

A large, leafy tree with some autumn-colored leaves stands in a field of tall grass and other vegetation. A group of about seven people is standing in the field, looking towards the tree. The background shows a line of trees under a clear sky.

washbrook  
**greenway**

## Trail Plan

Final Report  
December 2019

**UPLAND**



UPLAND

## Acknowledgments

UPLAND would like to thank the Washbrook Greenway Coalition for their work building community and promoting environmental stewardship and healthy living in Sydney.

### **Final Plan**

*December 2019*

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washbrook  
**greenway**

## **Table of Contents**

### **Background**

Page 1

### **Existing Conditions**

Page 5

### **Greenway Design**

Page 15

### **Next Steps**

Page 29



# 1 Background

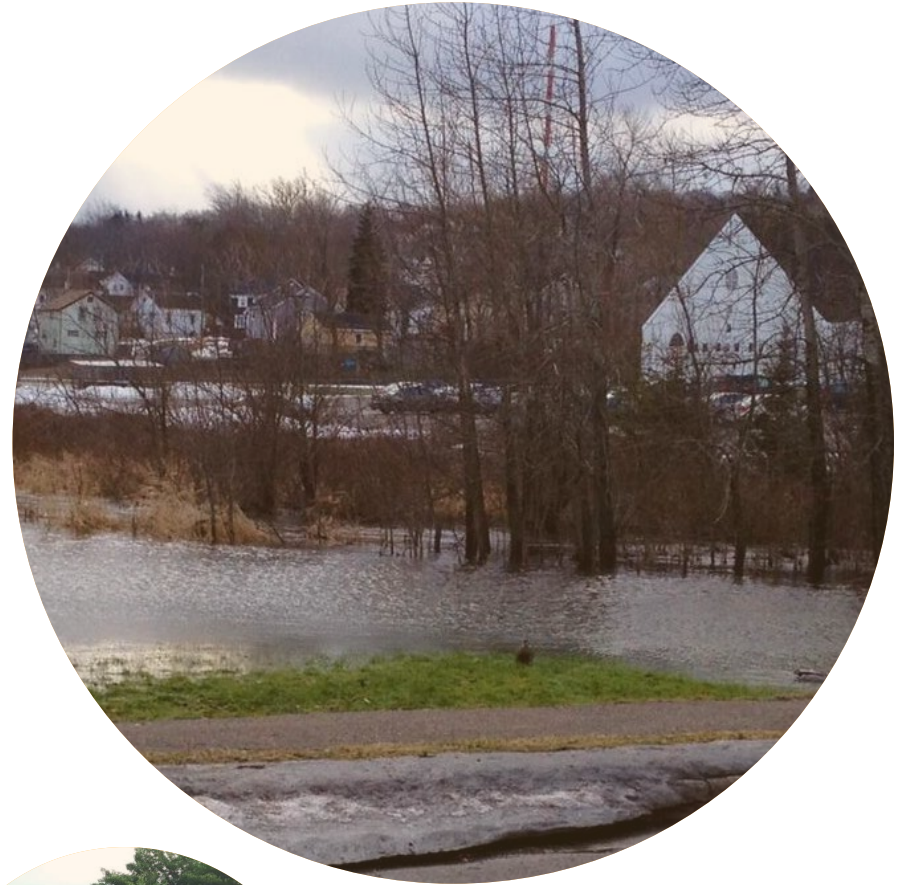


## Context

The Washbrook is small creek that meanders through an open greenspace in the heart of the southend neighbourhood of Sydney. It came into the public eye, during the “Thanksgiving Storm” in October 2016 when extreme rainfall caused flooding in many areas of Sydney. The water overflowed the narrow banks of the Washbrook and caused widespread damage to surrounding infrastructure and residences. Following this event, the Cape Breton Regional Municipality had a flood mitigation analysis done for the Washbrook to determine potential future risks and what measures could be taken to avoid such damage in the future.

Meanwhile, the southend community had come together in response to the storm damage, forming a new society called the Southend Public Gardens Society (SPGS). Together with the Atlantic Coastal Action Program (ACAP), the SPGS established the Southend Community Pollinator Garden on the site of the former Southend Community Centre (which was destroyed following the storm). Furthermore, the Baille Ard Recreation Association (BARA) did extensive work to repair the trails and bridges in their network that were damaged in the storm. BARA also saw potential in the green space along the Washbrook for a new trail that could connect the existing Baille Ard Trails and community destinations like the new Pollinator Garden and Downtown Sydney.

The Washbrook Greenway Trail Development Committee (WGTDC) was formed in 2018 by the SPGS, ACAP and BARA along with two local schools and other community partners to spearhead the development of a new community trail along the Washbrook lands. In 2019, the WGTDC hired UPLAND Planning and Design Studio to develop a shared vision for the Washbrook Greenway and to provide trail design support.



## Intent

The purpose of this project is to develop a shared vision for the Washbrook Greenway and to design a trail corridor that will make use of existing, underutilized public land to create a connection between outdoor recreation areas, community destinations, and neighbourhoods in Sydney. The challenge is to integrate flood mitigation strategies with the need for active transportation connectivity, and to design a trail that can withstand future flood events.



## Values

This project is oriented around several guiding principles identified by the Washbrook Greenway Trail Development Committee:

### Environmental Stewardship

The Washbrook Greenway should be protected as a natural space and managed with environmental values in mind. As a green space embedded in an urban area surrounded by schools, community facilities and residences, it is well positioned to provide educational and recreational opportunities, and to foster a sense of environmental stewardship among neighbours and community members.

### Natural Flood Abatement

An intervention is necessary in this area to reduce the risk and severity of future flood events. Flood abatement strategies can come in many forms, from constructing engineered dams and detention ponds to reinstating or creating natural wetlands. The solutions implemented along Washbrook should strive to be environmentally-oriented so that the greenway remains a natural area.

### Active Lifestyles

The Community Health Board's Collaborative Health Plan for Cape Breton Regional Municipality identifies physical environment as one of the most important factors in community health. Having easy access to green space and walking, hiking and biking trails contributes immensely to physical activity. The Washbrook Greenway should be developed with connectivity in mind – to encourage active transportation to schools and community facilities, and provide easy links between neighbourhoods and outdoor recreation areas like Baille Ard Nature Trails and Greenlink.

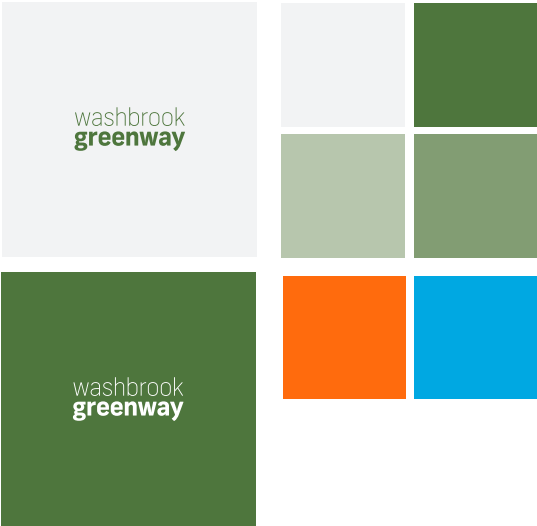
# Identity

To facilitate public recognition of the Washbrook Greenway and to assist in creating impactful materials that can be used to promote the project, engage stakeholders and request funding, the Washbrook Greenway requires a consistent visual identity. The proposed identity builds on the core values identified by the Washbrook Greenway Coalition, the physical site of the greenway and the identity of the connected Baille Ard Trails.

## Wordmark

washbrook  
**greenway**

## Colour Palette



## Applications



## 2 Existing Conditions



## 2.1 Trails and Open Space

### Sydney

Sydney has several existing urban parks that provide residents with open space and natural settings to enjoy close to home. Near the downtown, **Wentworth Park** features lawns, paved walking pathways, a large pond with ducks and geese, a gazebo and a bandshell. It is an urban park, connected to Sydney's downtown by the "downtown Sydney walking loop" and a short walk from the waterfront boardwalk.

**Open Hearth Park** is located to the north-east of downtown Sydney in Harbourside Commercial Park. It is a space for active recreation, featuring accessible paved pathways, sports fields, playgrounds, and several trails along Muggah Creek ranging from 700m to 1500m in length. Near Open Hearth Park to the North is **Whitney Pier Community Heritage Trail**, a 1.7 wide packed-gravel trail that is set between the Sydney Port Access Road and the neighbourhood of Whitney Pier.

In the southend of Sydney, the **Baille Ard Trails** are located in the 70 acres of undeveloped land between Peacekeepers Way and the southend neighbourhood. The 3km trail network was established over 25 years ago and provide a serene experience of the Acadian forest.

Near Membertou is the **Greenlink Trail**, which extends approximately 3km along the Wentworth Creek from the Shipyard neighbourhood up to the Cape Breton Regional Hospital. This is an accessible trail, with a wide crusher-dust surface, through an area which is largely wooded and natural. This trail is an excellent example of the experience the Washbrook Greenway could provide - once established.

### Southend Neighbourhood

The public lands clustered along the Washbrook make for a great deal of open space in Southend Sydney. Within these spaces, there is a network of informal trails that form connections between community destinations – for instance, there are two bridges that connect between sports facilities on opposite sides of the Washbrook, and an informal path that connects Cottagedale Crescent to the Centennial Arena area. While these informal trails do indicate the need for a trail in this area, in their current state they are not accessible for all users and are liable for flood damage.



**Existing Trails**

- Existing Trail
- Green Space

## 2.2 Destinations

There is a large amount of public land clustered along the Washbrook. Within these lands are a number of public facilities that are daily or regular destinations for residents of the area. These include:

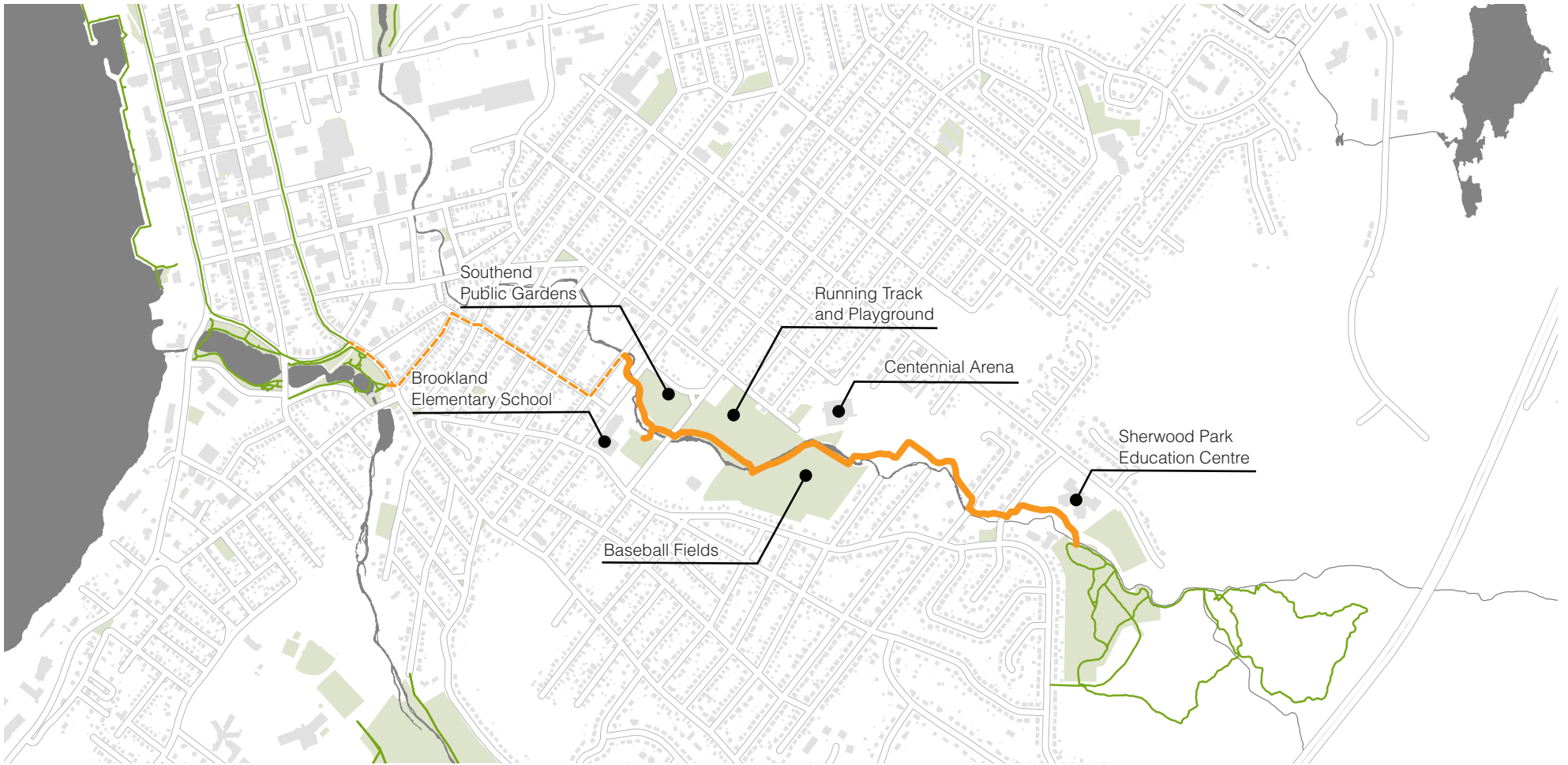
- Brookland Elementary School
- Sherwood Park Education Centre
- Bicentennial Gym
- Centennial Arena
- Running track (Cabot Street)
- Playground (Hospital Street)
- Susan MacEachern Memorial Baseball Park (Cottage Road)

From a community-wide perspective, the area surrounding the Washbrook is largely low-density residential with several higher-density residential developments and several locations where high-density residential development will be constructed in the future. Aside from neighbourhood convenience stores and other pockets of commercial activity, residents of this area must travel out of the neighbourhood for work and shopping. The waterfront and Downtown Sydney as well as peripheral areas where commercial activity exists should be considered as important destinations for people living in Sydney's residential neighbourhoods, since these areas are where the majority of people shop and work.

## 2.3 Connectivity

There is great potential to improve connectivity both on the city and neighbourhood levels. On the city level, there is currently a plan to extend the Waterfront Boardwalk to connect with the paths in Wentworth Park. The Whitney Pier Community Heritage Trail could also be connected with the Open Hearth Park trails through an on-road bike route or signed sidewalk trail. The remaining significant gaps between existing trail networks are between the Greenlink trails and Wentworth Park, and between the Baille Ard trails and Wentworth Park. An accessible Active Transportation Greenway along Wash Brook would create this connection between Downtown Sydney and the Baille Ard Trails, and provide a comfortable way for residents of the residential neighbourhoods surrounding the Washbrook to access Downtown Sydney. This would also contribute toward tying Cossitt Heights into Sydney's network of active transportation infrastructure, and could potentially form part of an envisioned "Brooks Loop", connecting to the Greenlink Trail System at the top of Wentworth Creek near the hospital.

On the neighbourhood level, formalizing an active transportation route along the Washbrook would create a safe and accessible route for residents of all ages and abilities –particularly youth– to travel on foot, by bike, using an assistive device, or by any other mode of active transportation between their homes and their daily destinations like school and work.

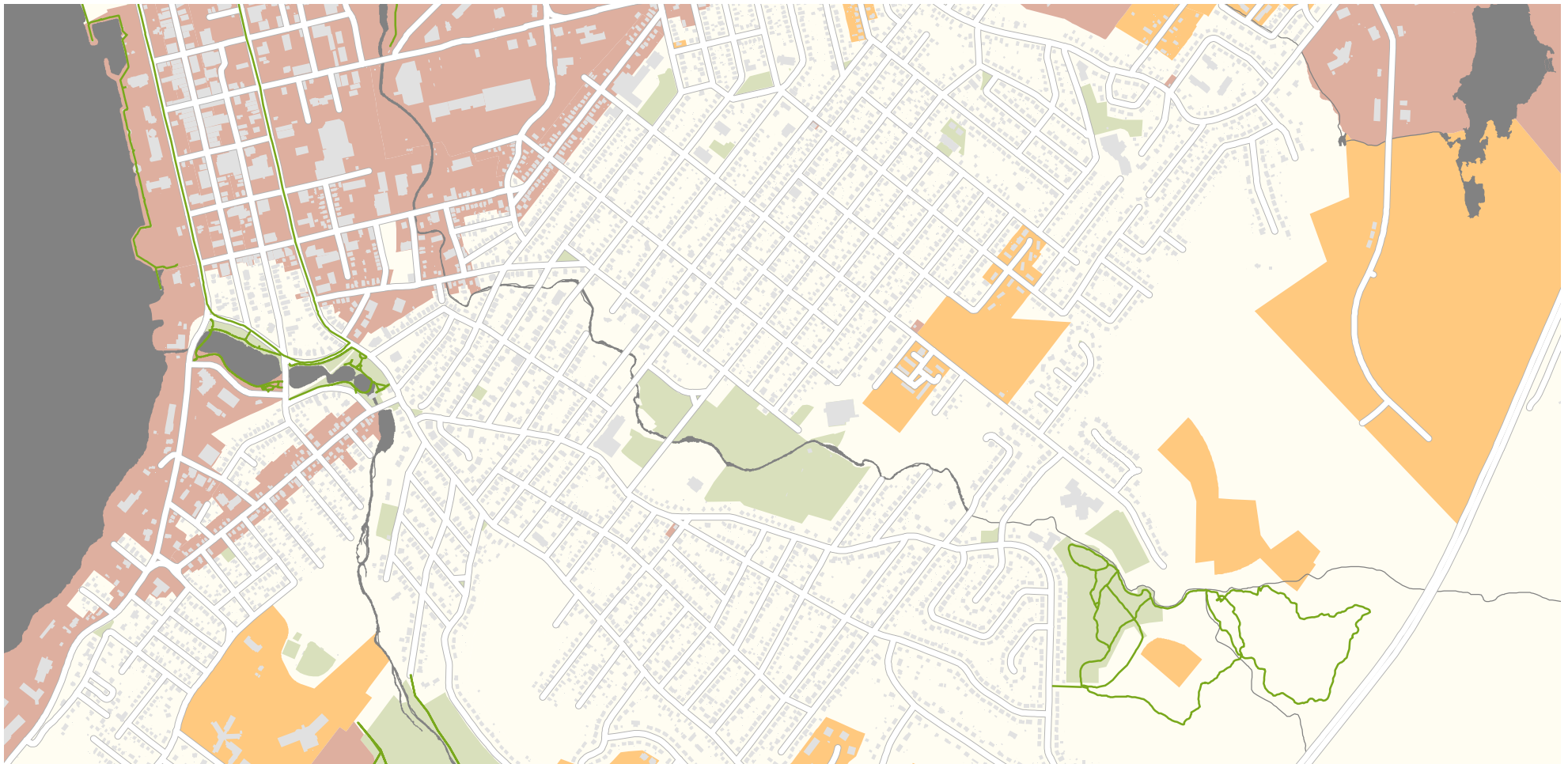


**Community Destinations**

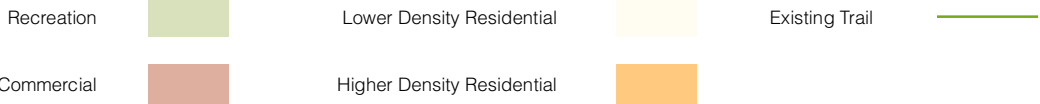




**Connectivity**



**Current Land Use**



## 2.4 Brook Health

While the upper end of the Wash Brook, where the Baille Ard trails are located, is natural and relatively unimpacted by development, the lower portion of the Wash Brook has experienced a significant amount of disturbance from human intervention. Near the harbour, the Washbrook joins the Muggah Creek estuary, which has been severely impacted by the Sydney Coke Ovens and other nearby industrial activity. Both Muggah Creek and the Washbrook served as open-air sewers until 2002 when a treatment facility was constructed. The lower section of the Washbrook, from Brookland Street onward, is confined to a concrete channel to reduce the risk of flooding and erosion to adjacent properties.

The watershed for the Washbrook is largely urban. An impermeable landscape with many roads, parking lots and buildings means that during rain events water does not have the opportunity to enter underground aquifers and rather flows over the surface or via stormwater collection systems into the brook. This has two main impacts. The first is that the water reaches the brook much more quickly than if it was soaking into the ground or collecting in smaller streams, pools and wetlands, leading to faster and more dramatic rises in water levels during storm events. The second is that the water reaching the brook has the opportunity to pick up contaminants from the residential areas, streets, construction areas and parking lots of the surrounding area before entering the brook.

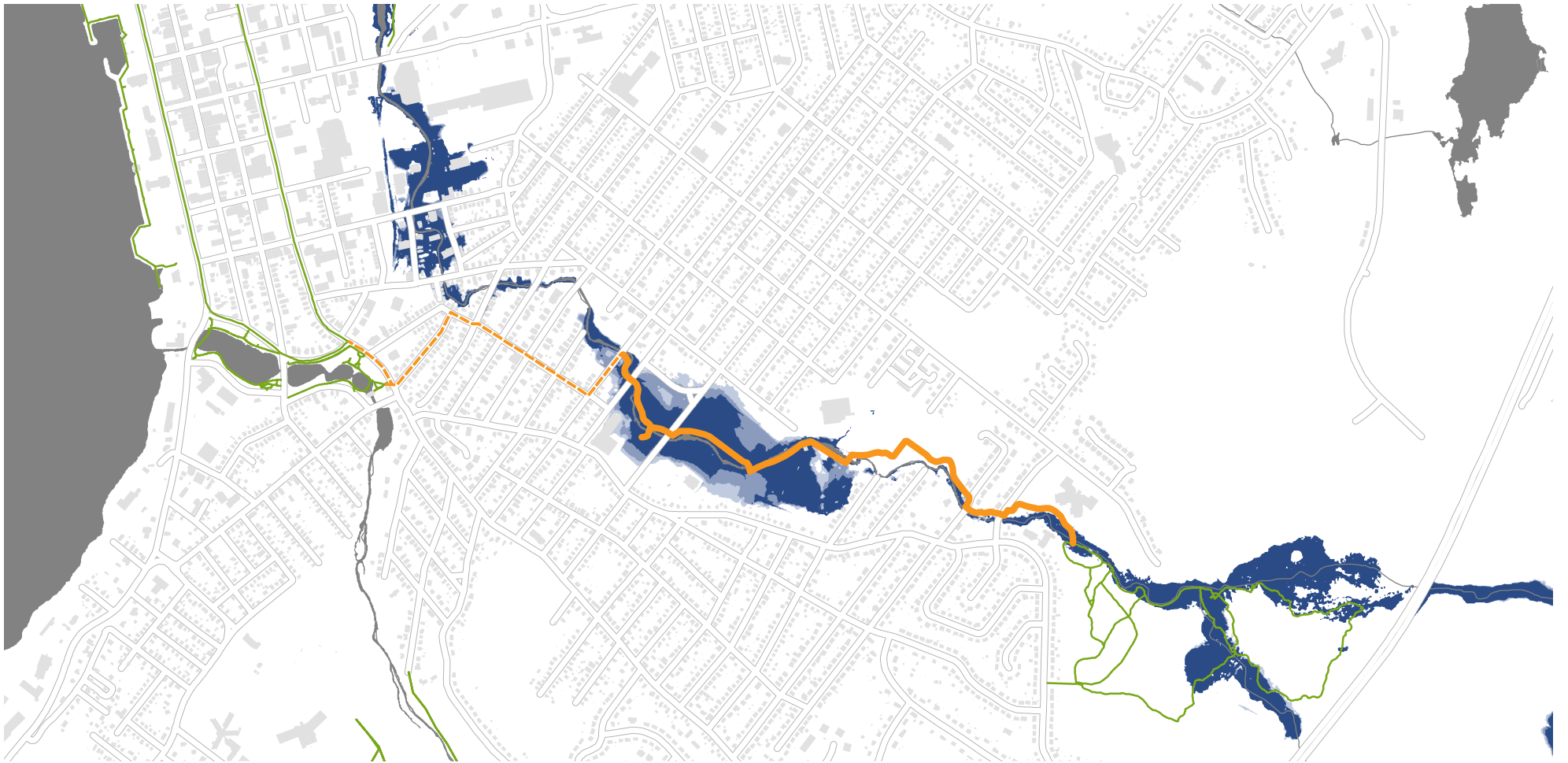
The health of the lower portion of the Washbrook has been improved due to extensive clean-up efforts in the estuary which took place from the late 1980's to 2014, and the diversion of raw sewage from the brook to the treatment facility. The Atlantic Coastal Action Program and other community organizations like the Baille Ard Trails Association have been doing restoration work on the upper portion of the Washbrook periodically since the 1990's. This work has ranged from installing digger logs to improve fish habitat, to protecting the 70 acres of Acadian Forest that filters water entering the brook at the top of its watershed, where the Baille Ard Trails are located.

## 2.5 Flood Risk

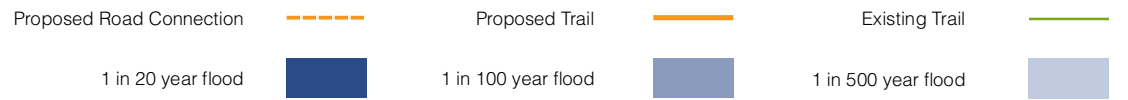
The Wash Brook is a waterway that is prone to extreme flooding during storm events. While the storm in 2016 was an unusual event, with rain exceeding the levels expected for a 1 in 100 year storm, the frequency and severity of extreme storm events is increasing over time and local residents as well as the Cape Breton Regional Municipality (CBRM) recognize that the community must be prepared for this type of event to occur again.

In 2018, the CBRM contracted a “floodwater containment and intensity mitigation” project to study the risk of future floods of the Washbrook and to identify potential solutions that could minimize the intensity, impact, and ultimately the cost of such events. Flood models identified the area that would be impacted by flooding during storm events of varying severity (shown on the flood risk map). Several structural interventions to reduce flooding were identified and modelled; the most effective were the installation of stormwater retention ponds managed by flow-restricting structures (dams) in the Baille Ard Trail area, to hold back water that would otherwise overflow the banks of the brook. Other solutions included other locations for stormwater retention ponds, widening the concrete-reinforced channel, and installing a culvert to redirect some of Washbrook's flow to Wentworth Creek. The project also identified non-structural measures that could be taken to reduce the impacts of floods, including municipal flood forecasting, and awareness campaigns that would increase citizens abilities to prepare for, respond to and recover following a flood.

The CBRM decided in March 2019 that a flow control structure would be installed at Mud Lake; the report identified this measure as having a significant impact only when combined with storm water retention ponds downstream. Whether or not the structural interventions made reduce potential flooding in the future, the proposed placement of the Washbrook Greenway is currently within the at-risk area. As such, it should certainly be designed to withstand periodic flooding.



**Flooding**





# 3 Greenway Design



## 3.1 Trail Placement

### Route

The Washbrook Greenway is intended to make a connection from the Baille Ard Trails to the Wentworth Park trails. Connecting those two hubs will be a great step toward tying Sydney's existing trails together, creating a network which will encourage active transportation and facilitate outdoor recreation in the city. The Washbrook Greenway will begin at Wentworth Park, at George Street and Byng Avenue, and will be a signed road route following George Street, Lorway Avenue, Center Street and St Peters Road. The trail will begin on St Peters Road between Center Street and Hopostal Street, and will follow the brook upstream crossing Royal Avenue, Cabot Street, Cottagedale Crescent and Bernard Lind Drive, joining the Baille Ard Trail behind Sherwood Park Education Centre.

### Placement

The on-road portion of the greenway will make use of existing sidewalks. Signs indicating the route will be installed at intersections.

The off-road portion of the Greenway will follow the banks of the Washbrook as closely as possible. In order to avoid wet areas, facilitate access to destinations, and ensure an adequate right-of-way between the brook and existing infrastructure, the trail will cross the brook at five points. One of these points the trail crosses the brook on an existing road, but the others require bridges.

The trail begins on the south side of the Wash Brook at St Peters Road and crosses to the north side at Royal Avenue. The trail then leads through the property where Public Gardens are now located. A trail spur crosses the brook to connect Brookland Elementary School to the Public Gardens and the Washbrook Greenway. From there, the trail crosses Cabot Street and follows parallel to the running track, crossing the Washbrook again at the end of the track to the baseball park. The trail will then remain on the south side of the brook past the baseball diamonds and will cross back to the north side of the brook once past the stream and wetland behind the Centennial Arena. The trail will cross the brook one final time behind Sherwood Park Education Centre to meet the existing Baille Ard Trails.

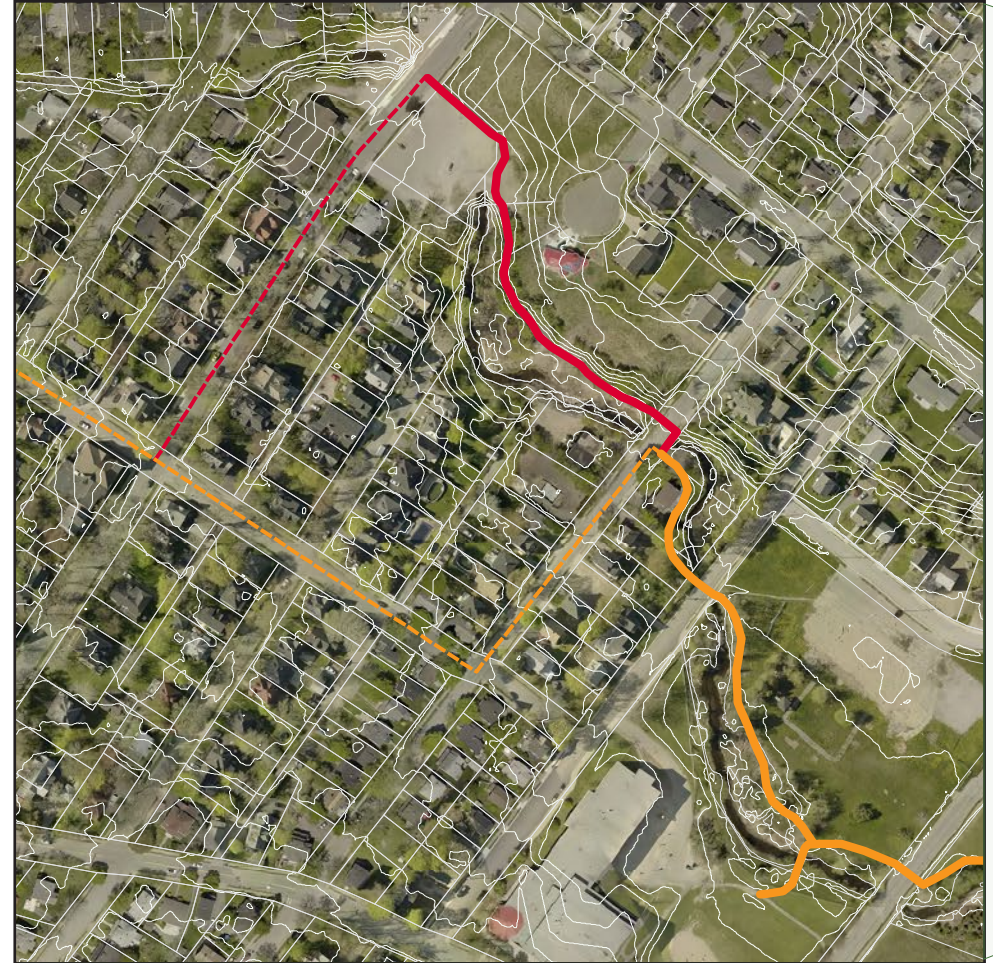


**Proposed Trail**

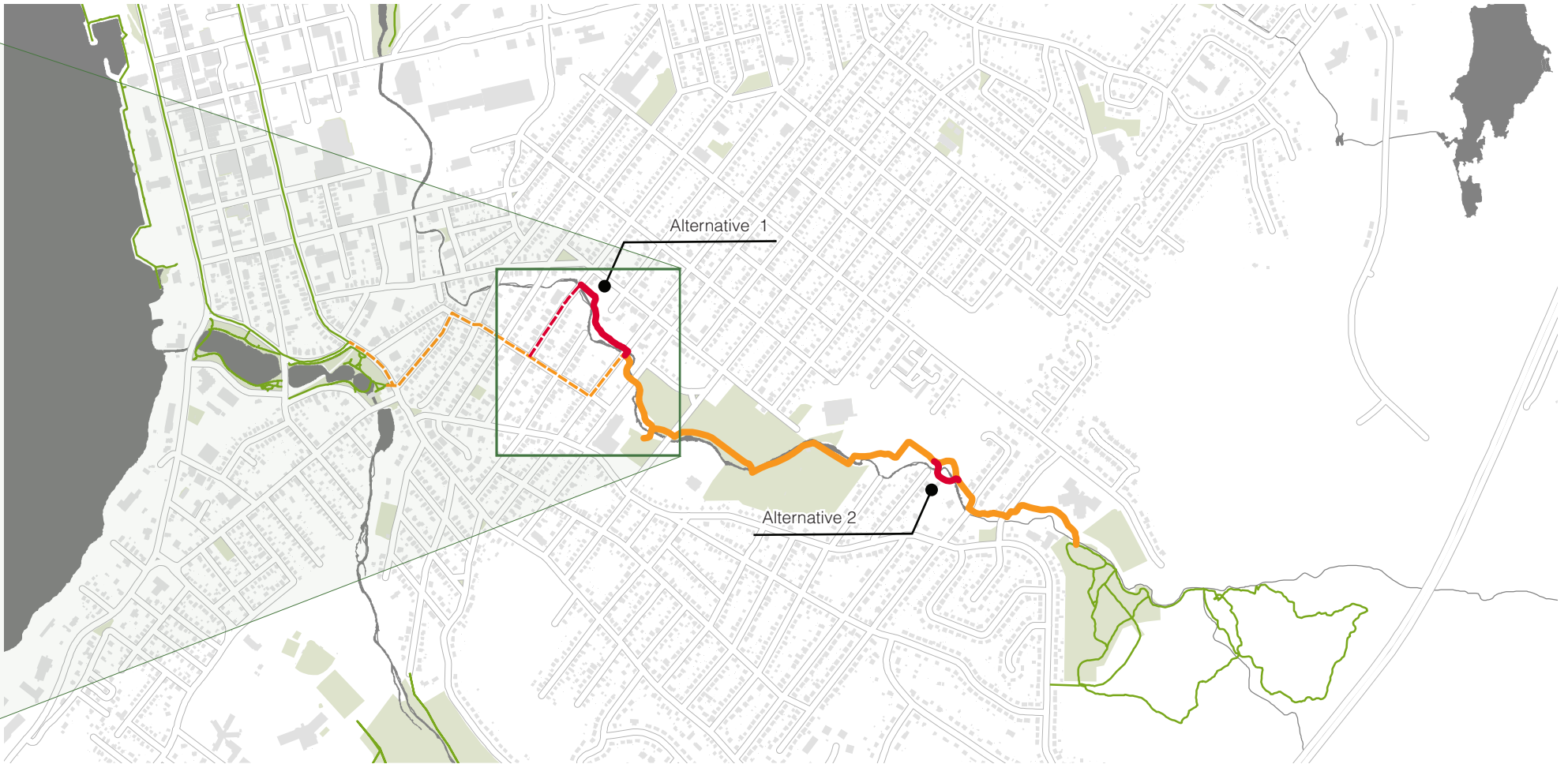


### Alternative Route

An alternative to the proposed route extends the Greenway along the Washbrook from St Peters Road to Whitney Avenue. This option makes the trail portion of the Greenway approximately 225m longer and the road portion about 95m shorter. This section of trail would be more challenging to construct due to steeper grades on the banks of the brook, less space between the brook and adjacent development, and a number of private properties that this route would intersect. If the available right-of-way on this route is not adequate to accommodate an accessible active transportation trail, this route could be considered for the development of a more rustic pedestrian trail extension of the primary Greenway route.



Alternative



**Proposed Trail with Alternative Routes**

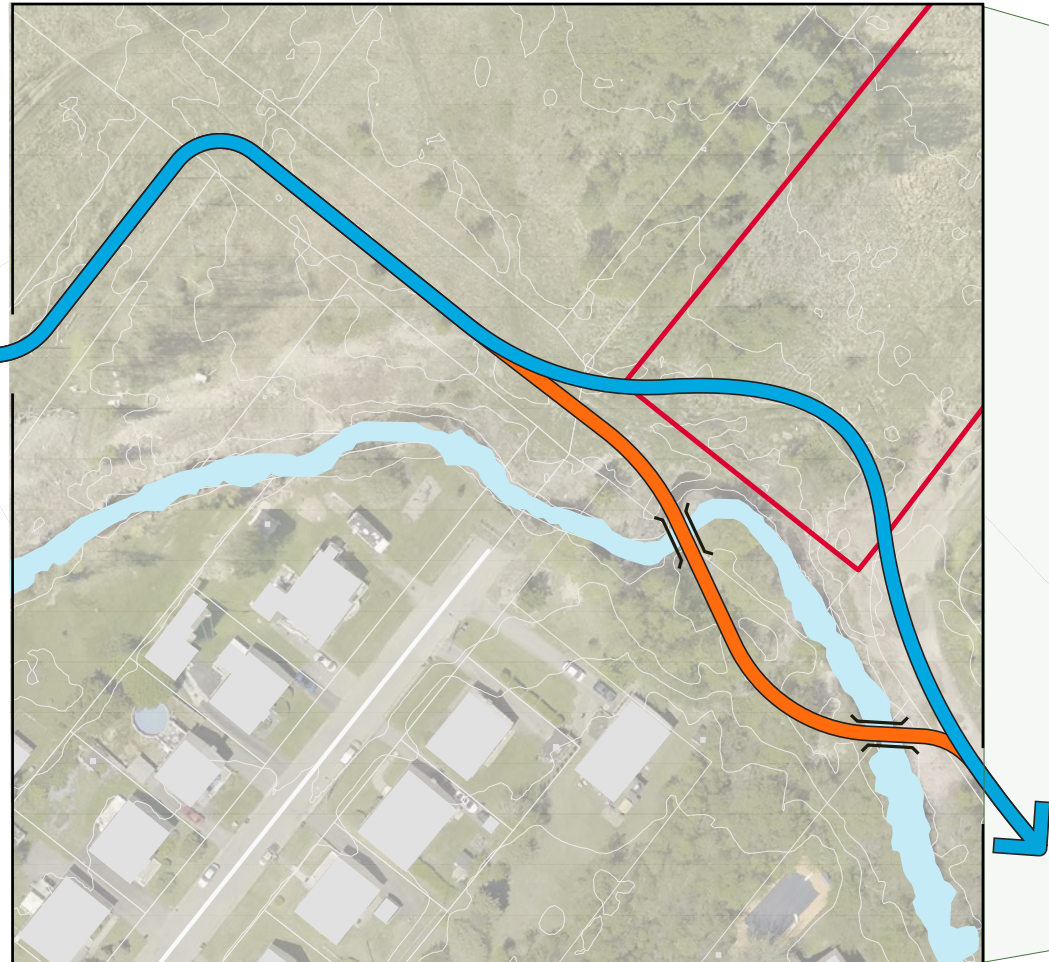
Proposed Trail Alternative		Proposed Trail		Existing Trail	
Proposed Road Connection Alternative		Proposed Road Connection		Green Space	

### Affected Properties

A majority of the land that the trail passes through is owned either by the municipality (road right-of-ways and recreation facility properties) or the province. There are also several road right-of-way parcels that the trail passes through for whom the owner is unknown, but are likely property of the province or municipality.

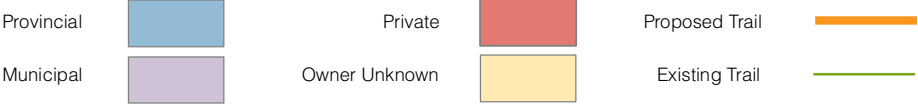
The remaining four parcels that the trail passes through are privately owned. Two parcels are large vacant lots, and one is a residential property with a dwelling on it. The largest privately owned parcel is the property where the Sherwood Park Education Centre is located; this property is owned by a private consortium, who leases the school property and building to the Regional Centre for Education, which operates the school. The lease is ending in 2020 and the the province has expressed the intention to purchase the land at that point, but until then the property will be managed as a public-private partnership. Permission from the owners of all privately-held parcels will have to be acquired before the proposed placement of the route can be confirmed.

A second alternative to the proposed route, near Cottagedale Crescent, provides an option to divert the trail onto municipally-owned land to avoid crossing through a privately-owned parcel. This alternative would be suitable if the private landowner is adverse to development on their property. However, it would require two additional brook crossings.



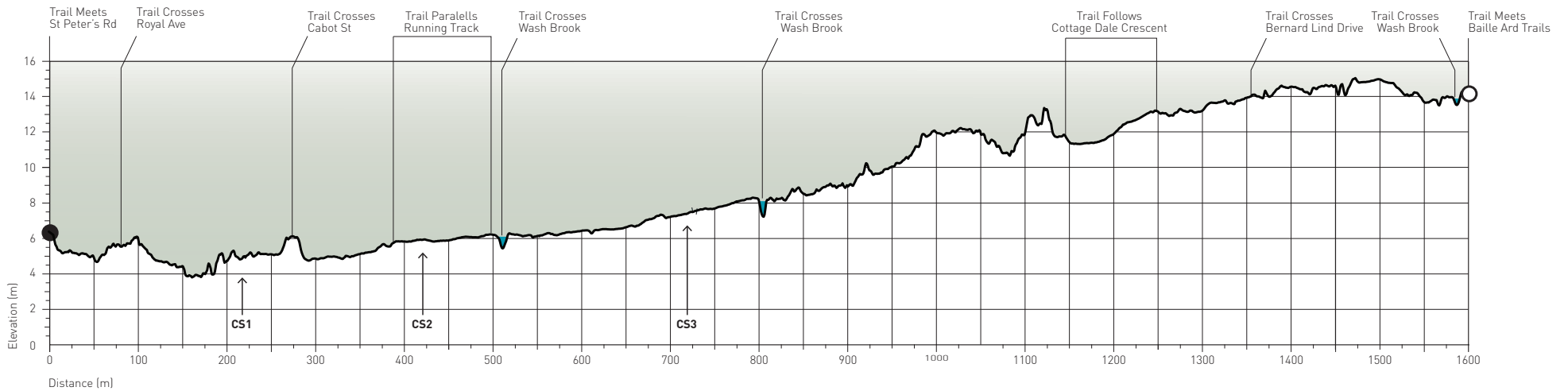


**Affected Properties**



## Trail Profile

The trail portion of the Greenway rises approximately 7m in elevation over its near 1600m length. This gives an average slope of 0.4%. The steepest sections of trail are where the trail crosses the brook, but any steepness there can be mitigated by well-installed bridges. The most uneven land lies between the Centennial Arena and Cottagedale Crescent, but this is also the area with the most open space and flexibility in terms of precise trail placement. It will be possible reduce the slopes in this section of trail by making modifications to the trail placement on-site, and through some grading.






**Trail Elevation Profile**

Elevation Profile Line 

Proposed Trail 

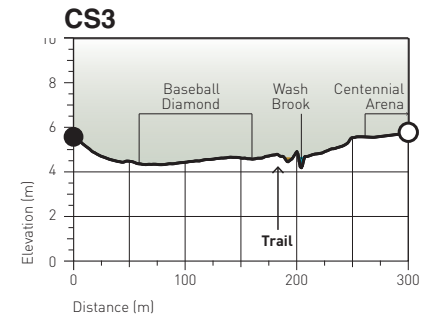
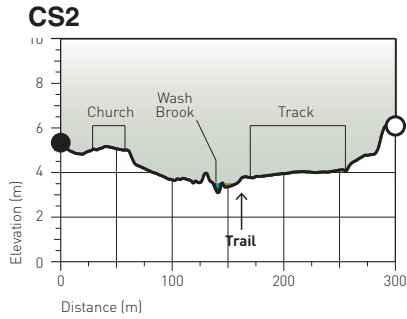
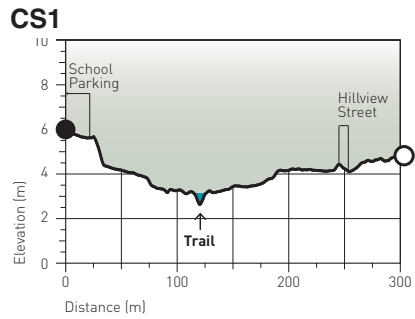
Existing Trail 

Proposed Road Connection 

1 in 500 year flood 

### Trail Cross-Sections

The shallow valley that the Washbrook runs through is less than 300m wide, and within 100m on either side of the brook the land gains only 1-3m elevation. The cross-sections below illustrate the topography that makes the area around the Washbrook particularly susceptible to flooding.





**Trail Cross Section  
Elevation Profiles**

Cross Section  
Elevation Profile



Proposed Trail



Existing Trail



Proposed Road Connection



1 in 500 year flood



## 3.2 Trail Design

### Flood-resistant

The Baille Ard Trails were significantly damaged and in need of major repairs following the 2016 flood. Crusher-dust and gravel trail toppings were washed away, and wooden bridges and boardwalks were knocked off their footings. While this infrastructure was well-constructed, it was not designed to resist the amount of flood water and debris that washed over the trails during that event.

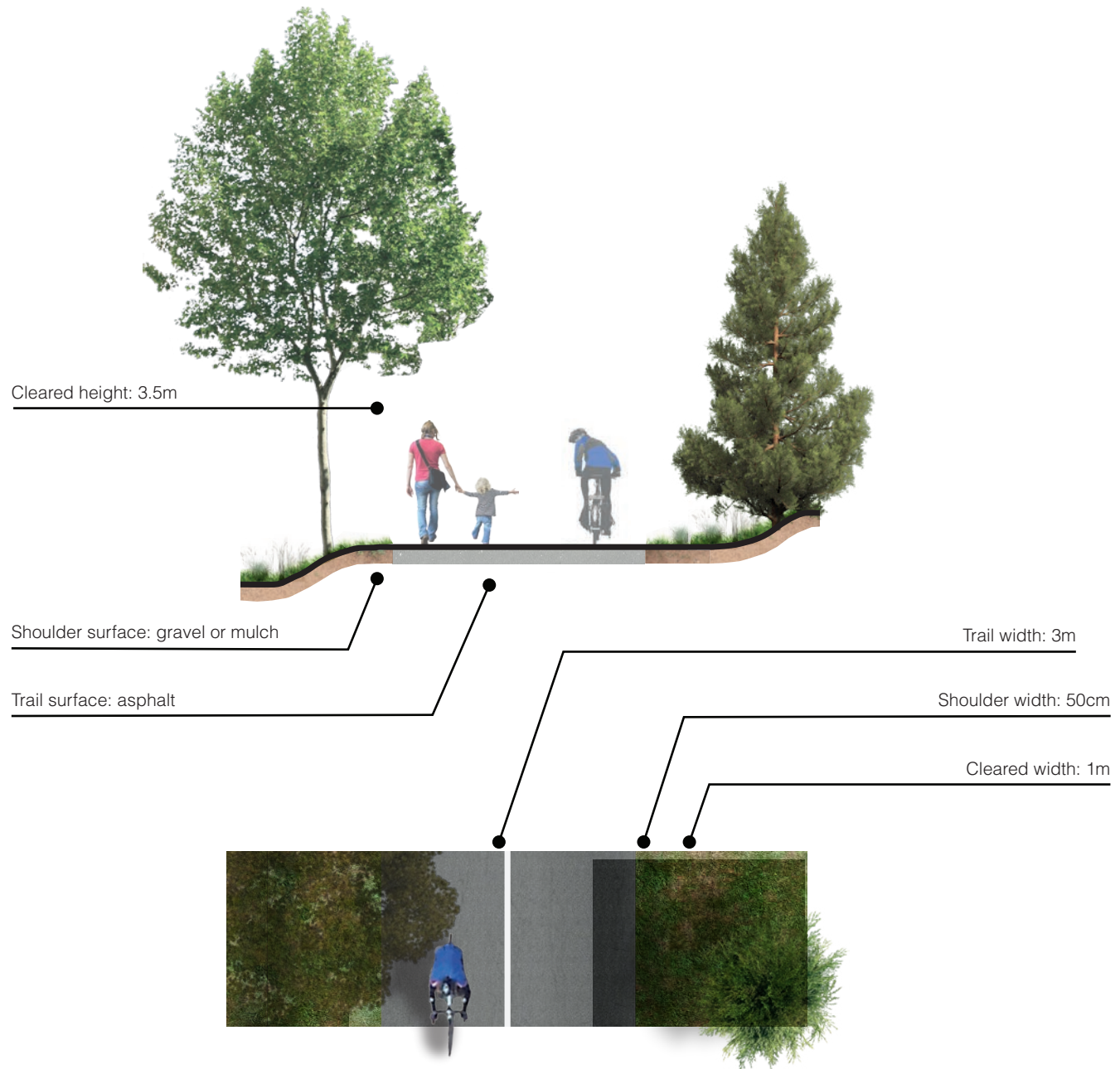
In order to ensure that trail surfaces cannot be washed away by moving water, the Washbrook Greenway should be a paved asphalt path. A paved surface will also facilitate the removal of both debris from storms and snow in winter, without damaging or needing to resurface the trail. The trailbed will be either crowned (sloped down from the centre to the edges) outsloped (sloped down to one side) or on a significant enough grade to ensure adequate shedding of water (typically 5% or over). Bridges and boardwalks will need to have strong concrete footings, and sign posts should be made from concrete or recycled plastic to ensure durability and avoid leaching from wood preservatives.

### Accessible

The intention for the Washbrook Greenway is to create an active transportation corridor that will be accessible for all users. The following design standards for accessible, non-motorized trails can be used for the Washbrook Greenway:

Trail Surface	Asphalt
Trail Width	3m
Shoulder Surface	Gravel or mulch
Shoulder Width	50 cm
Cleared Width	1-2m on each side of trail
Cleared Height	3.5m
Corridor Width	18m

The trail surface must be outsloped or crowned at a 2% slope to ensure adequate water runoff. The grade of the trail itself must not exceed 5% slope for sustained sections, and curves should have at minimum a 2.5m radius to ensure wheelchair accessibility. Bridges within the trail network must be at least 3m wide, and must meet the trail with a ramp that is 8% slope or less.



## 3.3 Landscape Design

### Flood Mitigation

The most effective solutions to reduce the intensity of flooding events identified in the CBRM's floodwater mitigation project involved a combination of flow control at two lakes upstream from the Washbrook, and stormwater retention ponds in the Baille Ard Trails area or further downstream. The most effective location identified for a stormwater retention pond would severely impact the Baille Ard trail network, through the construction of large berms and periodic planned flooding of areas of forest which currently do not experience flooding. The negative environmental and social impacts of that solution are not desired by the community. There were several other locations identified in the study where stormwater retention ponds could be located. These include:

1. Along the brook between Whitney Avenue and St. Peter's Road  
(near the site of the former hospital)
2. At the location of the Southend Public Gardens  
(at the site of the former Southend Community Centre)
3. At the location of the running track at Cabot Street
4. In the vacant land behind the Centennial Arena

An additional potential location would be at the Susan MacEachern Baseball Park, west of the new artificial turf.

### Constructed Wetlands

The Washbrook Greenway Trail Development Committee identified several core values to inform the design of the Washbrook Greenway, which include environmental stewardship and natural flood mitigation strategies. Adopting stormwater retention as a central strategy in flood mitigation provides an opportunity to re-naturalize the landscape by constructing wetlands, which likely existed along the Washbrook prior to development. Naturalized wetland stormwater retention basins have been used in cities across Canada as an environmentally sensitive and aesthetic alternative to engineered ponds. The City of Moncton has recently constructed two wetlands for this purpose. In 2016, a shallow wetland, complete with salt-tolerant native plant species, was installed to absorb and filter runoff from the pile of snow cleared from Moncton's streets as it melts in the spring. Another naturalized stormwater pond was constructed in Moncton's Fairview Knolls neighbourhood, which helps limit flooding and also draws a diversity of wildlife, creating a focal point for recreation in the neighbourhood.

For the detailed design of naturalized wetland stormwater retention basins, a partnership with Ducks Unlimited is possible. A local consultant on native wetland species suitable to the region would also be a valuable contributor.




Typical stormwater retention basin (Mississippi, US)



Naturalized wetland stormwater retention basin (Winnipeg, MB)





**Potential Stormwater Retention Basin Locations**

Potential Naturalized Stormwater Retention Basin 

Proposed Trail 

Existing Trail 

Proposed Road Connection 

1 in 500 year flood 

## 3.4 Signage

### Road Route

The effectiveness of on-road active transportation routes can be significantly increased through consistent and legible wayfinding signs. This can consist of simple signage at intersections identifying the route as part of the Washbrook Greenway and indicating the direction. Signs could also include distances to destinations like Wentworth Park or Brookland Elementary School - this would be particularly useful at the beginning and end of this route.

### Trail

Off-road trail signs should be consistent with on-road route signs and continued along the trail portion of the Greenway. At points where the trail intersects roads or other paths, the Greenway and the intersecting route should be identified. Directional signs should be used at these locations to identify nearby destinations and the distances to them. There may also be opportunities along the route to include interpretive signs, to inform recreational trail users about local landmarks, history, or natural features, plants or wildlife.



## 4 Next Steps



## Next Steps

### Partnerships and consultation

The Washbrook Greenway Trail Development Committee's strength is in the diversity of stakeholders who are already involved in this project. They include:

- Baille Ard Recreation Association
- Southend Public Gardens Society
- ACAP Cape Breton
- CBRM
- Sherwood Park Education Centre
- Brookland Elementary School
- Brookland Elementary School Advisory Committee
- Ecology Action Centre
- Nova Scotia Public Health
- Kiwanis
- Golden K

Reaching out to other community organizations, communities, and potential partners will only add momentum and resources to the project. Outreach will have to be done to contact and discuss with the owners of private land that the trail intersects the possibility of using this land.

Public consultation should also be undertaken to make local residents aware of the project and to hear any concerns and gather ideas they may have for the Greenway.

### Funding

The Washbrook Greenway contributes toward any municipal, provincial and federal strategies, including the federal *Let's Get Moving Strategy*, provincial *Shared Strategy for Trails and Recreation* and *Active Kids, Healthy Kids*, and municipal *Integrated Community Sustainability Plan*, *Physical Activity Strategy*, and *CBRM Active Transportation Plan*. Leveraging the Greenway's contribution toward governmental goals for sustainability and active living will be helpful in acquiring funding from these sources.

### Detailed Design

A detailed plan will need to be made to specify trail placement, construction specifications, material quantities, and final cost for the construction of the trail. Similarly detailed design will need to be procured for design of trail branding and signage, which would include precise sign placement, content, design specifications and construction, material and installation details.





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