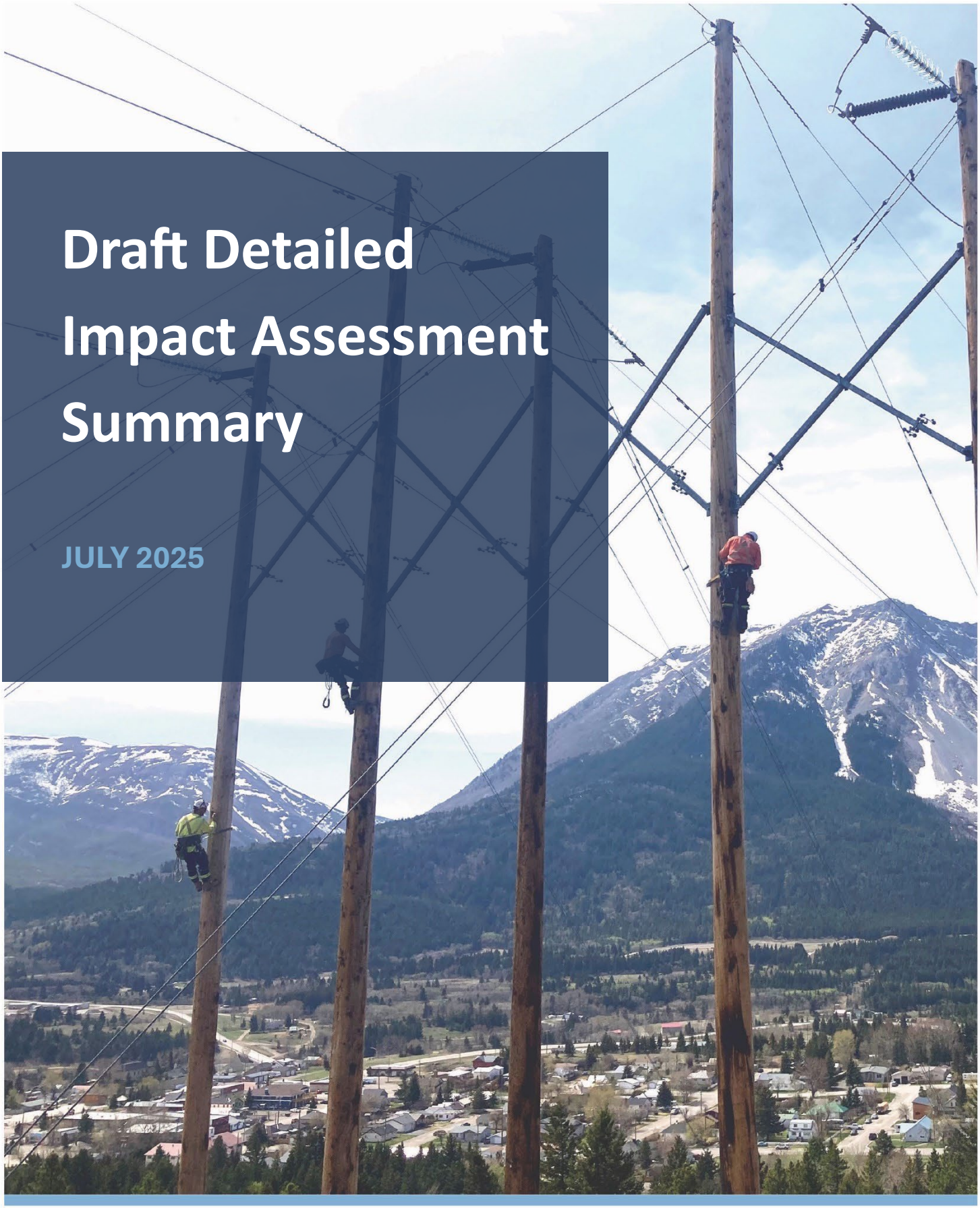
Draft Detailed Impact Assessment Summary

JULY 2025



ALTALINK

Sustainable Electricity Leader

Chef de file en matière d'électricité durable

Contents

Introduction

AltaLink Management Ltd. (AltaLink) owns and operates high voltage transmission facilities within Banff National Park (BNP). The 54L transmission line (54L) is the only source of power for BNP, Sunshine Ski Area and Lake Louise. Any outage of 54L results in the loss of power to these major tourist areas. The transmission line is nearing its end of life and AltaLink is proposing to rebuild the line beginning in 2026. AltaLink has also observed an increase in tree mortality and additional wildfire fuel along some portions of the line. This has increased the wildfire and public safety risk in these high use tourist areas. AltaLink proposes to mitigate these risks through removal of trees adjacent to 54L that are tall enough to fall on the line. The line will be rebuilt using weathering steel structures and AltaLink will replace the existing conductor. The Project will increase reliability and mitigate wildfire ignition risk by reducing the probability of asset failures and vegetation contacts. The rebuilt line will meet AltaLink's current minimum design standards and will comply with the current electrical transmission codes.

AltaLink submitted a project description to Parks Canada in March 2021 for the proposed 54L transmission rebuild (the Project). In November 2022, Parks Canada issued an Impact Assessment pathway decision and Terms of Reference (TOR) directing AltaLink to complete a Detailed Impact Assessment (DIA). The TOR for the DIA outlined the scope and requirements for preparing the DIA. AltaLink has completed a draft version of the DIA that evaluates the potential effects of the Project on Valued Components (VCs), which are key ecological and cultural resources that are characteristic of the environment, unique or outstanding features, and/or important to maintain visitor experience objectives.

Regulatory considerations

The Parks Canada Directive on Impact Assessment (2019) outlines the legislative and policy framework and accountabilities relevant to impact assessment of proposed projects within National Parks under the *Impact Assessment Act* (IAA).

Under the directive, projects that are deemed by Parks Canada to likely cause adverse effects to natural or cultural resources, or characteristics of the environment important to key visitor experience objectives, are assigned to one of four IA processes: Alternate Process, Best Management Practices, Basic Impact Assessment (BIA) or Detailed Impact Assessment (DIA).

After reviewing the project description provided by AltaLink, Parks Canada determined that the proposed Project is subject to a DIA under the IAA. Parks Canada provided AltaLink with a detailed scope for the DIA in the TOR in November 2022 (Parks Canada 2022b). For this Project, AltaLink is the proponent and Parks Canada, as a federal agency, is the Responsible Authority for the impact assessment. Parks Canada is responsible for determining the significance of any potential impacts that could occur as a result of this Project.

The Project is also being undertaken considering the *Canada National Parks Act*, *Fisheries Act*, *Migratory Birds Convention Act*, *Species at Risk Act*, *2022 Banff National Park of Canada Management Plan (BNPMP),* as well as other Acts and regulations.

Land use

AltaLink has a Utility Right-of-Way Agreement (ROW Agreement) with the federal government for electric transmission services in BNP from the east park boundary to the Banff 123S substation, which is located within the Town of Banff. In the ROW Agreement AltaLink commits to adhere to environmental protection measures and mitigations provided in the BNPMP, the Model Class Screening Report and any other impact assessment process as required by the IAA.

Access

There are 21 ROW access routes to the transmission line from the permanent roads and highways which are not on ROW. Twenty of these accesses are existing, and one is a new proposed route which is not on the ROW. For accesses that require highway lane closures or a temporary pause in traffic, a traffic accommodation strategy will be submitted to Parks Canada for approval before construction. All access routes are included in the assessment of the Project.

There are six proposed staging areas and material yards for this Project located within close proximity to the line or in locations suitable to support Project activities. The main staging yard and field site office will be established at the Mannix Pit with additional temporary yards or staging areas at Carrot Creek, Johnson Lake Parking Lot, Tunnel Mountain Campground, the Banff Industrial area and the Cascade Pit. AltaLink will maintain the existing fence at the Mannix Pit while it is being used. The other staging areas will not be fenced.

Assessment approach

AltaLink retained a consultant who specializes in impact assessment within BNP to complete the draft DIA. Using existing data and reports provided by Parks Canada, and supplemented by additional field surveys and background studies, the consultant completed a draft DIA assessing Valued Components (VC) affected by the Project.

Study area

For the purposes of this DIA, the Project Study area (PSA) encompasses the existing 54L transmission line ROW between the east park boundary and the Banff 123S substation within the town of Banff. The ROW ranges from approximately 20 m to 30 m wide. The Local Study Area (LSA) is the PSA plus a 100 m buffer on both sides of the PSA to encompass potential effects of this Project on wildlife and aquatic resources. This results in an LSA that is up to 220 m wide and centered on the transmission line.

The Regional Study Area (RSA) is the valley bottom terrain in the montane and lower subalpine ecoregions below 1800 m within the Bow Valley from the east park boundary to the Town of Banff industrial area with the addition of 2 km on each end, excluding the Lake Minnewanka Reservoir and Spray River (Figure 2-1). The RSA encompasses the town of Banff and most of the functional wildlife movement corridors surrounding the town and the PSA. Cumulative effects to VCs were assessed at the scale of the RSA.

Species at Risk

In the RSA there are several species-at-risk listed under *Schedule 1* of *The Species at Risk Act* that could potentially be affected by the Project. These species are identified in the baseline site condition below. In addition, the grizzly bear is listed as a species of *Special Concern* (Government of Canada 2023a), though this species is not listed under *Schedule 1* of SARA. Whitebark pine occurs within the RSA, but this species is primarily a high-elevation species occurring at treeline with no known records of whitebark pine in the ACIMS database below 1790 m in the RSA, therefore, the effects to this species were not considered. Some of listed species have designated Critical Habitat (CH) within the LSA and RSA. Effects and mitigations measures for species at risk are addressed within individual VC sections.

Baseline site condition

Air	The ambient air quality along the ROW is the same as that of the surrounding undisturbed land. There is potential for low levels of particulates and pollutants, mostly originating from vehicles travelling along the nearby roads that intersect the ROW, including the Trans-Canada Highway (TCH), roads in the Tunnel Mountain Campground and the Banff Industrial Park. During the wildfire season, levels of particulate matter (PM10) from smoke occasionally exceed the air quality thresholds for this pollutant.
Landform and soils	The 54L ROW is in the montane ecoregion of BNP under the Ecological Land Classification for the park. In general, the upland terrace from spans 200-242 in the PT1 ecosite has well drained coarse soils with low to moderate susceptibility to compaction. The exception is the large wetlands at spans 207-208, 211-212 and 235-236, which have organic soils on top of finely textured silty clay. The Carrot Creek alluvial plain, Morrison Coulee, and the Cascade Creek floodplains have a matrix of very coarse soils with pockets of fines commonly associated with floodplains in mountain streams. The Girouard Creek floodplain at spans 243-246 and 250-251 has recent deposition of silt and sand overtop of the existing fine textured soil and no coarse material near the surface. The Tunnel Mountain Campground has fine textured soils and appears to be previously disturbed with evident compaction and rutting near the structures. The historical level floodplain of 40 Mile Creek from spans 298-300 has poorly drained soils with fine textured soils and evidence of periodic inundation.
Vegetation, ecosites and communities	In total, there were 14 distinct vegetation community types identified in the nine ecosites in the LSA and 13 in the PSA. The ROW is dominated by four

	vegetation communities, which make up over 80 percent of the upland areas. Two closed lodgepole pine forest communities, C6 and C19, and closed C1 stands dominated by Douglas fir occur in the upland bench areas. Open O3 white spruce forest communities occur in the floodplain areas near Girouard Creek and Cascade Creek. The ROW is dominated by structural stages 2-4 with both natural fire/ disturbance origin stands and modified logged areas within the Carrot Creek fuel break (2L and 3L). The adjacent forests outside the ROW in the LSA are 50 percent mature structural stage 6, with another 25 percent in structural stage 3 in the 2003 Carrot Creek Wildfire area.
Special vegetation resources	In BNP, there are several plant species and vegetation communities that are considered special resources and may require additional mitigation in order to prevent large scale loss or damage to these species. Whitebark pine (*Pinus albicualis*) is a *Species at Risk Act* listed species that occurs primarily in high elevation sites near treeline in BNP. The 54L ROW and LSA do not occur in whitebark pine core or regeneration habitat. Limber pine (*Pinus flexilis*) is another rare five needle pine that is listed as Endangered in Alberta (reference). Limber pine was located on the ROW. Douglas fir is not a rare species in BNP, but this species is at the northern end of its range and therefore mature, large diameter trees are considered a special resource in the park (Achuff 1986). Douglas fir makes up a component of the stands at the east end of the ROW near the park boundary. Rocky Mountain juniper (*Juniperus scopulorum*) is another identified special resource in the park (Achuff 1986). This juniper species was recorded in a few ecosites along the ROW.
Species richness and diversity	Species richness in the open right-of-way (ROW) is 1.5 to 2.5 times higher than in the adjacent mature forest. Only about 10% of plant species are shared between the two habitat types. Open ROWs that support native plant communities enhance regional plant diversity across the Bow Valley Park landscape. This increase in plant diversity contributes to greater habitat diversity for wildlife within the montane ecoregion.
Rare plants	Occurrences of limber pine (*Pinus flexilis*) and Tunux's moonwort (*Botrychium tunux*) were identified within the ROW.
Invasive non-native plants	26 species of non-native plants were recorded in the PSA. Of these 26 species, 14 have a Parks Canada rank of 1 (Very Invasive) or 2 (Invasive) and most are rated as Noxious or Prohibited Noxious under the Alberta *Weed Control Act* (2010) (Table 5-5). Non-Native Vegetation (NNV) infestations are concentrated in areas that have been previously disturbed and high public use areas, including the accesses onto the ROW, the Carrot Creek fuel break, Johnson Lake area, the Tunnel Mountain Campground and the Banff industrial Park.

Wildlife	The 54L ROW is within a portion of the Fairholme-Carrot Creek Benchlands ESS (east park boundary to Johnson Lake), and legally declared wilderness area, consisting of the largest remaining intact block of secure montane wildlife habitat in the park. Several wildlife underpasses in the RSA (n = 8) parallel the 54L at the TCH and are critical for landscape connectivity in the area. Several animal movement routes intercept the 54L in proximity to these underpasses at Carrot Creek, Morrison Coulee and Girouard Creek. The 54L ROW is situated within three important wildlife corridors, including: Penstock (between Two Jack Canal and the TCH); Fenlands-Indian Grounds (between Banff townsite/Tunnel Mountain and the TCH); and Norquay-Cascade. Species-at-Risk listed under Schedule 1 of the federal SARA that occur in the RSA and therefore have the potential to interact with the project include: • **Endangered:** Little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*), black swift (*Cypseloides niger*), gypsy cuckoo bumblebee (*Bombus bohemicus*). • **Threatened:** Bank swallow (*Riparia riparia*), barn swallow (*Hirundo rustica*), bobolink (*Dolichonyx oryzivorus*), Lewis's woodpecker (*Melanerpes lewis*), westslope cutthroat trout (AB population; *Oncorhynchus clarkii lewisi*), bull trout (Saskatchewan-Nelson Rivers population; *Salvelinus confluentus*), western bumblebee (*Bombus occidentalis*) • **Special concern:** Grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), common nighthawk (*Chordeiles minor*), evening grosbeak (*Coccothraustes vespertinus),* Harris' sparrow *(Zonotrichia querula*), horned grebe (*Podiceps auritus*), olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), western grebe (*Aechmophorus occidentalis*), red-necked phalarope (*Phalaropus fulicarius*), western toad (calling population; *Anaxyrus boreas*), yellow-banded bumblebee (*Bombus terricola*)
Aquatics: Ground Water	Ground water levels along the ROW range from 3.1 m to 10.2 m below the existing ground surface and some areas are dry down to a depth of 6.4m. Areas with higher ground water levels (i.e. structures 303 to 313) could result in higher magnitude impacts during project activities which may be more challenging to mitigate.

	In certain areas of the PSA, particularly within the town of Banff, groundwater may be contaminated and/or exceed CCME water quality thresholds for the protection of aquatic life.
Aquatics: Surface Water	The 54L ROW crosses six tributaries to the Bow River that range from narrow ephemeral streams (that have not had flow for 10+ years) to wide perennial watercourses and flood plains including Carrot Creek, Girouard Creek, Anthracite Creek, one unnamed creek, Cascade Creek and Whiskey Creek. Four of these watercourses (Girouard Creek, Anthracite Creek, the unnamed creek, and Cascade Creek) must be crossed to complete work activities. Out of the six channels that the 54L ROW crosses, five have been classified as CH for Bull Trout (BLTR) excluding the unnamed creek at strs 267-268. Whiskey Creek west of Banff substation is classified as CH for Westslope cutthroat trout (WSCT). WSCT have recently been reintroduced into Cascade Creek (2024); as such, Parks Canada treats Cascade Creek as CH for this species with respect to level of protection.
Aquatics: Wetlands	There are six wetlands on or adjacent to the 54L ROW; four of these are large marshes or fens and two are very small artificially created or artifact wetlands.

The effects of the project on the VCs were evaluated using a set of criteria outlined by the Impact Assessment Agency and further refined for this project. The VC effects, mitigation measures and residual effects are outlined below.

Air quality

The VC for air quality is clean air with all compounds that contribute to poor air below the established thresholds that can negatively affect health outcomes for humans and wildlife.

Potential effects and mitigation measures

Potential effect	**Mitigation measures**
Smoke from vegetation debris burning	- Burn during good venting conditions in winter - Allow debris to dry before burning - Burn in forced air burner
Emissions from machinery and vehicles	- Ensure emissions control systems are functional on vehicles and machinery - Minimize idling of vehicles

Residual effects

The impacts of smoke from debris burning and emissions from equipment, machinery, vehicles and smoke will be low, negative, intermittent, localized, short term in duration and irreversible.

Topography and soils

The VC for soil is native soil that has all the characteristics to support good vegetation growth, including native soil structure and biota.

Effects and mitigation measures

Potential effect	Key mitigation measures
Scalping, compaction and rutting of native soil	- Use of low ground pressure machines - Work in frozen conditions on hard snow roads, where possible - Use matting to protect surface when working on unfrozen or soft ground - Use essential machinery on ROW only, minimize trips and travel to site using UTVs when possible
Erosion of soils	- Work in frozen conditions, where possible and replace topsoil on sites before spring thaw - Keep topsoil and subsoil piles “rough and loose” - Make annual ESC plan and install ESC measures on exposed soils on slopes following construction
Spread of NNV	- Ensure machines and vehicles arrive on site clean and free of soil
Contamination of soil (pre-existing and during construction)	- Complete Phase 1 Environmental Site Assessment (ESA) <100 m of known contamination - Test soil for contamination prior to disposing at an approved facility - Implement Parks Canada approved Spill Response Plan - Carry spill kits onsite and train all workers in their use - Store all deleterious substances in 110 percent containment - Clean up spills immediately and dispose of waste properly outside the park
Loss or admixing of native topsoil	- Strip and stockpile native soil separately from subsoil and replace after construction - Store native topsoil uncovered in windrows less than 1.5 m high to maintain biological activity in piles - If topsoil stored through growing season, seed piles with native grass seed
Dust during dry conditions	- Provide dust control (water spraying), as required, during construction

Residual effects

If mitigation described is implemented, there is a low probability that native topsoil could be affected by the Project. Topsoil is thin (3-8 cm) in most ecosites in the mountains, and therefore challenging to avoid admixing with subsoil during stripping, handling and replacement. This could lead to overall lower productivity of soil in some areas and reduced growth and vigour of vegetation in reclaimed areas. The residual effects of the Project on soil are expected to be negative, low magnitude, localized, occur once, be long term and irreversible.

Vegetation

The VCs for vegetation are healthy native plant communities that stabilize soils and filter runoff, and are free of invasive plant species. Rare plants and rare plant communities are preserved and are part of the landscape level plant diversity in the park.

Effects and mitigation measures

Potential Effect	Mitigation Measures
Loss/ alteration of native plant communities	- Minimize disturbance size for structure sites, and cut and fills - Travel on hard snow roads, where possible, to minimize vegetation disturbance - Reclaim ROW with native plants (including shrubs) in spring following construction
Increase in diversity of vegetation communities on ROW	- None required
Loss of Douglas fir, Rocky Mtn juniper	- Minimize removal of large diameter Douglas fir - Avoid juniper removal
Loss or damage to rare plant populations	- Mark plants and avoid these areas with machinery and vehicles
Increased fuel loads along ROW	- Burn tree crowns and other fine fuels produced as a result of tree clearing
Increased cover and extent of invasive non-native plants	- Control NNV prior to Project, if possible - Minimize ground disturbance with machinery, including cut and fill sites - Clean equipment prior to arrival in the park and after working in heavily infested areas on the ROW - Mark and avoid existing NNV patches on ROW. If plants cannot be avoided, work on snow cover or lay access mats over non-native plant patches.

Residual effects

Residual impacts on vegetation VCs are anticipated to be low. The Project will result in the loss of mature trees along the edges of the ROW; however, this impact is not permanent as trees will re-establish in these areas over time. The Project could result in an increase of non-native plant cover on the ROW after all the mitigation measures have been applied due to the aggressive nature of these plants and the

difficulty in eradicating established populations. There is very low probability that NNV would invade undisturbed native plant communities. If all mitigation outlined for vegetation is implemented, the Project could cause an incremental localized increase in NNV plant infestations on the ROW. The residual effect to vegetation is expected to be negative, low magnitude, localized, intermittent, short term and reversible.

Wildlife

Ten wildlife species and/or groups were selected as VCs, including elk, sheep, grizzly bear, wolf, cougar, marten, small mammals, bats, avian species (songbirds, raptors and owls) and amphibians. The section assesses the predicted effects of the project on the selected VCs pertaining to the five major impacts to wildlife from localized PSA and LSA scales, and in some cases (i.e., larger mammals), at the RSA scale.

Effects and mitigation measures

Elk, sheep, grizzly bear, wolf, cougar, marten, small mammal and birds	
Potential effect	**Mitigation measures**
Direct loss and alteration of habitat	- Avoid use of access 1c/3c - Top/hand-fall danger trees within wildlife movement features and 5 m and 30 m riparian areas; consult Environmental Surveillance Officer (ESO)/Environmental Monitor (EM) to determine if hand-fall or topping is preferred - Top cavity trees; avoid any alteration to Pileated Woodpecker (PIWO) nest cavities - Retain shrub/forb/saplings, where possible - Replace raptor stick nests on new structures or platforms - Reclaim as soon as possible in each section - Conduct Pileated Woodpecker nesting cavity survey prior to falling; apply for the appropriate permits if required to remove or relocate the cavity
Indirect loss (sensory disturbance)	- Adhere to restricted activity periods, seasonal wildlife closures; when not possible, conduct surveys and adhere to buffers. - Allow wildlife to passively disperse. - Work outside of crepuscular hours: 1 hour after sunrise to 1 hour before sunset.
Obstruction to Movement	- Adhere to restricted activity periods. - Elk calving activity from May 1 to June 30 - Elk rut during August and September - Bighorn sheep lambing from May 1 to June 30 - Bighorn sheep winter foraging from January 1 to April 30 - Grizzly bear hypophagia (low food intake) from May 1 to June 30 (weather dependent) - Grizzly bear hyperphagia (high food intake) August 1 to September 30 (berry dependent) - Wolf denning from April 1 to July 30

	- Songbird nesting from April 1 to August 31 - Raptor breeding/nesting from March to early September - Owl breeding nesting from February 15 to May 15
Direct mortality	- Reduce speeds - Work on frozen ground with snow cover - Work on frozen ground and snow cover outside of bird window - Devise and test method to effectively seal holes in piles, minimize time between steel pile and structure installations; EM to inspect each pile prior to structure installation
Indirect mortality	- Store attractants in vehicles, remove garbage - Do not plant palatable species around human use areas
Bats	
Direct loss and alteration	- None
Indirect loss (sensory disturbance)	- Work during crepuscular hours: 1 hour after sunrise to 1 hour before sunset
Obstruction to movement	- N/A
Direct mortality	- Conduct ultrasonic bat surveys prior to tree removal; postpone tree removal if bats are detected during bat roosting April 15 to October 15
Indirect mortality	- Work during crepuscular hours: 1 hour after sunrise to 1 hour before sunset and avoid roosting season
Amphibians	
Direct loss and alteration	- Top or hand-fall only, within 5 m of wetlands - Work on hard snow roads near wetlands
Indirect loss (sensory disturbance)	- Avoid working during crepuscular hours, restrict work to 1 hour after sunrise to 1 hour before sunset.
Obstruction to movement	- Adhere to restricted activity periods - Amphibian breeding and migration April 1 to May 30 and fall migration in September. - Allow wildlife to passively disperse
Direct mortality	- Work on frozen ground with snow cover - Carry spill kits - Devise and test method to effectively seal holes in piles; minimize time between steel pile and structure installations; EM to inspect each pile prior to structure install
Indirect mortality	- Avoid sensitive amphibian breeding and migration periods - Top or hand-fall only within 5 m of wetlands; consult ESO/EM

Residual effects

If all the mitigation measures outlined above are implemented, there should be minimal remaining residual effects to wildlife VCs from the proposed line construction and vegetation management.

The loss of mature trees will remove habitat for various species, e.g., birds, bats, prey species, carnivores; however, the understory species are expected to thrive in the absence of the canopy cover over the long-term (5-10 years) and bat habitat trees occur in alternate locations along the ROW. This impact is considered both negative (removing overstory habitat) and positive (increasing understory habitat), low in magnitude, localized, long-term, occurs once and reversible.

Danger trees surrounding known bird cavities will be removed and it is unknown if the removal of neighbouring trees may lessen the likelihood of cavity reuse due to the lack of surrounding protective cover. Residual effects are expected to be negative, low in magnitude, localized, long-term, occur once and reversible (irreversible if destroying or relocating the PIWO cavities).

Topping cavity trees, rather than removing, will preserve these important habitat features on the landscape in the short-term; however, it is expected that the decay process will accelerate once the trees are topped, ultimately shortening the lifespan of the trees/cavities. Topping aspen trees is expected to lead to abundant suckering from the root systems, which will lead to dense thickets of aspen saplings in the short term and more cavity trees in the long-term. Residual effects are expected to be negative, low in magnitude, localized, long-term, occur once and irreversible (for existing cavity trees).

Excavations in or near wetlands, as well as use of barrel piles, may result in residual effects to amphibian and small mammal survival. Mortality of amphibians is expected to be low in magnitude given winter/frozen work conditions. If the capping method on the barrel piles does not work effectively as observed during the 551L Rebuild, there will be moderate magnitude residual effects due to entrapment/mortality. Furthermore, if barrel piles are left permanently in wetlands, there is potential for rust from the piles to leach into the water, which could adversely affect growth and survival for amphibian and fish species, leading to moderate effects. These effects are expected to be localized, short-to-medium-term, occur once and irreversible.

Hydrology and aquatic resources

The VCs for hydrology and aquatic resources are: continued natural hydrological flows and functions; high quality fish habitat that supports healthy native fish populations; and continued presence of wetlands that provide a full range of natural hydrological and ecological functions.

Effects and mitigation measures

Hydrology	
Potential effect	**Mitigation measures**
Disruption of hydrological regime	- Avoid use of heavy machinery within 5 m of creeks - Keep root systems intact in riparian areas; top or hand-fall danger trees within 30 m of High Water Mark (HWM); consult ESO/EM - Work in riparian areas in frozen conditions - Use access mats to protect banks when installing temporary crossing structures or fording - Avoid any disturbance below the HWM for clear-span bridge installation - Follow *DFO Code of Practice for Fording* and *In-Water Site Isolation* - Provide detailed construction plans for stream crossings for PCA review; adhere to mitigations in annual Environmental Protection Plans (EPP's).
Water quality (spills/leaks, pre-existing contamination)	- Avoid use of heavy machinery within 5 m of creeks; minimize fording of watercourse - Keep staging areas <30 m from waterbodies; keep equipment regularly maintained
Fish and fish habitat	
Sediment loading	- Maintain erosion and sediment control (ESC) on slopes above creeks - Pile debris away from creeks on flat ground; stockpile topsoil outside floodplain and cover with geotextile - Keep root systems intact in riparian area; top or hand-fall danger trees within 5 m of HWM after obtaining approvals from ESO/EM; no machine access within 5 m HWM; hand-fall 5- 30 m. - Design bridges to direct run-off into vegetated area and clean off bridge deck away from surface water - Avoid sensitive timing windows when installing bridges and monitor turbidity - Install rubber access mats on south approach slope of Anthracite Creek before fording - Follow *DFO Code of Practice for Fording* and *In-Water Site Isolation* and any mitigations from DFO review - Implement a Water Management Plan, including fish salvage and water quality monitoring for in-stream activities - Salvage structures near water by cutting off at base rather than pulling out of ground
Alteration/ removal of fish habitat (bank, riparian)	- Hand-fall/top within 5 m of HWM after obtaining approvals from ESO/EM; no machine access within 5 m HWM; hand-fall 5 to 30 m. - Work in riparian areas during frozen conditions - If topping pine trees (i.e., removing canopy) or removing trees within 5 m of HWM, consider planting taller shrub species >1 m to provide shade habitat. - When working within 30 m of water, follow all relevant DFO mitigations (including *Measures to Protect Fish and Fish Habitat* and relevant *Code of Practice*); if not possible, Parks Canada will coordinate review with

	DFO and determine SARA permit requirements. DFO review is required prior to falling riparian vegetation and installing the crossing structures at Anthracite and Cascade Creeks which are both listed as CH for BLTR; Parks Canada also considers Cascade Creek CH for WSCT with respect to level of protection. Parks Canada's approval under the SARA is required if an activity affects an aquatic species at risk.
Deleterious substances (streams and wetlands)	- Avoid storing deleterious substances <30 m from waterbodies, sewer and sanitary systems (within Town of Banff) - Keep staging and fuel areas >30 m from waterbodies; keep equipment regularly maintained - Supply vehicles with spill kits - Avoid deleterious substances from entering water when cleaning off bridge decks - Follow herbicide labels for setback distances from waterbodies (Material Safety Data Sheets (MSDS), Integrated Pest Management Plan (IPMP))
Mortality/harm (direct)	- Limit fording with low pressure vehicle; avoid known spawning areas
Mortality/harm (indirect)	- Hand-fall/top within 5 m of HWM and consult with ESO/EM; no machine access within 5 m of HWM; hand-fall 5 to 30 m of HWM - Avoid deleterious substances and siltation within watercourse - If topping pine trees (i.e., removing canopy) or removing trees within 5 m of HWM, consider planting taller shrub species >1 m to provide cover habitat
Aquatic invasive species	- Follow decontamination protocol for the prevention of Whirling Disease
Wetlands	
Alteration of hydrology and water quality	- Hand-fall/top within 5 m of HWM and consult with ESO/EM; no machine access within 5 m of HWM; hand-fall 5 to 30 m of HWM (and retain shrubs)
Compaction and rutting	- Work in wetlands during frozen conditions
Deleterious substances	- Avoid storing deleterious substances <30 m from waterbodies, sewer and sanitary systems (within Town of Banff) - Keep staging and fuel areas >30 m from waterbodies; keep equipment regularly maintained - Supply vehicles with spill kits - Avoid deleterious substances from entering water when cleaning off bridge decks - Follow herbicide labels for setback distances from waterbodies (MSDS, IPMP)

Residual effects

Provided that all the mitigations described in this document are employed, residual effects of the proposed Project on aquatic and hydrology VCs are anticipated to be negligible-to-low.

Due to the proximity of some structures (temporary and permanent) within 5 m of creek banks of Critical Habitat, as well as bridge installations and frequent crossings on Johnson and Cascade Creeks, there may be introductions of small amounts of sediment and/or vegetation debris into watercourses, as well as potential fuel spills and/or leaks. The permanent bridge installation at Johnson's Outlet is considered a net positive residual effect.

In addition, the immediate loss of large over-story vegetation within 5 m of the HWM (through topping or hand-removal of danger trees) will temporarily affect fish, including eggs and habitat until the reclaimed line-compatible vegetation is fully grown (i.e., up to 10 years from the time of reclamation). These potential residual effects to fish and fish habitat are expected to be localized (confined to danger tree areas and a short distance downstream), medium-to-long-term (~10 years after construction), very low in magnitude and reversible.

Removal or topping trees along the edges of wetlands may result in a negative effect to the water table (potential to increase or decrease depending on how much water the trees at the edge of the wetland take up), and/or habitat in the wetland (loss of shade, drawdown of water, over-wintering upland amphibian habitat). These effects are expected to gradually lessen over time as trees re-establish in riparian areas at the edge of the wetlands. This effect is expected to be negative and negligible in magnitude as there are very few danger trees, continuous, long-term and reversible.

In addition, installing structures in wetlands (i.e., four bypass structures and one mainline structure) will reduce available habitat for amphibians, may cause mortality to over-wintering amphibians, and cause sedimentation during winter construction. This effect is expected to be negative, very low in magnitude, continuous, long-term and irreversible.

Cultural resources

Archaeological resource VCs for this Project include previously identified archaeological resources and currently unidentified archaeological resources.

Effects and mitigation measures

Potential effect	Mitigation measures
Loss or degradation of archaeological resources	- Follow site specific mitigation to avoid archaeological sites - Follow AltaLink Heritage Resource Stop Work and Parks Canada Accidental Finds Protocol - Minimize ground disturbance on ROW
Identification of previously unknown archaeological resources	- Follow AltaLink Stop Work Procedure and the Parks Canada Accidental Finds and Change of Scope Protocol

Residual effects

If mitigation to protect cultural resources is applied, there is low potential for loss or damage to archaeological resources as part of this Project. This potential residual effect is negative, variable in magnitude, localized, occurs once, is long term in duration and irreversible.

The Project represents a moderate to high potential for the identification and preservation of archaeological resources that would otherwise not receive assessment. The potential increase in knowledge regarding the culture history of BNP is positive, moderate in magnitude, localized, occurs once, is long term in duration and irreversible.

Aesthetics

The VC for aesthetics is retention or improvement of existing viewscapes.

Effects and mitigations

Potential effect	Mitigation
Increased visibility of the line and transmission structures from various viewpoints, day use areas and campgrounds	- Engineered design of the line minimizes height and number of structures - Optimizing location of structures during engineering to reduce visibility at Johnson outlet Day Use area.

Residual effects

The existing 54L and ROW has been in place for many decades and is a long-standing infrastructure component on the landscape. Based on the proposed design and mitigation measures, there are expected to be some negative long-term impact on aesthetics due to the Project. Key locations identified for visibility impacts include: Johnson Lake; Tunnel Mountain Campground; and Tunnel Mountain (west) bench above Banff Ave.

The removal of danger trees will reduce visual screening of the 54L transmission line and will increase the cleared width of the ROW. The initial visual impacts of vegetation removal, construction disturbance and new structures will fade with time due to vegetation regrowth and the weathering of materials and structures.

Public safety

The VC for public safety is maintaining a condition that prevents the ignition of wildfires and minimizes the chance for extended power outages.

Effects and mitigations

Potential effect	Mitigation
Trees falling on the line resulting in the ignition of wildfire or causing an outage or hazardous situation	- Removal of trees that can fall on the transmission line - Increased structure height - Using steel structures to provide structural resilience in the event of wildfire
Public safety risk during work activities	- Close trails along the ROW to the public during work activities - Provide signage to alert the public of active work occurring

Residual effects

If the mitigation for public safety is applied, the 54L rebuild will have a net positive effect on public safety by reducing the risk of wildfire ignitions on the transmission line.

Facilities and services

The VCs for facilities and services are continued access to nearby public facilities and services by public users during and following tree clearing and line construction activities.

Effects and mitigations

Potential effect	Mitigation measures
Trail closures or detours	- Minimize area of trail closures, detours and move closures with work down the line - Communicate trail closures to trail users through Parks Canada channels (i.e., website) - Use signage and barricades to inform trail users of closures and detours
Full road closures	- Design and implement Traffic Accommodation Strategy to minimize the length of closures and provide detours - Time full road closures for light traffic periods
Single lane road closures	- Design and implement TAS for all single lane closures or reduced speed zones

Residual effects

If the mitigations are implemented for public facilities and services, then there is expected to be no residual effects of this Project to public facilities and services.

Cumulative effects

The DIA assessed the potential for cumulative environmental effects to geography and soil, vegetation, and hydrology and aquatic resources to be negligible and the cumulative effect to wildlife as negligible to low. Aesthetics was identified as affected over the long term due to increased visibility at the Johnson Lake Day use area and Tunnel Mountain Campground as a result of tree removal at these locations,

which may be balanced by the long-term positive effect identified with respect to public safety from the Project due to increased reliability and a reduction in fire risk.

A complete version of the 54L rebuild DIA can be found at the link below.

www.altalink.ca/projects/54L