



Environmental Assessment Registration

Great Northern Trail Quirpon to Goose Cove

Minister of Environment and Climate Change
PO Box 8700
St. John's NL, A1B 4J6
Attention: Director of Environmental Assessment

Submitted by
Great Northern Trail Association Inc.
St. Anthony NL

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1. PROPONENT

NAME OF UNDERTAKING:

- Great Northern Trail (Quirpon, Great Brehat, St. Carols. St. Anthony Bight, & Goose Cove Sections).

(i) Name of Corporate Body:

- Great Northern Trail Association Inc. (GNTA)

(ii) Chief Executive Officer:

- Name: Ryan Patey

Official Title: President

(iii) Principal Contact Person for Environmental Assessment:

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Official Title: President, Great Northern Trail Association Inc.

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GNTA is a registered not-for-profit organization and is in good standing with the Registry of Companies.

2. THE UNDERTAKING

(i) Name of the Undertaking:

Great Northern Trail Sustainable Multi-Use Trail Network

The proposed trails include the following five main components:

Trail	Crown Lands Application #	Nearest Community
Quirpon Tickle Lookout Trail	163341	Quirpon
Goose Cape Trail	163342	Goose Cove
Cape St. Anthony Trail	163343	St. Anthony Bight & St. Carols
Square Bay Trail	163344	St. Carols & Great Brehat
Little Brehat Trail to Granchain Island	163346	Great Brehat

(ii) Purpose/Rationale/Need for the Undertaking:

The proposed trails will form and expand upon the Great Northern Trail Network, a collection of trails around the tip of the Great Northern Peninsula. GNTA has established a relationship with each coastal community to include each existing trail into the network and promote all under a unified brand. As an integral part of the Great Coastal Trail, aligning with provincial efforts to develop a world-class, sustainable coastal trail system, these trails will:

1. **Enhance Existing Pathways:** The new trails follow historic footpaths traditionally for berry picking, hunting, and traveling between communities. By building on these routes, we are not only preserving their heritage but also upgrading them with sustainable construction methods to ensure their longevity and accessibility for future generations.
2. **Promote Sustainable Outdoor Tourism:** Promoting Sustainable Outdoor Tourism: By connecting Goose Cove, St. Anthony Bight, St. Carol's, Great Brehat, and Quirpon, these trails will enhance the region's reputation as a premier hiking destination. With over 100 km of trails already included in the Great Northern Trail Network, this expansion further strengthens opportunities for outdoor recreation while supporting sustainable tourism and local communities.
3. **Support Conservation Goals:** This initiative aligns with Canada's 30 by 30 conservation targets by preserving natural landscapes and promoting responsible outdoor recreation. Our sustainable construction methods ensure that users can access the land while minimizing environmental impact—limiting the creation of multiple pathways, and reducing the need for further development.
4. **Benefiting Local Economies:** Increased trail-based tourism will provide a significant boost to local businesses, including accommodations, restaurants, and shops. By attracting hikers, outdoor enthusiasts, and adventure travelers, these trails create new opportunities for guided tours, gear rentals, and cultural experiences. Beyond tourism, this initiative directly supports the local economy by employing community members in trail construction and maintenance while sourcing materials and contractor services from local businesses. This ensures that the economic benefits of the Great Northern Trail Network stay within the region, fostering sustainable growth and strengthening the communities along the trail.
5. **Ensuring Long-Term Trail Sustainability:** GNTA's trained Great Northern Trail Builders will construct these trails using sustainable building practices designed to minimize environmental impact while maximizing durability. By employing techniques that reduce erosion, improve drainage, and integrate trails seamlessly into the natural landscape, we ensure that these pathways remain safe and accessible for generations to come. Sustainable trail construction not only enhances the user

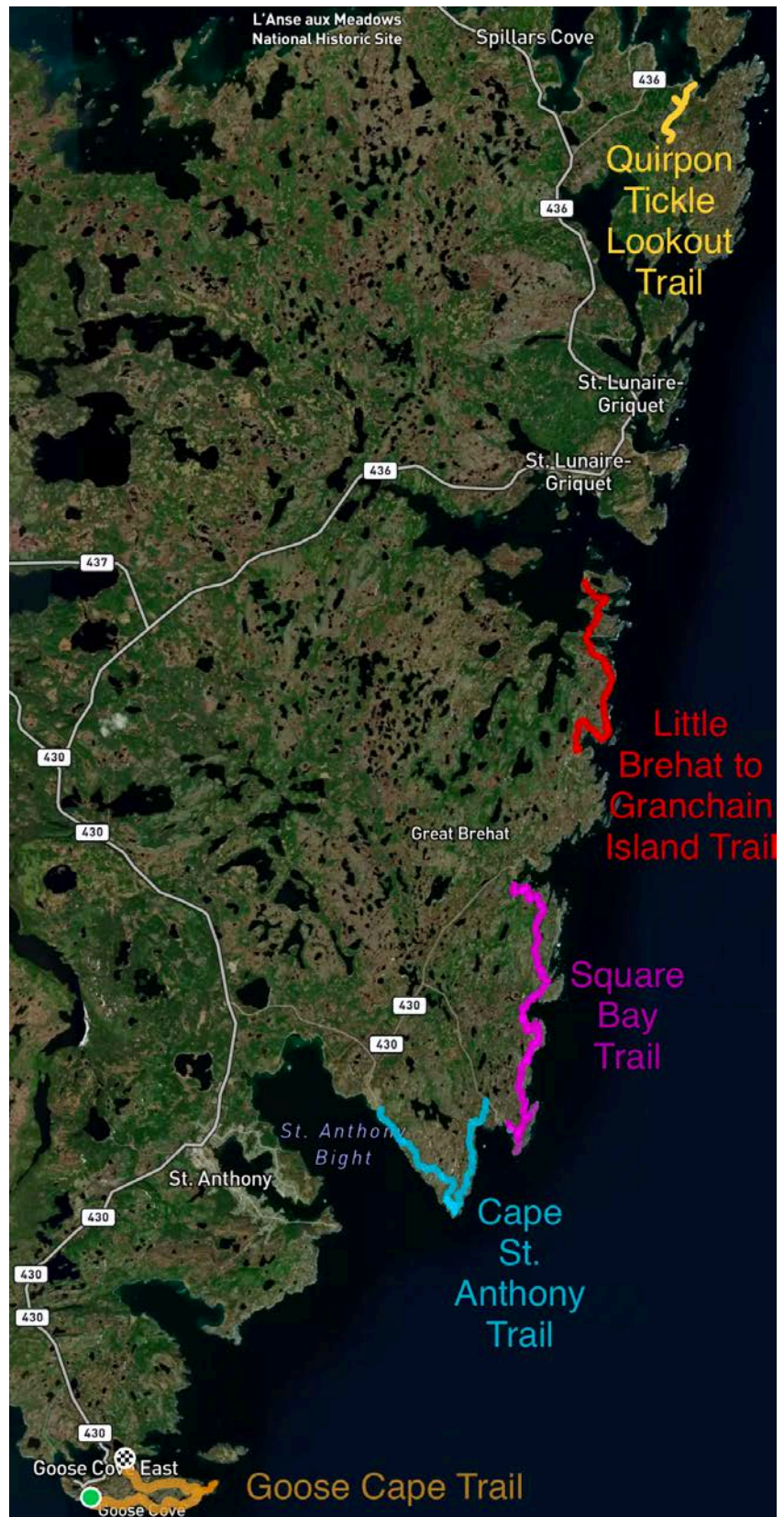
experience but also reduces long-term maintenance costs, preventing issues such as trail widening, water damage, and soil degradation. With a dedicated team committed to responsible land stewardship, the Great Northern Trail Network will continue to offer high-quality outdoor experiences while preserving the region's natural beauty.

3. DESCRIPTION OF THE UNDERTAKING

(i) Geographical Location:

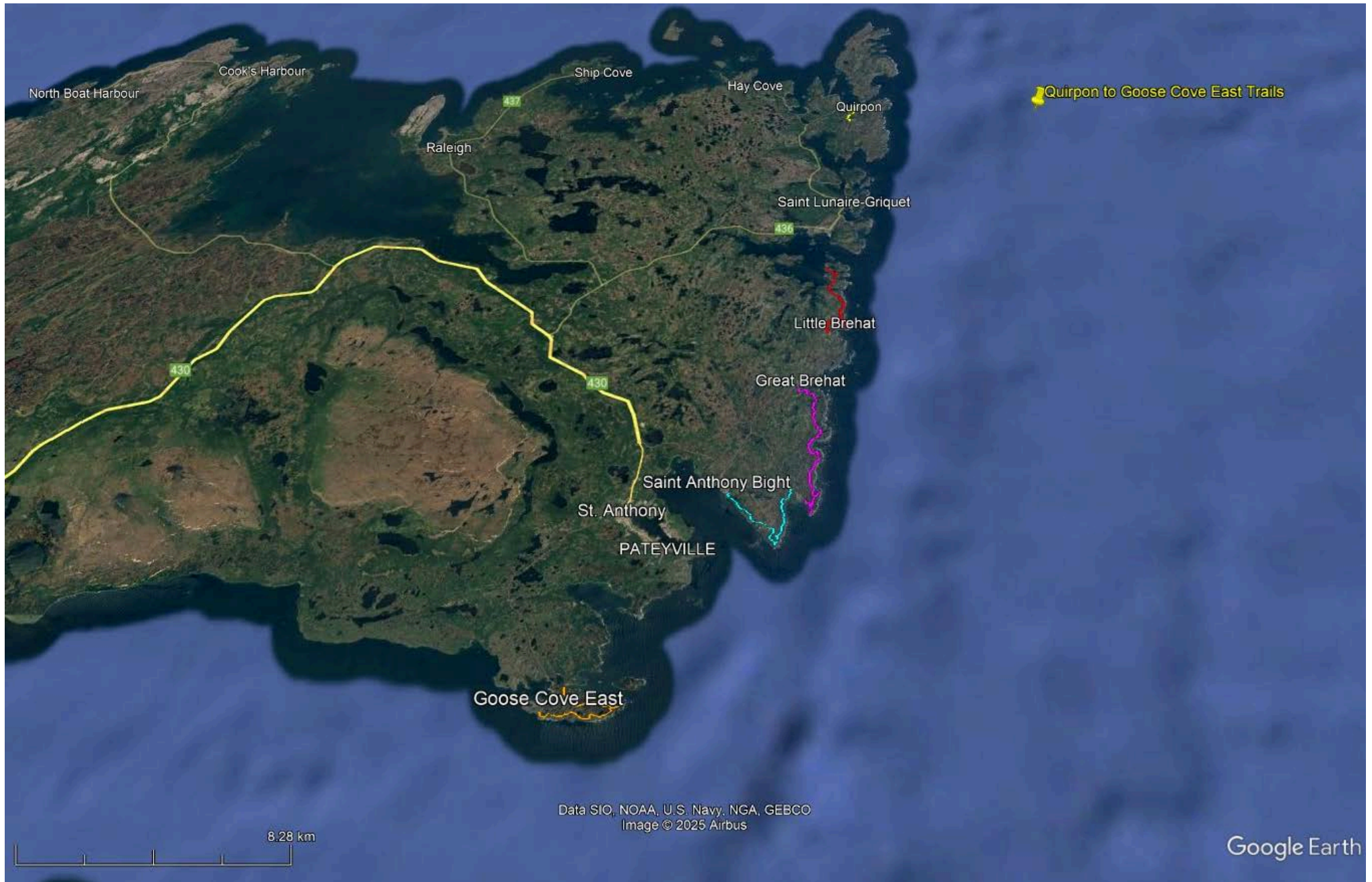
The trails (listed in the order of expected construction) are located along the North Eastern Great Northern Peninsula in Newfoundland, spanning:

- Quirpon Tickle Lookout Trail, located at the community of Quirpon (51.580577, -55.443092)
- Goose Cape Trail, connecting two trails in the Town of Goose Cove East. (51.305579, -55.637960 and 51.311343, -55.626929).
- Cape St. Anthony Trail located between two communities, St. Anthony Bight (51.379066, -55.541477), and St. Carols, (51.380813, -55.508651).
- Square Bay Trail, located between two communities, St. Carol's (51.376071, -55.501435) and Great Brehat (51.423217, -55.499597).
- Little Brehat to Granchain Island Trail, located in the community of Great Brehat, starting at Little Brehat Trail, Main Road, Great Brehat (51.428708, -55.494619).
- See scaled maps below for more details on location.









(ii) Physical Features:

1. Overview of Physical Features

The proposed trail development spans five new trail segments, totaling approximately 31.9 km, along the Great Northern Peninsula of Newfoundland. Each trail connects to existing routes which traverse coastal cliffs and shoreline, boreal forests, inland barrens, and traditional pathways that have historically been used for berry picking, hunting, and community travel.

Each trail will be approximately 1.2m in width with a cleared corridor of approximately 2.4m wide from the trail centerline. Vegetation clearing and pruning will be done strategically to avoid clear cutting, focusing only on plants that would cause an obstruction to trail users. The Trail surfaces will be existing mineral soil, reached by removing the ground vegetation and organic soil as needed in a 1.2m wide strip and compacting in the same area. Where the grade needs an adjustment to prevent erosion or materials are too wet and/or organic to support a trail, suitable material (mineral soil and/or stone) will be borrowed from an approved source and used to construct the tread to become more sustainable.

Through field work and satellite imaging analysis, it has been determined there are approximately 10 locations identified where the trail will cross a small brook, stream or wet channel, including one tidal crossing. Note that this is subject to confirmation in the field at time of flagging, staking, and building.

These crossings are mostly over small streams or brooks. It may not be necessary to use any infrastructure, and let users walk across them. However, where water may be coming from larger sources, and is deep, wide, and fast moving, it may be necessary to use rock bridging techniques (large, locally sourced rocks to armor the crossing and provide surface for users to step on or across) or appropriately sized culverts covered with stone or gravel to ensure passage of water remains undisturbed as per the Environmental Guidelines for Watercourse Crossings and Environmental Guidelines for Culverts from the Water Resources Management Division of the NL Department of Environment & Climate Change.

Quirpon Tickle Lookout Trail

This is a very old, existing trail. The **trailhead** (referring to the point where user access begins) will be near the end of Southern Tickle Road in Quirpon. It traverses inland barrens, rocky terrain, and Tuckamore forest. It will not cross any water bodies. The route consists of an offshoot leading to a panoramic viewpoint.

There is existing parking available at the turnaround located at the end of Southern Tickle Road in Quirpon. This area lies beyond the last residential homes and is regularly maintained by the Department of Transportation and Works. In addition, overflow parking is available approximately 400 meters further along the gravel section of the road, at an existing GNTA parking area for the Iceberg Trail. Parking is sufficient for its expected volume of use, and can accommodate more than 8 vehicles, therefore no conflicts are anticipated. Permission and support for construction and parking has been obtained by representatives from the Community of Quirpon.





Goose Cape Trail

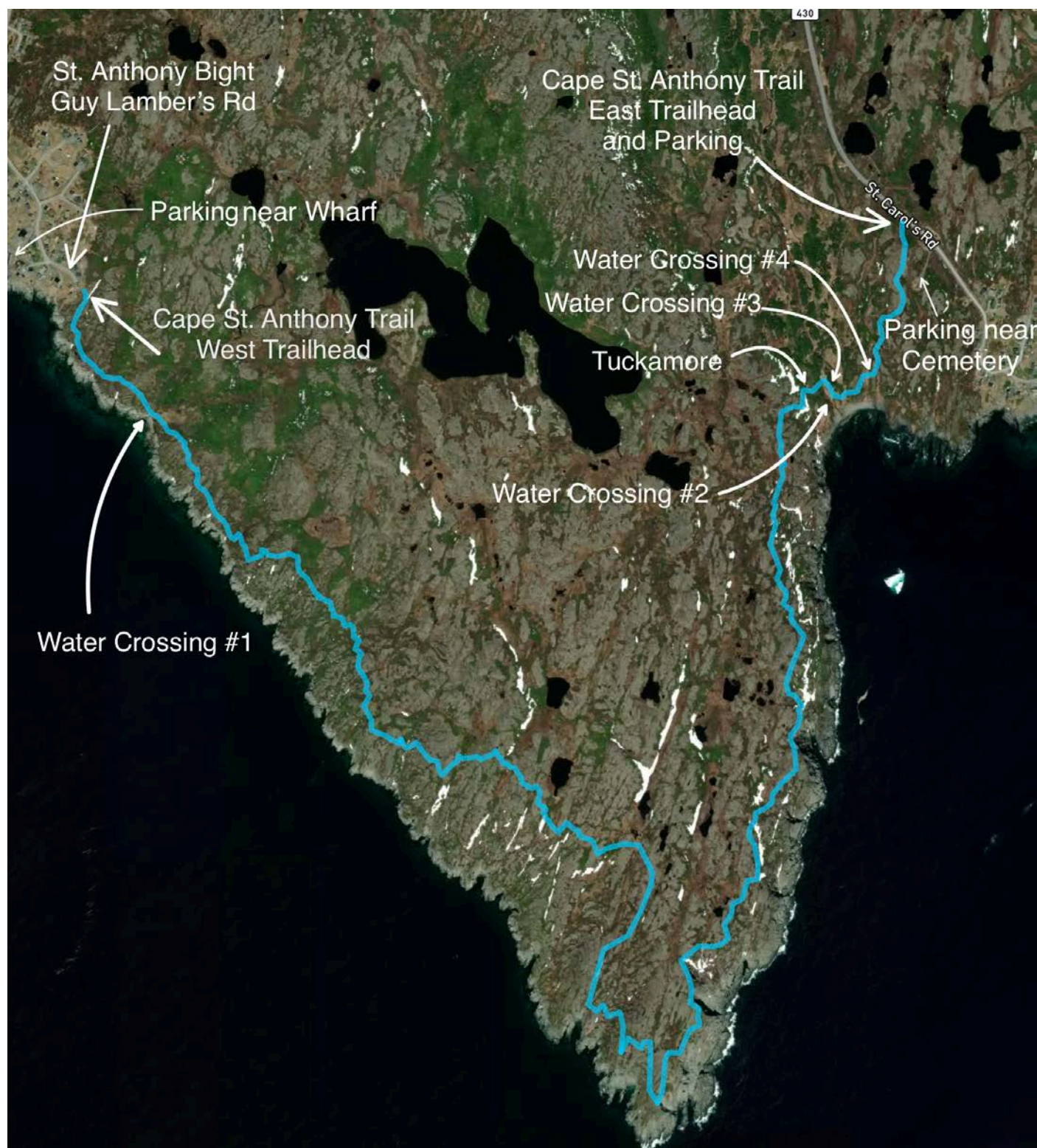
Following rocky, hilly, and barren terrain with peatlands, stunted shrubs, and coastal cliff lines this trail will link 2 km of existing trails. It does not cross any water bodies. The route consists of an offshoot that passes a shoreline and leads to a viewpoint. There are two trailheads: one at Back Cove Trail and Day Use Park near the Goose Cove Municipal Building, and the other near the end of Goose Cove Road at the start of Pumley Cove Trail. There is existing parking available at both trailheads, The Back Cove Trailhead uses the Goose Cove Municipal Building parking area and an existing roadside pull-off maintained by the town and Department of Transportation. The eastern trailhead near Pumley Cove has nearby access to a widened public area traditionally used by visitors. Parking areas are community-approved, sufficient for its expected volume of use, and can accommodate more than 8 vehicles. There is no anticipated conflict. Permission and support for construction and parking has been obtained by the Town of Goose Cove East.





Cape St. Anthony Trail

This trail will cross hilly, rocky terrain, inland barrens, peatlands and coastal cliffs before transitioning into small Tuckamore forest and short shoreline. It will cross 4 streams, but no other water bodies. There are two trailheads: the West Trailhead is near the end of St. Anthony Bight, Guy Lambert's Rd, at a turnaround. The East Trailhead near a clearing on St. Carols Road. Parking for the West Trailhead is available on Crown Land Public parking near the Community Wharf approximately 300m by road from the West Trailhead. Parking for the East Trailhead is at existing parking space for the cemetery near St. Carol's Road. Parking is sufficient for expected volume of trail and cemetery use, and can accommodate more than 8 vehicles. Permission and support for construction and utilization of parking areas have been obtained from the Communities of St. Anthony Bight and St. Carols.

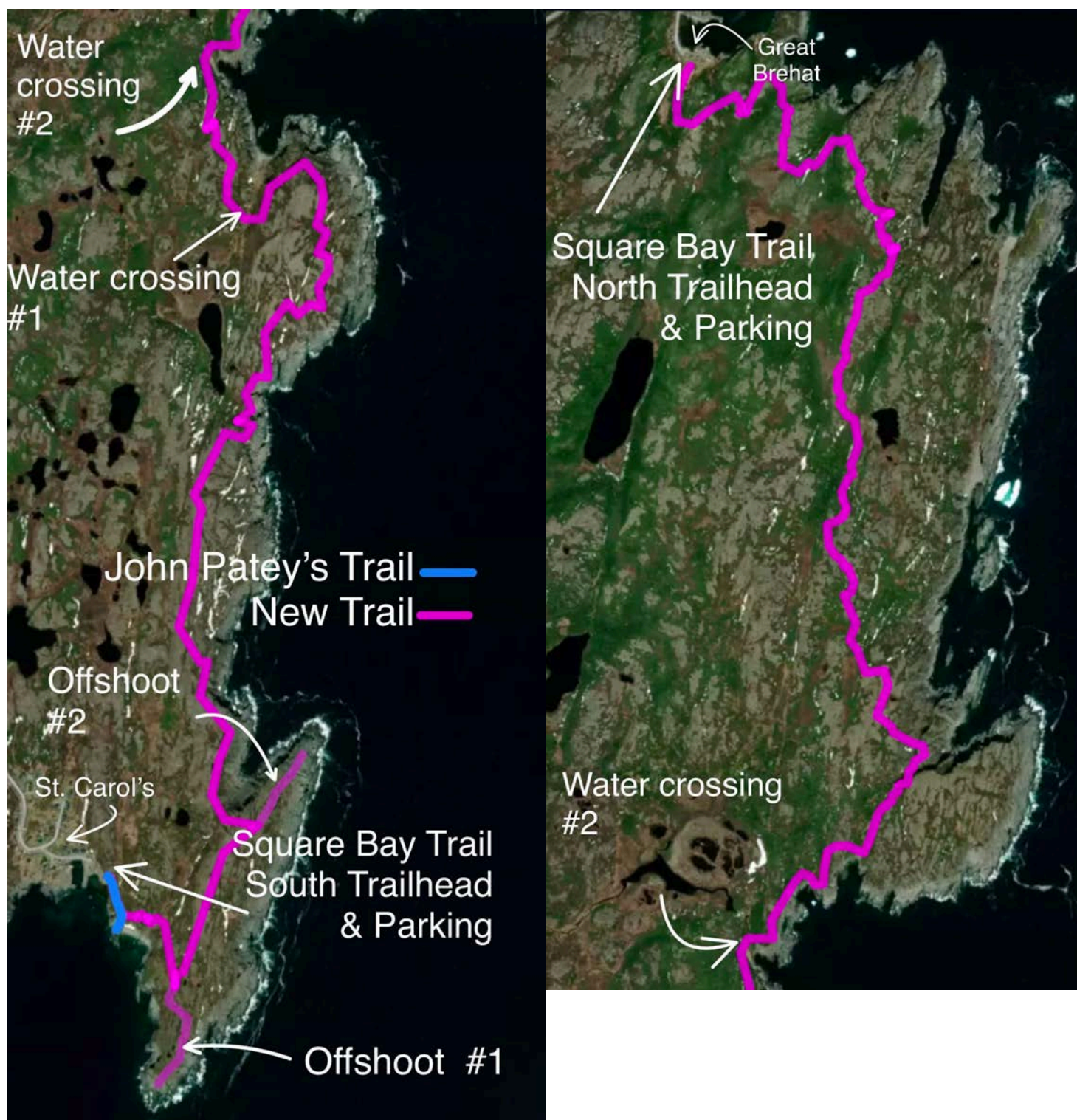




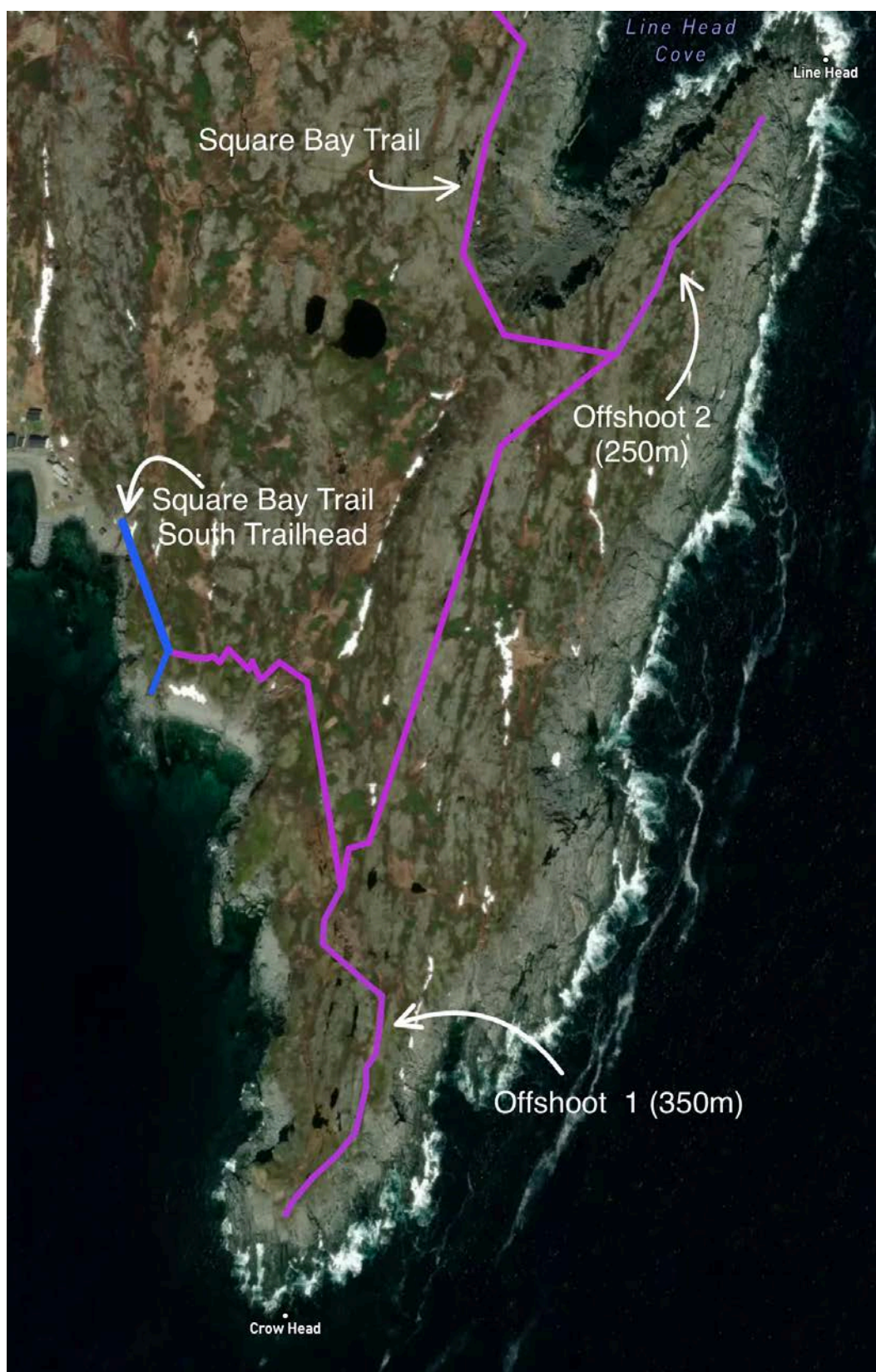


Square Bay Trail

The trail crosses rocky terrain, with some Tuckamore forest areas and sections of peat soil. The trail crosses 3 streams but no other major water bodies. It will link to the existing John Patey's Trail and feature two offshoots. There are two trailheads. The South Trailhead is located at John Patey's Trail near St. Carol's Road, utilizing the existing parking space. The North Trailhead will be located at the southern end of Main Road in Great Brehat, with parking at the turnaround. These roads are maintained by the Department of Transportation and Works. Parking is sufficient for the expected volume of use and can accommodate more than 8 vehicles. Permission and support for construction and utilization of parking areas has been obtained from the Communities of St. Carols and Great Brehat.





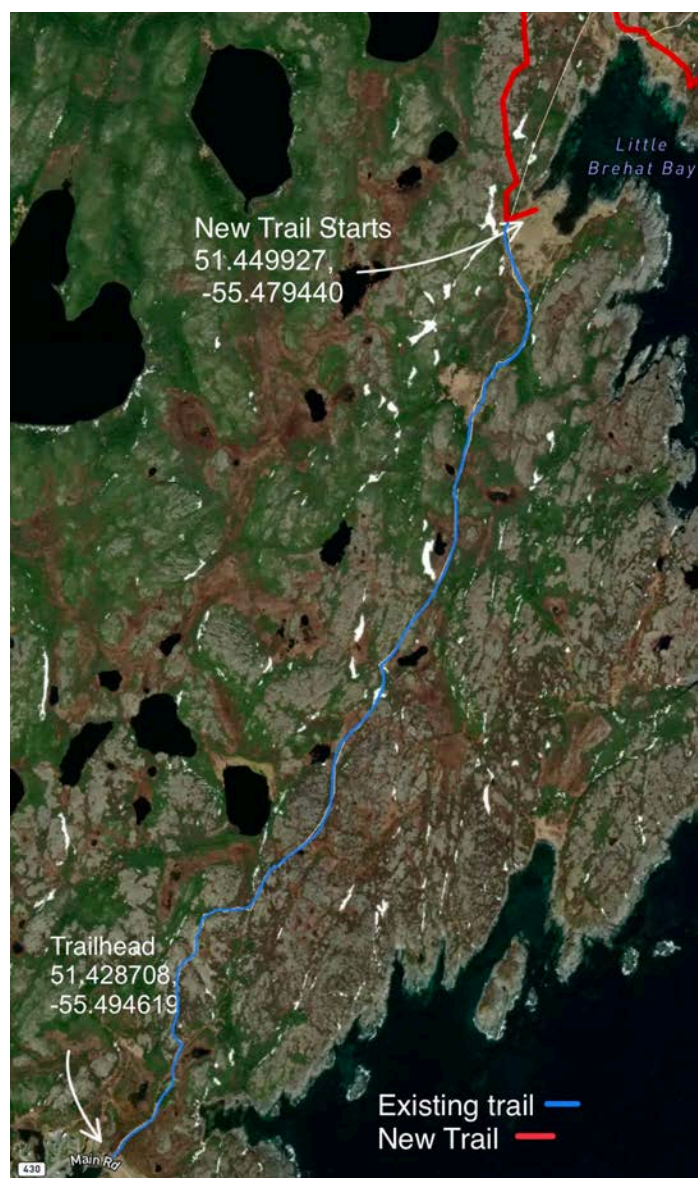






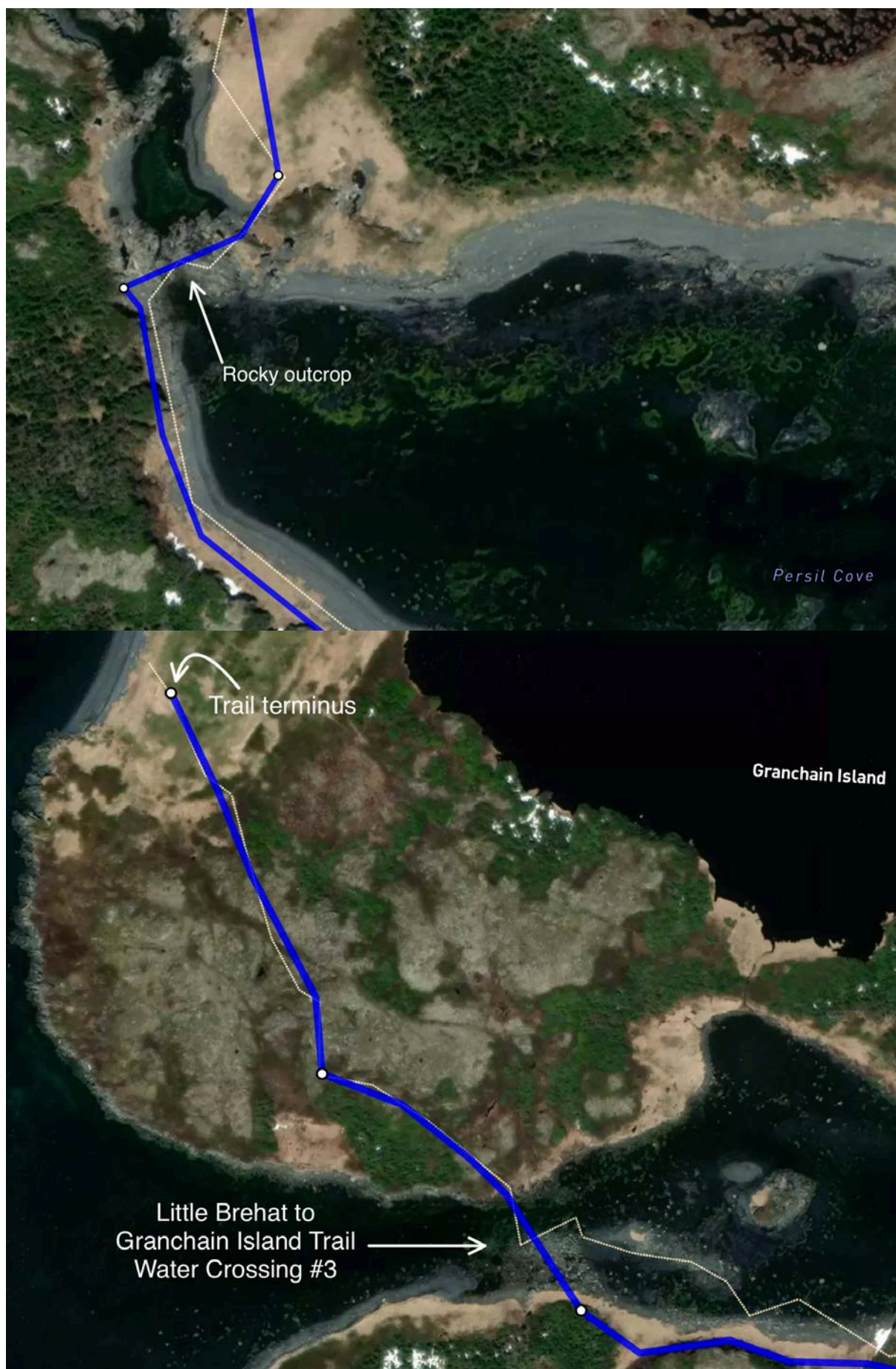
Little Brehat to Granchain Island Trail

This trail will connect to the existing Little Brehat Trail. New construction will traverse grassland, rocky terrain, and peat barrens, leading to higher inland ground with a mix of peat soil and shrubs. It passes a cemetery and two small streams. The route continues along coastal cliffs and rocky peat barrens, reaching a narrow rocky crossing at the Western side of Persil Cove, before leading to a shallow, tidal water crossing approaching Granchain Island. The trail follows similar terrain and terminates at a beach on Granchain Island. The trail will not cross any other water bodies. The existing trailhead for Little Brehat Trail as well as its existing parking will be utilized, both at the northern end of Main Road in Great Brehat. Parking is sufficient for the expected volume of use, accommodating more than 8 vehicles. This road is maintained by the Department of Transportation and Works. Permission and support for construction and utilization of parkin has been obtained by the Community of Great Brehat.









Structures and Infrastructure

- **Buildings:** No buildings will be constructed as part of this project.
- **Bridges:** No bridges are planned to be built. Large stones, or metal or polymer culverts are placed over streams, sized to ensure they will not be blocked to prevent erosion and environmental degradation. They are compacted with hard ground material to blend into the natural landscape. Wetlands and sensitive habitats are avoided.
- **Trail Surfaces:** The trails will be a mix of natural terrain, mineral soil, compacted gravel, and stone paths, following sustainable trail-building practices to withstand heavy coastal weather conditions. Existing mineral soil for pathways can be reached by removing the ground vegetation and organic soil as needed in a 1.2m wide strip and compacting in the same area. Where the grade needs an adjustment, or materials are too wet and/or organic to support a trail, suitable material (mineral soil and/or stone) will be borrowed from an approved source and used to construct the tread.
- **Signage & Trailheads:** GNTA-branded trailhead signage and wayfinding markers will be installed for safety, environmental awareness, and user navigation.
 - Each trailhead will include a 4'x3' trailhead sign, highlighting trail information, length, difficulty, and appropriate users. This includes explicitly stating no motorized use. signs will be attached to a 6' to 7' high signpost with a 2'x4' base and filled rocks to affix to its location. For a total signs.
 - Wayfinding signs will be included throughout the trails at an amount determined during construction, usually ensuring visibility from one post to the next. These are attached to wooden signpost structures that are filled with on site rocks to ensure it stays in place. These signposts are built from pressure treated 4"x4" lumber, with a single central post 5-6' high, with a 2'x2' base.
- **Access Roads:** Existing community roads will provide access to trailheads, but no new vehicle roads will be constructed. Trail builders will access construction sites from the trailhead, and keep to the trail without traversing elsewhere over the terrain. They will walk to construction sites. One mini-excavator and 2 tracked dumpers will utilize the tread of the trail to access construction sites.



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Utilities & Other Infrastructure

- No Pipelines or Transmission Lines are affected by this development.
- No Marine Facilities will be built, although sections of the trail offer scenic views of marine environments.

2. Size of the Affected Area

The new trails to be constructed will cover approximately 31.9 km of 1.2m wide trail for a total approximate area of 38,280 square meters across five locations:

Trail	Distance	Total Area
Quirpon Tickle Lookout Trail	2km	2400 sq.m
Goose Cape Trail	6.5km	7800 sq.m
Cape St. Anthony Trail	7.2km	8640 sq.m
Square Bay Trail	10km	12,000 sq.m
Little Brehat to Granchain Island Trail	6.2km	7400 sq.m
Total	31.9km	38,280 sq.m

This excludes existing trails that are linked.

3. Physical and Biological Environments of the Affected Area

A) Topography & Landscape Features

The Great Northern Peninsula is one of the most rugged and remote regions of Newfoundland, characterized by steep coastal cliffs that rise from the North Atlantic Ocean, glacially carved fjords and valleys, and exposed rock formations originating from the ancient Appalachian Orogeny. Common landscape types across the region include:

- Barrens and heathlands, with stunted vegetation adapted to strong coastal winds
- Tuckamore forests, primarily balsam fir and black spruce
Subarctic tundra-like terrain, supporting mosses, lichens, and hardy shrubs in exposed or high-elevation areas
- Boreal forests, dominated by black spruce, balsam fir, and larch (tamarack), interspersed with wetlands and peat bogs
- Exposed bedrock and rocky barrens

The trail routes described in the document traverse this diverse landscape, generally incorporating the following features:

- Rocky barrens
- Tuckamore forest
- Heathlands and coastal barrens, supporting native berry-producing flora
- Proximity to peat bogs

Several trails also feature:

- Exposed coastal cliff lines
- Coarse cobble or boulder beaches

Trail-Specific Variations

- Quirpon Tickle Lookout Trail
Includes all primary features. *Excludes exposed cliffs and coarse beach.*
- Goose Cape Trail
Includes all primary features, plus exposed coastal cliffs and coarse beach.
- Cape St. Anthony Trail
Includes coastal cliffs and coarse beach, consistent with Goose Cape Trail.
- Square Bay Trail
Includes cliffs and coarse beach, along with all other primary features.
- Little Brehat Trail to Granchain Island
Includes all primary features, coastal cliffs, coarse beach, and a distinct upland grassland.

B) Water Bodies & Wetlands

- Trail building efforts are made to route around wetlands and use only necessary water crossings.
- Quirpon Tickle Lookout Trail and Goose Cape Trail do not cross any water bodies.
- Cape St. Anthony Trail, Square Bay Trail, and Little Brehat to Granchain Island Trail all cross small freshwater streams, which can serve as important habitat for brook trout.
- Little Brehat to Granchain Island Trail has one crossing with sea water affected by the tide.
- No major river systems are directly affected.
- Culverts are anticipated for most crossings in this project due to their lower maintenance requirements and suitability for smaller watercourses.
- Coastal sections overlook the North Atlantic.
- GNTA will apply to NL Water Resources Management Division if required to obtain any water crossing approvals.

Water Crossing #	Location	Trail	Planned Crossing Structure
1	51.376019, -55.538779	Cape St. Anthony Trail	Embedded culvert crossing
2	51.376607, -55.512235	Cape St. Anthony Trail	Embedded culvert crossing
3	51.376458, -55.511387	Cape St. Anthony Trail	Embedded culvert crossing
4	51.376832, -55.510308	Cape St. Anthony Trail	Embedded culvert crossing
1	51.394361, -55.495515	Square Bay Trail	Embedded culvert crossing
2	51.399190, -55.496493	Square Bay Trail	Embedded culvert crossing
3	51.422256, -55.498068	Square Bay Trail	Embedded culvert crossing
1	51.453969, -55.476141	Little Brehat to Granchain Island Trail	Embedded culvert crossing
2	51.469052, -55.475377	Little Brehat to Granchain Island Trail	Embedded culvert crossing
3	51.480314, -55.474963	Little Brehat to Granchain Island Trail	None. Shallow enough to walk.

Cape St. Anthony Trail Water Crossings



Square Bay Trail Water Crossings



Little Brehat to Granchain Island Trail Water Crossings



C) Vegetation & Ecosystem Types

- Coastal Barren Vegetation: Low-lying crowberry, Labrador tea, and bakeapple (cloudberry) thrive in the rocky, wind-swept landscape.
- Tuckamore Forests: Stunted balsam fir and spruce trees, shaped by relentless winds, form dense, low-canopy forests.
- Wetland Habitats: Peat bogs with cotton grass, pitcher plants (NL's provincial flower), and sundews, supporting important pollinators and bird species.

D) Wildlife Species

The trails limit impact as it may pass through diverse wildlife habitats, that may support species such as:

- Mammals: Moose, Woodland Caribou, Arctic Hare, Red Fox, Black Bear, and Canada Lynx.
- Birds: Bald Eagles, Willow Ptarmigan, and numerous songbirds and shorebirds.
- Marine Life (Visible from Coastal Trails): Minke Whales, Humpback Whales, Harp Seals, and Iceberg Alley sightings during spring/summer.
- Fish Species: Brook Trout in freshwater systems.

E) Protected Areas & Conservation Zones

- No formally protected areas were identified.

4. Potential Environmental & Human Impact

A) Potential Adverse Environmental Effects

- Soil Erosion & Habitat Disturbance: Mitigated through proper drainage and sustainable trail surfacing.
- Wildlife Displacement: Trails will be built outside of sensitive breeding seasons with efforts taken to flag nests and breeding areas to be avoided, and signage will educate users on wildlife conservation.
- Wetland Disruption: Minimal impact, as trails will avoid wetland areas. Trails are constructed over hard ground and soil, moving around any wetland areas encountered.
- Human-Wildlife Encounters: Educational signage will be installed to reduce coyote and moose interactions.
- Trail building will commit to wildlife-friendly construction timing and sensitive area avoidance.

B) Potential Human Impacts & Benefits

- Recreational Infrastructure: Trails will enhance outdoor recreation, tourism, and community connectivity, creating new opportunities for local businesses.
- Cultural Preservation: The project follows historic walking routes used by generations for hunting, berry picking, and travel, helping to preserve local heritage.
- Economic Growth: Increased visitor traffic will benefit accommodations, restaurants, and tour operators along the trail corridor.

(iii) Construction

1. Total Construction Period & Phasing

The project will be developed over a five-year period in three phases, ensuring efficient resource allocation and environmental sustainability. These expected phases are:

Phase	Trail Section	Distance	Estimated Construction Period
Phase 1	Quirpon Tickle Lookout Trail	2km	May-Oct 2025
	Goose Cape Trail	6.5km	May-Oct 2025, May-Oct 2026
Phase 2	Cape St. Anthony Trail	7.2km	May-Oct 2027
	Little Brehat to Granchain Island Trail	6.2km	May-Oct 2028
Phase 3	Square Bay Trail	10km	May-Oct 2029

2. First Physical Construction Activity

Trail construction will follow sustainable practices summarized in this document and outlined in the *GNTA Sustainable Trail Building Manual* and *Parks Canada National Best Management Practices Trail Maintenance and Modification Plan*, with a focus on minimizing environmental impact, ensuring long-term durability, and reducing maintenance requirements. The first physical activity is scheduled for May–June 2025, beginning with site assessments, trail marking, and clearing at Quirpon Tickle Lookout Trail, followed by other trails in sequential phases (Phase 2 in 2027, Phase 3 in 2029).

Trail Construction Methods

Trail construction methods for this project are based on established North American best practices in sustainable trail development and are detailed in the *GNTA Sustainable Trail Building Manual* and *Parks Canada National Best Management Practices Trail Maintenance and Modification Plan*. These methods are designed to ensure environmentally responsible, low-maintenance, and long-lasting trails. The methods have been adapted to suit local conditions and align with recognized trail building standards used throughout North America, while being implemented with oversight from GNTA's experienced leadership and trained trail crew.

Trail Width and Clearing Standards

Each trail will be constructed to a consistent tread width appropriate for backcountry use, with sufficient cleared corridor to allow safe passage. The typical tread (the travel surface) will be approximately 1.2 m wide, with minor variations (0.75–1.5 m) in challenging terrain or at curves to maintain sightlines and stability. Vegetation and obstacles will be cleared to achieve a corridor roughly 2.4 m wide at ground level, expanding to about 3 m in width at a height of ~3 m above the tread for overhead clearance. This meets or exceeds standard minimums for hiking trails (e.g. foot trails often require at least 0.45 m tread and an overhead clearance ~2.4 m). All brush, limbs, and small trees within this corridor will be cut flush with the ground to prevent tripping or snagging. Overhanging branches will be pruned back to the clearing limits.

(about 3 m high) to ensure no encroachment into the trail space. On hillside trails, the clearing width may be slightly asymmetrical (more clearing on the uphill side for safety) but will still provide a roughly centered corridor.

Clearing will be done in a way that avoids creating a stark “tunnel” through the forest. Where vegetation is dense, the edges of the cleared zone will be feathered and irregular to appear natural. Low-lying vegetation (under ~0.5 m height) immediately alongside the tread may be left in place if it does not impede travel, to help stabilize soil and maintain a natural appearance. All cut stumps within the tread or clear zone will be removed or ground flush to ground level (no “ankle stub” hazards). Stumps just outside the immediate tread area will be cut low and covered with soil where possible to promote decay and avoid regrowth. Larger trees adjacent to the corridor that do not pose a hazard will be left in place to preserve canopy cover and habitat, unless they are leaning/dead in a way that threatens the trail (hazard trees will be assessed and removed if necessary for safety).

All cleared organic debris (branches, brush, etc.) will be disposed of appropriately by the means mentioned below. Woody debris will be scattered downslope well outside the trail corridor or collected for chipping or removal, rather than piled, to avoid fuel buildup and visual impacts. Cut limbs will be placed with cut ends facing away from the trail and dispersed to blend with forest floor litter. No debris will be left in waterways or drains. This standard clearing practice ensures a durable and safe trail corridor while minimizing ecological disturbance to surrounding vegetation.

Vegetation Clearing Methods and Wildlife Mitigation

Initial vegetation clearing will be carried out using a combination of manual and mechanized tools by trained or experienced crews. Chainsaws and brush saws will be used for felling or pruning larger trees and dense brush, while hand tools (axes, loppers, hand saws) will manage smaller shrubs and branches. In sensitive areas or where precision is needed near retained trees, workers will use hand tools to minimize collateral damage. Chainsaw operators will follow all safety protocols (wearing protective gear, maintaining safe distances, etc.). To reduce soil disturbance, heavy machinery will not be used for general clearing except for what is needed for excavation of the tread; instead, felled vegetation is cut by saw and removed by hand or with the aid of the excavator’s arm (e.g. to lift logs out of the corridor) once cut.

Special care will be taken to avoid impacts on nesting birds and other wildlife during clearing. Should an active nest be found within or adjacent to the trail corridor, a protective buffer will be established and clearing in that area will be postponed until the nest is vacated (young have fledged). This protocol follows migratory bird protection guidelines which state that vegetation providing nesting habitat should ideally be cleared outside the nesting season, or else active nests must be left undisturbed. Additionally, any known sensitive wildlife habitats (e.g. fox dens, rare plants) identified during project planning will be marked and avoided during clearing, and consultation with the NL Wildlife Division will be arranged.

All vegetation removal will be done in compliance with applicable environmental regulations and permit conditions. To further mitigate ecological impact, large diameter trees will be selectively cleared only to the extent necessary to fit the trail alignment. The trail has been aligned to naturally weave through gaps where possible, so as to avoid excessive tree cutting. Where a significant tree must be removed, the root system will be left in the ground if it does not interfere with the tread, to reduce ground disturbance and prevent erosion. Groundcover vegetation that does not lie directly in the tread path may be left intact to help quickly re-establish ground cover. By using low-impact clearing techniques, timing work appropriately, and monitoring for wildlife, the project will minimize harm to the surrounding ecosystem while establishing the required trail corridor.

Vegetation Debris Estimates

Clearing Specifications:

- Clearing Width: Approximately 2 meters total (1.2m tread + ~0.4m each side for clearance).
- Area Cleared per 100m: This results in 200 m² of area cleared for every 100 meters of trail.

Debris Volume:

- Light Brush: ~5 m³ per 100m
- Medium Brush: ~10 m³ per 100m
- Heavy Brush: ~15 m³ per 100m

Broadcasting Approach:

- The material is typically broadcast by hand using rakes and loppers over a 5–10 meter buffer zone on either side of the trail to:
 - Minimize visual impact
 - Avoid creating large debris piles
 - Encourage natural decomposition
 - Prevent habitat disruption

Alignment with Best Practices:

- The Parks Canada National Best Management Practices recommend spreading woody debris thinly within the surrounding forest to ensure native vegetation can grow and re-establish, which supports the broadcasting approach described.

Excavation, Grading, and Earthwork Methods

Once the corridor is cleared, trail bed construction will proceed with a focus on sustainable grading practices. A mini-excavator will be the primary tool for earthwork, as it can efficiently cut the trail bench and shape the tread while limiting the disturbance footprint. The excavator will remove the top layer of organic soil (leaf litter, root mat, and loose humus) to expose firm mineral subsoil for the trail base. This step is critical because organic material is spongy, holds water, and decomposes; stripping it away ensures the trail rests on stable mineral soil which compacts well and provides a durable tread. The excavated organic matter (duff) will be set aside for later use in rehabilitating edges and backfilling around structures, or spread thinly downslope so it can decompose naturally away from the trail.

On sloping ground, a bench cut technique will be used to carve the trail into the hillside. The preference is for a full bench construction: the excavator cuts the full width of the tread out of the hillside, and all excess soil is either side-cast well downhill or used to fill low spots in the tread, rather than leaving uncompacted fill on the outer edge. A full bench trail means the tread is entirely on solid, compacted native soil, which greatly improves stability and reduces future settling. In rare cases where a full bench is not feasible (e.g. encountering large rock outcrops that cannot be removed), a partial bench with some fill may be used, but additional reinforcement (such as retaining walls or tamping of fill material in layers) will be employed to ensure durability. The cut slope (backslope) on the uphill side will be shaped to a stable angle based on soil conditions (usually cut at a 1:1 or gentler slope in soil). Any loose rocks or debris on the backslope that could fall onto the trail will be removed, and the backslope will be left roughened (not polished smooth) to help vegetation re-establish and to better hold soil.

The target trail grade (longitudinal slope) will generally be kept moderate to enhance user safety and minimize erosion. As a rule, sustained grades will be 10% or less, with an average grade closer to 5-8%

where terrain allows. Short sections up to ~15% may be necessary in steep areas, but any such grades will be intermittent and mitigated with proper drainage features as outlined below. Very steep grades (>20-25%) are avoided, except potentially for short climbs with steps or rock work if absolutely required. Switchbacks or climbing turns will be utilized to gain elevation gradually on steep side slopes. These switchback turns will be built with a broad, level landing (platform) at the apex of the turn so that users can navigate the direction change without slipping. The approach and departure of each switchback will have reduced grade (flattening out somewhat) to make the turn easier and to prevent users from carrying too much speed into the turn. Switchback insides will be buttressed with rock or compacted fill as needed to prevent cutting of the corner and to support the tread. By incorporating switchbacks, the trail will zig-zag up slopes, keeping each segment within sustainable grade limits rather than one direct fall-line ascent.

To further promote sustainability, the trail will follow a rolling contour design. This means it will gently undulate with frequent grade reversals (dips and crests) rather than a continuously uphill or downhill path. These subtle grade changes (often called rolling grade dips) are introduced to shed water off the trail at regular intervals. For example, a short dip of a few meters where the trail grade briefly goes down then back up can serve as a drain point for water. Water flowing down the trail will naturally run out at these low points instead of accelerating further downhill. The trail tread will also be constructed with a gentle outslope (tilt of about 3-5% toward the downhill side) on bench-cut sections. This means the outer edge of the tread is slightly lower than the inner edge, encouraging water to sheet off the side of the trail as soon as it rains, rather than channeling down the trail length. If terrain prevents outsloping in a particular spot (e.g. on inside curves or flat areas), alternate drainage measures like shallow drain dips or waterbars will be integrated to prevent puddling. Overall, the grading approach will follow established best practices for sustainable trails: keep grades modest, avoid long straight downgrades, build in frequent drainage breaks, and ensure the tread is sloped for sheet flow. This will greatly reduce erosion potential and maintenance needs over the long term.

During excavation, the mini-excavator operator and crew will take care to avoid extra disturbance beyond the immediate trail footprint. The excavator's articulated arm allows precise digging and placement of soil, minimizing how much the machine must maneuver off the centerline. In sensitive spots, final shaping and smoothing of the tread will be done with hand tools (McLeod, rake, shovel) to achieve the desired finish without unnecessarily gouging the soil. The resulting trail tread will be compacted: the excavator can track-pack the soil by driving its tracks over the new tread, and crew members with tampers will compact fill in any areas where soil was placed. All excavated material that is not used to build up trail sections will be disposed of properly. Excess soil will be spread thinly downslope in a manner that does not create erodible piles and does not smother existing vegetation beyond the corridor. Any large boulders encountered can be repurposed for retaining walls, step features, or placed as natural barriers alongside the trail as needed (or left in place if they are flush with the tread and stable enough to serve as part of the walking surface). By executing excavation and grading in this careful way, the trail will have a stable, outsloped, compacted tread of mineral soil ready to support hikers and cyclists with minimal future settling.

Fill Requirements and Material Sourcing

Construction will make use of on-site materials to the greatest extent possible, reducing the need to import fill. In general, the trail is designed as cut-and-fill balanced: material cut from high spots or hillsides is used to fill low spots, avoiding waste on the trail. Most of the excavated mineral soil can be reused immediately as trail base or to build up sections that need additional height. However, certain segments (such as low-lying areas, or approaches to creek crossings) may require imported material to ensure a dry and stable tread. We estimate on the order of 100–200 cubic meters of fill per kilometer of trail may be required in sections that cannot source enough suitable soil on-site – this is a rough preliminary estimate. To plan for this, test holes/pits will be dug at intervals along the proposed alignment before final construction to examine soil depth and type. These small exploratory pits (dug by the excavator during initial mobilization)

will determine the thickness of organic layers and the presence of gravel or rock. The information from test holes allows us to quantify how much organics must be stripped and how much clean fill will be needed to replace unsuitable material for each stretch of trail. For example, if a test pit shows 0.5 m of peat over mineral soil in a boggy area, we know that peat must be removed and likely replaced with gravel or rock to form a solid tread. The route may need to be reassessed if the given amount of organic material to be removed is not feasible. The test pits will be backfilled immediately after examination to avoid leaving holes.

On-site material sourcing: Where suitable mineral soil or rock is abundant along the corridor, it will be used for fill. As the excavator creates the bench cut, the excess soil (so long as it is mineral and not high-organic muck) can be moved and placed into nearby low spots or soft ground to raise and firm the trail base. Any rocks unearthed can serve for armoring stream crossings or as rip-rap on slopes. In areas of soft ground, a method called “borrow and fill” may be used: material is borrowed (dug) from a higher, dry area adjacent to the trail and used to build up the trailbed in the lower wet area (this creates a slight depression in the borrow area which will be graded to drain). The borrow pits, if any, will be small, shallow, and placed in inconspicuous locations, then restored after construction by backfilling with excess organics and allowing vegetation to regrow.

Off-site material sourcing: If the needed fill or surfacing material cannot be obtained from the trail corridor itself (for instance, if we need gravel with certain specifications), material will be imported from an approved local licensed quarry or supplier. Common imported materials will include crushed gravel (e.g. Class A/B) or sand where needed for drainage layers. All imported fill will be clean (free of invasive plant seeds and contaminants). We will transport it to designated trail access points (staging areas) using dump trucks, and from there, move it along the trail as needed with smaller equipment such as tracked dumpers (as detailed in the Material Transport section). The volume of import will be minimized through careful use of in-situ soils, but sufficient contingency will be planned to ensure the trail can be properly built up in all areas (for example, having a stockpile of gravel on hand in case soft sections require more than expected).

In terms of fill placement, wherever fill is used to build the trail base, it will be placed in shallow lifts (15–20 cm at a time) and compacted thoroughly before the next layer, to create a solid embankment. This is especially important on any raised sections or turnpike-style trail segments over wet ground. The finished trail, whether consisting of native soil or imported aggregate, will have a smooth, compacted tread surface. Any remaining loose material will be raked off. The edges of filled sections will be blended into the natural ground and stabilized (e.g. logs or rocks at the toe of fill slopes if needed) to prevent the fill from migrating. Finally, after all fill is placed, the sides of the trail bench and any other disturbed soil will be re-vegetated or covered with organic mulch from the site, to help it knit into the landscape and prevent erosion. By sourcing material smartly and building up the trail tread with proper compaction, the project will create a stable trail while keeping import volumes and environmental footprint as low as practicable.

Fill Material Estimates

Purpose of Fill: Primarily used for elevating trail tread above wet or unstable ground, armoring soft areas, and stabilizing approaches to water crossings.

General Estimate:

- Volume: On average, 1 to 3 cubic meters of fill material per 100 meters of trail constructed, depending on terrain type and environmental sensitivity.
- Total for 1 km: This equates to an estimated 10 to 30 cubic meters of fill per kilometer.

Consistency with Standards:

- These figures align with guidelines from the USDA Forest Service's Trail Construction and Maintenance Notebook, which emphasizes minimal-impact approaches in sensitive terrains.
- The Vermont Agency of Transportation also provides detailed methodologies for estimating earth borrow quantities, reinforcing the validity of these estimates.

Material Density Considerations:

- The density of fill materials like crushed stone can vary. For instance, crushed stone 0/63 has an approximate density of 1.8 tonnes per cubic meter, while quarry stone 300/1200 can be around 2.1 tonnes per cubic meter

Water Crossings and Drainage Structures

All water crossing installations will follow environmental best practices and regulatory requirements. Work in or near water will be timed for low-flow periods (e.g., late summer) to minimize sedimentation. Silt fencing or turbidity barriers will be deployed downstream when working directly in a channel (such as placing rocks for a ford or installing a culvert) to catch any disturbed sediment. Structures like culverts and bridges will be designed not to impede fish passage in fish-bearing streams – using open-bottom designs or appropriately embedded pipes as required. After installation, the approaches to all water crossings will be stabilized with compacted fill and drainage directed into the structure (to avoid water running alongside the entrance). By employing the appropriate crossing type for each situation – whether a culvert, boardwalk, or ford – the project will maintain natural hydrology and provide reliable, low-maintenance trail crossings. Water crossings will follow the *Environmental Guidelines for Watercourse Crossings*, the *Environmental Guidelines for Culverts*, and the *Policy for Development in Wetlands* from the Water Resources Management Division of the NL Department of Environment and Climate Change. All water crossings will be assessed for fish-bearing potential. Where applicable, consultation with Fisheries and Oceans Canada or the appropriate provincial authorities will be undertaken to ensure compliance with habitat protection regulations.

While bridges are environmentally preferred over culverts—particularly in fish-bearing streams—culverts are anticipated for most crossings in this project due to their lower maintenance requirements and suitability for smaller watercourses. Where culverts are not appropriate, such as in larger streams or sensitive wetlands, bridges or boardwalk-type crossings will be prioritized to maintain natural channel continuity and minimize disturbance.

Several types of water crossings will be used depending on the size of the stream or wet area encountered, all installed to protect water quality, hydrology, and long-term trail stability. Wherever possible, crossings will be located on stable, straight sections of watercourse with minimal existing erosion and a consistent gradient.

Culvert Crossings

For minor drainages and seeps, where flow is seasonal and modest, cross-drain culverts will be installed. These will typically be high-density polyethylene or galvanized steel pipes placed to convey water under the trail, preserving a level and durable tread surface. Culvert diameters will be sized according to expected peak flows, using hydrologic guidance from the Water Resources Management Division. This ensures culverts are not undersized and are capable of safely conveying high flows.

Culverts will be placed at natural drainage low points and aligned with the flow direction, following the stream's natural gradient to avoid perched outlets or unnatural ponding. The invert (bottom) of each culvert

will be set at or slightly below the existing streambed grade. Where streams are fish-bearing, culverts will be countersunk and backfilled with gravel to simulate a natural streambed and maintain aquatic passage.

The trench for each culvert will be excavated and compacted, with a gravel bedding layer used for support. Backfill (native or imported granular material) will be placed and compacted in layers to 90% Proctor density or better. At least 15 cm (6 inches) of cover will be placed above the culvert crown to protect it from load stress.

Erosion control at the inlet and outlet will include rock armoring (riprap), header walls or slope-tapered inlets upstream, and splash pads downstream to dissipate flow energy and prevent scouring. Culvert ends will be stabilized and camouflaged using soil or stone to anchor the pipe and blend with the environment. Where applicable, a small basin or dip may be formed at the inlet to capture and direct water efficiently into the pipe.

Maintenance access will be maintained, with culvert locations clearly marked for future inspection and cleaning. Regular maintenance will follow significant rainfall events or storm surges to ensure functionality.

Alternate Crossing Structures

- *Boardwalks / Bridges:* In wide wetlands or across broader streams, elevated structures such as boardwalks or short-span bridges may be constructed. These will consist of timber frames supported on rock pads, mud sills, or precast footings placed on stable ground to avoid altering natural drainage or wetland hydrology. Where used, structures will span sensitive areas to prevent fill placement. All wood will be rot-resistant or treated in accordance with provincial environmental guidelines, and construction will follow provincial standards for load-bearing capacity and safety (e.g., width and railings where required). Work will be performed using hand tools or small equipment, typically from one side, to avoid entering the water. Although not anticipated for this project, these structures remain the preferred option in sensitive or fish-bearing environments.
- *Rock Fords:* Where trail crossings occur over shallow, intermittent, non-fish-bearing streams with stable beds, and where permitted, hardened rock fords may be used. These involve placing flat stone or graded crushed rock across the streambed and armored approaches, forming a durable, submerged crossing that allows water to flow over during high-water events. Rock will be sized to resist movement and provide a stable surface. The downstream edge may be reinforced with riprap to prevent scouring. Fords are only appropriate where disturbance is minimal, aquatic passage is not a concern, and foot or light equipment traffic is anticipated.
- *Open-Top Drains and Other Features:* To manage surface drainage along the trail, smaller features such as armored swales, ditch relief culverts, and grade reversals will be used. These allow cross-flow of water without erosion and help divert water away from the trail tread. In wet zones, drainage ditches may be placed on the uphill side, with periodic outlets to reduce water accumulation and ensure durability of the trail surface.

Environmental Protection Measures

All water crossing installations will follow environmental best practices and regulatory requirements. Work in or near water will be scheduled during low-flow periods (e.g., late summer) to minimize sediment disturbance. When necessary, sediment control measures such as silt fences or turbidity curtains will be deployed downstream. Approaches to all water crossings will be stabilized with compacted fill and shaped to direct drainage into the crossing rather than along the trail.

Structures will be designed not to impede fish passage—using open-bottom or countersunk culverts where required. By selecting the most appropriate structure for each site, this project will preserve natural hydrology, minimize habitat disturbance, and ensure long-term, low-maintenance access for trail users.

Equipment and Machinery Use Protocols

Trail construction will utilize lightweight, low-impact machinery suited for remote work, ensuring safety and environmental protection. The primary equipment will include a mini excavator (a 1.7 tonne class), two tracked dumpers, and chainsaws/brushcutters as mentioned. The mini excavator is the key tool for trail grading: its small size and rubber tracks allow it to maneuver along the narrow corridor with minimal ground pressure and damage. This machine will perform tasks from digging the bench cut to moving rocks and logs (using a hydraulic thumb attachment) and backfilling/compacting soil. All excavator operators will be experienced in trail work, ensuring precise control – as the saying goes, a skilled operator treats the excavator “like an extension of their arm”, enabling delicate work such as plucking out a tree root without gouging surrounding soil. The excavator will generally work forward along the new trail from one end, advancing as it builds the trail. In very steep or inaccessible spots, we may need to winch or assist the machine, but in most cases the mini excavator’s tracked traction allows it to climb and work on moderate slopes safely.

The tracked dumper (sometimes called a crawler carrier or power barrow) is essentially a motorized wheelbarrow with rubber tracks, used to transport material along the trail. This will be used to carry crushed stone, fill, lumber, or tools to sections of the worksite where needed. Its tracks and narrow profile make it ideal for trail use – it can fit in the ~1 m tread and exert low ground pressure, thus avoiding ruts. If absolutely necessary, we may employ small ATVs sparingly, and only where the trail or an existing path is wide and firm enough to support them without damage. In general, ATVs might be used to tow a small trailer of lumber or an especially heavy culvert to a location, but this will be limited to dry conditions and gentle terrain, or existing access routes, to prevent the ATV from causing erosion or widening the trail. Any motorized vehicle access will adhere to an equipment movement plan to ensure they stay within the cleared corridor or on designated paths and do not track into vegetated areas.

All machinery use will follow environmental mitigation protocols:

- **Spill prevention:** Equipment will be inspected daily for leaks. Refueling and maintenance will be done at least 30 m away from any waterbody, on a prepared area (e.g., a tarp or spill tray) to catch any accidental spills. Spill kits (absorbent pads, containment booms) will be kept on site whenever machinery is in use, and operators trained in their deployment. Only small fuel containers will be carried in (e.g., jerry cans for the excavator or mix fuel for chainsaws), and these will be sealed and handled carefully.
- **Noise and emissions:** Equipment will have functioning mufflers to reduce noise. Idling will be minimized – machines will be shut off when not actively in use to reduce noise and exhaust. Work hours will be limited to daylight periods to avoid disturbance to wildlife during dawn/dusk. While the project is in a remote area, we will still be mindful of noise pollution and air quality.
- **Vegetation protection:** The route for equipment travel will be the trail corridor itself as much as possible. We will avoid creating parallel tracks or tramping beyond the marked clearing limits. If the excavator or dumper needs to turn around or stage in one spot, that location will be carefully chosen in a cleared, stable area (or an existing opening) to prevent unnecessary crushing of undergrowth. Corners and tight spots will be monitored to ensure the machine’s swing radius doesn’t inadvertently damage trees we intend to keep.
- **Cleanliness and invasives:** All machinery will arrive on site clean and free of soil or plant material from elsewhere, to prevent introducing invasive species. This is especially important if equipment was previously used in areas with known invasive plants. The equipment will be checked and cleaned as needed if moving between distinct work areas.
- **Operator training and safety:** Only trained operators will run the excavator and mechanized carriers. They will follow Occupational Health and Safety regulations, including maintaining safe distances

from workers on foot (a spotter will guide the excavator when working near laborers).

Communication (via hand signals or radio) will be constant between the operator and crew on the ground to coordinate movements. All crew will wear high-visibility vests or markings so they are easily seen by machinery operators. Chainsaw operators will maintain appropriate distance from active machinery and vice versa.

- **Machinery impact mitigation:** If the excavator must travel over a very soft spot to reach the work area, we may lay down temporary timber mats or log corduroy for support, then remove them after passage. This prevents the machine from sinking and creating a mess. In extremely sensitive zones, manual methods will be preferred over forcing machinery in.

By following these protocols, the use of machinery will greatly speed up construction while keeping impacts low. The mini excavator and other tools enable us to build a high-quality trail (with proper grading and drainage structures) efficiently, and our operational rules ensure that this is done without spills, excessive noise, or avoidable habitat damage. All equipment will be removed from the site at the end of the construction period.

Material Transport and Access

Moving materials (gravel, lumber, culverts, etc.) into the work areas will be a carefully managed aspect of construction. The project will utilize a combination of manual transport and small mechanized transport to carry materials along the trail alignment. At road-accessible trailheads or entry points, supplies will be stockpiled (see staging areas section). From those points onward, large machinery (trucks) will not travel on the trail; instead, materials will be broken down into smaller loads for trail-friendly vehicles.

For example, crushed stone or sand needed for trail surfacing or backfill will be delivered by truck to the trailhead, then transferred into the bucket of the mini-excavator or into a tracked power dumper to be taken to the work site. The tracked dumper can shuttle back and forth on the trail, carrying perhaps half a cubic meter per load, depending on the model. Because it runs on tracks, it can negotiate uneven, muddy, or soft ground without getting stuck and with minimal rutting. Its weight distribution reduces pressure, so it can haul material over sections of trail under construction without overly compacting or tearing up the subgrade. Where the dumper cannot reach (say a very tight switchback or extremely steep bit before the trail is complete), the excavator itself can ferry materials in its bucket. In really constrained areas, we will revert to manual methods – crew with wheelbarrows or carry sacks can move gravel or rocks short distances to final placement. For lumber, pieces will be cut to manageable lengths at the staging area, and either hand-carried by teams of workers or ferried by the tracked dumper or small ATV if terrain allows.

Limited ATV use: As noted, we may use a small all-terrain vehicle in certain scenarios, primarily to tow a small trailer of materials along existing paths to reach an intersection with the new trail. For instance, if an old woods road comes near the trail route at midpoint, we might use an ATV on that old road to drop off a load of culvert pipes or lumber closer to where they will be used. However, the ATV will not be driven on the freshly built trail except possibly during final phases when the trail is essentially complete and firm, and even then it would be a last resort. The trail is not being built to be an ATV path for regular travel, so any such usage will be minimal and controlled. If ATV access is utilized, it will be during dry conditions to avoid gouging the trail, and the vehicle's speed and load will be kept moderate to maintain control on the narrow path.

Throughout the transport process, care will be taken to avoid spillage of materials into the environment. When carrying crushed rock or soil, the dumper beds will be covered or not overfilled to prevent dumping along the way. If any material does fall off the transport, it will be cleaned up immediately if it could cause environmental harm (for example, any treated timber debris would be picked up, any fuel containers dropped would be retrieved). The aim is to leave no trace outside of the intended construction footprint.

In summary, materials will move from staging areas to the trail work sites using small-scale, low-impact conveyances matched to the terrain. This logistical plan ensures the trail can be built efficiently without needing to cut in heavy equipment paths or cause extensive disturbance for material delivery. The result will be a finished trail with all necessary materials in place, delivered in a manner that respects the surrounding land.

Laydown and Staging Areas

Temporary staging areas will be established for material storage, crew assembly, and equipment parking at strategic locations (typically at trailheads or road access points). The selection of staging sites follows these principles:

- **Already disturbed or open areas:** Whenever possible, an existing clearing, old gravel pit, logging landing, or wide roadway pull-off will be used as the staging area to avoid new land disturbance. Using an area that is already devoid of sensitive vegetation minimizes impact. For this project, likely staging locations include (for example) a wide shoulder at the end of an access road or a natural clearing adjacent to the trail's start.
- **Distance from water:** Staging areas will be located at least 30 m away from any waterbodies or wetlands to reduce risk of runoff carrying sediment or spills into aquatic habitat. The ground is ideally flat and well-drained, to naturally contain any accidental spills and to avoid flooding the storage area.
- **Size and capacity:** Each laydown area will be just large enough to accommodate the needed materials and equipment. We anticipate needing space for: parking the mini-excavator and dumper when not in use, stacking culvert pipes, piles of gravel or fill (if delivered), lumber stockpiles, fuel storage (in proper containers), and a small site trailer or toolbox for tools. This typically can fit within an area on the order of 100–200 m² (e.g., 10 m by 10–20 m), though exact size will vary. We will not clear a massive area; rather, as little vegetation as possible will be removed to create a functional yard. If a larger construction area is needed to assemble something (like pre-building a bridge section), that will be planned for in a location that can accommodate it (perhaps a parking lot off-site, if feasible, then flown or carried in). This is not anticipated in this project.
- **Minimal clearing:** Should a new clearing be absolutely necessary for staging (only as a last resort), it will be done in a previously disturbed spot and kept to the minimum size. Topsoil in that area will be stripped and stored in a pile to one side, to be replaced later during rehabilitation. Any perimeter trees not removed will be protected (for instance, marked and fenced off if heavy equipment is moving nearby). This is not anticipated for this project.

At the staging areas, materials will be appropriately organized: aggregate materials on ground cloths or contained by temporary berms, to prevent them spreading; chemicals like fuels or paints (if any) in a secondary containment (spill tray or within a lined berm area). Equipment will park on thick polyethylene sheets or drip pans overnight to catch any oil drips. If staging on grass or soil, we may place plywood or geotextile under heavy equipment to prevent soil compaction and make eventual cleanup easier.

These sites will also serve as the waste management points. Any waste generated (packaging, scrap material, crew waste) will be collected in containers at the staging area and regularly hauled out to proper disposal facilities – we will implement a pack-in/pack-out policy for all non-natural materials. There will be no burying or burning of construction waste on site.

Once construction is completed, rehabilitation of staging areas will be undertaken. All equipment, leftover materials, and garbage will be removed. Any soil that was compacted will be de-compacted (ripped with the excavator bucket teeth or tilled) and the stored topsoil will be spread back over the area. Native vegetation

will be encouraged to regrow – this could include seeding with a local grass mix for quick groundcover and planting native saplings or shrubs if needed to restore the original condition. In forested settings, natural leaf litter and woody debris (collected from our clearing operations) can be spread over the area to promote recovery and discourage invasive weeds. The goal is that within a couple of growing seasons, the former laydown area blends back in with the surrounding land and does not remain as a noticeable scar.

In summary, staging and laydown areas are chosen and managed to minimize new disturbance, keep materials secure and contained, and be fully restored post-construction. These areas are essential for efficient building of the trail but will be handled in a way that the land can recover afterward.

Construction Schedule and Steps

Trail construction will be executed in steps, following a structured schedule that accounts for seasonal constraints, environmental timing windows, and the logical sequencing of construction activities. The full trail network includes the development of five trail segments, and the overall project is anticipated to span five construction seasons, although this is flexible based on weather and permitting. While each trail is assigned to a designated build season, shorter trail segments (e.g., 2–3 km in length) may be completed ahead of schedule, allowing the construction crew to begin early preparations or initial work on subsequent trails as conditions permit. The steps of work are outlined as follows:

1. **Step 1 – Pre-construction and Site Preparation:** This initial step involves final surveying and flagging of the trail alignment (verifying the route on the ground), marking trees for removal, and conducting any required pre-construction environmental surveys (nesting bird checks, rare plant flagging, etc.). This step will also include the establishment of staging areas and delivery of initial materials and equipment to site. Erosion and sediment control measures will be set up at this time (silt fence around staging areas, etc.). Ideally, vegetation clearing (felling of trees, brush cutting) will occur in this step during late fall or winter of the year prior to main construction – this timing avoids bird nesting season and occurs when the ground may be frozen or snow-covered, which can reduce soil impact when felling trees. Winter clearing can also be advantageous in minimizing damage to understory plants and allowing easier access (e.g., using snow cover to skid logs out). If winter clearing is not possible, early spring (before April) would be the next preference. Step 1 essentially “preps” the site so that heavy construction can begin unimpeded.
2. **Step 2 – Earthworks and Trail Formation:** This is the core construction step, typically taking place in the late spring through summer of the first year (after spring thaw has firmed up the ground). In this step, the mini-excavator and crew move in to perform mass excavation, grading, and tread construction along the alignment. The work may be subdivided into sections (for instance, building the trail one kilometer at a time). A logical segmentation will be used to focus activity and contain disturbance; e.g., complete clearing and rough grading from km 0 to 1 before moving to km 1 to 2, etc. Within each segment, the crew will first rough-cut the bench, then install drainage structures, then do final grading and compaction. By focusing on shorter reaches sequentially, we ensure that any given area is stabilized soon after it is disturbed, rather than having the entire length in a raw, unfinished state. This also makes supervision and quality control easier. Step 2 will include installation of culverts and small bridges as the excavator progresses – essentially, when the crew reaches a planned water crossing, they will pause to install the crossing structure (culvert/bridge) before continuing the trail on the far side. This ensures drainage is in place promptly. Summer is the preferred time for this earthwork step because soils are drier (easier to handle and less likely to cause rutting) and daylight hours are long, maximizing productivity.
3. **Step 3 – Specialized Structures and Finishing:** In early fall of Year 1 (or Year 2 if needed), work will concentrate on constructing any special structures like long boardwalks, large bridge spans, lengthy

stair/step sections, or extensive armoring that were not completed during Step 2. Autumn often has the advantage of low water levels, which is ideal for building boardwalks in wetlands or bridges at stream crossings. It also falls outside of most wildlife breeding seasons and ahead of winter, giving new structures a chance to settle. During this step, any remaining imported gravel will be placed on the tread in areas requiring a final surface layer, and the entire trail will be fine-tuned (outslopes checked, bumps removed, signage installed if part of construction). Essentially, Step 3 is about wrapping up all construction so that the trail is continuous and safe for use. If the trail is being built in multiple disjointed sections (due to funding or other reasons), step 3 might be staggered for each section as they finish.

4. Step 4 – Rehabilitation and Site Cleanup: The final step (late fall of the final construction year, before snowfall) is dedicated to cleaning up the work sites. This includes removal of all excess materials and debris, restoration of any disturbed areas outside the trail prism (for instance, replanting a shortcut that was used to access the site), and full demobilization of equipment. Reclamation of staging areas occurs now, as described in the earlier section. Erosion controls (like silt fences) will be left in place as needed and only removed once the ground is stabilized with vegetation. A walkthrough will be conducted to ensure all construction-related disturbances (like temporary access paths or borrow pits) are properly addressed. This Step ensures that by the time we consider the project complete, the only new footprint remaining is the trail itself and any intended amenities, with everything else returned to a natural state or better.

The schedule will be adjusted to weather conditions. Weather mitigation strategies are important: for example, if an unusually wet period occurs during Step 2, heavy construction will be paused to avoid tearing up muddy ground. The crew will pivot to tasks that can be done in wet weather with less impact, such as working on geotextiles, assembling bridge components off-site, or doing equipment maintenance. We will avoid operating the excavator on waterlogged soil to prevent deep rutting or bogging down. Similarly, if extremely heavy rain is forecast, the team will proactively install additional erosion controls (like extra silt fencing or check dams along freshly cut trail) to prevent washouts. After any major rain event, we will inspect the partly built trail and repair any erosion immediately (filling rills, replacing displaced soil) so that problems do not compound.

Seasonal shutdowns are anticipated. During spring thaw (late March or April through April or May), when the ground is saturated and frost is coming out, it is often prudent to halt construction because soils are unstable and wildlife is emerging. We plan for a break during this period, resuming only when soils have dried sufficiently in late spring. Winter shutdown: Newfoundland winters will make work unfeasible from late fall through early spring. We will winterize the site each year – ensuring that unfinished trail sections are left stable (tread smoothed, drainage in place to handle meltwater), and that no loose materials could be carried off by melt or wind. Equipment will be removed or securely stored. Work can resume in winter only if conditions allow specific tasks (like tree clearing on frozen ground as noted).

The phasing plan is subject to adjustment based on approvals and field conditions, but it provides a roadmap that prioritizes doing the work in a methodical, controlled manner. By phasing, we ensure environmental disturbances are limited in time and space, and by scheduling with respect to seasons, we leverage favorable conditions (dry weather, low flows) and avoid sensitive times (wildlife breeding, spring thaw). Contingency time is built in to allow for weather delays, with the ultimate goal of completing all construction activities and having the trail ready for public use by the end of the planned period.

Maintenance and Oversight Commitments

The proponent is committed to ongoing maintenance and oversight of the trail both during construction and after it is opened to the public. During construction, a project supervisor will be on site or on call at all times

to ensure that the methods described are properly implemented. The GNTA Executive will provide periodic field inspections throughout the construction season to ensure that trail development is consistent with the approved alignment, design standards, and environmental commitments. GNTA will also offer guidance or additional direction to the construction team if conditions deviate from expectations or require adaptive approaches. This oversight includes checking that erosion control measures are in place and functioning (especially after rain), verifying that machinery operators and crews adhere to the protocols (no spills, no off-corridor damage, etc.). Site meetings will be held regularly with all crew to reinforce best practices and adjust methods if something unexpected arises (like encountering archaeological artifacts or sensitive species, in which case work will pause and authorities will be contacted as required).

After construction, the trail will enter the operational step, and a routine maintenance program will commence. The following commitments form our maintenance plan:

- **Regular Inspections:** The trail will be inspected on a scheduled basis, at minimum twice annually (spring and fall), and additionally after major weather events (heavy rainstorms, spring snowmelt, or windstorms that might blow down trees). Spring inspections are crucial to address any winter damage or erosion from snowmelt; fall inspections prepare the trail for winter by clearing leaves from drainage and confirming structures are sound. These inspections will be performed by experienced trail maintenance personnel.
- **Drainage Upkeep:** All drainage structures (culverts, ditches, grade dips) will be kept functional. Inspections will specifically check for clogged culvert inlets or silted-up dips. If a culvert is blocked by debris, the maintenance crew will remove the obstruction immediately. We expect to clean culvert inlets at least every spring and after any storm that causes noticeable runoff, as preventive maintenance. Where we have installed outflow armoring, we will check that it remains in place and add rock if needed. If erosion is observed around a water crossing, repairs will be made – this could mean extending the rock apron or re-compacting fill that settled. The goal is to ensure water is flowing where we intend and not eroding new paths.
- **Tread and Slope Repairs:** The trail tread will be maintained to its intended width and grade. Over time, some sections might experience minor erosion or settling, especially in the first year or two as the trail “beds in.” We commit to promptly repairing any such issues. For example, if a short stretch develops a rut, we will fill and compact it, and possibly install an extra grade dip or waterbar to prevent recurrence. If the outslope has diminished (trail flattening due to use), we will re-cut or regrade to restore the outslope so water runs off. Any slough (eroded material) that has accumulated on the tread from the upslope will be removed. These tasks ensure the trail remains stable and does not start eroding exponentially. In areas with fill, we’ll monitor edges for slumping and add fill or support (rocks, logs) if needed to shore up the trail edge.
- **Vegetation Management:** The trail corridor will naturally try to regrow vegetation. We will perform brush trimming and clearing of regrowth likely on an annual or biennial basis to keep the corridor open to the originally specified width and height. Fast-growing shrubs or tree seedlings that encroach on the trail will be cut back. Grasses or weeds on the tread will be cleared if they present slipping hazards or hold moisture. However, we will aim for a balance – maintaining a natural appearance and some shading of the trail, while keeping it passable. Any invasive plant species that colonize disturbed areas will be targeted for removal or treatment as part of the maintenance regime, in consultation with provincial invasive species specialists.
- **Structural Maintenance:** All constructed features (bridges, boardwalks, signs, benches, etc.) will be routinely checked for integrity. Wooden structures will be inspected for rot, hardware soundness,

and stability. We expect to replace or repair components like deck boards or railing posts as they age – this will be scheduled at the first sign of significant wear to preempt any safety issue. Likewise, culverts, being galvanized steel or HDPE, have a long life but will eventually corrode or get brittle; we plan for a lifespan of a few decades, but should any fail or become undersized due to changes in drainage, we will replace them. We will also keep an eye on trail surfacing – if certain high-traffic areas lose gravel or get exposed roots, we may add fill or adjust as needed.

- **User Safety and Experience:** Maintenance also includes ensuring trail markers, difficulty signage, and any safety warnings are intact and visible. While not part of construction per se, the proponent will install and maintain adequate signage (e.g., trailhead map, kilometer markers, safety yield signs) so that users are well-informed. These will be kept up-to-date and clear of vegetation. We are also committing to responsiveness: if public feedback or our inspections reveal a hazard (like a hanging dead tree over the trail or a washed-out section), we will address it as a priority and, if needed, temporarily close or reroute that part of the trail until fixed.

The maintenance program will be formalized in a Trail Management Plan. It will specify the frequency of inspections and typical maintenance tasks, as summarized above, ensuring the trail's environmental and recreational values are sustained. GNTA will allocate an annual budget and personnel for these activities. Oversight of maintenance will include the GNTA Executive and may include volunteer stewardship groups for assistance with routine tasks, under supervision.

In conclusion, by adhering to a strong maintenance and oversight framework, the trail will remain in excellent condition year after year. The initial robust construction methods – proper drainage, good materials, careful clearing – combined with diligent upkeep, will greatly minimize environmental impact over the long term. The proponent accepts these responsibilities as part of ensuring the project's success and sustainability. ***All individual trail sections developed will refer back to this comprehensive methodology***, and any unique features will be maintained with the same level of care and commitment as outlined in this section, thereby upholding the environmental protection and user safety goals of the project.

Trail Construction Methods – Summary

Site Planning & Alignment

- Trails flagged in advance to confirm route and avoid wetlands, steep slopes, or sensitive areas.
- Alignment follows natural contours to reduce grading and erosion.

Width & Clearing

- Trail tread: 1.2 m wide; cleared corridor: 2.4 m from centerline.
- Clearing done selectively using brush cutters, chainsaws, hand saws, and loppers.
- Mini-excavator used only for sourcing material or excavation.
- Nesting birds identified and marked prior to cutting to avoid disturbance.
- Cleared material broadcast using rakes and loppers over a 5–10 meter buffer zone, either side of the trail

Trail Surface & Fill

- Organic soil removed only where necessary to expose stable mineral base.
- Rocky terrain left as natural tread where suitable.
- Fill requirements: 50–210 m³/km (mineral soil and/or stone).

- On-site sourcing preferred; test pits filled after inspection.
- Trailheads may use gravel from local quarry.

Erosion Control & Grading

- Rolling contours, grade reversals, bench cuts, and switchbacks used to manage water and slope.
- Compaction performed on suitable tread sections for durability.

Water Crossings

- Culverts sized on-site, embedded below streambed.
- Inlets/outlets armored with large stone and compacted with mineral soil/gravel.
- Alternatives used where culverts aren't suitable (e.g. rock fords, step-stones, boardwalks).
- Culverts installed by hand or mini-excavator.

Equipment Use & Transport

- Mini-excavator, two tracked dumpers, and hand tools used.
- Equipment travels only along flagged trail tread to minimize impact.
- Materials moved via tracked dumper or by hand; ATVs used only when needed, at low speed.

Laydown & Staging Areas

- Located at trailheads or natural clearings to avoid further clearing.
- Temporary staging used on longer trails to improve efficiency.

Construction Schedule & Mitigation

- 18-week season (starting May/June depending on thaw).
- Work phasing:
 - Weeks 1–4: Flagging, marking, clearing
 - Weeks 5–10: Surface work and excavation
 - Weeks 11–14: Water crossings
 - Weeks 15–18: Final grading and finishing
- Adaptive work schedule in case of weather or environmental delays.

Quirpon Tickle Lookout Trail – Trail-Specific Construction Approach

The Quirpon Tickle Lookout Trail will follow all general practices outlined in the GNTA Sustainable Trail Building Manual and summarized in the overarching Trail Construction Methods section. The following details clarify how those methods will be specifically applied to this trail segment.

General Route and Terrain: This trail begins at the designated trailhead and follows a flagged alignment through a combination of hard, rocky ground interspersed with brush and peat soil. Much of the route follows elevated ground with moderate slopes and some areas of low-lying vegetation requiring excavation. The terrain allows for a largely full-bench construction, with some tread sections left as exposed bedrock,

reducing the need for fill. Clearing will be minimal in areas with open rock; brush and low tuckamore will be selectively removed as needed.

Trail Rehabilitation & Upgrades:

- The existing trail tread, where present, will be reclaimed and upgraded, especially where the original path has deteriorated or grown in.
- Old boardwalks and bridges, which are no longer serviceable, will be removed and transported out using a tracked dumper. Materials will be disposed of off-site in accordance with waste regulations.
- The offshoot to the old lookout platform will be fully rebuilt using GNTA sustainable methods. The original stairs and viewing platform will be dismantled and removed.
- A new lookout platform may be installed once the main tread construction is complete, using sustainably sourced materials and design.

Tread Construction and Surface Work:

- Minimal grade adjustment will be required on many sections due to naturally stable rocky ground. These areas will remain as exposed tread, requiring only clearing and brushing.
- In sections of peat or soft organic soil, the organic layer will be excavated by hand or mini-excavator and replaced with mineral soil or stone from approved sources, either on-site or, if necessary, from an approved local quarry (particularly for trailhead approaches).
- Test pits will be dug in advance to assess material suitability, and filled in afterward to prevent environmental impact.
- Rolling contours and bench cuts will be introduced on inclines to maintain drainage and reduce erosion.

Water Crossings: While no major water crossings are anticipated on this trail section, localized surface drainage will be managed by:

- Installing grade reversals and outsloped tread to encourage sheeting of water off the trail.
- If required, small rock-armored dips or shallow culverts will be installed in soft, wet pockets. These will be armored and compacted per the general method and sized based on site conditions.

Equipment and Material Access:

- A mini-excavator and two tracked dumpers will travel along the cleared and flagged trail corridor during construction. All equipment will remain within the 1.2 m tread zone to reduce disturbance.
- In tighter or more sensitive areas (such as near the lookout point or along rocky slopes), hand tools will be prioritized.
- Material transport will occur using tracked dumpers and manual methods; ATV use will be avoided unless absolutely required in longer or more remote segments.
- A temporary laydown area will be established at the trailhead for staging equipment and materials, with minimal clearing and post-construction restoration.

Construction Phasing and Timeline:

- The Quirpon Tickle Lookout Trail is approximately 2 km in length, and construction is expected to proceed efficiently due to favorable terrain (primarily rocky ground) and a limited number of water management features.
- This segment will be the first trail constructed in the project, with work commencing as early as May or June 2025, depending on ground thaw and access conditions.
- Given its shorter length, construction is expected to be completed in approximately 4–6 weeks, weather and terrain permitting.
- Work will follow this approximate sequence:
 - Weeks 1–2: Final route flagging, test holes, clearing operations, and staging setup.
 - Weeks 3–5: Trail excavation, grading, removal of old structures, and completion of the lookout offshoot.
 - Week 6 (as needed): Final surfacing, erosion control measures, cleanup, and demobilization.
- Upon completion of this trail, the construction crew will immediately transition to the Goose Cape Trail, located within the same project scope. This staged progression ensures efficient use of time and equipment, and allows continuous momentum in trail development without idle periods.
- Should work on Quirpon Tickle Lookout finish ahead of schedule, early preparatory work (e.g. flagging, test holes) may begin on Goose Cape Trail while the remainder of the crew completes finishing work at Quirpon.

Goose Cape Trail – Trail-Specific Construction Approach

Construction of the Goose Cape Trail will follow techniques outlined in the GNTA Sustainable Trail Building Manual as well as the comprehensive practices described in the project's Trail Construction Methods section. All work will prioritize long-term durability, erosion control, and minimal environmental impact. This trail will serve as a key connection between the Pumley Cove Trail and the Back Cove Trail and Day Use Park, integrating both upgraded and newly constructed sections into a continuous, sustainable coastal route.

- **General Route and Terrain:** The trail begins at the Pumley Cove Trailhead, building upon and extending the existing Pumley Cove Trail corridor. From there, it continues over a flagged route through rocky terrain, peat soil, natural gravel, and brush, including moderate to steep coastal slopes. The first 1 km will rehabilitate and upgrade an older section of trail, followed by 6.5 km of newly constructed trail that winds along elevated terrain with expansive coastal views. Nearing completion, the last 1km will connect to and upgrade the Back Cove Trail & Day Use Park tread. While some minor wet areas are expected, no major water crossings or wetland have been identified along this route.
- **Trail Rehabilitation & Surface Upgrades:**
 - The existing 1 km segment of the original trail leading from the Pumley Cove Trailhead will be reclaimed and reconstructed to GNTA standards, improving drainage, tread stability, and sustainability.
 - The trail's northern terminus connects to Back Cove Trail and Day Use Park, and will reclaim an existing 1 km segment, completing a continuous, high-quality coastal loop.
 - Old boardwalks, stairs, or deteriorated trail infrastructure will be removed and transported out by tracked dumper for appropriate off-site disposal.
 - Grading and surfacing will be applied to stabilize the tread and restore accessibility.

- **Coastal Cliffs, Elevated Slopes & Natural Terrain:**
 - The remaining 6.5 km of trail will extend from the end of the Pumley Cove loop, following the coastal cliffs of Goose Cape and navigating higher elevations and rugged terrain.
 - Bench cuts, rolling contours, and switchbacks will be employed on steeper grades to ensure sustainability and minimize erosion.
 - Rocky surfaces requiring no modification will be preserved as natural tread to reduce environmental disturbance.
 - Brush and tuckamore will be cleared selectively to maintain a safe corridor while preserving natural vegetation outside the trail zone.
- **Offshoot & Back Cove Trail Connection:**
 - A side trail offshoot will descend from the main route to a scenic viewpoint and will be constructed primarily by hand, with materials transported by tracked dumper where needed.
- **Construction Phasing & Timeline**
 - Construction of Goose Cape Trail will begin immediately after the Quirpon Tickle Lookout Trail is completed, likely in mid to late summer 2025.
 - Due to its length (8.5 km total) and diverse terrain, construction will continue into the 2026 build season.
 - 2025 Season (Approx. July–October):
 - Reconstruct 2 km of trail from Pumley Cove Trailhead.
 - Begin construction of 3–4 km of new trail along the Goose Cape coastline.
 - 2026 Season (May–August):
 - Complete remaining trail sections, offshoot construction, and connection to Back Cove Trail.
 - Conduct final tread compaction, grading, and inspections.
 - Early activities (e.g., test pits, flagging, and route confirmation) may begin during or immediately after work on the Quirpon Tickle segment.

Cape St. Anthony Trail – Trail-Specific Construction Approach

Construction of the Cape St. Anthony Trail will follow GNTA's Sustainable Trail Building Manual in conjunction with the general methods outlined in the Trail Construction Methods section. The route will be constructed to ensure long-term durability, manage erosion, and minimize environmental impacts while traversing the scenic highlands and coastline of the Cape region.

General Route and Terrain: Construction will begin near the West Trailhead, with the final alignment flagged in advance and sensitive areas identified for adaptive planning. The trail will traverse a combination of rocky ground, brush, and peat soil, following high coastal ridgelines and passing features such as sea stacks, cliffs, and short sections of tuckamore forest. Excavation and grading will be required in organic soil pockets, while rocky terrain will be preserved as natural tread where stable and safe.

Vegetation Management & Terrain Adaptation:

- Selective clearing will occur through tuckamore and brushy areas, with minimal corridor width beyond the required 2.4 m.
- In the short tuckamore section near Western Cove, pruning and minor grading will be used to maintain trail continuity and user safety.
- Ground vegetation will be removed only where needed to expose compactable mineral soil for the tread.

Water Crossings: The trail includes four freshwater stream crossings, each of which flows directly into the ocean.

- The first crossing, located approximately 500 m from the trailhead near Green Cove, will be fitted with a large culvert, embedded below the streambed and armored with stone. The tread overtop will be compacted using mineral soil or gravel to match adjacent trail conditions.
- The remaining three crossings will use the same method, with culverts properly sized, stabilized with inlet/outlet stone armoring, and compacted overtop.
- In the unlikely event that conditions at any site are unsuitable for culverts, alternate methods such as rock-armored fords or step-stone crossings will be considered.

Construction Sequence and Timeline: Construction is expected to begin in spring or early summer, with work progressing from the western trailhead to the eastern end at St. Carol's Road. The route will be built in logical segments to ensure early stabilization of disturbed areas. This trail is expected to require a full season to complete due to its terrain, length, and structural features.

- Early summer: Clearing, site preparation, and installation of erosion controls.
- Mid-summer: Excavation, grading, tread formation, and installation of culverts.
- Late summer to early fall: Final grading, structure finishing, and trail walkthrough.

If weather or environmental delays occur, unfinished sections will be stabilized and winterized, with work resuming the following season if necessary.

Square Bay Trail – Trail-Specific Construction Approach

Construction of the Square Bay Trail will follow GNTA's Sustainable Trail Building Manual and the general standards outlined in the Trail Construction Methods section. This trail will include both the rehabilitation of older infrastructure and the construction of new trail and offshoots, with all work focused on minimizing environmental impact and ensuring long-term trail sustainability.

General Route and Terrain: The trail begins at the South Trailhead in St. Carol's, using the former John Patey's Trail as the starting point. After route flagging and adaptive planning, construction will begin with the reclamation of old stairs and upgrades to the original tread. From there, the trail continues north through a mix of rocky terrain, brush, and peat soil, requiring selective excavation to expose stable ground.

Approximately 350 m into construction, the route will branch to an offshoot leading to Crow Head. After this section is completed, the team will return to the main trail and proceed approximately 600 m further before constructing a second offshoot to Line Head. Both offshoots will use the same sustainable methods applied throughout the main route.

The remaining mainline trail continues north through coastal forest and open terrain, with short tuckamore sections requiring careful pruning and tread reinforcement.

Water Crossings: The trail includes three freshwater stream crossings, all of which flow into the ocean. These crossings will be built using large culverts installed below the streambed and armored with stone at both the inlet and outlet. Tread material above each culvert will be compacted mineral soil or gravel to ensure a seamless walking surface. These crossings include:

- One before the Crow Head offshoot.
- Two crossings on either side of Square Bay.

- A final crossing near the Northern Trailhead at Great Brehat's Southern Main Road, completed using the same stabilized culvert method.
- Alternate crossing types (e.g., rock-armored fords or step-stone paths) may be used if site conditions require.

Construction Timeline and Progression: Construction is expected to begin at the southern end, moving northward in segments to ensure that reclaimed and newly built sections are stabilized before progressing. The inclusion of offshoots and multiple stream crossings may extend the timeline, depending on site conditions.

- Early work will focus on:
 - Reclaiming and upgrading the initial section of the existing trail.
 - Establishing corridor clearance through brush and tuckamore.
 - Installing erosion control and initial culvert structures.
- Mid-construction will prioritize:
 - Completion of the Crow Head and Line Head offshoots.
 - Advancing through coastal terrain using bench cuts and grade management techniques.
- Late-season work will address:
 - Final water crossing near Great Brehat.
 - Finishing, compaction, inspections, and site cleanup.

Little Brehat to Granchain Island Trail – Trail-Specific Construction Approach

Construction of the Little Brehat to Granchain Island Trail will follow GNTA's Sustainable Trail Building Manual alongside the methods outlined in the Trail Construction Methods section, ensuring environmental protection, sustainable design, and long-term durability across a range of terrain types.

General Route and Terrain: Construction will begin at the existing Little Brehat Trailhead, with the route flagged in advance and any sensitive features identified for adaptive planning. The first portion of work will involve the rehabilitation of the existing trail, including the removal of old boardwalks and upgrades to the tread using sustainable excavation and surfacing techniques. Once this segment ends, the route will extend across new terrain toward Granchain Island, traversing rocky ground, brush, and peat soil, with minor wetland pockets and coastal features along the way.

Water Crossings & Coastal Navigation: Three freshwater streams will be encountered along the route:

- Crossing 1 – Near Cemetery: A properly sized culvert will be installed and reinforced with stone armoring and compacted tread material to provide safe, stable passage while protecting hydrology.
- Crossing 2 – Near Persil Cove: This stream will be crossed using the same method, with embedded culvert placement and erosion controls.
- Crossing 3 – Tidal Crossing to Granchain Island: This shallow crossing is tidally influenced and generally walkable without infrastructure. No culvert or structure is planned, as users can select stable footing at any tide level.

Other coastal features include:

- Beach Segment at Persil Cove: No construction will occur along this natural beach. Users will continue on foot without tread modification.
- Rocky Outcrop: This section will also be left undeveloped, with natural surface navigation supported by wayfinding and route continuity.

Trail Rehabilitation & Surface Upgrades:

- All old boardwalk structures on the existing trail will be removed and disposed of appropriately.
- The trail tread will be reconstructed to improve stability, drainage, and user experience, using mineral soil and stone sourced on site where possible.
- Compaction and grading will be applied to suitable areas to ensure a consistent and low-maintenance surface.

Construction Methods and Timeline: Construction will proceed from south to north, beginning with trail rehabilitation and continuing to the new alignment across to Granchain Island. The northwest beach at the end of Granchain Island marks the trail's terminus, with no construction on the beach itself to preserve the natural character of the site.

Work will be completed using a combination of hand tools and mechanical equipment, including tracked dumpers and a mini-excavator, operating only along the designated trail tread to limit disturbance.

This trail is expected to be completed within a single build season, with minor off-season work (e.g., early clearing or inspections) depending on weather and available workforce.

3. Potential Sources of Pollutants During Construction

GNTA is committed to minimizing environmental impact through sustainable trail-building techniques and uses pack-it-in-pack-it-out practices. However, the following sources of pollutants may arise:

A) Airborne Emissions

- Dust from trail clearing, excavation, and machinery use.
- Exhaust fumes from chainsaws, brush cutters, tracked dumpers, and a mini-excavator.
- Mitigation:
 - Watering down dust-prone areas if needed.
 - Using low-emission equipment where possible.

B) Liquid Effluents

- Fuel & Oil Leaks from chainsaws, brush cutters, tracked dumpers, and a mini-excavator.
- Runoff from disturbed soil, especially near wetlands or water bodies.
- Mitigation:
 - Spill kits will be available at all work sites and on vehicles.
 - Machinery fueling will take place away from water sources, with spill containment measures in place.
 - Fire suppression equipment will be stored on equipment and at each site.

C) Solid Waste Materials

- Organic debris (removed trees, shrubs, and rocks) from trail clearing.
- Packaging from materials and equipment.
- Mitigation:
 - Organic debris generated during trail construction will be repurposed for erosion control or mulched on-site following sustainable trail-building best practices. Materials such as branches and leaf litter will be strategically placed in disturbed areas to reduce runoff and support vegetation regrowth. Mulched debris will be spread in thin layers to stabilize exposed soil while allowing natural decomposition to occur.
 - Minimal packaging will be used when ordering materials.
 - All non-biodegradable waste will be collected and disposed of appropriately.

4. Potential Resource Conflicts

- If there are ongoing construction projects or resource access conflicts, GNTA can shift to a different trail section without delaying the project.
- No major industrial developments are currently planned along the proposed trail routes, reducing the likelihood of significant conflicts.

5. Mitigation Measures for Environmental & Resource Conflicts

- **Wildlife Impact Reduction:**
 - GNTA has already canvassed these proposed trails and does not expect to see nesting sites for any species at risk. NL Wildlife Division has noted the potential for Short Eared Owl.
 - A Short Eared Owl Survey Protocol will be conducted as per the requirements of NL Department of Fisheries, Forestry and Agriculture, Wildlife Division. If a nest is suspected or confirmed, the Wildlife Division will be immediately notified. A no-disturbance buffer of 800 meters must be placed around the area until owlets have successfully left the nest (usually by early August).
 - Consultation with the NL Wildlife Division will be arranged immediately upon any discovery of rare or endangered species.
 - Construction will avoid peak breeding seasons.

- Workers will be advised on minimizing disturbance to local fauna, including wildlife identification, behavioral best practices recognizing signs of wildlife distress, and site-specific mitigation strategies.
- Wildlife Distress Recognition:
Workers will be trained to recognize signs of wildlife distress, including unusual vocalizations, erratic or repeated fleeing behavior, lingering near work zones, visible injury, defensive behaviors (e.g., wing spreading, hissing, or bluff charging), and discovery of nests or dens with agitated adult animals nearby. If any of these signs are observed, work will pause in the area and be reported to a supervisor. The NL Wildlife Division will be contacted if necessary for further guidance and support.
- Work activities will incorporate low-impact methods, and scheduling adjustments to reduce disruptions to sensitive species if necessary. Ongoing monitoring and compliance checks will ensure adherence to these practices.
- **Soil & Water Protection:**
 - Sustainable trail grading and Erosion control measures (e.g., geotextile fabric, stone & gravel, and proper drainage) will be used.
 - Trail construction avoids wetland areas where feasible.
- **Fire Prevention & Safety:**
 - Fire extinguishers and suppression equipment will be available on all sites.
 - Safety briefings will include fire risk assessments, especially in dry conditions.

6. Public & Indigenous Consultation

GNTA has actively engaged with all involved communities regarding the trail network. Consultations have included:

- Meetings were conducted with municipal councils or representatives in each community that the trail resides near, obtaining support for the trail build. Goose Cove, St. Anthony Bight, St. Carol's, Great Brehat, and Quirpon, as well as other communities in the Great Northern Trail Network are amongst those contacted.
- Discussions with local businesses, residents, and outdoor recreation groups.
- No formal Indigenous engagement has been required to date, as the proposed routes do not intersect Indigenous lands or territories requiring formal consultation.
- Current Status: All communities have expressed support, given verbal or written support, and GNTA is awaiting the signing of an official Memorandum of Understanding (MOU)

(iv) Operation

1. How the Undertaking Will Operate

The trails will be multi-use, accommodating both hiking and mountain biking, and will be managed and maintained by the Great Northern Trail Association (GNTA) to ensure safe, sustainable use year-round. All trail infrastructure has been constructed following established best practices outlined in the GNTA Sustainable Trail Building Manual, with long-term maintenance procedures in place to protect environmental integrity. Operational use is phased alongside construction as some trails will open earlier while others follow in later years.

Operational highlights:

- **Public Access:** Open to residents and visitors for recreational use, with designated trailheads in Goose Cove, St. Anthony Bight, St. Carol's, Great Brehat, and Quirpon.
- **Trail Use Guidelines:** Non-motorized use only, except for:
 - Maintenance vehicles such as 1.7 tonne-class mini-excavator, and tracked dumpers. Potential to use a small maintenance-only ATV.
 - Emergency access, as needed.
- **Safety & Wayfinding Infrastructure:**
 - Signage at each trailhead outlining trail difficulty, environmental considerations, and emergency contact information.
 - Environmental awareness messaging to educate users about wildlife sensitivity and habitat protection.
 - Signs clearly indicate that off-road motorized vehicle use is prohibited on all trail sections.
- **Regular Inspections & Maintenance:**
 - GNTA will deploy two seasonal trail workers each year to monitor, repair, and upgrade trail infrastructure using low-impact tools and techniques.
 - Crews will adhere to the construction corridor to limit further disturbance during repairs.
- **Integration with Tourism & Community Initiatives:**
 - Trails are designed to connect communities and support local tourism through improved access to natural features, accommodations, and cultural experiences along the Great Northern Peninsula.

2. Estimated Period of Operation

- The trail system is a permanent recreational amenity, expected to operate year-round.
- Primary operating season: May – November (hiking, biking, educational use).
- Winter use (limited): Select sections may remain accessible for snowshoeing, backcountry skiing, or winter hiking, with only light maintenance needed during these months.

3. Potential Sources of Pollutants During Operation

Although the trails are designed to minimize environmental impact, a few minor pollutant risks exist:

A) Airborne Emissions

- Dust from foot and bicycle traffic in dry periods.
- Mitigation:

- Use natural and compacted gravel surfaces, stabilize loose soil, and plant native vegetation along edge.

B) Liquid Effluents

- Minor risk of fuel spills from maintenance vehicles or equipment.
- Mitigation:
 - All maintenance vehicles will carry spill kits.
 - Fueling will occur away from wetlands or water sources.

C) Solid Waste Materials

- Litter from trail users (food packaging, plastic bottles).
- Natural debris (fallen branches, eroded material) accumulating over time.
- Mitigation:
 - “Pack it in, pack it out” educational signage.
 - Trailhead garbage bins where appropriate.
 - Regular inspection and debris removal by GNTA trail crew.

4. Potential Causes of Resource Conflicts

The project does not currently anticipate major resource conflicts, but potential issues may include:

A) Overlap with Other Developments

- If other infrastructure or construction projects arise near the trails, temporary rerouting may be needed.
- Mitigation: GNTA will coordinate with stakeholders to minimize disruptions

B) Wildlife & Habitat Disruption

- Increased foot traffic may temporarily affect local wildlife activity.
- Mitigation:
 - Trails are routed away from sensitive habitats.
 - Ongoing monitoring and signage will reinforce respectful wildlife interaction.

C) Community Access & Use Conflicts

- Certain areas have been historically used for berry picking, hunting, and traditional land use.
- Mitigation:
 - The trails follow existing paths to maintain access for traditional land users.
 - Trail design includes multiple entry/exit points, ensuring local access is not restricted.

5. Measures to Mitigate Environmental & Land Use Conflicts

To ensure long-term sustainability, GNTA will implement:

A) Environmental Monitoring & Erosion Control

- Use of rolling grade, grade reversals, and bench-cut trail construction to reduce runoff and soil loss.
- Installation of stone armoring, geotextiles, and compacted tread in high-traffic or sensitive sections.

B) Wildlife Impact Reduction Strategies

- No maintenance activities during key breeding seasons for protected species.
- Workers trained to identify environmental concerns and halt work if needed.

C) Public Safety & Emergency Preparedness

- Clear signage at all trailheads for navigation and emergency response.
- On-site fire suppression kits and wildfire risk assessments during dry periods.

6. Trail Maintenance & Environmental Monitoring

GNTA will oversee routine inspections and proactive maintenance to ensure the trails remain safe, sustainable, and enjoyable year-round.

A) Seasonal Maintenance Schedule

- Spring (May-June):
 - Inspect trails for winter damage, fallen trees, and erosion issues.
 - Repair and reinforce structures, and drainage structures.
 - Conduct early-season vegetation management to clear overgrown sections, avoiding nesting and sensitive habitats.
- Summer (July-August):
 - Monitor trail wear from high visitor traffic.
 - Maintain clear signage and wayfinding markers.
 - Continue erosion control efforts in high-impact areas.

- Fall (September-October):
 - Prepare trails for winter conditions by clearing debris and stabilizing surfaces.
 - Conduct final inspections before seasonal closures or reduced winter use.
- Winter:
 - Some sections may be used for snowshoeing or backcountry skiing, with minimal or no required maintenance.

B) Dedicated Trail Maintenance Crew

- GNTA will employ two seasonal trail maintenance workers responsible for repairing damaged sections, clearing debris, and maintaining signage.
- Maintenance teams will work in rotation across all GNTA trails, ensuring consistent upkeep throughout the network.
- Volunteers and local hiking groups may also be engaged for community-driven trail maintenance events.

C) Environmental Monitoring & Sustainability Practices

To preserve the surrounding ecosystems, GNTA will implement ongoing environmental monitoring that includes:

- Erosion & Soil Stability Checks: Inspect trails for signs of erosion, pooling water, or shifting terrain, especially after large precipitation events. Trails may be closed to prevent further damage until maintenance has been performed.
- Wildlife & Habitat Protection: Trails are designed and managed to minimize impacts on sensitive habitats and migratory species through careful route planning, sustainable construction techniques, and ongoing monitoring. Environmental assessments guide trail placement, ensuring avoidance of critical habitats. Erosion control measures and seasonal restrictions are implemented to safeguard wildlife. Workers and trail users are educated on best practices, and adaptive management strategies allow for adjustments based on observed impacts.
- Vegetation Management: Maintain natural corridors while preventing invasive species from overtaking native plants.
- Waste Management: Promote a pack-in, pack-out policy to keep the trails free of litter and pollutants.

Additionally, GNTA may conduct annual assessments to evaluate the overall health of the trail system, making necessary improvements based on user feedback and environmental impact reports.

D) Public Consultation

- GNTA has consulted with all involved towns and communities, including Goose Cove, St. Anthony Bight, St. Carol's, Great Brehat, and Quirpon.
- Meetings with town councils, community members from Local Service Districts or committees have confirmed full support for the project.
- Current Status: GNTA is awaiting the final signing of an Memorandum of Understanding with municipal and community partners.
- Indigenous consultation has not been applicable at this time, as the proposed trails do not intersect with Indigenous lands requiring formal engagement.

(v) Occupations

1. Employment Estimates for Construction & Operations

The construction and operation of the trail system will create employment opportunities in both seasonal and ongoing capacities.

A) Construction Phase (2025–2029):

- Estimated workforce per season: 7 employees, full-time seasonal.
- Duration: 18 weeks per year (May – October)
- Total construction employment: Approximately 35 worker-seasons over five years
- Labor hours: 720 hours per employee per season, 5040 hours total.
- 25,200 labor hours for the project duration.

B) Operations & Maintenance (Ongoing):

- Estimated workforce per season: 2 employees, full-time seasonal.
- Duration: 18 weeks per year (June – October)
- Total long-term employment: 2 recurring seasonal positions
- 720 hours per employee per season.

In total, the project will provide over 45 worker-seasons of employment, benefiting the local labor market.

2. Breakdown of Anticipated Occupations (National Occupational Classification 2021)

Based on the National Occupational Classification (NOC) 2021, the following job roles are required for the project:

Construction Phase (Trail Development & Infrastructure Installation)

Occupation	NOC Code	Responsibilities	Number of Positions
Trail Construction Supervisor	72014	Supervise construction teams, oversee trail alignment, ensure compliance with sustainable practices, and manage project schedules.	1
Trail Builders	73400	Perform trail clearing, grading, and surfacing using standard and mechanized hand tools and small machinery. Construct walkways and erosion control structures.	4
Trail Equipment Operators	73400	Operate tracked dumpers, excavator, chainsaws, and other equipment for material transport and terrain grading	2

Total Seasonal Construction Workforce: 7 workers per season

Operations Phase (Trail Maintenance & Environmental Monitoring)

Occupation	NOC Code	Responsibilities	Number of Positions
Trail Maintenance Technicians	85121	Inspect trails, repair erosion damage, maintain signage, remove debris, and manage vegetation	2

Total Seasonal Operations Workforce: 2 workers per season

Hazardous Occupations & Workplace Safety Measures

Certain roles within the project involve moderate occupational hazards, including the use of power tools, heavy lifting, and exposure to outdoor elements. These risks will be mitigated through strict adherence to safety protocols:

- Chainsaw & Equipment Safety: Workers using chainsaws and tracked dumpers will receive proper training and personal protective equipment (PPE).
- Fire Prevention: Fire extinguishers will be available on all work sites and in vehicles, with fire risk assessments conducted regularly.
- Spill & Environmental Protection: Fuel handling will be restricted to designated areas, and spill kits will be deployed at each site.
- Erosion & Terrain Safety: Workers will follow safe trail-building techniques to prevent slips, falls, and rockslides.

All employees will undergo mandatory occupational health and safety training, including:

- First Aid & Emergency Response
- Chainsaw & Equipment Handling (where applicable)

The project does not involve high-risk occupations requiring specialized certifications beyond standard safety training.

Employment Equity & Gender Inclusion

GNTA is committed to fostering an inclusive and equitable work environment that promotes diversity in hiring practices.

- Age Inclusion: The project will recruit a mix of experienced workers and younger employees seeking career-building opportunities in outdoor recreation and conservation.
- Gender Equity: Efforts will be made to actively recruit women and gender-diverse individuals into trail-building and maintenance roles.
- Community-Based Hiring: Preference will be given to local applicants to support regional employment.

To support gender equity, GNTA will:

- Promote equal opportunities for women in outdoor trades through community outreach.

- Provide workplace policies that encourage an inclusive environment.
- For additional guidance, GNTA will consult the Office for the Status of Women and Gender Equality

Summary of Workforce Commitments

- Over 45 worker-seasons created over five years
- Seasonal employment for local workers in construction & trail maintenance
- Safety training for all workers
- Employment equity measures to support gender inclusion & youth hiring
- Local hiring priority to support economic benefits in involved communities

(vi) Project-Related Documents:

- Funding Proposal
- GNTA Sustainable Trail Building Manual (Available to reviewers; available publicly for a consultant fee)
- Parks Canada National Best Management Practices for Trail Maintenance and Modification
- USDA Trail Construction and Maintenance Notebook
- Crown Lands Applications
- Memorandum of Understanding between GNTA and Communities and Organizations (Pending signatures, as written and verbal consent has been obtained otherwise)
- Support Letters from involved Towns and Communities
- Environmental Guidelines for Watercourse Crossings, NL Water Resources Management Division, ECC
- Environmental Guidelines for Culverts, NL Water Resources Management Division, ECC
- Policy for Development in Wetlands, NL Water Resources Management Division, ECC

4. APPROVAL OF THE UNDERTAKING

Required Permits & Approvals

- Crown Lands Permits From Crown Lands Division (Pending with the result of this Environmental Assessment).
- Approvals from the Community of Quirpon for the reconstruction of the Quirpon Tickle Lookout Trail in addition to utilizing its existing parking space.
- Approval from the Town of Goose Cove East to upgrade its current trails as they link to the new construction of the Goose Cape Trail and permission to utilize existing parking spaces.
- Approval from the Community of St. Anthony Bight to construct the Cape St. Anthony Trail and utilize parking near the community wharf.
- Approval from the Community of St. Carols to construct the Cape St. Anthony Trail and Square Bay Trail, and to utilize existing parking.
- Approval from the Community of Great Brehat to Construct the Square Bay Trail, utilizing parking at the turnaround. Approval to reconstruct the Little Brehat Trail, and construct a new trail to Granchain Island, utilizing existing parking.
- Pending Archeological Assessment from Provincial Archaeological Office, Tourism, Culture, Arts & Culture for Granchain Island Trail Portion.
- Any water crossing approvals as necessary from Water Resources Management Division of the Department of Environment & Climate Change.
- Forestry Cutting Permits as necessary from the Forestry and Wildlife Services Branch of the Department of Fisheries, Forestry, and Agriculture
- Any permits from the Department of Fisheries and Oceans if applicable.

5. SCHEDULE

- Proposed Start Date: May 2025
- Estimated Completion: October 2029

GNTA chooses to begin trail work in May and June, as most snow and ice have melted, allowing for safe and efficient work conditions. Work continues throughout the summer and early fall, taking advantage of long daylight hours and stable weather. Construction concludes by October, as weather conditions typically deteriorate, making trailbuilding less productive and more challenging due to increased precipitation, wind, and potential early snowfall.

6. CAPITAL COST AND FUNDING

Estimated Capital Cost of the Undertaking

The total estimated capital cost for the construction and development of the five new trail segments is \$472,920 for Phase 1 (2025–2026). Additional funding will be sought for future phases leading up to 2029.

The estimated budget for Phase 1 includes:

Category	Year 1 (2025-26)	Year 2 (2026-27)	Total (Phase 1)
Labour Costs (7 seasonal employees)	\$133,920	\$133,920	\$267,840
Professional Services & Marketing	\$30,000	\$10,000	\$40,000
Materials & Signage (stone, wood, geotextile, tools, fuel, etc.)	\$55,040	\$55,040	\$110,080
Equipment Purchase & Rentals	\$45,000	\$10,000	\$55,000
Total Estimated Cost (Phase 1)	\$246,460	\$226,460	\$472,920

- Phase 2 (2027-28) and Phase 3 (2029) will require additional investment, with similar cost structures for trail expansion.

- Funding will support labour, materials, professional services, signage, marketing, and maintenance equipment.

Funding Sources & Grant Applications

This project is financially supported by multiple government agencies and organizations, with funding requests submitted to:

1. Atlantic Canada Opportunities Agency (ACOA)
 - Requested Contribution: \$307,398
 - Purpose: To cover a portion of labour costs, materials, and professional services.
2. Department of Industry, Energy, and Technology (IET) – Government of Newfoundland & Labrador
 - Requested Contribution: \$118,230
 - Purpose: To support labour costs and trail infrastructure development.
3. Other Supporters & Revenue Sources:
4. St. Anthony Basin Resources Inc. (SABRI) – Partner on trail initiatives, contributing funding to portions of trail work.
5. International Grenfell Association (IGA) – Previously supported GNTA's Cartreau Point Trail Project.
6. Municipal Contributions & Partnerships – GNTA is working with involved communities on funding initiatives and resource sharing.
7. GNTA Memberships & Merchandise Sales – Ongoing revenue generation to support trail maintenance & signage.

Potential Additional Funding & Financial Planning

- GNTA will explore additional federal and provincial funding programs, including Active NL grants, tourism development funds, and environmental conservation grants.
- Corporate sponsorships and public fundraising initiatives may be launched to cover trail expansion and long-term maintenance.

SIGNATURE



Ryan Patey

President, Great Northern Trail Association Inc.

Date: 13th May 2025