

3.0 TRANSMISSION FACILITIES OPERATION AND MAINTENANCE PROJECTS COVERED BY THE MODEL CLASS SCREENING REPORT

This section outlines the types of projects that are covered in the MCSR. Projects that are not subject to the class screening process are also identified because of their potential to also cause adverse environmental effects. Section 3.4 identifies projects that are non-routine and consequently are not covered by this MCSR. Those projects will require an individual screening as per Section 18 of CEAA.

3.1 The Purpose of Operation and Maintenance Projects of Power Transmission Facilities in Banff National Park

Transmission facilities in Banff National Park include electrical poles, power lines, substations, potential transformers (PTs) and power switching equipment. The primary objective of facilities operation and maintenance is to ensure the safe, reliable delivery of power to the Bow Valley. The safe delivery of power requires eliminating the potential for electric shock or fire hazards. Electric shock hazard occurs when a tree contacts a line and may subsequently conduct a current that energizes the tree and the surrounding ground. This would create a hazardous situation for people and wildlife in the area (TAU 1994). Similarly, trees contacting a power line may create a flow of current to the ground causing the tree or surrounding vegetation to ignite.

The BNP Management Plan (1998) identifies the provision of facilities and services to visitors and residents in a safe and cost-effective manner as one of the Parks' mandates. Provision for electrical services is included in this mandate.

3.2 Power Transmission Facilities Operation and Maintenance Projects Subject to CEAA

This MCSR includes projects that require an environmental assessment under CEAA. In order for CEAA to be triggered and a screening assessment to be required, the proposed projects must:

- Be defined as a project under the Act. A project is either an undertaking in relation to a physical work such as any proposed construction, modification, decommissioning, abandonment or other undertaking; or a physical activity not relating to a physical work that is listed in the *Inclusion List Regulation* to the Act;
- Not be listed in the *Exclusion List Regulation* to the Act; and
- Involve a federal authority that is required to exercise or perform at least one of the following duties relating to the project:
 - Propose the project;
 - Grant financial assistance to the project;
 - Grant an interest in land in order for the project to be carried out;
 - Exercise a regulatory duty in relation to a project, such as issuing a permit that is included in the *Law List Regulations* (paragraph 23(a) and (b)).

The projects included in this class screening are classed as “an undertaking in relation to a physical work such as construction, modification, decommissioning, abandonment or other undertakings”.

The relevant regulations are specified in the *Law List Regulations*. There are two provisions under the *Law List Regulations* that apply to operation and maintenance projects of transmission facilities, including:

1. Section 11(1) of the National Parks General Regulations is included in the Law List. Parks Canada issues permits for:

“...the removal of natural objects for construction purposes within the Park.”

Natural objects are defined as soil, sand, gravel, rock, mineral, fossil or other object of natural phenomenon, not included within the terms flora and fauna.

2. Section 12 (1) of the National Parks General Regulations is included in the Law List:

“..a permit issued by a park superintendent authorizing the removal or destruction of any flora or natural objects for park management purposes”.

Table 3.1 lists the projects that are covered by the MCSR and require environmental assessments under CEAA or under Parks Canada Policy. A detailed description of each of these projects is provided in Section 3.6.

3.3 Transmission Facilities Operation and Maintenance Projects Excluded from the MCSR

Some undertakings in relation to a physical work may not require an environmental assessment under the CEAA because they are included in the *Exclusion List Regulations*. These projects are therefore not included in the MCSR. The Act defines Excluded Projects under Section 7(1) whereby an environmental assessment of a project is not required when:

- The project is described in the *Exclusion List Regulation* to the Act ;
- The project is to be carried out in response to a national emergency for which special temporary measures are being taken under the “Emergencies Act”;
- The project is to be carried out in response to an emergency and carrying out the project forthwith is in the interest of preventing damage to property or the environment or is in the interest of public health or safety.

Projects covered by the MCSR are not on the Exclusion List.

Table 3.1 Permits and CEAA Triggers

Project	Project Permit Required	Type of Permit	CEAA Triggered	Potential Assessment Request
<i>Overhead Line Maintenance</i>				
Access and Travel along RoW	✓	Restricted Activity Permit for off highway vehicle use		
Detailed Aerial Patrols (DAP)	✓	Helicopter permit for take offs and landings in BNP. Restricted Activity for fly-overs.		
Detailed Climbing Patrols	✓	Restricted Activity Permit for off highway vehicle use		
Ground Patrols	✓	Restricted Activity Permit for off highway vehicle use		
Aerial Patrols	✓	Helicopter permit for take offs and landings in BNP. Restricted Activity for fly-overs.		
Emergency Aerial Patrols	✓	Helicopter permit for take offs and landings in BNP. Restricted Activity for fly-overs.		
Task Specific Aerial Patrols	✓	Helicopter permit for take offs and landings in BNP. Restricted Activity for fly-overs.		
Pole Test and Re-Treatment	✓	Restricted Activity Permit for off highway vehicle use	✓ If excavation is required	
Pole Replacement or Salvage	✓	Restricted Activity Permit for off highway vehicle use	✓ If excavation is required	
Pole Stubbing	✓	Restricted Activity Permit for off highway vehicle use		
Pole Anchor Installation	✓	Restricted Activity Permit for off highway vehicle use	✓ If excavation is required	

Table 3.1 Permits and CEAA Triggers – *Continued*

Project	Project Permit Required	Type of Permit	CEAA Triggered	Potential Assessment Request
<i>Overhead Line Maintenance - Continued</i>				
Crossarm Replacement	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
Conductor Repair, Replacement and Salvage	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
Conductor Joining	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
Insulator Washing	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
<i>Vegetation Control</i>				
Vegetation Management on the RoW	✓	Restricted Activity Permit for vegetation removal	✓	
Manual Brushing (Slashing) on the RoW	✓	Restricted Activity Permit for vegetation removal	✓	
Trimming on the RoW	✓	Restricted Activity Permit for vegetation removal	✓	EA may be requested under Parks Canada Procedures
Brush Mowing on the RoW	✓	Restricted Activity Permit for vegetation removal	✓	EA may be requested under Parks Canada Procedures
Herbicide Applications on the RoW	✓	Restricted Activity Permit for spraying herbicides	✓	

Table 3.1 Permits and CEAA Triggers – *Continued*

Project	Project Permit Required	Type of Permit	CEAA Triggered	Potential Assessment Request
General Activities				
Waste Management	-	-	-	-
Hazardous Material Handling	Only if off road	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
Temporary Staging Areas	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
Equipment Maintenance and Repair	-	-	-	-
Equipment Refuelling	-	-	-	-
<i>Other</i>				
Fording Streams, Wetlands and Rivers	✓	Restricted Activity Permit for off highway vehicle use		EA may be requested under Parks Canada Procedures
SUBSTATIONS				
Substation Inspections	-	-		
Substation Equipment Major Repair and Maintenance	-	-		EA may be requested under Parks Canada Procedures
Herbicide Applications	✓	Restricted Activity Permit for herbicide spraying and IPM form	✓	
Transformer Oil Handling				EA may be requested under Parks Canada Procedures

3.4 Transmission Facilities Operation and Maintenance Projects Not Suited to the MCSR

Several activities conducted by AltaLink on the transmission lines do not meet the class screening requirements of being routine, repetitive activities with known, easily mitigable environmental effects. These projects could have the potential to cause unacceptable environmental impacts, and therefore, an individual screening will be required. The projects that are excluded from this MCSR for that purpose are:

- Clearing of new land within BNP for construction of a new transmission RoW;
- Brush mowing or chemical spraying on the RoW closer than 30 m to a waterbody. This exclusion does not affect herbicide applications within fenced substations;
- Modifications that increase nominal line voltage; and
- Instream activities, except fording activities, triggering Section 35 (2) of the *Fisheries Act*.

Similarly, project activities that do not comply with the mitigations identified in this document (for example, conducting activities outside of recommended timing windows) will not be covered by the MCSR and must be assessed by an individual screening.

For those projects contained on the *Comprehensive Study List Regulations* of the CEAA, a comprehensive study, not a screening, would be required. There are no projects listed on the *Comprehensive Study List Regulations* that would apply to the routine operation and maintenance of transmission facilities in BNP.

3.4.1 Projects Included in this Document Based on Parks Policy

In addition to the projects that trigger CEAA, other projects undertaken by AltaLink require an environmental assessment under Parks Canada procedures for complying with CEAA. For completeness, all relevant routine activities associated with the operation and maintenance of transmission facilities have been included in this MCSR. This includes:

- Projects that trigger CEAA;
- Projects that require environmental assessments under Parks Canada procedures;
- Projects that may require permits to be issued by Parks Canada that are not in the Law List Regulation *e.g.*, Restricted Activity Permits. As outlined in Section 1.2, the MCSR can encompass federal permits and other approvals required for transmission facility operation and maintenance projects; and
- Any other activities associated with the above projects that have the potential to result in environmental effects.

Inclusion of all of these projects in the MCSR allows for a thorough review of impacts associated with all activities undertaken during routine operation and maintenance. It also assures consistency of environmental mitigation practices and demonstrates due diligence on the part of AltaLink.

3.5 Description of Project Class

Deregulation of the Alberta power industry has altered the ownership and responsibilities for electrical energy in BNP. TransAlta Utilities continues to operate and maintain the Cascade power generating facility and associated waterworks, and AltaLink is responsible for the transmission facilities that carry bulk electrical power into BNP, the Town of Banff and the Village of Lake Louise. Aquila Networks Canada operates distribution facilities to deliver electrical power service to residences, businesses and Parks facilities.

The MCSR covers all transmission facilities within BNP that are owned and operated by AltaLink. Transmission facilities in BNP include single pole wood structures with associated, power line conductor, insulators and other equipment, substations, switches, and potential transformers (photos 3.5.1, 3.5.2 and 3.5.3).

Photo 3.5.1: Potential Transformer at Temple Mile 111



Photo 3.5.2: Lake Louise Substation

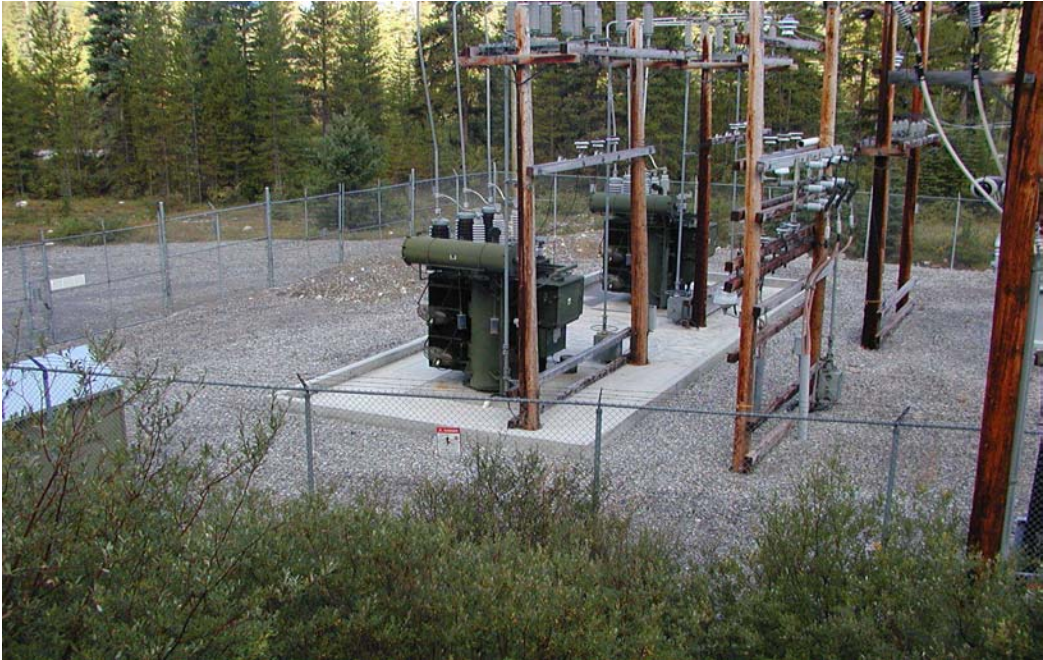


Photo 3.5.3: Eldon Substation



3.6 AltaLink Transmission Facilities Within Banff National Park

The locations of AltaLink transmission facilities in BNP are shown on Figure 3.1.

3.6.1 *Transmission lines*

- 54L (138 kV) East BNP boundary to Cascade Substation; then to the Town of Banff Substation
- 551L (69 kV) Banff substation to Lake Louise Substation

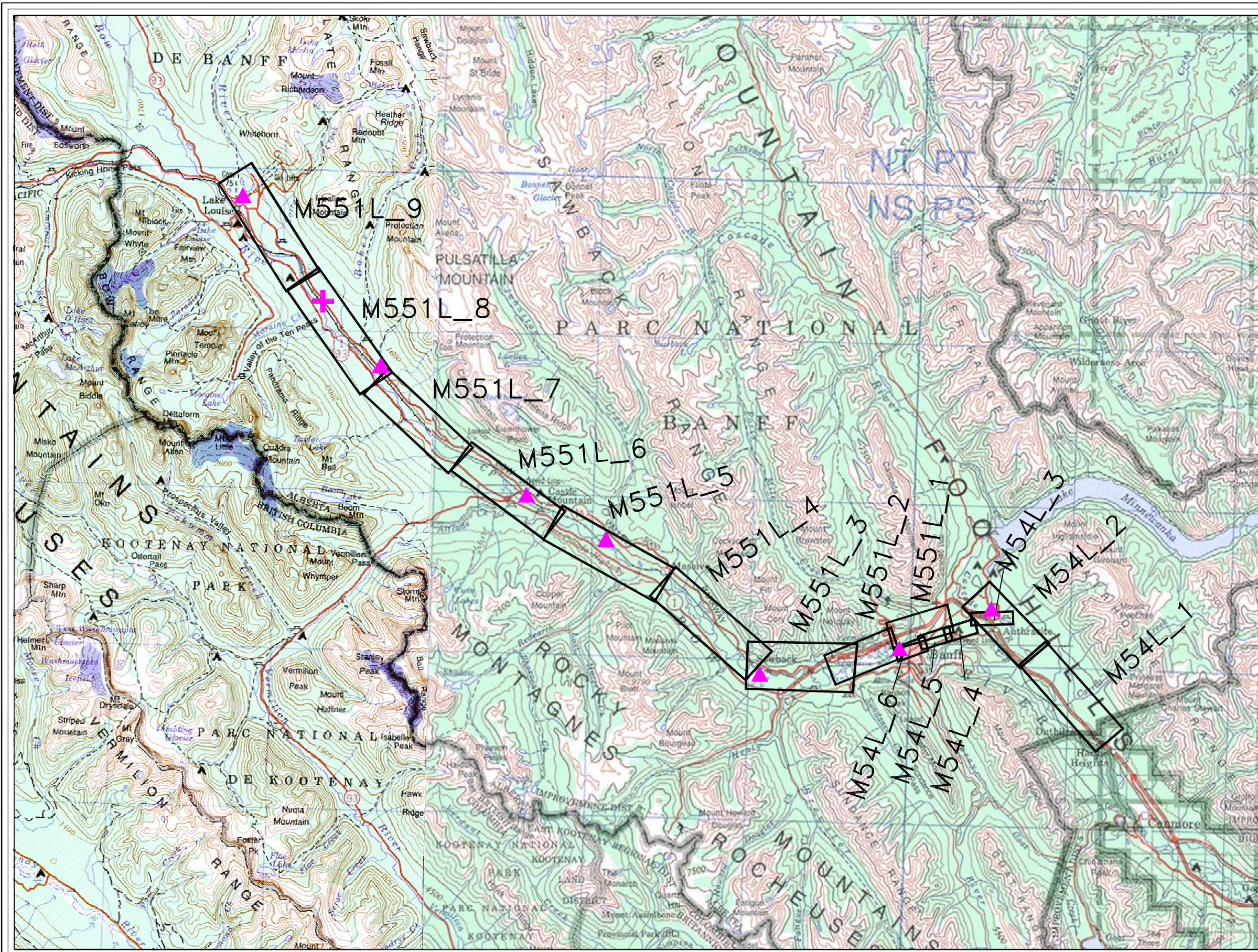
3.6.2 *Substations*




- Cascade substation 29s,
- West Cascade substation 177s,
- Banff substation 123s,
- Sunshine Village substation 945s,
- Lake Louise Substation 953s,
- Johnston Canyon,
- Eisenhower Junction (Castle Substation),
- Eldon West,
- Corral Creek.

PTs (potential transformers)

PTs function is to reduce voltage from 69 kV transmission voltage to a lower voltage. The low voltage is used to supply power for CPR signals and other devices adjacent to the railway.

- Massive East
- Massive West
- Temple Mile 111



- Legend
-  Map Sheet
 -  Substation
 -  Potential Transformer



Scale 1:250,000
 5 0 Km 5 10

FIGURE 3.1
 LOCATION OF ALTALINK
 TRANSMISSION LINE MAP SHEETS
 BANFF NATIONAL PARK

ALTALINK



TOPO KEY MAP

3.7 MCSR Projects

Only routine projects associated with the operation and maintenance of transmission facilities that are owned and operated by AltaLink are addressed in the MCSR. Some of these projects trigger an environmental assessment under CEAA; others require an environmental assessment under Parks Canada policy. As a proactive means of addressing all potential environmental implications associated with projects undertaken by AltaLink in BNP, the following routine operational and maintenance projects are included in the MCSR:

- Overhead Transmission Line Maintenance
 - Detailed Aerial Patrols
 - Aerial Patrols,
 - Task Specific Aerial Patrols
 - Emergency Aerial Patrols
 - Detailed climbing patrols
 - Ground Patrols
 - Pole Tests and Re-treatment
 - Pole Straightening, Replacement and Salvage
 - Pole Stubbing
 - Pole Anchor Installation
 - Crossarm Replacement
 - Conductor Repair, Replacement and Salvage
 - Conductor Joining
 - Insulator Washing
 - Vegetation control on the RoW, including
 - Manual brushing (slashing)
 - Trimming
 - Brush mowing
 - Herbicide Applications
- Materials Storage, Disposal and Handling
 - Waste management
 - Hazardous material handling
 - Temporary staging areas
 - Equipment maintenance and repair
 - Equipment refuelling

- Other
 - Fording of streams, wetlands and rivers
- Substations
 - Substation inspections
 - Equipment Major Repair and Maintenance
 - Herbicide Applications
 - Transformer Oil Handling

Environmental screening requirements for each project in this MCSR have been outlined in Section 3.2 and Table 3.1. A detailed description for each of these projects and their associated activities is provided in Table 3.2.

3.7.1 Off Roadway Vehicle Access

The use of motorized vehicles and specialized equipment off established roadways is associated with nearly all projects undertaken by AltaLink. The type of vehicle and equipment operated on each section of the RoW is dependant on the sensitivity of terrain, project requirements and operational limitations in terms of safety, weight capacity, wind, and cost. In most cases, equipment use is as follows:

- ATVs (quads, argos, snowmobiles) are typically used to carry the small tools and equipment involved in minor repairs (lines and poles) and to address tree encroachment where possible.
- 4 x 4 pick-up trucks & tandem trucks are used for sites accessible by road or firm ground trails.
- Large rubber tired “Formost” or rubber tracked machines are utilized in sensitive areas (seasonally wet, soft or steep terrain or snow conditions)
- Helicopters are used where wetlands or excessively steep terrain prohibit ground access. The helicopter is used to transport tools, equipment, men, and the poles to the site. Helicopters are also used when quick response is required such as responding to an emergency situation.

Equipment associated with each project undertaken on the RoW is summarized below in Table 3.3. All motorized vehicles and equipment involved in AltaLink projects will be marked with company identifiers (magnets with company logos).

3.7.2 *Typical Seasonal Scheduling and Duration of Projects*

It is possible to undertake routine transmission facilities maintenance and operation projects year round, and is necessary when responding to emergency situations. However, routine transmission line and RoW projects will be planned to comply with timing windows. Project planning and time restrictions are discussed in detail in Section 4.5.1. Substation work can be conducted at anytime.

The project scheduling can be driven by either a time-based interval (e.g. patrols and inspections) or by the condition of the equipment. A project schedule is then further influenced by the ability to obtain power outages, replacement parts, men and equipment availability.

Overall project duration will typically run from one to a few days, dependant on the project scale and scope. The time duration that personnel will be at each structure before moving on down the RoW to the next structure can be measured in seconds for helicopter patrols, to minutes for pole testing, to hours or days for structure or conductor replacements.

Table 3.2 Description of Projects and Associated Activities Carried out for Routine Operation and Maintenance of Transmission Facilities in Banff National Park

Project	Description of Associated Activities
MAINTENANCE AND OPERATION	
<i>Overhead Line Maintenance</i>	
Access and Travel along RoW	<ul style="list-style-type: none"> • Access onto the RoW and the use of motorized vehicles and specialized equipment is associated with all projects undertaken by AltaLink. The type of vehicle and equipment operated on each section of the RoW is dependant on the sensitivity of terrain, project requirements and operational limitations in terms of safety, weight capacity, wind, and cost. Section 3.9.1 and Table 3.3 describe equipment requirements for each of the projects described below.
Detailed Aerial Patrols (DAP) <i>Every 3 to 7 years</i>	<ul style="list-style-type: none"> • Helicopter detailed aerial patrols provide an expedient and effective method to inspect the powerline for physical and mechanical problems. During a DAP, the helicopter will hover close to each power pole so that linemen can thoroughly inspect insulators and other equipment for defects. • DAPs are typically scheduled every 7 years, or sooner if a problem is suspected. • Staging areas are required to re-fuel the helicopter. Historically, 4 staging areas have been used: Silver City near structure #223; 1A highway west of where tree is in middle of road (str. #145); Sunshine substation (str. #73); and off TransCanada Hwy (str. #430) in old borrow pit area.
Detailed Climbing Patrols <i>Every 3 to 7 years</i>	<ul style="list-style-type: none"> • Detailed climbing patrols are an alternate to DAPs. Patrols are typically conducted by personal using ATV equipment. • A lineman will climb each power pole to conduct a close-up inspection of powerline components.
Ground Patrols <i>Every 3 to 7 years or as required</i>	<ul style="list-style-type: none"> • Ground patrols are undertaken to assess the condition of the rights-of-way (RoW), tree concerns, access trails and to identify apparent line deficiencies. • Patrols are typically conducted by 2 people using quads for access along the RoW.
Aerial Patrols <i>Annually</i>	<ul style="list-style-type: none"> • A helicopter is used to conduct annual aerial patrols. Annual inspections are a regulatory requirement. Typically aerial patrols are conducted in early fall. Additional aerial patrols may be conducted midwinter to inspect line integrity during high electrical demand.
Emergency Aerial Patrols <i>As required</i>	<ul style="list-style-type: none"> • Emergency aerial patrols may be flown in the event of a powerline disturbance, after a serve weather situation, or some other emergency event. The powerline is flown to assess damage or potential risks.
Task Specific Aerial Patrols	<ul style="list-style-type: none"> • Aerial patrols similar to the annually inspection or DAP, information gathered could include Infrared Scans to locate hot spots, Pulse Radar Scan to determine condition of crossarm and pole above ground, corona camera to locate radio interference bonding and insulation problems.

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities – *Continued*

Project	Description of Associated Activities
<i>Overhead Line Maintenance - Continued</i>	
<p>Pole Test and Re-Treatment <i>Conducted after 20 years service, and then every 7 years</i></p>	<ul style="list-style-type: none"> • The internal pole condition is assessed by drilling a number of holes into the pole. The pole tester will determine and record sound wood depth, rot and/or cavities. Wood fumes, Boron rods or other types of approved wood re-treatment products will be added to the hole prior to being plugged. The pole surface is visually inspected to determine the presence of surface rot, woodpecker or carpenter ant cavities, or lightning damage • Wood pole preservative levels decrease overtime. Eventually, these levels decrease to a point where rot organisms or insect infestations that threaten the integrity of the pole are no longer inhibited. Prolonging wood pole service life is very desirable in that electrical services remain uninterrupted, pole replacement impacts are avoided and wood resources are optimized. • External re-treatment is in the form of a pole wrap. A pole wrap is an impervious paper with a wood preservative paste on the inner surface. This impervious layer keeps chemicals from migrating into the environment. The pole wrap is installed by shovelling soil away from the pole, placing the pole wrap around the pole (from groundline to 2 feet below) and then replacing the soil. • Internal retreatment can be liquid chemical or solid chemical rods inserted into the drilled inspection holes. • Woodpecker and insect cavities, if not too severe, can be injected with an epoxy resin filler compound. • Maintenance crews inspecting and re-treating poles typically consist of 2 to 4 persons. Light 4 x 4 trucks or quads are used for access and to transport material.
<p>Pole Replacement or Salvage <i>As required</i></p>	<ul style="list-style-type: none"> • Pole replacement is necessary when extensive insect, fungus or wildlife damage or other physical damage resulting from vehicle collisions, avalanches, rockslides, etc. has occurred. • The old pole is typically pulled out intact using a hydraulic boom. However, if the old pole cannot be extracted without a major amount of land disturbance, then the pole is cut off approximately 1m below groundline and covered with soil. • New poles are installed by augering a new hole approximately 9 feet deep. If augering is not possible, then a backhoe maybe used or in severe cases blasting may be required (<i>blasting is not covered under this MCSR</i>). Poles are then inserted and holes are backfilled. • Replacement poles treated with pentachlorophenol are not inserted into standing water. If possible, a treated replacement poles will be relocated to firm dry ground. When this is not possible, natural cedar poles with boron rods inserted internally, or steel poles are used instead. CCA treated poles are considered a last resort, but may be used if there is no other practical option.

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
<i>Overhead Line Maintenance - Continued</i>	
Pole Stubbing <i>As required</i>	<ul style="list-style-type: none"> • Poles that are only slightly damaged or weakened can be “stubbed” (splinted) with a steel brace to re-strengthen the pole. Thus the pole service life is extended. • The steel stub is placed next to the pole and is then driven into the ground by means of a jackhammer or hydraulic ram. Once the stub is in place, steel straps hold the pole and stub together
Pole Anchor Installation <i>As required</i>	<ul style="list-style-type: none"> • Anchors are buried structures that attach to guy wires for the purpose of stabilizing power poles. Anchors are either excavated or augered (screwed) into the ground approximately 6 – 10 feet deep. • There are four types of anchors: <ul style="list-style-type: none"> - Rock Anchor: A Nodwell equipped with an air compressor and drill creates a hole. Large steel pins are inserted approximately 6 feet deep. Concrete is poured into the hole to stabilize the pin. - Helix Anchor: An auger is used to screw the spiral rods into the ground approximately 6 feet deep. - Plate Anchor: A backhoe/bobcat digs a hole approximately 10 feet deep for the 2 foot square anchor. Once levelled, the metal plate is then placed in the hold and the excavation is backfilled. - Pole Foundation Anchor: where the ground is too soft to support the structure a pole foundation anchor may be installed. It is very similar to a helix anchor (above) and is installed straight down from the side of the pole at ground line.
Crossarm Replacement <i>As required</i>	<ul style="list-style-type: none"> • Crossarms can be treated wood that is dimensional lumber or round wood. On single pole structures, arms vary in length from 7 feet up to 13 feet. Two pole structures (H-frames) require crossarms that range from 24 feet to 38 feet in length. • Crossarms may need to be replaced more frequently than poles. The horizontal surfaces of crossarms retain more moisture than poles and thus are subject to more rot. Crossarms are also subject to greater mechanical stresses that can lead to structural damage. • Crossarms are installed by being lifted and temporarily held in place with hydraulic booms. Linemen climb the poles and secure the crossarms.
Conductor Repair, Replacement and Salvage <i>As required</i>	<ul style="list-style-type: none"> • An insulated boom and bucket allows conductor and equipment repair to be done “hot”, meaning the powerline is still in service. Where this equipment cannot be used, the line must be taken out of service (de-energized) before conductors and equipment can be repaired.

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
<i>Overhead Line Maintenance - Continued</i>	
Conductor Joining <i>As required</i>	<ul style="list-style-type: none"> • Implosive Method: Two powerline conductor ends can be joined together by inserting each end into a metal sleeve. Explosive is wrapped around the sleeve and detonated. The implosive force compresses the sleeve tight against the conductor, and thus joining them together. The explosion produces a small fire flash and a loud noise. • Hydraulic Ram Method – a hydraulic force is used to compress the joining sleeve. This method is slower and more awkward than the implosive method. This method is quieter than implosive method but does have the potential for hydraulic oil leaks.
Insulator Washing <i>As required</i>	<ul style="list-style-type: none"> • Insulators can become coated with dust and other particulates. This compromises the insulators electrical insulating capability and can become a safety hazard. • Insulators are washed using a high-pressure spray with an organic abrasive substance such as cornhusks. • Insulators have been known to become ‘dirty’ adjacent to highways due to airborne salt spray
<i>Vegetation Control (approximately every 3 to 4 years)</i>	
Vegetation Management on the RoW	<ul style="list-style-type: none"> • Trees need to be managed near powerlines. Trees contacting a powerline pose a major safety concern to people and wildlife; they can also start wildfires and disrupt power service. • Incompatible vegetation species are trees that have the potential to contact or conflict with power lines or equipment. This generally includes trees that will mature to a height of over 4 m. The following factors are taken into consideration: <ul style="list-style-type: none"> - Growth habit - Tree species - Existing tree locations and densities - Future vegetation control requirement - Prevailing wind direction - Danger trees (dead, split, misshapen, lightning damaged, trees in poor condition, etc.) • Vegetation management methods include: manual brushing (slashing), trimming, mowing and herbicide applications. Method selection is specific to the desired vegetation management objective and is influenced by site characteristics such as terrain, RoW access, vegetation species& density, public use, waterbody buffers

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
<i>Vegetation Control - Continued</i>	
<p>Manual Brushing (Slashing) on the RoW <i>As required</i></p>	<ul style="list-style-type: none"> • Manual brushing (slashing) is utilizing manual labour and chainsaws to remove trees from the RoW. Typically this method is used to remove trees in areas that are inaccessible to equipment or where only a few trees need to be removed. A slashing crew is typically a four-man crew equipped with crew cab truck, chainsaws and brush saws. • Slashing for “pre-mow” involves marking obstacles, removing vegetation around obstacles (i.e., guy wires) and hazards and marking items of significance i.e., rare vegetation, nesting trees, wet areas. Cut brush is piled on the RoW to be mowed with a brush mower. • Slash crews are also used to remove danger trees adjacent to the RoW • Slash debris can be chipped into mulch and blown back onto the RoW. Chips can also be blown into the truck box and hauled to a suitable dump location or used for landscaping. • Vegetation may also be cut and dropped into the forest and laid flat (limbed and bucked). • In areas marked for prescribed burn, trees may be felled into the forest and left whole. This manner will facilitate starting a burn and provide a firebreak. • Brush debris is only burned if directed by Parks personnel. Brush burning might be done if the amount of brush debris is excessive and might become a fire hazard if left to naturally decompose, but is only used as an alternate method of disposal.
<p>Trimming on the RoW <i>As required</i></p>	<ul style="list-style-type: none"> • Trimming to comply with Parks Canada specific requests in special protection areas (such as preservation of wildlife trees or vegetation species with special conservation status). • In areas accessible to equipment, a trim lift truck (5 – 10 ton) is utilized. These trucks are equipped with an insulated aerial boom and bucket so trimmers can reach treetops. Tree lifts are used only along roads or trails with sufficient hardened surfaces to carry the truck’s weight. • In areas inaccessible to equipment, trimmers hand climb the tree in order to trim off branches and tree tops. • Tree trimmers for utility work are specially trained and hold a valid Utility Tree Trimmer certification. • Brush debris disposal methods are the same as outlined for manual brushing.

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
<i>Vegetation Control - Continued</i>	
Brush Mowing on the RoW <i>As required</i>	<ul style="list-style-type: none"> • Brush mower can be used to effectively remove large areas of brush and trees up to 6 inches in diameter. A brush mower can be either a rubber tired or tracked vehicle with a mowing head attachment, similar to a heavy-duty lawn mower. The RoW must be relatively flat, free of large boulders and relatively firm to effectively use brush mowing. Vegetation is mowed to ground level, with the tree debris being mulched and scattered along the RoW. The mulch is left to decompose and become part of the duff layer. Re-growth will be allowed until critical tree to line clearances are reached or access for line repair becomes restricted. • A 1 ton service truck equipped with a “Tidy Tank” accompanies brush mowers for refuelling and repairs. • Hand mowing can be utilized as a sole method or in conjunction with herbicides to control infestation of non-native vegetation species (weeds).
Herbicide Applications on the RoW <i>As required</i>	<ul style="list-style-type: none"> • Herbicides are used to control all vegetation within substations. The presence of vegetation within a substation poses an electrical and fire hazard to workers and the public. Due the presence of energized wires mechanical or manual control methods are not practical within substations. • Herbicides are selectively used to manage outbreaks of noxious or restricted weed species. Herbicides may be used in conjunction with mechanical or hand labour means. (Appendix D lists Restricted & Noxious Weeds). • All herbicide applications are conducted by provincially licensed applicators. Typical application equipment is either a one ton truck equipped with hose and handgun sprayer or backpack sprayers.
GENERAL ACTIVITIES	
<i>Materials Storage, Disposal, Handling</i>	
Waste Management	<ul style="list-style-type: none"> • Wastes are collected and disposed of at approved locations either within the Park or externally.
Hazardous Material Handling	<ul style="list-style-type: none"> • Hazardous materials are transported out of the Park in accordance with Federal and Provincial <i>Transportation of Dangerous Goods Act</i> and Regulations. Hazardous chemicals used in transmission powerline maintenance are listed in Appendix D.
Temporary Staging Areas	<ul style="list-style-type: none"> • Depending on the scope of the maintenance project, it may be necessary to have temporary staging areas when large scale capital maintenance projects are being executed. Temporary staging areas will be selected through consultation with Parks Canada staff.
Equipment Maintenance and Repair	<ul style="list-style-type: none"> • No equipment maintenance or repair is scheduled to occur on the RoW. Equipment repair would only be undertaken in the event equipment is immobilized and cannot be towed to a repair facility or the repair is of a very minor nature. Minor routine equipment maintenance, such as equipment greasing, will be allowed on the RoW.

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
Equipment Refuelling	<ul style="list-style-type: none"> • Field refuelling may be necessary for certain types of equipment or activities. Examples include helicopters during DAPs, brush mowers, chainsaws, and construction equipment such as cranes or Foremost. • Refuelling will be done as per the standard procedure outlined within the MCSR.
<i>Other</i>	
Fording streams, wetlands and rivers <i>As required</i>	<ul style="list-style-type: none"> • Maintenance activities are scheduled to time periods where potential environmental impacts are minimized. Access routes to and along the RoW have been identified with site-specific and site-appropriate stream crossing solutions. ATV access occurs during ground patrols and is not limited to the timing restrictions. Large equipment access occurs every 7 years and is limited to the timing restrictions. Refer to access maps for details.
SUBSTATIONS	
Substation Inspections <i>2-4 times /year</i>	<ul style="list-style-type: none"> • A transmission substation refers to the chain link fenced gravelled area containing various electrical, relay and telecommunication equipment associated with the transmission of electrical power. • Substations are checked annually to ensure equipment is operating in satisfactory manner and to determine maintenance requirements or perform routine maintenance. The maintenance interval for some pieces of equipment is time based while for other pieces of equipment it is triggered by the number of operations. As a result, frequency intervals between equipment servicing can vary. • Ten substations exist within the Park.
Substation Equipment Repair & Maintenance <i>5 – 7 year intervals</i>	<ul style="list-style-type: none"> • Substation electrical, relay and telecommunication equipment will periodically require adjustments, repairs or replacements. Substations are isolated from the surrounding natural areas being surrounded by chainlink fence and covered with gravel. Thus work within substations will have minimal environmental impacts. Access to major substations is on hard-surfaced roads. Access to minor substations is on firm ground trails with no stream crossings. Substation work could occur year round. • Construction equipment that may be required to facilitate equipment repairs can include backhoes, bobcats or small cranes

Table 3.2 Routine Transmission Facility Operation and Maintenance Activities - *Continued*

Project	Description of Associated Activities
Herbicide Applications <i>Annually or as required</i>	<ul style="list-style-type: none"> • Herbicides are used to control all vegetation within substations. The presence of vegetation within a substation poses an electrical and fire hazard to workers and the public. Due the presence of energized wires mechanical or manual control methods are not practical within substations. (See a list of appropriate chemicals in Appendix D). • All herbicide applications are conducted by provincially licensed applicators. Typical application equipment is either a one ton truck equipped with hose & hand gun sprayer or backpack sprayers.
Transformer Oil Handling <i>5 – 7 year intervals</i>	<ul style="list-style-type: none"> • Major transformer or breaker repairs will require oil to be removed from the equipment and temporarily stored in an onsite tank • Transformer oil is also periodically pumped through a filtering and reconditioning unit

Table 3.3 Typical Equipment Requirements for Maintenance and Operation of Overhead Transmission Lines

TYPE OF ACCESS	EQUIPMENT						
	Truck (1/2, 3/4 or 1 ton)	Tandem Truck	Backhoe	Pole/stick Trailer		5-10 Ton Truck and Chipper	Tree Trimmer
Road Access							
Access: slope <15% and/or dry/frozen conditions	Snowmobile ATV	Foremost	Backhoe	Helicopter	Brush mower		
Access: slope 15-45% and/or wet terrain	ATV/Argo	Foremost or Nodwell		Helicopter			
Access: slope >45%	Foot			Helicopter			
TRANSMISSION LINE MAINTENANCE ACTIVITY:							
Access and Travel along RoW	✓	✓	✓	✓		✓	
Detailed Climbing Patrols	✓						
Ground Patrols	✓						
Pole Test and Re-Treatment	✓						
Pole Replacement or Salvage	✓	✓	✓	✓			
Pole Stubbing	✓	✓					
Pole Anchor Installation	✓	✓	✓				
Crossarm Replacement	✓	✓		✓			
Conductor Repair, Replacement and Salvage	✓	✓		✓			
Conductor Joining	✓	✓		✓			
Insulator Washing		✓		✓			
Vegetation Management on the RoW: Manual Brushing (slashing); Trimming	✓					✓	✓
Brush Mowing ^(a)	✓				✓		
Herbicide Applications	✓						

^(a) A 1-ton truck is required to accompany Brush Mower.