



Basic Impact Assessment Executive Summary

AltaLink 551L Transmission Line

Wildfire Mitigation Project in Banff National Park

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1.0 Project Description

1.1 Overview

AltaLink proposes wildfire risk mitigation on the 551L 69-kV transmission line (Banff 123S to Lake Louise 953S; ~57 km) within Banff National Park (BNP). The project combines:

- Vegetation management (danger tree removal/topping) across ~23 km of line (danger trees are dispersed along ~47 km of ROW; ~34.6 ha to be treated).
- Installation of covered conductor (“Tree Wire”) with overhead shield wire across ~10 km of high constraint segments to reduce ignition risk while retaining- adjacent screening vegetation.

Work is designed to meet the Parks Canada Directive on Impact Assessment (2019) and Section 82 of the Impact Assessment Act (IAA) via a Basic Impact Assessment (BIA), and to align with the Species at Risk Act (SARA), the Migratory Birds Regulations (2022), and BNP management direction.

1.2 Project Purpose and Rationale

- Post-rebuild assessments (2019–2024) identified the 551L corridor as predominately High-Risk Fire Area.
- Primary ignition pathway: tree contact or flashover leading to ground faults and sparking.
- Risk treatment: combine engineered protection (Tree Wire) in sensitive/high visibility/wildlife areas with the use of selective danger tree management elsewhere to reduce ignition likelihood while minimizing environmental and aesthetic effects.

1.3 Project Location

- Within the Banff and Lake Louise field units of BNP; ROW ~20 m nominal width with off ROW work required to remove danger trees and allow temporary access.
 - Access utilizes the existing trails from previous maintenance and the recent rebuild of the 551L transmission line. The Parks Canada Mannix Pit is the primary staging/laydown yard for the Project.
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1.4 Alternatives Considered

- Relocation/new ROW: not feasible in BNP given regulatory constraints.
 - Full underground: significantly higher cost, extensive/staged earthworks in steep/rocky terrain, longer outage restoration times in urgent repair situations.
 - Preferred: hybrid of targeted tree wire and danger tree removal to balance safety, environmental protection, visual impact, and cost.
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1.5 Design Related Mitigation

- Tree Wire structures sited to avoid streams/wetlands, unstable slopes, and visibility pinch points; shorter spans keep conductor below the average tree canopy and insulated conductors eliminate flashover and electrical sparking concerns from trees contacting the conductor.
 - Structure heights in visible areas are minimized (typical change -1.5 m to +2.7 m vs. existing).
 - Seasonal windows: all heavy work will occur between October to March, with winter (frozen conditions) for water crossings, logging, burning; frozen ground & snow cover to protect soils/hydrology and reduce weed spread.
 - Tree Wire used to retain screening vegetation along thin treed buffers near the Bow Valley Parkway, also improving public safety by reducing wildlife viewing pull-overs.
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1.6 Project Phases and Activities

1.6.1 Pre-Project Weed Treatment

- Annual treatment since 2016 continues under AltaLink's Integrated Pest Management Plan with a focus on Rank 1–2 non-native vegetation (e.g., oxeye daisy, tall buttercup, common toadflax) at accesses, laydowns, and previously disturbed sites.

1.6.2 Access Preparation

- Re-use existing accesses by developing snow roads (preferred); limited re-stripping of topsoil and cut/fill re-establishments only where necessary (targeted sites).
- Restrict traffic to essential vehicles; equipment arrives clean to prevent weed spread.

1.6.3 Waterbody Crossings

- 55 wetlands and up to 21 watercourses (15 distinct) potentially intersect access/ROW movements.
- Clear span bridges (access mats/wood/steel) for ~13 crossings; snow fills/bridges where suitable; no fording; Qualified Aquatic Environmental Specialist (QAES) oversight for install/use/removal; frozen conditions window.
- Remove snow fills before freshet; protect banks with mats or erosion and sediment control measures (ESC); avoid mature riparian tree removal.

1.6.4 Vegetation Management

- Danger trees (~45.8 ha modeled): ~34.6 ha to be removed/topped, ~11.2 ha retained within Tree Wire sections.
- Hand falling prioritized near riparian zones, steep slopes, and wildlife constraints; topping of tree in areas where ecological/aesthetic values warrant retention.
- Debris burning via forced air- burners in winter; topsoil stripped if burning on ground.

1.6.5 Tree Wire Construction

- Temporary bypass line built/energized; remove existing; install steel structures, tree wire and a shield wire.
- Foundations via auger/excavation or open barrel piles to reduce disturbance; wildlife safe capping and minimized duration between piling and structure set.

1.6.6 Reclamation

- Initiate promptly after construction in each section; spring–early summer preferred.
- Objectives: stabilize soils, restore hydrology, rebuild native communities, and control NNV. Methods: natural recovery (wet), sod salvage, live staking, engineered topsoil where needed, hydromulch, native seed/planting.
- Reclaimed areas monitored ≥3 years to established success criteria.

1.6.7 Operations and Maintenance

- Will be conducted under Pre-approved Routine Impact Assessment (PRIA) for AltaLink in BNP with standard mitigations and timing windows.
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1.7 Materials and Equipment

- Access: excavators, tracked carriers, plows, dump trucks, mats.
 - Vegetation: chainsaws, brush saws, processors/forwarders, skidder, bucket trucks/Nodwells.
 - Line work: digger/bucket trucks, cranes, augers, tensioner/puller, helicopter (select stringing).
 - Fuels/fluids secured in 110% containment; spill kits and trained crews onsite.
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1.8 Project Schedule

- 2026: BIA finalization and PCA approvals; mobilization/yard set-up; fall vegetation survey.
 - 2026-2027: Alberta Utilities Commission review and approval of the transmission Facility Application for the Tree Wire scope.
 - 2026–2029 (Oct–Mar annually): Vegetation management (all years); 2028–2029 Tree Wire construction.
 - 2026–2030: Reclamation & access rollback (rolling).
 - 2027–2033: Post-construction reclamation monitoring (≥3 years/site).
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2.0 Indigenous and Public Engagement

- Notification to Indigenous Nations, stakeholders, and the public is being undertaken with an opportunity for questions and comments on the project and draft BIA.
 - Comments and questions received will be considered to inform the final project and draft BIA.
 - Public notices for temporary road/trail closures and any planned power switching/outages will follow AltaLink standards.
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3.0 Valued Components (VCs)

3.1 Soils and Landforms

- VCs: native soils (structure, productivity, contaminant free) and stable slopes.

- Risks: compaction, rutting, topsoil admixing, erosion, and contamination from fuels.

3.2 Vegetation

- VCs: native plant communities, rare plants/communities, and NNV control.
- Rare plants recorded include limber pine, yellow sedge, western blue flag, male fern, smooth cliffbrake, Botrychium spp.

3.3 Wildlife

- VCs: ungulates (elk, moose, bighorn sheep), large carnivores (grizzly bear, wolf, cougar), mesocarnivores (marten), small mammals, bats (Endangered species), birds (raptors, owls, songbirds, waterfowl), and amphibians (western toad – Special Concern; Columbia spotted frog; wood frog).
- Key features: wildlife corridors (Fenlands–Indian Grounds, Norquay–Cascade, Whitehorn), TCH underpasses, dens, cavity trees (incl. PIWO nesting cavities protected year round), raptor platforms, and bat roost potential trees (175 locations; 10 clusters).

3.4 Aquatic and Hydrological Resources

- VCs: fish populations (incl. bull trout, Westslope cutthroat trout), fish habitat (substrate, cover, water quality), hydrologic regimes, and wetland function.
- Multiple watercourses with Critical Habitat (CH) intersect the corridor; >30 spawning sites documented in 2024 surveys.

3.5 Cultural Resources

- Archaeological Overview and Impact Assessments identified 47 sites within 20 m of footprint; several within ROW require monitoring or fencing/avoidance, with five sites needing site-specific mitigation.

3.6 Visitor Experience

- VCs: aesthetics/viewscales, facility/trail access, and public safety.
 - Visibility modeling & simulations indicate modest net increases in visible line/structures, mostly from vegetation management; Tree Wire helps retain buffers in thin-screen areas.
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4.0 Baseline, Effects Analysis, and Mitigation Measures for VCs

4.1 Soils and Landforms

Baseline: Thin montane topsoils (often 3–8 cm), sensitive peat wetlands, slopes with till/talus.

Effects: Compaction/rutting, erosion/sedimentation, topsoil admixing, contamination.

Mitigation:

- Frozen ground access, snow roads, matting; restrict wet-weather travel.
 - Topsoil strip/store/replace separately; windrow low piles; seed if stored >1 season.
 - ESC plans annually; spill prevention/response, containment trays.
- Residual: Localized, low magnitude, long term, irreversible in redisturbed cut/fill/access areas (soil productivity loss risk).

4.2 Vegetation

Baseline: 22 ELC types; conifer dominated forests; fens/seepages; rare plants present; notable limber pine recruitment along ROW; NNV concentrated at historic disturbances and along Bow Valley Parkway.

Effects: Loss/modification of canopy near cleared strips; potential damage to rare plants; NNV spread; short term understory disturbance; indirect fuel loading if slash unmanaged.

Mitigation:

- Frozen season- machine work; sod salvage in sensitive patches.
 - Riparian rules: within 0–5 m of HWM – hand work/topping by site specific approval; 5–30 m – hand felling only; no removal of shrubs/forbs/saplings <3 m within 30 m.
 - Flag/avoid rare plants; transplant sods where avoidance infeasible.
 - Topping preferred for high value Douglas fir, juniper, unique aspen stands; species-specific height retention to avoid mortality.
 - NNV program: pre-wash equipment, stake infestations, work on snow/mats, treat annually.
 - Prompt reclamation with native seed/planting; 3-year performance monitoring.
- Residual: Potential low magnitude, long-term increase in some NNV; otherwise low and localized.
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4.3 Wildlife

Baseline:

- Corridors & crossings: ROW intersects major BNP movement corridors and underpasses; several dens/cavity clusters/raptor platforms identified; secure grizzly habitat between structures 323–330.
- Bats: roost potential trees abundant; acoustic detections at 18–21 and 155–156.
- Amphibians: detections in 24/47 surveyed wetlands; western toad common.

Effects:

- Habitat loss/alteration: canopy reduction from danger tree works; potential loss of cavity/bat trees; short term understory loss in structure sites; amphibian overwintering/den disturbance risk.
- Movement: temporary displacement and potential widening where ROW parallels BVP/rail; sensitivity higher in remote/secure segments (e.g., 323–330).
- Survival: collision/entrapment risks (barrel piles), nest/roost disturbance, amphibian mortality at crossings, predator–prey visibility shifts, human–wildlife conflict if attractants unmanaged.

Mitigation:

- Adhere to Restricted Activity Periods (RAPs); complete Sections 6–7 before Hillsdale wolf closure.
- Pre-work bat surveys if October work intersects roost windows; defer if bats detected.
- Raptor/OWL surveys & buffers; permits required for PIWO cavity modification/relocation; relocate osprey platforms outside nesting period if affected.
- Flag/stake wildlife features (cavities, unique aspen, 5 m & 30 m riparian zones).
- Retain shrubs/forbs and limit traffic in movement features/secure habitat; vary topped heights for natural appearance.
- Barrel pile safeguards (full seals, minimized open duration, texture for egress; inspection before set).
- Food/garbage controls; reduced speeds; cover/fence excavations; burn woody debris promptly after wildlife checks.

Residual: Generally low magnitude, localized, long term, and reversible for most features; irreversible if any PIWO cavities are removed under permit or if barrel pile entrapment occurs (risk reduced through controls).

4.4 Aquatic and Hydrological Resources

Baseline: Multiple tributaries (e.g., Whiskey, Ranger, Silverton, Corral, Baker Creeks) with clear water, low nutrients; CH for bull trout and Westslope cutthroat present; >30 redds located in 2024. 55 wetlands on/adjacent to ROW.

Effects:

- Sediment loading from banks/approaches, structure excavations near CH, or bridge deck clearing; bank instability in steep cuts.
- Riparian alteration: reduced shading/input where canopy >10% close to HWM (notably Silverton Creek east bank).
- Flow/fish passage risks from snow fills if not removed pre-freshet.
- Deleterious substances: hydrocarbons/herbicide drift; pathogen/weed transfer on equipment.
- Wetlands: peat rutting/compaction if not fully frozen; minor permanent habitat loss where new structures placed.

Mitigation:

- DFO Project Review and permits as required for CH/within 30 m of HWM.
- Frozen season works; clear span bridges preferred; no fording; QAES on site.
- Annual ESC plans (biodegradable measures; prompt stabilization; monitor post events).
- Riparian planting (e.g., willow) where canopy loss + sparse understory (e.g., Silverton).
- No equipment in water; 30 m setbacks for fueling/maintenance; 110% containment; spill readiness.
- Remove snow fills before freshet; inspect/maintain crossings; use mats on soft approaches.

Residual: Localized, low magnitude and reversible effects expected; long term, low habitat reduction where structures in wetlands are permanent.

4.5 Cultural Resources

Baseline/Effects: Surface and subsurface archaeological resources occur along portions of the ROW. Risks include rutting/compaction, structure excavation impacts, and accidental disturbance of features.

Mitigation:

- Flag/fence sensitive sites during active work; limit traffic to snow roads in frozen conditions.

- Archaeological monitoring for excavations near select sites (e.g., 68R, 2390R, 24R, 2391R); avoidance fencing for 120R wooden surface feature during tree work.
- Accidental Finds & Change of Scope Protocols in force with Parks Canada.

Residual: Low potential if mitigations followed; any damage would be moderate magnitude and irreversible.

4.6 Visitor Experience

4.6.1 Aesthetics/Visibility

- Modeled increase in visible line length: TCH +455 m, BVP +630 m (distributed segments); slight increase in visible structures (TCH +3; BVP +1 in vegetation sections; additional structures in Tree Wire sections but with retained buffers).
- Photo simulations at Mt. Norquay Road, Muleshoe, Hillsdale Meadows, Castle Viewpoint, Johnston Canyon CG, Castle Junction, Lake Louise illustrate minor, context appropriate changes; Tree Wire avoids widespread clearing in thin buffer zones.

Mitigation: Minimize height increases; use Tree Wire to retain screens; vary topped heights; prefer individual rather than block topping; maintain conductor below average canopy.

4.6.2 Public Facilities and Services

- Short intermittent closures (typically $\leq 15\text{--}30$ min) at road crossings for stringing; winter timing limits facility/trail use conflicts.
- Coordinate with Parks for traffic accommodation and event timing (e.g., Lake Louise Loppet).

4.6.3 Public Safety

- Net positive through ignition risk reduction and improved reliability of sole transmission supply west of Banff.
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4.7 Indirect Effects

- Short-term access limitations for Indigenous users and park visitors during winter works; avoided where feasible and communicated in advance.

- Long-term benefits: reduced wildfire risk, sustained power reliability supporting visitor experience and businesses; with full reclamation, negligible lasting viewscape impact.
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5.0 Surveillance Requirements

- Parks Canada ESO present at start-up and as required; independent Environmental Monitor (EM) on site during key activities with weekly reporting.
 - QAES required for watercourse crossing installation/operation/removal and site condition checks; compliance with Code of Practice schedules.
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6.0 Monitoring Requirements

- Reclamation monitoring each spring (NNV) and late summer (vegetation performance) for ≥3 years per site against established criteria (drainage/erosion stability; native cover/structure; litter; weed thresholds).
 - Adaptive management: additional ESC, re-seeding/planting, soil remediation (e.g., ripping), and targeted weed control as needed.
 - Crossing and bank stabilization post event inspections until vegetation establishes.
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