

# Ecological Greenways & Trails - Guide for Developers

Ecological Greenways are multi-use linear parks that provide connections for pedestrians and cyclists, and connect and preserve key habitat areas. Ecological Greenways protect wildlife by providing shelter and food, and facilitating movement. Land Developers dedicate, design and construct amenities such as Creek Greenways and Ecological Greenways. These greenways are eligible for neighbourhood amenity area credit.

In order to successfully design and implement trails through environmentally sensitive areas, coordination between consultants, construction crews, and the Township is required. Design coordination includes but is not limited to: grading, retention of trees and existing vegetation, slope stability, service access, and restoration of disturbance.

Acceptance of the design and security deposit on greenways is typically required prior to Final Reading by Council. The security deposit is returned when the work is complete.

## Design & Construction Considerations

### Protection of Environmental Features

The Developer is responsible for protection of the greenway corridor during construction. This includes both existing trees and existing natural features such as drainage patterns, understory vegetation, snags and nurse logs. Habitat value shall be protected and enhanced by recognizing and protecting the 5 key habitat cover types; wetland, coniferous, mixed forest, broadleaf, and shrubs.

### Existing Trees and Vegetation

The Project Arborist is responsible for identifying and removing hazardous trees before construction begins in order to provide a safe working environment for construction crews and adjacent properties. Monthly Arborist reports are required and should be submitted to Green Infrastructure Services. Where the removal of existing trees or natural vegetation is unavoidable and is approved by the Township, existing trees shall be replaced at a 3:1 ratio. Existing understory areas shall be replanted using predominantly native species.

### Trail Layout

The trail within the ecological greenway is located to one side of the 30m (average) dedication—see Fig. 5.1 Ecological Greenway Cross-section—in the 6m wide utility corridor. Design trails to encourage users to stay on the trail. If necessary, the trail may shift sides but location should minimize disturbance to the existing vegetation within the corridor.

### Adjacent Development

The ecological greenway is separated from adjacent property by fencing and planting. The public has access to the trail at established locations and has visual access to the greenway. Design the trail and install protective fencing early on to discourage unauthorized activity such as construction access and green waste dumping in the Ecological or Creekside greenway.

### Surface Drainage

Evaluate existing surface drainage and the impact of adjacent development. The trail must be passable at all times during the year. Standing water along the sides of trail is not acceptable. Allow for positive drainage and provide culverts under trails and area drains where needed. Compliance with all Township bylaws, including the Erosion and Sediment Control Bylaw.

### Invasive Weeds and Unsuitable Material

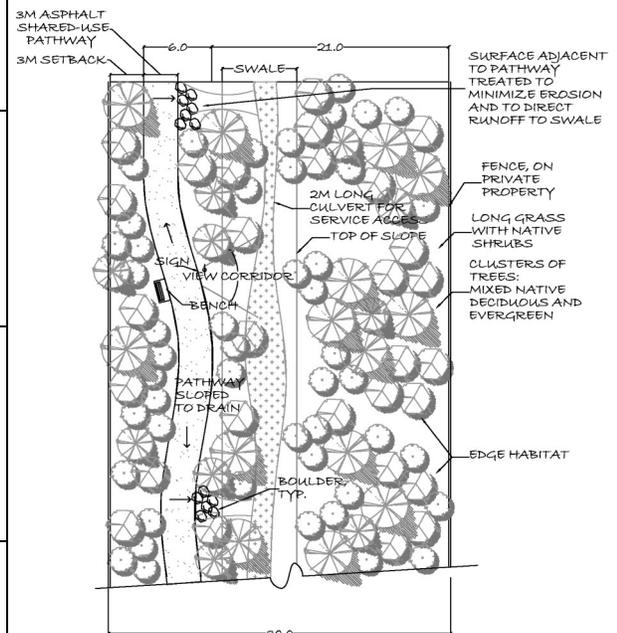
Remove invasive weeds, such as Himalayan Blackberry, English Holly, Scotch Broom, periwinkle, and labium, from the trail corridor. Remove and dispose of all unsuitable material and construction waste.

### Restoration of Disturbance

Install topsoil and native plant material to areas disturbed by construction activity. Ensure that existing plant material is protected during restoration work. Use 50% evergreen and 50% fruit bearing plants. Woody debris from tree removal and trail preparation may be distributed and placed discretely in the greenway areas.

## Reference & Related Details

- Community and Neighbourhood Plans
- Wildlife Habitat Enhancement Strategy 2008
- Subdivision and Development Services Bylaw 2019, No. 5382 Drawings:
  - ◆ TLP 06 Fence - Rear Yard
  - ◆ TLP 07 Fence - Chainlink
  - ◆ TLP 09 Fence - Access Barrier
  - ◆ TLP 11 Fence - Paige Wire
  - ◆ TLP 12 Fence - Streamside
  - ◆ TLP 18 - Asphalt Trail
  - ◆ TLP 19 - Granular Trail
  - ◆ TLR 20 - Emergency Access
  - ◆ TLR 22 - Bollard - Removable Restriction Post



Ecological Greenway Plan

Development Services Department  
Community Development Division

20338 - 65 Avenue Langley, BC. V2Y 3J1  
Ph: 604.533.6034 | Email: cdinfo@tol.ca  
Web: tol.ca/development



# Trail Construction Considerations

Step 1:	Flag	Flag the corridor, minimum setbacks from property lines, and trail.
Step 2:	Evaluate	Evaluate existing trees and vegetation in trail corridor. Identify and remove hazardous trees before construction to provide a safe working environment for construction crews and future trail users. Meander the trail route to maximize retention of existing trees and vegetation. Protect retained vegetation. Minimize disturbance to existing vegetation during construction. Comply with Erosion and Sediment Control Bylaw requirements. Restore disturbed areas.
Step 3:	Ensure Drainage	The trail is expected to be passable at all times. Standing water on and beside the trail is not acceptable. Identify surface drainage patterns, and locate culverts to suit. Culverts under trails shall be a minimum 200mm diameter SDR 35 pipe with minimum 300mm cover, extended a minimum of 500mm beyond edge of trail surface.
Step 4:	Stabilize Slopes	Install Modular Concrete Block retaining walls (as per TOL standard detail TLP 23) as required. Areas of disturbance adjacent to the trail are to have a maximum slope of 3H:1V. Areas of existing tree roots and/or unstable soil conditions may require site specific design considerations.
Step 5:	Prepare Base	Where required, excavate to load-bearing sub-grade and/or install compacted pit run (as per TLP 19 or 20) to achieve the acceptable trail slopes and load bearing. Geotechnical Engineering and geo-grid may be required to improve the structural capacity and load distribution over existing roots or unstable soils.
Step 6:	Grading	The trail grade may generally follow the existing contours but the maximum longitudinal grade is 10%. Short sections of trail with a maximum 15% slope are permitted where necessary.
Step 7:	Clean Up	Remove and dispose of construction waste, invasive plant material and other unsuitable material found in the trail corridor.
Step 8:	Rehabilitation	Stockpiling of topsoil/organic layer for restoration of trail edges is acceptable. Developer is responsible for erosion and sediment control. Fallen logs may be placed along the trail corridor to help define the trail edge outside of the clear zone. Branches and woody debris may be coarsely chopped and distributed, but not piled, onsite.
Step 9:	Maintenance	Maintenance of trails is the responsibility of the Developer until Trail Acceptance has been issued by the Township.

## The Landscape Architect's Role

Trails and associated landscapes in environmental areas are expected to conserve and enhance our environment, increase biodiversity and natural capital, protect people and property, and provide and support community based leisure opportunities. The consultant team has a key role in the design and construction of healthy, safe, and beneficial trail areas that comply with the Neighbourhood plans, Subdivision and Development Servicing Bylaw, and Official Community Plan.

The consultants are expected to provide Contract Administration services by performing inspections to identify deficiencies, interpreting plans, test results and inspection reports; determining and advising of corrective action, monitoring work, requesting inspections, and documenting construction progress meetings

### REQUIRED FIELD REVIEWS AND REPORTS

The following minimum reviews are required to be completed by the project Landscape Architect and submitted to Green Infrastructure Services staff:

- Tree protection measures
- Subgrade and Trail layout
- Growing medium and installation
- Finish grading and drainage
- Plant installation
- Fencing and signage installation
- Completion review
- Establishment maintenance inspections
- Acceptance review

As per Schedule C Subdivision and Development Services Bylaw 2019 No. 5382

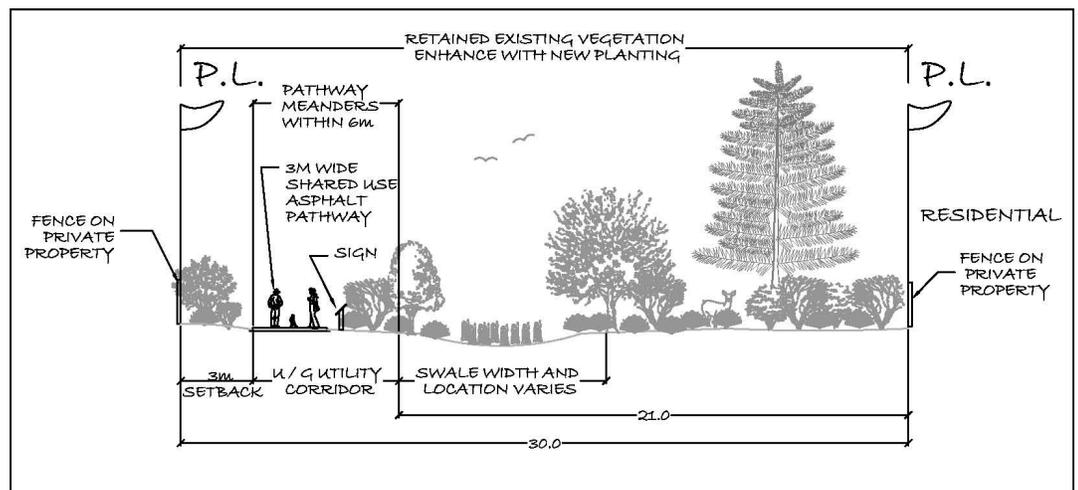


Fig 5.1 - Environmental Trail Typical Section in Cross-slope Area