Our File: EA1415-01

March 20, 2017

Notice of Proceeding

Re: Prairie Creek All Season Road Project, Canadian Zinc Corporation Commitments Table

To: Distribution List

The attached Table 1 is a draft version of a final commitments table for the Prairie Creek All-season Road Project (EA1415-01). The contents of each commitment in Table 1 are exactly as submitted by CanZinc in their IR 2 responses (PR#355). Review Board staff have categorized the commitments by Topic and Subtopic, and organized them alphabetically. Each commitment has been given a unique ID number based on this organization scheme, for tracking purposes during the remainder of the Environmental Assessment.

Review Board staff has also categorized commitments as having been made either in the DAR/DAR adequacy phase, or the technical analysis phase of the Environmental Assessment. This distinction allows parties to see whether the commitment was made regarding project design (i.e. the DAR phase) or in response to issues raised by parties (i.e. the technical analysis phase). In the Review Board's Report of Environmental Assessment for this project, only commitments made during the technical analysis and hearing phases will be tracked as "commitments". All "commitments" made in the DAR and DAR addendum will be considered as project design elements.

In Table 2 (attached), Review Board staff have identified a number of commitments that require clarification. The Review Board asks CanZinc to review the "issues" and "notes" in Table 2 and clarify the commitments as necessary. The Review Board requests that CanZinc also add any new commitments made in response to Parties' technical reports and submit a finalized commitments table (i.e. an updated version of Table 1) to the Review Board by ***April 7th, 2017.*** Parties may comment on the final commitments table during the Public Hearing for this Environmental Assessment.

If you have any questions, contact A/Manager of Environmental Assessment Chuck Hubert at (867) 766-7052 or chubert@reviewboard.ca or Environmental Assessment Officer Catherine Fairbairn at (867) 766-7054 or cfairbairn@reviewboard.ca.

Table 1- Final Commitments Table (DRAFT)

ID	Topic	Subtopic	EA Phase	Commitment	Reference
1	Access control	Check point location	DAR	The security check-point will be moved in summer to a location on the road west of the river crossing.	PR#55 p146
2	Access control	Non-mine related vehicles	DAR	Non-mine vehicles, including all-terrain vehicles (ATVs) and snowmobiles will be prohibited on site.	PR#55 p185
3	Access Control	Remote camera	Technical Analysis	Use of a remote camera is worthy of consideration for periods when the (road) checkpoint is not manned.	PR#370 p5
4	Access control	Reporting	Technical Analysis	CanZinc will monitor and record non-mining traffic activity on the all-season road, including the establishment of a checkpoint, and report this information annually.	PR#256 p1
5	Access control	Signage	DAR	Signs will be posted advising road users that the land is the traditional land of the NDDB, and a request that the road not be used and that no hunting should occur. Signs will also warn of the dangers posed by frequent, heavy mine traffic.	PR#55 p146
6	Air Quality	Dust management	DAR	The GNWT (1998) dust suppression guidelines will be implemented at the TTF and along portions of the road located in environments which are more prone to adverse effects from road dust accumulation (e.g. lakes, wetlands), as appropriate, to limit dust generation during the snow free months. Dust management will begin with road surfacing material which is coarse and minimally erodible, where practical. Where dust is problematic, watering will occur as and when required. Vehicles will adhere to speed limits on roads, which will help limit the re-suspension of particulate material.	PR#55 p240
7	Air Quality	Dust suppression	DAR	Dust suppression strategies (e.g., water or approved dust suppressant products) in accordance with the GNWT dust suppression guidelines.	PR#55 p256
8	Airstrip operations	Minimum flight altitudes	DAR	Maintain a minimum flight altitude of 600 m except during take-off and landings.	PR#55 p175
9	Airstrip operations	wildlife mitigations	DAR	Develop standard aircraft procedures for flying into and departing from the proposed airstrip to accommodate wildlife, if present on or near the airstrip.	PR#55 p175
10	Community Engagement	Engagement plan	DAR	Future engagement with aboriginal groups and government agencies will continue as described in the Engagement Plan.	PR#55 p159

ID	Topic	Subtopic	EA Phase	Commitment	Reference
11	Community well-being	Access to Nahanni Butte	DAR	CZN will restrict road crews from accessing Nahanni Butte (the only proximal community) by including this requirement in contracts for the work. The only exceptions would be if construction personnel are leaving or arriving at the Nahanni Butte airstrip, in which case they will be required to go directly to and from the airstrip only, and if personnel are invited by, and accompanied by, community members.	PR#100 p74
12	Concentrate and material transport	Diesel Fuel	Technical Analysis	Diesel fuel will be back-hauled by the concentrate trucks in dedicated tanks, 5,170 L. The tanks will be double-walled, with the capacity of the space between the walls being 110% of the inner tank, or approximately 5,700 L. The tanks will be puncture-resistant.	PR#355 p6
13	Concentrate and material transport	Sulphuric acid totes	DAR	Containers for sulphuric acid will be totes weighing approximately 1.4 tonnes.	PR#55 p190
14	Concentrate and material transport	Tracking	DAR	Measures for avoiding concentrate dust and potential tracking of concentrate off-site will be adopted (i.e. bags or bulk concentrate hauled inside a trailer box with a tarpaulin cover, truck wheel-wash)	PR#55 p139
15	Concentrate and material transport	Transport method	Technical Analysis	CZN would either transport concentrates in bulk using the 'Convey Ore' system, similar to the Red Dog Mine approach, or in bags in a truck box with a lid.	PR#355 p4
16	Contractors	Full qualifications	DAR	CZN will endeavour to ensure that all service providers are fully qualified and responsible to undertake the tasks required prior to issuing contracts.	PR#55 p43
17	Contractors	Instruction and training	DAR	When hiring contractors, CZN will provide instruction and training, if necessary, to bind all contractors and sub-contractors to corporate policies.	PR#55 p51
18	Contractors	Terms and conditions	DAR	In order to ensure that its contractors and subcontractors honour and adhere to all commitments made, CZN will ensure, through written contracts, that all such parties are aware and comply with all the terms and conditions that are associated with such permits that are necessary for operations.	PR#55 p43
19	Cumulative effects monitoring	CIMP	DAR	Monitoring data will be compatible with the NWT Cumulative Impact Monitoring Program, where possible.	PR#55 p283
20	Earthquakes	Pilot vehicle inspection	DAR	If a significant seismic event occurs, it would be prudent for a pilot vehicle to inspect the road before trucks resume travelling on it.	PR#129 p76
21	Emergency response	Control points	DAR	A Control Point will be established near the mouth of Funeral Creek.	PR#55 p202

ID	Topic	Subtopic	EA Phase	Commitment	Reference
22	Emergency response	Control points	DAR	Control Points will be established on two Funeral Creek tributaries at their confluence with the main stem. Similar Control Points will also be established on Sundog Creek in two locations (one just above the main falls and one just before the creek flows onto the fluvial outwash plain), and downstream of the Polje Creek, Tetcela River and Grainger River crossings. An additional control point will be established at the toe of the Silent Hills on the west side since the road section above is considered to have a high risk of a spill.	PR#55 p29
25	Emergency response	Emergency equipment	DAR	Two bladders with a capacity of approximately 10,000 L will be acquired. This would provide the means to commence the recovery and temporary storage of spilled liquid quite soon after the spill. One would be stationed with a pump at one of the Control Points on an upstream tributary to Funeral Creek.	PR#55 p203
28	Emergency response	Emergency equipment	Technical Analysis	We propose to acquire two bladders with a capacity of at least 5,000 L. One would be stationed with a pump at one of the Control Points on an upstream tributary to Funeral Creek. The other bladder would be stored with a pump on the trailer stationed at Cat Camp.	PR#282 p109
23	Emergency response	Emergency equipment	DAR	A silt or other form of curtain will be stored approximately mid-point between the Mine and Funeral Creek ready for deployment to reduce flow in part of Prairie Creek adjacent to a spill.	PR#55 p202
24	Emergency response	Emergency equipment	DAR	Equipment at the Control Points will include booms and absorbents in addition to material to create temporary dams, such as board weirs, sand bags and other inert materials that would be stored at the location. Shovels will also be left on site for use in making a dam also. A supply of soda ash will also be kept at Control Points to neutralize an acid spill.	PR#55 p203
26	Emergency response	Emergency equipment	DAR	A vacuum truck will be on stand-by at the Mine.	PR#55 p204
27	Emergency response	Emergency equipment	DAR	CZN has proposed to maintain spill equipment in portable trailers. We will ensure that these or other similar units are heli-portable.	PR#100 p61
29	Emergency response	Emergency protocols	DAR	The tractor/trailer units would provide emergency assistance if mechanical issues or adverse weather conditions occur. In addition, all trucks will have 24 hour communications with road operations and dispatch using either 2 way radio or GPS tracking devices.	PR#101 p45
30	Emergency response	Fire prevention training	DAR	Train staff in fire prevention protocols and emergency response procedures.	PR#55 p260
31	Emergency response	Incident management system	DAR	For operations, an incident management system will be used to respond to spills.	PR#55 p201

ID	Topic	Subtopic	EA Phase	Commitment	Reference
32	Emergency response	Materials management systems	DAR	Appropriate materials management systems will minimize the risk of accidental spills or leakage of concentrate, diesel fuel/ hydrocarbons, and other hazardous materials being shipped to the mine site. This includes ensuring hydrocarbon and chemicals that are hauled along the access road or stored at the TTF are in industry standard containers with appropriate spill containment and management measures in place.	PR#50 p31
33	Emergency response	Response teams	DAR	A response team with large equipment will be stationed at the Mine. Another response team will reside at Nahanni Butte.	PR#55 p201
34	Emergency response	Response teams	DAR	For the operating period, the spill response team will consist of 6 personnel: 1 Supervisor, 1 Safety Watch, and 4 Responders, one of which will be a mechanic.	PR#55 p202
36	Emergency response	Spill kits	DAR	For operations, comprehensive spill kits will be maintained at the Mine site, Cat Camp, the Tetcela Transfer Facility, Grainger Gap, and the Liard Transfer Facility.	PR#55 p203
35	Emergency response	Spill kits	DAR	Spill kits will be carried on vehicles with materials appropriate for the loads	PR#55 p203
37	Emergency response	Spill management	DAR	Staff trained on the existing spill management plan and procedures to quickly respond to an accidental spill. The plan will include provision for rapid deployment of cleanup crews and for contaminant and cleanup of spilled material and contaminated surfaces.	PR#55 p185
38	Emergency response	Spill monitoring program	DAR	In a spill related monitoring program, samples collected for chemistry and benthic community assemblage assessment should include at least one upstream sample (for reference purposes) and multiple downstream samples. All other endpoints would normally include an upstream and downstream sample only. Any spills to Funeral Creek should include an assessment of juvenile occupancy following methodologies developed by Neil Mochnatz, DFO. However, given some spawning bull trout also have to swim past the mine's discharge, it will be important to separate the different effects sources. Consequently, another upstream tributary to Prairie Creek known to host spawning/rearing habitat and previously characterized should be re-assessed concurrently with Funeral Creek. More detail will be provided in the AEMP.	PR#90
39	Emergency response	Spill response	DAR	Designated spill control points will occur at key locations along the road, and response materials will be stored at these locations. Trailers stocked with response equipment will also be parked at other locations so that responding crews can hook them up and move them to the spill location.	PR#55 p200
40	Emergency response	Spill response training	DAR	Maintenance crew will be working on the road somewhere between Km 40 and Km 170 (i.e. from Cat Camp to the Nahanni Butte Access Road) and will have spill response training.	PR#55 p201
41	Employment	Community well-being	DAR	CZN is required to post available employment positions with local Bands, and suitable and available NDDB members have priority. CZN has also committed to give preference to competitive and able consortia with local and northern content for procurement and	PR#55 p147

ID	Topic	Subtopic	EA Phase	Commitment	Reference
				business opportunities.	
42	Engagement	Ongoing engagement	DAR	CZN will continue to engage First Nations throughout the EA process.	PR#55 p159
43	Environmental monitoring	General	Technical Analysis	CanZinc will have local environmental monitors on the all-season road during periods of mine traffic.	PR#355 p16
44	Erosion and sediment control	Minimizing mobilization of sediment	Technical Analysis	CanZinc commits to implementing erosion and sediment control where construction has the potential to mobilize sediment and result in transport to surface water, and include specific plans for rapid response in the event of an intense precipitation event.	PR#246 p1
45	Fish and aquatic habitat, water quality	In-stream works	DAR	All in-stream works will be performed to avoid sensitive life stages of fish. In-stream work will not occur when fish are expected to be spawning. Also, instream work will be avoided if it is predicted that work will result in significant turbidity resulting in the smothering of downstream developing fish embryos. Existing investigations of fish-bearing crossings indicates that only the habitat in the Tetcela River Tributary and Tetcela Main crossing locations occur at a location where bottom substrate is a suitable size for spawning salmonids (i.e., Arctic grayling and whitefish).	PR#90 p13
46	Fish and aquatic habitat, water quality and quantity	Avoid disruption of spawning	DAR	Avoid disruption of the only known spawning location in the area (bull trout in Funeral Creek) during the spawning period (mid-August);	PR#55 p246
48	Fish and aquatic habitat, water quality and quantity	Blasting	Technical Analysis	At active blast sites during construction, the sites will be inspected during or immediately after rainfall to ensure sediment is either not being produced, or mitigation measures are effective. Confirmatory upstream and downstream turbidity readings will be taken to verify visual conclusions, if necessary. Depending on initial findings and results, a frequency of follow-up inspection will be decided on and implemented until the site is considered inherently stable.	PR#200 p8
47	Fish and aquatic habitat, water quality and quantity	Blasting	DAR	Blasting impacts on fish will be minimized by utilizing timing window, encouraging fish to move from the blast area, and minimizing the required blast energy.	PR#90 p13

ID	Topic	Subtopic	EA Phase	Commitment	Reference
49	Fish and aquatic habitat, water quality and quantity	Crossings	DAR	All crossings will follow DFO's *Operational Statements* for creek crossings, including span structures and culverts.	PR#55 p244
50	Fish and aquatic habitat, water quality and quantity	Crossings	DAR	In-stream works and crossings will be avoided as much as possible.	PR#55 p244
51	Fish and aquatic habitat, water quality and quantity	Crossings	Technical Analysis	If temporary (stream crossing) structures are utilized over an extended period (> 3 months), the design flow will be based on a 10 year return period.	PR#282 p40
52	Fish and aquatic habitat, water quality and quantity	Drainage	DAR	Construct a stable road bed adjacent to creeks and providing for runoff control to minimize the dispersal of sediment during precipitation events;	PR#55 p246
53	Fish and aquatic habitat, water quality and quantity	Habitat loss offset	DAR	Replace any habitat losses to the satisfaction of DFO	PR#55 p246
54	Fish and aquatic habitat, water quality and quantity	Minimize disturbances	DAR	Minimize disturbance of stream banks and riparian areas at stream crossings. Remove temporary crossing structures to avoid blockage and erosion.	PR#55 p246

ID	Topic	Subtopic	EA Phase	Commitment	Reference
55	Fish and aquatic habitat, water quality and quantity	Overtopping monitoring parameters	Technical Analysis	CanZinc commits to implementing TSS/turbidity, pH, dissolved oxygen and conductivity monitoring upstream and downstream of Casket Creek during high water events if overtopping of the road surface is occurring, and at any other areas where overtopping of the road surface occurs.	PR#263 p3
56	Fish and aquatic habitat, water quality and quantity	Re-vegetation	DAR	Promote re-vegetation of riparian areas to further reduce the potential for sedimentation;	PR#55 p246
57	Fish and aquatic habitat, water quality and quantity	Sundog Creek habitat loss	DAR	The fish habitat against the south bank will be lost, but would be replaced by comparable new habitat to the north. This work would be completed in the late fall when the floodplain is dry apart from isolated deep pools. Any pools would be subject to fish salvage before filling. In order to ensure the excavated channel remains open and utilized long-term, a series of very large (small car-size) boulders would be placed in the channel.	PR#55 p148
58	Fish and aquatic habitat, water quality and quantity	Sundog creek realignment morphology	Technical Analysis	Monitoring of the morphology of the new channel will occur to confirm that the new channel is providing habitat similar to the current channel. Monitoring will be conducted to ensure that the new channel is comparable to the existing channel. Monitoring will include field-based hydrological data collection (i.e., velocities and cross sectional profiles), supported by satellite or aerial imagery, when available If velocities are too high, and higher than those predicted for the existing channel, CZN will make necessary adjustments to the channel during no flow periods. Once the stream has been diverted, bi- annual monitoring (during freshet and low flow) of the channel for the first two years will occur. Subsequently, monitoring will transition to monitoring every second year, or immediately after a 1 in 10 year event or greater.	PR#370 p257
59	General	Draft management plans	Technical Analysis	CZN will convert the draft management plans and designs from, or referred to, in this EA into final plans and final designs for construction and operation of the road, and follow through on the commitments and design details contained in those plans and designs.	PR#355 p1
60	General	Recommendations	Technical Analysis	All recommendations by consultants have been accepted by CanZinc and will be assumed as commitments.	PR#355
61	Heritage and cultural resources	Archeological Surveys	Technical Analysis	CZN will include local community members in pre-construction survey crews. A professional archeologist will ensure each crew has the necessary knowledge and information, provide direction and focus to the crews in the field, and undertake independent inspections and verification.	PR#355

ID	Topic	Subtopic	EA Phase	Commitment	Reference
62	Heritage and cultural resources	Road construction and maintenance plan	DAR	A brochure of photographs of heritage resources will be compiled and provided to contractors as part of the Road Construction and Maintenance Plan.	PR#55 p269
63	Nahanni National Park and Reserve	Best practices	DAR	Adherence to standard industry best practices during construction.	PR#55 p227
64	Reclamation	Bridges and crossings	DAR	Bridges will be removed from stream crossings; abutments will be removed or pushed-back. Material will be pulled-back to recontour side-hill cuts. Erosion control measures will be installed as necessary. Restoration of disturbed areas will be promoted by stabilization measures and vegetation by natural invasion.	PR#29 p4
65	Reclamation	Disturbed areas	DAR	Once the road and crossings have been built, disturbed areas will be reclaimed by grading and providing runoff and sediment controls, as necessary.	PR#55 p245
66	Reclamation	Monitoring	DAR	The progress of reclamation in disturbed areas will be monitored.	PR#55 p246
67	Reclamation	Objective	Technical Analysis	After Mine closure, if the access road is also to be closed and reclaimed, CanZinc is committed to a reclamation goal of restoring pre-disturbance conditions, as much as possible, including the removal of structures no longer required, subject to the engagement and agreement of all parties.	PR#263 p5
68	Reclamation	Re-vegetation	Technical Analysis	Use natural encroachment as a re-vegetation strategy in disturbed areas to avoid the introduction of invasive species sometimes found in seed mixes.	PR#186 p3
69	Road design	Barge	Technical Analysis	A low draught vessel will be selected, big enough for one loaded tractor-trailer unit. Barge selection specifications will include provision for safe and easy loading/unloading and integration with the proposed ramps.	PR#371 p12
71	Road Design	Culverts	DAR	Careful culvert placement and sizing is especially important on slopes that already have significant existing slope instabilities and the potential for new instabilities.	PR#55 p33
72	Road Design	Culverts	DAR	In areas of switchbacks, any road location that receives a culvert on an upslope reach of a stream should also receive a culvert or culverts on the road sections downslope that re-cross the same stream, and water should not be allowed to flow off the ends of switchbacks into inappropriate areas.	PR#55 p33
73	Road design	Culverts	DAR	Careful placement of culverts even where there are no obvious stream channels will help reduce the likelihood of ponding water alongside the road embankment.	PR#55 p236
70	Road Design	Culverts	DAR	Culvert crossings, will be designed to avoid creating water drops on the downstream side (i.e., “perched” culverts will be avoided).	PR#90 p15

ID	Topic	Subtopic	EA Phase	Commitment	Reference
75	Road design	Cutslopes	DAR	If cutslopes in thaw-sensitive terrain are unavoidable, a much greater need for vigilance in monitoring and maintenance is required.	PR#55 p236
74	Road Design	Cutslopes	DAR	Cutslopes in thaw-sensitive terrain should be avoided if at all possible. If cutslopes in thaw-sensitive terrain are unavoidable, it may be possible to protect some cutslopes with a drainage blanket to help mitigate the effects of thaw and meltwater, or design near-vertical cutslopes to allow the organic layer to be draped over the cutslope to shade and protect it.	PR#55 p236
76	Road design	Footprint minimization	DAR	Confine all season road development activities to the approved winter road corridor to the greatest extent feasible.	PR#55 p266
77	Road Design	Grades and slopes	DAR	All reasonable options have been considered to keep maximum grades at 8% or less (preferred). However given the steep mountainous terrain and passes from KP 6 to 30, there are a number of sections with a 10% maximum grade and one short section of 12%.	PR#59 p26
78	Road Design	Grades and slopes	DAR	The subgrade will be left to settle over one summer period to mitigate winter construction risks.	PR#59 p29
79	Road Design	Ground condition	DAR	Construction will be managed such that travel across the ground does not occur when it is in its most vulnerable state.	PR#55 p235
80	Road Design	Ground condition	DAR	Summer/fall construction is proposed to take place when the ground is seasonally more likely to be relatively dry. The benefit of summer/fall construction in terrain that is not thaw-sensitive is that the construction team will be able to see more clearly where the cross-drainage installations should be placed and backfill placement and compaction will be greatly improved.	PR#55 p235
81	Road design	line of sight	Technical Analysis	CanZinc 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.	PR#355 p12
83	Road Design	Permafrost	DAR	Embankment fill-only (overlanding) techniques are proposed for thaw-sensitive permafrost areas.	PR#55 p235
82	Road Design	Permafrost	DAR	To minimize impacts related to permafrost, the standard approach taken regarding the cut slope angle will be 1:1 with some variability depending on soil type and site conditions.	PR#59 p19
84	Road Design	Pull outs	Technical Analysis	CanZinc commits to providing a pullout at approximately KP 29-30 for chain-up/chain-off, and turn-offs at approximately 10 km intervals to allow trucks with trailers to turn around.	PR#263 p3
85	Road design	Steep terrain	DAR	Proper design and construction of the access road, avoiding steep terrain and hairpin turns as much as possible.	PR#55 p244
86	Road Design	Stripping	Technical	CanZinc commits to not placing road strippings in riparian zones	PR#246 p2

ID	Topic	Subtopic	EA Phase	Commitment	Reference
		placement	Analysis		
88	Road Design	Sundog Creek	Technical Analysis	Complete the Sundog channel creek re-alignment and armouring in the late summer or fall when there is no stream flow.	PR#100 p41
87	Road Design	Sundog Creek	Technical Analysis	Construction of the Sundog re-alignment will occur in summer or fall/early winter when the creek has no surface water. All construction would be conducted continuously and completed within one season. Construction would start at the lower portion of the re-alignment and progress upstream. All proposed stream design characteristics would be constructed continuously to avoid repeated disturbance. If surface water is encountered, the sealed off bottom exit or end would restrict surface water from discharging to other channels. The water would filter through the natural gravels. The reconstructed channel within the natural streambed material would be washed with pressurized water to allow fine sediments to settle into the reconstructed porous rock stream bed, or collect in a sump at the downstream end of the excavation for subsequent removal. Water required for the washing process will be extracted from an adjacent, stable floodplain area. A small filter berm would remain in place until the upper portion is complete and existing channel is ready to be diverted. The re-alignment will be inspected by a qualified professional during the first freshet. In addition, it will be the responsibility of the Road Operations Manager (ROM) to complete formal inspections during spring runoff and after intense summer rainfalls. It is expected that less formal, casual inspections will be done on a regular basis to ensure continued stability of the re-alignment.	PR#282 p41
89	Road Design	Sundog Creek	Technical Analysis	The final (Sundog realignment) design will be developed to provide hydraulic/sediment capacity equivalent to the geometry of the existing channel, defined by its geometry, and to mimic the substrate characteristics of the existing channel.	PR#294 p61
90	Road design	Water drainage inspections	DAR	Regular inspections will help identify areas where surface water drainage provisions need to be changed or improved.	PR#55 p236
91	Road Design	Width	Technical Analysis	CanZinc commits to a minimum 4 m wide running surface width, and a 5 m wide running surface width where possible (the width would be no less than 4.9 m in the latter areas). There will be widenings at curves.	PR#263 p4
92	Road Maintenance	Armouring	Technical Analysis	Regular maintenance will be applied which will include rebuilding/adding additional armoring to those sections deemed insufficient, as required.	PR#178 p33

ID	Topic	Subtopic	EA Phase	Commitment	Reference
93	Road Maintenance	Bridge and culvert inspections	Technical Analysis	For Bridge and Major Culverts Inspection, Allnorth proposes: (1) (a) ensure that a qualified person such as a road maintenance supervisor carries out a visual inspection of each bridge or major culvert associated with the road at least once every year after the bridge or major culvert is constructed, and (b) make a record of the inspection. (2) (a) ensure that a qualified person under the direction of qualified Professional Engineer carries out a detailed inspection of each bridge or major culvert associated with the road, and (b) make a record of the inspection, (i) subject to subparagraph (ii), at least once every 3 years after the bridge or major culvert is constructed, or (ii) at such intervals as specified in writing by a professional engineer.	PR#200 p27
94	Road Maintenance	Drainage inspection an monitoring plan	Technical Analysis	CanZinc commits to developing a suitable inspection and monitoring plan regarding drainage patterns along the road alignment to maintain natural drainage and to inform adaptive management actions (including location of equipment required for these management actions such as backhoes, steamers and erosion/sediment control devices).	PR#263 p2
95	Road Maintenance	General	DAR	Long term road performance would be continually assessed following high water events and changes made accordingly. Ditches will be cleaned as required and maintained, culverts will be cleaned out and restored to ensure full capacity. Additional cross drainage culverts may be installed if required. From time to time, some minor breakdown of the road subgrade may occur, and would be restored.	PR#101 p14
96	Road Maintenance	Inspections	DAR	During road construction, operations and reclamation, there will be regular inspections by supervisory, maintenance and environmental staff, as well as community monitors. Any evidence of impacts, or conditions that might lead to impacts, will be immediately brought to the attention of the transportation manager. Any obvious problems, such as sediment dispersal, will be rectified immediately by construction/maintenance crews	PR#55 p246
97	Road Maintenance	Maintenance plan	DAR	A short and long term road maintenance program would be developed at the detailed road design stage.	PR#55 p27
98	Road Maintenance	Ongoing monitoring	DAR	Following the construction of the road, ongoing monitoring of the road structure will occur. Regular maintenance will be applied which will include rebuilding/adding additional armouring to those sections deemed insufficient as required.	PR#178 p33
99	Road Maintenance	Stream crossing inspection	Technical Analysis	CZN has committed to the development and implementation of an inspection and monitoring program for all stream crossing structures. The inspection and monitoring program would reflect the crossing risk rankings. Key to the monitoring would be the detection of any changes to channel positions and the potential for erosion with respect to the crossing structures, and consideration of required adaptive management.	PR#370 p127
100	Road Safety	Design guidelines	Technical Analysis	CanZinc commits to adhering to road design standards in the B.C. Ministry of Forests, Lands and Natural Resources Operations Engineering Manual as much as possible, and explaining and justifying where these guidelines will not be met.	PR#263 p3

ID	Topic	Subtopic	EA Phase	Commitment	Reference
101	Road safety	Driver impairment	Technical Analysis	Provisions for checking on the condition of drivers before they start their shift will be included, specifically, are they sufficiently rested and not sick, as well as provision for driver relief during their journey if they do not feel fully able to drive safely for any reason. During orientation, all drivers will be warned about the dangers of distraction and not being alert. This will be reinforced in morning meetings prior to initiation of the days' transport activities. Drug and alcohol screening is a standard procedure for all employees and contractors, and will be rigorously enforced and monitored. Any suspicion of impairment noted in morning meetings prior to initiation of the days' transport activities will result in the driver being withdrawn from work that day and subject to testing.	PR#370 p39
102	Road safety	Driver orientation	DAR	Drivers will also receive an orientation package describing the road and specific sections/conditions before driving the road for the first time, and they will be required to read it. Drivers will check in and out, and be in communication with control during the journey.	PR#55 p202
103	Road Safety	Engineering standards	Technical Analysis	At the detailed design stage, using the MOFLNR Engineering Manual standards, sections with restricted line of sight will be speed reduced accordingly and posted.	PR#364, Oboni IR#5
104	Road Safety	Management plans	Technical Analysis	Winter road management plans(See PR#55, Section 6.7) will need to be reviewed for the all season road to consider applicability to summer conditions.	PR#355
105	Road safety	Mitigations	Technical Analysis	During the detailed design phase and subsequent pre-operations planning, CZN proposes to consider the following additional mitigations: 1) Typical cab safety belts are designed to restrain occupants for forward collisions. Given the risk of an off-road excursion, which may lead to a rollover and sideways occupant motion, it is appropriate to consider additional operator restraint devices, and possibly modified seat-belt arrangements. We will also review other safeguards, such as a mechanism that prevents the operation of the unit if the seatbelt is not engaged. 2) Cargo safety, particularly anchoring, will be reviewed in detail. We will review options that stabilize the bases of items to be transported, as well as 'top-down' anchoring. The potential for forward and sideways energy will be considered. With respect to concentrate in bags, unless all concentrate is in bulk, we will look at a base design that will limit the opportunity for sideways, forward and backward movement, in addition to top straps to allow top-down forward and sideways anchoring. 3)For the road sections noted as requiring further review for additional mitigations, we propose to look into moderate widening (0.5-1 m) of the normal road width (5 m) in those locations considered to be specifically at risk of an off-road excursion. Widening should be feasible for the km sections 12.3-17 and 53.5-57.4. Widening of km 25.2-28.7 will be difficult because of the common occurrence of upslope rock cuts. Widening of this section in places may still be possible by steepening the downslope, for example by the use of gabions anchored onto underlying rock. CZN successfully used this approach to restore the road bed in several sections along Prairie Creek after the 2006 and 2007 floods. 4) The road sections to be reviewed for additional	PR#407 p9

ID	Topic	Subtopic	EA Phase	Commitment	Reference
				mitigations will be considered for perimeter barriers in locations where they are deemed necessary, which may or may not be the same locations selected for widening. Barriers could take the form of an earth berm if space is suitable, or narrower barriers such as cables or guardrails. 5) Following the completion of road construction, and before operations commence, an operational level risk assessment will be completed with the road team including supervisors, operators and maintenance staff. Additional risk mitigation measures will be considered	
109	Road Safety	Operations plan	Technical Analysis	The Road Operations Plan will be updated to incorporate GNWT Road Operation Guidelines, for review and approval by the regulator(s) prior to relevant operations.	PR#246 p2
106	Road Safety	Operations plan	Technical Analysis	Implement CZN's Road Operations Plan (see PR#135)	PR#355
107	Road Safety	Operations plan	Technical Analysis	Define in the Road Operations Plan how vehicle speeds will be monitored and enforced.	PR#355, as per PR#192, PCA IR 16
108	Road Safety	Operations plan	Technical Analysis	Revise the Road Operations Plan to abide by and enforce GNWT commercial truck loading restrictions, and adequately justify any variance from these allowances with respect to truck and trailer configurations.	PR#355, as per PR#192, PCA IR 16
110	Road safety	Retarder brakes	DAR	Discourage use of engine retarder breaks.	PR#55 p183
111	Road safety	Speed limits	DAR	Suitable speed limits on the Prairie Creek All Season Road.	PR#55 p183
112	Road safety	Systems to regulate road safety and performance	Technical Analysis	CZN will rely on the systems which have been established by the federal and provincial authorities to regulate the safety and performance of the commercial transport industry, such as the National Safety Code Registrations, to ensure requirements with respect to: driver qualifications and regular certification; hours of service operations; vehicle inspections (Daily and semi-annually); pre-trip assessments; and maintenance records and reporting. The status of an operator will be subject to: audits; suspensions if necessary; and removal of National Safety Code Registration if necessary. CZN is committed to ensuring the safe transportation of personnel and goods, and will adopt, at a minimum, and under the responsibility of a Road Operations Manager, standard industry operating procedures for all vehicles supporting the mine operation. These standards would include: daily tailboard meetings with operators to review any specific or unique road conditions which can impact the safe and efficient operation of the transportation fleet; weekly safety meetings of all personnel utilizing the road regularly; radio call procedures; daily pre and post trip inspections of all commercial vehicles, which would include brake checks, and inspection reports, completed by the operator; reporting procedures for all near misses and incidents and the appropriate actions to follow; and procedures for routine inspections of cargo and general truck conditions to	PR#370 p38

ID	Topic	Subtopic	EA Phase	Commitment	Reference
				be completed during the daily transportation cycle. CZN will ensure that all carriers (including its own) that are transporting dangerous good will provide proof of Transportation of Dangerous training and certification of the drivers. In addition, it will be confirmed that the operators of the unit possesses appropriate TDG containment and response equipment. For the non-categorized dangerous good, CZN will ensure that all carriers are operating to the minimum standard of the National Safety Code Cargo Containment, Standard 10.	
113	Road safety	Winter chains	DAR	A winter driving policy requiring tire chains to be used on haul trucks in the mountains (Phase 1 KP 0-29) to increase traction.	PR#55 p183
114	Terrain, soil, permafrost and karst topography	Avalanche recommendation follow-up	Technical Analysis	CZN will be following up on the recommendations in the (Alpine Solutions) report (re. avalanches) at the appropriate time in advance of winter road construction.	PR#178 p2
115	Terrain, soil, permafrost and karst topography	Avalanches	Technical Analysis	The avalanche assessment and map prepared previously for the road (PR#129) will be incorporated into an appropriate Road Operations Plan.	PR#355
116	Terrain, soil, permafrost and karst topography	Avalanches	Technical Analysis	CanZinc commits to considering avalanche risks in the design of bridges and crossings and the placement of construction camps, for review and approval by the regulator(s) prior to construction of each applicable bridge/crossing.	PR#246 p3
117	Terrain, soil, permafrost and karst topography	Best practices	DAR	Construction in accordance with best standard industry practices in relation to soil disturbance, hydrology maintenance and construction in permafrost areas.	PR#55 p267
120	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	DAR	If permafrost is a factor in the general area of a borrow pit, water should not be allowed to pond on it and create a surface thaw condition leading to permafrost degradation.	PR#59 p87
124	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	DAR	Some general guidelines for borrow sources are: minimize the surface area of the open cut; grade slopes to reduce slumping; grade material storage and working areas to promote drainage and avoid standing water; and, restore the borrow source when construction is completed by grading slopes to match the natural ground and drainage of the surrounding area, and replacing overburden.	PR#55 p33

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118	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	Individual borrow source development and management plans will be prepared for each borrow source that will incorporate site-specific recommendations relating to permafrost, as necessary.	PR#351 p1
125	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	During detailed design, borrow sources will be sampled according to the guidance of a professional ARD geochemist. Any borrow with a positive identification of ARD/ML potential will not be used. Any borrow with marginal ARD/ML potential will either not be used, or used based on mitigation procedures defined by a professional ARD/ML geochemist.	PR#200 p16
119	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	A "Detailed "Borrow Site Plan and Design" (DBSPD) for each selected borrow location will be completed prior to construction.	PR#350 p1
121	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	DAR	If permafrost is present and cannot be avoided in the pit development area, mitigation plans must be in place for dealing with any thawing of slope materials, and for the control and filtration of any resulting melt-water.	PR#59 p87
122	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	Where permafrost is encountered in borrows, either the borrow will not be used, or it will be used subject to mitigation by a professional geotechnical engineer to avoid significant impacts in terms of development and reclamation.	PR#200 p17
123	Terrain, soil, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	CZN is committed to avoiding and minimizing exposing water tables to the surface. All borrow sources located in floodplains will not be excavated below the water table. avoid extracting or excavating ditch depths below normal flood plain level. Borrow source investigation will be completed during the detailed design stage which would determine water table levels. A DBSPD will be completed on every selected borrow source which would include detailed, site specific extraction and reclamation plans, including borrow extraction within floodplains subject to water table influence. A minimum 50 m buffer will remain between the active portion of the floodplain (Q2) and the borrow source. During the detailed design stage, borrow sources which may be impacted by high water flows (Q100) will be guarded, if deemed necessary, by a berm elevated 1 m above the determined Q100 elevation. During detailed design, borrow pit stability, potential risk	PR#370 p124

ID	Topic	Subtopic	EA Phase	Commitment	Reference
				from active stream channel, and potential risk from high water flows will be reviewed and appropriate protection measures such as berms will be included in the DBSPD.	
126	Terrain, soil, permafrost and karst topography	Earthquakes	Technical Analysis	CanZinc will take into account the risk of earthquakes in the design and construction of permanent infrastructure and bridges, for review and approval by the regulator(s) prior to construction of permanent infrastructure and bridges	PR#246 p2
127	Terrain, soil, permafrost and karst topography	Environmentally sensitive areas	DAR	Monitor any borrow pits incorporating tall cut slopes or adjacent to environmentally sensitive areas for any evidence of slope instability during any excavation operations.	PR#59 p79
128	Terrain, soil, permafrost and karst topography	Investigation and monitoring plan	Technical Analysis	CanZinc commits to developing a permafrost monitoring plan as a permit condition, informed by a detailed investigation of permafrost along the road alignment.	PR#246 p2
129	Terrain, soil, permafrost and karst topography	Permafrost investigation	Technical Analysis	CZN will undertake a suitable site investigation program to further investigate permafrost issues during the detailed design process, and will implement appropriate mitigations during road construction activities to address those issues.	PR#320 p11
130	Terrain, soil, permafrost and karst topography	Quarry guidelines	Technical Analysis	Where excavation of borrow below the road grade cannot be avoided, CanZinc commits to applying appropriate guidelines (i.e. quarry guidelines). These considerations will be described in the development plans for these borrow sources, for review and approval by the regulator(s) prior to borrow pit development.	PR#246 p1
131	Terrain, soil, permafrost and karst topography	Sediment influx to watercourses	Technical Analysis	The potential for sediment influx to watercourses will be considered as part of detailed terrain stability assessment.	PR#320 p25
132	Terrain, soil, permafrost and karst topography	Soil disturbance	DAR	For wet, ice rich, or permafrost sections, typical overland construction will include no disturbance of the natural ground layer and placing timber horizontally in a corduroy style to help support the road subgrade.	PR#59 p23
133	Terrain, soil, permafrost and karst topography	Stability monitoring	DAR	Carry out at least monthly visual inspections for areas designated high-risk due to potential slope stability or ground stability issues until seasonal baselines for behavior are established, and then carry out regular visual inspections thereafter, including at least one inspection prior to spring freshet to confirm that culverts are free-draining, then monthly during the thaw season, and at least once during the winter for areas with hazards that exist in winter (e.g. for rock fall that is freeze/thaw-related).	PR#129 p76

ID	Topic	Subtopic	EA Phase	Commitment	Reference
134	Terrain, soil, permafrost and karst topography	Stability monitoring	DAR	Carry out inspections for high-risk areas within 24 hours of major rainfall events, abnormally high spring thaw events or significant seismic events, and/or prior to mine traffic travelling the road.	PR#129 p76
135	Terrain, soil, permafrost and karst topography	Stability monitoring	Technical Analysis	Areas at high-risk due to potential slope stability or ground stability issues will be monitored. A professional engineer will determine a monitoring frequency (minimum monthly) and specify the required qualifications of the inspector. Monitoring will be undertaken by local monitors under the guidance and instruction of an engineer, with inspection by the engineer on a pre-determined frequency. A major rainfall event or abnormally high spring thaw event is considered to be one that causes runoff sufficient to create erosive force, indicated by highly turbid water in local streams. A significant seismic event is considered to be one that is clearly felt either at the Mine or in neighbouring communities, and is recorded by the Geological Survey. After a significant runoff or seismic event, all sections of the road will be checked by proximal staff before the 'all clear' is given for travel.	PR#370 p5
136	Terrain, soil, permafrost and karst topography	Subsidence feature mapping	DAR	Map subsidence features on the Ram Plateau between Km 59 and Km 84, within about 200 metres of the road. Annually review these features and document any change in conditions.	PR#55 p225
137	Terrain, soil, permafrost and karst topography	Terrain stability assessment	Technical Analysis	CanZinc as part of permitting will complete a more in depth terrain stability assessment (including identification of risks and mitigations) with a focus on areas identified as unstable and potentially unstable in their terrain mapping, and will provide this information for review and approval by the regulator(s) prior to construction in those areas of focus.	PR#246 p3
138	Terrain, soil, permafrost and karst topography,	High risk area contingencies	Technical Analysis	Site-specific contingencies for high-risk areas are as follows: Carry out at least monthly visual inspections for areas designated high-risk due to potential slope stability or ground stability issues until seasonal baselines for behavior of the area are established; When the baselines are established, carry out regular visual inspections for areas designated high-risk due to potential slope stability or ground stability issues. A suggested schedule for inspection of those areas would include at least one inspection prior to spring freshet to confirm that culverts are free-draining, then monthly during the thaw season, and at least once during the winter for areas with hazards that exist also in winter (for example, for rock fall that is freeze/thaw-related); and Carry out inspections for high-risk areas within 24 hours of major rainfall events, abnormally high spring thaw events or significant seismic events, and/or prior to mine traffic travelling the road. “Where problems are detected, they would be repaired or corrected in a timely manner, and prioritized in accordance with the urgency of the problem.	PR#282 p2

ID	Topic	Subtopic	EA Phase	Commitment	Reference
139	Terrain, soil, permafrost and karst topography, fish and aquatic habitat	Rockfall measures	Technical Analysis	Locations where rock fall such measures could be successfully implemented will need to be chosen at the time of detailed design, taking into account the likely frequency and anticipated volumes of rock fall at a particular location, as well as the likely success of other measures that could be implemented in addition to or instead of physical solutions. For example, netting may be more useful on blind corners, whereas signage may be more appropriate at locations where sight distances are good in rock fall areas. Suitable protection solutions for existing out-dipping rock slopes along the route should be considered at the time of detailed design. Debris flow/flood locations should be specifically evaluated during detailed design to determine if some benefit would be realized with the use of a deflection berm.	PR#282 p217
140	Terrain, soils, permafrost and karst topography	Borrow source development and management plans	Technical Analysis	The development, working and restoration of borrow sources will be carefully planned and carried out to reduce or avoid negative effects including permafrost thaw and soil erosion.	PR#55 p236
141	Terrain, soils, permafrost and karst topography	National Parks Caving Directive	DAR	Parks is preparing a National Parks Caving Directive which may have information of value in karst terrain, and should be contacted.	PR#129 p79
142	Vegetation	Clearing	DAR	Brush and debris from clearing the right of way will be windrowed adjacent to the right of way, with breaks every 100 m. Trees felled will be bucked.	PR#2 p4
143	Vegetation	Invasive Species	Technical Analysis	Restrict access and use of the road by unauthorized persons because off-road vehicles could introduce invasive species. Road use monitoring is proposed at about km 140 on the all season access road.	PR#186 p44
145	Vegetation	Invasive species management plan	Technical Analysis	The Invasive Species Management Plan is meant to be adaptive and evolve as the project evolves and invasive species are, or are not, detected. The four key principles are prevention, detection, control and restoration.	PR#186 p2
144	Vegetation	Invasive species management plan	DAR	Development and implementation of an invasive species management plan to ideally prevent, or if necessary, control the establishment of invasive plant species in off-site vegetation communities adjacent to the roadway.	PR#55 p185
146	Vegetation	Invasive species	Technical Analysis	Re invasive species, highway trucks and/or trailers headed for the Mine will pass through a wheel-wash at the LTF and be cleaned of any debris before departure.	PR#186 p44

ID	Topic	Subtopic	EA Phase	Commitment	Reference
		mitigation			
147	Vegetation	Rare plant survey	Technical Analysis	An early rare plant survey is recommended prior to construction for the flowering periods of plant families such as Ranunculaceae (buttercups) and Rosaceae (rose).	PR#282 p4
148	Vegetation	right-	Technical Analysis	A suitable early season rare plant survey prior to construction of the all season road will be conducted for the all season road project footprint, and a rare plant management plan developed.	PR#320 p22
149	Vegetation	Stockpile placement	Technical Analysis	Stockpiles will be placed on non-vegetated or sparsely vegetated areas to minimize disturbance to vegetation, where possible.	PR#355
150	Vehicle maintenanc e	Inspections for leaks	DAR	Properly maintaining and inspecting vehicles for leaks, and using drip pans for stationary equipment.	PR#55 p192
152	Water and sediment quality, vegetation, wildlife	Contaminant loading management plan	Technical Analysis	CanZinc commits to updating its contaminant loading management plan in consultation with ECCC and Parks for the permitting phase.	PR#246 p2
151	Water and sediment quality, vegetation, wildlife	Contaminant loading management plan	DAR	Follow the existing draft Contaminant Loading Management Plan and soil sampling along the road bed both before and during haul operations.	PR#55 p184
153	Water quality and quantity	Peatland drainage	DAR	Preservation of natural drainage patterns along the haul road to maintain the natural function and processes of peatland habitats adjacent to the haul road.	PR#55 p185
154	Water quality and quantity	Refuelling	DAR	Refuelling of trucks and equipment away from any stream, lake, wetland or other water body, per industry standards.	PR#55 p267
155	Water quality and quantity	Water extraction volumes	Technical Analysis	Water extraction from lakes will limited according to lake volume as follows: Mosquito and Km 70 1%; Km 115 and Km 121 5%; Km 139 and Km 141 2%. Withdrawal rates noted above are based on each summer season. Withdrawal volumes will be tracked either by using an in-line flow meter, or by recording the number of fills of tanks of known capacity. Records will be kept and can be provided at regular intervals along with other road monitoring data.	PR#355 p4

ID	Topic	Subtopic	EA Phase	Commitment	Reference
156	Water quality and quantity	Watercourse crossings	Technical Analysis	CanZinc to commit to performing the geotechnical and hydrological investigation required prior to final design of the watercourse crossings	PR#200 p26
157	Water quality and quantity, aquatic habitat	Fuel	DAR	Fuel caches will be located on flat, stable terrain, or in a natural depression, away from slopes leading to water bodies, located above the Q100 high water mark, outside the defined riparian area of proximal bodies of water, will not be stored on the surface of frozen lakes or streams, will have secondary containment for stationary fuel containers with a capacity greater than 230 L, and the containment will be 10 percent greater than the capacity of the largest fuel container.	PR#59 p53
158	Water quality and quantity, aquatic habitat	Sediment control	Technical Analysis	Sediment control measures will be installed for any disturbed soils where there is a risk of sediment migration to surface water.	PR#246 p2
159	Water quality and quantity, aquatic habitat	Stockpile placement	Technical Analysis	CanZinc commits to placing any stockpiles of rock and coarse material 50 m from flowing watercourses, and soil or fine material at least 100 m from flowing watercourses. Where this is not possible (e.g. in tight canyons or valleys), CanZinc will implement enhanced erosion and sediment control measures to avoid impacts.	PR#246 p1
160	Wildlife	Barging	DAR	Cease barging activities if Wood Bison are observed crossing the river near the barge location.	PR#55 p255
161	Wildlife	Baseline wildlife surveys	Technical Analysis	Additional baseline wildlife surveys for forest and wetland birds are planned for the May to June window, at which time additional waterfowl and cliff-nesting raptor surveys may be conducted concurrently, and the black bear habitat potential maps may be updated with any new relevant information.	PR#282 p3
163	Wildlife	Bear den surveys	Technical Analysis	Pre-clearing denning surveys identified for Grizzly Bears also extends to Black Bears. Environmental Monitors will survey for wildlife dens in favourable denning habitat (e.g., borrow sources) prior to clearing.	PR#186 p9
162	Wildlife	Bear den surveys	Technical Analysis	Survey crews will conduct ground-based reconnaissance den surveys from KP 174 to KP 36. These ground-based surveys will cover the entire 138 km (KP 36 to 174) along the proposed all season road. An aerial den survey will focus on the area along the proposed all-season road (KP 36 to174) with: 1) moderate and high denning potential, 2) known den(s) identified during the ground-based surveys, and 3) proposed winter clearing (after October 1). Ground and aerial surveys will include areas overlapping with the previously developed winter road. The aerial survey will consist of flying evenly spaced transects, with a higher survey intensity in areas of previously identified dens.	PR#341 p4

ID	Topic	Subtopic	EA Phase	Commitment	Reference
164	Wildlife	Caribou	DAR	An alert system to warn personnel of Woodland Caribou and other sensitive wildlife in the local area by relaying sighting information to vehicles/aircraft and equipment operators and on-site personnel.	PR#55 p184
165	Wildlife	Caribou	Technical Analysis	If caribou are reported on the road or within 500 m of it, 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 away from the road or 5 minutes after last visual. Once traffic resumes, speed reduced to half the posted speed limit, 30 km/hr, within 1 km of the sighting.	PR#186 p18
166	Wildlife	Caribou	Technical Analysis	If caribou are reported beyond 500 m of the road, traffic speeds are to be reduced to half the posted speed limit, 30 km/hr, within 1 km of the sighting.	PR#186 p19
167	Wildlife	Community engagement	DAR	A wildlife and wildlife habitat mitigation and monitoring plan that includes annual engagement with members of the Naha Dehe Dene Band to monitor measureable parameters of effects.	PR#55 p184
168	Wildlife	Data sharing	DAR	Provide the Dehcho Land Use Planning Committee (and others as requested) the post-construction digital footprint of the all season access road and associated facilities to incorporate into ongoing cumulative effects monitoring across the Dehcho.	PR#55 p256
169	Wildlife	Den and nest avoidance	DAR	Project employees and contractors to avoid all known or suspected den and nest sites.	PR#55 p257
170	Wildlife	Education program	DAR	An education program of wildlife related policies and mitigation to all Project employees and contractors, including a bear awareness program to ensure employees and contractors are informed of bears and other potentially dangerous wildlife and the level of risk.	PR#55 p184
171	Wildlife	Fuel	DAR	Fuel storage facilities that meet industry standards for tank construction, location and spill containment.	PR#55 p183
172	Wildlife	Harlequin duck	Technical Analysis	Conduct any in-stream bridge construction work and the Sundog re-alignment/armouring outside Harlequin duck occurrence (late April to mid-Sept) or when no flow. Should in-stream work be required during this time, the Environmental Monitor will first survey the for the presence of Harlequin ducks within 500 m of the activity (both upstream and downstream) and in-stream work will cease if a Harlequin duck is present.	PR#186 p21
173	Wildlife	Harvesting	DAR	Prohibit hunting, trapping, harvesting, and fishing by site employees and contractors.	PR#55 p227
174	Wildlife	Measureable parameters of effects	DAR	Amend the existing draft Wildlife Mitigation and Monitoring Plan, as necessary, to include the monitoring of measureable parameters of effects.	PR#55 p256
175	Wildlife	Pets	DAR	Pets will be prohibited along the all season access road.	PR#55 p185

ID	Topic	Subtopic	EA Phase	Commitment	Reference
176	Wildlife	Pika	Technical Analysis	Within collared pika range and where talus is present, CZN commits to avoiding talus to the extent possible, and conducting presence/not detected collared pika surveys in all borrow sources selected for development and along the proposed all-season road alignment that disturbs talus. CZN commits to conducting pika surveys to determine their presence prior to development (e.g., road alignment, borrow sources) in pika habitat. Should pika's occupy a proposed borrow source or portion thereof, prior to development, a replacement borrow source or an unoccupied portion of the same source (as some sources are large) will be selected for use (after confirming that no pika's occur within a sufficient buffer distance identified by a biologist).	PR#341 p13
177	Wildlife	Pika	DAR	Surveying for and reporting the presence/absence of Collared Pikas (ranked as May Be At Risk in the NWT) at borrow sources BP 14 and 16 prior to Project-related disturbances, and consider additional mitigation should pikas be present.	PR#55 p249
178	Wildlife	Pika	Technical Analysis	CZN will commit to not disturbing occupied pika locations at borrow sources 33 and 34. CZN will borrow from these locations if this can be done without such disturbance (the talus fans and borrow sites are large relative to pika locations which are sporadic), as directed by a survey biologist. Failing this, CZN will borrow from other sources in the area.	PR#320 p8
179	Wildlife	Pika	Technical Analysis	Additional mitigation, beyond that previously identified in the DAR (e.g., low truck volumes, reduced traffic speeds, dust suppression, response to accidental spills, prohibit littering) specific to collared pika are: prohibit the storage of snow, including along roadside snow banks, on or within 10 m of talus habitat (within pika range); 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 be not present; and if required, determine a sufficient buffer distance from which borrow construction can occur near active pika habitat, based on guidance from a biologist.	PR#370 p85
181	Wildlife	Policy	DAR	Policy giving wildlife the right-of-way, obligating drivers to stop (when safe to do so) for wildlife seen on or immediately adjacent to the road, to allow them to move away.	PR#55 p184
180	Wildlife	Policy	DAR	A no hunting policy for all Project employees and contractors while working and/or at the Mine site.	PR#55 p183
182	Wildlife	Policy	DAR	Policy that all Project-related transportation activities are to give the right-of-way to any wildlife that such activity may encounter.	PR#55 p184
183	Wildlife	Problem Bears	DAR	Implement a protocol for dealing with problem bears, with a designated chain of responsibilities for ensuring worker safety and efficient and speedy resolution of incidents.	PR#55 p257
184	Wildlife	Regulatory agency notification	DAR	The appropriate regulatory agencies (i.e., GNWT ENR and Parks Canada) will be contacted to receive additional direction regarding new issues that arise.	PR#55 p258

ID	Topic	Subtopic	EA Phase	Commitment	Reference
185	Wildlife	Reporting	DAR	A structure for reporting human-dangerous wildlife encounters at the TTF and resulting incidents to inform Mine management and ENR staff.	PR#55 p184
187	Wildlife	Reporting	DAR	Reporting and evaluating wildlife sightings along the access road and airstrip, and if a problem area is identified, corrective management options for traffic and Project-related activities will be considered.	PR#55 p227
186	Wildlife	Reporting	DAR	Report annual updates and results of the Wildlife Mitigation and Management Plan, Controlled Road Use Plan, and inspections and enforcements.	PR#55 p215
188	Wildlife	Retarder Brakes	Technical Analysis	The use of engine retarders for braking will be discouraged but not prohibited since some road sections contain steeper portions, and drivers should retain the option to use any form of braking if necessary for safety.	PR#100 p47
189	Wildlife	Snow removal practices	DAR	Snow removal practices along the access road and airstrip to manage high snow banks, so that wildlife can readily move off as vehicles/aircraft approach.	PR#55 p184
190	Wildlife	Technical advisory committee	DAR	Discuss issues and considerations regarding wildlife populations and effects during the Technical Advisory Committee meetings proposed by CZN in EA0809-002.	PR#55 p211
191	Wildlife	Trumpeter swans	DAR	Prohibit pumping water from ponds occupied by Trumpeter Swans during nesting.	PR#55 p215
192	Wildlife	Use of explosives	Technical Analysis	Blasting is prohibited if caribou are observed within 1 km of blast site until animal moves out of the area.	PR#186 p17
193	Wildlife	Waste management plan	DAR	A Waste Management Plan that prohibits littering, purposely feeding wildlife, and storing attractants accessible to wildlife. Incinerate all waste foods and human garbage consistent with current industry good management practices to minimize wildlife attraction to the local area. Adaptive management will be applied to waste management practices. If wildlife are found to be attracted to the site (i.e., problem wildlife) additional management practices, if required, will be adopted.	PR#55 p185
194	Wildlife	Waste removal	DAR	Solid waste will be organized and stored securely so that it does not attract wildlife, will be removed from the site progressively as the operation is under way, and will be incinerated using a proper manner of incineration.	PR#59 p44
195	Wildlife	Waste removal	DAR	Non-combustible solid waste will be removed from the sites by the end of construction and operation.	PR#59 p44
196	Wildlife	Waste removal	DAR	Adaptive management will be applied to waste management practices. If wildlife are found to be attracted to the site (i.e., problem wildlife) additional management practices, if required, will be adopted.	PR#55 p185

ID	Topic	Subtopic	EA Phase	Commitment	Reference
197	Wildlife	Western toads	Technical Analysis	CanZinc commits to collaborating with GNWT to enable a breeding pond survey by local environmental monitors during the summer to detect the presence of Western toad in water bodies proximal to the road alignment between the Nahanni Butte access road and the Liard River. The survey will be conducted either before or after the early stage of construction (subgrade placement) to better understand the occurrence of Western toad in this area and potential need for mitigation during fall migration. If Western toad presence is confirmed in this area, the survey will be expanded progressively to other areas proximal to the road on the west side of the Liard River.	PR#263 p2
198	Wildlife	Wildlife monitoring and mitigation plan updates	DAR	Update the existing draft WMMP to include all season monitoring and species potentially affected by all season access road/ airstrip use. Additional considerations include: mortality thresholds for additional species at risk (e.g., Trumpeter Swan, Collared Pika), Moose, and Dall's Sheep; monitoring, evaluating, and reporting harvest pressure, particularly along the Nahanni Range portions of the outfitter zone located outside the NNPR boundary; and, educating and promoting First Nations voluntary reporting of harvests from along the all season access road. If excessive use of the road occurs by non-residents, and hunting pressures or safety concerns result, additional access control measures will need to be considered involving local communities and government agencies.	PR#55 p34
199	Wildlife	Wildlife sighting logs	DAR	Wildlife sighting logs to be completed by all Project employees and contractors for wildlife sightings (e.g., Dall's Sheep, caribou, Wood Bison) with respect to species, location along the access road/ airstrip, numbers, and reaction to Project activity. If a problem area is identified, corrective measures will be considered.	PR#55 p184
200	Wildlife	Winter road management	DAR	Managing the small portion of the winter road not used for all season access to prevent predator and non-Project related travel of the corridor, if necessary.	PR#55 p185
201	Wildlife	WMMP Revisions	Technical Analysis	Integrate proposed mitigation measures noted in DAR Addendum, Appendix E, Appendix C in a revised draft of the WMMP.	PR#355 p12
202	Wildlife	Yellow Rails	Technical Analysis	Re Yellow Rails, maintain natural drainage patterns throughout the boreal forest zone, by careful placement of culverts and regularly inspecting drainage measures to identify areas that do, or might unexpectedly, pond water. Follow best management practice (Environment Canada, 2009): • Avoid activities in areas while birds are present • Prevent loss and alteration of wetlands • Maintain year-round 100 m no-activity buffer from potential habitat • Avoid night-time activities (including light and noise) near breeding wetlands • No mowing of potential habitats when dry	PR#186 p19

ID	Topic	Subtopic	EA Phase	Commitment	Reference
203	Wildlife mitigation and monitoring plan	Wildlife	DAR	ENR's Woodland Caribou Best Management Practices for Industrial and Commercial Activities (once developed) to be incorporated into the wildlife monitoring program, where feasible, to manage or mitigate habitat impacts and sensory disturbances on Woodland Caribou.	PR#55 p185
204	Wildlife, fish and aquatic habitat	Use of machinery	DAR	Machinery used in road building will arrive on site in a clean condition, free of any fluid leaks, invasive species and noxious weeds. Machinery will be operated outside of wetted channels in such a way as to minimize disturbance of banks and channel bed. Fording of fish-bearing streams will most likely not be required, but if needed, will be limited to once-over-and-back, with prior Inspector approval. Temporary crossing structures or at minimum, swamp mats, will be applied to protect banks and stream beds if rutting is likely to result during fording. Equipment will be washed, refueled or serviced away from streams and in such a way as to prevent deleterious substances from entering the water. Fuel and other materials for machinery will also be stored in such a way as to prevent any deleterious substances from entering the water.	PR#90 p14
205	Wildlife, vegetation, fish and aquatic habitat	Sanitary and grey water	DAR	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 (sumps), meeting the required standards for effluent dispersal. Specific locations will have approved plans which meet the regulatory requirements and site specific conditions.	PR#59 p44
206	Wildlife, water quantity	Policy	DAR	A policy to avoid significant changes to water levels while pumping water from a known Beaver pond in the fall and winter periods.	PR#55 p185

Table 2- Draft Final Commitments with issues to be addressed

ID	Topic	Subtopic	Issue	Commitment	Reference	Notes
15	Concentrate and material transport	Transport method	Possible Contradiction	CZN would either transport concentrates in bulk using the 'Convey Ore' system, similar to the Red Dog Mine approach, or in bags in a truck box with a lid.	PR#355 p4	Possible contradiction with #14
28	Emergency response	Emergency equipment	Possible Duplication	We propose to acquire two bladders with a capacity of at least 5,000 L. One would be stationed with a pump at one of the Control Points on an upstream tributary to Funeral Creek. The other bladder would be stored with a pump on the trailer stationed at Cat Camp.	PR#282 p109	This may contradict #25 (i.e. 10,000L bladders)
3	Access Control	Remote camera	Not currently worded as a commitment	Use of a remote camera is worthy of consideration for periods when the (road) checkpoint is not manned.	PR#370 p5	To be considered a commitment for this EA, there must be a clear action statement (e.g. CanZinc commits to... or CanZinc will...)
104	Road Safety	Management plans	Not currently worded as a commitment	Winter road management plans (See PR#55, Section 6.7) will need to be reviewed for the all season road to consider applicability to summer conditions.	PR#355	To be considered a commitment for this EA, there must be a clear action statement (e.g. CanZinc commits to... or CanZinc will...)

139	Terrain, soil, permafrost and karst topography, fish and aquatic habitat	Rockfall measures	Not currently worded as a commitment	Locations where rock fall such measures could be successfully implemented will need to be chosen at the time of detailed design, taking into account the likely frequency and anticipated volumes of rock fall at a particular location, as well as the likely success of other measures that could be implemented in addition to or instead of physical solutions. For example, netting may be more useful on blind corners, whereas signage may be more appropriate at locations where sight distances are good in rock fall areas. Suitable protection solutions for existing out-dipping rock slopes along the route should be considered at the time of detailed design. Debris flow/flood locations should be specifically evaluated during detailed design to determine if some benefit would be realized with the use of a deflection berm.	PR#282 p217	To be considered a commitment for this EA, there must be a clear action statement (e.g. CanZinc commits to... or CanZinc will...)
145	Vegetation	Invasive species management plan	Not currently worded as a commitment	The Invasive Species Management Plan is meant to be adaptive and evolve as the project evolves and invasive species are, or are not, detected. The four key principles are prevention, detection, control and restoration.	PR#186 p2	To be considered a commitment for this EA, there must be a clear action statement (e.g. CanZinc commits to... or CanZinc will...)
147	Vegetation	Rare plant survey	Not currently worded as a commitment	An early rare plant survey is recommended prior to construction for the flowering periods of plant families such as Ranunculaceae (buttercups) and Rosaceae (rose).	PR#282 p4	To be considered a commitment for this EA, there must be a clear action statement (e.g. CanZinc

						commits to... or CanZinc will...)
44	Erosion and sediment control	Minimizing mobilization of sediment	Possible Overlap	CanZinc commits to implementing erosion and sediment control where construction has the potential to mobilize sediment and result in transport to surface water, and include specific plans for rapid response in the event of an intense precipitation event.	PR#246 p1	Suggest combining with #158
99	Road Maintenance	Stream crossing inspection	Possible Overlap	CZN has committed to the development and implementation of an inspection and monitoring program for all stream crossing structures. The inspection and monitoring program would reflect the crossing risk rankings. Key to the monitoring would be the detection of any changes to channel positions and the potential for erosion with respect to the crossing structures, and consideration of required adaptive management.	PR#370 p127	Suggest combining with #94
138	Terrain, soil, permafrost and karst topography,	High risk area contingencies	Possible Overlap	Site-specific contingencies for high-risk areas are as follows: Carry out at least monthly visual inspections for areas designated high-risk due to potential slope stability or ground stability issues until seasonal baselines for behavior of the area are established; When the baselines are established, carry out regular visual inspections for areas designated high- risk due to potential slope stability or ground stability issues. A suggested schedule for inspection of those areas would include at least one inspection prior to spring freshet to confirm that culverts are free-draining, then monthly during the thaw season, and at least once during the winter for areas with hazards that exist also in winter (for example, for rock fall that is freeze/thaw-related); and Carry out inspections for high-risk areas within 24 hours of major rainfall events, abnormally high spring thaw events or significant seismic events, and/or prior to mine traffic	PR#282 p2	Suggest combining with #133-135

				travelling the road. “Where problems are detected, they would be repaired or corrected in a timely manner, and prioritized in accordance with the urgency of the problem.		
176	Wildlife	Pika	Possible Overlap	Within collared pika range and where talus is present, CZN commits to avoiding talus to the extent possible, and conducting presence/not detected collared pika surveys in all borrow sources selected for development and along the proposed all-season road alignment that disturbs talus. CZN commits to conducting pika surveys to determine their presence prior to development (e.g., road alignment, borrow sources) in pika habitat. Should pika’s occupy a proposed borrow source or portion thereof, prior to development, a replacement borrow source or an unoccupied portion of the same source (as some sources are large) will be selected for use (after confirming that no pika’s occur within a sufficient buffer distance identified by a biologist).	PR#341 p13	Suggest combining with #177 and #178
188	Wildlife	Retarder Brakes	Possible Overlap	The use of engine retarders for braking will be discouraged but not prohibited since some road sections contain steeper portions, and drivers should retain the option to use any form of braking if necessary for safety.	PR#100 p47	Suggest combining with #110