HALIFAX

P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

TO: Mayor Savage and Members of Halifax Regional Council

Original Signed

SUBMITTED BY:
_____

Councillor Waye Mason, Chair, Community Planning & Economic Development
Standing Committee.

DATE: March 31, 2017

SUBJECT: A Rapid Health Impact Assessment of HRM's Draft Regional Centre Plan

INFORMATION REPORT

ORIGIN

Community Planning & Economic Development Standing Committee, Item No. 11.2

LEGISLATIVE AUTHORITY

Community Planning & Economic Development Standing Committee Terms of Reference section 3 (e) which states. "The Community Planning and Economic Development Standing Committee shall provide oversight of the Municipality's Regional Plan and Regional Planning Initiatives such as overseeing the priority setting relative to the Community Visioning Program, Functional Plan Implementation and major planning projects".

BACKGROUND

An information report from the Community Design Advisory Committee dated February 9, 2017 was before the Community Planning and Economic Development Standing Committee at its meeting held on March 23, 2017.

For further information, please refer to the attached committee report dated February 9, 2017.

DISCUSSION

The Community Planning and Economic Development Standing Committee brought the information report from the Community Design Advisory Committee dated February 9, 2017 forward for discussion at its meeting held on March 23, 2017 and passed a motion to forward it to Halifax Regional Council as an information item.

FINANCIAL IMPLICATIONS

None identified.

COMMUNITY ENGAGEMENT

The Community Planning & Economic Development Standing Committee meetings are open to public attendance, a live webcast is provided of the meeting, and members of the public are invited to address the Committee for up to five minutes at the end of each meeting during the Public Participation portion of the meeting. The agenda, reports, video, and minutes of the Community Planning & Economic Development Standing Committee are posted on Halifax.ca.

ATTACHMENTS

1. Community Design Advisory Committee report dated February 9, 2017.

A copy of this report can be obtained online at http://www.halifax.ca/commcoun/index.php then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

Report Prepared by: Liam MacSween, Legislative Assistant, 902.490.6521

HALIFAX

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Halifax, Nova Scotia
B3J 3A5 Canada

Attachment 1
Community Planning and Economic Development Standing Committee
February 23, 2017

TO: The Chair and Members of Halifax Regional Council

SUBMITTED BY: **Original signed by Sherryll Murphy for**

                     Fred Morley, Chair, Community Design Advisory Committee

DATE: February 9, 2017

SUBJECT: A Rapid Health Impact Assessment of HRM's Draft Regional Centre Plan

INFORMATION REPORT

ORIGIN

Motion of the Community Design Advisory Committee meeting of January 26, 2017.

LEGISLATIVE AUTHORITY

The Terms of Reference of the Community Design Advisory Committee set out under Responsibilities of the Committee:

1.   To provide regular reports to Community Planning and Economic Development Standing Committee on overall progress of the projects.

BACKGROUND

The Community Design Advisory Committee received a presentation on a Rapid Health Impact Assessment (HIA) of HRM's Draft Regional Centre Plan at a meeting held on January 26, 2017.

DISCUSSION

Members of the Committee and staff agreed that the information provided through the HIA was valuable in the ongoing development of the Centre Plan. The Committee approved the report be forwarded to Community Planning and Economic Development Standing Committee as information and requested the Standing Committee forward the information on to Council.

FINANCIAL IMPLICATIONS

No financial implications identified.

COMMUNITY ENGAGEMENT

The Community Design Advisory Committee meetings are open to the public and agendas, reports and minutes are available online. The Rapid Health Impact Assessment was undertaken in response to staff's consultation with the public on the Centre Plan.

ATTACHMENTS

A Rapid Health Impact Assessment of Halifax's Draft Regional Centre Plan, Prepared by: Public Health – Central Zone, December 14, 2016, Nova Scotia Health Authority

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A copy of this report can be obtained online at http://www.halifax.ca/council/agendasc/cagenda.php then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

Report Prepared by: Sherryll Murphy, Deputy Clerk, 902-490-4211 or murphysh@halifax.ca

A Rapid Health Impact Assessment of Halifax's Draft Regional Centre Plan

Prepared by: Public Health – Central Zone

December 14, 2016

nova scotia
health authority

Table of Contents

1. Introduction

The way communities are designed has direct impacts on the ability of residents to engage in healthful activities, such as active transportation; accessing local, healthy foods; participating in commercial and economic ventures; and partaking in social gatherings. In the Halifax region, our health and demographic data tell us that we have an aging population, low physical activity levels across most age groups and growing rates of obesity (Government of Nova Scotia, 2011 & 2012). Our social and physical environmental profiles also indicate we could do more to enhance our adaptive capacity to combat the impacts of climate change and to foster healthier and safer environments (Halifax Master Urban Forestry Plan, 2015). For our population to achieve and maintain optimal health status throughout the lifespan, our communities must be designed to protect the wellness of our residents and to make healthy choices *easier*.

Municipal planning departments can contribute to healthy environments and behaviours by paying careful attention to how they encourage and promote the construction and equitable access to housing, greenspaces, agricultural spaces, and transportation networks that support health. As such, the Regional Centre Plan presents a great opportunity to promote health and address health disparities through municipal planning policies. Just as we understand that community health outcomes are intricately linked to our built environment, we also understand that complex problems require solutions from many sectors. We appreciate the leadership shown by community groups and residents, municipal staff, design professionals, health professionals and elected officials in drafting the Centre Plan. We look forward to seeing this leadership persevere in the creation of a healthy and vibrant region.

Purpose

In October 2016, the draft [Centre Plan](#) was presented to the public with an early December deadline for comments and feedback. Given the available time and staff resources, Public Health has undertaken a Rapid Health Impact Assessment (HIA) of the Centre Plan. In order to keep the assignment manageable and achievable, the scope of the HIA was narrowed to the following key topics: Housing, Mobility, Sustainability and Food Systems. The inclusion of these topics was based on the range of expertise of the project team and the alignment with current Public Health focus areas. This endeavour has provided Public Health an introductory opportunity to identify potential health effects of Halifax's Centre Plan on its residents, shape an emerging conversation about land use and public health in Halifax, and build capacity to engage and contribute to municipal policies and conversation in relation to the health of its citizens.

The purpose of this HIA is:
- To inform decision-makers of the potential for the Centre Plan to create healthy communities and to decrease health disparities, with an emphasis on preventing chronic disease and injury and supporting mental wellness and quality of life for all residents.
- To provide recommendations about how to increase the health-promoting potential of the new plan and mitigate any unanticipated negative health consequences based on evidence found in relevant literature and expert opinion.

2. Methodology

In order to offer a systematic review in a timely and accessible way, we have conducted a Health Impact Assessment (HIA) of the Centre Plan. HIAs are a combination of procedures, methods and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population. A *Rapid* HIA is a systematic assessment of the health impact of a policy, program or project by a number of experts, decision-makers and representatives of those potentially affected by the proposed policy. It is based on an exchange of the *existing* knowledge of the participants involved, including knowledge gained from previous similar exercises and research (European Centre for Healthy Policy, 1999). Given available time, capacity and staff resources, Public Health has conducted a *rapid* HIA.

Project Team and Support

Public Health has carried out the review and analysis of the draft Centre Plan over the course of five weeks with a small three-person project team, that included a Public Health Nurse, Nutritionist and Urban Planner. This team has been supported internally by the Medical Officer of Health and Healthy Communities Manager. In addition, a number of experts within the fields of public health, food systems, mobility, housing, and sustainability provided valuable insights based on an early draft of the rapid HIA report. Our team of expert reviewers included:

- Dorothy Edem, Program Manager, Recovery and Integration Mental Health, NSHA reviewed the housing section.
- Dr. Judy Guernsey, Professor, Community Health and Epidemiology, Dalhousie University reviewed the sustainability and housing sections.
- Satya Ramen, Research Manager, Applied Research Collaborations for Health, Dalhousie University reviewed the food systems section.
- Amy Schwartz, Senior Analyst, Nova Scotia Department of Energy reviewed the mobility section.

Process

Much work has been done across the world to test, implement and advance HIAs in various contexts, including aspects of federal government policies, provincial polices and municipal projects, decisions and plans. Typically, HIAs include the following phases:

1) Screening – determine whether an HIA required and if decision-makers are receptive to the idea
2) Scoping – define HIA parameters and areas of focus, develop project team and work plan
3) Assessment – identify affected populations and explore the range of potential health impacts
4) Recommendations – identify ways to improve the plan by mitigating negative health impacts and promoting positive health impacts
5) Reporting – present results to decision makers, and if time allows affected communities, and other stakeholders
6) Monitoring and evaluation – determine the HIA's impact on the plan, policy, and/or decision; and ultimately health status (Centre for Disease Control and Prevention, 2016).

Many existing HIA tools, resources and complete HIA reports have been useful in framing and guiding the work. Most significantly, Metro Vancouver's *Health Impact Assessment of Transportation and Land Use Planning Activities: Guidebook and Toolkit* have been invaluable. In addition, the *Healthy Built Environment Linkages Toolkit* was been instrumental in providing clear evidence links between planning activities and health outcomes.

Other resources have also helped the development of this HIA, including those found through *SOPHIA* (Society of Practitioners of Health Impact Assessment) and the *National Collaborating Centre for Healthy Public Policy*.

Using the resources listed above, the project team completed the first five stages of a typical HIA. Monitoring and evaluating the HIAs approach and impact will occur in the coming months. The method is briefly outlined below:

1. Screening
   - Internal Public Health meeting with staff to explore how Public Health might provide comments on the draft Centre Plan. At this meeting, it was determined to conduct a Rapid HIA.
   - Check in with Centre Plan Project Manager to determine if interest existed within the municipality to receive an HIA on the Centre Plan. Municipal staff confirmed interest and suggested that this would be an appropriate stage in the Plan's development to conduct an HIA.

2. Scoping
   - Internal Public Health meeting with staff to explore Centre Plan content, brainstorm current health issues and our local health status in relation to the Plan. Four topic areas were chosen at this meeting: Housing, Mobility, Food Systems, and Sustainability.
   - Brief project outline and approach was written – drawing heavily upon Metro Vancouver's HIA Toolkit and Guidebook.
   - Formed HIA project team, including members from the Early Years and Healthy Communities Teams. Project support provided by Healthy Communities Manager and the Medical Officer of Health.

3. Assessment + Recommendations
   - Given the rapid nature of the HIA, the Assessment and Recommendations stages occurred somewhat concurrently.
   - The project team reviewed the Centre Plan through the lens of each focus area and noted policy statements and/or objectives that might relate to the focus area. Health impact, mitigation ideas, and equity considerations were noted and summarized in an Excel spreadsheet for each focus area.
   - A second review of the Plan and the summary Excel spreadsheet was conducted in relation to the "Planning Principle" outlined in the Provincial Health Services Authority's Healthy Built Environment Linkages Toolkit[1]. They were used as criteria by which to assess the draft Plan (e.g., does the plan support this guiding principle?, Is the plan silent on this principle?, etc). This review was captured in a simplified table (see section 4 for these summary tables)
   - The information collected and ideas noted in our reviews were verified using the evidence summary tables in the Healthy Built Environment Linkages Toolkit and other evidence summary documents on each topic area (see complete list of references in section 6).

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[1] These Planning Principles are referred to as "guiding principle" in this HIA report.

- Draft notes, summary tables and missed opportunities for each focus area were sent to four expert reviewers. These reviewers were asked to confirm that the logic behind the HIA was sound, highlight any missing information or ideas, and provide additional references if needed. Information and comments provided by the expert reviewers has been incorporated into this final HIA report.
4. Reporting
   - The final HIA report will be submitted to the municipal staff team working on the Centre Plan and Community Design Advisory Committee via the Municipal Clerk. In addition, the HIA project team will present and discuss the findings with the Municipal staff team.
5. Monitoring
   - Methods for evaluating the effectiveness and usefulness of the HIA to inform the Centre Plan still need to be determined. An internal evaluation of the HIA process will be done through a debrief meeting with project team members. This meeting will be articulate lessons learned through this HIA process that will inform future HIA work.

Limitations

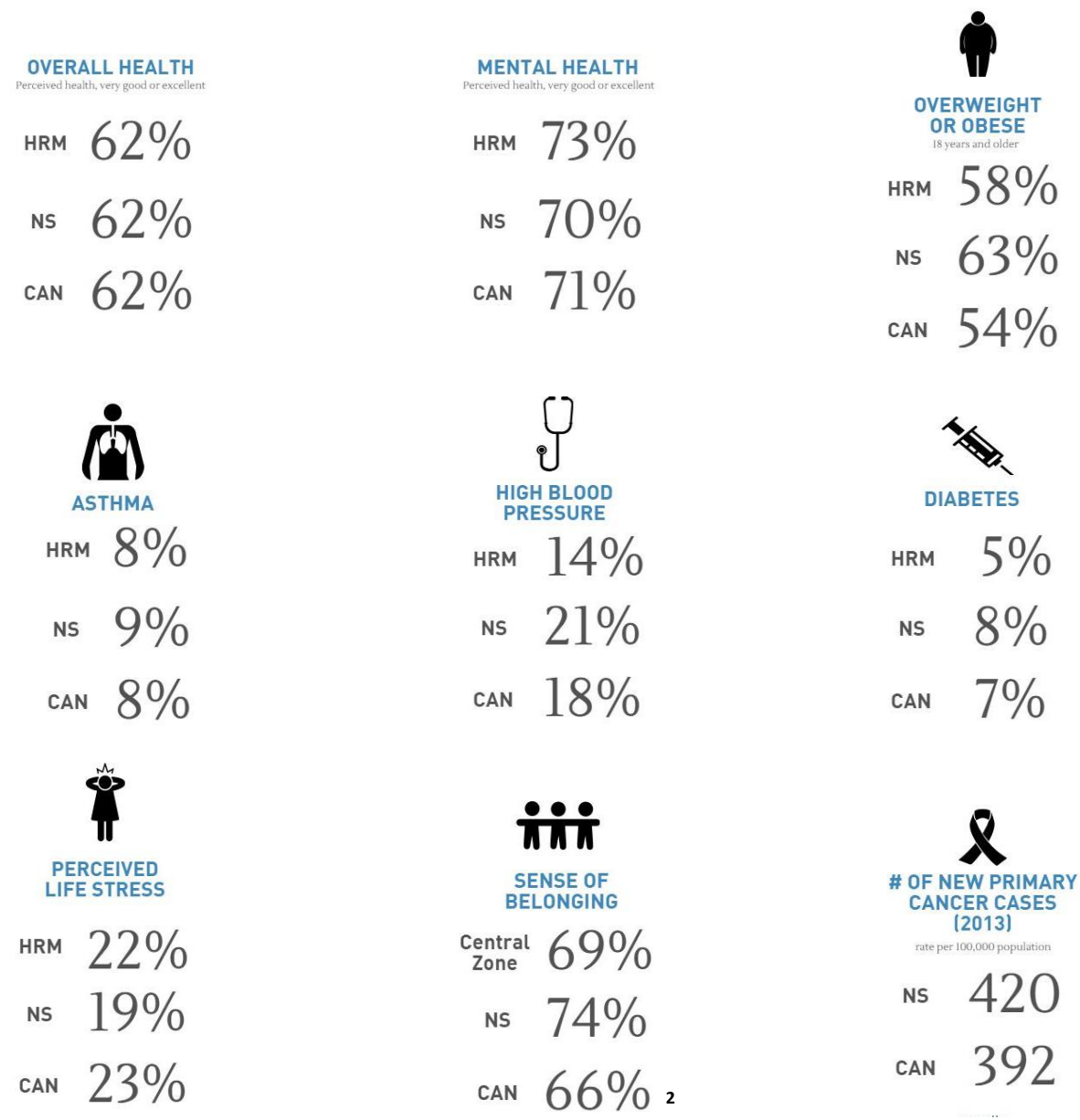The following list presents the limits by which the rapid HIA were undertaken:

- Staff capacity – While Public Health has conducted reviews of the Regional Plan (2014), Active Transportation Plan (2014) and has supported the development of healthy public policies at the municipal level in a variety of ways, this is the first Health Impact Assessment conducted by Public Health – Central Zone. We have used this opportunity to learn more about the HIA process while at the same time prepare an HIA report on the draft Centre Plan. We anticipate that with each HIA undertaken, staff capacity will continue to deepen and grow.

- Available staff resources – The HIA project team was limited to three Public Health staff available to step into the work at short notice. The team members' backgrounds include public health nursing, nutrition, and urban planning. The team was supported by the Healthy Communities Manager and Medical Officers of Health for Central Zone. We had hoped for additional disciplines to be included, but existing work plans did not allow.

- Timeframe for the review – From the time the draft Centre Plan was released to when comments were due, the project team had a total of 5 weeks to develop the HIA. This timeframe included developing a project team, creating a work plan, securing expert reviewers and conducting an initial assessment of the draft Plan and receiving and incorporating feedback from four expert reviewers. This tight timeframe presented a significant limit to the depth of our analysis and informed the parameters around what the project team deemed achievable within this timeframe.

Scope

Given the limitations mentioned above, Public Health's areas of expertise and existing knowledge of local health issues and health status informed how the scope of the HIA. Four focus areas were included in the scope of this HIA: housing, sustainability, food systems, and mobility. It is important to note that the Centre Plan likely has an impact on other health outcomes outside this scope, such as injury and accessibility that we did not review or assess.

3. Our Health Status

The information presented below was obtained from Statistics Canada's *Canadian Community Health Survey* (2014), *Canadian Cancer Registry Database* (2016), and the *National Household Survey* (2011). The data presented below represents, when not otherwise noted, the health status of residents over the age of 12 years in the Halifax region.
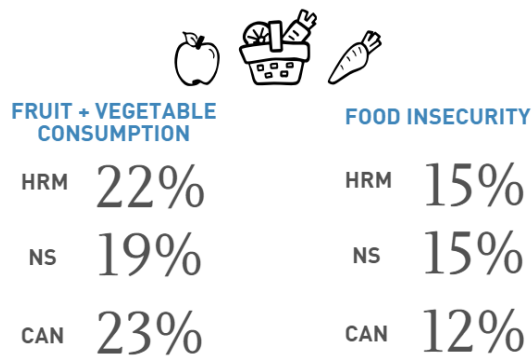
OVERALL HEALTH
Perceived health, very good or excellent

HRM 62%

NS 62%

CAN 62%

MENTAL HEALTH
Perceived health, very good or excellent

HRM 73%

NS 70%

CAN 71%

OVERWEIGHT OR OBESE
18 years and older

HRM 58%

NS 63%

CAN 54%

ASTHMA

HRM 8%

NS 9%

CAN 8%

HIGH BLOOD PRESSURE

HRM 14%

NS 21%

CAN 18%

DIABETES

HRM 5%

NS 8%

CAN 7%

PERCEIVED LIFE STRESS

HRM 22%

NS 19%

CAN 23%

SENSE OF BELONGING

Central Zone 69%

NS 74%

CAN 66% [2]

 # OF NEW PRIMARY CANCER CASES (2013)
rate per 100,000 population

NS 420

CAN 392

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[2] Central Zone refers to the geographic area of the Halifax Municipality, Municipality of West Hants and the Town of Windsor.
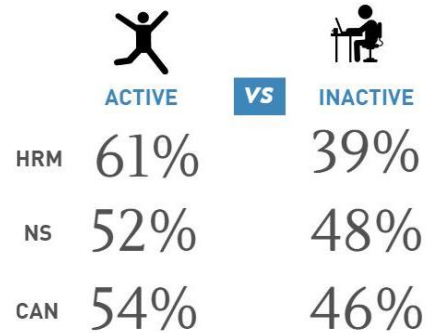
MOTOR VEHICLE COLLISIONS

In 2010-11, Halifax had the second lowest rate of traffic motor vehicle hospitalizations (64 per 100,000 persons) among the 10 most populated cities in Canada. However, this was higher than the provincial rate of traffic motor vehicle hospitalizations (42 per 100,000 persons). The types of Halifax occupants injured in these traffic motor vehicle hospitalizations are listed below.

Source: National Trauma Registry Report (2013)

Occupant	Halifax
Driver	147
Passenger	63
Cyclist	11
Pedestrian	33
Total	254

FRUIT + VEGETABLE CONSUMPTION

HRM 22%

NS 19%

CAN 23%

FOOD INSECURITY

HRM 15%

NS 15%

CAN 12%

PHYSICAL ACTIVITY DURING LEISURE-TIME

ACTIVE **vs** INACTIVE

HRM 61% 39%

NS 52% 48%

CAN 54% 46%

SPENDING > 30% INCOME ON HOUSING

HRM 25%

CAN 25%

HOUSING IN NEED OF MAJOR REPAIR

HRM 7%

CAN 7%

SUITABILITY OF HOUSING

HRM 4%

CAN 6%

4. Assessment

Using existing knowledge and understanding, referencing evidence summaries and considering the guiding principles, the Centre Plan was reviewed in terms of its potential to create communities that support healthy choices and remove barriers to healthy activities. Ultimately, we reviewed the Centre Plan for its ability to help reduce chronic diseases, support mental wellness and increase overall quality of life for residents. In addition, as is done in all Public Health work, the project team considered whether the policy statements might have an impact on health disparities across vulnerable populations. In particular, we considered the potential impacts on children, youth, seniors, persons with mobility issues, persons living on low incomes, aboriginal people, African Nova Scotians, persons living with chronic diseases, single parent households.

The main question that has guided the review of the potential health impacts of the draft Centre Plan is: *What health outcomes might be achieved through implementation of the Centre Plan as written today (October 2016)?* Guiding principles, outlined below, were used to review and evaluate the draft policy statements in relation to each area of the key topics included within the HIA scope.

MOBILITY
Guiding Principles   • Enable mobility for all ages and abilities   • Make active transportation convenient and safe   • Encourage use of public transit
SUSTAINABILITY
Guiding Principles   • Preserve and connect open space and environmentally sensitive areas   • Maximize opportunities to access and engage with the natural environment   • Reduce urban air pollution   • Mitigate urban heat island effects   • Mitigate winter extreme weather-related effects on Halifax microclimate   • Reduce likelihood of flooding and infrastructure damage from extreme weather events, storm surges and sea level rise
FOOD SYSTEMS
Guiding Principles   • Enhance urban agricultural capacity   • Increase access to healthy foods in all neighbourhoods   • Improve community-scale food infrastructure and services

HOUSING

Guiding Principles
- Increase access to affordable housing through provisions of diverse housing forms and tenure types
- Ensure adequate housing quality for all segments of society
- Prioritize housing for the homeless, elderly, low income groups, and persons with disabilities
- Site and zone housing developments to minimize exposures

Mobility

The draft Centre Plan presents a number of supportive policy statements that prioritize availability and access to active transportation and transit systems. This has the potential to increase physical activity levels through daily transportation across all segments of the population, which in turn could significantly boost the health and well-being of residents and reduce the overall burden of chronic diseases. The World Health Organization (2011) concluded that prioritizing walking, cycling and public transit could cardiovascular and respiratory disease from air pollution, injuries to pedestrians and cyclists, noise and noise-related stress, chronic diseases through an increase in physical activity, and increase health equities and social welfare.

As such, the draft Centre Plan has been reviewed using the following three guiding principles relating to mobility. The guiding principles served as a lens by which to evaluate the draft policy statements:

- Enable mobility of all ages and abilities
- Make active transportation convenient and safe
- Encourage use of public transit

1) Enable mobility of all ages and abilities
People's decision to be physically active through walking, cycling and transit use can be influenced by the availability of streets and other facilities which allow for convenient, safe and enjoyable routes to their destinations. There is much evidence that suggests adopting a Complete Streets approach to street design and our transportation network can have beneficial health impacts due to increased physical activity, increased traffic safety, better air quality, lowered body weight and improved physical, mental and social health.

Section 2.2 Mobility, includes a number of policy statements that support mobility for all ages and abilities, including statements that support the development of compact, complete communities and statements that consider design solutions to ensure comfort of pedestrian environments. There are a number of policy statements that work to address accessibility issues in the Regional Centre. Some of these statements could be strengthened – particularly around public places (2.3.1 g). In general, these statements support more equitable and social inclusive communities.

2) Make active transportation convenient and safe
Prioritizing pedestrians (objective within section 2.2 Mobility) supports an important and needed shift in transportation thinking and decision making. Historically, streets have been designed and maintained to prioritize vehicle movement. This objective coupled with policy statements around complete communities and compact developments have the potential to significantly change the way our streets are designed and residents move around the region – leading to increased physical activity levels and decreasing severity of injuries. This has the potential to greatly impact health of populations. Systematic

reviews of the literature on physical activity and chronic disease indicate that physical activity may have a protective factor against some chronic diseases, including cardiovascular diseases (high blood pressure, heart attacks, strokes), obesity, diabetes, osteoporosis, asthma, breast and colon cancer (Booth et al, 2012; Eijkemans et al, 2012; Ford & Caspersen, 2012; Gunter et al, 2012; Kruk, 2007; Pakhale et al, 2013; Zschucke et al, 2013).

3) Encourage use of public transit

Frequent, convenient and reliable public transit has the potential to impact the way residents move around the region. This is particularly significant in terms of health, in that most public transit trips begin and end with a walk – allowing individuals to achieve some of their daily physical activity. In addition, public transit connected to the social determinants of health in that it is allows for individuals to access important parts of the region and significant destinations, including work places, medical families, schools and universities, friends and families. Finally, access to public transit can encourage equality by enhancing mobility among a wide range of vulnerable groups including children, youth, seniors, low income earners, and persons with disabilities.

The following table provides a summary of how Centre Plan policy statements connect to each guiding principle and outlines to anticipated outcomes (activity and health related) that could be achieved if each guiding principle was achieved.

Supportive Policy Statements in Relation to Principles	Activity Outcomes	Health Related Outcomes
Ultimate Health Impacts ↓ chronic illness ↑ mental wellness		
Enable mobility of all ages and abilities 2.1.1 b) Compact Development; 2.2.1 a) Level of Service Assessments; 2.2.2 Complete Streets; 2.2.4 Pedestrian Comfort and Active Transportation	↑ proximity of destinations (shops, schools, homes, work places, etc) ↑ perceived safety ↑ # of people walking, bicycling and taking transit	↑ health equities and social welfare ↓ unintended injuries ↓ noise and noise-related stress ↑ air quality ↑ social connectivity ↑ physical activity
Make active transportation convenient and safe 2.1.1 e) Complete Communities Funding; 2.1.2 i) General Built Form Character; 2.1.2 p) – y) Streetwall Character; 2.2.1 a) General ; 2.2.2 Complete Streets;	↑ # of people walking, bicycling and taking transit ↓ traffic-related air pollution	↓ cardiovascular and respiratory disease from air pollution ↓ obesity ↓ site specific cancers ↑ social connectivity

2.2.5 Connectivity - Regional Connectivity; 2.3.1 i) General; 2.3.3. Parks and Open Space		↑ physical activity
Encourage use of public transit 2.1.1 b) Compact Development; 2.2.1 a) General; 2.2.3 a) – e) Public Transit	↑ # of people taking transit ↓ vehicle miles travelled / resident ↓ traffic-related air pollution	↓ obesity ↓ site specific cancers ↑ social connectivity ↑ physical activity

Missed Opportunities / Mitigation Ideas

- Lower speed limits on residential streets and streets with significant destinations, such as parks and playgrounds (as is done in school zones). Research shows that reduced vehicle speeds results in reduced severity of injury if a collision were to occur. In addition, age matters. The average risk of death for a 70 year old pedestrian struck at any given speed was similar to the average risk of death for a 30 year old pedestrian struck at a speed 11.8 mph faster (Tefft, B.C, 2011).
- Include an equity analysis in decision-making around infrastructure investments across neighbourhoods. Consider the needs of residents more dependent upon non-vehicle transportation when determining where to invest (e.g., neighbourhoods with high portion of children and youth, seniors, low income earners, persons with disabilities).
- In order for the municipality to embed a Complete Streets approach across departments, a number of tools and updated design guidelines are needed. One such tool is a shared understanding and language around which streets are defined. A street classification system needs to be established that incorporates both the importance of context with transportation function of a street. In addition, a clear vision for each street (beyond current conditions) needs to be determined in order to inform retrofit designs.
- Attention must be paid to how shifting traffic patterns from residential streets toward Corridors *may* impact health inequities.

Sustainability

The urban environment is characterized as an ecosystem that is largely influenced by human activity with distinguishing features of a high population density, an established infrastructure, and a high level of social organization (Lebel, 2003). A well-developed urban plan that incorporates an ecosystem approach to health emerges from the recognition or our dependence upon our global environment for clean air, clean water, food and our overall wellbeing.

The draft Centre Plan has been reviewed using the following five guiding principles relating to sustainability. The guiding principles served as a lens by which to evaluate the draft policy statements:

- Preserve and connect open spaces and environmentally sensitive areas
- Increase opportunities to access and engage with the natural environment
- Reduce urban air pollution
- Mitigate urban heat island effect
- Reduce climate-change extreme weather event related impacts

1) Preserve and connect open spaces and environmentally sensitive areas

By incorporating ecosystem principles into the overall design of our community, we are increasing our resilience against the increasing climate-change related threats of extreme weather events and their consequences and contributing to the quality of the planet generally. We are also enhancing the quality of our community to provide natural shelter against the effects of negative effects of sun, wind, rain and extreme temperatures. A quality urban natural environment has also been linked to increased pedestrian activity and other forms of active mobility and other aspects of personal wellbeing.

2) Increase opportunities to access and engage with the natural environment

Research supports a strong relationship between time spent in nature with many health benefits, including reducing stress, chronic disease, depression, anxiety, improved concentration and cognitive functioning. Policy statements that create new green spaces, ensure access to existing green spaces and prioritize connection to and between these important natural areas have the potential to greatly impact community health. As such, consider including an objective within section 2.6 Sustainability about protection of sensitive area and promoting better access to parks and green spaces.

3) Reduce urban air pollution

In addition to statements in section 2.6 Sustainability, there are many policy statements included in section 2.2 Mobility and 2.3 Public Spaces and Places that have the potential to support better air quality in our urban neighbourhoods. Shifting from vehicular traffic to more sustainable modes of transportation has been seen to have a positive effect on local air quality. In addition, certain type of

vegetation has been shown to improve air quality. There seems to be a missing objective around urban air quality in section 2.6.

4) Mitigate urban heat island effect

While urban heat island effect is not a significant issue in Halifax, as it is in larger cities, such as Toronto, it is still important to ensure actions taken today mitigate the potential for urban heat island effect. As described in the Healthy Built Environment Linkages Toolkit (2014), "Preliminary studies indicate that the cooling effects of vegetation can be significant. Such effects are greater from larger parks, urban agriculture and bodies of water" (p 27). The draft Centre Plan includes a number of policy statements that support the mitigation, including statements about green roofs, urban forest canopy, parks and open spaces, etc.

5) Reduce climate-change extreme weather event related impacts

Around the world, the impacts of natural disasters have been increasingly dramatically. Many natural hazards have the potential to impact human health though they only become disasters when certain vulnerabilities are present (Health Canada, 2008). Among those that have resulted in the most acute and sustained damage, are the numerous weather-related events that have led to hurricanes, floods, droughts and extreme temperatures (both hot and cold). Each region has unique susceptibilities to extreme weather and weather-related natural hazards; these are influenced by climatic conditions of ocean cooling and heating which in turn drive atmospheric circulation. Adaptive strategies that anticipate and combat these changes should be incorporated into our overall Centre Plan as fundamental planning principles. Halifax has been subject to severe storms (hurricanes) and to extreme rain and snowfall events which have caused flooding, property damage and even deaths in recent years. The summer of 2016 featured a long period of drought and higher than normal ambient temperatures. Yet most homes and apartment buildings in Halifax do not provide air conditioning and many areas lack an adequate tree canopy to protect residents' homes from the heating effects of the sun.

The following table provides a summary of how Centre Plan policy statements connect to each guiding principle and outlines to anticipated outcomes (activity and health related) that could be achieved if each guiding principle was achieved.

Supportive Policy Statements in Relation to Principles	Activity Outcomes	Health Related Outcomes
Ultimate Health Impacts ↓ chronic illness ↑mental wellness		
Preserve and connect open spaces and environmentally sensitive areas 2.2.5 a) Connectivity; 2.6.5 b Land	↑ecosystem function ↑soil health ↑water quality	↑general health and wellbeing

Increase opportunities to access and engage with the natural environment 2.1.2 d) Urban Design; 2.1.2 o) Urban Design; 2.2.5 a) Connectivity; 2.3.1 d) Provision of Parks in Under-Resourced Areas	↑access to nature ↑social interaction	↓ stress ↓ depression ↓ inequities
Reduce urban air pollution 2.1.1 e) Complete Communities Funding; 2.1.2 ak) Urban Design; 2.1.2 i) General Built Form Character; 2.1.2 p) – y) Streetwall Character; 2.2.1 a) General ; 2.2.2 Complete Streets; 2.2.4 a - h) Pedestrian Comfort and Active Transportation; 2.2.5 Connectivity - Regional Connectivity; 2.3.1 i) General; 2.3.3. Parks and Open Space	↓ traffic related air pollution ↑improved growing conditions for plants ↓ air pollutants	↓ respiratory illnesses (asthma, COPD) ↓ cardiovascular illnesses
Mitigate urban heat island effect 2.2.4 e) Pedestrian Comfort and Active Transportation; 2.2.6 Parking	↓ impact and # of extreme heat events	↓ cardiovascular, respiratory mortality ↓ heat related mortality and morbidity
Reduce climate-change extreme weather event related impacts 2.1.2 ak) Urban Design	↓ flooding of houses and streets ↓ damage to housing and municipal infrastructure (roads, bridges, buildings)	↓ mold-related allergies and asthma ↓ demand for shelter amongst those most vulnerably housed

Missing Information / Missed Opportunities
- Strategies are needed that provide for retrofitting current structures to reduce energy requirements and meet energy needs in cleaner, more sustainable ways (also see the many other sustainability dimensions of the Ontario Government 2016 Climate Change Action Strategy that could be integrated in Halifax.
  See: www.applications.ene.gov.on.ca/ccap/products/CCAP_ENGLISH.pdf.
- Opportunity to identify criteria by which to prioritize investments in neighbourhood parks, playgrounds and other green spaces (i.e., implementation of policy 2.3.1 d, 2.3.2 b). Consider including an equity analysis as part of the decision making process to determine how policy statement 2.3.1 a might be achieved.
- Mitigate the negative health effects of traffic related air pollution from major highways in close proximity to higher order residential (e.g., Mic Mac Mall, Graham's Grove) through buffers (200-400m), urban design, landscaping and vegetative features (Brugge, 2015).

- The Parks and Open Space chapter might benefit from a similar policy statement as 2.1.1 e) Complete Communities Funding, but specifically tailored to supporting community groups to animate and steward public spaces.

Food Systems

There are several policy directions throughout the Centre Plan that support the development of healthy, just and sustainable food systems[3]. Strengthening local food systems can contribute to positive improvements in health outcomes such as increases in mental well-being and reduction in chronic diseases. The Centre Plan has been reviewed using three guiding principles relating to food systems; which served as a lens by which to evaluate the draft policy statements:

- Enhance agricultural capacity
- Increase access to healthy foods in all neighbourhoods
- Improve community-scale food infrastructure and services

1) Enhance agricultural capacity

There are a number of policy statements that have the potential to increase agricultural capacity within the boundaries of the Centre Plan. These policies support increased food production and as a result increased availability of healthy food. A healthy food environment is associated with a healthy diet (Health Canada, 2013), whereas an unhealthy food environment is associated with increased chronic disease and compromised mental health (CMA 2013; Jones, 2009).The creation of natural environments within complete communities is achieved, in part, through policies supporting urban agriculture. The research shows a strong relationship between exposure to nature and the reduction of stress, depression, chronic disease, anxiety and can lead to improved concentration and cognitive functioning (Provincial Health Services Authority, 2014).

Although not directly linked to health outcomes, the commitment to increasing the quantity and quality of compost (Waste 2.6.3), would be important to growing healthy food within the Centre Plan region and throughout the municipality.

2) Increase access to healthy foods in all neighbourhoods

The Centre Plan presents a number of policy statements that could increase access to healthy food in all neighbourhoods. Compact development that is well served by transit and active transportation networks and improved public transit can result in better access to food especially for seniors, youth, persons with disabilities and people living with low incomes who primarily rely on these modes of transportation. The policies supporting affordable housing and increasing the variety of housing options can influence household food security as more money is potentially available for the food budget Generally, the Centre Plan polices that support reductions in the cost of housing, shelter and

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[3] A healthy, just and sustainable food system is rooted in healthy and resilient communities, where no one is hungry and everyone can access nutritious and culturally preferred food. It is an economically viable, diverse and ecologically sustainable system to grow, harvest, process, distribute, and prepare food.

transportation can impact one's ability to afford a healthy diet. (Williams, P.L., 2013) which in turn can affect health outcomes such as obesity, chronic disease and mental well-being. The alternative of living with food insecurity can negatively affect physical, emotional and mental health (Desjardins E., 2009).

The Centre Plan policies around land use and sustainability that promote community gardens, greenhouses, edible landscapes, tree planting, and industrial food activities; in addition to public places and spaces that permit urban agriculture all have the potential to ensure that healthy food is available in all neighbourhoods. The increased availability of healthy food is associated with better diet quality. (CMA, 2013)

Geographic accessibility to healthy foods alone did not demonstrate a consistent relationship with people eating healthy foods. (Health Canada, 2013) However, because of the many different types of studies on accessibility, it is difficult to confidently state any associations between distance to food outlets and dietary outcomes. Studies have shown that availability and accessibility of affordable healthy food retail or food services has been linked with improved diet quality and decreased obesity. (CMA, 2013, BC Healthy Built Environment Linkages, 2014)

3) Improve community-scale food infrastructure and services

Finally, the Centre Plan supports community scale food infrastructure and services, which can include community kitchens, community and school gardens, urban farms, community ovens, and recreational programming. All of these program examples can create the conditions for people to come together around food and in turn support skill building, food literacy, and social interactions, (Iacovou, M., et. al 2013.) Inherent to the food-related activities above are increases in accessibility and availability of healthy food within neighbourhoods. The benefits of gardening and growing food are well documented particularly in relation to the impact of school gardens on dietary outcomes as measured by increases to fruit and vegetable intake, (Robinson-O'Brien, R, Story, M. & Heim, S (2009) food literacy (Blair, Dorothy, 2009) and physical activity.

The following table provides a summary of how Centre Plan policy statements connect to each guiding principle and outlines to anticipated outcomes (activity and health related) that could be achieved if each guiding principle was achieved.

Supportive Policy Statements in Relation to Principles	Activity Outcomes	Health Related Outcomes
Ultimate Health Impacts $\downarrow$ chronic illness $\uparrow$ mental wellness		
Enhance agricultural capacity 2.1.1 Land Use; 2.1.2 Urban Design; 2.3.1 General Policies;	$\uparrow$ opportunity for food production $\uparrow$ # of complete communities	$\uparrow$ social cohesion / sense of community $\downarrow$ stress

2.6.5 Land: tree planting, animals, community gardening, greenhouses, edible landscaping, industrial food activities, brownfield development	↑ availability of healthy foods	↑ healthy eating
Increase access to healthy foods in all neighbourhoods 2.1.1 Land Use; 2.2.3 Public Transit; 2.3.1 (j) General Policies; 2.5.1 Housing General; 2.5.2 Affordable Non-Market Housing; 2.6.5 Land: tree planting, animals, community gardening, greenhouses, edible landscaping, industrial food activities, brownfield development; 2.7.4 Community Services and Support	↓ in transport costs ↓ in housing costs ↑ household food security ↑ availability of healthy foods (2.1.1, 2.3.1 and 2.6.5) ↑ physical accessibility	↑ social, health and economic equity ↑ diet quality ↑ fruit and vegetable consumption ↓ obesity
Improve community-scale food infrastructure and services 2.1.2 Urban Design; 2.3.2 Community Facilities; 2.3.3 Parks and Open Spaces; 2.6.5 Land: tree planting, animals, community gardening, greenhouses, edible landscaping, industrial food activities, brownfield development	↑# of complete communities ↑opportunity for food skill building ↑opportunities for gathering around food ↑educational outcomes ↑food literacy ↑ availability[4] ↑ accessibility[5]	↑ social cohesion / sense of community ↑ fruit + vegetable consumption ↑ stress ↑ physical activity

Missing Information / Missed Opportunities

- Jobs and Economic Development: There is an opportunity to include a statement about food businesses and small-scale healthy food retail. While there may not be a clear way to incentivize this, there could be consideration for incentives for at-grade food retail beyond restaurants as a percentage of increase in densities with multi-unit in-fill developments.. The evidence shows that healthy food retail is associated with increases in diet quality, decreases in obesity and improved food literacy (CMA, 2013, BC Healthy Built Environment Linkages, 2014).
- Jobs and Economic Development: Consider including a statement around streamlining the permit and license processes for food-related businesses (and others).

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[4] Availability refers to the adequacy of the supply of healthy food; examples in the food environment might include the presence of certain types of restaurants near people's homes, or the number of places to buy produce.
[5] Accessibility may be more inherently geographic, as it refers to the location of the food supply and ease of getting to that location. Travel time and distance are key measures of accessibility.

- Jobs and Economic Development 2.7.1 General – Missing reference to mobile healthy food vending/retail such as food trucks, mobile food markets and healthy food retail
- Land Use and Design 2.1.1-Consider including a policy that restricts developments that would create food deserts (limited food access) or food swamps (limited healthy food access; high density of fast food) as poor health outcomes are linked to poor food access environments (Jones, 2009). Currently there is no best practice as to how to achieve this; however, one possibility is to also limit drive throughs in Employment Intensive Areas.

Housing

Over the last decade there has been mounting evidence of the fundamental importance of housing and shelter for health and wellbeing. Healthy housing is recognized as providing affordable, adequate, accessible, safe, and secure shelter for all that is free of hazards and enables people to engage in activities of daily living while optimizing their health. Quality and affordable housing is imperative to improving the health of Nova Scotians. We are pleased to see that the draft Centre Plan highlights the need for access to suitable, affordable and comfortable housing as a fundamental requirement for the health and quality of life for all people.

The Plan has been reviewed using the following four guiding principles in relation to housing. The guiding principles served as a lens by which to evaluate the draft policy statements:

- Increase access to affordable and suitable housing through provision of diverse housing forms and tenure types
- Ensure adequate and accessible housing quality for all segments of society
- Prioritize housing for the homeless, elderly, low income groups, and persons with disabilities
- Site and zone housing developments to minimize exposure

1) Increase access to affordable and suitable housing through provision of diverse housing forms and tenure types

There are several policies in the Centre Plan conducive to increasing access to affordable, suitable housing, which enables people to live comfortably without overcrowding and within an appropriate temperature and humidity range (CMHC, 2014). Affordable housing improves health and safety outcomes; lowers crime rates and justice system costs and improves health by freeing up family resources for food, transportation, recreation and other needs (Cahill, 2011). Increasing the diversity of housing forms and tenures to ensure safe, affordable housing may be especially important for vulnerable populations such as people with low incomes, persons with disabilities and seniors.

When affordable housing is scarce individuals and families may need to live in overcrowded conditions which can lead to the inability to deal with daily stressors and maintain supportive relationships; this situation can result in an increase in physiological distress, helplessness and high blood pressure (Maqbool et al, 2015; Evans et al, 1998). Overcrowding can also lead to negative physical health through increased exposure to infectious disease (Cardoso et al, 2004; Baker et al, 2000) as well as increased health and behavioral problems in children (Solari et al, 2012).

2) Ensure adequate and accessible housing quality for all segments of society

Adequate housing also positively impacts a range of health conditions including respiratory infections, asthma, lead poisoning, injuries, and mental health (Krieger, 2002). Adequate and accessible housing has been built in accordance with current building codes and construction standards, is not in need of

repairs, not placed in areas prone to flooding, high noise levels, or traffic-related pollution or and is fitted appropriately according to one's physical needs and abilities (CMHC, 2014).

Policy statement 2.5.2 o) encourages the renewal of existing affordable housing, which will contribute to address adequate housing issues in the Regional Centre. As noted in the Missing Information section below, this statement would be strengthened by using language that outlines a larger role for the municipality in renewing housing stock. In addition, the Centre Plan may want to also include a statement around ensuring that housing units remain affordable after the repairs or renewals. Evidence shows the implementation of healthy housing renovations (modified ventilation, heating, insulation and accessibility) decreased adult and child rates of acute hospitalization (Jackson, et al, 2011). Renovations to improve housing quality were noted to cost less than improved clinical outcomes and corresponding health care costs (Fabian, et al, 2014; Takaro, et al, 2011).

Substandard housing health risks include: respiratory and cardiovascular diseases related to indoor air pollution; spread of communicable diseases and risk of home injuries related to poor living conditions; and illness. (WHO, 2013). Emotional and behavioral issues among children and youth have been noted among families living within poor quality housing as living within unhealthy conditions affects parenting (Housing and Health, 2013). Poorly maintained or poor quality housing may put individuals at risk for exposure to mold, dust mites or rodents. These are sources of allergen which cause asthma, fatigue, headache, and difficulty concentrating (Rauh, Landrigan, Claudio; 2008).

3) **Prioritize housing for the homeless, elderly, low income groups, and persons with disabilities**
While the draft Plan includes policy statements that focus on creating family friendly housing, increasing the supply of accessible housing and construction of additional affordable housing units in the Regional Centre, the Plan would benefit from more of an emphasis on providing supports for our most vulnerable populations. Housing insecurity is associated with poor health (children and adults), developmental delays, and children under three years of age are reported to have lower weights when compared to children living in stable housing (Cutts et al, 2011). Stable affordable housing decreases or avoids the cost of treating adverse health outcomes and stress (Ontario Medical Association, 2013). Individuals on waitlists for affordable housing report a sense of powerlessness, frustration and inability to move forward with their lives. These families also experience financial stress, children and youth are at risk of underachieving academically (CMHC, 2011).

4) **Site and zone housing developments to minimize exposure**
Uncontaminated housing enables residents to live within internal home environments that are free from biological, chemical and physical hazards. These home-related public health hazards include contamination resulting from lead-based water pipes, asbestos insulation, improper venting of furnace gases, molds from water intrusion, rodents, slipping and tripping and many other hazards. Such public health hazards are principally the responsibility of homeowners and tenants to maintain; nevertheless the municipality has an important role through building inspections, nuisance complaints, and other means to create and foster neighbourhoods, clean home environments and infrastructure to prevent and discourage these from occurring. Municipalities routinely work with other levels of government to

ensure these situations are either prevented or corrected. New home construction also should be monitored to ensure that these problems do not emerge in the future. This is an especially important consideration in relation to the implications of future extreme weather events and climate change.

In terms of siting housing developments and exposure, the Centre Plan could benefit from policy statements that require consideration of a buffer between residential developments and highways or high traffic arterials.

The following table provides a summary of how Centre Plan policy statements connect to each guiding principle and outlines to anticipated outcomes (activity and health related) that could be achieved if each guiding principle was achieved.

Supportive Policy Statements in Relation to Principles	Activity Outcomes	Health Related Outcomes
Ultimate Health Impacts ↓ chronic illness ↑ mental wellness		
Increase access to affordable housing through provision of diverse housing forms and tenure types 2.5.1. a) Family-Oriented Housing; 2.5.1 c) Family-Oriented Multi-Unit Dwellings; 2.5.1 d) Housing Options; 2.5.1 e) Unit Size Diversity; 2.5.1f) Multi-Unit Housing Amenity Space; 2.5.1 i) Housing Diversity in Strategic Locations; 2.5.1 j) Housing Incentives; 2.5.1 l) Innovative Housing Forms; 2.5.1 m) Live/Work Housing; 2.5.1 k) Ground-orientated Housing	↑ housing options (type, size, and tenure) ↑ access to affordable housing ↑ economic growth ↑ opportunities to earn income ↑ amount of affordable housing ↑ ground floor housing	↑ social cohesion / sense of community ↑ accessibility ↑ food security ↓ stress ↑ sense of safety (↓ crime + injury)
Ensure adequate housing quality for all segments of society 2.5.2 o) Renewal of Existing Affordable Housing	↑ supports for youth, families and seniors creating age-friendly "complete communities" ↑ housing quality ↑ indoor air quality	↓ stress ↓ respiratory illness ↑ care for seniors ↑ sense of safety (↓ crime) ↓ injuries ↑ sense of pride
Prioritize housing for the homeless, elderly, low income	↓ # of people living in poverty ↑ access to adequate housing for	↑ social cohesion / sense of community

groups, and persons with disabilities 2.5.2 Affordable Non-Market Housing; 2.5.2 n) Rooming Houses; 2.5.1 Co-operative Housing Development	people with mental illness	↑ sense of pride ↑ accessibility ↓ stress ↑ food security
Site and zone housing developments to minimize exposure 2.2.2 Complete Streets; 2.5.1f) Multi-Unit Housing Amenity Space; 2.5.1 i) Housing Diversity in Strategic Locations	↓ air pollution exposure (particularly TRAP) ↓ noise exposure ↓ chemical exposure	↓ stress ↑ respiratory health ↓ cancer ↑ physical health ↑ social cohesion / sense of community

Missing Information / Missed Opportunities
- 2.5.2 Affordable Non-Market Housing. Recommend including policy statement that ensures units remain affordable after renewal, repair or upgrade.
- 2.5.1 Family-Oriented Housing B. Suggest including all elements of a "complete community" (i.e., grocery stores and parks).
- Consider 200-400 m buffer between Higher Order Residential and major highways and highways (Mic Mac Mall, Graham's Grove). Residential units within close proximity to highways are at higher risk of exposure to traffic-related air pollutants, including nitrogen oxides, carbon monoxide, fine particulate matter, volatile organic compounds.
- Work with the Province to ensure 100% of units in smoke free multiunit buildings are smoke free.
- Include ways that Solar City can help reduce housing expenses and contributes to affordability.
- Include ways for the municipality to incentivize the development of accessible units and houses.

5. Closing Thoughts

This Rapid Health Impact Assessment sought to provide decision makers with information on the linkages between the Centre Plan and the potential to create healthy communities and decrease health disparities. Based on this review, we have shared some recommendations in relation to missed opportunities and ideas to mitigate any unintended negative health impacts. We are pleased that many of the policies are aligned with supporting vulnerable populations particularly in relation to housing, transit, and food availability. Overall, the Centre Plan contains many positive promising policies that we believe have the potential to contribute to improving population health. We share this Health Impact Assessment report as a way to contribute to the conversation about municipal planning's impact on public health and look forward to continued discussions and opportunities to work together to create healthy communities in the Halifax region.

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