



March 3, 2016

Ms. JoAnne Deneron
Chairperson
Mackenzie Valley Environmental Impact Review Board
5102 50th Avenue,
Yellowknife, NT
X1A 2N7

Dear Ms. Deneron

RE: Environmental Assessment EA1415-001
Prairie Creek Mine All Season Access Road
Information Requests from the Review Board

We refer to the Information Requests (IR's) issued by the Review Board posted on February 12, 2016. Canadian Zinc Corporation (CZN) is disappointed with the content of many of the IR's from the Board. We have concerns regarding the level of detail requested (much of which we believe has already been provided or is not necessary at this stage of the project), the appropriateness of some requests, and the fact that more assessment is now being requested in others. This is also frustrating given the magnitude of information still being requested after two adequacy steps related to the Developer's Assessment Report (DAR) have been completed.

This EA is the sixth environmental assessment (EA) in respect of the Prairie Creek Project. The previous EA on the Mine and winter road access generated much valuable information that is pertinent to this current EA, but is not being sufficiently considered.

CZN has had concerns throughout the current EA process. In our comments on the draft Terms of Reference (TOR) issued by the Board, we noted that the draft was very different from the version discussed with parties at a technical meeting in Yellowknife on July 8, 2014. We also observed that the EA1415-001 TOR was written in a very prescriptive fashion. CZN interpreted the intent of the TOR in the DAR submitted in April 2015. In the interim, the Board hired a consultant to assist with review, mainly on permafrost-karst issues. The Adequacy Review (AR) dated May 22, 2015 consisted of 24 sections and an appendix itemizing DAR deficiencies. It was clear that the interpretation of the TOR in the AR was different from CZN's, and did not provide for any latitude or flexibility in assessment approach. Also, many items in the AR implied a level of detail beyond what we believed was appropriate for an EA. Following meetings with the Board's consultant and Board staff, a few adequacy items were removed or refined, and thereafter CZN submitted a DAR Addendum in September 2015.

The Review Board subsequently issued Reasons for Decision on the Adequacy of the DAR on December 21, 2015 defining five items the Board felt were still inadequate, four of which required a response from CZN. Again, following communications with the Board's consultant and Board staff, CZN provided additional evidence regarding these items on January 29, 2016. The Board then decided to omit one item from consideration, and alter two others. CZN is in the process of responding to the three items to complete adequacy.

The point we are making here is that this is the third time we have felt compelled to bring concerns to your attention (two during Adequacy and now the third with this IR step). The IR step is usually a time when questions are posed for understanding or clarification, and in some instances, greater detail is asked for to support a conclusion. In some of the IR's issued by the Board, a level of detail that is more suited to the permitting phase is being requested (e.g. IR's 3, 4 and 6), and in others new or more detailed assessment is being requested (e.g. IR's 31-34). We believe many other IR's are either not necessary or are inappropriate (e.g. IR's 17, 18, 26, 27, 29, 37, 38 and 41).

We respectfully request that you undertake a re-evaluation of the IR's issued by the Board, but particularly those noted above. To facilitate this, the attached document provides our comments on those IR's we believe require deletion or modification.

Thank you for your consideration and attention to this matter. If you have any questions, please contact us at 604 688 2001.

Yours truly,
CANADIAN ZINC CORPORATION



David P. Harpley, P. Geo.
VP, Environment and Permitting Affairs

Attachment

IR	Recommendation	CZN Comment
2	<p>1. Please update the terrain stability mapping to accurately reflect all of the observations made along the alignment related to permafrost and permafrost features; The terrain stability mapping should clearly depict the permafrost distribution along the alignment.</p> <p>2. Please support the description by providing additional information from site surveys; The Board expects CanZinc to conduct hand-excavated test pits and geophysics surveys (e.g. ground penetrating radar and/or resistivity surveys), to investigate for the presence and extent of massive ground ice in known areas of fine soils e.g. the organic swamp areas adjacent to watercourses and the lacustrine deposits (KP91 Km to KP94 Km); While test pits may not be possible in the winter, the Board considers geophysics surveys possible and necessary at this time.</p>	<p>We have no problem with 1. Re 2, we realize this has since been retracted. However, that it was included initially is concerning. Hand-excavated test pits were conducted as part of fieldwork undertaken. Re the geophysics, in our previous geophysics rebuttal (Jan 29) we noted that geophysics can be useful where massive ice can occur. However, in that case (Mary River), we also noted that the method was useful in continuous permafrost terrain in coarse material, neither of which occur in the KP91-94 area. Further, massive ice was investigated at Mary River due to planned 15 m fills for a railway, a very different situation. As such, the original request suggests a lack of understanding.</p>
3	<p>Please provide detailed descriptions of the slope aspect and angle and describe what the effects to permafrost along the alignment are predicted to be.</p>	<p>Consideration of slope angle and slope aspect was included in the baseline road section descriptions in Section 5 of the geotechnical report, Appendix 2 of the DAR. TSM and slope angle/aspect mapping did not alter our interpretation of effects on permafrost, and the consequent recommendations regarding road alignment and construction approach. Therefore, the requested work has been completed, to the extent necessary for this stage of the project, given that more site-specific review will occur during the detailed investigation and design phase.</p>

4	<p>Please provide the following:</p> <ol style="list-style-type: none"> 1. An updated list of the major crossings including the alternative alignment between KP103 Km and KP124 Km. The list should also include all the alluvial fan crossings. 2. For each crossing, the following should be provided: <ol style="list-style-type: none"> 2.1. Descriptions of the physical environmental setting, including channel and floodplain dimensions, bedload transport activity, channel stability, overbank flooding, and avulsion history. 2.2. Support for the above from site photographs and historical air photo interpretation and mapping. 2.3. Descriptions of the crossing structure and the approach segments of the road with respect to channel and floodplain constriction. 2.4. Descriptions of the alternative crossing locations that were considered, and how this particular site was selected. 2.5. Descriptions of the potential effects of the environment on the crossing, with respect to channel avulsion, bed material aggradation, or excessive bedload transport through the crossing. 2.6. Descriptions of the potential effects of the crossing on the environment, with respect to constriction of channel/floodplain width, the alteration of bedload/debris transport and bed material accumulation, and the direction of channel avulsions down the road alignment. 3. A description of any channel avulsion hazards that may affect the road that are not directly associated to channel crossing structures (e.g. km 30.6). 	<p>The comment to this recommendation refers to information to confirm that crossing locations have been 'nailed down'. Crossing locations were selected by qualified engineers experienced in road design, and taking account of a variety of factors (e.g. approaches, bank to bank width), including channel stability. In all cases, the crossing locations can be considered 'nailed down' as they are the best locations, notwithstanding possible minor adjustments during detailed design which will not alter assessed effects in any significant way. All crossing locations are inherently stable based on field evidence of the age of landforms and vegetation present, apart from 3 floodplains that are crossed. These regularly carry water and have potential for channel movement, Casket Creek, a Grainger tributary and Grainger River. In each case, engineering works are proposed to train flows under or into the crossing structure to avoid channel movement. This will be better explained in the Technical Session. The alluvial fan crossings on the Alternate Alignment are on the very edge of the fans, taking advantage of firm ground as opposed to adjacent muskeg. These fans do not usually carry water, but there is a risk of water and debris during high runoff events. Therefore, culverts and armour will be required. However, there is low risk of impacts from erosion and sediment production given the natural vegetation filter before downslope wetlands, which are not fish-bearing.</p> <ol style="list-style-type: none"> 1. No problem with this. 2.1 Relevant information was provided in the DAR Addendum, Appendix A (Table 2 and Appendix B), including channel and floodplain dimensions, and flood level. Bedload and flood level will be reviewed in detailed design. 2.2 Photographs were provided in DAR Addendum, Appendix A (Table 2). Historical air photo review is not considered necessary for the reasons noted above (channels are stable or will be trained). 2.3 Relevant information was provided in the DAR Addendum, Appendix A (Table 2). 2.4 Also provided in DAR Addendum, Appendix A (Table 2) and better explained in the Technical Session.. 2.5 Relevant information was provided in the DAR Addendum, Appendix A (Table 2). Bed load issues are appropriate for the detailed design phase. 2.6 This is the same as 2.3. Information has either been provided or further consideration can be deferred to detailed design. 3. This item refers to the lower Sundog section where the road parallels the creek. This is a flood level-road bed elevation issue, and would be addressed during detailed design. The road bed would be elevated sufficiently above a specified flood level. Channels can naturally avulse away from or up to the road.
6	<p>Please describe what mitigations would likely be implemented to address risks from geohazards in the high risk and moderate risk areas defined in the Terrain Mapping Report. The descriptions should include a list of the possible mitigations, why each mitigation would be appropriate and under what conditions each would be implemented.</p>	<p>This information was also already provided in the DAR, Appendix 2, Section 8.1.3, and to a lesser extent in the DAR Addendum and TSM report. The first approach is to avoid potentially problematic areas, and that is what the proposed road alignment adjustments seek to do. Again, a more site-specific review will occur during the detailed investigation and design phase, when site-specific mitigations, such as wider or thicker fill, will be considered further, if necessary..</p>
7	<p>Please describe the erosion risks at meander bends that may affect the road.</p>	<p>Km 3.6 is referenced. This is a winter road section already built to all season standards and armoured, and we assume scoped out of further assessment. In any event, the risks are low since armour was placed on this and other sections specifically to address the damage from the 2006 and 2007 flood events (Cadillac had not armoured the road).</p>
10	<p>Please provide detailed evidence to clarify subjective statements used in the alternatives assessment.</p>	<p>The full context leading to this request is "Some local aboriginals perceive that an all season road, including some limited blasting for bridge abutments and approaches, will mean a greater impact on the land compared to a winter road. However, others likely agree with CZN's belief that use of an all season road through the mountains will be inherently safer than only winter use, and that as a result, the risk of accidents and spills will be less." This discussion is provided to justify a component score. The multiple accounts analysis is somewhat subjective by definition, and based on an opinion. We think some latitude is reasonable.</p>

17	<p>1. Please provide a timeframe prior to road construction when a baseline vegetation survey for potential contaminants of concern will occur.</p> <p>2. Please describe the survey methodology for this baseline vegetation study.</p> <p>3. Please describe a monitoring plan for loading of potential contaminants of concern in vegetation along the proposed road route.</p>	<p>1. The requirement for vegetation monitoring is linked to concentrate transport on the all season road. Therefore, a baseline survey need only be completed prior to this, not prior to road construction.</p> <p>2. and 3. We believe it would be appropriate to request this information as a condition of land use permits, which would also require it to be approved before concentrate haulage. The information is not considered to have any material influence on the assessment of effects during this EA.</p>
18	<p>1. Please submit a conceptual framework for an invasive species management plan for discussion during the technical sessions. Describe adaptive management options to prevent the spread of invasive species in the conceptual framework.</p> <p>2. A Contaminant Loading Management Plan was developed for the winter road. Describe what mitigations from that plan are relevant, which mitigations need to be updated given the proposed change to an all season road, and what new mitigations would be needed for proposed project.</p>	<p>1. During the Adequacy Review, it was agreed that, for management plans, CZN would provide either a draft plan or the key mitigation/monitoring steps to be included in a future plan. We agree to do this for an Invasive Species Management Plan if this is what is intended.</p> <p>2. This was provided in the DAR Addendum, Appendix D, section 4.2.</p>
19	<p>Please either describe in detail how these measureable parameters would effectively capture potential effects to harvested species due to avoidance or altered movement, or provide alternate parameters that CanZinc will measure to adequately quantify these responses.</p>	<p>Firstly, the DAR is referenced whereas the Vegetation and Wildlife & Wildlife Habitat assessment report was updated in the DAR Addendum, and further describes how measurable parameters are used to monitor effects. Secondly, the author seems to ignore the evidence that wildlife use of the road corridor is sparse, except for moose, the only harvested species currently of significance with respect to the road locally, and which is not prone to significant effects from altered movement.</p>
20	<p>Please describe the anticipated impacts on all harvested species from disturbance and displacement caused by the project. This description will include but is not limited to a discussion on impacts to migratory species or those whose habitat range is only partially (either temporally or geographically) within the vicinity of the all season access road.</p>	<p>Again, the DAR is referenced whereas the Vegetation and Wildlife & Wildlife Habitat assessment report was updated in the DAR Addendum, and provides further consideration for migratory species and those whose habitat range is only partially within the vicinity of the all-season road. Also, recent TK and information from hunters indicates that only moose, and occasionally buffalo, are harvested locally.</p>
26	<p>Please provide summaries of the data provided in DAR Addendum Appendix C Attachment C. Include a description of statistically appropriate central tendency, trends, and range of concentrations by species and location. This information is conducive to presentation in graphical format.</p>	<p>In the opinion of our fisheries biologist, the utility of fish tissue information is low for the road. The road is not a single continuous discharge point (i.e. effluent), and therefore it shouldn't be treated as one. Gathering a large amount of baseline tissue concentration data will be very expensive and provide little benefit. The probability of a significant impact as a result of a spill or natural erosion is very small. Concentrate is in a form that is not readily bioavailable, and any spill would be cleaned up. Metals would not be expected to build-up in the tissues of fish. A spill of diesel would also not lead to build up in tissues. Therefore, we see no point in providing the requested information. Further, other than for Prairie Creek, the data (for Tetcela River) is insufficient to calculate summary statistics.</p>

27	Please provide summaries of the data provided in DAR Addendum Appendix C Attachment D. Include a description of statistically appropriate central tendency, trends, and range of health factor by species and location. This information is conducive to presentation in graphical format. Please also include a discussion of existing levels of parasites, disease and condition. If this data are not available, please describe how and when it will be collected.	Similar to tissue data, our fisheries biologist believes there is little utility in fish health data. The EA requirements for an all-season road should not have to meet the requirements of a continuous discharge. Being able to use the baseline data in a meaningful way to assess potential effects is also unlikely. Since the metals in concentrate are not readily bioavailable, measurable effects on fish health are unlikely. In short, fish health indices have very little utility in the assessment of potential effects, and therefore there is no point in providing the requested information. Also, the available fish health data is limited.
29	Will CanZinc commit to collecting baseline on fish tissue chemistry and fish health data at key locations along the length of the proposed road alignment prior to construction, in order to facilitate the updating of its Aquatic Effects Monitoring Program?	Firstly, we feel it is inappropriate to pose a pointed question such as this. Secondly, comments on IR's 26 and 27 above indicate that the data from the suggest work would have little utility. Thirdly, fish tissue and fish health studies are likely to have detrimental effects on fish populations that have low productivity. A well-designed study will likely pose a greater risk to fish populations than a spill. Fish in creeks along the road are generally too small for tissue plug sampling, meaning that most sampling will have to be lethal. Similarly, most health indices also require a lethal sampling program. Fourth, the comment to this recommendation refers to separating the effects of the road from effects of the mine discharge. What we would consider amenable is documenting the tissue metals content and health of sculpins in Funeral Creek and Prairie Creek. The existing AEMP for the Mine includes an effects monitoring and bull trout occupancy survey, and adding tissue metals to a common species is little additional effort without significant adverse impact.
31	Please complete an assessment of effects on the three Myotis species potentially affected by the Project, as required in the Species at Risk Act.	COSEWIC (2013) indicates that bats are most sensitive to effects during the winter. They also indicate that bats are not particularly sensitive to disturbances while overwintering, except if the activity is occurring directly at or within the hibernacula. Environment Canada agree with this. No adverse Project-bat interactions are expected since suitable hibernacula sites (caves in karst formations) are not present near the proposed route. The feature at Km 56 is a shallow pond, which may in fact not be a karst feature. Therefore, an assessment has already been completed, to the extent necessary. It is also worth noting that all season road operations will represent much less activity in winter than a winter road, and therefore the risk to bats is incrementally less.

32	<p>1. Please provide detailed information about sources of noise from the project including, but not limited to:</p> <p>1.1 their locations, timing (including, but not limited to, the start and end dates, time of day, seasonality etc.),</p> <p>1.2 duration (how long the sound is emitted), frequency and magnitude (including, but not limited to, normal, peak, and cumulative decibel levels).</p> <p>2. Provide an assessment of how far this noise can travel until it reaches background for individual sources and for any combination of noise sources, such as multiple noise sources from a borrow source.</p> <p>3. Provide a consideration of how terrain, temperature, and weather may affect noise.</p>	<p>Although the language is incorrect, this request is actually asking for a comprehensive noise assessment. This is inappropriate given the stage of the EA and the fact that noise is a subject of note. Further, and more importantly, there is no purpose to this assessment because there is no data to gauge impacts on wildlife, and as already stated, the Nahanni Butte community is 7 km from the nearest point of the road, and is separated from it by a height of land to the west and large islands between braided channels to the east, eliminating any possibility of noise transmission to the community. Also, ambient noise regulations don't exist in the NWT. Golder and Tetrattech were consulted on this item. Both say that the output of a noise model will not help an assessment of how moose, caribou, sheep etc., will respond. There is no published work on wildlife response to noise. Effects have been adequately assessed in the Tetrattech wildlife report. Regarding Nahanni Butte, as noted, local traffic is common in the community, and therefore, even if truck noise from the access road could be discernable, it is highly unlikely to be an irritant. Note that access road traffic will be the same as for the already permitted winter road, except it will be spread over the year. Also note that it was the NDDB's decision in the last EA to route the road in its present alignment to intersect the Liard Highway as opposed to routing it to Lindberg Landing further north. The requested assessment is not necessary for impact assessment and an unnecessary expense.</p>
33	<p>Provide a time series analysis of noise from the project. In other words, estimate how long a valued component can hear noise associated with the project. For instance, how long would a person be able to hear a haul truck and what is the interval between being able to hear the noise from one haul truck until the noise from another haul truck is audible? This must include considerations of terrain, weather, peak sound emissions (use of engine breaks for instance), and time of year.</p>	
34	<p>Please provide an assessment of predicted dust emissions from stationary sources, such as borrow sites, to: vegetation, water quality, and fish and fish habitat. This will include a consideration of sensitive time periods, such as spawning times, egg and juvenile stages for fish; periods of low or no flow, and any other periods for increased vulnerability</p>	<p>In Golder's air quality assessment (Appendix D of the DAR Addendum), fugitive dust generated from overburden removal, material handling, rock crushing and screening, compacting, grading, vehicular traffic (road dust) and air transport were estimated. By road phase, estimated dust emissions from operations were far greater than construction (2,609 tonnes/year versus 58.3 tonnes/year). The mitigation proposed for operations dust is to follow GNWT dust suppression guidelines, and by doing so, potential effects are "expected to be low" (p. 21). Golder say that the reason they excluded borrows from modelling in the work was that the construction phase was estimated to emit much less for a shorter period, and therefore the assessment of operational traffic on the road is a conservative analog for the construction phase of the project. Hence, there is no need or logic for assessing dust from borrows. In any event, the outcome would be the same, to follow GNWT suppression guidelines.</p>
37	<p>Provide a list of the different tourism industries in the region, the number of people employed in tourism and tourism-dependent jobs (according to gender, community and region), the revenue generated by each tourism industry and its overall value to the local and regional economies.</p>	<p>We don't see the point of this. The Project will have minimal impact on the existing tourism, but has the potential to stimulate additional tourism because of the improved access. We know of one year when a few tourists visited the Ram Plateau area, which we noted. We also said that charters from Fort Simpson going to the central NNPR may overfly the western end of the road which already exists to all season standards. We discussed the Liard River crossing and explained that barge crossings are relatively rapid and would not hinder canoe/raft trips ending at Lindberg Landing. Other than that, the all season road will have no effect on tourism. Therefore, further research into tourism isn't going to identify any additional effect, and so isn't necessary.</p>
38	<p>Describe the direct and indirect economic value of Nahanni National Park Reserve visitors to the Nahanni National Park Reserve and to the local and regional economies.</p>	<p>Again, we don't see the point of this. NNPR activities clearly affect Fort Simpson in terms of charter and schedule flights and hotels, but the all season road wouldn't alter that. NNPR activities have relatively little affect on Nahanni Butte, other than a few seasonal jobs and river trips occasionally stopping for food or lodging in summer, and again the all season road wouldn't alter that, but could stimulate much greater tourism if the Band desired (controlled access).</p>

41	<p>Distinguish between past baseline information and community engagement about the Project region and winter road route (EA0809-002) Describe engagement activities specific to cultural or harvesting concerns of an all season road (EA1415-01).</p>	<p>The comment to this recommendation states "The ToR sought relevant research pertaining to cultural and spiritual sites and activities, including that conducted by CanZinc and its consultants, the Nahanni Butte Dene Band Traditional Knowledge study, and any other relevant materials. This information was not provided in the DAR." This is not correct. This information was provided or referred to in Sections 5.2, 5.3 and 11.9.3. Section 5.2 provides a summary of traditional harvesting activity. We draw your attention to the last paragraph on p. 123 which states "Camp sites were likely established and utilized all along the travelled routes (Band members indicated that such camps were only temporary and were used perhaps only for 1 night while on a harvesting expedition, and that the locations were more or less at random and not in common, frequently used locations (January 20, 2015))". This is important because potential heritage resource locations is related to the locations of traditional activity, and given that camp locations were 'at random, such resources could be anywhere in the area. However, in Section 5.3, third paragraph on P. 127, we noted that "CZN held meetings with the NDDDB in July and August 2009 as part of a TK addendum. One area of concern was as follows: "Given that the ancestors of the Nahanni people are known to have travelled overland to a greater extent than via waterways, the mountain passes that provide easy access into and between valleys are potential areas for pre-historic and historic artifacts. For this reason, it would be useful to carry out archaeological work". It was agreed that archaeological work should be undertaken in key areas of the Prairie Creek access road, primarily at the Second Gap area in the Nahanni Range, but also at Wolverine Pass in the Silent Hills, and at the crossings of the Tetcela River. CZN engaged Points West Heritage Consulting Ltd. to undertake an Archaeological Impact Assessment (AIA) of the noted key areas." Section 5.3 provides a summary of salient cultural information extracted from the TK Assessment Report Addendum completed for the NDDDB (Crosscurrents, August 2009), which is on the Registry, and the full TK study was provided to the Board also. Section 5.3 also documents CZN's engagement with the Band on cultural issues. Two AIA's were completed, during which the consultants engaged with elders regarding cultural site locations. These AIA reports are on the registry for EA0809-002 and need to be posted on the EA1415-001 registry. Therefore, relevant research pertaining to cultural and spiritual sites and activities was provided in the DAR, directly and by reference to previous studies.</p> <p>The comment goes on to say "To determine the adequacy of CanZinc's assessment on these valued components, the Review Board needs to understand what specific previous efforts have been made to identify cultural and spiritual sites and whether they address the concerns arising from an all-season road versus a winter road." The information referred to above illustrates that considerable efforts have been undertaken to identify cultural and spiritual sites in the area. The area was treated as a whole, although the road alignment represents a narrow linear feature in it. The same information would be relevant and appropriate for any other development in the area, including the all season road. We investigated the locations of highest potential for heritage resources based on TK, and found nothing.</p> <p>In the recommendation, a distinction is being drawn between information collected for the winter road and more recently for the all season road. At what stage the information was collected is irrelevant. The information applies equally to both roads, and for any other proposed development in the area for that matter. It is not important when the information was collected. As we indicated in the DAR, the research for heritage site locations is sound, however it is not practical to investigate the whole area for heritage resources when they could occur randomly, if at all (Section 11.9.3). A practical solution is to produce a brochure of heritage resources for site workers so that if any are identified during development work, they can be protected.</p>
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