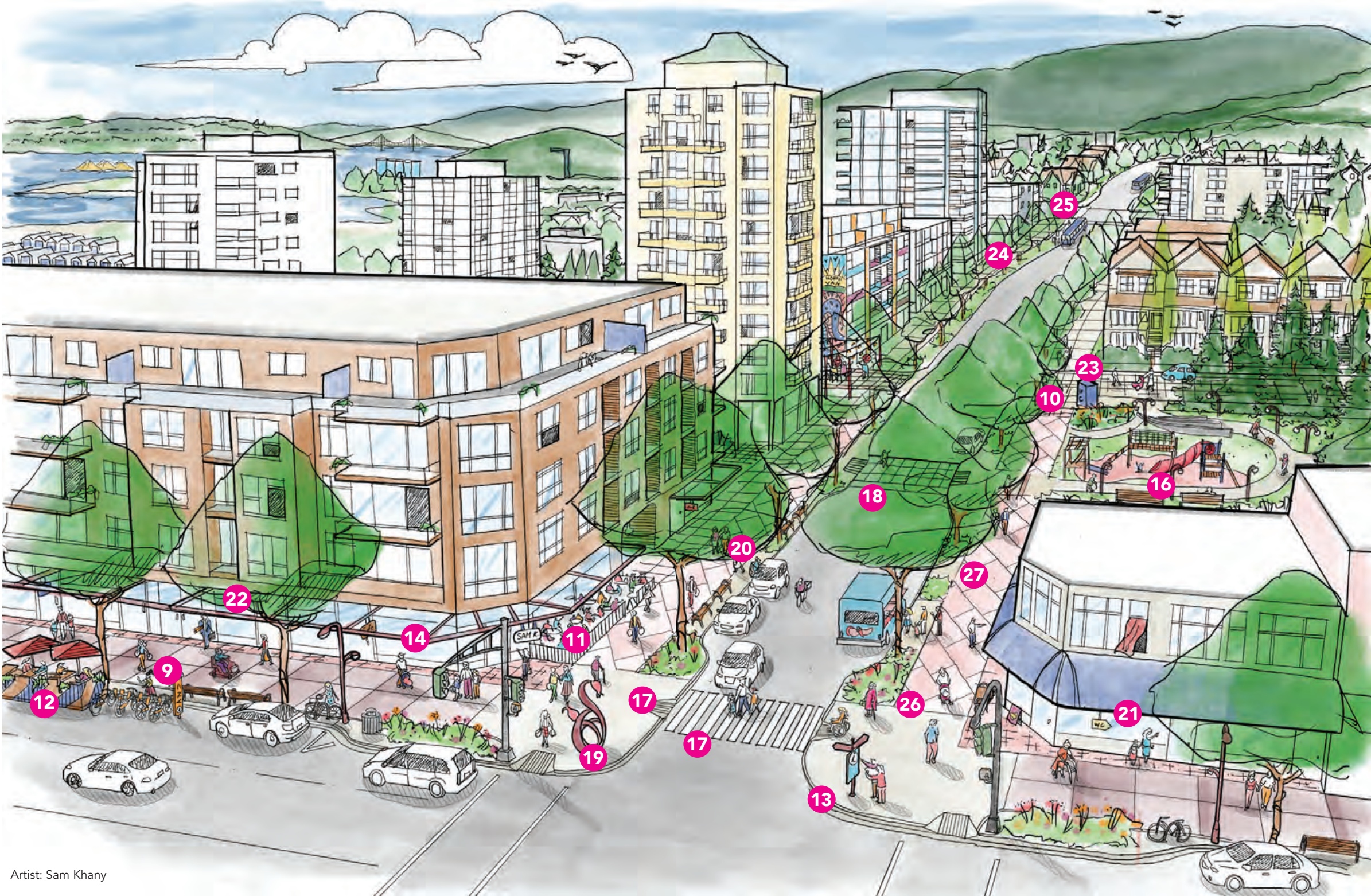
This conceptual pedestrian network illustrates what a network of higher quality walking routes could look like. The intent is to provide walking corridors with a higher standard of amenities including pedestrian level lighting, benches at frequent intervals, street trees and improved road crossings. This network connects major destinations both in the City and in the District of North Vancouver, including recreation centres, schools, commercial districts, parks dense residential neighbourhoods. The network would be a starting place on which to focus pedestrian improvements and will be further developed in the Mobility Strategy.



Improve and Enhance the Pedestrian Experience

DESIGN ACTIONS: These actions focus on enhancements to make public spaces more inviting, safe and attractive for all people walking to move around. Streets are some of our most vital and extensive public spaces, which makes thoughtful upgrades to our sidewalks, pathways, parks, open spaces, civic buildings and other facilities especially impactful.

- 9 Provide pedestrian amenities and features that make the pedestrian network inviting
- 10 Provide public washrooms in parks and plazas, and along streets
- 11 Expand the City's existing Parklet and Patio Programs
- 12 Formalize the PLAY CNV program as part of the City's placemaking initiative, to make streets more interesting and appealing for pedestrians
- 13 Develop and implement a pedestrian wayfinding strategy
- 14 Make building frontages inviting and interesting
- 15 Develop and enhance mid-block connections and cut-throughs
- 16 Integrate parks into the pedestrian network by enhancing pathways with wayfinding and pedestrian amenities



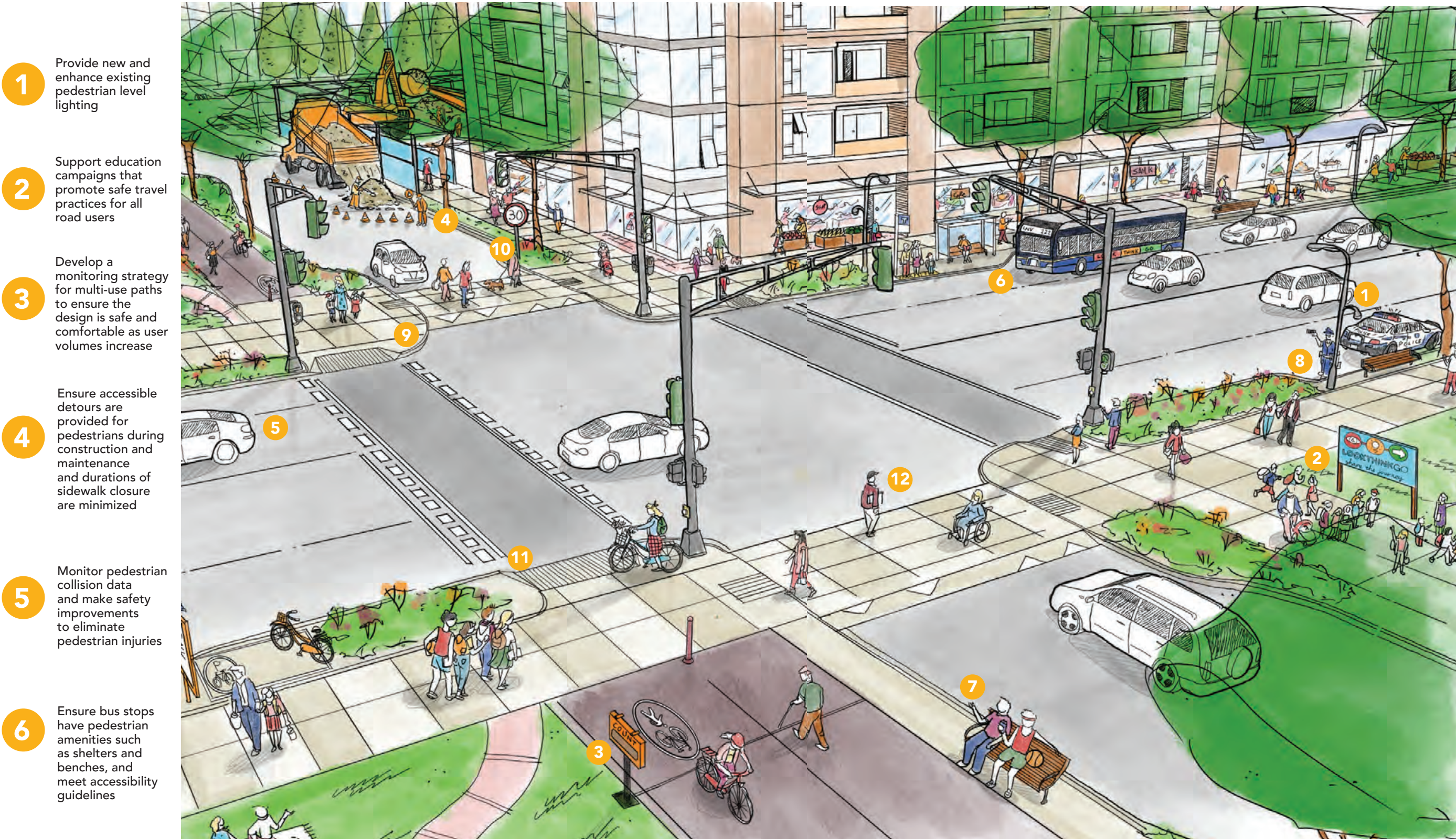
Artist: Sam Khany

- 17 Reduce pedestrian road-crossing distances
- 18 Identify additional pedestrian road crossing locations where warranted
- 19 Provide public art in pedestrian spaces.
- 20 Investigate the integration of curbside management (parking, loading etc) with walking
- 21 Identify ways to improve access to washrooms in commercial buildings
- 22 Require continuous sidewalk weather protection wherever possible
- 23 Develop guidelines to create pedestrian-oriented streets and laneways
- 24 Eliminate gaps in the sidewalk networks
- 25 Eliminate missing curb letdowns
- 26 Update policy for accessible travel on sidewalks
- 27 Provide street trees on all streets

Make Walking Safe and Comfortable

Safety, both real and perceived, is an important factor influencing whether people choose to walk. People walking are considered ‘vulnerable road users’ as they are often subject to greater severity of injury when involved in a collision. Traffic safety and accessibility, particularly at intersections, was identified through the Walk CNV survey as a key barrier preventing people from walking more often.

No matter the extent of infrastructure, if people do not feel safe using it, they will see this as a barrier to walking and may opt for their vehicle. Given this, the City is committed to work towards eliminating all pedestrian fatalities and serious injuries. The following actions deal with safety, comfort and accessibility for everyone.



Artist: Sam Khany

- 1 Provide new and enhance existing pedestrian level lighting
- 2 Support education campaigns that promote safe travel practices for all road users
- 3 Develop a monitoring strategy for multi-use paths to ensure the design is safe and comfortable as user volumes increase
- 4 Ensure accessible detours are provided for pedestrians during construction and maintenance and durations of sidewalk closure are minimized
- 5 Monitor pedestrian collision data and make safety improvements to eliminate pedestrian injuries
- 6 Ensure bus stops have pedestrian amenities such as shelters and benches, and meet accessibility guidelines

- 7 Apply Crime Prevention Through Environmental Design (CPTED) principles and best practices when designing and updating pedestrian facilities
- 8 Work with the RCMP to enforce vehicular speed limits and encourage safe driving behaviour
- 9 Support existing programs to improve neighbourhood safety for pedestrians
- 10 Reduce speeds on local and collector streets through a combination of road design and speed limits
- 11 Work with other North Shore jurisdictions to adopt the City's design guidelines for pedestrian crossings
- 12 Monitor crossing times and signal phasing at intersections

Increase Awareness of the Benefits of Walking

In addition to providing walking infrastructure, actions such as increasing awareness, providing better maps and signage and educating residents on the benefits of walking can help to encourage more trips by foot. Education and encouragement initiatives include providing information to the public on the benefits of walking and hosting events to promote walking and active transportation. These are important and cost-effective measures to enable residents to feel safer and more comfortable walking.

- 1 Celebrate existing and newly completed projects to raise awareness of walking infrastructure
- 2 Support events led by partners that raise awareness of walking
- 3 Develop policy to enable increased walking knowledge among people in new developments



- 4 Enhance the Safe and Active School Travel Program
- 5 Share information about existing pedestrian infrastructure and trip planning
- 6 Engage partners who represent specific demographic groups in our community, and work with them to address barriers around walking
- 7 Work with partners and researchers to develop and deliver informative materials outlining the benefits of walking



Inform and Guide Future Planning

There are a number of key considerations that can be embedded into the City's planning practice in order to create more walkable environments. Design principles that consider all users are important in the early stages of project development, whether delivered by the City, a developer, or partner agencies. Finally, a monitoring strategy can be developed to evaluate the outcomes and ensure we are contributing to the Walk CNV vision and the Official Community Plan goals.

- 1 Work closely with other agencies to ensure pedestrian connections across jurisdictional borders are well integrated
- 2 Secure land through redevelopment to provide increased space for pedestrian needs
- 3 Design projects using age, gender and accessibility lenses
- 4 Align projects with development and grant funding
- 5 Develop and initiate a WalkCNV monitoring plan that includes both statistical and qualitative data on walking
- 6 Engage children, youth and seniors in project design
- 7 Measure health outcomes as we deliver an improved pedestrian infrastructure



Our Future: A People-First City

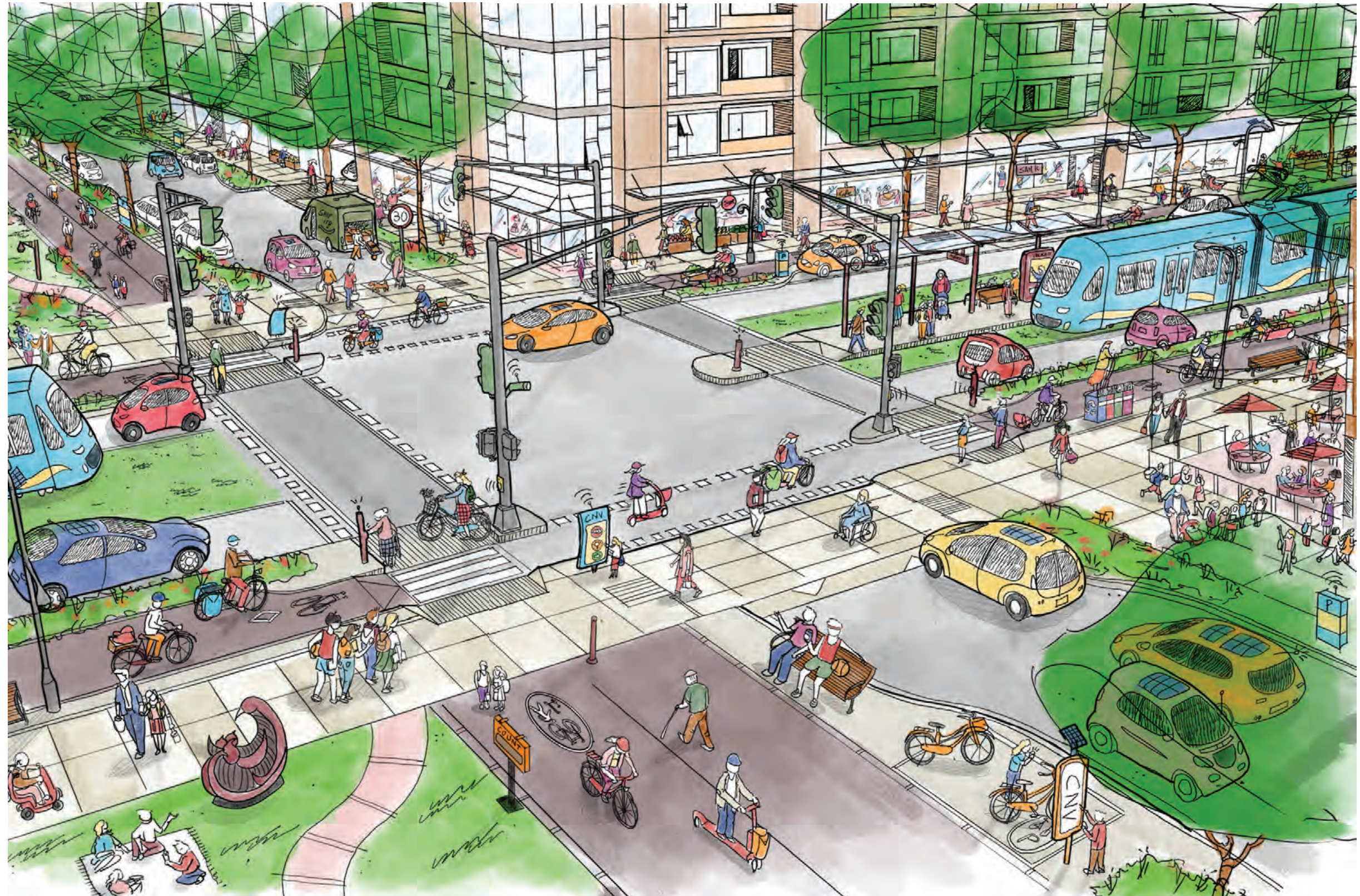
The Walk CNV Framework guides us toward our vision:

“Walking will become the preferred way to move around the City of North Vancouver, thanks to a strong culture of health and wellness and a commitment to great design, comfort, accessibility and safety.”

The implementation of the Walk CNV Framework will build upon progress the City has made in helping realize the following OCP goals: Prioritizing walking, cycling, transit and goods movement over single-occupancy vehicles (2.1); Integrating Land Use and Transportation Planning to reduce the need for car travel (2.2) and Supporting a safe, accessible, resilient, and affordable transportation system (2.3).

Walking is the foundation of all trips as nearly every journey begins and ends on foot. To create a safe, integrated transportation network in the City of North Vancouver, we must consider the needs of pedestrians within the context of all other modes of travel. This work will be undertaken and strengthened through the Mobility Strategy, a comprehensive update to the City’s Long Term Transportation Plan. The near-term action plan, on the following page, provides guidance for project planning with actions that can be implemented prior to the development of the Mobility Strategy. Longer Term actions will be considered as part of the Mobility Strategy.

Everything we learned through the Walk CNV planning process will directly inform the Mobility Strategy, to provide a strong foundation centered on the mode of transportation that we all use.



Artist: Sam Khany

Near-Term Action Plan

Improve and Enhance the Pedestrian Experience

NEW ACTIONS	
	Complete an inventory of sidewalk quality, prioritize updates and upgrade sidewalks
	Develop and provide a network of high-quality pedestrian corridors that connect destinations
	Reduce walking barriers across creeks, ravines, highways and rail corridors
	Develop experiential street character guidelines
	Develop a public awareness campaign to inform residents about sidewalk snow and ice clearing requirements
	Develop streetscape standards for different street types
	Review and establish maximum controlled crossing spacing standards and guidelines for multi-lane arterials
	Provide public washrooms in parks and plazas and along streets
	Develop and implement a pedestrian wayfinding strategy
	Identify additional pedestrian road crossing locations where warranted
	Investigate the integration of curbside management (parking, loading, etc.) with walking
	Identify ways to improve access to washrooms in commercial buildings
	Require continuous sidewalk weather protection wherever possible
	Develop guidelines to create pedestrian-oriented streets and laneways
	Eliminate missing curb letdowns
	Update bylaws to make new building frontages inviting and interesting
	Formalize the PLAY CNV program as part of the City's placemaking initiative, to make streets more interesting and appealing for pedestrians
	Update policy for accessible travel on sidewalks
ONGOING ACTIONS	
	Provide pedestrian amenities and features that make the pedestrian network inviting
	Develop and enhance mid-block connections and cut-throughs
	Integrate parks into the pedestrian network by enhancing pathways with wayfinding and pedestrian amenities
	Provide street trees on all streets
	Reduce pedestrian road-crossing distances
	Expand the City's existing Parklet/Patio Program
	Provide public art in pedestrian spaces
	Eliminate gaps in the sidewalk network

Increase Awareness of the Benefits of Walking and Places to Walk

NEW ACTIONS	
	Develop a monitoring strategy for multi-use paths to ensure the design is safe and comfortable as user volumes increase
	Reduce speeds on local and collector streets through a combination of road design and speed limits
	Update the Traffic Management Plan requirements to ensure accessible detours are provided for pedestrians during construction and maintenance and durations of sidewalk closure are minimized
	Ensure bus stops have pedestrian amenities such as shelters and benches, and meet accessibility guidelines
	Work with other North Shore jurisdictions to adopt the City's design guidelines for pedestrian crossings
ONGOING ACTIONS	
	Monitor crossing times and signal phasing at intersections
	Work with the RCMP to enforce vehicular speed limits and encourage safe driving behaviour
	Support existing programs to improve neighbourhood safety for pedestrians
	Monitor pedestrian collision data and make safety improvements to eliminate pedestrian injuries
	Apply CPTED principles and best practices when designing and updating pedestrian facilities
	Support education campaigns that promote safe travel practices for all road users
	Provide new and enhance existing pedestrian level lighting

Inform and Guide Future Planning and Design

NEW ACTIONS	
	Develop policy to enable increased walking knowledge among people in new developments
	Share information about existing pedestrian infrastructure and trip planning
	Work with partners and researchers to develop and deliver informative materials outlining the benefits of walking
	Engage partners who represent specific demographic groups in our community, and work with them to address barriers around walking
ONGOING ACTIONS	
	Enhance the Safe and Active School Travel Program
	Celebrate existing and newly completed projects to raise awareness of the infrastructure and walking
	Support events led by partners that raise awareness of walking
NEW ACTIONS	
	Measure health outcomes as we deliver improved pedestrian infrastructure
	Develop and initiate a WalkCNV monitoring plan, which monitors both statistical and qualitative data on walking
ONGOING ACTIONS	
	Secure land through redevelopment to provide increased space for pedestrian needs
	Design projects using age, gender and accessibility lenses
	Align Project with development and grant funding
	Engage children, youth and seniors in project design
	Work closely with other agencies to ensure pedestrian connections across jurisdictional borders are well integrated



THE CURRENT STATE OF WALKING IN THE CITY OF NORTH VANCOUVER

NOVEMBER 2017





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PART ONE

INTRODUCTION

INTRODUCTION

The City of North Vancouver (CNV) is a vibrant and compact community on the North Shore of Burrard Inlet in Metro Vancouver. With approximately 53,000 residents living in a compact area of approximately 12 square kilometres, the City has one of the highest population densities in Metro Vancouver, and this will increase as the City's population is expected to grow steadily in coming years.

The City is already a walkable community, as its high population density, compact urban form, grid street network, and extensive sidewalk and greenway network, combine to provide excellent opportunities for residents to incorporate walking into their everyday lives. The City is interested in promoting walking as an attractive and convenient mobility choice for residents of all ages and abilities. Encouraging walking helps the City work toward achieving its commitments to reduce transportation-related Greenhouse Gas (GHG) emissions and helps to promote a healthy environment and community.

Sustainable transportation is a key priority in North Vancouver. The City's 2014 Official Community Plan (OCP) includes the goal of providing a balanced transportation system that encourages more sustainable modes of travel including walking, cycling and transit. The OCP recognizes that increasing the provision of accessible and convenient transportation choices as attractive alternatives to single occupant vehicles will help reduce local and regional GHG emissions and will foster a healthy lifestyle for the community. Improving active transportation options has demonstrated health benefits, facilitates physical activity, and improves public safety and the perception of safety.

The City's 2008 Long-Term Transportation Plan also focused on prioritizing sustainable transportation choices, recognizing the City's street network is largely built-out and that focusing on sustainable transportation can help the City to plan for and accommodate growth. The plan for the pedestrian network as identified in the Long-Term Transportation Plan focuses on three key features: Pedestrian Areas and Generators, Pedestrian Treatments, and Greenways. This Pedestrian Plan builds on these directions to improve walking in the City.

Walk CNV will establish goals, and objectives as well as corresponding directions and actions for improving walking related policies, standards, infrastructure and programs. The detailed actions will prioritize pedestrian investments throughout the city including new sidewalks, curb ramps, crosswalks, and many other improvements that make it easier to walk in the City. By developing Walk CNV and continuing to promote walking as an attractive and convenient form of transportation for people of all ages and abilities, the City can work to reduce automobile dependence and GHG emissions, increase physical activity and improve public health outcomes, increase social connections, and reduce infrastructure demands.





Plan Process

Walk CNV is being developed over a four-phase process over a 12-month period that began in the Fall of 2016. We are currently in the second phase of the process, focusing on understanding existing conditions, gathering feedback and ideas, and exploring options to improve walking in the City. A significant component of this second phase of work has been to hear from residents and stakeholders to better understand the existing conditions for walking in the City today and what are some of the opportunities for making it a better place to walk. The information presented in this report comes directly from this second phase of work.

Based on the information collected in Phase 2, the project team will begin to develop and create some initial recommendations for the Pedestrian Plan and report back this information for public input in the Summer of 2017. The Walk CNV process will be completed in Fall 2017 with the development of the final Plan.

FIGURE 1 - WALK CNV PROCESS TIMELINE



Public Engagement

The second phase of the Walk CNV process involved gathering feedback and ideas from residents and stakeholders. The feedback and ideas received are presented throughout this report and will be incorporated into the final recommendations and priorities presented in the Pedestrian Plan. Through this phase of work, we have interacted with hundreds of residents through the following engagement activities:

Pop-Up Engagement: The Walk CNV project team set-up pop-up tents at two locations (Lonsdale Quay and Civic Plaza) on two separate occasions. These locations were selected because of the high foot traffic and a diversity of residents. The pop-ups were used to spread awareness, encourage people to complete the online survey, and provide an opportunity to have direct conversations. During the pop-up engagement information about the project was handed out to approximately 400 residents and stakeholders.

Interactive Survey: An interactive survey was available online and through hardcopy for all residents to complete between January 25, 2017 and March 6, 2017. In total, 365 people completed the survey.

Walkabout Series: Three community walkabouts were completed over two Saturdays in March 2017. The walkabouts occurred in three neighbourhoods of the City and provided attendees an opportunity to walk with the project team and explore the challenges and opportunities for walking in North Vancouver. Approximately 18 people participated in the walkabouts.

Committee and Stakeholder Meetings: Several City Advisory Committees including the Integrated Transportation Committee (ITC), the North Shore Advisory Committee on Disability Issues (ACDI), and the Children and Youth Committee (CSYAT) have been engaged with as Walk CNV has been developed. Additionally, a Steering Committee made up of City staff from various departments was established to assist the development of Walk CNV.

Targeted Engagement: The City has also engaged with targeted groups of residents and stakeholders including youth and school aged children as well as seniors. This includes meetings with the Lions View Seniors Planning Society and students at Sutherland Secondary School.

Online Engagement: Several online tools were used to enhance the public engagement opportunities, allowing residents to participate at their convenience. A project website, email, Facebook and Twitter were also used as other components of the online engagement strategy.





PART TWO

SETTING THE CONTEXT

SETTING THE CONTEXT

2.1 BENEFITS OF WALKING

Walking is the most common form of transportation, as every trip begins and ends by foot. The City recognizes that an increase in trips made by walking will result in a more balanced transportation system that encourages healthy and active living, creates a more livable community, and results in a cost-effective and efficient solution in terms of the community's infrastructure investments. The City already has an extensive network of sidewalks and off-street shared use trails and pathways and by making future improvements, people of all ages and abilities will be provided with safe and convenient facilities for walking. The benefits to supporting an active walking culture include economic, health, environmental, safety and societal.



Economic Benefits

Promoting walking can contribute to the development of a healthy and diverse local economy. Walking supportive design can encourage residents to take walking trips to local businesses, instead of driving to services further away in adjacent communities. A walk-friendly atmosphere can attract more visitors to neighbourhoods, who will in turn be patrons of local services and amenities. Further, having options that support residents to walk in their neighbourhoods can decrease congestion and increase attractiveness of the area for both locals and visitors. Decreased congestion also helps make the movement of goods and transit more efficient. In addition, individuals engaging in more walking can see real benefits from less financial resources dedicated to automobile use. Specific economic benefits of walking include:

- ***Investing in walking infrastructure and programs can stimulate the local economy by generating tourism revenue, supporting local business, and increasing property values.*** A walkable community can encourage more livable and enjoyable places to be, with a stronger sense of place and freedom of mobility. This can attract businesses, residents and visitors (and spending dollars) to certain areas.

- ***Walking can reduce transportation costs for a household.***

Transportation costs are second only to housing costs as a percentage of household spending in North America¹. Spending on transportation is disproportionately high among low and moderate-income families and walking presents an affordable option. Using walking for transportation reduces household transportation spending, and in some cases, active transportation and transit use can eliminate the need for an extra vehicle or can reduce the need for a vehicle at all, especially if car share is an available option. Various studies have examined the 'operating costs' of active transportation, in relation to other more cost-intensive modes such as driving. For example, a study by the Sierra Club estimates that walking costs approximately \$70 per year. The Canadian Automobile Association estimates that driving costs owners about \$9,000 annually in operating costs (Note: costs for walking can be attributed to walking shoes/clothing, while car ownership costs can include fuel, maintenance, and insurance). While these numbers may vary city to city, and depends on personal use, there is clear evidence that there are great personal savings available through engaging in more walking activity. These cost savings can result in people having larger disposable incomes, and some studies have found that people walking are "competitive consumers" who tend to spend their money more locally than motorists, while shopping with greater frequency².



Health Benefits

Research and scientific evidence has shown the importance of physical activity on an individuals' health. Regular physical activity, even at a moderate intensity, reduces the risk of early death and numerous chronic diseases. Physical activity has been shown to improve psychological well-being, and prevents weight gain and obesity³. While the benefits of walking on health have been well documented, low levels of physical activity in children and adults are still prevalent throughout the world, including Canada. The World Health Organization has identified physical inactivity as

¹ http://www.fhwa.dot.gov/livability/fact_sheets/transandhousing.cfm

² Clifton, K., et al. (2012). *Consumer Behavior and Travel Choices: A Focus on Cyclists and Pedestrians*. https://nacto.org/wp-content/uploads/2015/04/consumer_behavior_and_travel_choices_clifton.pdf

³ TransLink. (July 4, 2013). *Media Report. Walking Cycling and Transit Investments Lead to Healthier People*. <http://www.translink.ca/en/About-Us/Media/2013/July/Walking-cycling-and-transit-investments-lead-to-healthier-people.aspx>

one of the main leading risk factors for global mortality, and as an underlying factor for many chronic diseases⁴. Walking is the most affordable and accessible way to add exercise to a daily routine. Walking is an active form of transportation that promotes healthy and active living. There are many health benefits associated with walking including⁵:

- Obesity prevention;
- Reduced risk of cardiovascular disease, Type 2 Diabetes and metabolic syndrome and some cancers;
- Improved strength and bone density, leading to an enhanced ability to do daily activities and avoid falls;
- Improved mental health and mood; and
- Increased chance of living longer.

Physical activity is closely tied to physical and mental health with our aging population. Research has shown that both non-communicable diseases (cancer, cardiovascular disease and diabetes) and cognitive impairment diseases (Alzheimer's, dementia) show positive impacts by long-term physical activity. These diseases are a major concern for aging populations and typically challenging to treat due to the long duration over which an individual's condition deteriorates. Seniors often see the largest impacts from walking but are also greatly impacted by the walking infrastructure. A continuous sidewalk network that is well-lit will allow older members of the community to access services and social networks that are essential for maintaining both physical and mental health⁶. The City has been working with other North Shore communities to raise awareness and develop a community action plan so that people with dementia can experience a better quality of life and live as independently as possible in the north shore.

Physical activity is also a concern for children. The non-profit organization Participaction gave Canadian Children a score of D- for overall physical activity. The lack of physical activity has a major impact on the physical

and mental health of our children as well as academic and motor skill development. Vancouver Coastal Health suggests children need physical activity throughout the day in the form of both organized sports and activities and a stronger use of active transportation. This is consistent with the goal of North Vancouver's Safe and Active Schools program to encourage students to use active modes to travel to and from school.

Through the My Health My Community, initiative, which is a partnership between the health authorities operating in Metro Vancouver, a survey of residents of Metro Vancouver was conducted to understand how health is affected by lifestyle choices, community involvement and neighbourhood characteristics. The survey was conducted between June 2013 and July 2014, over 28,000 residents 18 years and older participated in the survey. It is unclear how many respondents were from the City of North Vancouver. Below are some of the results specific to the City:

- **72%** of respondents reported walking more than 30 minutes or more a day in total.
- **39%** of respondents reported walking for recreation 30 minutes or more a day.
- **28%** of respondents reported walking for utilitarian purposes 30 minutes or more a day.
- **23.7%** of North Vancouver Respondents said that traffic in the area makes walking difficult.

Figure 2 presents the findings of the My Health My Community survey, looking specifically at the percentage of municipal residents that are considered overweight or obese with a Body Mass Index (BMI) greater than 25, and the combined mode share of walking, cycling and transit based on 2011 National Household Survey. Based on these results, it appears that municipalities with lower walking, cycling, and transit mode shares tend to have a higher percentage of residents with a BMI greater than 25. Some key

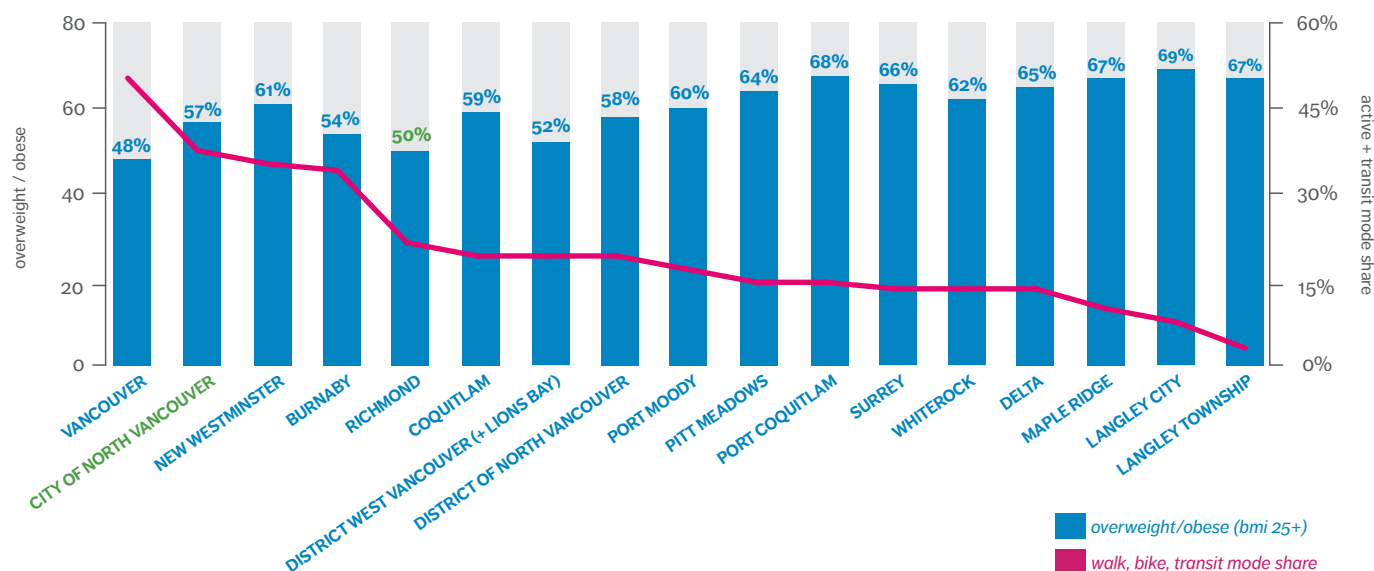
⁴ Badland, H., et al. (2014). The development of policy-relevant transport indicators to monitor health behaviours and outcomes. *Journal of Transport & Health*.

⁵ Transportation Research Board Institute of Medicine of the National Academies. (2005). Does the Built Environment Influence Physical Activity: Examining the Evidence?" *Transportation Research Board Special Report 282*

⁶ Transportation and Health in Metro Vancouver. *my Health my Community*. www.myhealthmycommunity.org

highlights from reviewing the survey results are that the City of North Vancouver is already doing quite well within the Metro Vancouver context with the 5th highest walk, bike and transit mode share. It is also doing well in terms of health indicators, with the second lowest percentage of residents with a BMI greater than 25 within Metro Vancouver.

FIGURE 2 - PERCENTAGE RESIDENTS OVERWEIGHT / OBESE AND WALK, BIKE & TRANSIT MODE SHARE (MY HEALTH MY COMMUNITY⁷ / 2011 NATIONAL HOUSEHOLD SURVEY⁸)

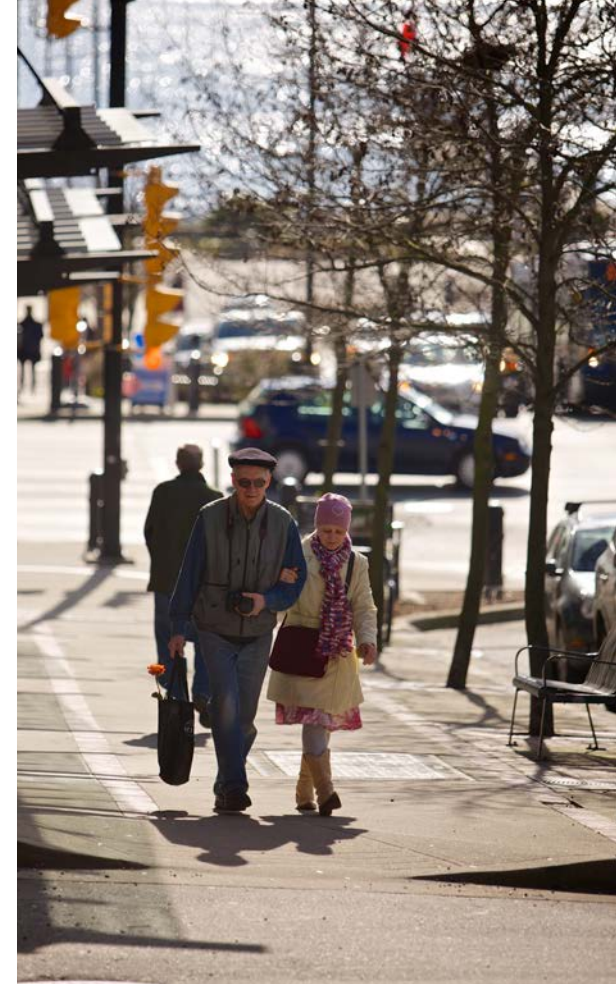


Environmental Benefits

Walking has many environmental benefits such as, reducing the number of motorized vehicle trips, traffic congestion, and air pollution. Walking helps to reduce GHG emissions by limiting the use of personal automobiles. Promoting walking can help in efforts towards climate change mitigation, while supporting the protection and improvement of North Vancouver's natural environment. Walking has a low environmental impact, as the act of walking generates virtually no GHG emissions or air pollution, minimal noise and light pollution. According to iCANwalk's Canadian Vehicle Survey, the average car emits 4 tonnes of carbon dioxide in a year and vehicles

⁷ My Health My Community study- https://www.myhealthmycommunity.org/Portals/0/Documents/Community%20Profiles/CityofNorthVan_final.pdf

⁸ 2011 National Household Survey



contribute to about 30% of total greenhouse gas emissions in Canada. Research suggests Canada would save about 3.8 million tonnes of greenhouse gas emissions each year if every Canadian left their car at home just one day a week. This is the equivalent of taking about 800,000 cars off the road⁷.

The table below (**Table 1**), illustrates the CO₂ emissions produced from a 1.6 km trip completed twice a day, five days a week for a year. This calculation was based on the assumption that 62% of trips are made by motorized automobile, this number is based on the 2011 National Household Survey travel to work/school data. The table shows how the total emissions would be reduced based on a shift from motorized automobile to walking for this type of trip over a year. For example, a shift from 11% of trips made by walking to 35% walking trips, would result in a reduction of nearly 5,000 tonnes of CO₂ emissions per year.

**TABLE 1 - CO₂ EMISSION PER YEAR BASED ON A SHIFT IN MODE SHARE
(20-MINUTE WALKING TRIP TWICE A DAY)**

MODE OF POPULATION TO SHIFT TO WALKING	TOTAL	EMISSIONS
100%	0	T CO ₂ e / year
35%	3833	T CO ₂ e / year
25%	5250	T CO ₂ e / year
15%	6667	T CO ₂ e / year
0%*	8792	T CO ₂ e / year

* Represents current 62% dependent on driving 5 days a week



Safety Benefits

Walkable environments contribute to a safer transportation system by making walking more visible resulting in reduced risk of collisions. Streets designed for slower vehicle speeds feel safer for people walking. Studies have shown that slower motor vehicle speeds exponentially increase survival rates for people walking involved in collisions with vehicles. The graphic presented below comes from research presented by the City of Edmonton. It has also been found that as walking rates increase, rates of collisions with motor vehicles decrease. This is known as the “safety-in-numbers” principle⁸.

FIGURE 3 - SPEED LIMITS VS LIKELIHOOD OF FATALITY



Societal Benefits

High levels of walking in a community is viewed as a good indicator of sustainability and liveability. The 'millennial' generation is a generation where car ownership is declining, based on recent studies. Peak vehicle ownership coincided with the baby boomers' peak driving years, significant growth in rising wages, low fuel prices, cheap credit and suburbanization⁹. Building safe and comfortable walking facilities can provide affordable and accessible transportation choices, transportation alternatives for youth and seniors who may not have access to an automobile, and encourages social interaction that builds strong communities. Walking creates opportunities for face-to-face interactions with members of the community and builds trust, respect, understanding and a sense of co-operation.

⁷ Settlement.org. What are the environmental benefits of walking and cycling?

<http://settlement.org/ontario/housing/living-in-ontario/green-living/what-are-the-environmental-benefits-of-walking-and-cycling/>

⁸ OCED (2013). Cycling Health and Safety. OECD Publishing <http://dx.doi.org/10.1787/9789282105955-en>

⁹ Active Transportation in Canada – a resource and planning guide - http://www.fcm.ca/Documents/tools/GMF/Transport_Canada/ActiveTranspoGuide_EN.pdf



2.2 COMMUNITY PROFILE

Land Use

The City's location provides residents with numerous amenities, including beautiful parks and trails, a scenic waterfront with views of Burrard Inlet, and abundant recreational activities. The City is home to employment and tourist destinations as well as the Lonsdale Regional City Centre. The Lonsdale Regional City Centre is identified in the Regional Growth Strategy as the "downtown" for the entire North Shore. The City's OCP supports the role of Lonsdale as a Regional Centre and has focused on locating high trip-generating uses such as high density residential and commercial activity in the area. This type of land use is also conducive to encouraging walking trips. The OCP identifies additional residential and commercial capacity in Central Lonsdale and in Frequent Transit Development Areas (FTDAs) which are in the East 3rd Street area and the Marine Drive Area. Generally, the density of residential and commercial land use decreases as one moves farther east/west from Lonsdale Avenue, except where there are nodes of density near key transit corridors. **Figure 4** shows many important destinations within the City of North Vancouver and destinations within the District of North Vancouver that are within a five-minute walk of the City. These destinations include:

- **Commercial areas:** this includes a variety of uses such as retail outlets, office space and grocery stores to name only a few.
- **Comprehensive development areas:** this includes site specific development areas that are planned in an integrated manner and can include some form of commercial use.
- **Parks**
- **Schools and other institutional facilities**
- **Other destinations:** this includes the hospital, municipal hall, library and recreation centres

A Compact Municipality

The City has a compact land area of approximately 12 square kilometres, which results in a population density of approximately 4,465 people per square kilometres. This makes it currently one of the highest density municipalities in Metro Vancouver behind only the cities of Vancouver and New Westminster. Compact communities are ideally suited for active forms of transportation, including walking, as a variety of destinations are often within a shorter distance. The OCP identifies the ongoing pursuit of a sustainable compact and complete community with a mix of housing with a balance of jobs, transportation options and recreational amenities.

Neighbourhoods

The City is made up of eight distinct neighbourhoods:

- Westview
- Tempe
- Mahon
- Central Lonsdale
- Grand Boulevard
- Marine-Hamilton
- Lower Lonsdale
- Moodyville

These neighbourhoods range in land use, housing types, and commercial activity. Within higher density neighbourhoods such as Central Lonsdale and Lower Lonsdale, sidewalks tend to be wider and pedestrian amenities are more abundant. This is the case along streets such as Lonsdale Avenue and Esplanade Avenue. Other important walking facilities are found in neighbourhoods throughout the City, many City parks are in these lower-density neighbourhoods, primarily along creeks and waterways, which are abutted by environmentally sensitive areas. The OCP and Long-Term Transportation Plan note the importance of increasing sustainable means of transportation, optimizing the existing road network, and supporting traffic calming initiatives to contribute to the overall safety and livability of the City's neighbourhoods.

FIGURE 4 - COMMUNITY CONTEXT



Destinations

The City has several major community recreation centres that provide accessible, affordable, and inclusive recreation programming. Their service offerings include sports and fitness, arts and cultural activities, multiple special events and community education courses. These facilities provide highly valued opportunities and supports for physical activity, healthy lifestyles and social interaction. Improved transportation options to and from these community centres are a natural extension of the City's community and recreational goals for its residents.

Recreation Facilities:

- John Braithwaite Community Centre
- Harry Jerome Recreational Complex
- Memorial Community Centre
- Mickey McDougall Community Centre
- North Shore Neighbourhood House

Municipal or Assembly:

- Municipal Hall
- North Vancouver City Library
- Centennial Theatre
- BCIT Marine Campus
- Lions Gate Hospital
- Schools, parks, green spaces

Shopping:

- Lonsdale Quay Market
- Capilano Mall
- Park and Tilford
- Westview Shopping Centre
- The Shipyards

Topography

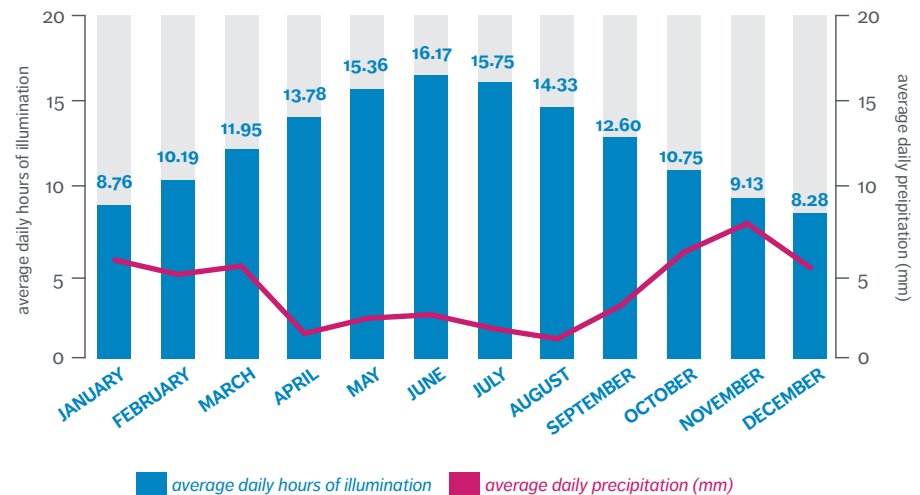
The City is characterized by its unique hillside topography. The rise in elevation is the steepest in Lower Lonsdale, north of 18th Street (east of Lonsdale Avenue) and in some of the City's natural areas (**Figure 6**).

The topography can make walking challenging for some members of the community such as individuals with mobility challenges, older residents, and some visitors are likely to find walking steep hills more difficult¹¹. As the impact of topography varies by individual it is difficult to say at what degree slope becomes an issue. The topography also allows for stunning views and undeveloped natural areas.

Weather

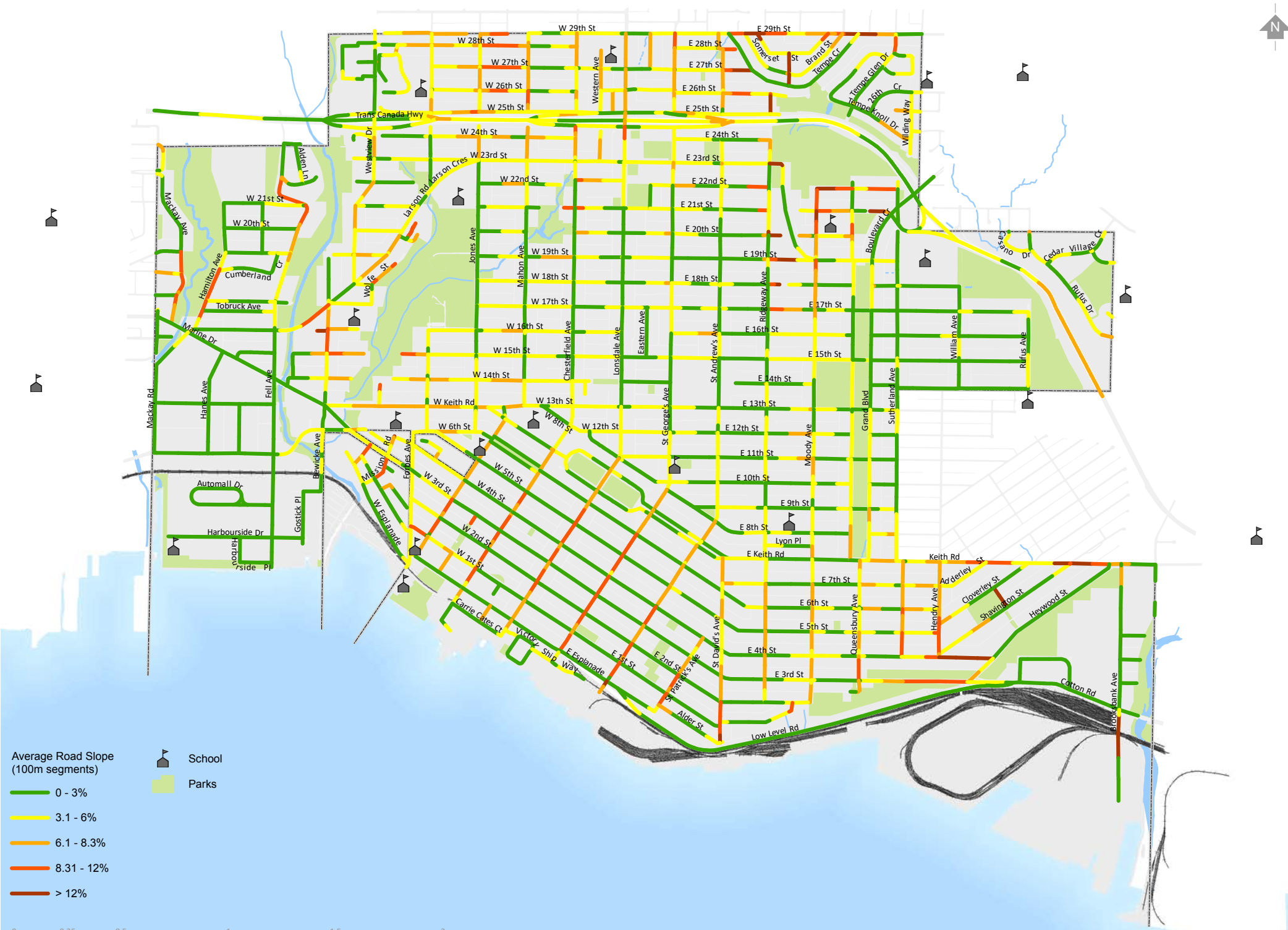
Living on the west coast means that residents of Metro Vancouver experience cool and rainy weather many months of the year. As seen in **Figure 5** below, during the months where the average daily hours of illumination are the lowest, the daily average level of precipitation are the highest. These are also the months with the highest percentage of report ICBC collisions as discussed in more detail below and seen in **Figure 12**.

FIGURE 5 - AVERAGE DAILY HOURS OF ILLUMINATION VS. AVERAGE DAILY PRECIPITATION IN METRO VANCOUVER (NATIONAL CLIMATE DATA & NATIONAL RESEARCH COUNCIL CANADA 2016)



¹¹ Rodriguez, D. A. & Joo, J. (2004). *The Relationship Between Non-Motorized Mode Choice and the Local Physical Environment*. Transportation Research Part D: Transport and Environment, 9, 151-173

FIGURE 6 - AVERAGE SLOPE OF ROADS IN THE CITY OF NORTH VANCOUVER



2.3 DEMOGRAPHICS

Demographics play a significant role in influencing transportation choices and travel patterns. This section summarizes key demographic characteristics that will be used as a basis to inform the direction of Walk CNV.

A Growing City

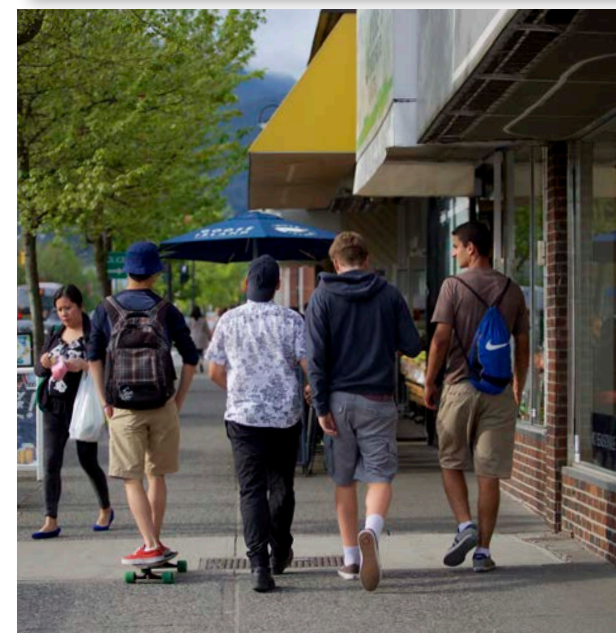
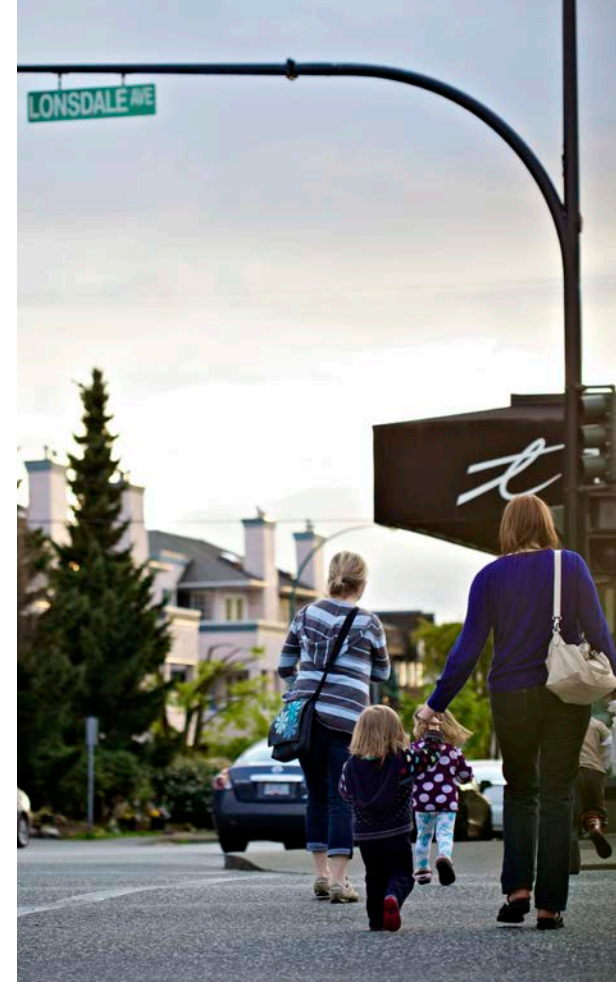
As outlined in the OCP, much of the land in the City has already been developed and the City is not seeing as large a population growth when compared to some other Metro Vancouver municipalities. However, as redevelopment occurs and densification continues, the City is seeing steady growth in both population and employment. It is projected that growth will occur at approximately 1.3% per year through to 2031 and decreasing to 1% between 2031 to 2041 as shown in **Table 2**. It is important to note that over the past few years, the City has seen population growth that is greater than anticipated as can be seen in the table.

TABLE 2 - CNV REGIONAL GROWTH STRATEGY PROJECTIONS
(CNV OCP / STATISTICS CANADA 2016 CENSUS / METRO VANCOUVER 2040: SHARING OUR FUTURE, METRO VANCOUVER 2011)

	2011 (CENSUS)	2016 (CENSUS)	2021 (PROJECTION)	2031 (PROJECTION)	2041 (PROJECTION)
POPULATION	48,168	52,898	56,000	62,000	68,000
DWELLING UNITS	24,206	26,426	25,600	28,000	30,200
EMPLOYMENT	30,422	34,630	34,000	37,000	40,000

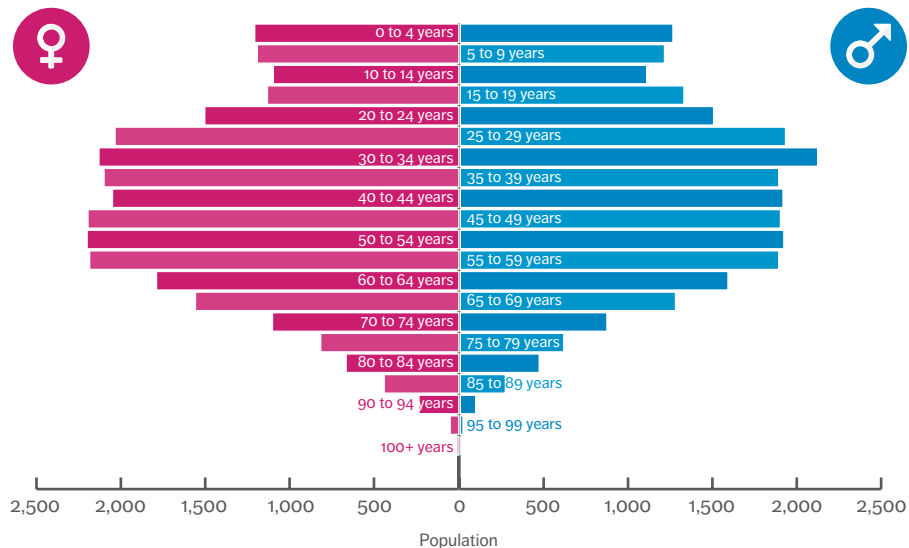
Age of Population

Based on Statistics Canada data (2016), roughly 39% of the City's population is under the age of 35 (**Figure 7**). People in this age group tend to rely more on transit, walking, and cycling to access schools and services. Studies suggest those born between 1981 and 2001 – are a generation where car ownership is declining and higher rates of walking, cycling and transit. Residents over 65 also make up a significant segment of the population, accounting for approximately 16% of the population. The needs and travel patterns of older residents are unique and a range of mobility options is important to ensure that an aging population can participate in their communities at all stages of their lives, regardless of ability. The City's OCP noted that, City residents under 25 years old have the lowest automobile mode share (58 %), while seniors (65+) have the highest at 74%¹².



¹² 2014 City of North Vancouver Official Community Plan

FIGURE 7 - CITY OF NORTH VANCOUVER POPULATION BY AGE & GENDER (STATISTICS CANADA 2016)



Official Community Plan (2014)

The current OCP was developed in 2014 to guide the City to 2031 and beyond with a key focus on creating a Sustainable City. The plan includes goals and objectives specific to walking and transportation. Three transportation goals were established as well as a list of objectives that will help to accomplish each goal.

There were also a number of goals from other sections beyond transportation that have an influence on Walk CNV, some of them include:

- Prioritize walking, cycling, transit and goods movement over single-occupancy vehicles
- Integrate Land Use and Transportation Planning to reduce the need for car travel.
- Support a safe, accessible, resilient, and affordable transportation system.
- Enhance the distinctive sense of place and livability of the City through high-quality design and maintenance of urban form.
- Enhance well-being and quality of life for all community members.
- Support the independence and well-being of older City residents.
- Provide a variety of public spaces for community engagement and stewardship.

The goals established prioritize building a City that relies heavily on walking to reduce traffic, emission of greenhouse gases and connect the City for all residents. The plan also notes that the relatively small geographic area puts the City in a strong position to continue to increase the active transportation mode share with careful planning and implementation.

Long-Term Transportation Plan (2008)

The Long-Term Transportation Plan was created in 2008 to serve as the “road map” to allow the City to achieve many of the transportation goals and

2.4 POLICY CONTEXT

Walk CNV is closely linked to, and will be informed by, many of the City’s key planning documents that contain pedestrian-related policies, plans, and goals. Many of these documents include broader aspirations for growth and transportation. These documents also provide specific directions on how walking and other forms of active transportation can become an integral part of the City’s transportation system. Walk CNV can reinforce and help further the goals and policies found in other documents.

The following is an overview of five overarching municipal plans and programs that will play a significant role in informing the development of Walk CNV.

objectives established in the 2002 OCP, now superseded by the 2014 OCP. The Plan outlines the city's transportation goals, policies and infrastructure investment priorities for all modes of transportation, with a strong focus on prioritizing sustainable modes such as walking, cycling and transit.

The pedestrian component of the Plan includes three sections and focuses on connecting areas of the City and filling in gaps within the walking network. Many of the walking specific recommendations from the Long-Term Transportation Plan will be reviewed through Walk CNV including reviewing and updating the priority pedestrian areas and infrastructure improvements.

Sidewalk Assessment and Implementation Program (Initiated 2009)

This report was created to ensure the best approach was taken in the City for enhancing facilities to support walking as a primary mode of transportation. This Program integrates with the Transportation Plan and OCP of the time and identifies walking facility gaps and opportunities. Using the results from the assessment, an implementation plan was created that categorizes sidewalk improvements into high, moderate, and low categories based on six criteria such as distance from transit, proximity to schools, and probability of conflict. This assessment and implementation program will be reviewed and updated as part of the Walk CNV process. Since its development, this document has been updated annually.

Network Screening Study for Road Safety Strategy (2017)

The City recently completed a Network Screening Study to aid in the development of a Road Safety Strategy (RSS). The main objective of Network Screening Study is to update the list of high risk locations previously identified in the 2005 Network Screening Program that can benefit from road safety improvements to meet the needs of all road users, while complying with Vision Zero, particularly as it relates to vulnerable road

users. Five years of ICBC claim data and RCMP Traffic Accident System (TAS) records were reviewed as part of the Network Screening Study, and a ranking was developed based on four safety performance measures. This study also reviews collisions involving pedestrians and results of the work are included in this Discussion Paper.

Parks and Greenways Strategic Plan (2002)

The Parks and Greenways Strategic Plan was developed in 2002 to establish key priorities surrounding the parks and greenways that are an integral part of North Vancouver. Many of the priorities of the Plan adopted 16 years ago still align with the current vision of the 2014 OCP. The plan establishes a proposed system of trails and greenways to connect the key parks and destinations around the city.

Other City plans and initiatives that will inform Walk CNV include:

- Housing Action Plan (2016)
- Traffic calming policies and various plans (2001 – 2016)
- CNV4ME Child, youth + Family Friendly Strategy (2015)
- Safe & Active School Travel Program (since 2013)
- North Shore Area Transit Plan (2012)
- Esplanade, Marine Drive, and Lonsdale Streetscape Design Guidelines (2005, 2010, and 2011)
- Social Plan (1998)
- Living City
- Dementia Friendly City
- Subdivision Development Control Bylaw
- Policy for sidewalk installation (2010)



PART THREE

WALKING IN THE CITY TODAY

WALKING IN THE CITY TODAY

3.1 EXISTING CONDITIONS FOR WALKING IN CNV

As noted, walking is the most common form of transportation, as every trip begins and ends by foot. When a suitable network exists within a community – such as having a complete and connected sidewalk network, safe crossings, and major destination close to where people live – walking can be a practical and attractive form of transportation for almost all short trips throughout the year. The City has an extensive network of walking facilities including sidewalks, trails and pathways. The City has approximately 135 km of roads, of which over 112 km have sidewalks on one or both sides of the street. There are also over 30 km of designated Greenways and trails in the City of North Vancouver.

The City has made significant progress in expanding and improving the conditions for walking around the City, through new sidewalk and pathway infrastructure, the installation of new curb ramps, and inviting pedestrian areas which includes the installation of amenities such as public art, benches and landscaping. However, there are still opportunities to fill in network gaps and enhance the environment for walking to help encourage more trips by walking within the City. The following section summarize the existing conditions for walking in the City.

Greenways and Trails

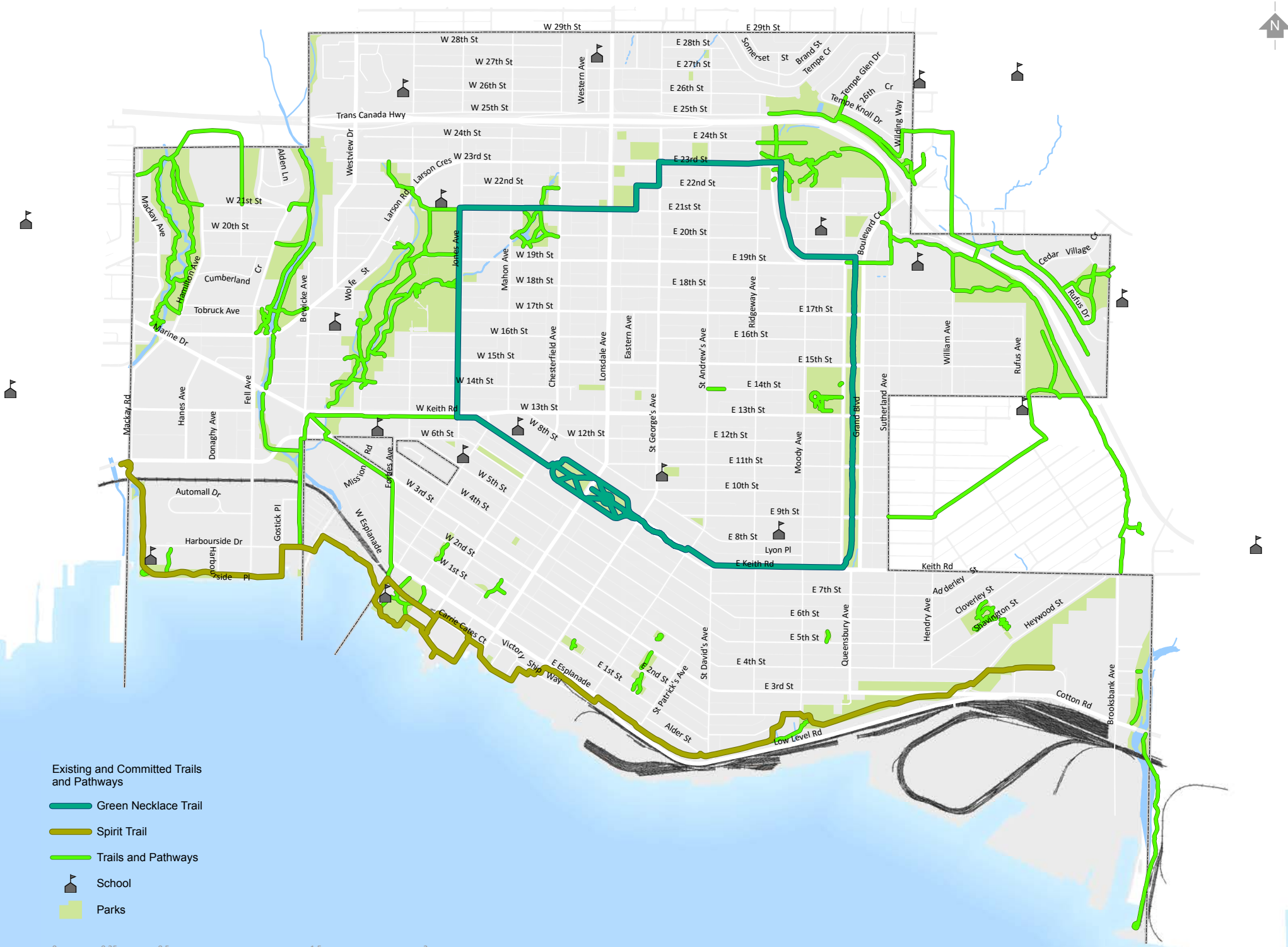
There are two popular greenways within the City of North Vancouver, the Spirit Trail and the Green Necklace, as seen in **Figure 8**.

The Spirit Trail is an important regional walking connection. Once completed, the Spirit Trail will extend from Horseshoe Bay to Deep Cove connecting the three North Shore municipalities. The City has been working with the federal and provincial governments, other North Shore municipalities, First Nation communities and other agencies to create the Spirit Trail. The City's portion of the Spirit Trail is approximately 6.5 kilometres in length. In 2007, City Council set an ambitious goal of completing the City's portion of the trail within a 10-year timeframe, and are on target for 2017.

The City is also in the process of completing the Green Necklace, a 7 km greenway loop around Central Lonsdale, original proposed in the City's original 1907 town plan. The two previous phases of work were completed in 2005 and 2015 respectively. The completion of the Green Necklance is a phased multi-year project that is scheduled to be completed in 2018.

In addition to the greenways the City also has an extensive network of existing and proposed trails and pathways in parks such as Mahon Park, Mosquito Creek Park and Heywood Park (**Figure 8**). These trails help to provide connections between City neighbourhoods, and some provide connections to the District of North Vancouver.

Trails also increase an individual's access to parks, green spaces, and other places for recreation. They are often considered more of a destination than a transportation route. It is important to note, trails in the City are not always lit and may not be a reliable transportation connection after dark.



Sidewalks

Sidewalks form the backbone of a well-connected walking network. There are approximately 200 km of sidewalks within the City. As shown in **Figure 9**, sidewalks are located on one or both sides of most of the streets within the City. A large percentage of arterial and collector roads (97%) have sidewalks on one or both sides of the street. In addition, 88% of local streets have sidewalks on one or both sides. Many of the streets without sidewalks are located north of 23rd Street or in the Marine-Hamilton neighbourhood. The City has committed to installing sidewalks on both sides of the street of all roads in the City where physically feasible. It is important to note that this map does not address the quality or width of existing sidewalks.

Sidewalk Requirements

The City's Subdivision and Development Control ByLaw, No. 8014 outlines the City's current practices regarding the installation of new sidewalks based on road classification and Pedestrian Area, as follows:

Major Arterials & Pedestrian Precinct Areas:

- Sidewalks on both sides of the street
- Minimum width 3.0 metres

Collectors and Minor Arterials & Primary Pedestrian Generators:

- Sidewalks on both sides of the street
- Minimum width 2.0 metres
- Commercial frontage also considers opportunities for outdoor dining or space for the sale of goods.

Local Roads & Secondary and Low Pedestrian Generators

- Sidewalks on both sides of the street in around Secondary Pedestrian Generators and one side of the street in areas identified as Low Pedestrian Generators.
- 1.8 metre sidewalk if there is a boulevard between the edge of the sidewalk and the roadway.
- 2.0 metre sidewalk if the sidewalk is located adjacent to the roadway.

In ideal conditions, when installing new sidewalks, the City will provide a boulevard between the sidewalk and the roadway. There are times when this is not possible, such as when new sidewalks are being built on steep slopes or where there are mature street trees and space is a constraint. There are several types of sidewalks and walking facilities that offer a range of comfort in the City. These can range from pedestrian only off-street pathways and multi-use pathways which provide physical separation from moving vehicles. Other types of walking infrastructure include various widths of concrete sidewalks to unpaved pathways located at the side of the street.

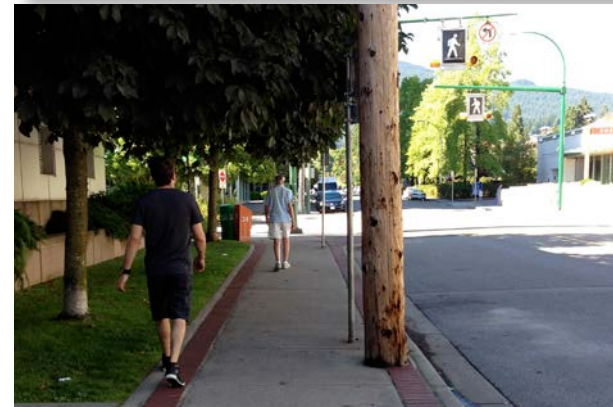
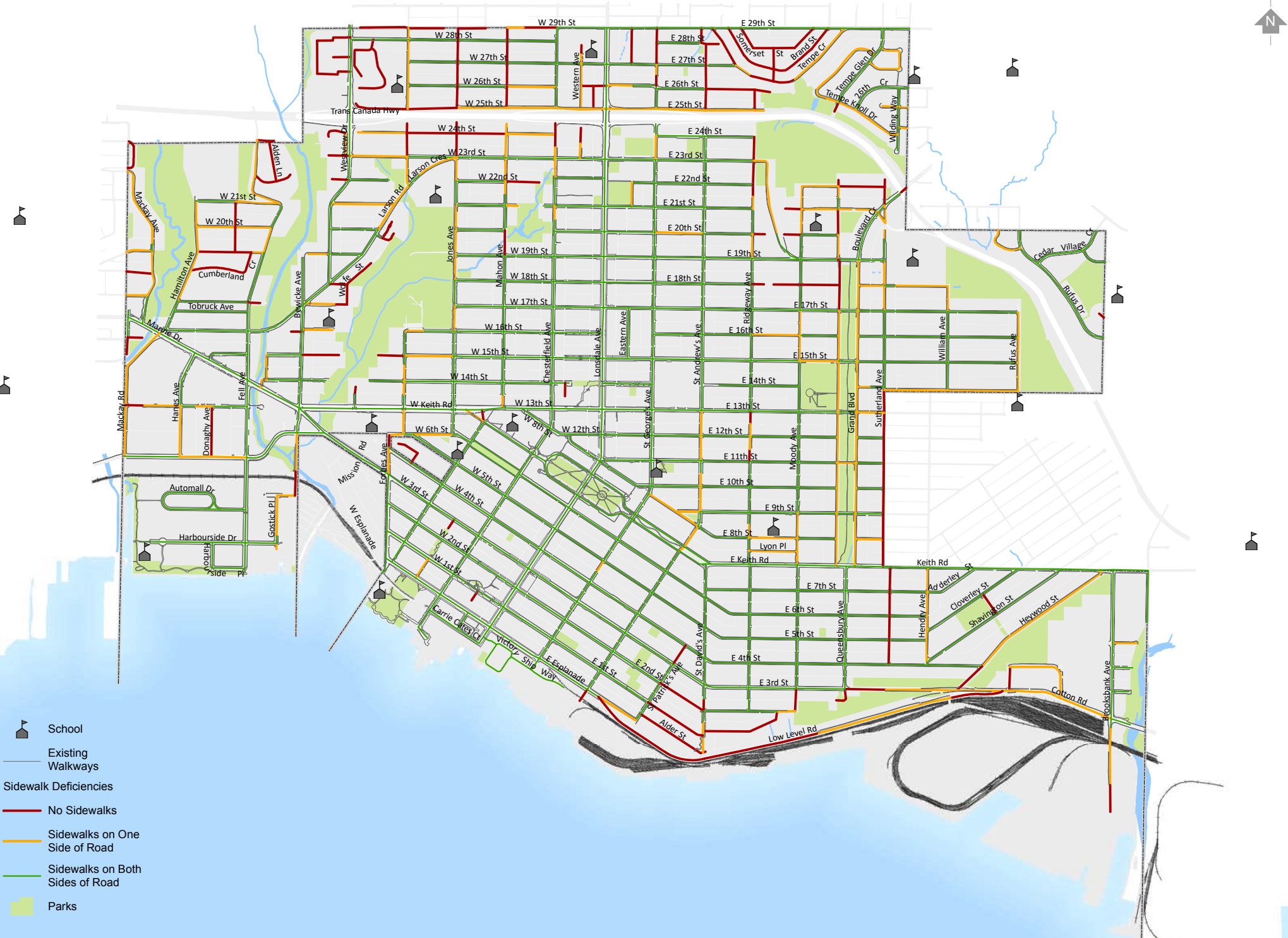


FIGURE 9 - EXISTING SIDEWALK NETWORK



Sidewalk Assessment

The City developed a Sidewalk Assessment and Implementation Program in 2009 to ensure the best approach was taken in the City to support walking as a primary mode of transportation through the installation of new infrastructure. The specific objectives of the assessment were to:

- Identify sidewalk needs;
- Establish priorities;
- Assign appropriate weighting;
- Prioritize improvement options;
- Development planning level cost estimates; and
- Ranked list of sidewalk projects.

Each project was given a high, moderate, or low priority ranking. Prioritization was based on several evaluation criteria, including severity, probability of conflict, access to transit, proximity to schools, pedestrian demand, and if it had been identified as a priority in other planning documents.

High priority projects were located along streets such as Mahon Avenue, Larson Crescent, and Moody Avenue, several which have been installed since the completion of this study. Moderate priority projects were found on Jones Avenue, and St. Andrews Avenue. Several of the moderate priority projects have also been completed. Lower priority projects were located on local streets including, several streets north of the Trans-Canada Highway, and streets in the Marine-Hamilton and Moodyville neighbourhood. Many of these projects have not been completed.

Crossings

Crossing treatments allow people walking to confidently and safely across busy streets and play an important role in creating facilities that are accessible for people of all abilities. Marked crosswalks are provided at several locations in the City, including both intersection and mid-block

crossings. In addition, numerous locations in the City that have full or pedestrian signals and 8 locations with special crosswalks (**Figure 10**). There are also dedicated active transportation overpasses in the City (**Figure 10**).

An important component of intersection crossings is accessibility. This includes the presence and location curb ramps. **Figure 11** identifies the intersections and mid-block crossings within the City that are missing sidewalk ramps. The City has identified 216 locations where sidewalk ramps are missing. It is important to note that this map does not take into consideration the quality of existing ramps.

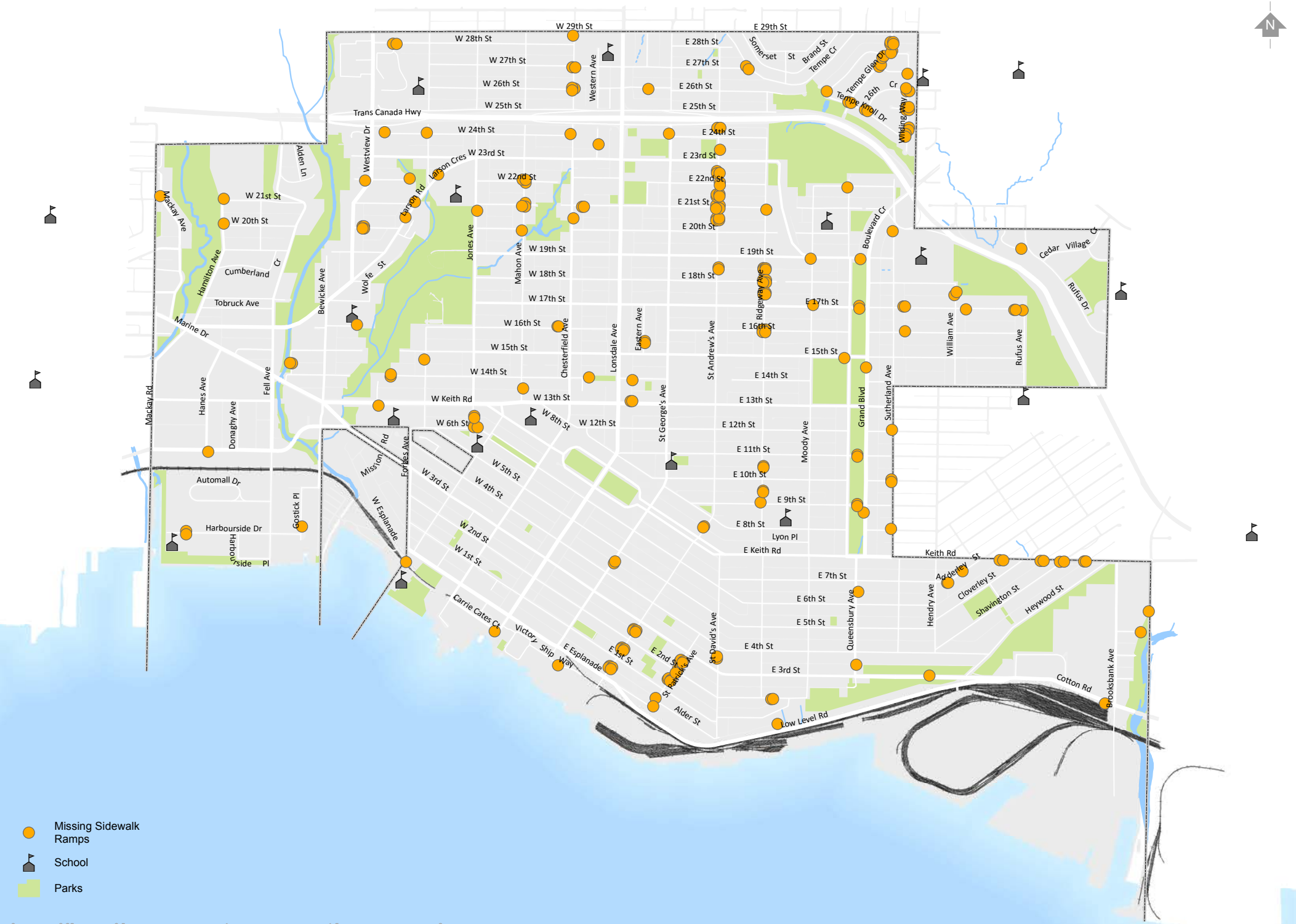
All signalized intersections in the City have pedestrian activated pushbuttons and pedestrian countdown timers, except for the highway overpass crossings at Lonsdale Avenue and Westview which are under BC Ministry of Transportation and Infrastructure (MoTI) jurisdiction. Several signalized intersections along Lonsdale and Chesterfield and several other locations have audible signals. However, the majority of signals are not audible.

Accessible pedestrian signals (APS) provide non-visual indications to pedestrians who are blind, deaf, or partially sighted to assist them to independently cross a street. By indicating when a crossing interval begins, These non-visual signals can also provide directional guidance that can assist in the crossing of non-perpendicular intersections and multi-lane crossings. Accessible pedestrian signals provide audible and vibrotactile indications that confirm when it is legal to make a street crossing not only for pedestrians who are blind, or deafblind, or partially sighted, but also for many other users who may benefit from non-visual prompts, such as children, seniors, and people with cognitive disabilities. However, across Canada and even Metro Vancouver, the operations and features of APS is not standardized.

FIGURE 10 - TRAFFIC SIGNALS AND SPECIAL CROSSWALKS



FIGURE 11 - LOCATION OF MISSING SIDEWALK RAMPS



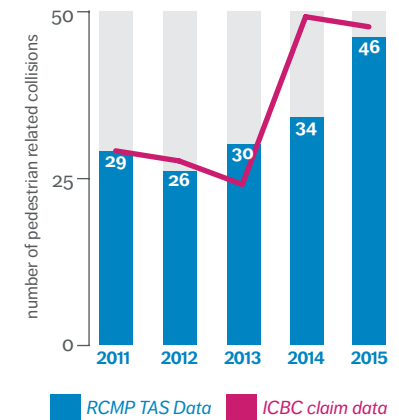


Safety

As noted above in the review of existing policies and studies that will have an impact on Walk CNV, the City has completed a Network Screening Study to aid in the development of a Road Safety Strategy (RSS). Five years of ICBC claim data and RCMP Traffic Accident System (TAS) records were reviewed as part of the Network Screening Study, and a ranking was developed based on four safety performance measures.

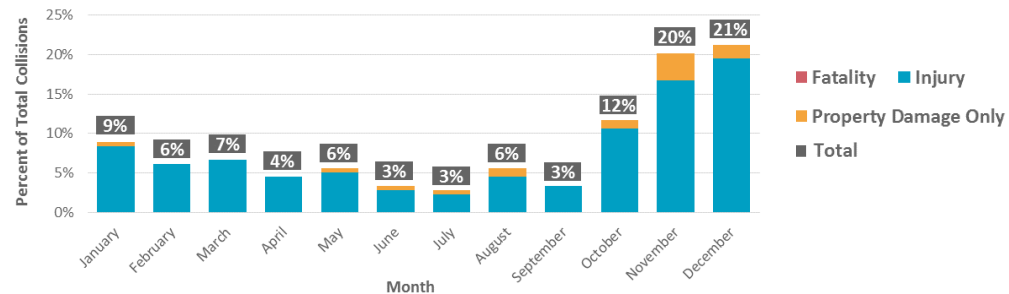
On average, the study found that there is an average of 33 (RCMP) and 35.8 (ICBC) reported pedestrian-related collisions per year from 2011 to 2015, respectively. 2015 had the highest number of pedestrian-related collisions (46) in the five-year study period according to RCMP TAS data. 2015 and 2014 had a high number of pedestrian-related collisions (48 to 49) in the same period according to ICBC claim data. Overall, the trend showed an increase of pedestrian-related collisions (**Figure 12**). This trend was seen for all types of collisions, not only collisions involving people walking. Indicating that, in general, the number of motor vehicle related collisions are increasing throughout the City.

FIGURE 12 - NUMBER OF COLLISIONS INVOLVING PEOPLE WALKING PER YEAR (RCMP AND ICBC COLLISION DATA)



When looking at collision distribution by month, it is found that the winter season (November to February) experienced the highest number of pedestrian-related collisions (53% to 56% of total collisions), according to the RCMP TAS and ICBC claim data. This may be related to the dark and rainy conditions that characterize these months.

FIGURE 13 - COLLISION DISTRIBUTION BY MONTH WITH SEVERITY (ICBC CLAIM DATA)



Amenities

Amenities help make walking more fun, interesting and enjoyable by providing places for people to stop and rest, see interesting views, and create an environment where people want to stay a linger. These types of amenities exist throughout the City in the form of benches, street art, garbage bins, water fountains, pavement markings and other fixtures. This summer the City initiated a pilot to provide additional outdoor seating at restaurants in Lower Lonsdale and at Lonsdale at 18th Avenue to help enhance and add vitality to public spaces. Many of the amenities listed above are typically concentrated in areas with high numbers of people walking such as, parks and along the Spirit Trail, Green Necklace and Lonsdale Avenue.

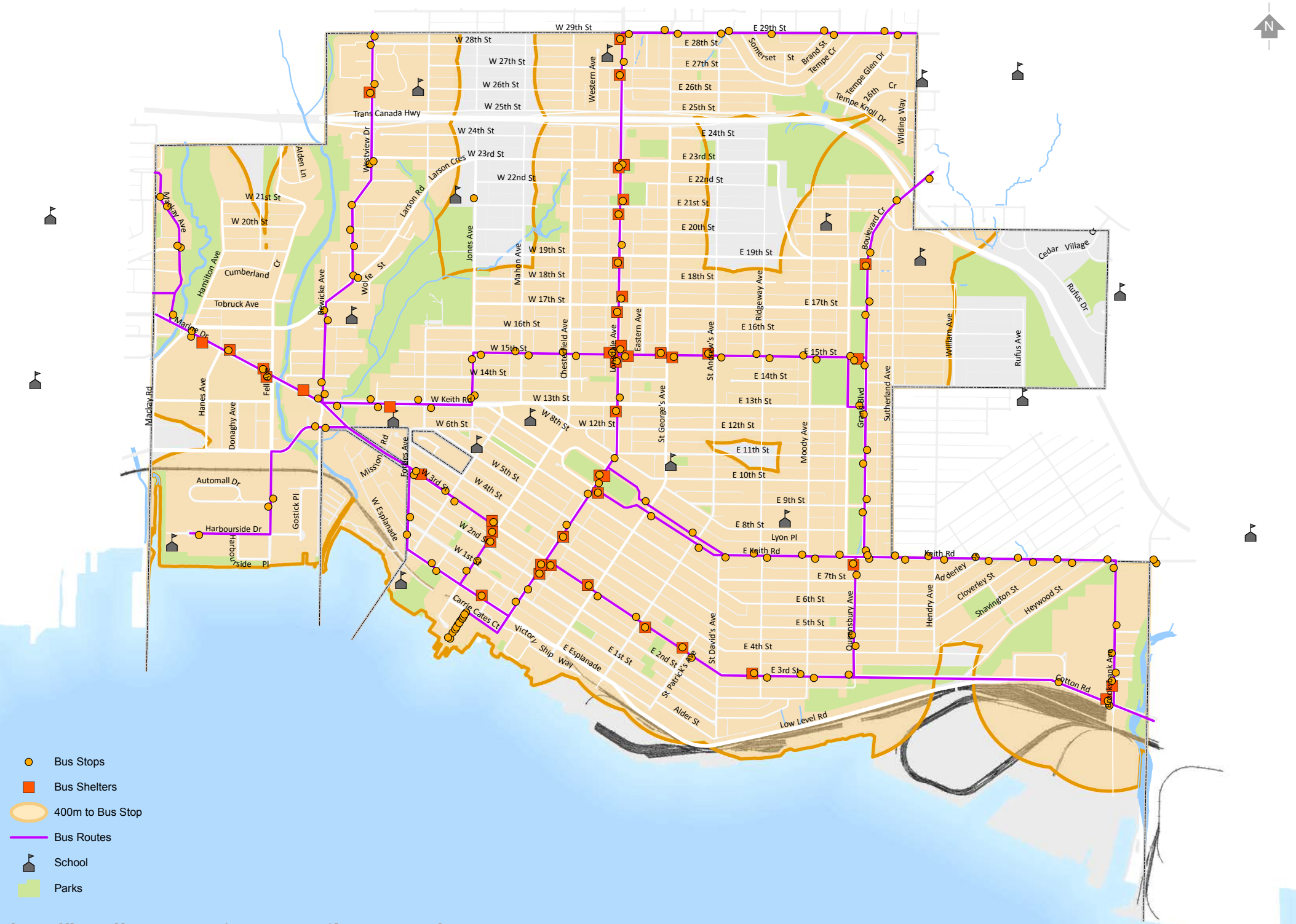
Transit Integration

As many transit trips begin or end on foot, it is important to consider how well the sidewalk and trail network is integrated with transit services and facilities. Walk CNV is an opportunity for the City to look at ways to improve walking connections to and from transit stops and exchange and infrastructure and amenities at bus stops to enhance the customer experience. The City's transit network includes approximately 165 bus stops, of which approximately 25% have permanent bus shelters (**Figure 14**). Most bus stops in the City of North Vancouver are considered accessible (89%), which is the highest in Metro Vancouver (excluding Bowen Island). Figure 14 also shows that nearly 84% of the City's landmass is within 400 metres of a bus stop, indicating a bus stop is within a 5 minute or less walking distance for most residents.

In 2012, TransLink developed the North Shore Area Transit Plan (NSATP) to guide the growth of the transit service network on the North Shore and to integrate with the services provided across Metro Vancouver. TransLink developed this plan to adapt to the changing dynamics of the North Shore communities that will see more residents staying on the North Shore for their daily work commute and growing demand will exist for people commuting into North Shore communities for work. The plan identifies rapid transit service in the City in both the north/south and east/west direction. Some of the key takeaways from the NSATP to be considered in Walk CNV include the desire to improve safety, accessibility and the overall customer experience at transit exchanges. It was noted in the 2015 Progress Update that the improvements to transit exchanges throughout the North Shore are currently in progress.



FIGURE 14 - THE CITY OF NORTH VANCOUVER TRANSIT NETWORK AND BUS STOPS



3.2 TRAVEL PATTERNS

The following section outlines existing travel patterns for City residents based on 2011 National Household Survey data, 2011 TransLink Regional Trip Diary data and responses to the Walk CNV survey completed in early 2017. The survey was completed by 365 individuals.

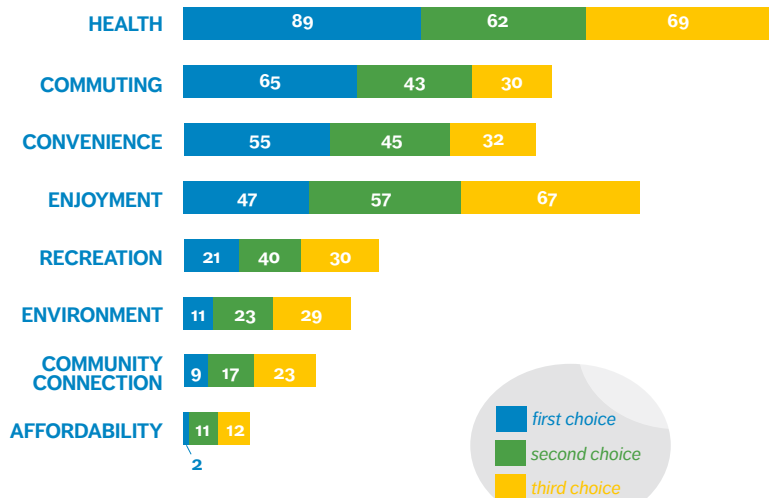
Interest In Walking

As noted previously, promoting walking can help reduce automobile dependence and GHG emissions, increase physical activity and improve public health outcomes, increase social connections, and reduce infrastructure demands. Results from the 2017 interactive survey show that City residents believed walking is important for many reasons, with health, commuting, convenience and enjoyment being the top priorities for walking, as seen in **Figure 15**. The remaining priorities, ranked in order of importance, included: recreation, environment, community connection and affordability (**Figure 16**).

FIGURE 15 - PRIORITIES FOR WALKING
(WALK CNV SURVEY HIGHLIGHTS)

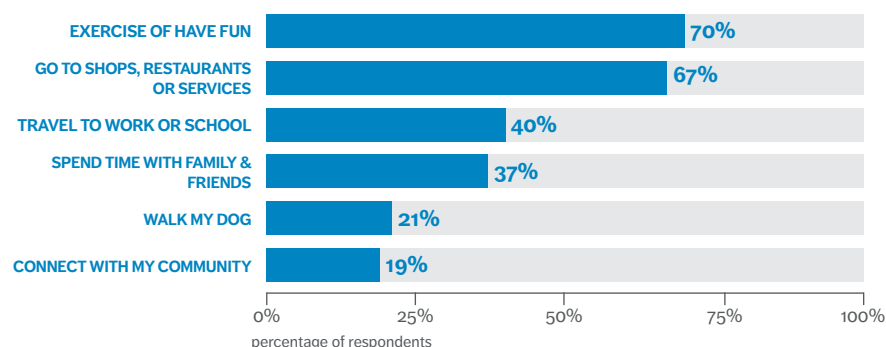


FIGURE 16 - PRIORITIES FOR WALKING (WALK CNV SURVEY RESPONSES - 2017)



Respondents indicated they were interested in walking for a variety of reasons, with the most common reasons being for exercise or to have fun, and to go to shops, restaurants and other services. This shows people are walking for both utilitarian and recreational purposes within the City.

FIGURE 17 - REASONS FOR WALKING (WALK CNV SURVEY RESPONSES - 2017)



Mode Share (Commute Trips)

According to Statistics Canada's 2011 National Household Survey, approximately 11% of commute trips to work or school in the City are made by walking (**Figure 17**). An additional 23% of trips are made by transit, as most transit trips start and end on foot. This means more than 11% of residents are walking at some point during their trip to and from work. When compared to other municipalities in Metro Vancouver, the City has the second highest walking mode share, as seen in **Figure 18**. Over the last 15 years the percentage of trips made by walking has remained relatively stable.

Walking patterns vary significantly throughout the City. The highest proportion of walking trips to work are found in the census tracts that are in Central Lonsdale and Lower Lonsdale, with the lowest proportion of walking trip originating in the Marine-Hamilton neighbourhood.

FIGURE 18 - CNV WALKING TRANSPORTATION MODE SHARE (2011 NATIONAL HOUSEHOLD SURVEY)

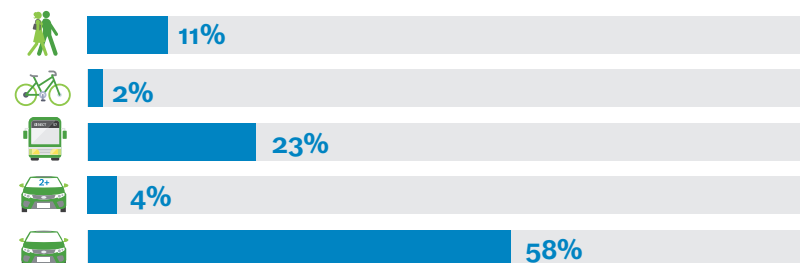
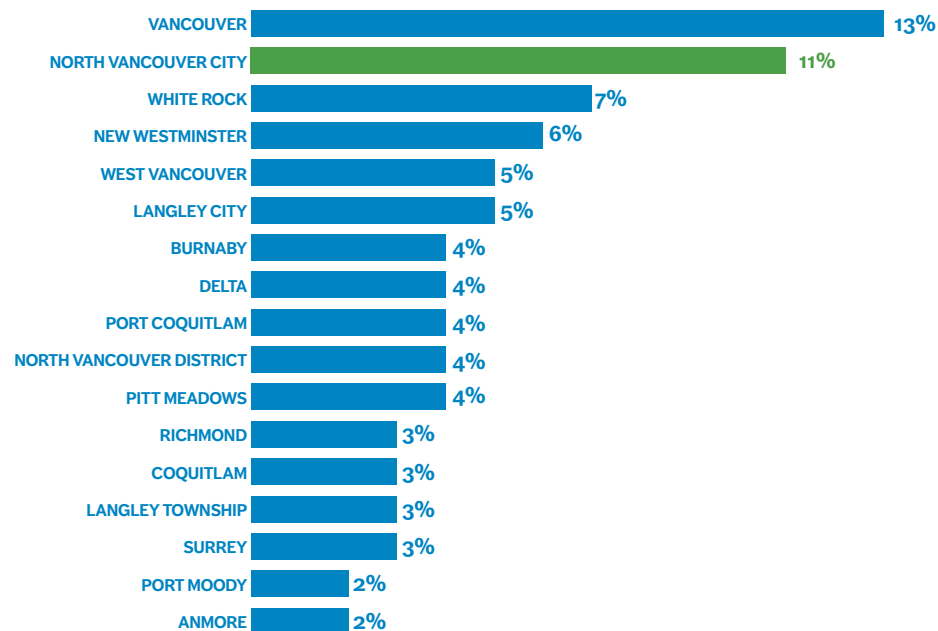


FIGURE 19 - CNV WALKING TRANSPORTATION MODE SHARE (2011 NATIONAL HOUSEHOLD SURVEY)

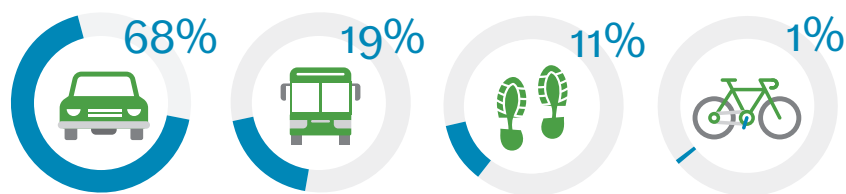


Mode Share (All Trips)

In 2011, TransLink conducted a Regional Trip Diary Survey to understand travel patterns throughout the Metro Vancouver region considering all trip types (not just commute trips to work or school). The survey found that approximately 11% of all trips in the City are made by walking (**Figure 20**).

The difference between Census Canada National Household Survey Data and the Regional Trip Diary Survey is the type of trips that are included. The National Household Survey includes only commute trips to work and school, whereas the data collected from the Regional Trip Diary Survey includes all types of trips including walking trips to shopping, entertainment, recreation and social activities. A comparison of the two data sources indicates that more people are walking for other trip purposes beyond commute trips to work and school.

FIGURE 20 - TRANSPORTATION MODE SHARE - CNV RESIDENTS
(2011 TRANS LINK REGIONAL TRIP DIARY – ANALYZED BY CNV)



Note: The remaining 1% are categorized under 'other'

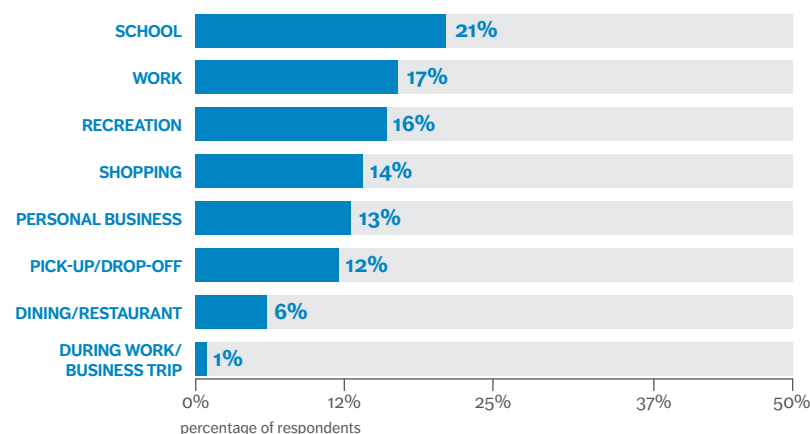
Distances

Most walking trips in the City are relatively short, based on the 2011 TransLink Regional Trip Diary 63% of walking trips are less than 1 kilometre (approximately a 10-15 minute walk), and a further 25% of walking trips are between 1 and 2 kilometres (approximately a 20-25 minute walk). As such, the majority of walking trips (88%) are less than 2 kilometres, or approximately 20-25 minutes. As a result, many of the walking trips that begin in the City remain in the City. While there are a percentage of walking trips that are to and from the District of North Vancouver, the majority remain in the City. This is important to consider because most areas within the City are within a 2 kilometre distance from Central Lonsdale and, as such, walking can be a practical travel choice for most trips within the City.

Trip Purpose and Length

As noted above, walking trips are made for a variety of reasons, including shopping, recreation, and traveling to school and work, as seen in **Figure 21**.

FIGURE 21 - CNV WALKING TRANSPORTATION MODE SHARE (2011 NATIONAL HOUSEHOLD SURVEY)

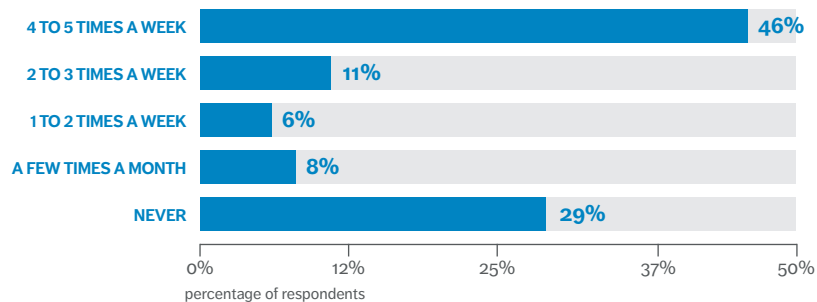


Walking To School

The City of North Vancouver's and the North Vancouver School District's Safe and Active School Travel Program focuses on encouraging healthy and sustainable transportation. This is done through encouraging changes in behaviour and making infrastructure improvements to address safety issues. In the fall of 2013, the North Vancouver School District asked families to complete an online travel survey. The results showed that for every seven families that walk to school, there were six other families that drove and one other family cycled.

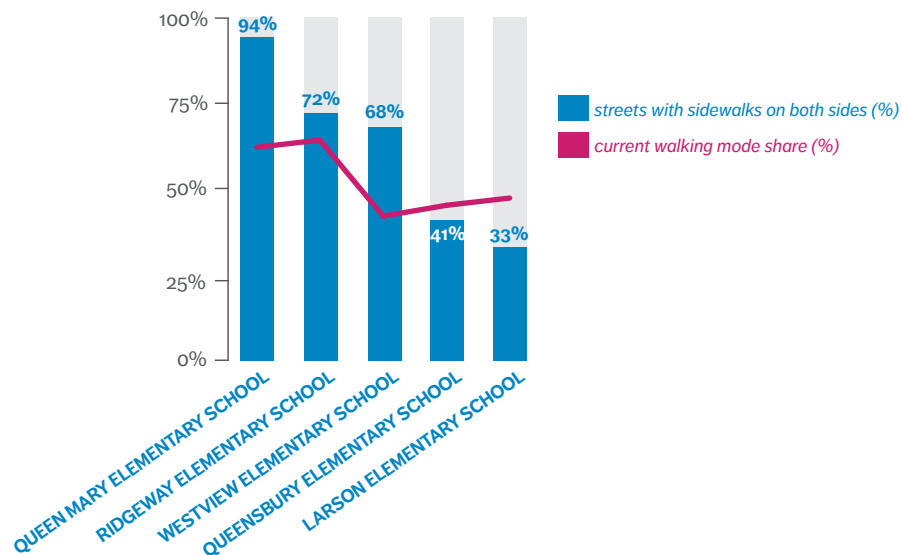
In 2017, the Walk CNV survey was used to better understand how school aged children in the City are travelling to school. Survey respondents that had school aged children were asked how often they walk to school. The interactive survey results show that nearly half (46%) of respondent's school aged children walk to school regularly (four to five times a week), while nearly a third (29%) never walk. A smaller proportion of respondents indicated that their children occasionally walk to school, with 16% walking to school one to three times a week, and 8% walking a few times a month (Figure 22). It is important to note that these results represent a portion of the 365 people that completed the Walk CNV survey and is not a representative sample.

FIGURE 22 - TRAVEL TO SCHOOL (WALK CNV SURVEY RESPONSES -2017)



Engineering and infrastructure is one component that can influence a family's choice to walk to school. **Table 3** shows the sidewalk coverage within 400 metres around each of the public elementary and secondary schools in the City. The results show that schools located in Lower/Central Lonsdale such as Queen Mary Elementary and Ridgeway Elementary have the highest sidewalk coverage with sidewalks on at least one side of over 98% of the streets. However, schools such as Larson and Queensbury Elementary, located north of 19th Street, have lower sidewalk coverage. The City has been making significant infrastructure upgrades related to walking, the City has completed, or is currently working on completing all identified infrastructure projects at the existing elementary schools and is about to start addressing upgrades around high schools.

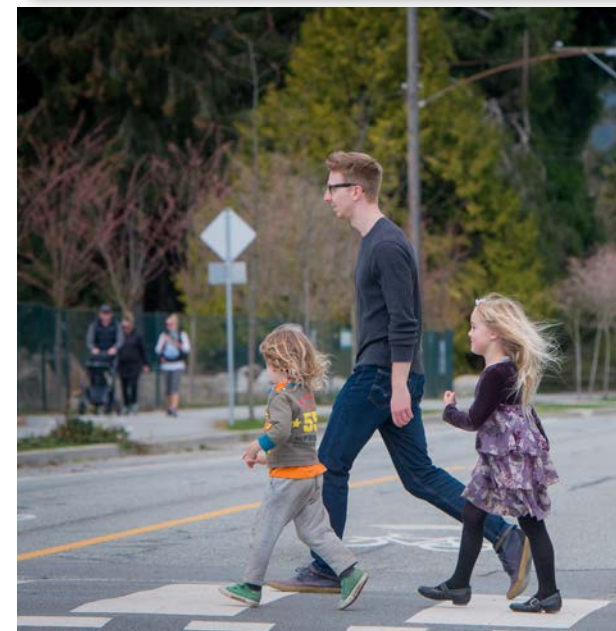
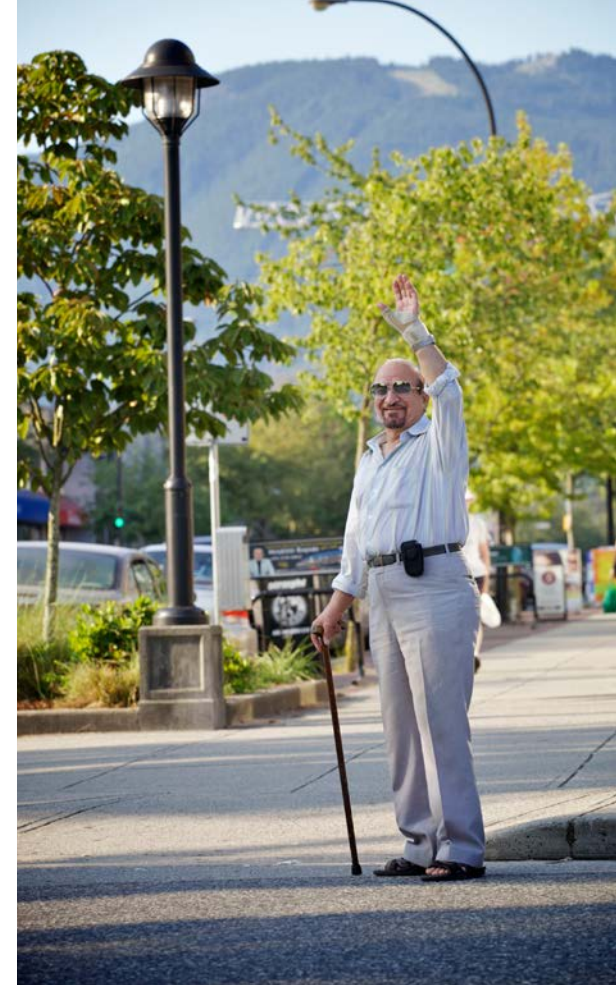
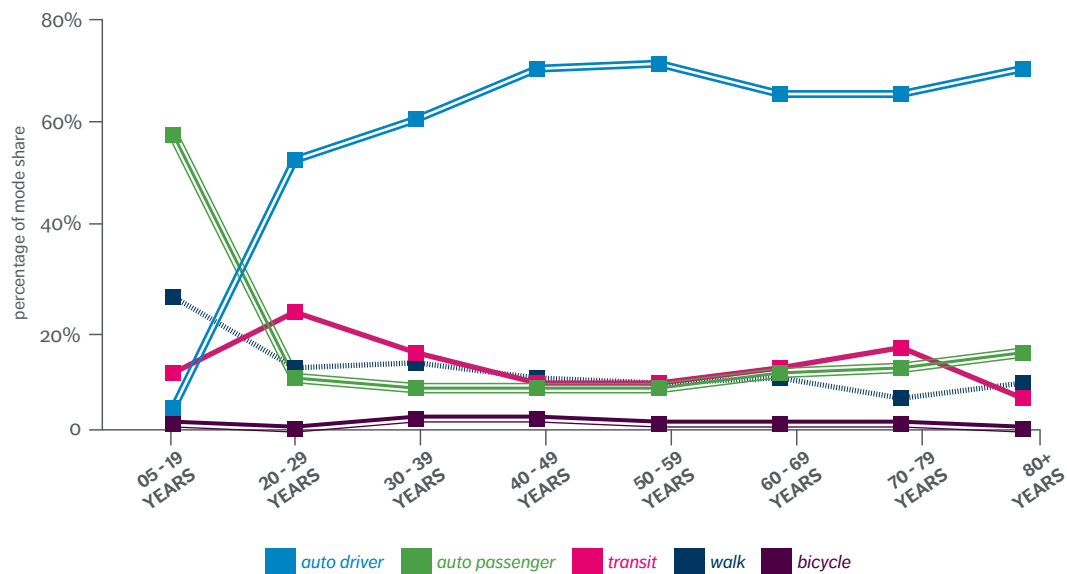
FIGURE 23 - SIDEWALK COVERAGE AND WALKING TRIPS



Walking Patterns By Age

Approximately 16% of the City's population is over 65 years of age and approximately 18% is under the age of 19. TransLink's Regional Trip Diary Survey data indicates that walking trips are highest among individuals between the age of 5 to 19, as over a quarter (26%) of trips made by this age group are made by walking. Walking levels decline over the age of 20, with a slight increase among the 30 and 39 age group, and among those 80 years of age or over (**Figure 24**). Encouraging walking at an early age can help normalize walking as a mode of transportation and build life long travel behaviours.

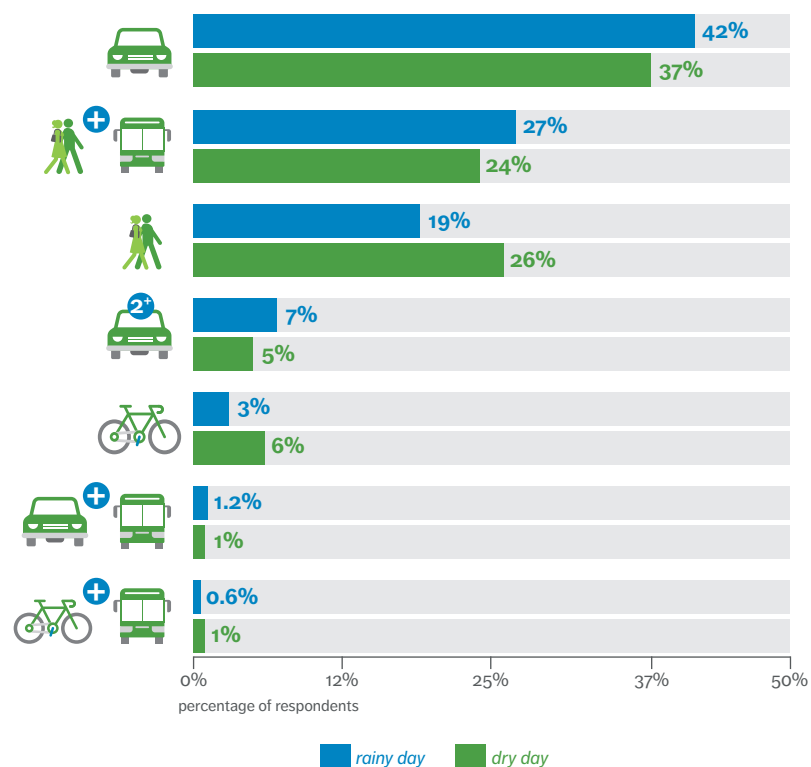
FIGURE 24 - MODE SHARE BY AGE GROUP (2011 TRANS LINK REGIONAL TRIP DIARY)



Weather

Respondents of the 2017 Walk CNV survey indicated that they were 7% less likely to walk as their primary mode of transportation when the weather is cold and rainy (19% of trips, compared to 26% on warm and dry days) (Figure 25). This graph shows respondents that walked all, or a portion of their trip. Approximately 50% of survey respondents walked at least a portion of their trip to work and school on both sunny and rainy days.

FIGURE 25 - WEATHER CONDITION BASED ON MODE CHOICE (WALK CNV SURVEY RESPONSES - 2017)



Destinations

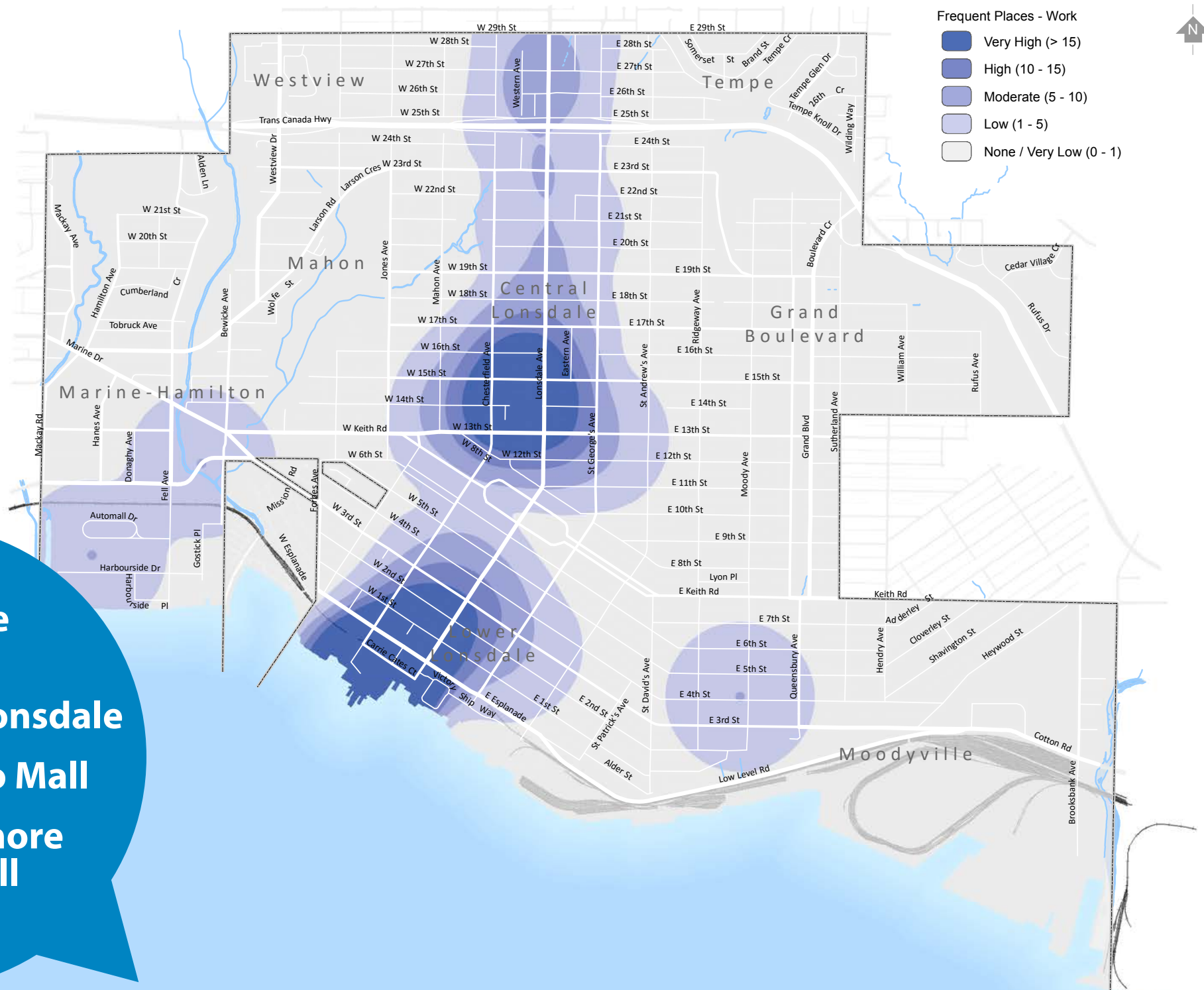
Respondents of the 2017 interactive survey were asked to identify locations they frequently walk to and from for daily tasks such as grocery shopping or going to work. Mapping the results of this exercise was particularly helpful to understand walking patterns within the City. It is important to note that these maps have been created based on the points provided by survey respondents and that there are some examples where destinations markers may have been misplaced or labeled. Figure 26 to Figure 30 show the distribution of these trips.

Some of the key findings show that people are:

- **Able to find many of their destinations** on or nearby Lonsdale Avenue.
- **Working** in Central and Lower Lonsdale and near the North Shore Auto Mall.
- **Shopping** along Lonsdale Avenue, Capilano Mall, Westview and Park and Tilford.
- **Accessing Groceries** in Central Lonsdale, Lower Lonsdale, Capilano Mall, Queensbury Avenue and Park and Tilford.
- **Going to restaurants** on Lonsdale Avenue, Lower Lonsdale, North Shore Auto Mall area and Queensbury Avenue.
- Accessing **recreational facilities** throughout the City including Harry Jerome Recreation Centre, Mahon Park, Grand Boulevard / Ray Perrault Park as well as Lower Lonsdale and the Spirt Trail.

Figure 30 combines the destinations identified above and illustrations the top walking destinations within the City including, Lonsdale, Capilano Mall, North Shore Auto Mall, along with various parks and green spaces. Finally, survey respondents were also asked to identify some of the great places in the City they like to walk. The results are illustrated in Figure 31 and show that respondents identified great places that cover almost the entire City.

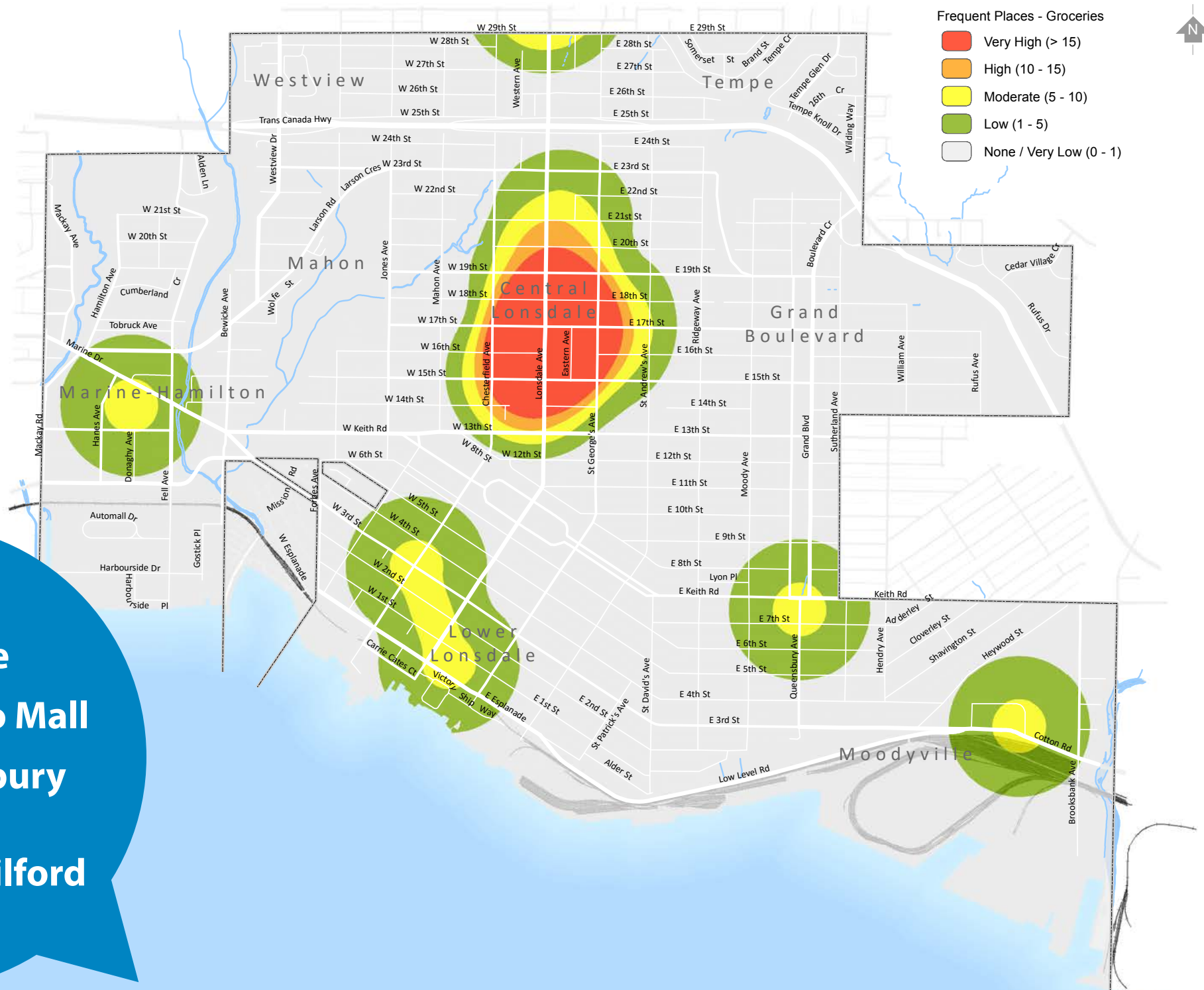
FIGURE 26 - FREQUENT WORK DESTINATIONS (WALK CNV SURVEY RESPONSES - 2017)



Lonsdale Avenue
Lower Lonsdale
Capilano Mall
North Shore Auto Mall

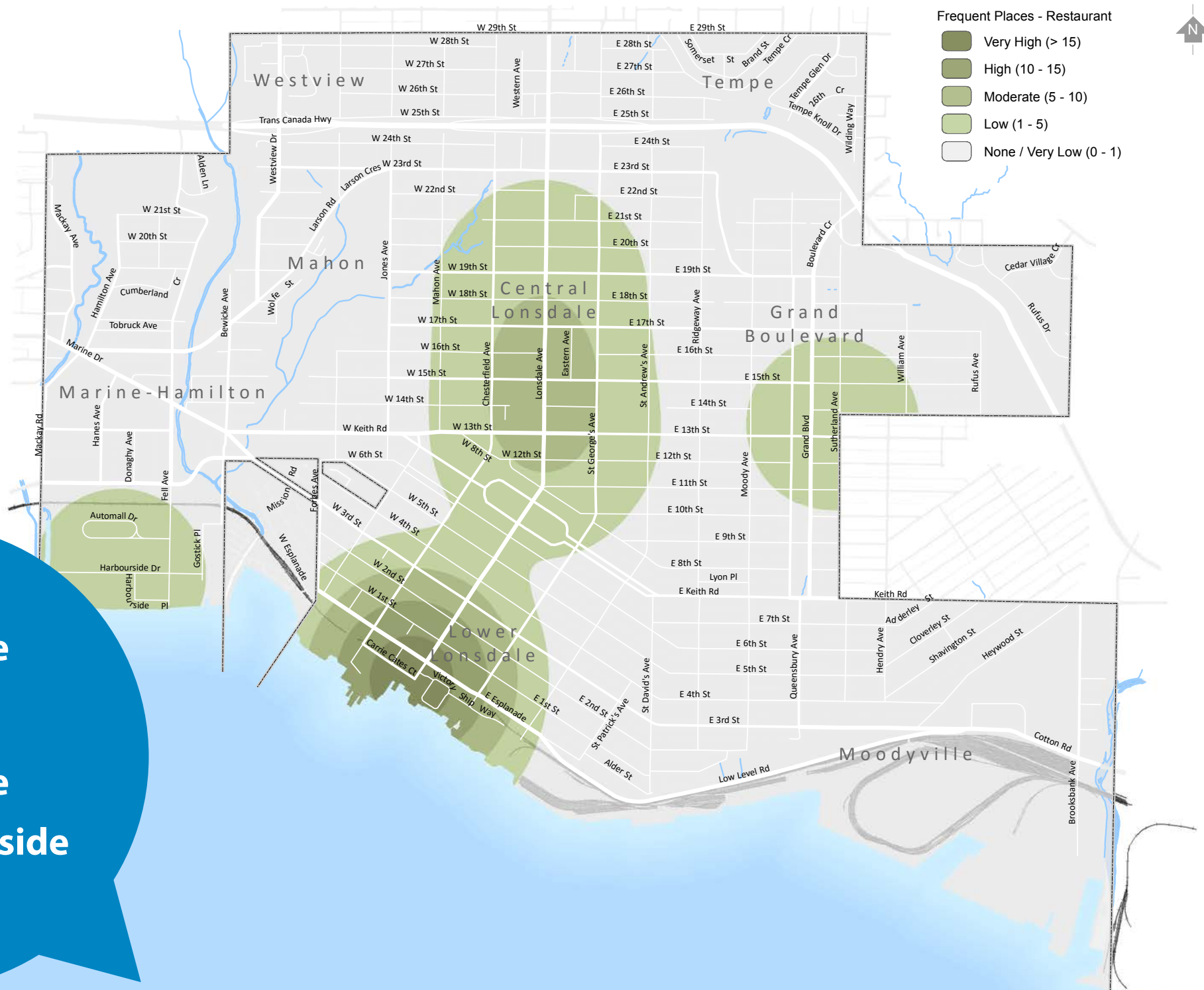


FIGURE 28 - FREQUENT GROCERY DESTINATIONS (WALK CNV SURVEY RESPONSES - 2017)



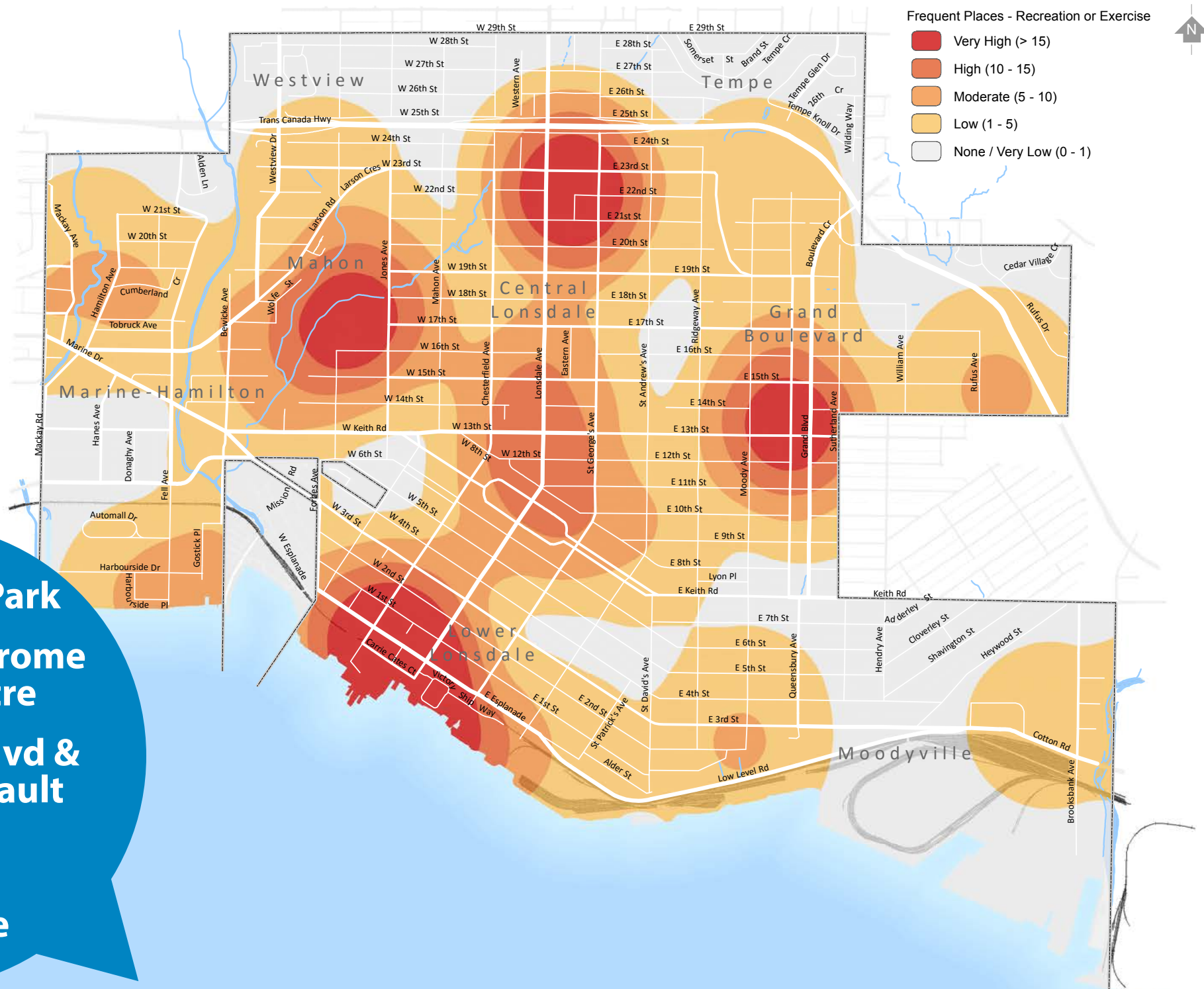
Central
Lonsdale
Capilano Mall
Queensbury
Avenue
Park & Tilford

FIGURE 29 - FREQUENT RESTAURANT DESTINATIONS (WALK CNV SURVEY RESPONSES - 2017)



Lonsdale
Avenue
Lower
Lonsdale
Harbourside

FIGURE 30 - FREQUENT RECREATION DESTINATIONS (WALK CNV SURVEY RESPONSES - 2017)



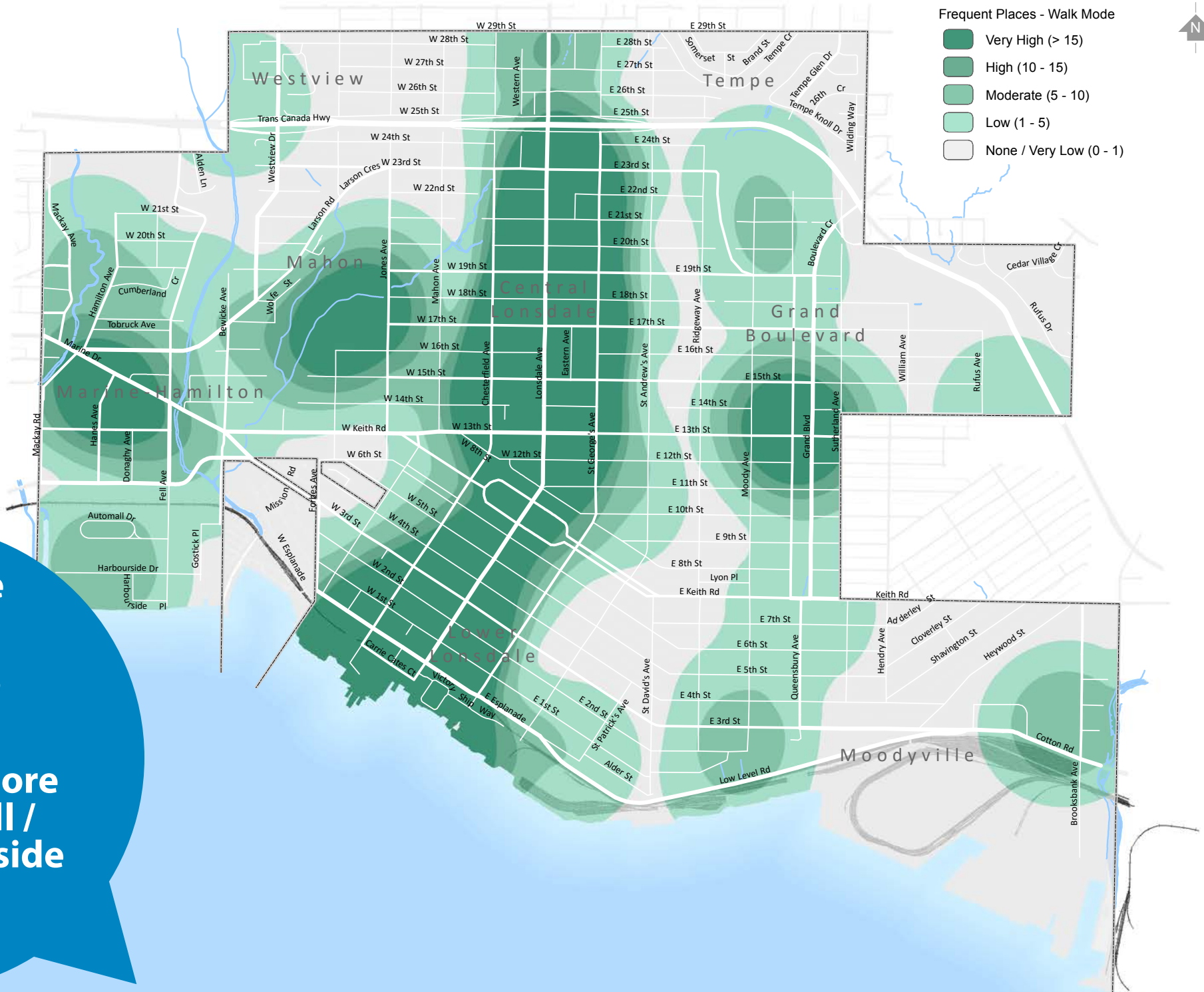
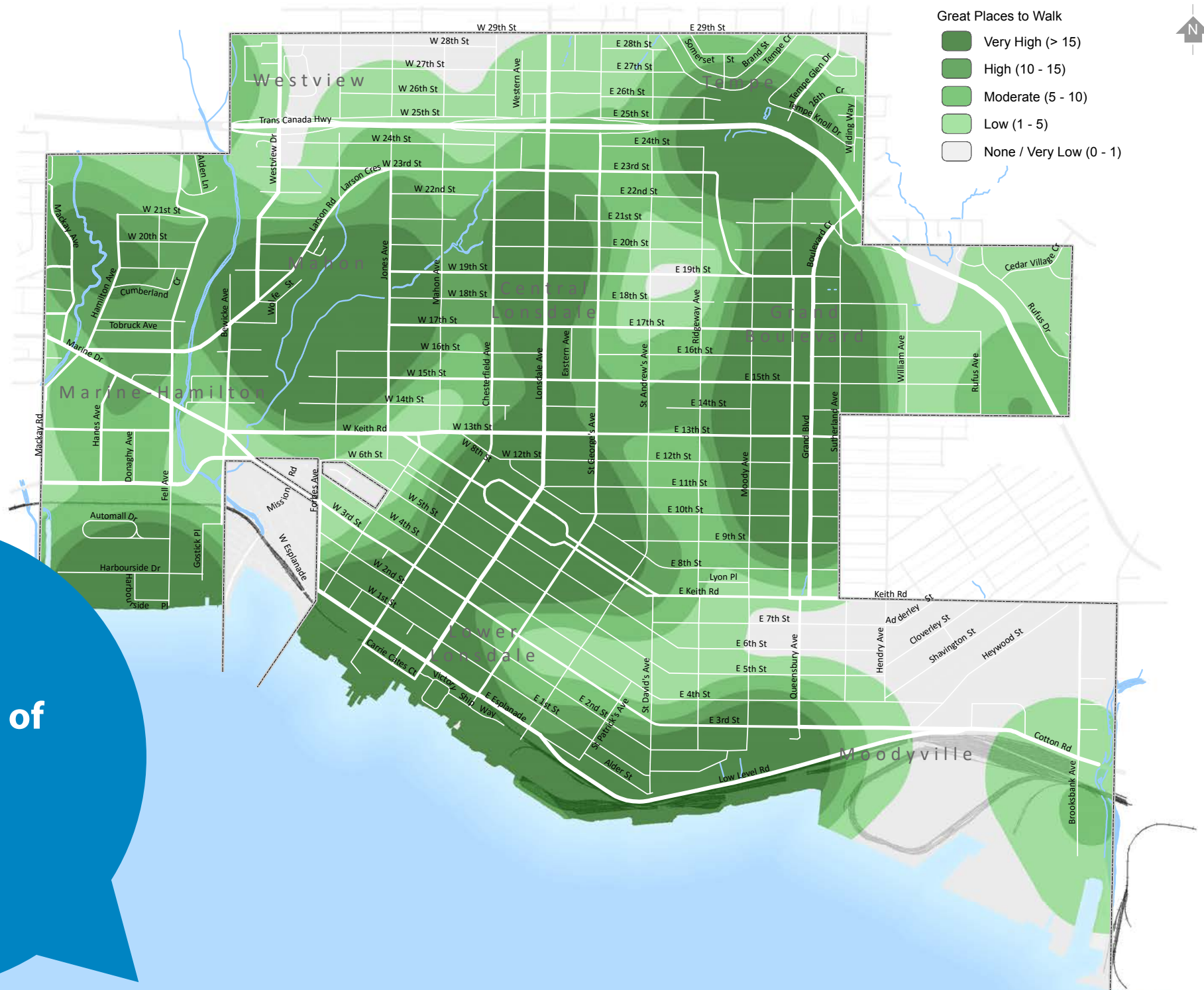


FIGURE 32 - GREAT PLACES TO WALK (WALK CNV SURVEY RESPONSES - 2017)





Pedestrian Areas and Generators

The Pedestrian Plan, developed as part of the City's Long-Term Transportation Plan, defines four key pedestrian areas and corresponding design treatments that will help make the City more walkable over the long-term. The areas identified include:

- **Pedestrian Precincts:** Includes Lonsdale Avenue from the Quay to the Trans-Canada Highway (one block on either side) and much of Lower Lonsdale. These are areas where walking could be the primary mode of travel and should be made a priority. The land use is generally a mix of higher-density land uses that attract multi purpose trips.
- **Primary Pedestrian Generators:** Includes public secondary schools, community centre, Civic Plaza and other key employment areas. These are considered areas that will typically generate a higher than average number of walking trips.
- **Secondary Pedestrian Generators:** Includes auto-oriented commercial developments, playing fields and parks and public elementary and private schools. These are considered areas that will attract moderate volumes of people walking.
- **Low Density Pedestrian Areas:** Represents the remaining areas of the City where lower volumes of people walking is expected.

As part of the Walk CNV process, these areas and generators will be reviewed and updated based on existing travel patterns and land use. The maps developed above based on the Walk CNV 2017 Survey, help to illustrate the pedestrian areas within the City and identifies the destinations residents are already walking to.

Regional Connections

As the City is bordered on three sides by the District of North Vancouver, walking connections between the two municipalities are important for residents of both municipalities. There are several destinations in the District of North Vancouver that are within walking distance of City residents and vice versa. Destinations such as schools, recreational centres and commercial retail are destinations for both City and District residents. There are several pathway and trail connections between the two communities through parks and in many locations along the border the walking conditions between the two municipalities integrate seamlessly. However, the Trans-Canada Highway creates a barrier for walking within the City itself and between the City and the District.

3.3 KEY ISSUES AND OPPORTUNITIES

Through input received from the interactive survey, public engagement events, discussions with City Advisory Committees and the project Steering Committee, several key issues and opportunities for walking in the City have been identified.

Issues

The issues identified in this section were mainly identified through the 2017 Walk CNV survey and have been discussed and confirmed through discussions with the City Advisory Committees and Project Steering Committee. The walking issues most commonly reported are shown in **Figure 33**. The survey included an interactive map of the City for respondents to identify specific challenges or areas for improvements. Respondents could drag and drop 'topic pins' onto specific locations and provide comments to help explain what challenge they have experienced or suggest improvements.

As seen in **Figure 34**, respondents were asked to identify infrastructure issues. These issues include locations where sidewalks or trails are missing or end, where the sidewalk or trail is narrow or in poor condition, locations where intersection safety is a concern, traffic volumes or speeds are high or where it's too dark. Respondents were also able to identify other infrastructure concerns. Some of the other concerns identified include short pedestrian signals, long waits to cross, limited sightlines, and several intersection safety concerns. The map shows a high concentration of intersection safety concerns along Lonsdale Avenue, particularly in Lower Lonsdale and at the highway overpass. There was a concentration of pins dropped where the Spirit Trail currently ends within the Squamish Nation. Traffic volumes and speed was identified several times along 3rd Street, and intersection safety issues were identified along Keith Road.

FIGURE 33 - TOP WALKING ISSUES (WALK CNV SURVEY RESPONSES - 2017)

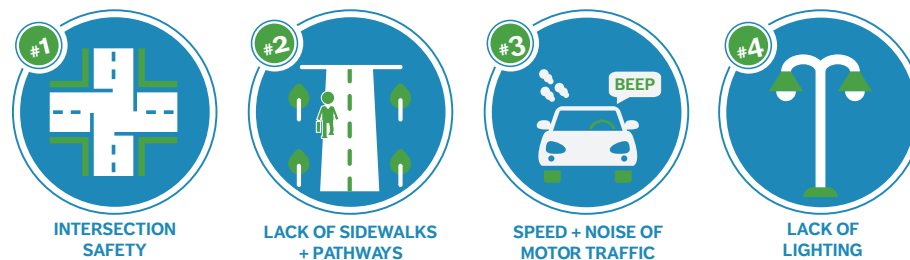
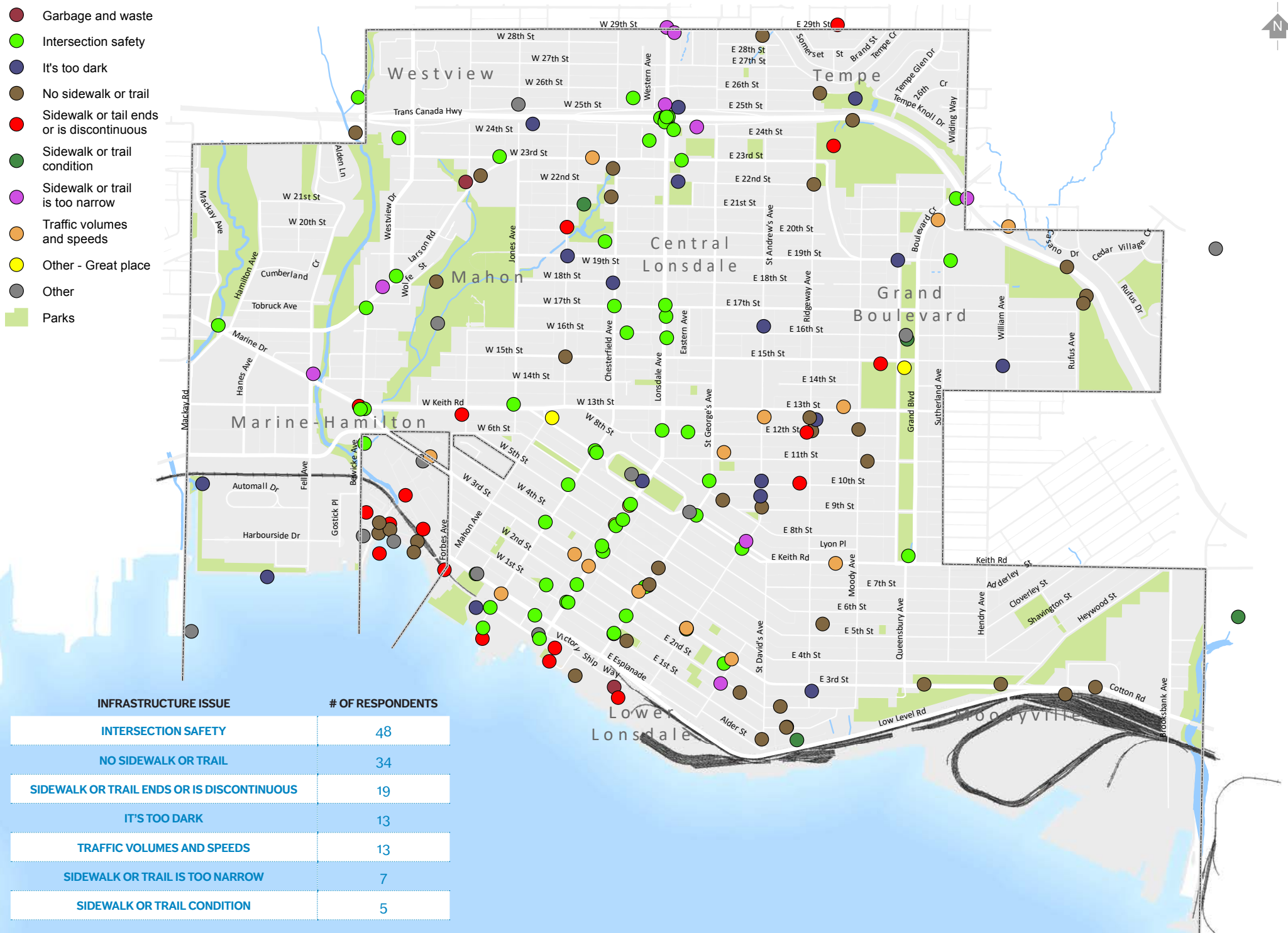


FIGURE 34 - INFRASTRUCTURE ISSUES (WALK CNV SURVEY RESPONSES - 2017)



As seen in **Figure 35** on the following page, respondents also identified accessibility issues, such as locations where there are missing curb ramps, where curb ramps do not lead to the crosswalk, overgrown vegetation and sidewalk clutter. Respondents were also able to identify any other accessibility issues they had. Some of the other issues identified included locations where sidewalks are closed for construction, intersection safety issues, poor sightlines, and signal timing.

A concentration of missing curb ramps was identified along St Andrews Avenue. Concerns about closed sidewalks during construction along 13th Street, and some locations where overgrown vegetation and sidewalk clutter were also identified as issues. Accessibility issues were also discussed at meetings with the City's Advisory Committees and at the community walkabouts, during these conversations, similar input was received regarding existing infrastructure and accessibility concerns.

Based on the survey results, meetings with the City's Advisory Committees and other engagement that was part of the Walk CNV process the following key themes and locations have been identified as issues for walking:

Intersection safety

- Lonsdale Avenue (Lower Lonsdale)– vehicles not stopping for people in the crosswalk
- Lonsdale Avenue (highway overpass) – feels unsafe and uncomfortable for people walking
- Marine Drive and Bewicke Avenue – potential conflict with turning vehicles
- 3rd Avenue – vehicle speeds make it difficult to cross intersections
- Larson Crescent (near Carson Graham Secondary) – difficult to cross

Missing and discontinuous sidewalks and pathways

- Spirit Trail (Squamish Nation)
- Ridgeway Avenue
- St Andrews Avenue
- Sidewalk closures during construction and redevelopment

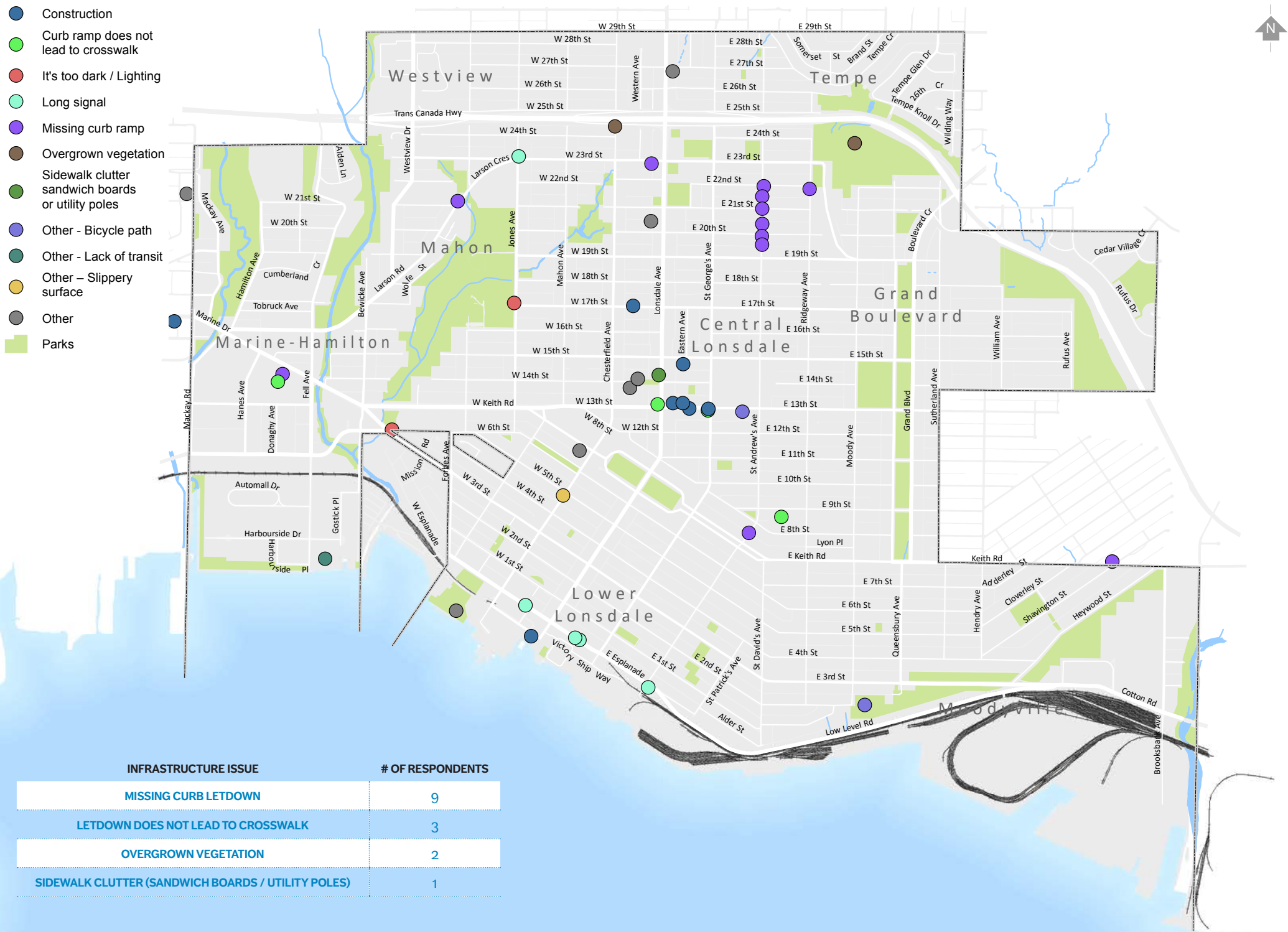
Accessibility

- Curb ramps at all intersections (particularly St Andrews between 19th Street and 23rd Street)
- Ensure curb ramps lead into the crosswalk

Lighting

- St Andrews Avenue between 13th Street and Keith Road
- Streets located adjacent to parks and greenways

FIGURE 35 - ACCESSIBILITY ISSUES (WALK CNV SURVEY RESPONSES - 2017)



Opportunities

Building on the issues identified above, it is important to note that during many of the same conversations with residents and stakeholders they expressed how enjoyable it is to walk within the City, with many people indicating that the scenery, access to trails and pathways, public spaces and plazas and numerous destinations already make walking in the City enjoyable.

Survey respondents were asked what they felt would help them walk more. The top suggestions were: ensuring sidewalks are properly maintained, making it easier to cross the street, completing the sidewalk network, providing more off-street pathways, and improving lighting.

Additionally, respondents were asked what could be done around the City to make walking more fun and enjoyable. The most common responses were to add more street trees and landscaping, public plazas, decorative crosswalks and sidewalks and public art. There were also several comments from other residents and stakeholders that suggested using and revitalizing existing alleyways as alternative walking routes and having more events that encouraged and prioritized walking could help raise awareness and make walking in the City more fun. Stakeholders and residents indicated that while there are several opportunities for improvement, particularly regarding intersection safety, accessibility, ensuring sidewalks and pathways are continuous and well-lit, there are already a lot of really great places to walk and a strong walking culture in the City.



A photograph of a person running on a city sidewalk, viewed from behind. The runner is wearing a grey long-sleeved shirt, black shorts, a white and red cap, and a large grey backpack. They are running on a paved sidewalk lined with trees and blue poles. In the background, there are cars and other pedestrians. The image is split diagonally by a green and white geometric shape.

PART FOUR

NEXT STEPS

NEXT STEPS

This is the first Discussion Paper prepared as part of the Walk CNV process, and summarizes existing conditions for walking in the City today based on technical analysis and public input received to date. Additional research has been completed during this phase of work on some of the best practices in infrastructure design specific to crossing treatments, street lighting and street furniture for the City of North Vancouver.

The next phase of work will on Walk CNV will focus on charting the course for the future of walking. Based on input received from the public and stakeholders and a review of best practices, future goals, objectives and principles will be developed to help guide the policy and infrastructure recommendations that will be identified in the final Plan.





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HOW LOUD IS TOO LOUD?

Health Impacts of Environmental Noise in Toronto



Reference:

Toronto Public Health. How Loud is Too Loud? Health Impacts of Environmental Noise in Toronto. Technical Report. April 2017

Authors:

Kelly Drew, Ronald Macfarlane, Tor Oiamo, Meghan Mullaly, Desislava Stefanova, Monica Campbell

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Eleanor McAteer (Engineering and Construction Services)
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email: publichealth@toronto.ca

Executive Summary

There is increasing concern about the impacts of environmental noise on health, especially in urban areas. The growing body of evidence indicates that exposure to excessive environmental noise does not only impact quality of life and cause hearing loss but also has other health impacts, such as cardiovascular effects, cognitive impacts, sleep disturbance and mental health effects.

Health studies usually report on average noise exposure for a specific period (daytime, nighttime or 24 hrs) and measured as A-weighted decibel levels (dBA). Toronto Public Health (TPH) conducted a noise monitoring study in the early fall of 2016. The average 24-hour equivalent noise levels in Toronto were 62.9 dBA. Average daily levels at individual locations ranged from a low of 50.4 to a high of 78.3 dBA, with mean levels of 64.1 dBA daytime (7:00 a.m. to 11:00 p.m.) and 57.5 dBA nighttime (11:00 p.m. to 7:00 a.m.). Nearly 60 percent of noise in Toronto can be attributed to traffic noise and it is estimated that dissemination areas in the lowest income quintile are almost 11 times more likely to have 50 percent of their residents exposed to night noise levels over 55 dBA, than residents in the highest income quintile. The results of the study show that levels of noise in Toronto are similar to levels found in other large cities such as Montreal and Toronto; as well, similar to other cities there is a disparity between income and exposure to noise.

Non-auditory health impacts of environmental noise were reviewed by the World Health Organization (WHO) in 2009 and 2011. The reports show that cognitive impacts, sleep disturbance mental health and cardiovascular effects could occur at noise levels commonly experienced in urban environments. Toronto Public Health has reviewed the evidence that has accumulated since the WHO evaluation. Newer evidence confirms that health impacts can occur at levels between 42 and 60 dBA outdoors, which is below the 70 dBA benchmark that TPH had previously been considered protective of health. The available evidence suggests that environmental noise in Toronto occurs at levels that could be detrimental to health.

The World Health Organization (2009) established health-protective guidelines of 55 dBA outdoors (Leq 16 hours) for daytime and evening exposures and night-noise exposure guidelines of 40 dBA (outdoors Leq night 8 hours, to keep an indoor average of 30 dBA). Given that 40 dBA is often difficult to achieve in urban centres, the WHO indicated an interim nighttime limit of 55 dBA. The Ontario Ministry of Environment and Climate Change has recommendations for road-related noise thresholds: for sensitive land uses, such as residential uses, mitigation measures are required if outdoor levels at the centre of a window or door opening exceed 55 dBA daytime or 50 dBA nighttime.

Reducing the exposure of environmental noise to residents is multi-pronged and includes periodic assessment of the noise environment through monitoring and modelling, policy interventions (for example, traffic management, building code standards, equipment performance standards, and noise bylaws), and education and engagement of the public. Maintaining a quality outdoor noise environment will contribute to better health and wellbeing. Not only will such an environment promote a more active lifestyle (walking, cycling and active recreation), which can reduce noise levels from transportation, it will also contribute to a reduction in the risk of chronic disease, making Toronto a healthier city for all.

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Glossary

Sound levels are reported in decibels (dB) or A-weighted decibels (dBA) which take into account the human perceptions of loudness at different frequencies. The loudness of sound (L) may be expressed in different ways:

Leq: The equivalent continuous level, which is the average level of sound over a period of time (for example hour, day, or year)

Leq 24: The equivalent continuous level, which is the average level of sound over a period of 24 Hours

Ldn: the average equivalent sound level over a 24 hour period with a penalty added for noise during the nighttime hours

Lden: the average equivalent sound level over a 24 hour period with a penalty added for noise during the evening and nighttime hours

Lmax: the maximum level of sound that occurs in a period of time

Lnight: average level during the night (usually 8-hours, for example 11pm to 7 am)

Plane of door or of window: the centre of an exterior window or door opening in a building

SEL: the sound exposure level measured over one second

Environmental Noise and Health

Environmental noise is considered to be any unwanted sounds created by human activity (Murphy, King, & Rice, 2009). Environmental noise includes noise from roads, rail and air, as well as construction noise, music systems (amplified sound), neighbours, small machinery and air conditioners. This makes it an important issue for densely populated urban environments. This definition allows for environmental noise to be considered a type of pollution, an element that can be regulated, controlled and mitigated. As is common practice, environmental noise for the purpose of this study refers to noise outdoors. It does not include noise generated indoors such as noise that travels between units in multi-residential buildings.

Noise is a complex issue to measure as it has several important properties including: loudness (intensity, measured in decibels on a logarithmic scale [dB or dBA]), duration (continuous, intermittent, or impulsive), and frequency (pitch). Measurements of loudness are often reported on the A-weighted scale, and can include additional penalties for evening and night levels (see glossary for additional information on noise measurements). In environmental noise and health research the focus tends to be on average noise levels for a specific period (day, night or 24 hrs) and measured in dBA. Since the decibel is a logarithmic unit, a sound received by the ear at 60 dBA is perceived as twice as loud as sound at 50 dBA.

Until recently the impacts of environmental noise were generally deemed a quality of life issue and the main concern was impact on hearing and annoyance. As Figure 1 shows, within an exposed population, the most severe health impacts from noise exposure will be experienced by a relatively small proportion of the population, but a larger number of people will experience feelings of discomfort or stress.

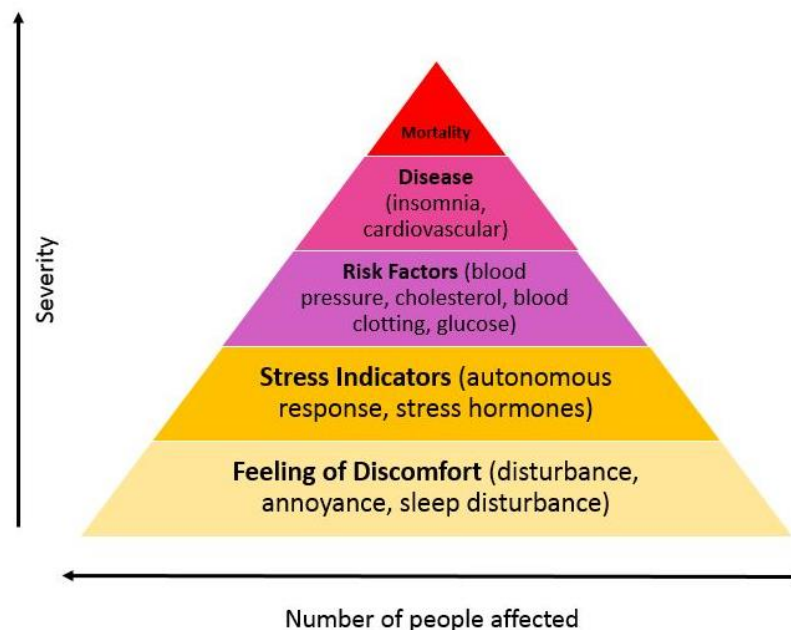


Figure 1: Source: adapted from (Wolfgang Babisch, 2002) as cited in (W Babisch et al., 2010) Noise is considered a biological stressor and a component of one's physical environment, and this therefore one of the determinants of health (Mikkonen & Raphael, 2010). The experience

of noise is based on both noise as heard by the observer and individual sensitivities to noise, with physical and psychological mediators influencing the non-auditory impacts of noise exposure (Murphy & King, 2014). The majority of the available health evidence comes from studies that modelled outdoor noise levels using proximity to roadways, railway tracks or airports to estimate exposure.

Noise-induced Hearing Loss

For a long time, the main health concern related to noise was related to occupational exposure and hearing loss. The World Health Organization (World Health Organization, 2009, 2011) has determined that noise-induced hearing loss is unlikely when average daily exposure to noise is below 70 dBA and impulse sound levels do not exceed 110 dBA. The equivalent 8-hour exposure threshold for hearing loss that includes impulse sounds is 75 dBA (World Health Organization, 1999, 2009, 2011). In Ontario, the Occupational Health and Safety Act protects workers so that no employee is exposed to levels exceeding 85 dBA (8-hour average) (Government of Ontario, 2014). Noise at this level could still result in some hearing loss.

It is important to note that hearing loss or damage is a cumulative impact, as people are exposed to noise throughout their lifetime and hearing damage can build over time. In some cases personal noise exposure is based on choices made, such as ear buds and personal listening devices, operating small equipment without protection or attending concerts and events. While these personal choice exposures were not considered in this review, they can have an impact on health. The WHO considers hearing loss or damage from acute or chronic exposure a health concern as this can affect a person's ability to function in society and result in social isolation. There is now evidence that noise can have other health impacts not related to hearing.

Non-Auditory Health Impacts of Environmental Noise

There has been growing interest in the non-auditory impacts of environmental noise on health. In 2009, the World Health Organization Regional Office for Europe released its Night Noise Guidelines for Europe and in 2011 the Burden of Disease from Environmental Noise. From these comprehensive reviews, the WHO recommended that outdoor noise levels do not exceed an average of 55 dBA during the day and an average of 40 dBA at night.

Toronto Public Health searched the literature published between 2010 and January 2017 to identify any new evidence that had emerged since the WHO review. The health effects that were included were impacts identified in the previous WHO reviews as well as emerging health impacts supported by strong evidence. Diabetes and adverse behavior in children are emerging end-points of concern. Health impacts considered in this review are:

- **Cardiovascular Effects:** myocardial infarction, hypertensive heart disease, ischemic heart disease, high blood pressure, cerebrovascular disease (stroke), coronary heart disease
- **Cognitive Impacts:** impairment (attention, memory adults, errors upon testing in children)
- **Sleep Disturbance:** increased arousals, changes to sleep structure
- **Mental Health:** annoyance, depression, quality of life

- **Pulmonary Effects:** chronic obstructive pulmonary disease, pneumonia
- **Other Effects:** diabetes, behaviour in children

Cardiovascular Effects

Noise exposure has been linked to cardiovascular diseases as vascular tension is impacted by stress responses (Babisch, 2005 in Bodin et al., 2016). These effects have been reported to occur at levels ranging from 55 to 73.6 dBA outdoors.

Myocardial infarction occurs when stress hormones like noradrenaline and cortisol interfere with beta-adrenergic receptors of the circulatory system (Gan, Davies, Koehoorn, & Brauer, 2012). Noise has been associated with an increased risk of mortality from myocardial infarction. Outdoor noise has been linked to increased odds of hypertensive health outcomes as a result of stress which affects individual hormone and blood pressure levels (Sørensen et al., 2011a). A higher arousal of the autonomous nervous and endocrine systems, which is adversely influenced by road traffic noise exposure, is associated with an increased risk of mortality from ischaemic heart disease (World Health Organization, 2011).

Adverse increases in blood pressure from environmental noise are associated with cardiovascular mortality (Chobanian et al., 2003; Ezzati et al., 2002 as cited in Fuks et al., 2011). By influencing factors like atherosclerosis and elevated blood pressure, road traffic noise exposure has been linked to an increased risk of mortality from cerebrovascular disease (stroke) (Sørensen et al., 2014). Exposure to certain noise levels indicate an increase risk in mortality due to impacts on blood pressure, which is a risk factor for the advancement of coronary heart disease, a condition that indicates the blood vessels of the heart are compromised (World Health Organization, 2016).

Recio and colleagues (2016) found a 3.5 percent increase in the risk of death from myocardial infarction and 2.9 percent increase in the risk of death from ischaemic heart disease, and 2.4 percent increase in the mortality rate of cerebrovascular disease for every 1 dBA increase in nighttime noise levels between 58.7 – 76.3 dBA (L_{max} night) for people 65 and older. For people younger than 65, there was an 11 percent increased risk of death from myocardial infarction and ischaemic heart disease for every 1 dBA increase in average nighttime noise levels between 56.2 – 69.9 dBA. Similar results were found in other studies with increased risk of mortality from myocardial infarction and ischaemic heart disease (approximately 55-60 dBA during the day, >50dBA at night)(Seidler et al., 2016a; Sørensen et al., 2012).

Seidler and colleagues (2016b) reported a statistically significant increase in odds of hypertensive heart disease for every 10dBA increase in noise over 55dBA (Leq 24). Banerjee and colleagues (2014) found similar results of increased odds of hypertension at 60dBA (L_{den}) for women and 65dBA (L_{den}) for men. The WHO (2011) found that road traffic noise and air pollution independently impact the prevalence of hypertension. Indoor environmental nighttime noise levels above 30dBA have been associated with increased odds of hypertension and high systolic blood pressure per increase of 5 dBA (Foraster et al., 2014). Sørensen and colleagues (2011a) reported that in people over 64.5 years of age, exposure to every 10 dBA (L_{den}) increase in residential road traffic noise was associated with a 27 percent higher risk for stroke.

In analysis of road traffic noise, Gan and colleagues (2011) reports an increased relative risk of mortality from coronary heart disease of 13% for every 10 dBA over 58dBA and 29% for every 10dBA increase over 70 dBA when the effect of PM2.5 was taken in to account. Significant correlations for noise were still found when the effect of black carbon was taken in to account with an increased relative risk of mortality from coronary heart disease of 9% for every 10 dBA over 58 dBA and 22% for every 10 dBA increase over 70 dBA when compared to those with noise exposures less than 58 dBA.

Cognitive Impairment

Van Kempen and colleagues (2012) found an association between students exposed to road and air noise pollution at school and the number of errors made during SAT testing. In contrast, another study reported that children had increased information and conceptual recall when exposed to road or aircraft noise at school (Matheson et al., 2010). It was suggested this was due to context-dependent memory, where people recall information better when exposed to a similar environment where it was originally introduced (Matheson et al., 2010).

Cognitive impairment in adults as a result of exposure to noise has only recently been studied. Initial evidence suggests environmental noise, acts as a sensory stimulant and may hinder cognitive abilities including "attention, memory and executive function" (Wright, Peters, Ettinger, Kuipers, & Kumari, 2016b).

Sleep Disturbance

Sleep disturbance due to noise exposure is a common complaint among noise exposed populations (World Health Organization, 2011). Sleep is important to physical and mental health and well-being. Sleep is involved with the healing and repair of the body, and disturbed or deficient sleep has been linked to an increased risk of many chronic diseases. Sleep disturbance has an impact on metabolic and endocrine function and contributes to the risk of cardiovascular disease. Sleep loss is associated with weight gain, risk of diabetes, and susceptibility to viral illness (World Health Organization, 2009). Chum and colleagues (2015), indicated an increased odds of self-reported sleep disturbance in areas with elevated noise and traffic levels. Increased odds of worse quality sleep was found with outdoor daytime aircraft noise between 50-60 dBA and nighttime noise levels between 50-55 dBA (Schreckenberg, Meis, Kahl, Peschel, & Eikmann, 2010).

Mental Health

Annoyance and its link to mental health is an emerging area of research on the impacts associated with exposure to environmental noise. Annoyance to noise results in a multitude of emotional responses including "disturbance, dissatisfaction, displeasure, irritation, nuisance, or anger" ((Van Kempen & Van Kamp, 2005)as cited in Babisch, Schulz, Seiwert, & Conrad, 2012). The condition of annoyance can be conceptualized in one of two ways - as a mediating factor in, or indicator for, biological responses to noise (Evans & Cohen, 1982 as cited in Oiamo, Luginaah, & Baxter, 2015). In general, the extent and impact of annoyance varies among individuals exposed to environmental noise (Murphy & King, 2014).

A recent study looking at self-reported noise exposures found higher odds of high annoyance in populations exposed to moderate truck traffic when compared to those exposed to light truck traffic and similarly when comparing people exposed to constant truck noise to those exposed

to no truck noise (Dratva et al., 2012). When looking at residents living in buildings with one quiet façade, De Kluizenaar and colleagues (2011) found that individuals benefited from both decreased noise exposure at the most exposed façade as well as lower levels of annoyance from road traffic noise. In buildings without a quiet façade the odds of annoyance increased as traffic noise increased (De Kluizenaar et al., 2011). In a study by Schlittmeier and colleagues (2015) that individuals reported average outdoor noise levels of 50 dBA Leq (10 sec) were “significantly less annoying” than when average levels were 70 dBA Leq (10 sec). In 2011, the WHO estimated 42 dBA outdoors as the point at which individuals exhibit high levels of annoyance when exposed to road traffic noise.

Increased stress and sleep disturbance have been suggested as the biological pathways by which environmental noise influences depression. Orban and colleagues (2016) found an association between high noise exposure, defined as 55 dBA Lden outdoors and greater than 50 dBA Lnight and an increased risk of self-reported high depressive symptoms.

Quality of life is defined as “an individual's perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (WHO as cited in Shepherd et al., 2010). The World Health Organization Quality of Life (short-form) scale consists of 26 factors divided into four domains: physical health (7 items), psychological wellbeing (6 items), social relationships (3 items), and environmental factors (8 items). Shepherd and colleagues (2013) found higher scores across all dimensions of the Health-Related Quality of Life (HRQL) scale (except for the social dimension) for individuals residing in areas of median 55 dBA Ldn noise levels, compared to those living in “noisy” regions of median 76 dBA Ldn. In 2016, Shepherd and colleagues found noise annoyance more predictive of “psychological, social and environmental” domain variability on the HRQOL when compared to annoyance from air pollution.

Pulmonary Effects

Chronic obstructive pulmonary disease (COPD) is a term that describes multiple chronic conditions that limit airflow to the lungs (World Health Organization, 2017). Recio and colleagues (2016) found a 4% increase in the risk of death from for every 1 dBA increase with nighttime noise levels ranging from 58.7 to 76.3 dBA (Lmax night) for people 65 and older.

Recio and colleagues (2016) found a 3% increase in the risk of death from pneumonia for every 1 dBA increase with nighttime noise levels from 58.7 – 76.3 dBA (Lmax night) in people 65 and older. The authors suggest that this association is the result of chronic stress from exposure to noise which leads to reduced immunity.

Emerging Health Evidence

There is new but limited evidence for an association between exposure to environmental noise exposure and diabetes and metabolic processes. (Basner et al., 2014; Muenzel et al., 2014 as cited in Tonne et al., 2016). In individuals 65 years and older, exposure to noise at levels ranging from 56.2 to 69.9 dBA Leq night has been associated with a 11 percent increase in relative risk of mortality from diabetes for every one dBA (Recio et al., 2016).

There is some evidence of an association between road traffic noise and increased risk of a higher abnormal total difficulties score, hyperactivity, conduct problems and difficulties with

peer relationship in children as based on a standardised Strengths and Difficulties Questionnaire (Hjortebjerg et al., 2016). Another study found an association between increased road traffic noise exposure at school sites and attention deficit hyperactivity disorder symptoms (Forns et al., 2016).

There has been limited focus on low-frequency noise exposure and health impacts in traditional literature (Murphy & King, 2014). Low-frequency noise is generally referring to noise levels from 20-200 Hz, and buildings tend to have difficulty with attenuating these levels (Wise & Leventhall, 2011). There is some evidence that low-frequency noise may contribute to annoyance and sleep disturbance.

Annoyance while known as an impact of environmental noise, it had not been studied much in regard to its relationship with health. Environmental noise is starting to be recognized as an important factor in the health of individuals, particularly as we undergo rapid development and urbanization.

Discussion

Based on the best available health evidence at that time, Toronto Public Health (2000) had concluded that exposure to noise at levels of up to 70 dBA (Leq 24) would not result in any adverse impacts. This review along the WHO 2009 and 2011 reviews indicate that health effects occur at much lower exposure levels (see for example Table 1). Previous evidence found ischaemic heart disease at threshold around 70 dBA, current evidence finds this threshold to start around 58 dBA. Currently, the thresholds for self-reported sleep disturbance is 42 dBA nighttime, where as previously there were around 60 dBA. The more recent evidence reviewed for this report (refer to the Appendix) supports these lower thresholds.

Table 1: Effects of noise on health and wellbeing with sufficient evidence (source: European Environment Agency, 2010)

Effect	Exposure Measure *	Threshold ** (dBA)	Effect type
Annoyance disturbance	L _{den}	42	Chronic
Self-reported sleep disturbance	L _{night}	42	Chronic
Learning, memory	L _{eq}	50	Acute, chronic
Stress hormones	L _{max Leq}	NA	Acute, chronic
Sleep	L _{max, indoors}	32	Acute, chronic
Reported awakening	SEL _{indoors}	53	Acute
Reported health	L _{den}	50	Chronic
Hypertension	L _{den}	50	Chronic
Ischaemic heart diseases	L _{den}	60	Chronic

Note: * L_{den} and L_{night} are defined as outside exposure levels. L_{max} may be either internal or external as indicated.

** Level above which health effects start to occur or start to rise above background. NA – not available.

Policy makers benefit from noise thresholds as they provide standards on which to base limitations on. Some health impacts have been suggested to occur using a no threshold model but evidence for this is limited at the current time. Due to the difference in measurement of the time periods where health effects are seen (day, evening, night), the thresholds are not directly comparable to each other and to guideline levels without conversion.

Noise Levels Recommended for Health

To protect health, the World Health Organization (2009) established night-noise guidelines of 40 dBA (outdoors Leq night 8 hours) to keep an indoor average of 30 dBA. Understanding that 40 dBA is often difficult to achieve in urban centres, they added an interim value of 55 dBA night. Additionally, the WHO recommended daytime levels of 55 dBA (Leq 16 hours). The Ministry of Environment and Climate Change (MOECC) (Government of Ontario, 2013) has recommendations for road related noise thresholds before mitigation measures are required of 55 dBA daytime and 50 dBA nighttime (See Table 2). These levels are applicable to road and stationary sources of noise at the centre of window or door openings for sensitive land uses such as residential properties, hotels, schools, hospitals, and community centres. More information on the MOECC guidelines can be found in the Noise Regulation in Ontario section of this report. The evidence identified in this review supports using the WHO guidelines as maximum noise exposure to protect health.

Table 2 – Outdoor Residential Noise level guidelines from the WHO and MOECC

Measure Detail	Noise Level (dBA)		
	Day	Evening	Night
Noise Duration	12 Hr	4 Hr	8 Hr
Timeframe	7:00-19:00	19:00-23:00	23:00-7:00
Authority			
WHO Target noise guideline	55		40
	Calculated Maximum Equivalent Ldn: 55.6		
	Calculated Maximum Equivalent Lden: 56.5		
	Calculated Maximum Equivalent Leq (24h): 53.3		
MOECC Target noise guideline (1 hr Average)	55		50
	Calculated Maximum Equivalent Ldn: 58.2		
	Calculated Maximum Equivalent Lden: 58.7		
	Calculated Maximum Equivalent Leq (24h): 53.9		

Noise Levels in Toronto

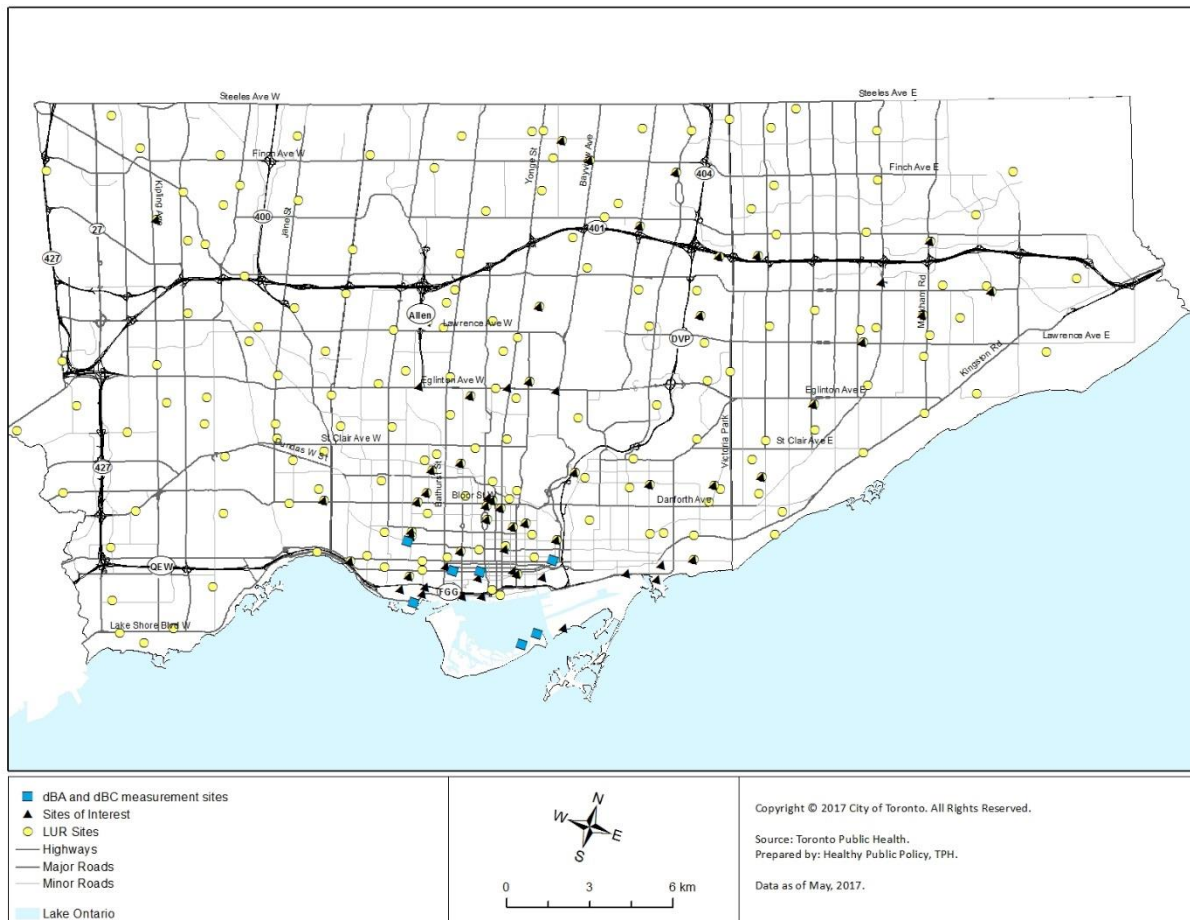
The City of Toronto is currently undergoing a noise bylaw review. To determine if current exposures to noise in Toronto could have a negative impact on health, and inform the revisions to the bylaw Toronto Public Health commissioned a noise monitoring and modelling study, the results of which can be found in Environmental Noise Study in the City of Toronto report (Oiamo, et al., 2017).

Noise Monitoring

Over the period of August to October 2016 a total of 227 noise measurements were made. Noise was monitored using the A-weighted decibel scale at 220 different locations across the City (see Figure 2) for approximately a one week period at each site. Additional measurements were done using the C-weighted scale at seven locations where the noise environment was influenced by sources of amplified sound to provide information on the distribution of lower frequency sounds. The sites were chosen based on a combination of population densities, land uses and sites of interest as determined by the project advisory committee. The project advisory committee suggested locations where events are held, or where residents have expressed concerns about noise or noise levels are expected to be high. The sites were categorised by land use (residential, open space, employment, industrial/commercial, residential), road type (local, collector, major arterial) and sites of interest (schools, long-term care/hospitals, community housing, concert venues, EMS, CNE, BMO field, TTC yards, historic or cultural sites and Toronto island).

The monitoring data was analysed in a number of traditional noise metrics for each site as well as for different categories of sites. Measurements for the full week, weekend and weekdays as well as average measurements for 24 hours (L_{den} , $Leq\ 24h$), day ($Leq\ 16h$), night ($Leq\ 8h$) and maximum measured 1 second (L_{max}). Exceedance levels, values that describe the sound level exceeded in a specified period of time (L_1 is 1% of the time, L_5 is 5% of the time) were determined for the listed time periods as well. In addition, values were calculated that described the percent of time a noise level was exceeded (for example 95% of the time noise levels at night are above 40dBA).

Figure 2: Noise Monitoring Locations in Toronto (recreated from Oiamo et al., 2017)



Noise Modelling

To better understand the distribution of noise levels and exposure in Toronto, two modelling methods were used; a propagation model, which estimated the percentage of noise from road traffic specifically and a receptor-based land-use regression model that extrapolates the effect of environmental features on observed noise levels. These models were combined to create maps of predicted noise levels for daytime and nighttime across the city.

The modelling results compared the traffic based model to the receptor based land use regression model to determine the areas where the traffic model was over or under predicting noise levels based on the built environment and monitoring results. The study found that the traffic model was over predicting noise levels in areas with high levels of vegetation coverage and was under predicting noise levels in areas where population density was high. The lack of data for rail and air traffic noise means noise emissions from these sources were not modelled in this study. However, the monitoring and modelling process would still take these noise sources in to account but their precise impact on the soundscape could not be inferred. Due to data limitations sound barriers and noise walls could not be included in the modelling process. This led to some of the major roadways noise levels being over estimated in the initial traffic model. These over and under estimations were corrected for in the final modelling process.

It should be noted that land use regression is a math based approach to predicting exposures, and in this case a modelled approach to predicting where the noise from the traffic model was over or under estimated. The predictors for vegetation coverage, population density, distance to airports and railways all logically relate to noise level estimates. The interpretation of how other predictor's effect noise levels is less straight forward. Detailed methods for the modelling methods uses can be found in the report of Oiamo and colleagues (2017).

To estimate population noise exposures, the noise estimates from the final daytime and nighttime surface models were linked to Statistics Canada population estimates. Noise was estimated for the exposed façade of all residential buildings in Toronto and dissemination block level population data were used to estimate the number of residents in each building based on building size. From this, the proportion of residents exposed to daytime and nighttime levels at certain thresholds was estimated. To estimate the impact on vulnerable populations a logistic regression model was used to look at the relationship between income and noise. Household incomes were linked to dissemination areas where nighttime noise levels exceeded 55dBA for at least 50% of the residents.

Results

The monitoring study found the average 24-hour equivalent noise levels across the city to be 62.9 dBA. Average daily levels at each site ranged from a low of 50.4 to a high of 78.3 dBA. Daytime and night time averages can be seen in Table 3. Weekdays were found to be louder than weekends across the city.

The dBC measurements were primarily taken in areas where there was a known source of amplified sound. It was observed that the dBC values did not decrease with the dBA values during the latenight hours but the cause of this is unknown, but could be due to vibration of low frequency amplified sound.

Table 3 – Average dBA levels from noise monitoring. (Source: Oiamo et al., 2017)

dBA (n=220)	Full Week				Weekday				Weekend			
	Lden	Leq24h	LeqD	LeqN	Lden	Leq24h	LeqD	LeqN	Lden	Leq24h	LeqD	LeqN
Mean	66.4	62.9	64.1	57.5	66.7	63.2	64.5	57.6	65.3	61.2	62.4	56.8
Median	65.3	61.9	63.2	56.4	65.4	62.1	63.4	56.1	64.5	60.6	61.9	55.9
Std. Devi	6.9	6.4	6.3	7.8	6.9	6.3	6.2	7.9	7.3	7	7	7.9
Minimum	54	50.4	51.6	42.6	53.9	50.7	52.2	42.2	51.3	47.5	48.4	43.5
Maximum	82.3	78.3	79.5	74.4	82.9	78.9	80.1	74.8	80.8	76.5	77.8	74.1

Note: Lden is the average equivalent sound level over a 24 hour period with a penalty added for noise during the evening and nighttime hours; Leq is The equivalent continuous level, which is the average level of sound over 24 hours; LeqD is The equivalent continuous level, which is the average level of sound over 16 daytime hours; LeqN is The equivalent continuous level, which is the average level of sound over 8 nighttime hours;

Observed average noise levels among the sites of interest varied depending on the type of site or land-use. The lowest noise levels were observed in residential areas and along local roads. As expected, the highest levels were observed in mixed-use areas and along major arteries. Sites identified as close to construction activities also exhibited higher average noise compared to the overall average noise levels. Monitoring was completed in late summer early fall, which corresponds to peak construction season. High average noise levels were noted near busy TTC facilities and an EMS station and monitors in proximity to large gatherings of people also indicated high noise exposures at specific periods in time (BMO Field and CNE). The noise bylaw identifies quiet zones, which are defined as hospital, retirement home, nursing home, senior citizens residence, or other similar uses. Monitoring locations in or near 'quiet zones' showed similar patterns to overall levels. This might be due to the fact these facilities are generally found along major roads, and may have a larger number of emergency vehicles passing close by.

Overall the study found that 62% of the time the mean noise level was above 55dBA during the day (Leq_{day}) and 54% of the time above 50dBA (Leq_{night}) at night. The modelling indicated that 59% of the noise in Toronto can be attributed to traffic (Leq_{24}). This result is similar to the results of comparable studies in Montreal and Vancouver. Sound levels at the majority of locations that were specifically selected because of concerns about noise did show higher noise levels overall than other sites.

Figure 3, is a map of the final predicted daytime noise levels based on traffic and land use regression modelling combined. The traffic noise dominates the map, there are higher levels in the downtown core and some areas near the highways. Areas of parkland and ravines have the lowest estimated noise levels. Figure 4 is the average predicted night time noise levels, and demonstrates a similar pattern as the daytime results. At night, the roads still dominate and the downtown core is still relatively loud, but the overall noise levels are lower.

Figure 3 - Predicted daytime (Leq16) noise levels in Toronto

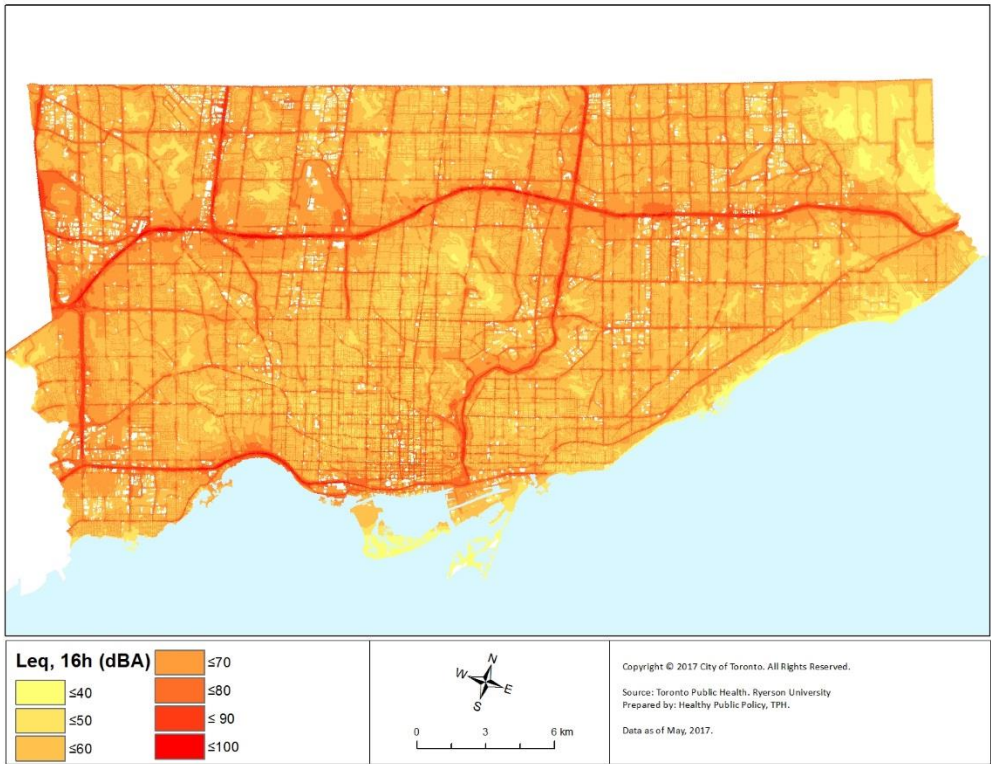
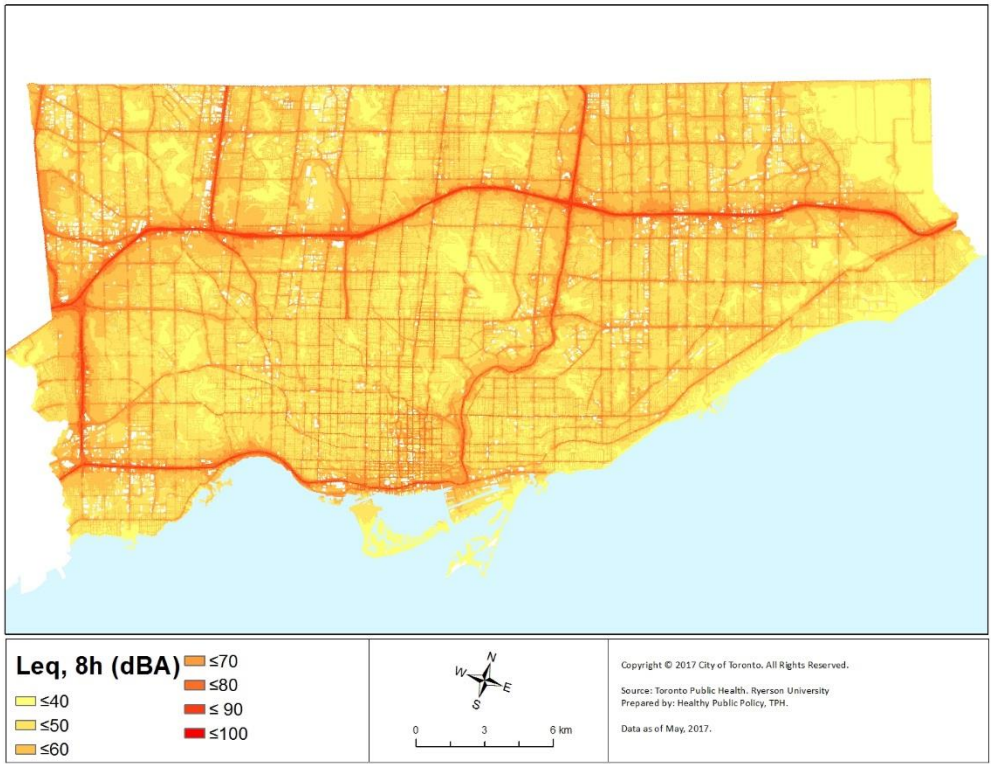


Figure 4 - Predicted nighttime (Leq8) noise levels in Toronto



Populations Affected

Table 4, has the percent of the estimated population exposed to certain noise levels at various time periods. For example, 88.7% of the population is estimated to be exposed to levels above 55 dBA during the day, and 43.4% is estimated to be exposed to above this level at night.

Table 4 – Estimated Population Exposed to Noise above selected noise exposure levels

Noise Threshold	Number of people exposed above the threshold (millions)	Percentage of people exposed above the threshold
L _{Aeq} , 24h, 65 dBA	0.85	30.1%
L _{Aeq} , 24h, 55 dBA	2.03	72.2%
L _{Aeq} 16, day, 65 dBA	1.09	38.8%
L _{Aeq} 16, day, 55 dBA	2.49	88.7%
L _{Aeq} 8 ,night, 55 dBA	1.22	43.4%
L _{Aeq} 8, night, 45 dBA	2.60	92.3%

Dissemination areas in the lowest income quintile are nearly 11 times more likely have 50% of their residents exposed to a nighttime noise above 55 dBA than do residents in dissemination areas in the highest income quintile (Table 5). Overall, a large percentage of residents in Toronto are exposed to noise that exceed objectives for outdoor noise, especially nighttime exposure at home. People living near major arterial roads or in areas with mixed commercial and residential uses are also more exposed.

Table 5 – Logistic regression predicting dissemination areas with 50% of residents exposed to nighttime noise levels exceeding 55 dBA. (Source: Oiamo et al., 2017).

	Odds Ratio**	95% Confidence Interval
Highest Income Quintile (Reference Category)		
4	1.84	1.38-2.44
3	2.18	1.64-2.89
2	3.76	2.87-4.92
Lowest income Quintile	10.99	8.42-14.36

** significant at $p < 0.0001$

Mitigation and Regulation

Noise Regulation in Ontario

Health Canada does not have any exposure guidelines for environmental noise. The 8-hour workplace permissible exposure limit in Ontario is 85 dBA. Some hearing loss can still be expected at this level of exposure.

The Ontario Environmental Noise Guideline, from the Ministry of Environment and Climate Change is applicable to stationary and transportation sources of noise (NPC-300) identifies various limits depending on area, source of noise, time of day, and type of noise. Noise

sensitive land uses include residential properties, hotels, schools, hospitals, and community centres.

For example, the MOECC guidelines indicate that for road-related noise, control measures (such as sound proofing and ensuring adequate ventilation so that windows or doors can be kept closed) is not be required if the sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA (daytime) and 50 dBA (night-time). If the sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA (daytime) or 60 dBA (night-time), noise mitigation is required, which may include installation of central air conditioning to maintain adequate ventilation, so that noise levels are kept below an average of 45 dBA in living areas, with a provision of night-time average levels of 40 dBA in sleeping quarters due to road-related noise; the corresponding values for rail-related noise are 40 and 35 dBA.

NPC-300 also includes a graduated scale for impulse noise (short burst of loud noise) depending on number of impulses per hour ranging from 80-50 dBA (impulse, outdoor), with a provision for higher allowable noise levels in Class 4 areas (areas where new sensitive land uses are built next to existing stationary source of noise).

The current City of Toronto noise bylaw sets out specific rules for noise depending on the location and time of day. The bylaw covers a variety of noise sources including amplified sound, construction noise and general noise. The bylaw regulates types of noise not covered in other regulations, and includes provisions for quiet zones and times. Other common sources of noise such as transportation, rail, industrial and workplace noise are regulated through provincial or federal instruments.

Mitigation Best Practice

There are a number of strategies available to help mitigate impacts from environmental noise. Land-use planning is a preferred choice, which includes separating loud land uses from sensitive ones and site design and building layouts that site sleeping areas away from noise sources. In developed urban environments this option is not always available to planners.

Controlling the noise at the source would be the next best choice in mitigation practice. This can include enclosing it, use of silencers or mufflers, and limiting the times of operation. Amplified sound for events such as large scale concerts or outdoor events, noise leakage can be mitigated through specific time limitation, speaker layout and design and other noise insulation strategies, such as soundproofing or using tents.

Creating barriers to reduce the amount of sound that reaches the receiver is also a common approach. This includes noise barriers, setback requirements, and mounds and trenches. Controls on the receiver of the noise generally are related to building design, such as sound insulation, window glazing, and enclosed balcony to buffer noise. Codes may require stronger attenuation requirements for buildings near major noise sources to reduce the intrusion on occupants.

Many jurisdictions have noise level limits for road noise which may vary according to the adjacent land use. Most commonly limits are between 55-70 dBA, for daytime road traffic noise levels near residential land uses. In addition to physical noise barriers, walls and buffers for traffic noise, dynamic traffic management has been suggested as an effective mitigation strategy. This could include traffic restrictions around vulnerable populations (schools, hospitals), reduced nighttime vehicle operations, coordinated traffic signals, and street design that favours non-automobile uses. Higher vehicle speeds results in higher road noise; for example, there is an effective doubling of noise levels from 30km/h to 50km/h (Department of Transportation, 1998). Updates in paving materials can create smoother surfaces and thus result in less road noise.

The way things are built and the materials used can have a large impact on the noise levels being produced from all sources of environmental noise. For example, wheel and tire design and materials can lower noise levels by 2-15 dBA; new paving materials can reduce road noise; and, the electrification of cars, buses, trains and trucks are expected to reduce traffic noise.

Some construction noise levels can be reduced through method and equipment choices, noise barriers and scheduling both time of day and limiting the number of concurrent noise sources. Generally electric versions of small equipment are quieter than their gas powered counterparts. The requirement for noise ratings and labelling can encourage and facilitate the purchase of and use of more quiet equipment.

The European Union noise directive (European Commission, 2002) requires urban areas with population of over 100,000 to assess their noise environment on a regular basis, including the impact road, rail, and airport noise. Municipalities are also required to develop noise management action plans in consultation with the public. These plans cover the exposure to environmental noise, prevention and reduction strategies and preserving environmental noise quality where levels are good¹. A review of this requirement has found this practice effective as it has brought attention to the importance of noise as a public health risk (European Commission, 2016).

Conclusions

The health impacts associated with environmental noise are both acute and chronic in nature. In addition to noise-induced hearing loss, there is growing body of evidence that shows an association between environmental noise and health impacts including cardiovascular disease cognitive impairment in adults and children, sleep disturbance and mental health impacts. Emerging evidence suggests that exposure to environmental noise could lead to adverse pulmonary effects increased mortality from diabetes, and negative impact on behaviour in children.

¹ For a Step by step approach for developing noise Action Plans, see Kloth, M and colleagues (2008) <http://www.noiseineu.eu/fr/3527-a/homeindex/file?objectid=3161&objectypeid=0>

The health evidence suggests that older adults and young children may be more at risk. Furthermore, in Toronto lower income populations who are already experience poorer health are also more likely exposed to more noise than people with higher income.

Results of the noise monitoring and modelling study indicate that noise levels in Toronto are above the World Health Organization's limits for both daytime and nighttime exposure, and thus likely to contribute to the burden of illness in the city. Given the ubiquitous nature of this exposure a comprehensive approach to noise management in the city will be required to effectively limit unnecessary exposure to noise and ensure that noise exposures do not increase over time.

Approaches that can be used to reduce exposure to noise include choosing technologies that are quieter, setting planning requirements, adopting improved building codes, implementing traffic management measures, and prescribing limits and noise mitigation measures in the noise bylaw.

Given that almost 60% of the noise in Toronto can be attributed to traffic noise, implementing measures to reduce exposure to noise from transportation sources should be a priority. Maintaining a quality outdoor noise environment will contribute to better health and wellbeing. Not only will such an environment promote it a more active lifestyle (walking, cycling and active recreation), which can reduce noise levels from transportation, it will also contribute to a reduction in the risk of chronic disease, making Toronto a healthier city for all.

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Appendix: Health Impacts of Environmental Noise Exposure:
Literature Review Evidence Summary Table

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
Cardiovascular mortality (overall)					
Recio et al., 2016	All	Yes	Leq night (0-8h)	Mean (SD) = 60.2 (1.0) Range = 56.2 – 69.9 dB(A)	RR = 1.033 (95% CI: 1.017, 1.049) per 1 dB(A) increase in Leqn at lag 0, ≥ 65 age
					RR = 1.050 (95% CI: 1.004, 1.098) per 1 dB(A) increase in Leqn at lag 0, < 65 years of age
Myocardial infarction morbidity or mortality					
Recio et al., 2016	All	Yes	Lmax night (0-8h)	Mean (SD) = 63.9 (1.7) Range = 58.7 - 76.3 dB(A)	RR = 1.035 (95% CI: 1.011,1.061) (mortality rate of myocardial infarction) per 1 dB(A) increase in Lnmax at lag 0, ≥ 65 age
			Leq night (0-8h)	Mean (SD) = 60.2 (1.0) Range = 56.2 – 69.9 dB(A)	RR = 1.11 (95% CI: 1.042,1.192) (mortality rate of myocardial infarction) per 1 dB(A) increase in Leqn at lag 0, < 65 years of age
Sorensen et al., 2012	Road	Yes	Lden	Range = 42–84 dB	IRR = 1.12 (myocardial infarction) per 10 dB(A) increase for both yearly exposure at the time of diagnosis (95% CI: 1.02, 1.22) and 5 years, time-weighted mean (95% CI: 1.02, 1.23) preceding the diagnosis
Seidler et al., 2016a	Road	No	Leq (24h) The evaluation was performed on the basis of the continuous 24-hour noise level and the categorized noise	Increased risk estimates can be seen starting from a road traffic noise level of 55 dB. The OR reaches statistical significance at a noise level between 60 dB and <65	OR = 1.028 (95% CI: 1.25, 4.5) per 10 dB(A) increase in Leq (24h) (myocardial infarction)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
			level (in 5 decibel classes).	dB (OR = 1.09 (95% CI: 1.02, 1.16)); the highest OR of 1.13 (95% CI: 1.00, 1.27) is found with a 24-hour continuous noise level ≥ 70 dB. For night-time hours between 10 p.m. and 6 a.m., the risk increases when road traffic noise increases above 50 dB (statistically significant in some cases).	
	Rail			For rail traffic, in the 50 to <55 dB category there is a statistically borderline significantly raised OR of 1.05 (95% CI: 1.00, 1.10); in the 55 to <60 dB category the OR is 1.04 (95% CI: 0.97, 1.12); while in the highest sound level category, 70 dB and upwards, the OR is 1.16 (95% CI: 0.93, 1.46). For night-time hours from 10 p.m. to 6 a.m., the ORs begin to rise notably at noise levels of ≥ 60 dB (OR = 1.10 (95% CI: 1.01, 1.20)).	OR = 1.023 (95% CI: 0.5, 4.2) per 10 dB(A) increase in Leq (24h) (myocardial infarction)
Hypertensive heart disease					
Babisch et al., 2014a	Road	Yes	Lden Unit scale was 10 dB(A). For graphical presentation of the results the noise levels were categorized in 5-dB(A) categories using ≤45 dB(A) as a	Range = 31–80 dB(A)	OR = 1.43 (95% CI: 1.10, 1.86) per 10 dB(A) increase in Lden (isolated systolic hypertension)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
			reference category [noise level categories: ≤ 45 , 46–50, 51–55, 56–60, 61–65, ≥ 66 dB(A)].		
Seidler et al., 2016b	Road	No	Leq (24h) For all continuous analyses, a starting point of 35 dB was chosen for noise in the range virtually indiscernible from background noise, below 40 dB.	The categorical analysis showed a nearly monotonous risk increase, reaching statistical significance from 55 dB upwards.	OR = 1.024 (95% CI: 1.016, 1.032) per 10 dB(A) increase in Leq (24h) (hypertensive heart failure)
	Rail		The continuous sound levels for each traffic noise source were grouped in 5 dB categories.		OR = 1.031 (95% CI: 1.022, 1.041) per 10 dB(A) increase in Leq (24h) (hypertensive heart disease)
	Aircraft		For the analysis of road and railway traffic noise, cases and control subjects with noise exposure of less than 40 dB were grouped into the reference category. For the analysis of aircraft noise, individuals exposed to a continuous sound pressure level below 40 dB with the nightly maximum level exceeding 50 dB six or more times (NAT 6) were grouped into a separate exposure category.	In the categorical analysis, the OR was significantly elevated to 1.07 (95%CI 1.04–1.09) at 45 to <50 dB sound levels. For individuals with 24-h continuous aircraft noise levels <40 dB and nightly maximum aircraft noise levels exceeding 50 dB six or more times, a significantly increased risk was observed.	OR = 1.016 (95% CI: 1.003, 1.030) per 10 dB(A) increase in Leq (24h) (hypertensive heart disease)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
Banerjee et al., 2014	Road	No	Lden Noise exposure was grouped into two categories (<60 dB(A)) according to the facade Lden levels. The choice of 60 dB(A) as cutoff point was due the fact that, firstly, it was close to the median Lden value (62.5 dB(A)) and, secondly, most studies have reported 60 dB(A) for similar investigations.	>65 dB(A) Lden (for men) >60 dB(A) Lden (for women)	OR = 1.99 (95% CI: 1.66, 2.39) per 5 dB(A) increase in Lden (hypertension)
Foraster et al., 2014	Road	Yes	Lnight	Median indoor sound modelled = 27.1 dB(A)	OR = 1.06 (95% CI: 0.99, 1.13) per 5 dB(A) increase in Lnight (hypertension)
				Median sound modeled at bedroom façade = 53.5 dB(A)	OR = 1.07 (95% CI: 1.01, 1.14) per 5 dB(A) increase in Lnight (hypertension)
				Median sound modeled outdoors = 56.7 dB(A)	OR = 1.19 (95% CI: 1.02, 1.40) per 5 dB(A) increase in Lnight (hypertension)
Ischemic heart disease morbidity and mortality					
Recio et al., 2016	All	Yes	Lmax night (0-8h)	Mean (SD) = 63.9 (1.7) Range = 58.7 - 76.3 dB(A)	RR = 1.029 (95% CI: 1.010, 1.048) (mortality rate of ischemic heart disease) per 1 dB(A) increase in Lnmax at lag 0, ≥ 65 age
			Leq night (0-8h)	Mean (SD) = 60.2 (1.0) Range = 56.2 – 69.9 dB(A)	RR = 1.108 (95% CI: 1.042, 1.177) (mortality rate of ischemic heart disease) per 1 dB(A) increase in Leqn at lag 0, < 65 years of age

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
Sorensen et al., 2011a	Road	Yes	Lden		IRR = 1.14 (95% CI: 1.03, 1.25) (ischaemic stroke) per 10 dB increase in Lden
			Linear and categorical analyses performed with seven noise exposure categories (55–58, 58–61, 61–64, 64–67, 67–70, 70–73, and >73 dB) and a reference category (≤55 dB). 55 dB used as the reference because this is often the limit value for noise in outdoor residential areas, and used exposure categories of 3 dB because this difference is a doubling in acoustical energy. IRRs were calculated for above and below 64.5 years of age, corresponding to the median age at stroke diagnosis among the cases.	Mean exposure < 64.5 years = 57.8 dB Mean exposure ≥ 64.5 years = 58.2 dB	IRR = 1.27 (95% CI: 1.13, 1.43), (ischaemic stroke) per 10 dB increase in Lden, ≥ 64.5 years of age
Systolic blood pressure					
Foraster et al., 2014	Road	Yes	Lnight	Median indoor sound modelled = 27.1 dB(A)	β = 0.72 (95% CI: 0.29, 1.15) per 5 dB(A) increase in Lnight (systolic blood pressure)
Cerebrovascular disease morbidity or mortality					
Recio et al., 2016	All	Yes	Lmax night (0-8h)	Mean (SD) = 63.9 (1.7) Range = 58.7 - 76.3 dB(A)	RR = 1.024 (95% CI 1.001,1.048) (mortality rate of cerebrovascular disease) per 1 dB(A) increase in Lnmax at lag 0, ≥ 65 age
Sorensen et al., 2011a	Road	Yes	Lden		IRR = 1.14 (95% CI: 1.03, 1.25) (ischaemic stroke) per 10 dB increase in Lden
			Linear and categorical analyses performed with seven noise exposure categories (55–58,		

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
			58–61, 61–64, 64–67, 67–70, 70–73, and >73 dB) and a reference category (≤55 dB). 55 dB used as the reference because this is often the limit value for noise in outdoor residential areas, and used exposure categories of 3 dB because this difference is a doubling in acoustical energy.		
			IRRs were calculated for above and below 64.5 years of age, corresponding to the median age at stroke diagnosis among the cases.	Mean exposure < 64.5 years = 57.8 dB(A) Mean exposure ≥ 64.5 years = 58.2 dB(A)	IRR = 1.27 (95% CI: 1.13, 1.43), (ischaemic stroke) per 10 dB increase in Lden, ≥ 64.5 years of age
Coronary heart disease mortality					
Gan et al., 2011	Road	Yes	Lden Continuous variable to calculate the relative risks of CHD mortality associated with a 10-dB(A) elevation in noise levels and categorical variable to examine exposure-response relations by dividing study subjects into deciles based on noise levels	Mean (SD) = 63.4 (5.0) Range = 33.0 – 90.0 Median (Interquartile Range) = 62.4 (59.8–66.4)	RR = 1.13 (95% CI: 1.06, 1.21) per 10 dB(A) increase in Lden (Coronary Heart Disease mortality when adjusting for PM _{2.5})
					RR = 1.29 (95% CI: 1.11, 1.50) per 10 dB(A) increase in Lden, noise > 70 dB(A) (Coronary Heart Disease mortality when adjusting for PM _{2.5})
					RR = 1.09 (95% CI: 1.01, 1.18) per 10 dB(A) increase in Lden (Coronary Heart Disease mortality when adjusting for PM _{2.5} and black carbon)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
					RR = 1.22 (95% CI: 1.04, 1.43) per 10 dB(A) increase in Lden, noise > 70 dB(A) (Coronary Heart Disease mortality when adjusting for PM _{2.5} and black carbon)
Cognitive impairment (children)					
Pujol et al., 2013	All	No	The school average outdoor L _{Aeq, day} was selected for analysis.	Mean (SD) = 51.5 (4.5) Range = 38 – 58 dB	β = - 0.44 (95% CI: - 0.85, -0.02) (Math test scores) per 10 dB increase in L _{Aeq, day} , ages 8-9 β = - 0.44 (95% CI: - 0.85, -0.02) (French test scores) per 10 dB increase in L _{Aeq, day} , ages 8-9
van Kempen et al., 2012	Road	Yes	Leq (7-23h)	Mean (SD) = 48.7 (8.6) Range = 34.0 – 62.0	β = 0.30 (95% CI: 0.10, 0.50) (Attention scores: SAT, arrow)
	Aircraft			Mean (SD) = 48.6 (7.1) Range = 36.3 – 62.8	β = 0.92 (95% CI: - 0.02, -1.850) (Attention scores: SAT, switch)
Matheson et al., 2010	Road	No	Leq16h	Range = 32 to 71 dB	β = 0.065 (95% CI: 0.02, 0.11) (conceptual recall) per 5 dB(A) Leq16h increase, 8-10 years of age
Sleep disturbance					
Chum et al, 2015	Road	Used local traffic data (together with noise as a control variable) as a proxy for air pollution (common in other studies)	Self-reported level of noise disturbance	Neither agree or disagree - disturbed by noise at home	OR = 1.13 (95% CI: 1.01,1.28) (\leq 6 vs.7 hrs sleep)
				Agree - disturbed by noise at home)	OR = 1.66 (95% CI: 1.39,1.98) (\leq 6 vs.7 hrs sleep)
				Strongly agree - disturbed by noise at home	OR = 2.24 (95% CI: 1.77,2.84) (\leq 6 vs.7 hrs sleep)
				Disagree -disturbed by noise at home	OR = 1.15 (95% CI: 1.00, 1.31) (any vs. none: sleep problems)
				Neither agree or disagree - disturbed by noise at home	OR = 1.84 (95% CI: 1.65, 2.04) (any vs. none: sleep problems)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
				Agree - disturbed by noise at home	OR = 2.74 (95% CI: 2.25, 3.34) (any vs. none: sleep problems)
				Strongly agree - disturbed by noise at home	OR = 3.03 (95% CI: 2.26, 4.07) (any vs. none: sleep problems)
Schreckenberg et al., 2010	Aircraft	No	L _{Aeq} , 16h	Sleep quality is worst for residents exposed to 50 to 60 dB(A) at daytime and 50 to 55 dB(A) at night-time than for residents with less or higher noise exposure.	OR = 0.95 (95% CI: 0.93, 0.97) (bad sleep quality)
Annoyance among adults					
Dratva, et al., 2010	Road		Self-Reported Noise Exposures	The degree of noise annoyance was measured by a thermometer scale ranging from 0 (not at all) to 10 (strong and unbearable, Fig. 2) [10, 37–39]. We created a dichotomous noise annoyance variable, defining high noise annoyance as a value of >6 on the original 11-point scale, similar to the dichotomization presented by Li et al. and Conzelmann-Auer et al. [10, 37].	OR = 0.42 (95% CI: 0.24, 0.74) (high annoyance), countryside vs. heavy traffic location
					OR = 1.82 (95% CI: 1.38, 2.39) (high annoyance), moderate vs. light traffic
					OR = 1.46 (95% CI: 1.09, 1.95) (high annoyance), infrequent truck noise vs. no truck noise
					OR = 3.20 (95% CI: 2.17, 4.82) (high annoyance), constant truck noise vs. no truck noise
de Kluizenaar et al., 2011	Road	No	L _{den} (without quiet side dwelling) <45 defined as reference category	45 – 50 dB(A)	OR = 1.19 (95% CI: 1.03, 1.39)
				45 – 52.5 dB(A)	OR = 1.26 (95% CI: 1.09, 1.44)
				50 – 55 dB(A)	OR = 1.74 (95% CI: 1.47, 2.05)
				52.5 – 57.5 dB(A)	OR = 2.23 (95% CI: 1.87, 2.66)
				55 – 60 dB(A)	OR = 2.75 (95% CI: 2.27, 3.34)
				57.5 – 62.5 dB(A)	OR = 3.83 (95% CI: 3.09, 4.74)
				>60 dB(A)	OR = 6.93 (95% CI: 5.65, 8.50)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
			Lden (with quiet side dwelling) <45 defined as reference category	>62.5 dB(A)	OR = 8.00 (95% CI: 6.30, 10.16)
				50 – 55 dB(A)	OR = 1.63 (95% CI: 1.25, 2.13)
				52.5 – 57.5 dB(A)	OR = 2.05 (95% CI: 1.67, 2.52)
				55 – 60 dB(A)	OR = 2.38 (95% CI: 1.99, 2.84)
				57.5 – 62.5 dB(A)	OR = 2.96 (95% CI: 2.52, 3.48)
				>60 dB(A)	OR = 5.30 (95% CI: 4.63, 6.07)
				>62.5 dB(A)	OR = 6.54 (95% CI: 5.64, 7.58)
Chronic obstructive pulmonary disease mortality					
Recio et al., 2016	All	Yes	Lmax night (0-8h)	Mean (SD) = 63.9 (1.7) Range = 58.7 - 76.3 dB(A)	RR = 1.04 (95% CI: 1.010, 1.070) (mortality rate of Chronic Obstructive Pulmonary Disease) per 1 dB(A) increase in Lnmax at lag 1 , ≥ 65 age
Pneumonia mortality					
Recio et al., 2016	All	Yes	Lmax night (0-8h)	Mean (SD) = 63.9 (1.7) Range = 58.7 - 76.3 dB(A)	RR = 1.03 (95% CI: 1.002, 1.058) (mortality rate of pneumonia) per 1 dB(A) increase in Lnmax at lag 1 when NO2 > 30µg/m³, ≥ 65 age
Diabetes mortality					
Recio et al., 2016	All	Yes	Leq night (0-8h)	Mean (SD) = 60.2 (1.0) Range = 56.2 – 69.9 dB(A)	RR = 1.11 (95% CI: 1.040, 1.192) (mortality rate of diabetes) per 1 dB(A) increase in Leqn at lag1, ≥ 65 age
Depression					

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
Orban, et al., 2016	Road	No	<p>L_{den}</p> <p>High noise exposure was defined as annual mean 24-hr noise levels > 55 dB(A)</p> <p>(High noise at night was also defined as >50 dB(A) L_{night} and in general had similar associations)</p>		RR = 1.29 (95% CI: 1.03, 1.62) (high depressive symptoms), middle-age
Quality of Life scores					
Schreckenberg et al., 2010	Aircraft	No	$L_{Aeq, 16h}$	HQoL with regard to vitality and mental health decreases with increasing aircraft sound level at daytime from <45 dB(A) up to the sound level class 50–55 dB(A), but then increases again for residents exposed to higher sound level classes at daytime.	<p>OR = 0.95 (95% CI: 0.93, 0.97) (vitality)</p> <p>OR = 0.96 (95% CI: 0.94, 0.98) (mental health)</p>
Adverse behaviour among children					
Hjortebjerg et al., 2016	Road	Yes	Time-weighted mean exposure from birth to 7 years of age	For time-weighted mean exposure from birth to 7 years of age, estimated that a 10-dB higher exposure to road traffic noise was associated with a 7% increase in abnormal total difficulties scores (95% CI: 1.00, 1.14) (Table 2), which seemed to follow a monotonic exposure–response relationship until 60–65 dB, after which the curve leveled off (Figure 1A).	<p>RR per 10 dB(A) increase (age 7, exposure from birth) =</p> <ul style="list-style-type: none"> 1.07 (95% CI: 1.00, 1.14) (abnormal vs. normal total difficulties) 1.05 (95% CI: 1.00, 1.10) ("borderline and abnormal hyperactivity") 1.09 (95% CI: 1.03, 1.18) ("borderline and abnormal inattention") 1.05 (95% CI: 0.98, 1.14)

Reference	Noise Source	Adjustment for Air Pollution	Noise Detail	Threshold, or Mean and Range measured, or Lowest effect level (as available)	Findings
					("abnormal conduct problems") <ul style="list-style-type: none"> • 1.06 (95% CI: 0.99, 1.12) ("peer relationship problems")
	Rail			≤ 60 dB In the cohort as a whole, exposure to railway noise ≤ 60 dB at the time of birth was positively associated with abnormal emotional symptom scores (OR = 1.11; 95% CI: 1.00, 1.23 compared with unexposed children) but this outcome was not associated with railway noise > 60 dB (OR = 1.01; 95% CI: 0.83, 1.22).	OR = 1.11 (95% CI: 1.00, 1.23) (abnormal emotional symptom scores), exposure at time of birth