POST-EA INFORMATION PACKAGE INCLUDING
AN UPDATED PROJECT DESCRIPTION
ALL SEASON ROAD TO PRAIRIE CREEK MINE

APPENDIX 1-3

SUBMITTED IN SUPPORT OF:
Water Licences MV/PC2014L8-0006, and
Land Use Permits MV/PC2014F0013

SUBMITTED TO:
Mackenzie Valley Land and Water Board
Yellowknife, NT X1A 2N7

Parks Canada,
Nahanni National Park Reserve
Fort Simpson, NT X0E 0N0

SUBMITTED BY:
Canadian Zinc Corporation
Vancouver, BC, V6B 4N9

February 2019
Prairie Creek All Season Road
Road Construction Management Plan

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**DOCUMENT INFORMATION**

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PLAIN LANGUAGE SUMMARY

This Road Construction Management Plan (RCMP) was prepared for Canadian Zinc Corporation (CZN) by Allnorth Consultants Ltd (Allnorth). This management plan serves to set forth management protocols for the construction site, management of contractors, general construction schedule and approach for the construction of the Prairie Creek All Season Road (ASR). The RCMP also defines procedures to ensure work site safety while minimizing potential risk to the environment.

The ASR is approximately 170 km long, connecting the Prairie Creek Mine site to the Nahanni Butte access road. Half (85 km) of the road is within the Nahanni National Park Reserve (NNPR). The proposed ASR generally follows the alignment of the winter road assessed during EA0809-02.

CZN proposes to construct access to the mine site in two phases:

**Phase 1**: A winter road within the ASR alignment right-of-way (ROW) to support required geotechnical investigation and future ASR construction.

**Phase 2**: Re-construct the Phase 1 winter road and commence ASR construction, to be completed over two further years.

Initial winter roads are also required to transport materials and equipment to the Mine. The RCMP is a guide for the construction management team in 5 key areas:

- Construction Management Organization;
- Construction Facilities and Services;
- Occupational Health and Safety and Environmental Protection;
- Schedule; and
- General construction approach and procedures.

The Construction Management Organization is the interfaces and communication lines that will be utilized to ensure the construction is appropriately monitored and managed. The key roles within Construction Management Organization and their responsibilities are:

- **Construction Project Manager (CPM)**: Reporting to Canadian Zinc, maintaining/managing overall construction project schedule and budget;
- **Road Construction Supervisors (RCM)**: Under the direction of the CPM, supervise and ensure contract and permit compliance of day to day construction activities within a defined construction spread;
- **Senior Engineer**: Reporting to the CPM, coordinates specific engineering tasks with the CPM and Supervisors, provides direction and manages the Engineering and Survey team and material testers to ensure compliance with specific engineering design details (i.e. bridge/major culvert installations);
- **Safety Operations Manager**: Develops project safety plans and ensures compliance of plans by management and contractors; and
- **Senior Environmental Monitor**: Under the direction of CZN, manages and coordinates the Environmental Monitors (EM) to ensure permit and environmental compliance.
The key construction facilities and services that will be available are:

- **Camp Administration**: Camp operations and camp maintenance, which will be the responsibility of the general road contractor.

- **Emergency Services**: An emergency response team will be available and trained at all times for construction situations. First Aid staff will be appropriately allocated and present at all times during construction. First Aid services will be available 24 hours a day and in compliance with Workers Safety and Compensation Commission (WSCC, NWT).

- **Utility Services**: Electrical power and lighting will be provided at camps via diesel generator. Non potable water supply will be withdrawn from defined approved water withdrawal locations. Potable water will be hauled in or filtered.

- **Dangerous Goods Handling**: Diesel fuel and explosives.

- **Occupational Health and Safety**: Will conform to WSCC.

Construction procedures, outlining the responsibilities and procedures that will be put into effect, are described and include:

- **Pre-Works Checklists**: Prior to the commencement of operational works, the checklist will be jointly reviewed and checked between the contractor(s), the RCM, the acting EM, and if and when necessary, government inspectors;

- **Right of Way Clearing**: Right of way clearing is considered the process of falling, brushing, and removal of vegetation, but not the intentional stripping of organics to mineral soil;

- **Stripping and Grubbing**: Stripping and grubbing is the removal of unwanted organics and soils, in preparation of constructing the ASR subgrade;

- **Subgrade Construction**: Subgrade construction activity is the shaping, ditching, and building up of the road prism structure;

- **Surfacing**: Is the gravel running surface placed on the subgrade;

- **Lower Sundog Road Construction and Stream Re-Alignment**: The process of road and re-alignment channel construction over this section;

- **Watercourse Structure Installations**: The procedures for the installation of minor and major culverts, and bridges.

A summarized construction schedule is provided in the form of key project considerations and milestones. The Plan will be adjusted as necessary based on operating experience to promote safety, access control and wildlife protection. All near misses and incidents will be investigated appropriately to determine root cause(s). The investigations will make recommendations in an effort to eliminate future similar incidents. The RCMP is a living document and the CPM will ensure that the plan is reviewed and updated on an annual basis.
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GLOSSARY AND ACRONYMS

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<td>All-Season Road</td>
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<td>CZN</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>Government of Northwest Territories</td>
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<td>KP</td>
<td>Kilometre Post</td>
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<td>Mine</td>
<td>Prairie Creek Mine</td>
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<td>NNPR</td>
<td>Nahanni National Park Reserve</td>
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<td>NWT</td>
<td>Northwest Territories</td>
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<td>Prairie Creek All Season Road</td>
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<td>RCMP</td>
<td>Road Construction Management Plan</td>
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<tr>
<td>Project</td>
<td>Refers to the construction and operation of the Prairie creek ASR</td>
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<td>RCPM</td>
<td>Road Construction Project Manager</td>
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<td>RCS</td>
<td>Road Construction Supervisor</td>
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<td>WSCC</td>
<td>Workers Safety and Compensation Commission</td>
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GLOSSARY OF TERMS

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<thead>
<tr>
<th>Glossary of Terms</th>
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<tr>
<td>Two Way Radio</td>
<td>A communication radio fixed in vehicle or hand held very commonly used in industry for site communications.</td>
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<td>Repeater Station</td>
<td>A fixed, typically permanent communications tower which will receive and re-transmit a communications. Used to provide support in rugged terrain to increase effective range of communications.</td>
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<td>Subgrade</td>
<td>Refers to the underlining base material of a road structure.</td>
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<tr>
<td>Strippings</td>
<td>Refers to the organic and unusable mineral soil not suitable for subgrade, which is removed/cleared away and piled.</td>
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<tr>
<td>Waterbars</td>
<td>An installed “berm” structure used to deflect surface water flow in a specific direction.</td>
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1 INTRODUCTION

This Road Construction Management Plan (RCMP) was prepared for Canadian Zinc Corporation (CZN) by Allnorth Consultants Ltd (Allnorth). This management plan serves to set forth management protocols for the construction site and management of contractors, to outline the general construction schedule of the Prairie Creek All Season Road (ASR), and to minimize risks to humans and wildlife at the work site. The plan has been prepared to adhere to industry Best Management Construction Practices and the construction guidelines outlined in NWT "Northern Land Use Guidelines – Road and Access Trails".

The ASR has been designed at a preliminary level. This plan is considered a living document and will be updated as the ASR advances through detailed design.

Under the direction of the Construction Project Manager (CPM), this plan will be incorporated appropriately within the Site Orientation given to all employees and contractors that will be involved in construction of the ASR.

1.1 Company Name, Location and Mailing Address

Company Name:
Canadian Zinc Corporation

Head Office:
Address: Suite 1710 – 650 West Georgia Street, Vancouver, BC, V6B 4N9
Phone: +1-604-688-2001
Fax: +1-604-688-2043
Email: david@canadianzinc.com

Prairie Creek Mine Site:
Iridium 9555 Satellite Phone 1 (yellow) 011-8816-315-30998
Iridium 9505A Satellite Phone 2 (black) 011-8816-315-30997
Iridium 9505A Satellite Phone 3 (orange) 011-8816-315-30996
Ground-To-Air Radio Handheld FREQ 122.800

1.2 Other Management Plans

This Plan is supported by, the following other CZN management plans:

- Road Operations and Maintenance Plan;
- Traffic Control Mitigation and Management Plan;
- Health, Safety and Emergency Response Plan;
- Engagement Plan;
- Borrow Pit Management and Reclamation Plans;
- Explosives Management Plan;
- Invasive Species Management Plan;
- Permafrost Management Plan;
- Rare Plant Management Plan;
1.3 Road Summary

The ASR is approximately 170 km long, connecting the Prairie Creek Mine site to the Nahanni Butte access road. Half (85 km) of the road is within the Nahanni National Park Reserve (NNPR). The proposed ASR generally follows the alignment of the winter road assessed during EA0809-02. Figure 1 on page 3 shows the location of the proposed ASR. Project overview map is located in Appendix A and detailed site maps can be viewed in "Post-EA Information Package including Updated Project Description, Appendix 1-2".

CZN proposes to construct access to the Mine site in two phases:

**Phase 1**: Construct a winter road within the ASR alignment right-of-way (ROW) to support required geotechnical investigation and future ASR construction.

**Phase 2**: Re-construct the Phase 1 winter road and commence ASR construction, to be completed over two additional years.

The initial winter roads will also allow the transport of materials and equipment to the Mine.

This RCMP is intended as a guide for the construction management team to manage the site (including environmental, health, and safety aspects), the construction of the Project, and incident management and recording.

- Wildlife Mitigation and Management Plan;
- Avalanche Hazard Management Plan;
- Road Closure and Reclamation Plan;
- Sediment and Erosion Control Plan;
- Spill Contingency Plan; and
- Waste Management Plan.
Legend

- Mine Site
- City / Town / Community
- Proposed All Weather Access Road Route
- Highway
1.4 Plan Objectives
The Plan’s objectives are to:

- Ensure construction, environmental, health and safety aspects are effectively managed;
- Maintain safe, effective and efficient control of the site during construction activities;
- Define management procedures and structure for the construction management team;
- Define roles and responsibilities for contractors and the construction management team;
- Describe the Phase 1 and Phase 2 ASR construction approach;
- Define construction procedures for the Phase 1 and Phase 2 ASR construction; and
- Provide approaches and clear procedures that contractors must adhere to.

1.5 Legislation and Regulations
This RCMP was prepared with guidance from the following publications:

Government of Northwest Territories, Department of Lands’ Northern Land Use Guidelines – Access: Roads and Trails (GNWT, 2015a);

Government of Northwest Territories, Department of Lands’ Northern Land Use Guidelines – Pits and Quarries (GNWT, 2015b);

Transportation Association of Canada’s Guidelines for Development and Management of Transportation Infrastructure in Permafrost Regions (TAC, 2010); and

All operations must comply with local laws, rules, and regulations. The plan is intended to adhere to the compliance obligations outlined in the following regulatory codes:

- Occupational Health and Safety;
- Safety Act of NWT (1988);
- Fisheries Act (1985);
- Species at Risk Act (2002);
- GNWT DOT Highways Act;
- British Columbia DOT Highways Act;
- Federal Transportation Act;
- Wildlife Act (1996); and

1.6 Roles and Responsibilities
The Construction Project Manager (CPM) will be responsible to implement and monitor this plan during the construction of the Phase 1 winter road and ASR. The CPM will direct and integrate support from the Health and Safety Manager and the Environmental Managers to implement, train, and report activities within this plan.

The CPM will ensure that the plan is incorporated appropriately into the contracts and employment offers for all construction management staff. The CPM will ensure that the appropriate information from the Plan is included in the tender and contract documents for each construction contract.

All Project employees and contractors will be required to adhere to the intent of this Plan.
As this is a living document and is subject to updates and improvements, the CPM will ensure that any changes or updates to the plan are communicated internally to the construction management staff and affected contractors immediately. An updated CMP document would be provided within annual reports of the project and will be provided to regulators.

1.7 Construction Management Organization

The proposed organization structure, including interfaces and communication lines, is shown in Figure 2.
A Project Contact List will be implemented and maintained. The list will identify all key construction management positions, contact information, functions, and key personnel.
1.8 **Roles and Responsibilities**

**Construction Project Manager (CPM):** Reporting to Canadian Zinc, maintaining/managing overall construction project schedule and budget.

**Road Construction Supervisors (RCS):** Under the direction of CPM, supervise and ensure contract and permit compliance of day to day construction activities within a defined construction spread.

**Camp Manager:** If required, under the direction of CPM, co-ordinates camp mobilization and manages operations to support construction schedule.

**Senior Project Accountant:** Reporting to CPM, manages accounts payable and updates budget.

**Senior Engineer:** Reporting to CPM, coordinates specific engineering tasks with CPM and Supervisors, provides direction and manages Engineering and Survey team and material testers to ensure compliance with specific engineering design details (i.e. bridge/major culvert installations)

**Engineer and Survey Team:** Reporting to Senior Engineer but coordinate with Road Construction Supervisors, provide necessary day to day direction and compliance of specific activities following specific detailed engineered designs.

**Safety Operations Manager (SOM):** Reports to CPM, develops project safety plan and ensures compliance of plan by management and contractor operations.

**Senior Environmental Monitor:** Reporting to CZN and the CPM, manages and coordinates the Environmental Monitors to ensure environmental protection and permit and environmental compliance.

**Environmental Monitors (EM):** Reporting to the Senior Environmental Monitor, ensures the day to day compliance of contractors and activities with environmental protection requirements within a defined construction spread.

2 **CONSTRUCTION FACILITIES AND SERVICES**

Construction facilities and services are important as they assist in keeping the site operating efficiently and effectively.

2.1 **Camp Administration**

For road construction, there will be a need for the establishment of camps and staging areas along the road corridor. The camps will be temporary facilities to support the construction of the road and bridges. On completion of the proximal activity, these temporary facilities will be decommissioned with the footprint being reclaimed to the applicable standard, consistent with the Road Closure and Reclamation Plan. Camp operations are the responsibility of the general road contractor.

2.2 **Emergency Response**

The SOM will ensure that a fully functional emergency response team is available and trained at all times for all construction situations. An emergency contact list will be established, maintained, and provided to personnel prior to construction commencing.
2.3 First Aid

First aid will be required as per NWT Occupational Health and Safety regulations and is the responsibility of the general road contractor or independent contractors. The SOM will ensure that all operations are compliant with safety procedures outlined within the relevant management plans. A medevac emergency system will be established under the direction of CZN. A mobile First Aid facility will be available at the works site(s). First aid staffing will be available 24 hours a day at camp facilities.

2.4 Communication Services

Road and site communications will primarily utilize two way radios. A radio controlled road protocol will be implemented as a mitigation measure to improve safety. Typical two way radios transmit from 10 to 20 km depending on terrain. To increase the range of two way radios, CZN is considering installing repeater stations at key locations.

All drivers must follow radio control protocol. However, all operations must conform to "visual rules" for operating in a safe manner and not rely exclusively on radio communications. CZN will establish a radio calling protocol at the start of the Phase 1 ASR construction to ensure the safe usage of the roadway by vehicles. Drivers will be required to announce the following:

- Vehicle type;
- Location;
- Direction at the time of entry or exit of the road; and
- Stopping or parking, and when travel is resumed.

Drivers will be required to announce any non-radio user they observe on the road so that other users can take appropriate precautions.

Construction crews routinely use two way radios on site to communicate directions and manage site safety. A separate radio channel will be established for these situations. Crews will monitor both road and site radio channels.

2.5 Water Use Requirements

During road construction, water will be used for the following purposes:

- Dust Suppression (summer);
- Winter road construction;
- Rock Drilling; and
- Camps and Facilities.

The use of water for road construction will comply with the conditions of the water license, including limitations on water withdrawal from designated withdrawal locations.

2.6 Fire Protection Water

Non-potable water will be stored at predetermined locations at all camp facilities. Water extraction will comply with the conditions of the water license, including limitations on water withdrawal from designated withdrawal locations.
2.7 **Construction Power**

Construction power will be supplied by temporary generators as required and are the responsibility of contractors.

2.8 **Construction Lighting**

Adequate lighting of all sites is required. Contractors will be responsible for providing their own temporary lighting systems which will likely be in the form of temporary light plant systems.

2.9 **Diesel Fuel Storage and Distribution**

Fuel storage required to support the construction of the Prairie Creek ASR will be in compliance with all permits and regulations which are set forth by permits, and NWT government and Federal legislation.

- All fuel storage areas will be predetermined locations and approved by the RCM. Camp locations will serve as the primary storage location and equipment will be fueled daily on site utilizing an approved fuel truck. This will mitigate fuel storage risk within the work site(s).
- All fueling of equipment will be done 50 m away from riparian areas, in an environmentally neutral location, or as defined in permits;
- All equipment will carry approved spill kits;
- Fuel will be stored above the Q100 high water mark, outside the defined riparian area, and at the appropriate setbacks from bodies of water:
- Fuel and hazardous materials will not be stored on the surface of frozen lakes or streams;
- Secondary containment, which refers to any impermeable storage structure surrounding fuel containers that has the capacity to contain fuel in the event of a spill, will be utilized for stationary fuel storage; and
- The volume of the secondary containment structure will be 10 percent greater than the capacity of the largest fuel container within it. Examples of secondary containment include double-walled fuel tanks and engineered containment areas.

2.10 **Explosives Manufacturing, Storage and Transportation**

Where explosives are required for construction of the road or associated infrastructure, contractors will be licensed and regulated by permit conditions and Natural Resources Canada, and subject to the authority of the Explosives Act and corresponding regulations. Suitably licenced contractors will be responsible for explosives storage and transportation, or utilizing CZN’s existing facilities. Refer to the Explosives Management Plan for more details.

2.11 **Waste**

All solid waste will be removed from the site and or disposed of in accordance with the approved Waste Management Plan.

- Solid waste will be organized and stored securely so that it does not attract wildlife;
- Waste that can be removed from the site progressively as the operation is under way will be;
- Solid Waste that can be incinerated will be done so using a proper manner of incineration;
- Non-combustible solid waste will be removed from the site by the end of construction and operation;
Sanitary and grey water will either be collected in tanks for subsequent transfer to trucks for off-site disposal at suitable locations, or processed locally (pit privies, barrels, sumps, treatment plant), meeting the required standards for effluent dispersal. Specific locations will have approved plans which meet the regulatory requirements and site specific conditions; and

- Adaptive management will be applied to waste management practices. If wildlife are attracted to site (i.e., problem wildlife) additional management practices, if required, will be adopted.

### 2.11.1 Toxic or Hazardous Materials

All toxic and hazardous material used in the construction of the road and associate infrastructure will be transported, handled and disposed of in accordance with approved plans, permits, and applicable acts and regulations.

The transportation of toxic or hazardous materials will be subject to regulations and CZN's approved Spill Contingency Plan. Contractor's will comply with the Transportation of Dangerous Goods Act and regulations, and ensure that all personal involved in the handling or transportation of dangerous materials have received the appropriate training and have the correct equipment, including:

- Comply with WHMIS;
- Personal Protective Equipment;
- Spill Response materials;
- Spill Clean Up Equipment and Materials; and
- Emergency Response Plan.

### 2.12 Air Support

Airstrips are located at the Nahanni Bute community and Prairie Creek Mine. Charter flights can be arranged from Fort Nelson, Fort Simpson, or Yellowknife. These Airstrips will be utilized to mobilize rotation crews, consumable food and camp supplies, machine parts, and air medical evacuation. Prairie Creek Mine Site is located in a mountain valley and is subject to periodic weather restricted travel.

Helicopter services will be required throughout the construction season to support crew mobilization, the parts supply chain, and medical emergency response. Helicopter charters are based in Fort Simpson; and can be sub-based at selected camp locations as required. A helicopter charter will provide required technical logistical support, such as service engineers.

### 2.13 Site Security

A security checkpoint will be established near the Liard crossing to discourage and to monitor non project personnel/public access. This project is located in an isolated region and site security is not expected to be a significant issue. However, it will be the responsibility of all contractors, CZN, personnel, and CPM to be diligent and observant regarding non project persons/public entering active sites and monitoring.

### 2.14 Equipment Mobilization / Transportation

All equipment, deliveries, and tractor/trailer units arriving on site from outside the region will be inspected prior to entering the project area to ensure units are:
• Free of oil/fluid leaks;
• Clean, free of soil and vegetation deposits, particularly heavy equipment.

3 OCCUPATIONAL HEALTH AND SAFETY, AND ENVIRONMENTAL PROTECTION

The construction phase will comply with the safety, health, and environmental protocols defined in all relevant management plans prepared specifically for the ASR. When viewed as a whole, these plans form a basis for providing direction as to the measures and actions to be taken in regards to health, safety and environmental protection during the construction phase. Occupational Health and Safety procedures will conform to Workers Safety and Compensation Commission (WSCC) requirements.

3.1 Contractor Responsibilities

All employees and subcontractors are required to work safely, to assist in the development of safe work procedures and to follow all rules and procedures. Everyone is expected to report, and if able, correct unsafe conditions or activities, and to work cooperatively toward the prevention of accidents. Responsibilities include:

• A designated person will be responsible for the safety, health and environmental related communications for their company;
• Occupational Health and Safety procedures will conform to Workers Safety and Compensation Commission (WSCC) requirements;
• Being thoroughly familiar with, and participate in the health, safety and environmental programs;
• Following safety standards and safe work procedures;
• Providing safe working conditions;
• Establishing and maintaining site safety standards, and working with all personnel to develop work procedures and guidelines;
• Providing safe tools and equipment;
• Ensuring hazards are guarded against or eliminated;
• Refusing to perform work when unsafe conditions exist or if not competent to perform;
• Reporting all unsafe conditions, hazards, accidents, incidents and injuries;
• Participating in all training sessions;
• Use required PPE and safety equipment; and
• Checking tools and equipment, including PPE for hazards before using them.

CZN reserves the right to refuse or remove any contractor or subcontractor based on their health, safety and environmental performance.

Contractors are also prohibited from entering the village of Nahanni Butte, unless invited by, and escorted by, a Band member.

3.2 Site Orientation

All personnel working on-site must attend the site orientation presentation(s) and complete and sign a record form, acknowledging the orientation and agreeing to adhere to site policies. Site orientation will include procedures and policies related to site safety, wildlife encounters, personnel responsibilities, and construction procedures. This orientation would also include Bear Awareness training.
3.3 **Wildlife**

All wildlife along the road corridor or within project site area is to be respected and given right of way when approaching. When encountering wildlife within the road corridor, keep your distance and stop to allow wildlife to move off. Do not approach, or feed wildlife.

The following key wildlife mitigations for road construction are:

a. **Caribou**: CZN commits to installing windrows, lumber, or other brush clearing material at intersections with other linear features to discourage access (and limit sightlines) to the road corridor by wildlife and humans;

b. **Bear den**: A survey is required prior to winter clearing. If a bear den is encountered during site works, stop immediately and report to supervisor and EM;

c. **Habitat**: Significant changes to water levels while pumping water from a known Beaver pond in the fall and winter periods will be avoided;

d. **Pika**: Prohibit the disturbance of talus habitat (within pika range) year round unless pre-disturbance presence/not detected surveys have been completed and pikas were determined to not be present;

e. **Pika**: If required, determine a sufficient buffer distance from which borrow construction can occur near active pika habitat, based on guidance from a biologist. NOTE: this is 150 m from all general construction activity and 500 m from blast sites during the breeding period from June 1 to July 31;

f. **Caribou, Dall’s Sheep, Grizzly Bear, Wolverine, and Trumpeter Swan**: Blasting is prohibited if caribou, sheep, grizzly, wolverine or swan are observed within 1 km of the blast site until the animal moves out of the area;

g. **Trumpeter Swan**: Frequent, long-term and large disturbances, multiple sources of disturbances, and noise emissions greater than 50 dB (or greater than 10 dB above ambient) will be avoided within 800 m of observed Trumpeter Swans. Mitigation and monitoring efforts will be focused in sections where the Project overlaps the Southeastern Mackenzie Mountain Key Migratory Habitat Site (from Km 87 – 117);

h. **Trumpeter Swan**: Construction activities (if critical for development, including crushing but excluding blasting) may occur within 800 m of observed Trumpeter Swans (from April 1 to September 30) with the assistance of a CZN Environmental Monitor; and

i. **Migratory Birds**: Right of way clearing to be scheduled during non-nesting periods (September-April). If clearing is completed during nesting periods, additional survey and monitoring will be completed as directed by EM. If nests are encountered, stop work, leave area, and notify EM for instruction.

j. **Timber Harvest**: CZN will notify the community of Nahanni Butte of opportunities to undertake timber recovery.

3.3.1 **Wildlife Encounters**

The following approach will be taken toward aggressive or problem wildlife:

- All Project employees will take a Bear Awareness course during site orientation;
- Avoid working alone. Work in pairs, be aware and alert;
- Carry bear spray when working within bush or away from vehicle, secure area;
- Notify site supervisor, other workers in area, and EM ASAP; and
- EM to notify Park or GNWT inspectors immediately of ongoing problem wildlife to agree on a mitigation strategy.
3.4 **Pets**
Pets are prohibited within the Project area.

3.5 **Hunting, Fishing, Trapping**
All hunting, fishing, and trapping is prohibited within the Project area by CZN and project contractor employees.

4 **CONSTRUCTION APPROACH**

4.1 **Phase 1 Winter Access Road**
Establishment of the Phase 1 winter road will provide access for further geotechnical investigation, delivery of equipment and supplies to the Mine site, as well as staging equipment and supplies to various locations as needed along the proposed route for subsequent construction efforts. The winter grade will be established primarily from snow and ice with minimal stump removal. Some portions of the Phase 1 winter road will require some cut and fill of mineral soils (in terrain with steeper side slopes and broken) to establish a safe winter road base. A mix of sufficient mineral soil with organics, and capped with snow/ice to preserve/protect from sun exposure, will be used. Clearing width is anticipated to be 10 to 15 metres.

The winter road grade will be established to the low side of the Right of Way to avoid freeze in of the ground surface within the footprint of the ASR.

4.2 **Phase 2 ASR Construction**
The Phase 2 ASR construction approach will be as follows:
- Construction would occur Year 2 and 3;
- Multiple construction fronts would be operating at a given time, supported with up to 7 camps;
- A winter road would be re-established to supply materials and resources to the project;
- Summer operations would require fuel and supplies to be delivered and stockpiled during winter road operations;
- The majority of major stream crossings will be constructed in the first winter to provide needed access in summer;
- Winter operations will focus on sections considered wet or potentially containing permafrost, and therefore better suited for winter operations. This will include installing culverts on streams influenced by permafrost during colder periods to minimize impacts;
- Summer operations would focus on drier terrain and reshaping winter subgrade, applying/installing culverts; and
- In summer Year 2, helicopter support will be utilized to transport consumable goods and personnel to inaccessible camps.

**Preliminary Subgrade vs. Final Subgrade**
Generally, a preliminary subgrade will be constructed in winter. Additional subgrade would be added to complete a final subgrade, ready for surfacing. With this approach, the road subgrade is allowed to
settle for a season to improve road subgrade structure, reduce surfacing depth, and reduce future maintenance costs.

The preliminary subgrade will have adequate ditching/drainage control and will be suitable for light duty function. Temporary steel pipes may be used for drainage until final culverts are installed. This approach will provide limited access to help support construction operations.

The “final subgrade” will be a constructed road prism and grade as per detailed design, all final drainage structures (culverts) will be installed and functioning, cuts/fills properly sloped/shaped, road base properly packed and shaped ready for surfacing.

**Reshaping Preliminary Subgrade**

It is expected that a significant portion of the preliminary subgrade constructed during the winter will require some additional shaping outside of winter. Winter subgrade is commonly not fully compacted due to freezing temperatures and the unintentional inclusion of snow/ice mix. Re-shaping and added compaction will establish solid subgrade.

### 4.3 Borrow Pits

Three types of borrow pits will be utilized:

1. **Subgrade**: Common earth material silt, clay, sand, gravel or a mix used exclusively as base for the subgrade. Generally short term sources except sand borrow sources may be used long term to support winter operations. Borrow Sources outside the Right of Way will be cleared during winter operations concurrently with subgrade construction.

2. **Aggregate**: Gravels (maybe pit run, screened, or crushed) used for road surfacing materials, foundations, culvert installs, but may also be used for subgrade borrow. Most good quality pits will remain long term if not depleted to support long term road maintenance.

3. **Rock Quarry / Rip Rap**: Provide armouring rock adjacent to streams and slope stabilization. May require blasting; where possible try to utilize large talus rock deposits. Some will be retained for long term road maintenance

### 5 CONSTRUCTION PROCEDURES

The designated CPM has acting authority and responsibility to ensure:

- Prime contractor, sub-contractor(s), and those employed are working in full compliance of the project especially related to safe work practices;
- All environmental safeguards and procedures are followed;
- Road construction practices are consistent with accepted best management practices and in full compliance of prescribed road designs, bridge and culvert designs, and the RCMP.

### 5.1 Pre-Works Checklist

Prior to the commencement of operational works, the checklist will be jointly reviewed and checked between the contractor(s), the CPM, the acting EM, and if and when necessary, government inspectors. The pre-works checklist will be completed as necessary at both a macro level (example, initial start-up
of construction) or at a micro level (example, specific bridge installation or Special Erosion Protection Area SEPA)). The checklist would identify and communicate such things as:

- Confirm all permits and approvals;
- Safety actions or concerns;
- Specific construction approaches, concerns, and procedures;
- Erosion and sediment control measures;
- Scheduling;
- Environmental protection approaches, concerns, and procedures; and
- Identify any conflicts with winter road operations (transporting delivered loads) and road construction works.

5.2 Right of Way Clearing

Right of way clearing is considered the process of falling, brushing, and removal of vegetation above ground, but not the intentional stripping of organics to mineral soil. The following will be applied to right of way clearing operations:

- Phase 1 right of way clearing minimal, Phase 2 full right of way clearing;
- Prior to commencing right of way clearing, all operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood. Bear den survey to be completed in designated areas prior to clearing.
- The detailed design will identify environmentally sensitive areas which may require the removal and storage of right of way debris at specified locations;
- For Phase 1 operations, right of way vegetation will be placed along the shoulder of the road edge and may be used as fill material along the low side of road. Mulchers may be utilized to manage and break down larger concentrations of debris;
- For Phase 2 operations, larger log fibre will be used for log corduroy material where required, otherwise piled and burned, buried, or loaded and relocated to suitable locations. Mulchers may be utilized to manage and break down larger concentrations of debris;
- During non frozen periods, clearing of riparian areas only to occur during optimum weather conditions;
- Right of way debris must not be piled in a riparian area or watercourse. It must be pulled back and stored outside of riparian area;
- Avoid high, long windrow piles. Breaks must be established frequently to allow wildlife passage;
- Equipment crossings of open surface water will be avoided. If a crossing is unavoidable, it will be limited to a one time crossing with authorization to gain equipment access to oppose side and can only be considered if the stream depth and bottom material is acceptable to support such a crossing without significant stream bed damage. Otherwise, an alternative must be applied.

5.3 Stripping and Grubbing

Stripping and grubbing is the removal of unwanted organics and soils, in preparation for constructing the road subgrade. Stripping/grubbing is to be avoided during Phase 1 winter road construction. However, some portions of the Phase 1 winter road will require some stripping of mineral soils (in terrain with steeper side slopes and broken) to establish a safe winter road base.

The following procedures will apply for stripping/grubbing operations (Phase 2)
Prior to commencing stripping and grubbing, all operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood;

- Stripping will occur prior to subgrade construction;
- Stripping material will be placed along the low side of the right-of-way unless otherwise directed or as per Detailed Design. The detailed design will identify environmentally sensitive areas which may require the removal and storage of stripping at specified locations;
- Stripping piles may be placed at specific locations to reduce wildlife line of sight, such as intersections with existing cut-lines.
- Avoid mixing and stockpiling organic stripping with other undesirable stripping material (organic material may be utilized for future reclamation);
- Only strip as necessary to avoid excessive freeze in of exposed soils impacting subgrade construction;
- Following stripping, the road prism will be grade staked to direct equipment operators.
- Avoid placing snow/ice fill within the road subgrade;
- Stripping and grubbing to be completed concurrently 1 to 2 days ahead of subgrade construction to avoid unnecessary exposure of mineral soils to weather (summer rain, winter snow and deeper frost penetration);
- Provisions for the above include special defined areas or circumstances where it is known to be beneficial to the construction schedule, without causing significant additional environmental risk. An example would be drainage of an identified wet area in advance of construction activities to improve the future constructability of the site;
- Avoid stripping at the conclusion of winter operations to avoid unnecessary exposure of mineral soils during spring thaw runoff;
- No stripping to be completed at designated “overland” sections, particularly known permafrost sections. If permafrost is encountered, stop and consult with supervisor for direction;
- Strippings and overburden piles must not be stockpiled within 15 m of the top of bank of any watercourse, wetland, or riparian area, unless otherwise reviewed by the Environmental Monitor (EM) and deemed to pose a low risk of sediment entry into any water body;
- Strippings and overburden to be placed in accordance with the road design plan. Typically, these piles would be located on the lower side of the right of way. These piles must be placed to allow future accessibility for required reclamation of the road;
- Within riparian areas, stripping is to be avoid if possible (overland) or minimized only to support road design criteria. Overburden stripplings are to be placed in defined location outside the riparian area, for timely future reclamation within the riparian zone;
- During non frozen periods, stripping of riparian areas only to occur during optimum weather conditions, with subgrade construction to immediately follow to avoid unnecessary exposure of mineral soils;
- Any temporary storage of stripplings and overburden, such as at borrow locations, will be consistent with the specific site plan;
- Avoid high, long windrow piles. Breaks must be established frequently to allow wildlife passage; and
- Maintain all natural drainage flows. Do not block or dam areas creating a ponding effect.

5.4 Subgrade Construction

Subgrade construction involves shaping, ditching, and building up of the road prism structure. The following procedures will be followed to construct subgrade:
Prior to commencing, all operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood;

- Following stripping, the road prism will be centerline or grade staked to direct equipment operators;
- Finish all subgrade activities concurrently. Ensure natural drainage patterns are restored by adequate ditching, cross ditches, water bars, and installation of culvert;
- Any fill utilized for subgrade must be placed in layers with adequate compaction;
- Cut and fill slope angles will reflect general soils type; gravels 1.5:1, fine soils/silts 2:1. Refer to detail design for details;
- Subgrade will be constructed in accordance with the road design
- Construction will be stopped during periods of heavy rain and runoff to minimize soil disturbance;
- Runoff will be diverted away from water bodies;
- Silt or filter fences will be installed on the lower perimeter of slopes (i.e. lower 1/3 to 1/2 of the site) and areas where the erosion potential is high and/or it is desirable to contain waterborne movement of eroded soils. Such areas include the bottom of cut or fill slopes, material stockpiles and disturbed natural areas;
- Immediately following the completion of a road segment, erosion and sediment control measures will be applied to minimize the migration of eroded soils. Control measures include gravel berms, small silt fences, check dams, turf reinforced mats, and local organic based berm structures and/or geotextile fabric covering. The number and spacing of these installations will depend on the nature of the construction operations. Large cuts/fills may be capped with gravels/rock as required within a reasonable time;
- Fill brought to the Project site will be managed properly to prevent soil erosion and/or sediment laden runoff;
- Equipment operator competence and adequate supervision to prevent unwanted/undesirable material placed into the road subgrade. This is particularly important during winter operations avoiding added ice and snow;
- Equipment used for site preparation, construction, installation of culverts will operate outside the wetted channel from the top of the bank or in a dry stream channel;
- All areas with steep slopes will be reviewed closely prior to stripping to ensure that accurate work limits are established;
- All open water stream crossings must use a temporary crossing structure such as a temporary culvert, bridge, or crane mats; and
- When crossing sensitive, wet sections vulnerable to erosion or significant environmental impacts, the contractor will utilize rig mats or other capable methods.

Subgrade Construction (Overland)

- Stumping/stripping not required for overland construction;
- Avoid placing snow/ice fill within road subgrade during construction;
- Following clearing, the road prism will be centerline or grade staked to direct equipment operators; and
- Majority of overland construction is short spans; across wet or suspected permafrost sections.

5.5 Lower Sundog Construction and Stream Re-Alignment

The following procedures will apply for the construction of the ASR within Lower Sundog Creek and for the proposed channel re-alignment;
• KP 33 to 38.5; portions of the proposed road will be constructed within the current active floodplain of Sundog Creek;
• Portions of the alignment not on the active floodplain will require rock blasting;
• Construction is scheduled to commence in late summer. The work must be completed during low or no flow periods, August to December 31, and completed in one construction season;
• Construction pace through this section will be considered slow due to confined work space limiting the effective size of equipment spreads. Therefore, construction will be staged from 2 fronts; east from Camp 42 and west from Camp 23;
• Initially, the focus is to establish a preliminary access road to connect the 2 sides, then continue to build the finished subgrade;
• Borrow Pits identified to support construction need to be quantified and conform with any applicable Pika restrictions;
• Work on the proposed re-alignment channel will occur in conjunction with subgrade construction. If possible, material generated from enlarging the re-alignment will be utilized in the road subgrade;
• Works will commence approximately 50 m from the downstream “tie in” end and commence upstream, and stop short of upstream “tie in” to the main channel. The downstream “tie in” section will remain intact and untouched until all works upstream are completed. Any surface water flows which develop in the isolated section will filter through natural gravels and release of sediment into the main channel will be avoided;
• The newly constructed re-alignment channel will be washed with sufficient water to allow sediment to filter and settle within the gravel bed or collect in sumps. Sediment catch sumps will be established at prescribed locations. Channel washing will occur concurrently as construction progresses upstream;
• Water utilized for the washing will be extracted from an adjacent floodplain location;
• Following satisfactory washing of the exposed constructed stream bed, the downstream “tie in” section will be constructed;
• With final inspection and approval of the constructed re-aligned channel, the upstream “tie in” to the main channel will be constructed and the main channel diversion completed, these works occurring after all surface water flows have ceased for the season; and
• Ongoing monitoring of the re-alignment channel will occur.

5.6 Borrow Pits

The following procedures for borrow pit development and operation will include:

• Refer to the approved “Borrow Pit Management and Reclamation Plan” to ensure compliance;
• Prior to completion of winter operations or when borrow pits remain dormant for period of time, ensure and establish proper management of surface water by use of ditches, cross ditches, waterbars, silt fencing, etc.; on all exposed/cleared/developed borrow pits. Ensure water flows do not impact potential surrounding permafrost; and
• Some borrow sources may only be accessible during the winter (frozen) season. Material from these sources will be stockpiled at predetermined locations to support summer construction operations.

5.7 Stockpiles

Stockpiles of rip rap and aggregate materials will be required at locations within the Project. The following procedures for material stockpiles will include:
• Storage at approved locations;
• Prior to stockpiling, all operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood;
• Locate within the existing project footprint; and
• Locate a minimum 15 m from the top of bank of any watercourse, wetland, or riparian area, unless otherwise reviewed by the Environmental Monitor (EM) and deemed to pose a low risk of sediment entry into any water body.

5.8 Aggregate Production and Placement

An acceptable surfacing aggregate may be placed over the subgrade up to a year following the construction of road subgrade to allow proper drainage, drying, and settling of the subgrade. Aggregate for surfacing the road subgrade may utilize natural pit run, potentially screened material or, if required, crush material in accordance with detailed design parameters. The following procedures will be included:

• All borrow sites will be operated in accordance with the approved BPMRP’s;
• Material will be applied as defined in the detailed road design, as required; and
• Water application may be required to improve the quality of the application and to provide dust management.

5.9 Operations within Riparian Areas

The following procedures will be included when operating within riparian areas:

• All riparian areas will be clearly marked, identified, and communicated to equipment operators;
• All works within riparian areas will follow the EM direction and guidelines to prevent or minimize adverse impacts to the riparian zone;
• Minimize or avoid unnecessary stripping within riparian areas, overland construct if possible to preserve natural vegetation;
• Works conducted within riparian areas will be completed in a continuous manner until completion, unless site conditions do not permit; and
• Upon completion, under the direction of the EM, disperse organic strippings on exposed soils to assist natural re-vegetation of the site.

Works conducted within riparian areas, including crossing installations, will be scheduled during optimum seasonal conditions, either winter or dry summer periods during low water flows, and outside any specific fish windows. Work during peak water flows will be avoided. Temporary crossings may be utilized to maintain the construction schedule and allow the installation to occur at a later date when conditions improve. It is preferred to install culverts concurrently with the subgrade construction.

5.10 Watercourse Structure Installation

The following general approach will be taken for all watercourse crossing installations:

• Avoid perched/elevated culvert outlets. Place adequate rip rap at inlet/outlet to mitigate erosion and sedimentation impacts;
• All fish bearing stream crossing structures shall be installed in accordance with DFO Installation Guidelines; and
• Follow guidelines within NWT “Northern Land Use Guidelines – Road and Access Trails” and industry Best Management Practices.

5.10.1 Culvert Installation

**Minor Culvert Installation**

Minor culvert installations would include 800 mm and smaller diameter. This would include non-classified drainages, non-fish bearing streams, and cross drainage culverts. The installation of these culverts would be generally considered simple. The following procedures will be applied:

• Prior to installation, confirm culvert size matches the crossing, operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood;
• Install required erosion and sediment control measures;
• Complete works in a timely manner and minimize disturbance to the natural channel;
• Establish a solid base to place the culvert and apply adequate compaction during the installation process;
• If there is significant surface water flow, a diversion of the water flow is required by either the use of pumps or a short term diversion channel;
• Add additional erosion and sediment control measures as required; and
• Install/place required rip rap at outlets as required.

**Major Culvert Installation**

Major culvert installations would include greater than 800 mm and some sites may require multiple culverts. This would include crossing larger wetlands and larger streams, classified as either non-fish or fish bearing. Typically, the installation of these culverts would be considered a more complex process regarding proper site preparation and installation approaches. In addition to the approaches for minor culverts, the following approaches will be applied:

• Equipment crossings of open surface water will be avoided. If a crossing is unavoidable, it will be limited to a one time crossing with authorization to gain equipment access to the oppose side and can only be considered if the stream depth and bottom material are acceptable to support such a crossing without significant stream bed damage. Otherwise, an alternative must be applied;
• Establish a solid base to place the culvert and apply 30 to 50 cm lifts of suitable granular material and apply adequate compaction until the installation is complete. Typically, the fill on top of the culvert must be a minimum of ½ the diameter of the culvert;
• When isolation of the channel is required, water pumps will be used to draw water from the work area and discharge it to a well vegetated area or a settling basin away from the stream;
• Complete the prescribed riparian reclamation measures immediately following the completion of subgrade construction within riparian areas unless conditions do not allow; and
• Avoid installing major culverts when extreme cold temperatures prevail and/or with frozen fill material.

5.10.2 Bridge Installation

A number of bridge structures will be multi spans of significant size. The following procedures will be applied to bridge installation operations:
- Prior to installation, confirm all materials and supplies matches the crossing, all operators must confirm all approvals are obtained, objectives defined and understood, any erosion/sedimentation measures are applied, and special precautions/procedures are understood;
- Bridge installations are to be scheduled during preferred seasonal windows;
- Install required erosion and sediment control measures;
- Complete works in a timely manner and minimize disturbance to the natural channel;
- The bridge and its approach roads are not to produce a back-water effect or increase the head in the stream;
- The equipment used for construction, including site preparation and maintenance of the bridge, will be situated in a dry stream channel or will be operated from the top of bank;
- Add additional erosion and sediment control measures as required;
- Complete the prescribed riparian reclamation measures immediately following the completion of subgrade construction within riparian areas unless conditions do not allow;
- Avoid installing foundations with frozen fill material or installing spread footings over frozen ground; and
- Equipment crossings of open surface water will be avoided. If a crossing is unavoidable, it will be limited to a one time crossing with authorization to gain equipment access to oppose side and can only be considered if the stream depth and bottom material is acceptable to support such a crossing without significant stream bed damage. Otherwise, an alternative must be applied.

5.11 Blasting Operations

The following procedures will apply for blasting operations:

- Must comply with NWT government and Parks regulations;
- Apply best management practices; and
- Follow the approved Explosives Management Plan.

Specific wildlife restrictions include:

Fish Bearing Streams
- Adhere to DFO regulations with respect to blasting within proximity to fish bearing streams; and
- At active blasting sites in proximity to fish bearing streams, complete inspections during and immediately following significant rainfall periods to assess and if required, mitigate, potential sediment release.

Caribou
- KP 0-Liard highway
  a) Blasting prohibited year-round when caribou present within 1 km (until animal moves out of the area).
  b) General Project shut-down, year-round, when caribou within 500 m.

- KP 114-Liard highway
  a) Blasting prohibited from May 1 to Jul. 15 (during boreal caribou calving/post-calving).
  b) Blasting minimized to the extent possible from Dec. 1 to Apr. 30.

Bears
- KP 0-70
  a) Blasting prohibited when grizzly bear present within 1 km (until animal moves out of the area).
-KP 0–Liard highway
  a) Blasting prohibited within 1.5 km of a known den from Sept. 30 to May 31.

**Collared Pika**
- KP 14–40
  a) Avoid the disturbance of talus habitat year-round unless a pre-disturbance survey has been completed and pika were determined to not be present.
  b) Blasting prohibited within 500 m of pika occupied talus from Jun. 1 to Jul. 31.

**Birds**
- KP 0–Liard highway
  a) Avoid clearing during the nesting period (May 1 to Aug. 31).
  b) Avoid all bird nests by 250 m or more during the nesting period.

- KP 60–Liard Highway
  a) Blasting prohibited from Apr. 1 to Sept. 30 when Trumpeter Swans are within 800 m.

**Other Wildlife**
- KP 0–Liard highway
  a) Blasting prohibited year-round when wolverine present within 1 km (until animal moves out of the area).

- KP 0–39
  a) Blasting prohibited year-round when Dall’s sheep present within 1 km (until animal moves out of the area).
  b) Blasting prohibited from May 1 to Jun. 15 when Dall’s sheep lambs present within 2 km.
  c) Minimize Project activities from Jun. 15 to Aug. 15 when Dall’s sheep lambs present.

- KP 124–160
  a) Blasting prohibited year-round when Dall’s sheep present within 1 km (until animal moves out of the area).
  b) Blasting prohibited from May 1 to Jun. 15 when Dall’s sheep lambs present within 2 km.
  c) Minimize Project activities from Jun. 15 to Aug. 15 when Dall’s sheep lambs present.

- KP 156–157
  a) Minimize Project activities from Apr. 1 to Jul. 15 within 250 m of mineral licks.

**5.12 Deactivation of Winter Roads**

Deactivation of winter roads is required at the conclusion of a winter haul program. Procedures for deactivation include:

- Removal of all snow fills/log debris/temporary steel pipe drainages/temporary bridges as required at all stream crossings and ensure natural drainage will occur;
- Install water bars/cross ditches as directed and required to maintain natural drainage patterns;
- Stabilize any mineral soil cut or fill slope disturbance areas;
- Stage necessary equipment and supplies at predetermined locations to support potential future erosion control responses; and
- Monitor spring break-up period to ensure no significant erosion/sediment disturbance.
6 CONSTRUCTION SCHEDULE

The following list summarizes the key considerations within the construction schedule and key Project milestones:

**Key Project Considerations:**

- Incorporation of Measures and Developer’s Commitments from the Report of EA, including review of designs by an Independent Technical Panel (Panel);
- A two phase approach (Phase 1 and 2) to constructing the ASR;
- Phase 1 Winter Road construction to commence on KP 0 to 26 in fall 2019, with the majority occurring in winter 2019/20;
- An operational Phase 1 winter road for late winter 2020; re-establishment of winter roads as required for winters 2021 and 2022;
- Phase 2 ASR construction to be completed over a two-year period;
- Lower Sundog Creek re-alignment and ASR construction to be completed in one season during low or no flow periods (late summer to early winter);
- Majority of major stream crossing structures to be installed in the first winter of Phase 2 construction to support summer construction site access;
- The Liard River crossing is an access challenge to the Project. An ice bridge crossing during winter months cannot be established until ~January 1, and for heavy traffic ~January 15. A small sized barge capable of transporting single 5 tonne trucks could provide limited access during summer operations;
- Multiple construction fronts will be operating consecutively supported by up to 7 camps;
- A number of camps will be isolated during the first Phase 2 (2021) summer operations. Materials, fuel, and supplies need to be transported in winter and stockpiled to support summer operations; and
- In summer 2021, a helicopter will be utilized to transport camp consumables and project personnel to isolated construction camps/spreads.

**Key Project Milestones:**

- Panel completes review of non-typical Phase 1 winter road sections by September 1, 2019.
- Panel completes review of Phase 2 ASR preliminary road designs and provides direction for integration into final detailed road designs by January 1, 2020;
- Phase 1 (KP 0 to 26) construction commences September 1, 2019;
- Phase 1 (from 26 and 170) construction commence with suitable winter conditions from November 1, 2019;
- Liard River ice bridge established by January 1, 2020;
- Operational Phase 1 winter road by March 15, 2020;
- Geotechnical and geophysical investigations completed in winter, 2020. Final report summited by May 1, 2020;
- Detailed road and crossing structure designs completed for K 0-25.5 by July 15, 2020, Panel/Regulator approval by August 30, 2020
- Detailed road and crossing structure designs completed for KP 170-156 and 25.5-28.5 by July 31, 2020, Panel/Regulator approval by October 1, 2020;
- Detailed road and crossing structure designs completed for remaining sections by November 1, 2020, Panel/Regulator approval by December 1, 2020;
- Fall, 2020:
  - KP 0 to 25.5, priority developing major stream crossings and blasting sections.
- KP 170 to 155, constructing ASR to Liard River crossing;
  - Winter 2021 Re-establish Phase 1 winter road for site access;
  - Limited road access established to Camp 87 by early fall 2021;
  - Majority of ASR subgrade constructed in 2021;
  - Lower Sundog Creek re-alignment and ASR construction within August 15 to December 1, 2021;
  - Majority of surfacing completed in winter and summer 2022; and
  - ASR operational August 1, 2022.

7  MONITORING

Overall monitoring of road construction compliance and effectiveness, site safety as well as access control, environmental, wildlife and harvesting will be jointly conducted by the CPM, RCS, SOM, EM’s, and the Site Safety and Health Manager.

7.1  Record Keeping

Monitoring reports, including near-miss and incident reports, will be maintained. These records will be kept for the life of the ASR. Weekly and monthly reports and revisions of this Plan will also be maintained.

7.2  Plan Annual Review and Updates

The CPM will ensure that this plan is reviewed and updated on an annual basis. Any updates to the plan will be provided to the MVLWB and Parks Canada for comment. The review will incorporate Incident Reports involving risk to personnel, wildlife, equipment, and/or the environment.

Any updates to the Plan will be communicated with all Project employees and contractors.

8  ADAPTIVE MANAGEMENT

The Plan will be adjusted as necessary based on operating experience to promote safety, access control and wildlife protection.

All near misses and incidents will be investigated appropriately to determine root cause(s). The investigations will make recommendations in an effort to eliminate future similar incidents. The investigation results will be assessed for identification of trends that might suggest a need to change the Plan.

Any Plan revisions will be immediately incorporated into training and orientation sessions and be distributed to existing staff members for their immediate use.
ALLNORTH CONSULTANTS LIMITED

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Appendix A  Project Overview Map