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

APPENDIX 4-1

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
Traffic Control Mitigation and Management Plan

Prepared For: Canadian Zinc Corporation

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Date: 15 February 2019
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PLAIN LANGUAGE SUMMARY

This Traffic Control Mitigation and Management Plan (TCMMP) was prepared for Canadian Zinc Corporation (CZN) by Allnorth Consultants Ltd (Allnorth). This management plan serves to set forth safe operating procedures for managing mine and non-mine traffic on the Prairie Creek All Season Road (ASR) and initial winter roads, and to ensure the safety of all road users and the general public while minimizing potential risk to the environment. The Construction Project Manager (CPM) will be responsible to implement and monitor the use of this plan during the construction of initial winter roads and ASR. The Road Operations Manager (ROM) will assume implementation and monitoring responsibilities associated with the ASR operation and Closure and Reclamation Plan. All managers will ensure that this plan is incorporated appropriately within the Site Orientation given to all employees, contractors and visitors that will use the ASR.

The ASR is approximately 170 km long, connecting the Prairie Creek Mine site to the Nahanni Butte access road. The TCMMP provides procedures for traffic control and monitoring over all phases of the Mine Project. This includes:

1. Construction Phase 1 - Winter Road Construction and Operation: Construct a winter road on the ASR alignment right-of-way (ROW) to support required geotechnical investigation and future ASR construction;
2. Construction Phase 2 – ASR Construction: Reconstruct the Phase 1 winter road and commence ASR construction, to be completed over two further years;
3. ASR Operation: Includes loaded concentrate transportation, the transportation of consumable materials and supplies to support mine operations, and road maintenance; and
4. Closure and Reclamation.

The main objective of the TCMMP is to ensure the transportation of goods, services, and materials along the Prairie Creek ASR is conducted in a safe, efficient, and courteous manner to ensure the protection of people, the environment, and wildlife. The TCMMP is intended to address 5 key areas that are related to traffic control on the ASR. These 5 areas are:

- Nature of Mine Traffic;
- Road Operating Conditions;
- Hazards;
- Daily Road Use; and
- Access Control, Tracking, Communications and Monitoring.

Nature of Mine Traffic: During ASR construction, there will be winter traffic to/from the Mine as well as construction deliveries for 3 winters before the ASR is operational. ASR Operations will extend from the completion of the ASR construction over the currently projected mine life of 15 years. The estimated number of round trips per day during normal operational periods is 26-32 vehicles.
Road Operating Conditions: These are the planned road operating conditions relating to safety of the mine trucks and drivers using the ASR. Speed limits will be posted along the ASR and enforced. Maximum speed limits will be posted for optimum driving conditions. Employees will be required to drive to road conditions and not endanger themselves or others in inclement weather or adverse driving conditions. Temporary emergency shelters will be maintained at the maintenance camps at KP 42, 87, and 121, in the event of unscheduled road closures. To ensure mine trucks remain in safe operating condition, a pre-trip inspection will be performed daily. Each vehicle will be equipped with a logbook to record inspections and regular maintenance. All vehicle operators will have a valid Driver’s License appropriate for the vehicle under their operation, and have received the appropriate orientation and training prior to road use. A daily tailgate meeting will be held prior to hauls commencing. Drivers will be informed of present road conditions, potential hazards, and have an opportunity to express safety concerns.

Hazards: Potential hazards that may pose a risk to traffic on the ASR include avalanches and rock falls in mountainous terrain, forest fires and wildlife. The occurrences of hazards will be monitored and traffic advised and/or adjusted accordingly.

Daily Road Use: For ASR operations after ASR construction, CZN will adopt a journey management system (JMS) which will be overseen by a JMS Coordinator (JMSC), as directed by the ROM. All users of the ASR will be required to check in with the JMS Coordinator prior to using the ASR. The JMSC will be responsible for ensuring procedures are followed, and managing the daily mine haul. Prior to the daily haul commencing, maintenance crews and environmental monitors (EM’s) will leave first to check road conditions and advise the JMSC. The shorter haul periods for the initial winter roads will be coordinated by Liard River checkpoint and Mine site staff, liaising with the CPM.

Access Control, Tracking, Communications and Monitoring: Access control will be adopted on the winter and all season roads to promote safety and minimize hunting pressures.

All concentrate trucks will be equipped with a Global Positioning System (GPS) tracking device and a two-way radio to assist with communications and monitoring. Locations and speeds will be monitored by the JMSC. For all other authorized ASR mine traffic, GPS tracking devices and radios will be provided to these vehicles at the security checkpoint for their safety and to operate within the radio protocol procedures. Other potential industrial users will require a road use agreement with CZN which must comply with this TCMMP. The radios will be used to coordinate passing using the pullouts. Radios will also be employed on the initial winter roads.

Public travel will be discouraged by enforcing non-entrance to CZN’s leases covering the ASR on both sides of the Liard River, only providing barge use to mine traffic in summer, and operating the security checkpoint on the road north of the Liard River crossing. If unauthorized vehicles persist in using the road, checkpoint staff will try to provide GPS tracking devices and radios. Failing that, and in any event, unauthorized vehicles will be tracked by cameras and/or EM’s assigned to ‘shadow’ them. When the checkpoint is not in operation, motion-sensing cameras with detection relay will be used to relay the alarm.

Incident Response: Incident response actions are as follows:

Emergency Situation

- Secure the area if unsafe;
- Contact the JMSC or other representative;
• If trained, apply first aid measures if injuries are incurred;
• In the event of a spill, follow the approved Spill Contingency Plan; and
• Record incident details when site and situation is under control.

Non Emergency / Unsafe Acts
• Report vehicle collisions or near misses involving single vehicles, multiple vehicles or wildlife;
• Report evidence of unauthorized access to the ASR by a vehicle; and
• Report evidence of unauthorized hunting, fishing, trapping or any other prohibited activity in the
  ASR.

Adaptive Management: This 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
TCMMP is a living document and the RCM will ensure that the plan is reviewed and updated on an annual basis.
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ACRONYMS & ABBREVIATIONS

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<th>Definition</th>
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<tr>
<td>AHMP</td>
<td>Avalanche Hazard Management Plan</td>
</tr>
<tr>
<td>ASR</td>
<td>All-Season Road</td>
</tr>
<tr>
<td>CPM</td>
<td>Construction Project Manager, for the ASR</td>
</tr>
<tr>
<td>CZN</td>
<td>Canadian Zinc Corporation</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EM</td>
<td>Environmental Monitor</td>
</tr>
<tr>
<td>ETA</td>
<td>Estimated Time of Arrival</td>
</tr>
<tr>
<td>ETD</td>
<td>Estimated Time of Departure</td>
</tr>
<tr>
<td>GNWT</td>
<td>Government of Northwest Territories</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>JMS</td>
<td>Journey Management System</td>
</tr>
<tr>
<td>JMSC</td>
<td>Journey Management System Coordinator</td>
</tr>
<tr>
<td>KP</td>
<td>Kilometre Post</td>
</tr>
<tr>
<td>Mine</td>
<td>Prairie Creek Mine</td>
</tr>
<tr>
<td>MVLWB</td>
<td>Mackenzie Valley Land and Water Board</td>
</tr>
<tr>
<td>NNPR</td>
<td>Nahanni National Park Reserve</td>
</tr>
<tr>
<td>NWT</td>
<td>Northwest Territories</td>
</tr>
<tr>
<td>Project</td>
<td>Prairie Creek All Season Road</td>
</tr>
<tr>
<td>ROM</td>
<td>Road Operations Manager</td>
</tr>
<tr>
<td>ROW</td>
<td>Right-of-Way</td>
</tr>
<tr>
<td>TCMMP</td>
<td>Traffic Control Mitigation and Management Plan</td>
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GLOSSARY OF TERMS

<table>
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<th>Glossary of Terms</th>
<th>Definition</th>
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<tr>
<td>Bedrock</td>
<td>The consolidated rock (harder than 3 Moh’s scale of hardness) underlying the Earth’s surface. Bedrock can be encountered at depths ranging from the Earth’s surface to hundreds of metres below, depending on the level of exposure to erosion.</td>
</tr>
<tr>
<td>Borrow Pit</td>
<td>Pit created to provide earth materials to be used as fill at another site.</td>
</tr>
<tr>
<td>Concentrate</td>
<td>Refers to the mine ore product refined into a concentrated form, either zinc or lead concentrate, for sale and transportation to Fort Nelson.</td>
</tr>
<tr>
<td>Pulaski</td>
<td>A special fire fighting hand tool that combines an axe and an adze in one head.</td>
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INTRODUCTION

This Traffic Control Mitigation and Management Plan (TCMMP) was prepared for Canadian Zinc Corporation (CZN) by Allnorth Consultants Ltd (Allnorth). This management plan serves to set forth safe operating procedures for managing mine and non-mine traffic on the Prairie Creek All Season Road (ASR), and to ensure the safety of all road users and the general public while minimizing potential risk to the environment.

The All Season Road (ASR) is currently in the design phase. This plan is considered a living document and will be updated as the ASR advances through detailed design, construction, operation, and reclamation.

During ASR construction, the CPM is responsible for the implementation of the plan. Once the ASR is operational, under the direction of the Road Operations Manager (ROM), working with JMSC and all managers, this plan is incorporated appropriately within the Site Orientation given to all employees, contractors and visitors that will use the ASR.

In the plan below, the general road design principles and nature of the traffic are briefly described first to serve as a basis for the subsequent definition of the proposed traffic control approaches.

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 Relevant Management Plans

This TCMMP is linked to several other CZN management plans, including:

- Road Operations and Maintenance Plan;
- Health, Safety and Emergency Response Plan;
- Engagement Plan;
- Borrow Pit Management and Reclamation Plans;
- Explosives Management Plan;
- Invasive Species 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 corridor alignment of the winter road alignment assessed during EA0809-02. Figure 1 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 on the ASR alignment right-of-way (ROW) to support required geotechnical investigation and future ASR construction; and

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

A safe and reliable means of transport for materials and equipment is required to support the Mine. The TCMMP provides procedures for traffic control and monitoring over all phases of the Mine Project. This includes:

1. Winter Road Construction and Operation: Geotechnical investigations and transportation of materials and supplies into the Mine during Phase 1, and the same and ASR construction in Phase 2 until the ASR is operational;

2. ASR Operation: Includes loaded concentrate transportation to Fort Nelson, B.C., the transportation of consumable materials and supplies to support mine operations, and road maintenance; and

3. Closure and Reclamation.

In addition to traffic mitigation and management, proper and adequate road maintenance is required to support safe road operations. Refer to the "The Road Operations and Maintenance Plan" for details concerning road maintenance.

The road accesses areas that are:

- In Nahanni National Park Reserve;
- Culturally and spiritually important and used for traditional harvesting by Indigenous people; and
- Habitat for wildlife and plant species at risk.
1.4 Plan Objectives

The main objective of this plan is to ensure the transportation of goods, services, and materials along the Prairie Creek ASR is conducted in a safe, efficient, and courteous manner to ensure protection of people, the environment, and wildlife. This plan defines:

- A clear and specific safe operating procedure for all applicable road users during the three phases of the road project;
- Mechanisms to control access along the road corridor;
- Road operational authority;
- Mitigation and management of road access by the public;
- Road design standards to be implemented;
- Monitoring, Reporting and Enforcement procedures;
- Training procedures and implementation; and
- Security for CZN and contractor assets.

Enacting this Plan will mitigate the risks associated with operating a single lane, resource style road.

1.5 Legislative and Legal Requirements

This plan is designed to meet the compliance obligations defined by the Mackenzie Valley Land and Water Board (MVWLB) October 9, 2018 EA1415-01 Approval letter, stipulating CZN submit a Post EA Information Package, to fulfill requirements under the following:

- Measure 5-2 EA1415-01 REA Mackenzie Valley Review Board Decision, September 12, 2017;
- Section 72.1 Mackenzie Valley Resource Management Act (MVRMA), subsection 19(2) of the Mackenzie Valley Land Use Regulations; and
- Section 41.1 of the Canada National Parks Act.

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

Applicable best management practices related to design, construction, and operation of resource style roads and bridges were considered in the development of this plan. This includes consideration of similar plans for other mining projects.

1.6 Roles and Responsibilities

The Construction Project Manager (CPM) will be responsible to implement and monitor this plan during the construction of the initial winter roads and ASR. The Road Operations Manager (ROM) will assume
implementation and monitoring responsibilities associated with the ASR operation and Closure and Reclamation Plan. Both the CPM and ROM will direct and integrate support from the Health and Safety Manager, Journey Management System Coordinator (JMSC), and the Environmental Managers to implement, train, and report activities within this plan.

All Project employees, contractors, and visitors will be required to adhere to the intent of this plan.

2 ROAD DESIGN AND MAINTENANCE

2.1 Design Criteria

The winter road and ASR will be built using the minimum design criteria listed in Table 1 below to promote safety.

Table 1: Road Design Specifications

<table>
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<tr>
<th>Item</th>
<th>Phase 1 Winter Road</th>
<th>Phase 2 ASR</th>
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<tbody>
<tr>
<td>Running Surface Width Minimum</td>
<td>5.0 m</td>
<td>5.0 m</td>
</tr>
<tr>
<td>Design Speed (primary)</td>
<td>30 km/hr</td>
<td>40 km/hr</td>
</tr>
<tr>
<td>Design Speed (secondary)</td>
<td>20 km/hr at limited locations</td>
<td>20 km/hr or 30 km/hr</td>
</tr>
<tr>
<td>Minimum Curve Radius (primary)</td>
<td>35 m</td>
<td>65 m</td>
</tr>
<tr>
<td>Minimum Curve Radius (secondary)</td>
<td>25 m</td>
<td>25 m</td>
</tr>
<tr>
<td>Optimum Maximum Sustained Grade</td>
<td>8 %</td>
<td>6 %</td>
</tr>
<tr>
<td>Acceptable Maximum Sustained Grade</td>
<td>10 %</td>
<td>8 to 10%</td>
</tr>
<tr>
<td>Maximum Short Pitch Grade (&lt; 250 m)</td>
<td>18 % unassisted 25 % assisted</td>
<td>12 %</td>
</tr>
<tr>
<td>Turnouts (minimum)</td>
<td>1 per km</td>
<td>2 to 3 per km</td>
</tr>
<tr>
<td>Life Expectancy</td>
<td>Up to 3 winter season</td>
<td>20 years</td>
</tr>
</tbody>
</table>

2.2 Maintenance

Road maintenance is critical to ensure safe transportation along the ASR. Many factors are considered to determine the level of road maintenance, such as:

- Seasonal and weather conditions;
- Traffic volumes;
- Road bed condition;
• Road usage and vehicle type (light vehicles vs. heavy commercial vehicles);
• Terrain, leading to surface deformation; and
• Environmental considerations.

Road maintenance activities will be conducted on a regular basis to ensure a safe and efficient operating road is maintained at all times. Details regarding the road maintenance program can be found in the Road Operations and Maintenance Plan.

3 MINE TRAFFIC

3.1 ASR Construction Period Traffic Volume

There will be winter traffic to/from the Mine for 3 winters before the ASR is operational, as well as for construction deliveries. Table 2 below summarizes the anticipated traffic volume over these three winters.

<table>
<thead>
<tr>
<th>Year</th>
<th>Operating Period</th>
<th>Mine Deliveries</th>
<th>ASR Construction</th>
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<tr>
<td>1</td>
<td>March 1 to 31</td>
<td>200 loads</td>
<td>80 loads</td>
</tr>
<tr>
<td>2</td>
<td>February 1 to March 31</td>
<td>400 loads</td>
<td>250 loads</td>
</tr>
<tr>
<td>3</td>
<td>January 15 to March 31</td>
<td>1,200 loads</td>
<td>250 loads</td>
</tr>
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</table>

3.2 ASR Operations Traffic Volume

The operation of the ASR will extend from the completion of the ASR construction over the currently projected mine life of 15 years.

Because of the Liard River crossing, operations will likely pause during the spring breakup and late fall ice-up periods when there is a transition from ice bridge to barge and back to ice bridge. CZN is discussing mitigation options regarding weight restrictions on Highway 7 during the spring-break up (April-July). Weight restrictions may limit and/or alter the normal frequency of ASR Mine traffic.

Table 3 below summarizes the estimated number of round trips per day during normal operational periods.

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Trips per day</th>
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</thead>
<tbody>
<tr>
<td>Super B Concentrate</td>
<td>15-20</td>
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</table>
4 ROAD OPERATING CONDITIONS

This section describes the planned road operating conditions relating to safety and specific to the road itself, and the mine trucks and drivers using it.

4.1 The ASR

4.1.1 Speed Limits

Speed limits will be posted along the ASR and enforced. Maximum speed limits will be posted for optimum driving conditions. Employees will be required to drive to road conditions and not endanger themselves or others in inclement weather or adverse driving conditions.

Table 4: Operating Speed Limits

<table>
<thead>
<tr>
<th>Road</th>
<th>Speed</th>
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<tbody>
<tr>
<td>Winter Road</td>
<td>30 km/hr</td>
</tr>
<tr>
<td>ASR</td>
<td>40 km/hr with posted 20 km/hr to 30 km/hr sections</td>
</tr>
</tbody>
</table>

4.1.2 Signage

Exact locations for all signage, and the nature of the signage, will be determined during detailed design and further reviewed by the CPM and ROM before traffic is cleared to use the road. Signage is expected to be applied as follows:

- At the intersection of the Nahanni Butte Access Road, specifying "Industrial Road used by heavy vehicles - Use Road at Own Risk", "Road use only by authorized vehicles after KP 14", and "Entering traditional land of NDDB - No Hunting";
- At the boundary of the staging area south of the Liard River "Entering Canadian Zinc Corporation Lease area, road use only by authorized vehicles, access denied to unauthorized users";
- At all bridge and confined stream crossing locations;
- Generally posted speed limit (30 or 40 km/hr) throughout;
- Speed reduced sections of 20 and 30Km/hr;
- Known wildlife presence or crossing areas (once these are known);
- Rock fall or avalanche areas ('No stopping' sections);
- Any 'must call' locations;
- Long sustained down grade sections (KP 11 to 17 for example, gear down);
- Chain on/off stations;
- Turn around locations;
- Stop Sign - Intersection with Nahanni Butte Access Road; and
- Kilometre signs at 1 km intervals.

4.1.3 **Shelters**

Temporary emergency shelters will be maintained at the maintenance camps at KP 42, 87, and 121, in the event of unscheduled road closures.

4.2 **Mine Concentrate Trucks**

To ensure mine haul trucks remain in safe operating condition, a pre-trip inspection will be performed daily. Each vehicle will be equipped with a logbook to record inspections and regular maintenance. The inspection checklist will include the following:

- Maintenance and service;
- Radio;
- Housekeeping;
- Glass and mirrors;
- Lights, signals, horn;
- Fluid levels;
- Tires (incl. spare);
- Body damage;
- Safety and First Aid Kit;
- Spill Kit;
- Fire extinguisher; and
- Wheel chocks.

All commercial vehicles are also required by law to complete pre-trip inspections including daily brake checks, as per the Motor Vehicle Act regulated by Transport Canada and GNWT.

4.3 **Drivers**

4.3.1 **Qualifications**

All vehicle operators will have a valid Driver’s License appropriate for the vehicle under their operation and have received the appropriate orientation and training prior to road use.

A process will be established to pre-qualify and evaluate all haul truck drivers prior to commencing the concentrate haul. This would include a "drive along" until proficiency is confirmed.

4.3.2 **Daily Tailgate and Safety Meetings**

A daily tailgate meeting will be held prior to hauls commencing. Drivers will be informed of present road conditions, potential hazards, and opportunity to express safety concerns. Information will be given regarding the locations of maintenance crews.
Monthly safety meeting to be completed with all Project staff to review safety concerns and opportunity to express safety concerns.

4.3.3 **Fatigue, Distracted Driving and Driving Under the Influence**

Driver Fatigue is a significant risk to the safety of people, environment, and wildlife. It is the responsibility of all personnel, employees, contractors, operators, and managers to recognize personal limitations and NOT to operate any vehicle when fatigued. The following approach will be applied:

- Drivers will be responsible to getting the necessary rest prior to starting a shift, and to report tiredness and/or illness at the daily tailgate meeting. Compromised drivers will be substituted;
- If fatigue is setting in, switch with other driver if this is an option, otherwise pull over at a safe location and rest;
- Daily total hours worked not to exceed 12 hours; and
- All commercial operations to comply with Transport Canada regulations regarding maximum log hours and time off requirements.

All drivers MUST adhere to federal, and territorial laws regarding distracted and driving under the influence (drugs, drug-impaired and alcohol). The following approach will be applied:

- All CZN operators will abide by strict rules regarding driving under the influence;
- Drug and alcohol pre-screen testing of all driver applicants for concentrate haul;
- Bi-annual drug and alcohol testing for all concentrate haul drivers; and
- Disciplinary action, including employment termination, will be applied.

5 **HAZARDS**

5.1 **Avalanche Awareness and Mitigation**

Sections of the ASR / Winter Road are in steep mountainous terrain and have been identified to be at risk from avalanches. Avalanche assessments have been carried out and an Avalanche Hazard Management Plan (AHMP) developed. The AHMP should be consulted for details, but the following key items will be implemented to safe guard road users against the effects of avalanches:

- All road operators will receive a site access orientation prior to operating vehicles on the access road in winter and early spring which will include specific reference to access through avalanche terrain;
- Personnel working in avalanche prone areas during periods of snow will receive prior advice on current risks from a member of the avalanche management team;
- “No Stopping” signs will be installed at predetermined locations during avalanche season; and
- Proper protocols will be implemented in the event of road closures due to any active avalanche management and control.

5.2 **Rock Fall Awareness and Mitigation**

Some portions of the ASR (from KP 0 to 40) are located below rock faces or at the base of talus rock slopes which can have rock fall hazards. The following mitigation approaches will be implemented:
- Annual inspections (spring season) of susceptible slopes and defined mitigation actions (rock scaling if required) as directed by professionals;
- Review the adequacy of rock fall protection measures subsequent to design and road construction, notably from KP 14 to 15.5, and 16.5 to 17.0;
- Proper signage along the road for rock fall prone sections and "No Stopping";
- Daily and on-going inspections of the road surface and slopes by maintenance crews; and
- Immediate reporting of rock falls along the ASR and immediate follow up.

5.3 Forest Fires

Forest fires can occur in summer, and may be proximal to the road. Transportation operations may be suspended accordingly. Any suspicious looking smoke or fire will be reported.

Road users should also take care to not start forest fires, for example by discarding cigarettes. All CZN trucks will be equipped with basic forest fire tools including fire extinguisher, shovel, and pulaski during fire season.

5.4 Wildlife

All wildlife along the road corridor is to be respected and is given right of way when approaching. Protocols are established in the Wildlife Mitigation and Monitoring Plan regarding encountering wildlife.

The following key mitigations for road safety and wildlife are:

- Wildlife advisory system to communicate and alert nearby road users that wildlife are on, or visible near, the road via radio so that extra precautions and or avoidance can be taken. Sightings of caribou, Moose, Dall’s Sheep, Wolverine, Grizzly Bear, Wood Bison, Trumpeter Swan are to be reported to CZN’s Environmental Monitor to be recorded and road-wildlife interactions monitored for possible adaptive management;
- If Wood Bison are reported on or near the road, traffic speeds are to be reduced to half the posted speed limit within 1 km of the sighting or as soon as the animal is sighted;
- If caribou, Moose, Dall’s Sheep, Mountain Goat, Grizzly Bear, or Wolverine are reported on the road or within 500 m of the road footprint, traffic or activity will cease at least 500 m from (or at first observation of) the animal(s) and all headlights turned off until the animal moves off at least 100 m or 5 minutes after last visual. Once traffic resumes, speed reduced to half the posted speed limit within 1 km of the sighting;
- Policy giving all wildlife the right-of-way if crossing or attempting to cross the road, which obligates drivers to stop (when safe to do so) for all wildlife seen on or immediately adjacent to the road, giving wildlife the opportunity to move off;
- All employees/contractors are to remain in the vehicle and/or shelter if harvested wildlife species are observed on or near the road footprint;
- Reporting and evaluating wildlife sightings along the access road, and if a problem area is identified, such as frequent wildlife encounters, corrective management options for traffic and road-related activities will be considered; and
- Maintain snow removal practices approved for the winter road to manage high snow banks (e.g., less than 1 m high) and create breaks in snow berms (e.g., berm breaks every 500 m), so that wildlife can readily move off the road and through breaks as vehicles approach and aircraft flyover.
5.5 Dust

During dry periods, increased levels of dust may occur. Dust suppression for the ASR will be conducted in conformance with the GNWT's Guideline for Dust Suppression (GNWT 2013), which is included in Appendix B. Maintenance crews will operate water trucks as required to suppress dust when unacceptable conditions prevail. Dust suppression agents (calcium chloride) may be used at specific problem locations or constrained road sections (approaches to bridges). Water for dust suppression will be extracted from approved locations as per Water Licenses.

6 DAILY ROAD USE PLAN

ASR Operations

For ASR operations after ASR construction, CZN will adopt a journey management system (JMS) which will be overseen by a JMS Coordinator (JMSC), under the direction of the ROM. All users of the ASR will be required to check in with the JMS Coordinator prior to using the ASR. The JMSC will be responsible for ensuring procedures are followed, and managing the daily haul. The JMS will cover, but not be limited to, the following:

- All vehicles are serviceable and carry a first aid kit, fire extinguisher, survival kit, spill kit, global positioning system beacon, and have working communications. Those in the vehicle must all have suitable clothing;
- All drivers are trained and briefed on the route, road conditions, existing and forecast weather conditions, problem areas, any observations of wildlife, and are instructed on and given a copy of the communications protocols;
- All drivers have a copy of, and have read and understood, the Spill Contingency Plan for the Prairie Creek Mine ASR;
- A journey plan is kept by the JMSC which includes the name of all persons in the vehicle, the assigned radio call sign, ETD and ETA, destination, type and quantity of the cargo and confirmation of vehicle fuel level;
- The plan is opened by radio upon departure and closed by radio upon arrival at destination with the JMSC;
- Progress is monitored by the JMSC and radio check-ins may be required at pre-determined intervals; and
- The JMSC will track all traffic and will initiate a radio call if a vehicle position is unknown or check in is overdue. A response is initiated if traffic passing through the area within a very short period of time cannot confirm the non-reporter has radio problems or other valid reason for missing a check in.

For mine based trucks, their 'journey' will start and end at the Mine (KP 0). For trucks based in Fort Nelson, their journey will start and end at Fort Nelson. There will be a check-in and check-out process.

Prior to the daily haul commencing, maintenance crews and environmental monitors (EM’s) will leave first to check road conditions and advise the JMSC.

Concentrate trucks will conduct hauls in one or more convoys. Adequate space between units will be made to allow for adaptation of driving and safe travel. Scheduling of convey will facilitate passing by other traffic e.g. maintenance crews, EM's and special deliveries. In essence, everyone will know where the concentrate trucks are at a given time of day, and can organise their activities and vehicle location
accordingly. The check point at the Liard River will also know and can advise other road users. Check point staff will also advise the JMSC of any on-coming traffic for relay to the haul trucks.

As much as possible, supply deliveries will be scheduled to occur when the mine trucks are not conducting their out-bound trips. This will minimize passing requirements and promote safety.

In order of highest to lowest priority, the following right-of-way will apply:

- KP 0 to 3, aircraft landing and takeoff;
- Wildlife;
- Emergency vehicles – when lights flashing;
- Trucks transporting dangerous goods (TDG);
- Explosives transport vehicles;
- Loaded transport vehicles ascending a sustained grade;
- Reagent transport trucks;
- Bulk carriers (non-TDG);
- Heavy equipment; and
- All other vehicles.

When two comparable trucks/vehicles (e.g. two similar loaded/unloaded trucks) meet, loaded trucks will have right of way. Generally, mine vehicles will yield to any public vehicles, unless road conditions/location would make this unsafe.

In winter, chain up of heavy commercial vehicles will be mandatory for the KP 0-29 section. The ice bridge operation on the Liard River will be constructed and monitored by professionals, under direction from the ROM. The following rules will be implemented:

- Maximum speed limit of 15 km/hr;
- Maximum of one commercial tractor/trailer unit crossing at any given time;
- No stopping on the ice crossing; and
- Potential ice problems will be reported and recorded.

Winter Road Operations

Winter hauling periods during the first 2 years of ASR construction will be relatively short and with a limited number of loads. Loads will primarily move in convoy and will be scheduled. A JMSC and ROM will not yet be in place. However, movement of the convoys will be coordinated between personnel at the Liard River crossing checkpoint and at the Mine site, liaising with the CPM. For the winter transit, pull tractors may be needed for higher grade sections, such as in upper Sundog and potentially in the Silent Hills, hence the need for coordination.

7 ACCESS CONTROL

Access control will be adopted on the Winter and All Season Road to promote safety and minimize hunting pressures.

7.1 Phase 1 Winter Road

The first winter road (Phase 1) will be built in January-February. This is a time of year when un-authorized access is not expected since wildlife is generally not available/present for hunting. The staging area leases on either side of the Liard River will not yet be in place. There will be an ice bridge to cross the Liard
River. During winter road construction, there will be construction camps along the alignment with construction personnel and security. There will also be EM’s monitoring activities. All personnel will be collectively responsible for monitoring unauthorized access and activities. Unauthorized access will be deterred.

During Phase 1 winter road hauling operations, a checkpoint north of the Liard River will be in operation, and there will be EM’s monitoring activities. Unauthorized access will be similarly deterred, but if it occurs, it will be closely monitored.

Automated trail cameras with detection relay are planned to be used for periods when security, checkpoint or EM personnel are not on duty.

7.2 Phase 2 Winter Roads

For the second and third winter roads, which will include the first and second year of ASR construction, the same access control conditions will apply as for Phase 1, except additionally the staging area leases will be in place and CZN will have, and will exercise, its right to restrict access to the leases to authorized persons. This may not restrict access to the river and the ice bridge, but it will make it difficult for unauthorized persons to access the winter road north of the river.

7.3 Phase 2 ASR Construction

ASR construction will occur in winter and during the open water season. Construction locations in summer will have limited connectivity until later in the construction process. The Liard River will be crossed using a smaller, limited capacity barge unit to support delivery of camp consumables and shuttle crews. Construction personnel will be vigilant for unauthorized road use.

7.4 ASR Operations

Again, the staging area leases will be in place and CZN will have, and will exercise, its right to restrict access to the leases to authorized persons. In the open water season when a barge is in operation, the barge will only be available to authorized persons.

When haul traffic is on the road, a manned checkpoint north of the Liard River will operate. Checkpoint staff will deter unauthorized entry, record entry and exit of all vehicles, and inquire and record any harvesting that has occurred, noting species and other specifics. Motion-sensing cameras with detection relay will be used when the checkpoint is not manned.

Road inspection and maintenance crews will also be responsible for recording and reporting any unauthorized or suspicious activity along the road corridor.

8 TRACKING, COMMUNICATIONS AND MONITORING

8.1 Tracking

During ASR operations after ASR construction, all concentrate trucks will be equipped with a GPS tracking device and a two-way radio to assist with communications and monitoring of the ASR.
Locations and speeds will be monitored by the JMSC. For all other authorized mine-related traffic, GPS tracking devices and radios will be provided to these vehicles at the security gate for their safety and to operate within the radio protocol procedures. Other potential industrial users will require a road use agreement with CZN which must comply with this TCMMP. An example of a road use agreement is included in Appendix C. Public travel will be discouraged by restricting access at the Liard River crossing.

Any delayed or unexpected inactivity will be confirmed (e.g. a major incident, such as an off road excursion). Anything abnormal will trigger communications to determine the prevailing situation. This may require observations by the next truck passing the location, or travel to the specific location by either maintenance personnel or an EM, whomever is closest.

Despite the considerable efforts to prevent unauthorized access, there is a risk this may still occur. If the checkpoint is operating, checkpoint staff will still try to provide GPS tracking devices. Failing that, unauthorized vehicles will be tracked by cameras and/or EM’s assigned to ‘shadow’ them.

8.2 Communications

Mine vehicles, including haul trucks, will have two way radios. Typical two way radios transmit from 10 to 20 km depending on terrain. To increase the range of the radios, CZN will consider installing repeater stations at key locations; potential locations include the high pass at KP 17, Wolverine Pass at KP 102 and Grainger Gap. This will expand the coverage area for radio communications, which will assist in providing increased positional updates for all road users and allow messages regarding wildlife encounters, poor road conditions or on-coming traffic, to be transmitted. The radios will normally be used to facilitate passing using the pull-outs.

The radio frequency will be posted at the Nahanni Butte Access Road and programmed on fleet radios and provided to contractors, suppliers and bulk carriers.

All drivers will be required to follow a radio control protocol, which will be provided (see Appendix D). Drivers will be required to announce any non-radio user they encounter on the ASR so that other users can take appropriate precautions.

Public traffic that does not have radios will be instructed on safety rules and procedures for the ASR via signage at the start of the ASR.

Non-radio users may be temporarily restricted from using the road in some circumstances. Non-radio users will also be informed that they must yield to mine vehicles that would have difficulty reversing or turning on the ASR.

For Phase 1 winter road haul periods, at least the lead and trailing truck of a convoy will have two way radios. Trucks not in convoys will be required to have a two way radio.
8.3 Monitoring

Daily monitoring of ASR haul operations will be monitored by the JMSC, as directed by the ROM. Access control will be monitored by checkpoint staff, as well as uncooperative unauthorized vehicles by EM’s or road maintenance staff.

Overall monitoring of ASR operations compliance and effectiveness, as well as access control, wildlife and harvesting will be conducted by the Safety and Health Manager and Environmental Manager, as directed by the ROM.

Winter road haul operations will be monitored by Liard River checkpoint and Mine site staff, liaising with the CPM.

9 REPORTING AND PLAN UPDATES

9.1 Incident Response and Reporting

Should an incident occur, the following actions are to be followed:

Emergency Situation

- Secure the area if unsafe;
- Contact the JMSC or other representative;
- If trained, apply first aid measures if injuries are incurred;
- In the event of a spill, follow the approved Spill Contingency Plan;
- Record incident details when site and situation is under control; and
- Refer to the appropriate management plan for specific details and reporting procedures.

Non Emergency / Unsafe Acts

The following incidents will be reported immediately to the Managers after the appropriate protocols identified in the respective management plans are enacted to control the situation:

(1) Vehicle collisions or near misses involving single vehicles, multiple vehicles or wildlife;
(2) Evidence of unauthorized access to the ASR by a vehicle; and
(3) Evidence of unauthorized hunting, fishing, trapping or any other prohibited activity in the ASR.

Reporting will be done weekly and monthly by the Safety, Health and Environmental staff as part of overall site safety reporting. Where required, reports will be forwarded to relevant government agencies as stipulated by regulations and permits. In addition, a summary of data collected as part of the ASR monitoring program will be provided to the regulatory bodies on an annual basis.

If an employee or contractor witnesses an unsafe act, breach of procedures or rules, a report must be made to a supervisor or manager.

9.2 Records

Records of Plan compliance as it relates to the ASR will be the responsibility of the Safety, Health and Environmental staff, under the direction of the ROM, relying on the observations of all ASR users to assist in monitoring. Records will include:
(1) Tracking road safety incidents, including wildlife interactions / collisions, to determine trends and identify areas requiring further mitigation;
(2) Unauthorized road use, including development of snowmobile trails;
(3) Incidental observations of wildlife locations;
(4) General observations of wildlife occurrence; and
(5) Amount and nature of traffic use by CZN and its contractors.

9.3 **Plan Annual Review and Updates**

The TCMMP is a living document and the ROM will ensure that the plan is reviewed and updated on an annual basis. Any updates to the plan will be included within the “Annual Prairie Creek Mine ASR Traffic Report”, available to the MVLWB and/or Parks Canada. The review will incorporate Incident Reports involving vehicles or other road related issues and comments from non-mine users as appropriate.

Any updates to the Plan will be communicated with all Project employees, contractors and visitors and a copy will be provided to MVLWB for their comment.

10 **ADAPTIVE MANAGEMENT**

The Plan, road operations and protocols 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 change to the Plan (i.e., adaptive management) is required.

As part of adaptive management, this Plan will be revised before and during all phases of the ASR Project, taking information into account such as field assessments, environmental monitoring reports or any additional information.

Changes to the Plan will be incorporated into training and orientation sessions and distributed to existing staff members for their immediate use.

11 **REFERENCES**


**ALLNORTH CONSULTANTS LIMITED**

Prepared By:

Amy Johnson

Reviewed By:

Ernest Kragt
Appendix A  Project Overview Map
Appendix B  Example Road Use Form
PERMISSION FOR A VEHICLE TO SITE

PROJECT TITLE  PRAIRIE CREEK ALL SEASON ROAD  DATE

CONTRACTOR

CONTRACT NO.

CONTRACT TITLE

NAME

ADDRESS

CITY

VEHICLE MAKE  TYPE  YEAR  LICENSE NO.

REASON FOR PERMIT

LENGTH OF STAY

INSURANCE NO.

INSURANCE EXPIRY DATE

I/we fully understand that this vehicle is allowed on Canadian Zinc Corporation’s (the OWNER) solely at our risk and we discharge the OWNER, its servants and agents, from all liability for any and all loss or damage to any vehicle owned or driven by us, or the contents thereof which shall occur upon the OWNER’s property.

I/we further agree that any permit issued to admit the vehicle to the OWNER’s property is issued on the following terms and conditions:

a) The vehicle will be insured at all times in accordance with the requirements of the Contract documents.
b) That the vehicle may be inspected by the OWNER at any time upon entering or leaving the property.
c) The vehicle will be parked in prescribed parking areas only.
d) The operating procedures in the traffic and Access Management Plan shall be followed at all times.
e) That the attached “List of Tools and Equipment” is completed and will have all the tools and equipment checked against this list by the OWNER’s security upon entering or leaving the property.
f) That any failure to comply with the terms of this permit or in any other permit issued will entitle the OWNER to cancel the permit.

NAME OF COMPANY

SIGNED BY

TITLE

SECURITY APPROVAL SIGNATURE

PERMIT EXPIRY DATE
MATERIAL REMOVAL AUTHORIZATION

PROJECT TITLE  PRAIRIE CREEK ALL SEASON ROAD  DATE  
CONTRACTOR  
CONTRACT NO.  
CONTRACT TITLE  
GRANTED TO:  

________________________________________  ________________________________  
(Print Name)  (Signature)
THE PROPERTY BELONGS TO  

VEHICLE DESCRIPTION  
YEAR  LICENSE NO.  PROV.  

REMOVAL OF THE FOLLOWING MATERIAL OR EQUIPMENT:

________________________________________  

________________________________________  

________________________________________  

________________________________________  

SHIPPING PAPERS, BILLS OF LADING ATTACHED (FOR OWNER OF PROPERTY)

☐ WILL BE RETURNED  ☐ WILL NOT BE RETURNED

CONSTRUCTION MANAGER APPROVAL  

________________________________________  ________________________________  
(Print Name)  (Signature)
SECURITY APPROVAL  

________________________________________  ________________________________  
(Print Name)  (Signature)
DATE AND TIME REMOVED FROM THE PROJECT  

________________________________________
TOOLS AND EQUIPMENT TO/FROM SITE

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DATE OR ENTRY

CONTRACTOR

CONTRACTOR SIGNATURE

SECURITY APPROVAL SIGNATURE

DATE OF EXIT

CONTRACTOR

CONTRACTOR SIGNATURE

SECURITY APPROVAL SIGNATURE

A “MATERIAL REMOVAL FORM” MUST BE OBTAINED FOR ALL ITEMS BEING REMOVED BEFORE COMPLETION OF CONTRACT
Appendix C  Radio Calling Protocol
Access Road Radio Calling Protocol

1) “Up” and “Down” to identify the direction of travel
   a. “UP” is defined as increasing numbers of kilometers
   b. “Down” is defined as decreasing numbers of kilometers

2) Haul trucks call “UP” or “DOWN” followed by the kilometer position (e.g. “Down 241”)

3) All vehicles must identify themselves: pick-up, low-bed, fuel truck, grader, etc. (e.g. “pick-up DOWN 60” or “grader UP 122”)

4) Calling protocol for vehicles:
   a. Up vehicles call every EVEN km, unless posted otherwise
   b. Down vehicles call every ODD km, unless posted otherwise

5) Must call situations for both UP and DOWN vehicles
   c. When entering and leaving the ASR
   d. At posted “must call” signs
   e. Whenever stopping and parking on the road, and when resume travel
   f. Whenever encountering a vehicle travelling without a radio
   g. Whenever encountering large wildlife on or adjacent to the road (e.g. bear, moose, wolf)

6) Convoy calling (two or more vehicles)
   h. The lead vehicle is responsible for calling for all vehicles in the convoy
   i. It is the responsibility of the vehicle joining or leaving the convoy to inform and to receive confirmation from the lead vehicle
   j. A vehicle more than 2 km behind the lead vehicle is no longer part of the convoy and must call their own position

7) Fuel trucks, wide loads and loaded bulk carriers have the right of way; light duty vehicles or empty trucks must yield using pull outs unless otherwise agreed to via radio with opposing traffic

8) Only pass a vehicle once the slower vehicle has safely exited onto a pull-out. If required to pass a vehicle at a location other than a pull-out (e.g. heavy equipment performing road maintenance) the driver must first make radio or visual contact with the vehicle being passed and receive “OK” to do so.

9) Avoid distractions while monitoring the road channel:
   k. No unnecessary radio chatter
   l. Avoid noise distractions, i.e. AM/FM radios, phones, music players, passengers

10) The ASR radio channels are for traffic management purposes only. Conduct all other communications on a non-ASR radio channel when not travelling on the ASR.