

Tłıchǫ All Season Road (TASR)
Conceptual Wildlife Effects Monitoring Program (WEMP)

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GOVERNMENT OF THE NORTHWEST TERRITORIES (GNWT)

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NOTE: THIS IS THE WORKING WEMP. GNWT'S ABILITY TO ADDRESS SPECIFIC OBJECTIVES AND PREDICTIONS WILL BE AFFECTED BY THE TYPE OF MONITORING APPROACHES AGREED TO AND THE ABILITY TO GATHER SUFFICIENT WILDLIFE DATA TO TEST PREDICTIONS. THE WEMP HAS AND WILL BE ADAPTED AND REVISED AS NEEDED (I.E., PENDING CONSULTATIONS WITH CO-MANAGEMENT PARTNERS, NEW INFORMATION, AND IDENTIFICATION OF RESOURCES).

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1.0 Introduction

The Government of the Northwest Territories (GNWT) is proposing to construct an all-season road from Highway 3 to the community of Whatì, called the Tł̨chq̨ All-Season Road (TASR). The proposed TASR is an all-season two-lane gravel road approximately 94 km in length with a 60 m right-of-way and a cleared driving surface of approximately 8.5 m in width with culverts and/or double lane bridges over water crossings as necessary. Up to 13 borrow sources along the proposed right of way will provide granular materials for road construction. The road will have a posted speed limit of 70 km/h, and will allow for year round use by commercial and private vehicles. Traffic levels are estimated at 20 to 40 vehicles per day, including potential traffic from a proposed mine northeast of Whatì. Construction on the TASR is expected to begin in winter 2019 and the road is scheduled to open in late 2022. Within the GNWT, this project is led by the Department of Infrastructure (INF) (formerly Department of Transportation (DoT)). The Department of Environment and Natural Resources (ENR) provided technical expertise on how potential highway impacts on wildlife and wildlife habitat could be monitored and mitigated.

The construction and operation of the TASR can impact wildlife and wildlife habitat in a number of ways, including 1) direct habitat loss, 2) habitat degradation and functional habitat loss due to noise, dust, spills of toxic or hazardous substances or other sensory disturbances, 3) injury or mortality due to vehicle collisions, 4) increased mortality associated with improved access to for harvesters or wildlife-human interactions, 5) increased mortality from facilitated predator movements, and 6) wildlife attraction. Particular concern over impacts to caribou from increased harvesting pressure, increased predation resulting from new access, increased road-induced mortality, and barrier effects to caribou as well as uncertainty regarding the effectiveness of mitigation measures were cited by the Mackenzie Valley Review Board (MVRB) as reasons for referring the project to environmental assessment (EA) in July 2016. Frequently-raised concerns by other parties over the course of the EA have also related some of the above mentioned concerns specifically to other valued components (VCs) including moose and bison.

This conceptual Wildlife Effects Monitoring Program (WEMP) outlines monitoring actions GNWT is proposing to undertake to understand the impacts of the TASR on wildlife, test the predictions made during the EA and inform the implementation of appropriate road mitigations and wildlife management. GNWT previously submitted a draft Wildlife Management and Monitoring Plan (WMMP) (version 1) with the project description to the Wek'èezhì Land and Water Board (WLWB) ([Appendix M, PR#7](#)) in March 2016 which dealt primarily with the construction phase. The following WEMP primarily addresses monitoring and management of impacts related to the operational period of the road, though several proposed programs

will begin prior to construction in order to maximize the baseline dataset. The intention is for this WEMP to be collated with an updated version of the WMMP to meet the content requirements of WMMPs outlined in Section 95(b) of the *Wildlife Act*. GNWT expects that this plan may be modified subject to internal GNWT discussion as well as the outcomes of the EA and regulatory processes. Implementation of the plan is subject to availability of appropriate resources. While some elements of this WEMP can fit into existing ENR programs and operations, several elements are new and specific to the effects of the TASR and will require additional resources. Further statistical work may be required prior to finalization of the effects monitoring section of the WMMP, and as such modifications to sample sizes and study approaches may be required.

2.0 Objectives

The WEMP includes proposed monitoring of effects of the TASR on wildlife and wildlife habitat, with a focus on wildlife VCs including boreal woodland caribou, moose, bison and barren-ground caribou. Specifically, effects monitoring will address concerns raised during the environmental assessment that the TASR will lead to direct and indirect loss of wildlife habitat, potential range expansion of bison, and increased wildlife mortality due to increased harvest pressure and traffic-related mortality along the highway.

The WEMP proposes monitoring during construction and operation of the TASR but, as part of adaptive management, the timelines proposed for individual monitoring programs will be continually re-evaluated as more information becomes available. For example, if traffic levels averaged over a three-year period indicate a 50% increase above the maximum traffic levels predicted in the first three years of operation (40 vehicles/day was the prediction in the Adequacy Statement Response), the need for further effects monitoring will be considered.

The primary objectives of monitoring activities will be to:

- a) Determine if improved year-round access created by the highway results in a level of harvest mortality or harvest patterns of any wildlife VC that would suggest a conservation concern.
- b) Determine the distribution, habitat use and movements of boreal woodland caribou in the TASR study area and adjacent areas before road construction.
- c) Monitor direct habitat loss at completion.
- d) Monitor and measure changes in distribution and abundance of moose, bison and caribou as borrow site activities and TASR right-of-way construction progresses.

- e) Monitor and measure changes in distribution and abundance of moose, bison and caribou for up to 5 years after construction of the highway is completed, and possibly longer if traffic levels increase substantially.
- f) Determine the amount and seasonality of wildlife injuries and mortality from vehicle collisions.
- g) Determine spatial and temporal distribution of wildlife movements, sightings and collisions along the road to inform targeted mitigation actions.
- h) Use the information from monitoring to mitigate and manage highway impacts where possible
- i) Use information from monitoring to inform best practices associated with future highway development and wildlife management in the NWT.

3.0 Components of the WEMP

3.1 Traffic Monitoring

a) Rationale:

Many of the predictions in the environmental assessment are contingent on the TASR having relatively low traffic volumes. Traffic levels for the proposed TASR have been estimated at 20 to 40 vehicles per day. This number was extrapolated both qualitatively and quantitatively by relying on GNWT's Tłıchq Winter Road Project Officer's numerous years of experience, Tłıchq winter road traffic counters, Tłıchq winter road community resupply details, and the estimated traffic volumes of a metals mine north of Whatì. Monitoring traffic levels is important for operational considerations related to road maintenance as well as for gauging the effects of the road. As roads tend to open up other areas for new development, the potential exists for traffic levels to increase in future, along with associated risks to people and wildlife.

b) Monitoring question:

- Are traffic levels averaged over a three-year period staying within 50% of the levels maximum traffic levels predicted for the TASR?

c) Proposed approach:

The NWT highway network consists of 2200 km of all-weather roads and 1620 km of winter roads. To monitor traffic utilizing the highway system, the Department of Infrastructure operates a series of permanent and sessional mechanical counters, and conducts periodic visual counts and surveys. Where

counters are located, the stations provide hourly information on traffic for the complete year, or selected portions of the year for counters located on winter roads or other seasonal access roads. These stations are positioned to capture the general flow of traffic on the highway network. The Department of Infrastructure will install a permanent traffic counting station along the TASR, develop a regular schedule of visual counts and surveys to verify the accuracy of the unit, and provide monthly average daily traffic level summary reports to ENR every year. ENR can use this information as a covariate in analyses for other programs under this WMMP.

d) Temporal scope:

Traffic monitoring will occur indefinitely through the operations phase, and INF will report to ENR annually.

e) Adaptive Management:

Part of adaptive management is identifying the need for increased monitoring or mitigation when conditions change, therefore, when traffic levels averaged over a three-year period indicate a 50% increase in traffic levels above the mean traffic levels in the first three years of operation, the need for extending or reinstating programs in this WMMP beyond the initial operations timelines will be considered.

3.2 Access and Harvest Monitoring

a) Rationale:

One of the key concerns associated with the TASR is increased wildlife mortality associated with a) hunting along the road; b) greater hunter access from the road into previously difficult-to-access harvesting areas and c) extended seasonal access into winter harvesting areas for barren-ground caribou beyond the TASR study area. There is concern that this increased access will change patterns of legal harvest in the region and increase illegal harvest such that harvested wildlife populations will experience higher total mortality. GNWT is limited in the actions it can take to restrict harvest along a public road unless it can identify a public safety or conservation concern; and to identify the latter, enhanced monitoring is required to determine whether harvest is increasing and to what extent. While the range of options for monitoring and managing access and harvest is project-specific, other major developments that involve the construction and operation of either a seasonal or all-season road in caribou range in the North typically include actions to

assist in the monitoring and management of harvest associated with road access. A comprehensive approach employing both greater collaboration between GNWT and the Tłıchǫ Government (TG) at the community level to support community based programs, as well as enhanced compliance monitoring by the ENR will be required.

b) Monitoring questions:

- Determine if the highway is resulting in a pattern or level of harvest mortality for the wildlife VCs that would suggest a conservation concern or need for additional harvest management actions.
- Identify who is using the road to access harvest opportunities.
- Determine the sex and age structure of the harvested population of moose in the North Slave Region
- Determine if and where moose are being harvested near the TASR

c) Proposed Approach (*Temporal scope*):

- i. Create a new ENR Renewable Resource Officer position in Whatì. ENR recommends that creating an ENR Officer position in the community of Whatì would help to conduct and/or facilitate several of the recommended actions in the WEMP and would go a long way to addressing concerns related to harvest and access associated with the Whatì Road. This position would also help to monitor for additional impacts to wildlife habitat associated with the road such as fire monitoring, spill response etc. (*Temporal scope*: This is proposed to be a permanent position.)
- ii. Increase regular patrols along the TASR throughout the year, particularly during fall resident moose harvest seasons and winter caribou seasons. Currently ENR regularly sends patrols out along the winter road for the duration of the winter road season; however, there will need to be patrols year-round with increased activity in peak harvesting seasons (i.e., fall moose hunt, winter barren-ground caribou hunt, etc.). ENR patrols contribute to harvest and access monitoring as well as enforcement of hunting regulations. (*Temporal scope*: indeterminate with the frequency of patrols to be determined and modified in response to results of monitoring or identified concerns).
- iii. Increase the length of the winter monitoring season. Move the checkpoint station for barren-ground caribou winter harvest season to the TASR south of Whatì and extend the period the checkpoint is open by one month on either end of the current winter road season. This will require additional funds at either end of the season for a monitor from Whatì and for on-the land monitors from Whatì and the other Tłıchǫ communities

- within barren-ground ground caribou winter harvest areas. (*Temporal scope*: Ongoing until harvest restrictions on barren-ground caribou are lifted, at minimum).
- iv. Subject to discussion with TG, the potential for expanding community-based harvesting monitoring within the community of Whatì can be explored with ENR. This would involve having someone within the community to collect information about how many animals are harvested based on conversations with people in the community. Ideally, this would include harvest reporting for moose and boreal caribou (*Temporal scope*: to be determined).
 - v. Increased number of aerial surveys to monitor harvesting activities on either end of the winter barren-ground caribou harvest season. (*Temporal scope*: Ongoing until harvest restrictions on barren-ground caribou are lifted, at minimum).
 - vi. Continue ENR North Slave Region's moose jaw collection program. The ENR North Slave Region has been running a voluntary moose jaw collection program since 2013-2014 whereby moose hunters in the North Slave Region are provided an incentive of 50\$ plus a ball cap to supply ENR with the lower jaws of harvested moose and general location of harvest on a 10km by 10km grid. Hunter information, specific locations and personal details are kept confidential and results are saved to ENR's Wildlife Management Information System. The program is run year-long. The information is used to generate the sex and age structure of moose harvested in the North Slave Region, identify areas of higher harvest pressure and generate an interest in moose management among the public. This program can provide general indicators on patterns of harvest in the North Slave Region. For instance, the age structure of the harvested moose population can provide one broad indicator of the overall sustainability of the harvest. If, over time, there is a change in the age structure of the population (such as a shift to a younger average age of harvested moose) to suggest the harvest is no longer sustainable, increased monitoring and harvest management actions can be considered in areas of concern within the NSR. Locations of harvests can provide a sense of the extent to which additional harvest areas are being targeted near the road during construction and operation. (*Temporal scope*: Ongoing, subject to funding).

d) Adaptive Management

The proposed approach in conjunction with other programs for monitoring species population trend (boreal and barren-ground caribou) and/or distribution (moose, bison) is expected to provide several lines of evidence to

inform GNWT and the TG if there would be a need to consider management actions. Given the paucity of baseline data and current absence of identified triggers defined by species –level management plans, setting quantitative thresholds is difficult and therefore the need to consider wildlife management actions can be raised by co-management partners as part of the review of monitoring results. Implementation of management actions within Wek'èezhì would need to occur through formal co-management processes with the Wek'èezhì Renewable Resources Board (WRRB).

3.3 Boreal caribou collaring program

a) Rationale:

Boreal caribou are a culturally and ecologically important species in the Northwest Territories (NWT). They are listed as "Threatened" under the federal *Species at Risk Act* and as "Threatened" under the *Species at Risk (NWT) Act*. While the population in the continuous range in the NWT (NT1) identified in the federal Boreal Caribou Recovery Strategy is considered to be "likely self-sustaining" based on habitat conditions, population trends likely vary among NWT regions. For example, there is evidence of population declines in the southern NWT, yet it is unclear to what extent this applies across the range. While ENR has conducted boreal caribou population monitoring in the South Slave, Dehcho and Inuvik regions, boreal caribou were only once formally surveyed in the North Slave Region in 2005, and no long-term population monitoring has ever been conducted in this region. Part of the reason for this is that, until recently, the management priority for this relatively diverse region has been on barren-ground caribou, and human and financial resources have been allocated accordingly. Implementation of a boreal caribou collar monitoring program in the North Slave Region has become imperative with the TASR and with the "threatened" status of boreal caribou in the NWT. In other jurisdictions, linear features including roads have been shown to contribute to the loss of functional habitat for boreal caribou and to population declines associated with increased predation by wolves that use those features. Although the TASR is not predicted to change the self-sustaining status of boreal caribou at the range-wide scale (NT1), the impact of the road on population trend of boreal caribou within the North Slave portion of the range is less certain given that there is currently less than 65% undisturbed habitat in the region. Initiating a collaring program prior to construction of the road can provide some baseline data on boreal caribou distribution, population trend, movements and body condition in the TASR project area against which potential impacts can be monitored. Collars are also necessary to complement aerial surveys to provide sightability metrics

necessary for calculation of abundance should population surveys be undertaken by the GNWT in future. Information on habitat associations obtained from collars can be used to target mitigations for preventing collisions.

b) Study Questions:

Information from a collaring program may help determine:

- Where collared boreal caribou are located in relation to construction activities
- If boreal caribou avoid the road during and after construction
- If and where boreal caribou cross the road
- If the rate of boreal caribou movements changes in proximity to the road
- If rates of caribou mortality are higher within the study area during and after highway construction
- The population trend of boreal caribou in the regional TASR study area

c) Proposed Approach:

A total of 20 collars were deployed in the boreal caribou study area in March 2017 (see response to [ECCC IR #7](#) (PR#128) for more details; see Figure 1 for the Study Area). Based on work elsewhere in the NWT, a minimum of 20 collars is recommended for reasonably precise estimates of adult female survival to support calculation of population trend in a given area and maximize the information provided by collared animals. The 20 collars should allow ENR to obtain an estimate of female mortality and calf survival with which to generate an estimate of population trend in 2018. It is intended that sample size will be expanded and maintained at 30 collars annually for at least 5 years during the operational period of the road to measure population trend. To monitor population trend, spring recruitment surveys will be required annually to determine cow:calf ratios and sex ratios. When possible, collars will be retrieved from cows that have died to determine the cause of mortality.

The collars used in this study will be equipped with a “geofencing” function that allows increased frequency of locations to be collected within a previously defined area programmed into the collar. In this study, collars will be programmed to generate three locations per day, but this will increase to hourly locations within a buffer of 10 km from the proposed TASR. This will allow for a finer scale assessment of the behavioural response of boreal caribou to the construction and operation of the TASR, and to traffic along the existing highway.

During construction of the TASR, information on the location of collared caribou will be regularly provided to construction crews to alert them to the potential need to apply mitigations, such as work scheduling to avoid disturbing known animals.

Data collected during collar deployment included pregnancy and body condition, diseases and parasites, and DNA.

Analytical methods to be used will be finalized in later drafts of this document, however, resource selection functions can likely be developed for boreal caribou with covariates such as vegetation type, proximity of road, proximity of other linear features, traffic levels (if available), seasonality, proximity &/or relative abundance of other species (moose/bison). Furthermore, should funding become available in future for repeated surveys, estimates of population abundance may be determined using a variety of techniques using marked individuals and modeling their detection probabilities. Depending on the data, other potential analyses include the use of multi-state models to test whether the construction of the highway influences the probability of caribou movement across the road and if proximity to the highway affects survival rates.

Annual reporting and summaries of results would be distributed to co-management partners such as TG and the WRRB through the research permitting process; whereas more formal comprehensive analysis and reporting will occur a) at the end of construction and b) after five years of operations.

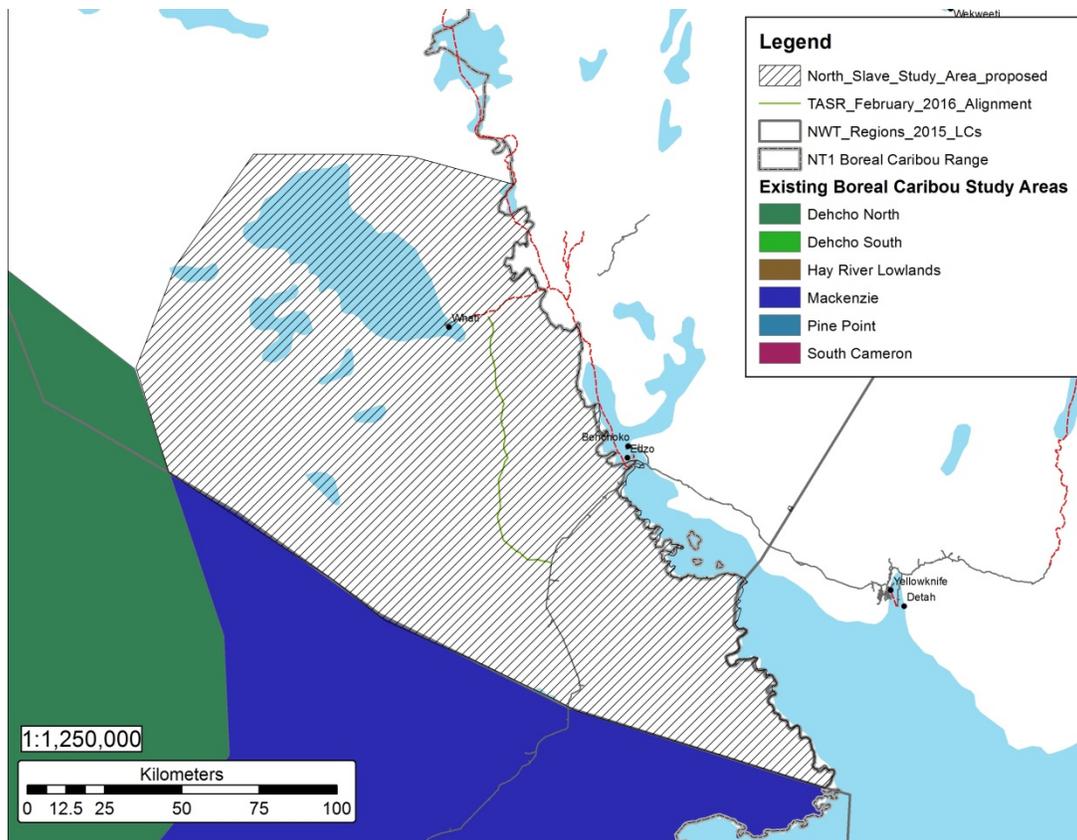


Figure 1: Boreal Caribou North Slave Study Area

d) Temporal Scope

This collaring program is proposed for the duration of constructions plus five years of operations. The need for continued monitoring will be re-evaluated at that time.

e) Adaptive Management:

During construction, monitoring of collared animals will help to determine the proximity of some animals to the TASR for construction. In addition to visual on-the-ground monitoring conducted by monitors to identify approaching wildlife, ENR will provide weekly location maps of boreal caribou to construction crews to monitor the movements of collared caribou.

During operations, the results of this monitoring program will be used to identify where mitigation actions such as reduced speed limits or signage at crossing locations or in sensitive seasons should be applied. Formal analyses of resource selection and movement patterns related to the road can help to quantify the impact of the road and provide information for future resource planning in the NWT. Estimates of population trend and related statistics will

support regional scale efforts such as range planning and help to identify larger issues with survival that may lead to consideration of management interventions among co-management partners.

3.4 Moose & Bison Population Monitoring

a) Rationale:

Moose are an important big game species in the North Slave Region, comprising a substantial portion of the Tłıchǫ subsistence harvest and supporting a resident fall harvest. Moose occur in low densities throughout the NWT, and the most recent targeted population survey in the North Slave Region conducted in 2012 identified densities of roughly 2.9 moose/100km² in the Taiga Plains. While ENR conducts moose population surveys approximately every five years throughout the North Slave Region, these studies have not historically provided good coverage of the TASR regional study area and are not designed to detect changes in a targeted area. There are several factors affecting moose in the TASR study region that, in addition to the road itself, warrant tracking moose populations. Given harvest restrictions on caribou, moose may be targeted more frequently by hunters, which will be further facilitated by the road. This could lead to the potential for localized over-hunting. In addition, community members have expressed concerns that the potential expansion of the Mackenzie bison northward towards Whatı will negatively impact moose and caribou in areas where they overlap. While the extensive recent burns in the vicinity of the TASR might be expected to increase moose habitat over time, the interaction of these factors introduces sufficient uncertainty to warrant more targeted regional monitoring. Having an understanding of how the population is changing in the RSA is essential to placing the information generated by harvest and collision monitoring into context for making decisions about the need for management actions.

Wood bison, assessed as Threatened by the NWT Species at Risk Committee and listed as Threatened under the federal *Species at Risk Act*, are a species of management concern in the NWT. With construction of the TASR, it is likely that the Mackenzie bison herd will use the road corridor to expand its range northward, possibly entering the community of Whatı. This has raised the concern among community members that bison may begin to exclude moose and caribou in the region. Hunting of the Mackenzie bison population is currently closed following an anthrax outbreak in 2012, but a new road will increase hunters' access into bison habitat and may increase hunting pressure when hunting is reinstated. Traffic on a new road will also increase the number of bison-vehicle collisions, which is already a substantial cause of mortality on Highway #3. Collisions are a risk to human safety and a cause of bison mortality.

Aerial surveys designed to monitor moose relative abundance and trend in the TASR study region can also be used to monitor bison abundance in the area, track any northward expansion, and inform the need for more targeted mitigation to minimize bison-vehicle collisions.

b) Study Questions:

Data obtained from population monitoring conducted in the regional TASR study area will help to determine:

- If the relative abundance of moose in the TASR regional study area changes over time. This will help to identify potential conservation concerns related to the road and hunter access.
- Whether changes in the abundance of moose in the TASR regional study area are qualitatively similar to what is observed in North Slave Regional surveys.
- If and at what rate bison expand their range northward along the road corridor.
- If the relative abundance of bison in the TASR regional study area changes over time.

c) Proposed Approach:

ENR proposes late winter aerial surveys every three years for moose and bison to generate density estimates in the TASR regional study area, and look for impacts of the road for at least two rounds of surveys after the operations period of the road begins. The first survey would occur in 2017-18 before road construction begins to get a baseline estimate, with the others being conducted in March. Therefore two surveys are proposed during construction and two surveys during operations. ENR is proposing to use a distance-based sampling method over a minimum study area of 25,000km² using 3km transect spacing. These surveys would also record boreal caribou sightings which although not sufficient to provide reliable caribou population estimates or trend information, could provide information on caribou occupancy throughout the study area. For this program, a summary report would be provided to co-management partners every survey year (i.e., every three years), and at the end of the study. Analysis of the relative abundance of moose and bison in the TASR regional study area will be determined using Program Distance and related packages in R.

This monitoring approach and initial study design is subject to change pending statistical power analyses. In the event that it is determined that aerial surveys would not provide the statistical power necessary to reliably detect changes in abundance and distribution of moose and bison in the TASR study area, other

methods of population monitoring (e.g. based on collared individuals, or indices such as track counts or browse pellet surveys) will be assessed and considered.

d) Temporal Scope:

One baseline survey will be conducted in Fall-Winter 2017, two additional surveys within three years during the construction phase, and two additional surveys during operations. This schedule is subject to change based on statistical analysis.

e) Adaptive management:

Density estimates and distribution information within the TASR road study area of bison and moose can help to detect changes in the region over time that may identify harvesting or collision issues and inform the need for management decisions to be considered with co-management partners. For example, if harvest monitoring indicates notable increases in moose mortality in the RSA, the need to consider conservation actions would be informed by whether population level monitoring shows decreasing, stable or increasing populations.

3.5 GNWT wildlife sighting and collision reporting program

a) Rationale: Increased risk of wildlife injury and mortality due to vehicle collisions is one of ENR's main concerns with the TASR and it has been raised by other parties throughout the environmental assessment. One difficulty in predicting the extent and the seriousness of harm to wildlife from vehicle collisions of a new road on wildlife is that currently GNWT does not have a single source of baseline data on wildlife mortalities. INF and ENR have different processes and keep separate records of animal-vehicle collisions which makes assessing the true costs to humans and wildlife difficult. This particular impact pathway potentially affects all wildlife but has been a particular source of uncertainty in the EA for Mackenzie bison which are more susceptible to collisions given their frequent use of roadways. There are currently harvest restrictions in place until the population reaches 1000 animals, and additional mortalities will slow recovery. Furthermore, there is no consistent, accurate, geo-referenced system in place for tracking wildlife-vehicle collisions or wildlife observations along the road to determine where potential hotspots may be that warrant dedicated mitigation efforts such as increased signage or heightened speed limit enforcement. Having a consistent method for reporting wildlife-vehicle collisions and wildlife observations will also provide information on potential range expansion of Mackenzie bison along the TASR, which addresses one of the questions of the EA.

b) Monitoring question:

- How many wildlife-vehicle collisions are occurring along NWT highways, and how will the TASR contribute to that?
- Where are wildlife-vehicle collisions occurring most frequently along the TASR and other NWT highways?
- Where are wildlife being observed most frequently along the TASR?
- Are the Mackenzie bison expanding their range further north along the road?

c) Monitoring approach:

GNWT will establish an inter-departmental working group co-chaired by INF and ENR to investigate, design and launch a wildlife collision and sighting reporting system for GNWT employees based on the Alberta Wildlife Watch Program¹. Alberta has designed an app for use by employees and contractors who travel the roads frequently to easily and accurately record wildlife sightings, carcasses and collisions in order to better understand the costs associated with collisions, impacts to wildlife, where mitigation is required and the effectiveness of mitigation. Alberta is making the platform available to other jurisdictions to tailor to their needs. GNWT will work on designing and launching the program during the construction phase of the TASR, with the intention of having the program operational in time for operation of the TASR.

d) Temporal Scope:

The timeline and appropriate review cycles necessary to generate the appropriate amount of data to support mitigation for the operations phase of the TASR would be determined by the working group based on periodic review of results.

e) Adaptive Management:

Depending on the rate of data acquisition, the program will identify regular intervals for analysis that will provide sufficient data to identify potential hot-spots along the road. When these are identified, INF can implement mitigations such as lowered speed limits or signage.

¹ <https://albertawildlifewatch.ca/>

3.6 Barren-ground caribou collaring program

a) Rationale:

Barren-ground caribou are a highly valued species in the NWT. Barren-ground caribou have been assessed as “threatened” by COSEWIC and by the NWT Species at Risk Committee. Several herds in the NWT have experienced substantial population declines. While barren-ground caribou have not been detected in the vicinity of the TASR in recent years of low population levels, the historical annual range of the Bathurst herd as determined by traditional knowledge (TK) and collaring data has overlapped the northern section of the TASR corridor. It is possible that barren-ground caribou may re-occupy the area of the TASR corridor in future, likely in winter. Protocols to mitigate the risk of vehicle collisions and sensory disturbance associated with TASR will be included in the full WMMP, and ENR’s existing barren-ground caribou collaring program will help ENR to detect approaching caribou. Given that the TASR will occur on the very edge of the range, the risk of the road acting as a substantial barrier to barren-ground caribou is low, however, collar data may be used over time to evaluate the impacts of the road on barren-ground caribou movements if they move into the area.

b) Monitoring Question:

Data from the existing barren-ground caribou collaring program may be used to determine whether barren-ground caribou are approaching the area of the TASR corridor.

c) Approach:

GNWT-ENR attempts to maintain 50 GPS collars annually on the Bathurst caribou herd, 30 on cows and 20 on bulls. Some of these collars are equipped with a “geofencing” function that allows increased frequency of locations to be collected within a previously defined area programmed into the collar, and the goal is to have all collars equipped with this capability over time with redeployments. Collars are programmed to generate three locations per day, however this will increase to hourly locations within a buffer of 10 km from the proposed TASR and along HWY 3. This will allow for a finer scale assessment of the behavioural response of barren-ground caribou to the construction and operation of the TASR, and to traffic along the existing highway if caribou do re-enter the area. Data are typically downloaded every four days. Given the slower and more limited movements of barren-ground caribou in the winter, this is sufficient to detect their approach into the area and to alert patrols to look out for them.

d) Temporal Scope:

Indefinitely, as this is a well-established, on -going program.

e) Adaptive Management:

If collar data indicate that barren-ground caribou are approaching the TASR road, ENR and INF staff traveling the road will be notified to monitor for groups of caribou. In the event that GNWT staff either see or receive reports of groups of caribou on or adjacent to the road, ENR will contact INF to discuss the need or potential for temporary speed reductions or closures.

4.0 Refinement of the study design

Upon finalization of the wildlife effects monitoring approaches proposed herein, statistical analysis will be conducted to verify whether modifications of the initial study designs are required to ensure that the proposed program obtains the information required. Part of this will analysis may also consider the feasibility of using alternate methods to achieve similar objectives.

APPENDIX A: Revision Tracking Table

This table will only contain substantive changes to the scope of the WEMP, methodology used to test hypotheses, and budget projections. Minor edits to improve clarity of the text are not included.

Date	Version	Changes	Rationale
July 2017	Conceptual Draft 1	N/A	N/A

DRAFT