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Item No. 13.1
Halifax Regional Council
December 4, 2018
December 11, 2018

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed

Kelly Denty, Director, Planning & Development

Original Signed by

Jacques Dubé, Chief Administrative Officer

DATE: September 27, 2018

SUBJECT: **Integrated Mobility Plan Implementation of Regional Centre "AAA" Bikeway Network**

INFORMATION REPORT

ORIGIN

Regional Council, December 5, 2017, Item 17.3 Committee of the Whole Ratification – Integrated Mobility Plan MOVED by Councillor Nicoll, seconded by Councillor Outhit THAT Halifax Regional Council: … 2. That staff be directed to prepare a supplementary report regarding: a) Amend the IMP to set the target date for the Bike Network minimum grid for completion by end of summer 2020 construction.

LEGISLATIVE AUTHORITY

The *Halifax Regional Municipality Charter* Subsection 79(1) states (in part) that: The Council may expend money required by the Municipality for:

> (ah) playgrounds, trails, including trails developed, operated or maintained pursuant to an agreement made under clause 73(c), bicycle paths, swimming pools, ice arenas and other recreational facilities;
>
> (aa) streets, culverts, retaining walls, sidewalks, curbs and gutters;

Subsection 229 (1) states (in part) that A municipal planning strategy may include statements of policy with respect to any or all of the following:

> (g) studies to be carried out prior to undertaking specified developments or developments in specified areas;
>
> (i) the provision of municipal services and facilities;

Section 322(1) provides that "The Council may design, lay out, open, expand, construct, maintain, improve, alter, repair, light, water, clean, and clear streets in the Municipality."

Section 90 of the *Motor Vehicle Act* authorizes the Traffic Authority to mark lanes on a street and control their use.

BACKGROUND

All ages and abilities (AAA) bicycle facilities are those that are comfortable for a wide range of cycling abilities and experience levels. Guidelines from the Transportation Association of Canada (TAC), the National Association of City Transportation Officials (NACTO), and other professional associations provide guidance on the design of these types of facities. These guidelines generally identify a range of facility options and criteria for decision-making to inform context sensitive design. Factors that influence user comfort and safety on a bicycle facility are primarily related to the volume and speed of vehicular traffic – in general, the higher the number of motor vehicles and the faster that they are traveling, the greater the need for physical separation for bicycles. In Halifax, AAA bicycle facilities include small segments of protected bike lanes, multi-use pathways, and structures. The Macdonald Bridge Bikeway, over 1km long and entirely separated from traffic, is the most significant AAA bicycle facility and the current AT network.

Building AAA bicycle facilities is critical to attracting more people to bicycling as a standard part of household travel modes (e.g. for trips to work, school or services). A 2016 survey of Halifax residents found that there was significant interest in bicycling more often. However, residents stated that they needed greater separation from motor vehicles. This 'latent demand' for bicycling represents an important opportunity to improve cycling mode share through improved cycling infrastructure. Halifax shares the objective of developing a network of safer and more comfortable bicycle routes with cities across Canada and around the world.

Integrated Mobility Plan – Regional Centre AAA Bicycle Network

The implementation of the Regional Centre AAA Bicycle Network is one part of the overall framework for meeting transportation needs that were identified in the Integrated Mobility Plan (IMP). For more residents to chose to bicycle for their trips, the network described below is essential. However, the implementation of other IMP initiatives such as education and promotion initiatives, faster and more reliable transit service, road safety improvements, and complementary parking strategies are also part of attracting more residents to cycling.

The IMP supports the Regional Plan objective that at least 30% of region-wide trips will be made by walking, bicycling and public transit by 2031. In the Regional Centre, where non-auto mode share is higher (50% based on 2011 Census), the target for combined walking and bicycling mode share is at least 37% in 2031 (an increase of 7% from 2011). To support this objective, Action 72 of the IMP is to: "Deliver the Regional Centre all ages and abilities bicycle network by 2022." However, when the IMP was approved in December 2017, Regional Council asked for staff to consider amending the IMP to set the target date for the Bike Network AAA network for completion by end of summer 2020 construction.

The "all ages and abilities" bicycle network recommended in the IMP includes approximately 50km of on-road and off-road bicycle facilities within the Regional Centre. As well, several bridge structures are required (e.g. Macdonald Bridge Halifax access flyover and potential bridge over CN rail cut near Bayers Road).

A total of 10km of the proposed 50km network (20%) has been built. This consists primarily of multi-use pathways and the existing bikeway on the Macdonald Bridge. Facilities that currently exist, but that are

being reviewed and enhanced to be designated "AAA", include bike lanes on Windsor Street, Hollis Street, Lower Water Street, South Park Street, and Brunswick Street, along with the multi-use pathways on the Halifax Common.

In the public engagement for the IMP, feedback was requested on the routes and target dates for the completion of the network. An initial target date of 2020 for completion of the network was proposed in response to public engagement requests for rapid implementation of the network. In developing the final IMP recommendations, staff proposed a target completion date of 2022, pending budget availability, following a review of the planning and design steps, available resources, costs and project integration factors associated with implementation of the network.

DISCUSSION

There are four topics in this section:

1) Consideration of how to attain the network target by 2020;
2) The rationale for maintaining the proposed 2022 target completion date;
3) An update on project status and target implementation timeframes for the 40km of new facilities that are in the construction, design and planning process; and,
4) Proposal to add new corridors to the proposed network.

Consideration of how to attain 2020 Target

The following represent initiatives that were considered to help accelerate the implementation of the Regional Centre AAA Bikeway Network. As noted, some are already part of how implementation is proceeding.

Initiative	Implications
Eliminate or significantly reduce efforts to plan and expand the active transportation network outside of the Regional Centre	No or very few AT projects (new sidewalk, support for community groups, multi-use pathways) outside the Regional Centre. This means that other IMP actions and priorities would be postponed until after 2020. Not desirable as the purpose of the IMP was to implement actions in urban, suburban and rural areas of HRM.
Bundle projects together for planning and design.	This could save time and money on planning elements such as public and stakeholder engagement. Combining connecting segments should assist in design consistency. This is already being done. E.g.: planning for downtown bikeways; Macdonald Bridge Bikeway Connectors is 3.5kms of bikeways, plus structures and multimodal intersection improvements.
Hiring more staff for planning, engineering design and construction oversight.	This would require increases to operations budgets. It should be noted that the 2022 timeline already includes the addition of about four temporary staff. Such staff would also ideally be experienced in the planning and design of AAA bicycle facilities.
No capacity to consider new Council priorities. For example, Council has identified the need for recapitalizing walkways and has requested installation of	Action on newer Council priorities that arise would be delayed to future years.

tactical urbanism projects.	
Reduce or eliminate further AT staff involvement in providing advice to other HRM projects.	Reduce AT staff advice on related HRM priorities such as new land use development proposals, Red Book redesign, corridor functional planning studies or streetscaping plans. This could result in missed opportunities for an integrated approach to these initiatives.
No action on education and promotion activities.	Bike map no longer produced. Delay implementation of IMP TDM initiatives, which are both IMP actions.
Reduce public engagement for new capital projects.	Public engagement, done well, typically results in better projects. A key part of installing the network is "change management" to help residents understand the new facilities and to help encourage use. At the same time, engagement for projects is being bundled to help accelerate implementation and provide residents with focused opportunities to learn and advise on project design.
Contract out all of the planning, design and construction oversight functions associated with the network.	It is difficult to predict if such an approach is viable. Such an approach would mean that HRM planning and design staff would not develop capacity in modern bikeway/complete street design. Hiring external consultants is part of how the network will be planned and designed, but staff will also be working on projects depending on the requirements of the project and available resources.
Eliminate the requirement for Council to approve local street bikeway and on-road bike lane projects identified as part of the candidate network.	This would save some time, but probably not enough to meet a 2020 target.

Rationale for Maintaining 2022 Target

The factors that were considered in recommending maintaining the 2022 target are below.

1) Time required for the planning and design process

After a corridor has been identified in either the IMP or the AT Priorities Plan, there are three stages of further planning and design required to take network-level concepts of proposed routes and transition them into concrete facility options through to detailed engineering designs for construction. This can take about three years and makes the 2020 target unfeasible.

The stages are:

i) Functional Planning & Design (6-12 months): The goal of this stage is to develop a facility option and overall street configuration, to the "proof-of-concept" stage as well as develop preliminary cost estimates. Steps to support the evaluation and arrive at a final recommendation include:
   a. Baseline information on the corridor is collected such as property lines, road dimensions, user counts (e.g. vehicular traffic, pedestrians, bicycles, transit, parking), speeds, any collision history, topography, adjacent land use functions and interactions;

b. Conceptual options are developed that explore how the facility could fit within the corridor in relation to other street or property functions. Criteria include overall safety, impact to other users, connectivity, abutter needs, topography; accessibility, interaction with other modes; etc..
c. Feedback on concepts is obtained from internal stakeholders (i.e. HRM departments), external stakeholders (e.g. utilities, property owners, community associations), and the public. Throughout this process the concepts are modified and refined.
d. Additional studies are often required to investigate parking utilization and parking loss mitigation strategies, as well as detailed traffic analysis.
e. A preferred option is selected and costed. If required, Regional Council approval is sought, and,
f. Engineering designs are advanced to the 30% stage and Class "D" cost estimates are developed.

Complete street objectives mean that bikeway functional planning can happen as part of broader corridor planning processes (e.g. bikeway elements of Cogswell Plan; Bayers Road Transit Priority includes a multi-use pathway to connect to Chain of Lakes Trail). Also, even if the scope focusses on bikeway functional planning, opportunities for multi-modal changes (e.g. curb extensions, loading areas, transit stops, streetscaping) are considered.

ii) Preliminary Design (3-12 months): The goal of this stage is to refine the functional plan and prepare the project for detailed design. Steps at this stage include
   a. Topographical survey;
   b. Property acquisition (if required);
   c. Notification and co-ordination with utilities (e.g. pole relocations);
   d. Full consideration of drainage (working with Halifax Water);
   e. Risk analysis;
   f. Synergies with other projects in construction (including Halifax water work and state of good repair work on HRM infrastructure (curb, sidewalk, traffic signals etc.);
   g. Advancing overall engineering designs to the 60% stage;
   h. Refining the cost estimate; and
   i. Horizontal and vertical alignments.

iii) Detailed Design (3-12 months): The goal of this stage is to develop a set of tender-ready designs that present all aspects of the project and that are ready for engineering certification, pre-tender review, and Traffic Authority approval. Engineering designs at this level are at 100%. Steps include:
   a. Completion of drainage design;
   b. Completion of intersection design changes and traffic signal work;
   c. Constructability review;
   d. Review of future maintenance requirements and feasibility (snow plowing, etc.);
   e. Preparation of final cost estimates and quantities;
   f. Completion of final drawings; and
   g. Full review of the project by internal and external partners (utilities, HRM departments etc.).

Table 1 below describes the status of proposed IMP AAA routes relative to these stages.

2) Adoption of new facility types and guidelines into HRM practices

Maintaining the 2022 timeline for implementation provides an appropriate amount of time to fully integrate new bicycle facility types into all HRM functions. The AT Plan goal was to install one pilot

protected bike lane before 2019, so the IMP objective represents a significant shift in our targets for and approach to facility planning, design, construction, and ongoing maintenance and operation.

The geometric design guidelines for bicycle facilities have changed significantly in North America over the past several years. In 2017, the Transportation Association of Canada published a new Geometric Design Guide for Canadian Roads that included a new chapter on bicycle facility design. In 2017 HRM became members of the NACTO and began using design guidance from this organization. This means that engineering and design guidelines are just being established and need to be integrated into HRM planning, design, construction and operations. A longer implementation timeframe provides the time to ensure that the best designs for the HRM context are used and that there are opportunities to learn and adapt as implementation proceeds.

Planning and implementing new bicycle infrastructure on an accelerated timeframe requires additional commitment of staff time and resources across the organization. Responsibility for planning and implementing this proposed network involves new responsibilities for HRM departments including Traffic Management, Road Operations and Construction, Halifax Transit, Project Planning and Design, Strategic Transportation Planning, Parks and Recreation, Communications, Real Estate and others. This time commitment needs to be factored into the implementation timeframe.

One example is how the new facilities are maintained and operated after construction. New approaches for snow clearing need to be understood and incorporated into the overall program. New equipment may need to be procured. Adding up to 40 kilometres of new facilities in just two years would require resources to support such a significant growth in maintenance responsibilities in a short period.

3) ***Complete Streets objectives***

The IMP goals and other HRM initiatives (e.g. Road Safety Framework, CentrePlan, Moving Forward Together Plan) mean that adding AAA bicycle facilities are often just one of several changes being proposed for various corridors. These planning and design processes need to be co-ordinated and this makes it difficult to commit to a 2020 completion timeframe.

Time is required for activities such as:

- *Multi-modal planning and implementation on proposed AAA bicycle corridors that are also proposed transit priority corridors or are associated with other IMP objectives;*
- *Understanding of how other street users and functions are impacted by the proposed new facility and incorporating them into the design process. Typical factors include accessible parking, pedestrian needs, transit stops, truck and vehicle movements, loading, urban trees, design, and on-street parking;*
- *Stakeholder and public engagement;*
- *Co-ordinating with land-use developments. Multi-year street encroachments for a new building are sometimes on AAA candidate routes. Reinstatement around new developments provide opportunities for integrating bike lanes; and,*
- *Conducting multi-modal level of service analysis that enables evaluation by mode (pedestrians, bicyclists, buses, trucks, vehicles) of proposed changes to the transportation network.*

4) **Project integration**

Some of the bikeway facilities that will form the AAA network are integrated into larger projects, for example, the AAA bikeway segments that are part of the Cogswell redevelopment project. The construction timeline for this complex project is tentatively forecast to extend to 2021. Another example is the Dartmouth Harbourfront Greenway between Prince and King Streets which needs to be co-ordinated with new developments and parkland planning. In such cases, the timelines are driven by factors related to the larger project.

The implementation of bikeway facilities will be integrated with road rehabilitation projects when possible. Other integration partners include Halifax Water (storm, sewer and potable water infrastructure, NSTIR, Heritage Gas, Halifax Transit, etc.). There are many opportunities to co-ordinate with such integration opportunities between now and 2022. In other cases, when such major rehabilitation projects are beyond the 2022 timeframe, interim measures to create the AAA facility can be used.

5) Other ongoing Municipal Active Transportation priorities

There is direction from Council to address a range of priority active transportation (AT) projects in addition to this project. This includes support for projects involving the Community Trails Associations, AT projects in suburban and rural communities, new sidewalks, enhancing walkability, applying the social equity lens to AT projects, promotion and education, and monitoring and evaluation. It is necessary for staff to balance their efforts among the various ongoing projects; accelerated timelines for the proposed AAA Regional Centre Bikeway Network (i.e. completion by 2020) would limit progress on other priorities across the Municipality.

6) Property acquisition

Bikeway projects often require property acquisition or easements. For example, some of the missing segments of the Dartmouth Harbourfront Greenway require negotiation of easements with private property holders. The timelines for such processes are uncertain and sometimes driven by factors beyond HRM control.

7) Budget

The capital cost of implementing the Regional Centre AAA Bikeway Network is estimated at $25 M and significantly exceeds the amount typically budgeted for AT infrastructure (approximately $5M/year which also includes new sidewalks and regional trails funding). Only $3M in capital funding for the AAA bikeway network has been approved by Council to date. This network is just one of many AT/IMP capital project priorities. As well, the estimated operational costs for these bikeway facilities are estimated to be $350,000/year for protected bike lanes and $90,000/year for multi-use pathways. Therefore, without having a clear understanding of Regional Council's direction regarding future capital and operating budgets, it is difficult to commit to a 2020 or 2022 implementation timeframe.

8) Utility Relocations

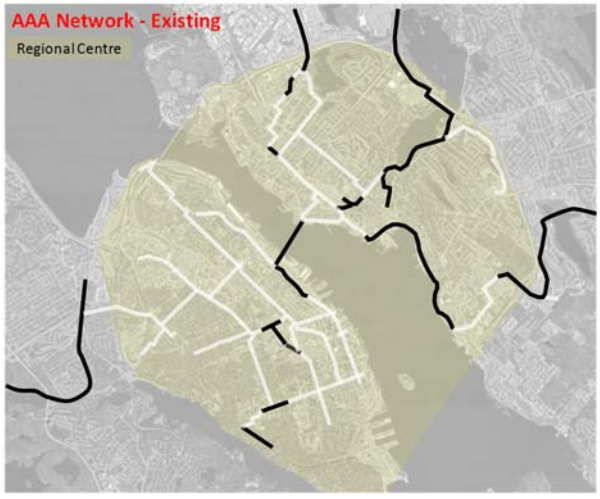
Projects often require relocation of existing overhead and underground utilities including, power and telecom poles and wires, underground services, gas lines, storm water infrastructure, etc. The utilities are separate from HRM and consideration needs to be given to their timelines, staffing resources, and budget availability.

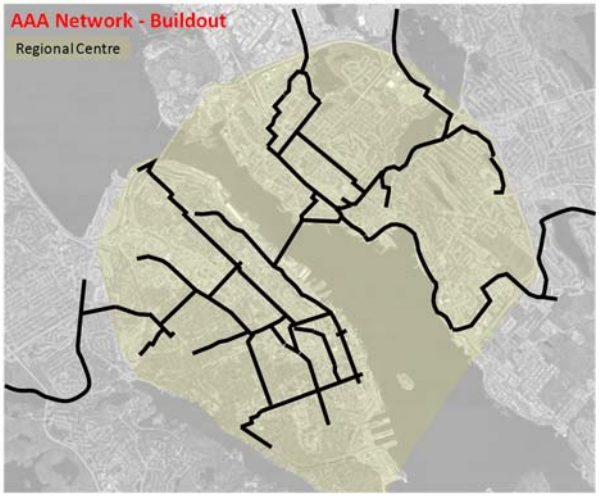
Implementation of the Regional Centre AAA Bikeway Network to 2022

Planning and implementation of the proposed Regional Centre AAA Bikeway Network is underway. The table and maps below describe and illustrate the status of implementing bikeway segments. Decisions on final facility design will depend on the planning process and implementation considerations.

Bike lanes that are implemented will be either "interim" or "permanent". Interim facilities are the typical treatment when an on-road bike lane is a "stand alone project" and implemented separate from a larger street rehabilitation project. Features include precast concrete curb, intersection markings, signals (as required), street scaping (e.g. planters). Permanent facilities are integrated with larger-scale street rehabilitation changes and may include, for example, raising the bike lane to sidewalk level and greater separation at intersections.

The operation, maintenance and monitoring of these facilities is also part of implementation. As new facilities are built, additional resources are required for snow clearing, line painting, horticultural, sweeping and general "state of good repair" up keep. Ongoing monitoring is required to fulfill IMP reporting requirements and to understand how the facilities are operating.





The tables included in Attachment A summarize the status and proposed implementation timeframe for segments of the proposed AAA Regional Centre Bikeway Network. In these tables, "planning" refers to "functional planning" and "design" refers to "preliminary and detailed design" as described in the process description above. These segments remain "candidate" routes until the planning process is complete. In some cases, the planning process may result in recommendation of another parallel corridor for the bike facility.

All timeline targets are dependent on available budget and resources, and, in most cases, Regional Council project approval. In some cases, completion is dependent on property permissions or other project co-ordination dependencies (e.g. completing the Canal Greenway in Downtown Dartmouth is part of a comprehensive, multi agency / department initiative). Projects that extend over several years can have overlapping phases (e.g. construction of one segment of the Dartmouth Harbourfront Greenway may be happening as another segment is being designed).

Proposed Additional Corridors

Since the completion of the IMP, three corridors have been identified as additions to the network. These are:

1) Barrington Street (North Street to Niobi Gate) and Devonshire. Originally Barrington Street between North Street and Niobi Gate was identified for planning. Due to a project integration opportunity, staff are pursuing extension of the Barrington Greenway to Niobi Gate. This connects with Devonshire Avenue which currently has painted bike lanes.

2) Charles Street. Charles Street is proposed as a local street bikeway street. It would either replace or complement North Street as an AAA bikeway connection. The narrow dimensions, high traffic volumes and interest in considering transit priority for North Street make attainment of AAA status difficult. Charles Street is already a candidate route in the AT Plan and parallels North Street.

3) An extension of the Halifax Urban Greenway either north to Jubilee Road or south to Point Pleasant Park.

In summary, the 2020 target is a high volume of work that requires specialized resources and integration with external stakeholders as well as significant capital and operating funds. The above approach outlines a realistic construction timeline, subject to Regional Council's approval of a significant increase in AT funding, to enable successful delivery of the bicycle network.

FINANCIAL IMPLICATIONS

There are no financial implications arising from this report.

COMMUNITY ENGAGEMENT

The Integrated Mobility Plan was based on significant community and stakeholder engagement. Functional planning for many of these projects has included and will include further public engagement.

ATTACHMENTS

Attachment A AAA Bikeway Network Status and Implementation Timeframes

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A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

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Table A-1: Implementation Status and Targets for Regional Centre 'AAA' Bicycle Network

Project Name	Proposed Facility Type	Length (km)	Projected Implementation Timeline "P": Planning | "D": Preliminary and Detailed Design | "C": Construction					
			2017	2018	2019	2020	2021	2022
South Park Street Bike Lane Enhancement and Extension (Spring Garden to Inglis)	Bike lane	0.9	P	D	C			
South Park - Bell Road and Intersections (Spring Garden Road to Trollope)	Bike lane	0.8		P	D	C	C	
Vernon-Seymour and Allan-Oak Local Street Bikeways	Local street bikeways	2.1	P	D / C	C			
Ahern Street	Bike lane or Multi-use pathway	0.5	P	D / C				
Almon Street	Bike lane	0.9	P	D	C			
Woodside Connector (Pleasant Street - Orion)	Multi-use pathway	1.5	P / D	D / C				
Dartmouth Common pathway enhancement to Victoria / Dahlia	Multi-use pathway	0.3		C				
Macdonald Bridge Bikeway Connectors (structures, plus Wyse, Lyle, Dickson, Faulkner, Shore, North/Charles)	Grade separated structures, bike lanes and multi-use pathways, local street bikeway, multi-modal intersection changes	3.5	P	D	D / C	D / C	C	
Downtown Bikeways Enhancement (Hollis Street / Lower Water Street / Terminal / George)	Bike lanes	3.2	P	P / D	C	C		
Cogswell District AT Components (Barington, Upper Water, Poplar, Cogswell)	Bike lanes, multi-use pathway	1.8	P	P / D	D / C	C	C	C
Barrington Greenway Extension to Niobe Gate/Devonshire	Multi-use pathway	0.7	P	D / C	C			
Penhorn Greenway (Penhorn Park to Portland Street/Perhorn Terminal)	Multi-use pathway	0.7	P (2015)	D	C	C		
Peninsula North End Bikeway	Local street bikeway	3.8		P	D / C	D / C	D / C	C
Peninsula West End Bikeway	Local street bikeway and/or bike lane	2		P	D / C	D / C		
Rainnie – Brunswick Enhancement and extension to Spring Garden Road	Protected bike lanes	1.1	P		D	C		
Dartmouth Harbourfront Greenway: Three Gaps	Multi-use pathway	1.1		P / D	P / D	D / C	C	C
Bayers Road AT Greenway (COLTA – Peninsula Connection)	Multi-use pathway (potentially including structure over CN rail cut)	1.3	P	P / D	D / C	D / C	C	C
University-Morris Corridor	Bike lane	1.8		P	D	C		

Project Name	Proposed Facility Type	Length (km)	Projected Implementation Timeline "P": Planning | "D": Preliminary and Detailed Design | "C": Construction					
			2017	2018	2019	2020	2021	2022
Africville AT Connections	Multi-use pathways, structure	0.9		P	P / D	D / C	C	C
Dalhia (Darmouth Common to Sullivan's Pond)	Local street bikeway	0.5			P / D	C		
Windsor Street Improvements + Welsford-Allan-North Common-Quingate	Bike lanes, multi-use pathway	2.4		P	P / D	C	C	
Devonshire Bike Lane connection and improvements	Bike lanes	1.3				D	C	
Halifax Common multi-use pathway enhancements	Multi-use pathways	0.5		P	P / D	C	C	
North End Dartmouth	Local street bikeway and multi-use pathway	2			P	D / C	D / C	
Cogswell Street (Brunswick to North Park)	Protected bike lane	0.3				P	D	C
Harris Road LSB to Graham Groves Park	Local street bikeway	1.4				P	D	C
Slayter Street and Albro Lake Road	Protected bike lane and local street bikeway	1.9				P	D	C
Canal Greenway	Multi-use pathway	0.5			P	P	D	C
TOTAL		**40**						