APPENDIX C 2024 WILDLIFE MITIGATION AND MONITORING REPORT

PREPARED FOR

B2Gold Back River Corp.

Back River Mine

2024 Wildlife Mitigation and Monitoring Program Report

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Back River Mine

2024 Wildlife Mitigation and Monitoring Program Report

March 2025

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ACRONYMS AND ABBREVIATIONS

°C	degree Celsius
AI	artificial intelligence
AIC	Akaike's Information Criterion
AIS	Automatic Identification System
B2Gold Nunavut	B2Gold Back River Corp.
CESCC	Canadian Endangered Species Conservation Council
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CTAG	Caribou Technical Advisory Group
CWS	Canadian Wildlife Service, a division of ECCC
dBa	decibels A-weighted
EC	Back River Energy Centre
ECCC	Environment and Climate Change Canada
FEIS	Final Environmental Impact Statement
GIS	Geographic Information Systems
GLMM	generalized linear mixed model
GN	Government of Nunavut
GN DOE	Government of Nunavut Department of Environment
GNWT	Government of Northwest Territories
GNWT ENR	Government of Northwest Territories Department of Environment and Natural Resources
Goose Site	The Goose Property Area, encompassing the planned mine location: currently houses the Goose Camp and airstrip used for advanced exploration and construction
GPS	Global Positioning System
h	hour
ha	hectare
IEAC	Inuit Environmental Advisory Committee
IOL	Inuit Owned Land
IQ	Inuit Qauajimajatuqangit
JPCSL	Jason Prno Consulting Services Ltd.
KitIA	Kitikmeot Inuit Association
km	kilometre
KM	Kilometre Marker

km/h	kilometres per hour
L_{eq}	equivalent continuous sound pressure level
L_{max}	absolute maximum in dBA
L_{min}	absolute minimum
LSA	Local Study Area
m	metre
the Mine	Back River Mine
MLA	Marine Laydown Area: located on the west coast of Bathurst Inlet
NDVI	Normalized Difference Vegetation Indices
NIRB	Nunavut Impact Review Board
NTKP	Naonaiyaotit Traditional Knowledge Project
PDA	Project Development Area: the area approved for development by the NIRB
PRISM	Rapid Program for Regional and International Shorebird Monitoring
RSA	Regional Study Area
Sabina	Sabina Gold & Silver Corp.
SARA	*Species at Risk Act*
SOP	Standard Operating Procedure
TK	Traditional Knowledge
TSF	Tailing Storage Facility
UD	Utilization Distribution
VEC	valued ecosystem component
VRPC	Variable Radius Point Count
WAIC	Widely Applicable Information Criterion
WIR	Winter Ice Road; connecting the MLA and Goose Site
WMA	Waste Management Area
WMMP Plan	Wildlife Mitigation and Monitoring Program Plan (B2Gold 2024a)
WMMP Report	Wildlife Mitigation and Monitoring Program Report
ZOI	Zone of Influence

EXECUTIVE SUMMARY

The Back River Mine is a gold mining project owned by B2Gold Back River Corp. (B2Gold Nunavut), located in the Kitikmeot Region of Nunavut, which holds Project Certificate No. 007 Amendment 1 from the Nunavut Impact Review Board (NIRB; NIRB 2024) and a Type A Water License from the Nunavut Water Board (NIRB 2017). The Back River Mine is largely located on Inuit Owned Land (IOL) and consists of a Marine Laydown Area (MLA) located in Bathurst Inlet and the Goose Property Area (Goose Site) that are connected by a Winter Ice Road (WIR).

In 2024, the Back River Mine continued in the construction phase, triggering mitigation and monitoring relating to wildlife as summarized in the Back River Mine's Wildlife Mitigation and Monitoring Program Plan (WMMP Plan; B2Gold 2024a). The various regional wildlife monitoring programs during the construction phase are scheduled to be implemented during the first 3 years of construction. Several programs commenced in 2024 (e.g., regional population monitoring), in anticipation of completion of the construction phase in 2025. The WMMP Plan focuses on mitigation and monitoring for eight terrestrial wildlife valued ecosystem components (VECs), including caribou (*Rangifer tarandus groenlandicus*), muskox (*Ovibos moschatus*), grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), upland breeding birds, waterbirds, raptors, and marine mammals. Mitigation and monitoring for each of these VECs is summarized in this 2024 WMMP Report.

Highlights of monitoring completed in 2024 include:

- Assessment of habitat loss for each VEC;
- WIR monitoring, including wildlife cameras and caribou behaviour surveys;
- Improved monitoring of blasting as relates to wildlife;
- Camp and waste monitoring and management (including waste audits, onsite wildlife cameras, and building inspections);
- Caribou behaviour surveys;
- Seasonal range assessment for the Bathurst and Beverly/Ahiak caribou herds;
- Zone of Influence monitoring for caribou via wildlife cameras and GPS collars;
- A full year of regional monitoring via camera traps;
- Pre-clearing surveys for birds and bird nests;
- Regional monitoring surveys for waterbirds, upland migratory birds, and raptors;
- Pit and quarry wall nest monitoring for raptors;
- Marine shipping observations for birds and marine mammals; and
- Incidental observations for all wildlife species.

Based on the results of monitoring conducted in 2024, mitigation measures appear effective in ensuring the potential impacts of the Back River Mine align with those predicted in the Final Environmental Impact Statement (FEIS; Sabina 2015). Extensive and consistent monitoring in 2024 allowed for the identification and execution of adaptive management approaches to further improve mitigation related to wildlife VECs, including:

- Reassessing securement of the incinerator area following multiple wolverine attempts to access the facility, including successful aversive conditioning approaches for the wolverine in question;
- Continuing increased monitoring of Waste Management Areas through regular inspections, and documenting improvements and mitigations applied;
- Continuous improvement of compliance with documentation of waste management, facilities inspection, and pre-blast surveys; and
- Expansion of facilities monitoring cameras to new locations to expand understanding of potential attraction to or interaction of wildlife with the Mine.

B2Gold Nunavut continues to strive for excellence in mitigation and monitoring related to wildlife VECs and looks forward to continuing existing monitoring programs and implementing expanded programs as the Back River Mine continues to progress in the construction phase and enters the operation phase.

PROJECT REQUIREMENTS AND MONITORING OBJECTIVES

PROJECT REQUIREMENTS

The wildlife mitigation and monitoring requirements for the Mine were set out in the Back River Mine's Project Certificate No. 007 Amendment 1 (NIRB 2024), and commitments made during the review of the Environmental Impact Statement.

The Back River FEIS identified eight terrestrial wildlife VECs, including caribou (*Rangifer tarandus groenlandicus*), muskox (*Ovibos moschatus*), grizzly bear (*Ursus arctos*), wolverine (*Gulo gulo*), upland breeding birds, waterbirds, raptors, and marine mammals. The FEIS predicted five residual effects on wildlife VECs, none of which were predicted to be significant and all negligible or low magnitude (Table 1):

- Habitat loss;
- Disturbance;
- Disruption of movement;
- Attraction to the site; and
- Direct mortality.

TABLE 1 MAGNITUDE OF BACK RIVER FEIS RESIDUAL IMPACT PREDICTIONS

VEC	Habitat Loss	Disturbance	Disruption of Movement	Attraction	Direct Mortality
Caribou	Negligible	Low	Low	Not residual	Not residual
Muskox	Low	Low	Low	Not residual	Not residual
Grizzly Bear	Negligible	Not residual	Low	Low	Not residual
Wolverine	Negligible	Not residual	Low	Low	Not residual
Upland Breeding Birds	Low	Negligible	Not residual	Not residual	Low
Waterbirds/Seabirds	Low	Negligible	Not residual	Not residual	Low
Raptors	Low	Low	Not residual	Not residual	Low
Marine Mammals	Not residual	Not residual	Not residual	Not residual	Not residual

The WMMP also includes input from the NIRB, Environment and Climate Change Canada (ECCC), the Government of Nunavut Department of the Environment (GN DOE), the Canadian Wildlife Service (CWS), the KitIA, and the IEAC. The annual WMMP Reports are also provided to the NIRB, who distributes them to stakeholders for review and comments. The WMMP Plan is updated as needed during the life of the Mine, in part based on these review comments.

INCORPORATION OF COMMUNITY PERSPECTIVES, INUIT QAUAJIMAJATUQANGIT, AND TRADITIONAL KNOWLEDGE IN THE MONITORING PROGRAM

Community perspectives, Inuit Qauajimajatuqangit (IQ), and Traditional Knowledge (TK) are considered throughout the Mine's baseline studies, environmental assessment, and wildlife monitoring program. B2Gold Nunavut has developed the document Guidance for Incorporating Community Perspectives and Traditional Knowledge in the Back River Project's Monitoring Programs to assist in the preparation of its annual monitoring reports.[1]

Community perspectives, IQ, and TK were first considered in the identification of VECs and the assessment of the mine effects in the FEIS (Sabina 2015, 2017); these effects subsequently became a focus of B2Gold Nunavut's WMMP Plan (B2Gold 2024a, Version 13).

The following meetings and reports were reviewed for TK-specific information related to wildlife:

- Inuit TK of Sabina Gold & Silver Corp., Back River Project, Naonaiyaotit Traditional Knowledge Project (NTKP) report, commissioned by the KitIA (2012; Appendix V3-3A of the FEIS).
- Naonaiyaotit Traditional Knowledge Project (NTKP)—Hannigayok (Sabina Gold & Silver Corp. Proposed Back River Project). Results from Data Gaps Workshops, Final Report (June 2014; KitIA 2014; Appendix V3-3C of the FEIS [Sabina 2015]).
- Back River Project: Existing and Publicly Available TK from Selected Aboriginal Groups in the Northwest Territories (Appendix V3-3B of the FEIS [Sabina 2015]).

[1] A copy of this document was included in JPCSL (2020; NIRB Public Registry ID# 329193).

- The NIRB Public Scoping Meetings Summary Report (NIRB 2013). This report summarizes public scoping meetings held by NIRB within five Kitikmeot communities, including residents/families from Bathurst Inlet and Omingmaktok as well as a public scoping meetings in Yellowknife, Northwest Territories.
- Focus Group Sessions (Rescan 2013a) with hunters from Kitikmeot communities.

Community perspectives, IQ, and TK were used to decide which wildlife species to include as VECs. The TK reports present maps of valued animal species, environmental components, and traditional land use activities. This information was used to determine if these valued aspects potentially interacted with the proposed mine, and if so, they were included as VECs.

The Regional Study Area (RSA) for the FEIS and WMMP Plan was defined and modified based on IQ and TK. The boundary was adjusted to include important areas for caribou, such as Beechey Lake, grizzly bear habitat along the Western River, and ringed seal (*Pusa hispida*) habitat in Bathurst Inlet.

Baseline studies were designed to characterize wildlife and wildlife habitat identified as culturally important to Inuit. IQ and TK identified important habitat features, such as crossing points for caribou, raptor nest locations and carnivore den locations, and important staging areas for migratory birds. Ecosystems of traditional and cultural importance due to their value as wildlife habitat, including eskers, sedge wetlands, marine shores, and riparian ecosystems, were incorporated into field studies and habitat mapping.

Examples of important habitat features identified from IQ and TK and incorporated into baseline studies, the FEIS, and the design of the WMMP Plan include:

- The locations of numerous traditional harvesting and habitation areas were used to identify important corridors, crossings, and pinch-points for caribou movement.
- These TK locations, combined with land user information in the field, were used to place trail cameras to study the abundance and timing of movement of wildlife in the RSA, including caribou, muskox, and grizzly bear.
- Habitat usage and foraging locations from TK were incorporated into habitat maps for caribou, grizzly bear, and muskox.
- The location of historic calving ranges for the Bathurst herd, both east and west of Bathurst Inlet, was identified and mapped.
- The location of a currently unused calving area for the Bathurst herd, to the north of Nose Lake and around Beechey Lake, was identified.
- The fact that Bathurst herd calving grounds have changed frequently through time between their various historic calving grounds.
- The historic location of the Beverly calving ground.
- The movement patterns of both Bathurst and Beverly caribou herds between their winter, calving, summer, and back to winter ranges.
- The location of the Dolphin and Union herd calving grounds on Victoria Island.

- Movement patterns of the Dolphin and Union herd on Bathurst Inlet and across the Dolphin and Union Strait.
- The importance of Nose Lake and Contwoyto Lake for summering Bathurst caribou.
- The use of eskers and other elevated landforms by caribou during summer for ease of movement and relief from insects.
- The use of wet foraging locations during post-calving, including areas with cotton grass, as important forage for lactating females and newly weaned calves.
- The use of lakeshores as travel corridors and for insect relief.
- Land users provided insights on grizzly bear behaviour and habitat use and directed the installation of hair-capture posts in the best possible locations to attract grizzly bears.
- Muskox were noted as an important resource species and were evaluated as a VEC.
- For birds, IQ included observations of the earlier migration of the Snow Bunting (*Plectrophenax nivalis*) and of large-bodied birds, such as the Tundra Swan and geese, and identification of ravens (*Corvus corvax*) and Ptarmigan as non-migratory, resident birds. Examples of detailed observations of bird habitat use include frequent foraging on berries by geese, nesting of waterbirds on mid-stream islands and of geese and some ducks on cliffs, and observations of higher densities of nesting waterbirds in large wetlands. Inuit TK also included the identification of regularly used staging sites by waterbirds as areas that become ice-free earlier than other areas, such as fast-flowing rivers.
- Cliff nesting habitat identified by Inuit in the wildlife RSA includes areas west of Goose Property on the northern shores of Beechey Lake, near Kingaok, as well as on the eastern shores of Bathurst Inlet near Omingmaktok. Inuit also stated that ground-nesting raptors prefer areas around wetlands or non-cliff areas as they hunt mainly small rodents. This knowledge was used to prioritize areas to search for raptor nests during baseline studies.
- Important habitats for muskox, grizzly bear, moose, and wolves (*Canis lupus*) in the Back River Mine area.
- Historic harvesting areas for waterfowl, ringed seal, and fish at lakes and on Bathurst Inlet.

Community perspectives, IQ, and TK were considered in the design of the Back River Mine, following the mitigation hierarchy, to avoid important habitats for wildlife and avoid unwanted effects on wildlife populations identified as important to Inuit, including:

- Using a WIR in lieu of an all-season road to reduce disruption of movement for caribou;
- Designing the WIR to avoid a valley east of Bathurst Inlet identified by the KitIA as an important area for overwintering moose;
- Designing the WIR to avoid the mouth of the Western River, an area identified as important for wildlife through IQ and TK;
- Designing the on-ice airstrip at the MLA to be constructed before the ringed seal pupping period to avoid effects on seal lairs;
- Removing the George Camp from the Project Description to reduce interactions between the Mine and Bathurst caribou; and
- Designing roads and maintaining the WIR to allow caribou to easily cross.

Community perspectives, IQ, and TK were considered in the evaluation of mine effects in the FEIS and addressed through management actions in the WMMP Plan, including:

- Evaluating habitat loss and disturbance for passing caribou and muskox;
- Evaluating whether grizzly bear and wolverine would be attracted to mine camps;
- Evaluating whether on-ice activities would disturb ringed seals; and
- Evaluating whether the WIR would impede caribou movement.

The WMMP Plan (B2Gold 2024a) was designed to include community perspectives, IQ, and TK, through:

- The WMMP Plan introduction states: “B2Gold Nunavut is committed to considering and incorporating traditional knowledge into the Plan on an ongoing basis. The incorporation of traditional knowledge will occur throughout all stages of the Plan, including identification of mitigation measures, monitoring study design, data collection, and follow-up programs to obtain feedback.”
- The Caribou Technical Advisory Group (CTAG) is composed of B2Gold Nunavut, along with the KitIA and the GN. The KitIA has an ongoing opportunity to provide Inuit perspectives on mitigation and management for the Mine, which is then incorporated into the Plan.
- The objective of the IEAC is to liaise with Inuit Elders who have experience in the Mine area on wildlife, fisheries, and other environmental features. Inuit Elders will review mitigation and results of monitoring and provide insights that can be incorporated into existing management and monitoring programs.
- Habitat areas identified as important by community members, land users, and TK formed the basis of wildlife habitat maps used for designing the WMMP Plan and locations for wildlife studies, including the trail camera program, monitoring for bears, waterfowl, ringed seals, and seabirds.
- Concerns raised by communities have been incorporated into mitigation programs, including avoiding wildlife with helicopters, stopping vehicles when wildlife are on the road, and halting mining activities if caribou shift their calving ground to overlap the site.
- Concerns raised by communities have been included in monitoring programs, including behaviour monitoring for caribou, monitoring whether caribou avoid the Mine, and monitoring whether bears and wolverine are attracted to the Mine camps.
- Communities raised concerns about keeping the environment clean, so wildlife can stay healthy. This has led to no littering policies, requirements surrounding reporting and cleaning up spills, and contributed to other monitoring programs reported separately, including for: water quality, water flow, dust, vegetation, toxicology, and fish.

Moving forward, relevant community perspectives, IQ, and TK will continue to be tracked through annual WMMP reports and inform the content, results, and management actions associated with B2Gold Nunavut’s monitoring program. B2Gold Nunavut will also continue to address comments raised about its monitoring programs directly with community members where appropriate.

No new IQ or TK was collected in 2024.

1. INTRODUCTION

The Back River Mine is a gold mining project owned by B2Gold Back River Corp. (B2Gold Nunavut), located in the Kitikmeot Region of Nunavut (Figure 1-1). The Back River Mine is largely located on Inuit Owned Land (IOL) and has two centres of activity that are connected by a Winter Ice Road (WIR). The two centres of activity are a Marine Laydown Area (MLA) located in Bathurst Inlet and the Goose Property Area (Goose Site) approximately 160 kilometres (km) south of the MLA where the Mine will be located.

The Back River Mine holds Project Certificate No. 007 Amendment 1 from the Nunavut Impact Review Board (NIRB 2024) and a Type A Water License from the Nunavut Water Board (NIRB 2017). The Back River Mine started construction in 2023 and continued through 2024, with camps and infrastructure at both the Goose Site and MLA. The various wildlife monitoring programs during the construction phase were completed in 2024.

This document presents the results of wildlife monitoring activities for the Back River Mine conducted by B2Gold Nunavut in 2024. The wildlife monitoring program is described in the Wildlife Mitigation and Monitoring Program Plan (WMMP Plan; B2Gold 2024a), which was discussed with the Inuit Environmental Advisory Committee (IEAC) and circulated to the Kitikmeot Inuit Association (KitIA) and various stakeholders for discussion before implementation. The WMMP Plan identifies the activities to be undertaken annually and presented in the WMMP Report (this document), which is submitted annually.

The introduction of the WMMP Report provides a description of:

- The Project Certificate No. 007 Amendment 1 requirements and the objectives for the WMMP (Section 1.1); and
- The WMMP Plan and the 2024 Program components (Section 1.2).

The WMMP is designed to monitor potential mine-related effects on valued ecosystem components (VECs) as predicted in the Final Environmental Impact Statement (FEIS; Sabina 2015) and to meet the commitments of NIRB Project Certificate No. 007 Amendment 1 (NIRB 2024).

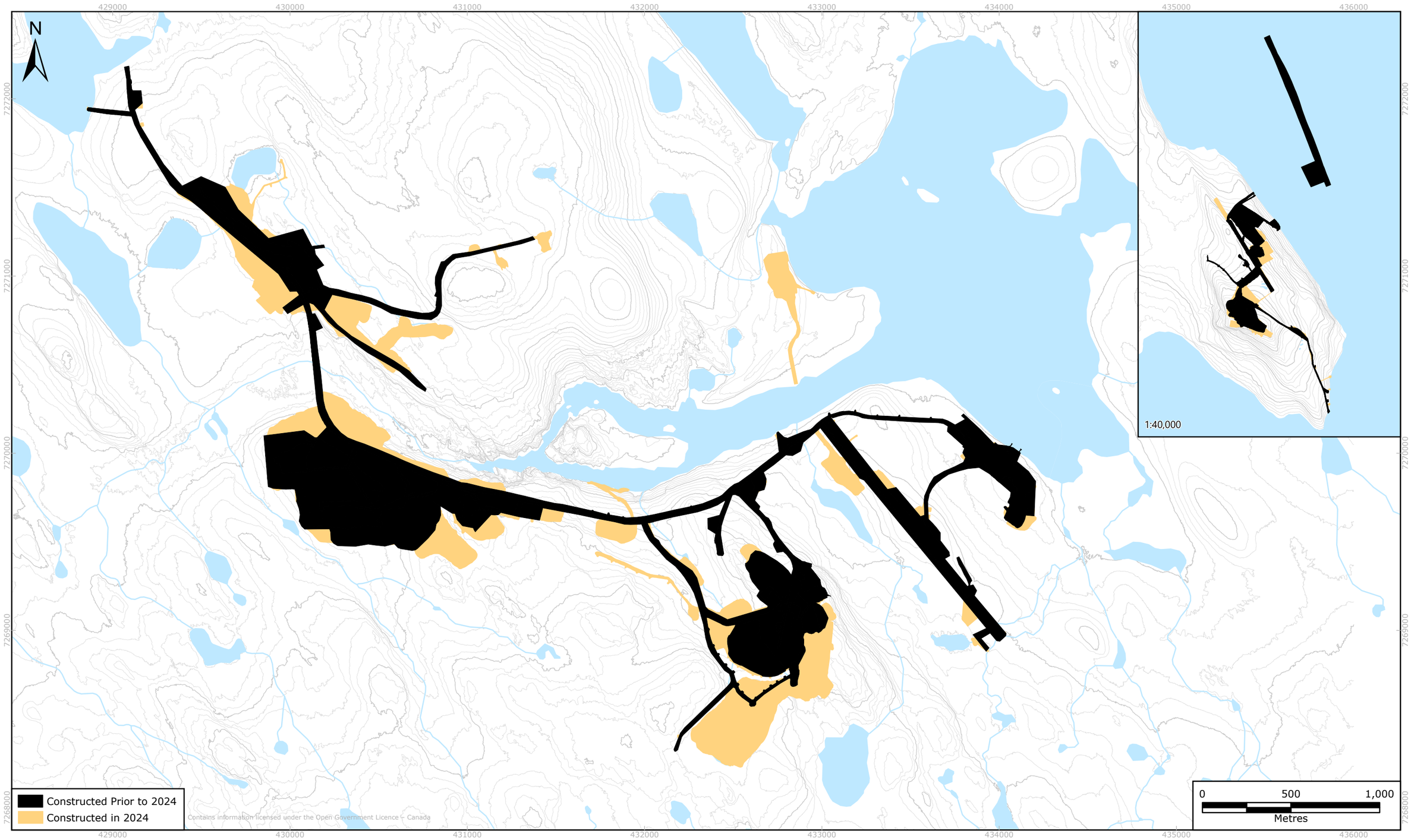
The Report describes the results of the monitoring activities designed to test these predictions including:

- Habitat loss due to the Back River Mine (Section 2.1);
- Traffic, helicopter/aircraft, and blasting monitoring to confirm estimates used in the FEIS (Section 2.2, 2.4, and 2.5 respectively);
- VEC-specific monitoring (Section 3 to 8);
- Caribou Mitigation and Monitoring (Section 3); and
- Wildlife use of the Back River site, including any interactions, incidents, and mortalities (Section 9).

The Report also describes monitoring conducted to guide adaptive management, such as:

- Snowbank monitoring on roadways and WIR monitoring (Section 2.3); and
- Incidental observations (within VEC subsections; Section 3 to 8).

FIGURE 1-1 BACK RIVER MINE LOCATION



ERM

CLIENT: B2Gold
GIS NUMBER: BAC-23-648-01

DATE: 02/05/2025

PROJECTION: NAD 1983 UTM Zone 13N
SCALE: 1:20,000 when printed at 11x17

1.1 THE WILDLIFE MITIGATION AND MONITORING PROGRAM PLAN

This document reports the results of the wildlife mitigation and monitoring program during construction, as described in the WMMP Plan (B2Gold 2024a).

The WMMP Plan describes the mitigation and management activities conducted by B2Gold Nunavut to keep wildlife and wildlife habitat safe by mitigating potential impacts of the project. The WMMP Plan also includes a description of two types of mine monitoring activities:

1. Monitoring used to direct management activities; and
2. Monitoring of Mine effects to confirm impact predictions made in the FEIS.

The WMMP Plan was included in the FEIS and was updated several times following discussions with regulators, including the KitIA, GN DOE, and Government of Northwest Territories Department of Environment and Natural Resources (GNWT ENR).

During 2024, the WMMP Plan was updated to Version 13 (the current plan; B2Gold 2024a) to include commitments made by B2Gold Nunavut in response to comments and suggestions made by the KitIA and due to the addition of windfarm-related mitigation and monitoring (not applicable to the Construction WMMP Report). The WMMP Plan will be updated as needed during the life of the Mine in cooperation with the KitIA, GN, Government of Northwest Territories (GNWT), and community members and groups.

NIRB Project Condition 51 describes a collaborative CTAG that reviews and provides comments on the WMMP Plan. The CTAG is composed of representatives from B2Gold Nunavut, the KitIA, the GN DOE, and other experts requested by the representatives to address specific topics. In addition to the WMMP Plan, B2Gold Nunavut has also produced detailed memos to discuss aspects of management with the CTAG. B2Gold Nunavut has also produced detailed Standard Operating Procedures (SOPs) to operationalize aspects of the WMMP Plan. The SOPs also communicate requirements to subcontractors, such as shipping and aircraft companies, as well as staff onsite.

1.1.1 NIRB CONDITIONS

The NIRB Project Certificate (No. 007 Amendment 1) includes 28 Conditions for wildlife (NIRB 2024). Compliance with these Conditions is described in the 2024 NIRB Compliance Report and summarized in Appendix A.

1.1.2 MONITORING IN 2024

The Back River Mine started construction in 2023 and continued through 2024. Associated mitigation and monitoring that occurred in 2024 during construction are outlined in Table 1.1-1 and Appendix B.

TABLE 1.1-1 WILDLIFE MONITORING IN 2024

Monitoring Objective and Method	2024—Back River Mine Construction
Mine Infrastructure Development and Activities	
a. Habitat Loss—GIS Analysis of Footprint Area	Section 2.1
b. Traffic Monitoring	Section 2.2
c. Winter Ice Road Mitigation and Monitoring	Section 2.3
d. Helicopter and Fixed Wing Aircraft Monitoring	Section 2.4
e. Blasting Mitigation and Monitoring	Section 2.5
f. Camp and Waste Management and Monitoring	Section 2.6
g. Building and Skirting Inspections	Section 2.7
h. Noise Monitoring	Section 2.8
VEC and Other Species Monitoring and Mitigation	
a. Caribou	Section 3
b. Muskox	Section 4
c. Grizzly Bear	Section 5
d. Wolverine	Section 5
e. Migratory Upland Breeding Birds	Section 6
f. Migratory Waterbirds	Section 6
g. Marine Birds	Section 6
h. Raptors	Section 7
i. Marine Mammals	Section 8
j. Wildlife Incidents and Mortalities	Section 9

2. HABITAT LOSS AND SITE ACTIVITY MONITORING

2.1 HABITAT LOSS

Direct loss of wildlife habitat may occur through site clearing, infrastructure construction, and facility expansion. Habitat loss is evaluated as the direct loss of vegetation communities due to the Mine footprint.

The WMMP Plan includes monitoring and reporting of the area of habitat loss in each year of construction and operation of the Mine (B2Gold 2024a). Habitat loss is reported here to provide a measure of habitat loss due to construction activities in 2024 and prior to 2024.

2.1.1 FEIS PREDICTIONS

The FEIS described the wildlife habitat that will be lost within a permitted Project Development Area (PDA), composed of the Mine site footprint and a 1 to 1.5 km buffer. This larger PDA allowed for future development and operational flexibility. Infrastructure construction was predicted to result in the reduction of existing wildlife habitat (Table 2.1-1). Habitat loss was predicted to be a not significant residual effect and the magnitude was classified as low for all wildlife VECs. The geographic extent of habitat loss was the PDA for all wildlife VECs.

TABLE 2.1-1 FEIS PREDICTIONS OF HABITAT LOSS FOR WILDLIFE VECS

Species	Season or Habitat Type	FEIS Predicted Habitat Loss		
		Total Combined Area (ha)	MLA PDA (ha)	Goose PDA (ha)
Caribou (Beverly Herd)	Summer	5,389	542	4,847
	Fall	4,592	532	4,060
	Winter[1]	3,546	208	3,338
Muskox	Summer/Fall	2,302	491	1,811
	Winter/Early Spring	882	29	853
Grizzly Bear	Spring	4,324	296	4,029
	Summer	4,545	616	3,929
	Fall	4,032	516	3,517
	Denning	23	23	0
Wolverine	Denning	2,866	299	2,567
Wolf	Denning	67	37	31
Upland Breeding Birds	Dry upland / Moist-Wet lowland	4,905	532	4,372
Waterbirds	Waterbodies/Wetlands	2,489	337	2,152
Raptors	Cliff-nesting / Foraging habitat	634	5	629
	Ground-nesting	2,806	363	2,443

Note:
[1] Caribou winter habitat loss was not assessed in the FEIS. In 2020, the KitIA requested that caribou winter habitat loss be included in the annual WMMP report; therefore, winter habitat loss was calculated in 2021 and is included in all WMMP Reports moving forward.

2.1.2 METHODS

2.1.2.1 INFRASTRUCTURE DEVELOPMENT

The amount of habitat loss is expressed as a proportion of the PDA. The total area constructed in 2024 was calculated via onsite surveying and remote sensing and compared to the total area of the PDA using GIS analysis.

2.1.2.2 HABITAT LOSS

Habitat loss was calculated by comparing the as-built Mine footprint with existing habitat suitability mapping for specific focal species using Geographic Information Systems (GIS) to verify predicted effects of the Mine. Species monitored for habitat loss include:

- Caribou (summer, fall, and winter);
- Muskox (summer/fall and winter / early spring);
- Grizzly bear (spring, summer, fall, and denning);
- Wolverine (denning);
- Wolf (denning);
- Upland breeding birds (dry upland / moist-wet lowland);
- Waterbirds (waterbodies/wetlands); and
- Raptors (cliff-nesting, including a 1 km foraging buffer, and ground-nesting).

Habitat suitability models were developed for the FEIS using a combination of ecosystem mapping and field surveys for model validation. Models consider species life history and seasonal patterns.

Annual habitat loss was calculated as the difference between the current year's footprint and the existing footprint from previous years, while cumulative habitat loss was calculated as the difference between the current year's footprint and the pre-construction state.

2.1.3 RESULTS AND DISCUSSION

2.1.3.1 INFRASTRUCTURE DEVELOPMENT

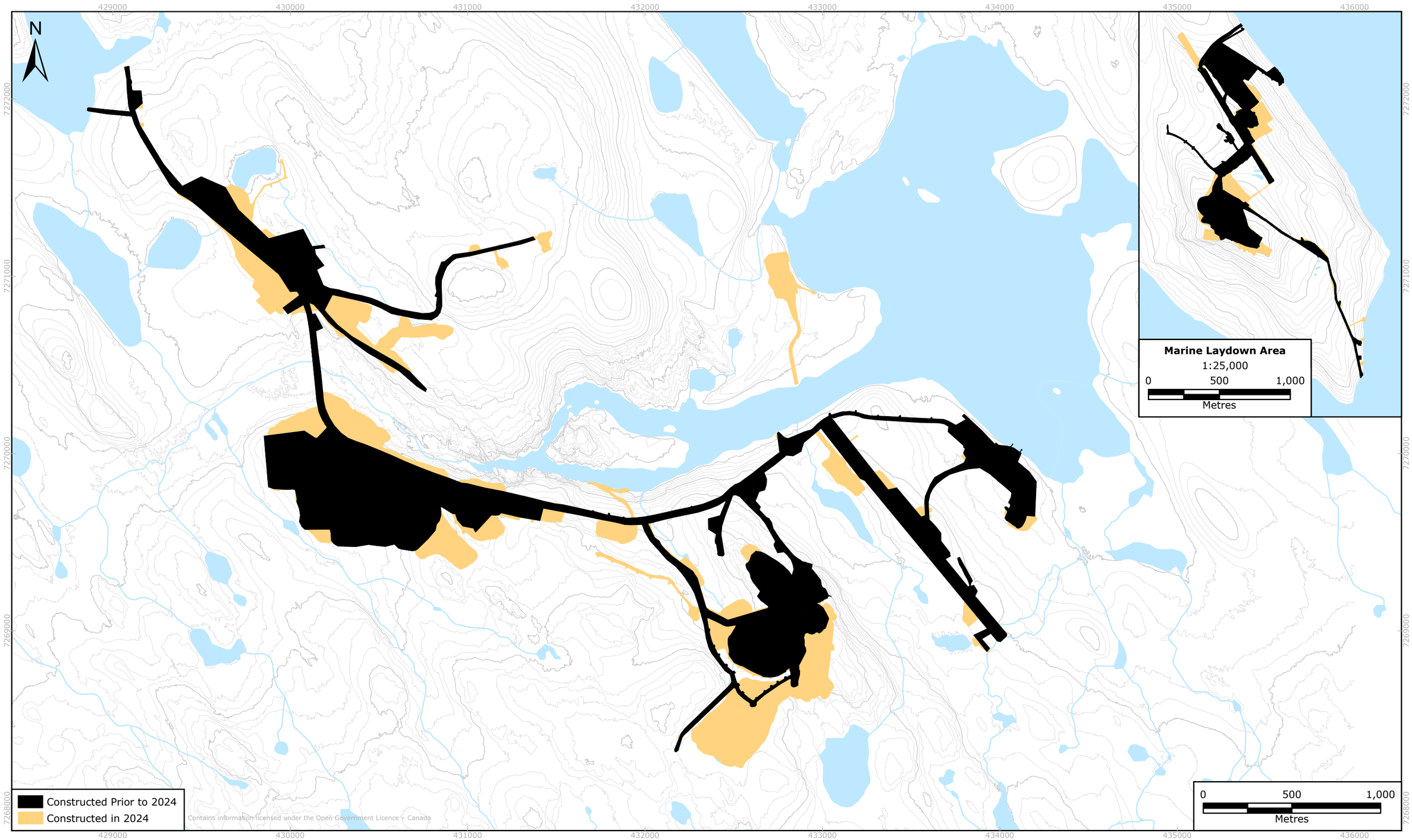
In 2024, 83 hectares (ha) were constructed at the Goose Site and 11 ha were constructed at the MLA. Collectively, the Mine footprint covers 295 ha to date (Table 2.1-2; Figure 2.1-1).

TABLE 2.1-2 FOOTPRINT DEVELOPMENT WITHIN THE PROJECT DEVELOPMENT AREAS OF 2024

Project Area	Pre-2024 (ha)[1]	2024 (ha)	Total (ha)
Goose Site	165	83	248
MLA	36	11	47
Total	**201**	**94**	**295**

Note:
[1] Pre-2024 values have been adjusted due to a small error relating to a road alignment in previously reported footprints, and as such may have changed slightly as compared to the previous annual report. The as-built Project footprint was resurveyed in 2023 to correct for this error, in addition to including new development.

FIGURE 2.1-1 INFRASTRUCTURE DEVELOPMENT AT THE BACK RIVER MINE AS OF 2024



ERM

CLIENT: B2Gold
GIS NUMBER: BAC-23-648-02

DATE: 02/11/2025

PROJECTION: NAD 1983 UTM Zone 13N
SCALE: 1:20,000 when printed at 11x17

The Goose PDA is approximately 5,427 ha; as of 2024, 248 ha of the Goose PDA has been constructed (approximately 4.5% of the Goose PDA).

The MLA PDA is approximately 653 ha; as of 2024, 47 ha of the MLA PDA has been constructed (7% of the total MLA PDA).

2.1.3.2 HABITAT LOSS

The Back River FEIS (Sabina 2015) assessed the impacts of predicted habitat loss on VEC species or group. Table 2.1-3 summarizes the amount of habitat lost for each wildlife species as of 2024.

Among each of the mammalian VECs for which habitat loss is evaluated relative to the RSA, between 3.9% and 13% of available suitable habitat within the RSA was lost due to the Mine. For avian species, between 2.6% and 8.7% of available suitable habitat within the Local Study Area (LSA) was lost to construction of the mine. No loss of special landscape features designated as potential rare plant habitat occurred.

2.1.3.3 DISCUSSION

The Back River FEIS assessed the impacts of predicted habitat loss on all VEC species or group. The realized habitat loss to date is 4.9% of the predicted habitat loss within the Goose and MLA PDAs combined (6,080 ha).

The magnitude of predicted habitat loss in the FEIS was classified as low for caribou, grizzly bear, wolverine, grey wolf, muskox, upland breeding birds, waterbirds, and raptors. The predictions of the Back River FEIS on the VECs remain valid with respect to the Mine footprint.

Previous studies have suggested a potential decrease in species richness and abundance for birds and mammals at critical threshold levels of 40% to 90% loss of suitable habitat (Andren 1994; Fahrig 1997). Currently, the levels of disturbed suitable habitat for mammalian VECs are between 3.9% to 13% of the suitable habitat within the RSA, and for bird VECs are between 2.6% to 8.7% of the LSA. These percentages are considered minimal, and well below critical threshold levels.

2.2 TRAFFIC MITIGATION AND MONITORING

The Back River Mine is committed to ensuring wildlife safe passage near site roads. Mitigation and management for disruption of movement and mortality of caribou and other wildlife focuses on management of the onsite roads, as per Section 7.2 of the WMMP Plan (B2Gold 2024a). Onsite roads include short stretches of all-season roads within the Goose PDA and MLA PDA that connect the various buildings, pits, waste rock storage, and Tailing Storage Facility (TSF). Traffic monitoring on the WIR is described in Section 2.3.

2.2.1 FEIS PREDICTIONS

Traffic was evaluated in the FEIS for its potential to pose a hazard to wildlife crossing roads or due to noise. Mitigation includes conservative speed limits, road signage, and employee training for wildlife avoidance. Disruption of movement due to onsite traffic was predicted to be non-residual for all wildlife VECs in the FEIS.

TABLE 2.1-3 AREA OF SUITABLE HABITAT LOSS FOR WILDLIFE VECS, 2024

Species	Season or Habitat Type	FEIS Predicted Habitat Loss			2024 Habitat Loss			Cumulative Habitat Loss		
		Goose PDA (ha)	MLA PDA (ha)	Total Combined Area (ha)[1]	Goose PDA (ha)	MLA PDA (ha)	Total (ha)	Total Loss Before 2024 (ha)	Cumulative Loss (ha)	Percent of Predicted Loss (%)
Caribou	Summer	4,847	542	5,389	81	10	91	196	287	5.3
	Fall	4,060	532	4,592	72	10	82	193	275	6.0
	Winter[2]	3,338	208	3,546	61	9	70	169	239	6.7
Muskox	Summer/Fall	1,811	491	2,302	26	8	34	56	90	3.9
	Winter / Early Spring	853	29	882	11	2	13	27	40	4.5
Grizzly Bear	Spring	4,029	296	4,324	72	9	81	182	263	6.0
	Summer	3,929	616	4,545	64	9	73	168	241	5.3
	Fall	3,517	516	4,032	64	9	73	168	241	6.0
	Denning	0	23	23	0	1	1	2	3	13.0
Wolverine	Denning	2,567	299	2,866	49	4	53	130	183	6.4
Wolf	Denning	31	37	67	0	1	1	2	3	4.5
Upland Breeding Birds	Dry upland / Moist-Wet lowland	4,372	532	4,905	75	10	85	198	283	5.8
Waterbirds	Waterbodies/Wetlands	2,152	337	2,489	25	6	31	46	77	3.1
Raptors	Cliff-nesting / Foraging habitat[3]	629	5	634	17	0	17	38	55	8.7
	Ground-nesting	2,443	363	2,806	22	7	29	43	72	2.6

Notes:

[1] Potential Development Area without Winter Roads.

[2] Caribou winter habitat loss was not assessed in the FEIS. In 2020, the KitIA requested that caribou winter habitat loss be included in the annual WMMP report; therefore, winter habitat loss was calculated in 2021 and is included in all WMMP Reports moving forward.

[3] Suitable cliff-nesting habitat was defined as: 1) areas within a 1 km radius from known raptor cliff nests; and 2) south-facing rock faces taller than 10 metres (m) and within 1 km of water. No cliffs were lost during construction. The area reported is within the 1 km buffer.

2.2.2 METHODS

Incident reports and reports of non-compliance events were reviewed to track potential impacts of traffic on wildlife.

Vehicle traffic is managed to ensure caribou and other wildlife can travel safely through the area and to minimize vehicle-related wildlife mortality and injury. Vehicle traffic operation follows the Light and Heavy Vehicle Operation on Roads Pre-construction, Construction, and Operations SOP (B2Gold 2024b). This includes the following responsibilities of all drivers to mitigate effects of vehicle traffic on wildlife:

- Drivers must follow 60 km/hour speed limits (or lower) on all onsite roads;
- Wildlife have right-of-way on all roads;
- Drivers will report all wildlife observations to the Environment Department; and
- Drivers will report any wildlife injury or mortality to the Environment Department.

If locations with repeated mortality events are identified, adaptive management will be implemented.

2.2.3 RESULTS AND DISCUSSION

Speed limits and vehicle traffic guidelines were presented to all staff during initial orientation to site, and reminders were provided by Health and Safety and Environment Department staff throughout the year. Email notifications were issued by the Environment Department to all site staff when mortalities of small wildlife occurred on roads, and messaging around the importance of following vehicle mitigation guidelines (as described in Section 2.2.2) was included in morning toolbox meetings across departments.

There were no vehicle related wildlife mortalities in 2024. Mitigation and monitoring measures in place by B2Gold Nunavut were effective at ensuring caribou and other wildlife can travel safely through the area, minimizing vehicle-related wildlife mortality and injury. No mortality events were recorded in 2024; therefore, no additional mitigation was required in 2024.

Traffic mitigation continues to be successful at the Back River Mine, illustrated by the lack of mortality events in 2024, and a low number (three mortality events) the previous year in 2023, which included two Arctic hares (*Lepus arcticus*) and one Rock Ptarmigan (*Lagopus muta*).

2.3 WINTER ICE ROAD MITIGATION AND MONITORING

The Back River Mine is committed to ensuring wildlife safe passage near the WIR. Mitigation and management for disruption of movement of caribou and other wildlife focuses on management of the WIR, as per Section 7.2.3 of the WMMP Plan (B2Gold 2024a). Monitoring along the WIR includes traffic volume monitoring, human activity monitoring, and snowbank monitoring. Monitoring for caribou along the WIR is presented in Section 3.3.

Traffic was evaluated in the FEIS for its potential to pose a hazard to wildlife crossing roads or disturbance due to noise. Mitigation includes conservative speed limits, road signage, and employee training for wildlife avoidance. The WMMP Plan also includes a Road Management Plan, which describes road safety, design, and monitoring practices.

Monitoring of human activity along the WIR was completed in accordance with Back River Mine's Project Certificate (No. 007 Amendment 1) Condition 80 (NIRB 2024).

Monitoring snowbank height along the WIR was completed in accordance with Back River Mine's Project Certificate (No. 007 Amendment 1) Condition 45 to mitigate disturbance to caribou migration and movement (NIRB 2024).

Monitoring for potential grizzly bear dens in suitable habitat was completed, as per Section 9.3.1.5 of the WMMP Plan (B2Gold 2024a), prior to construction of the WIR in suitable habitat.

2.3.1 FEIS PREDICTIONS

The WIR from Goose PDA to the MLA PDA was anticipated in the FEIS to be active between December and April, with active hauling occurring in January through April. Traffic levels on the WIR were predicted in the FEIS to be approximately 1,900 one-way trucks over 100 days of WIR operation (an estimate of 19 one-way trucks per day during Construction).

The winter range of Beverly caribou overlaps the southern wildlife RSA and approximately 0.01% of the winter range overlaps a portion of the WIR PDA, indicating that few caribou of the Beverly herd will occur in the RSA during the winter period when the winter road is active. Thus, it was predicted in the FEIS that there will be few caribou crossing the WIR. Combined with the vehicle mitigation, mortality from vehicle collisions and disruption of movement on the WIR was not anticipated to result in a residual effect in the FEIS.

The FEIS evaluated the potential effects of new access to the Back River Mine site along the WIR from the MLA and determined there was a negligible potential for increased access. To mitigate any potential effects, the WIR will be closed to the public.

2.3.2 METHODS

2.3.2.1 TRAFFIC MONITORING

Total volumes of traffic are recorded by onsite personnel for each load (freight and fuel) transiting the WIR and are recorded as the number of heavy vehicles dispatched from the MLA each day. As a result, number of loads is given as return trips. Operational days is the total number of days between the opening and closure of the WIR in 2024. The number of days with loads is representative of the number of days where loads were dispatched from MLA.

Vehicle traffic is managed in accordance with the Light and Heavy Vehicle Operation on Roads Pre-construction, Construction, and Operations SOP (B2Gold 2024b). This includes grouping trucks in convoys and additional mitigative measures should the WIR operate past April 15.

2.3.2.2 HUMAN ACTIVITY MONITORING

The WIR is restricted to Mine site personnel only; therefore, measures are in place to ensure the WIR is not used by others, including closing the road to the public and controlling access to the road.

Human activity monitoring evaluates whether people other than site staff are using the WIR and whether measures to control access have been effective. All Back River Mine personnel working along the WIR are expected to report observations of people other than site staff occurring around or interacting with the WIR. Observations are reported to the Environment Department, including

location (Global Positioning System [GPS] coordinates), date, time, type of vehicle, number of people, reason for access (e.g., hunting, recreation, fishing), outcome of interaction with Back River Mine personnel, and any other descriptive information regarding the sighting.

Human activity along the WIR is recorded in accordance with, and using the datasheet provided in the Human Use Monitoring SOP *(*B2Gold 2024c).

Should more than five groups of hunters be observed using the WIR, then enhanced management will be initiated to limit use of the WIR as outlined in Section 7.2.5 of the WMMP Plan (B2Gold 2024a). If triggered, B2Gold Nunavut will liaise with the relevant Hunters and Trappers Organizations to discuss possible options for enhanced management to limit hunter use of the WIR.

2.3.2.3 SNOWBANK MONITORING

Snowbank height was documented along the WIR by the onsite dedicated caribou monitors while driving the WIR daily using vehicle mounted video cameras. If snowbanks appeared too high (greater than 1 metre [m]), the onsite biologists would contact the WIR manager for immediate action to reduce snowbank height. Actions included the use of snowcats, bulldozers, and graders to maintain minimal height and slope of banks at the road edge.

2.3.2.4 DEN MONITORING

Potential denning habitat for grizzly bears was assessed via overlaying habitat suitability maps with the WIR route, resulting in only one area of potential high-quality habitat in proximity to the WIR. A visual assessment of this area was conducted by an experienced biologist, and the area was determined to be unsuitable denning habitat. As such, no further mitigation was required and is not described further in the results.

2.3.3 RESULTS AND DISCUSSION

2.3.3.1 TRAFFIC MONITORING

The WIR operated over 55 days in 2024 between March 7 and April 30. This is 45 days shorter than what was predicted in the FEIS (FEIS estimated 100 days of operation). A total of 1,558 loads (return trips) were hauled down the WIR during the operating period, with loads being sent on 46 of the 55-day operating period. Of the 46 days where loads were sent, all the days had freight loads and 70% (32 days) had fuel loads. Freight accounted for 1,167 of loads (75%) and fuel accounted for 391 (25%) of loads (Table 2.3-1). There were two loads that occurred outside of the operating period, one freight load on February 16 and one fuel load on March 1, both to support WIR construction.

TABLE 2.3-1 TRAFFIC ALONG THE WINTER ICE ROAD, MARCH 7 TO APRIL 30, 2024

Month	Fuel Loads			Freight Loads			Total Loads per Day
	Number of Loads	Number of Days	Loads per Day	Number of Loads	Number of Days	Loads per Day	
March 7 to 31	210	18	11.7	351	18	19.5	31.2
April 1 to 30	181	14	12.9	816	28	29.1	35.6
Total	**391**	**32**	**12.2**	**1167**	**46**	**25.4**	**33.9**

A total of 3,116 one-way trips were made during the 55-day operating period of the WIR, which is above the predicted estimate of 1,900 one-way trips per year. However, during the period of time when caribou may interact with the WIR (i.e., after April 15 during spring migration), a total of 1,016 one-way trips were completed over the 15 days.

A traffic rate of 20 vehicles/h has been shown to likely cause a low crossing rate for large caribou groups trying to cross a pipeline road in Alaska (Smith and Cameron 1985). More recent studies suggest that the relative probability of crossing the road declines at a lower traffic rate of approximately 12.5 vehicles/h (Smith and Johnson 2023). The WIR was generally operational for 24 hours per day, apart from days where weather restricted traffic resulting in reduced traffic or temporary road closures. In 2024, an average of 34 heavy vehicles per day used the WIR. Therefore, the WIR had a traffic rate of approximately 1.4 vehicles per hour, remaining below the threshold of disturbance. In addition, B2Gold Nunavut safety rules required trucks to travel in convoys of at least three trucks at a time, further reducing the frequency of individual vehicles per hour (Photo 2.3-1).

Photo 2.3-1 Vehicle stopped on the Winter Ice Road, April 22, 2024.

Mitigation and monitoring in place by B2Gold Nunavut for the WIR was effective at reducing traffic levels along the WIR. Traffic rates along the WIR remained below levels that may disrupt caribou movement (12.5 to 20 vehicles/h; Smith and Johnson 2023; Smith and Cameron 1985). Although traffic levels were above the estimated 1,900 one-way trips per year, there was no evidence of disturbance to caribou (Section 3.3) and no additional mitigation was required in 2024. If traffic levels are higher than estimated in the FEIS for 3 consecutive years and if deemed required by the NIRB, then B2Gold Nunavut will conduct an assessment of road effects on caribou at that time (Section 7.3.1.8 of the WMMP Plan).

2.3.3.2 HUMAN ACTIVITY MONITORING

During the 2024 WIR season, one group of people other than site staff was observed near the WIR. This group of hunters was observed hunting by snowmobile adjacent to the WIR between April 20 and 25. This is the same group of hunters that were observed along the WIR in 2023.

Mitigation and monitoring in place by B2Gold Nunavut for the WIR was effective at ensuring that only site personnel are using the road. The one group of hunters observed adjacent to the WIR in 2024 were noted as not using the road, but travel alongside the road. Therefore, human activity near the WIR remained below the threshold of five groups and no additional mitigation was required in 2024.

2.3.3.3 SNOWBANK MONITORING

Bank heights along the WIR were actively managed to be as low as possible to allow easy passage by caribou, with many sections having negligible bank height or slope as compared to the road grade (Photo 2.3-2). Following snow or wind events, onsite biologists observed immediate actions by road maintenance equipment operators to reduce bank heights in all sections of the WIR. Snowcats, bulldozers, and graders were often maintaining minimal height and slope of banks at the road edge. Project management staff also consulted with the onsite biologists each day regarding priority areas to further reduce bank height to facilitate effective caribou passage across the WIR.

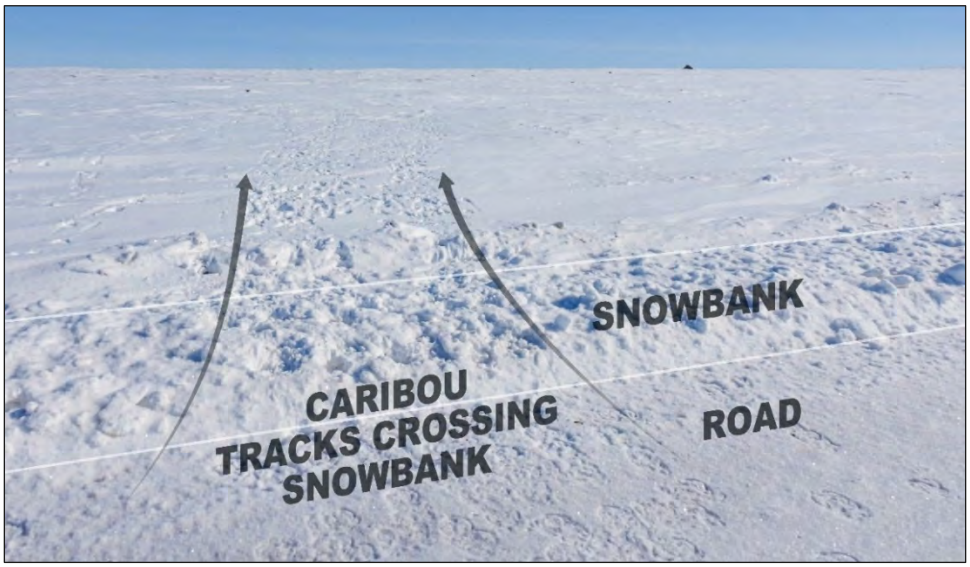


Photo 2.3-2 Caribou tracks crossing low snowbanks along the WIR.

Mitigation and monitoring in place by B2Gold Nunavut for the WIR was effective at reducing snowbank height. Bank heights were actively managed to be as low as possible to allow easy passage by caribou, with many sections having negligible bank height or slope as compared to the road grade. Therefore, any banks greater than the trigger height of 1 m were flattened, and no additional mitigation was required in 2024.

2.4 AIRCRAFT MITIGATION AND MONITORING

Helicopters and fixed-wing aircraft currently operate at the Back River Mine. Helicopters make trips between the Goose and MLA areas, as well as taking supplies (e.g., drilling gear) and crews (field survey biologists) to other areas near the Mine. Fixed-wing aircraft service crew and supplies movement in and out of the regional area.

Fixed-wing and helicopter aircraft operation guidelines were developed and provided to pilots to guide aircraft operation at the Back River Mine. These guidelines met the Back River Mine's Project Certificate (No. 007 Amendment 1) Conditions #60 and #61, to mitigate potential impacts to wildlife from aircraft operations (NIRB 2024).

Mitigation actions were applied to fixed-wing aircraft to limit disturbance to caribou and other wildlife, as described in Section 7.2.2.6 of the WMMP Plan (B2Gold 2024a), including remaining above 610 m whenever caribou are encountered; completing a visual inspection for wildlife on the airstrip prior to aircraft landing; and suspending or delaying flights if caribou are observed near the airstrip.

Mitigation actions were applied to helicopters to limit disturbance to caribou and other wildlife, as described in Section 7.2.2.7 of the WMMP Plan (B2Gold 2024a), including educating pilots on flying altitudes when caribou are present and maintaining appropriate distances from caribou. These avoidance distances include the following:

- During calving, post-calving, and early summer (June 5 to July 31), large groups of caribou (more than 250) are avoided by 610 m vertically or 4 km horizontally;
- During calving, post-calving, and early summer (June 5 to July 31), helicopter pilots are to avoid groups of 25 or more caribou either vertically (610 m) or horizontally (2 km); and
- At all other periods in the year caribou are avoided by 610 m vertically or 1 km horizontally.

2.4.1 FEIS PREDICTIONS

Helicopters and fixed-wing aircrafts were evaluated in the FEIS for potential to pose a collision hazard to birds, and noise disturbance to wildlife. Mitigation includes: avoiding low level flying over wildlife (under 610 m) where possible (fixed-wing) or when caribou are observed in the immediate area (helicopters), pilot training, and aircraft operation guidelines.

2.4.2 METHODS

Helicopter and fixed-wing aircrafts operated in accordance with the flight procedures outlined in the Fixed-Wing and Helicopter Operations SOP (B2Gold 2024d). This includes flight altitude and horizontal guidelines, avoidance of sensitive wildlife features, adjustments in procedures associated with the Caribou Management System, wildlife reporting procedures, and flight tracking. Additionally, visual inspections of the airstrip for wildlife were completed prior to aircraft landing, with suspending or delaying flights if caribou were observed near the airstrip.

To minimize disturbance to caribou, aircrafts are advised to maintain a minimum 610 m vertical flying altitude or 1 km to 4 km horizontal distance, except when landing or takeoff, as indicated by the WMMP Plan, depending on time of year and caribou group size (as described above and in Section 7.2.2.7 of the WMMP Plan).

Fixed-wing pilot logs, helicopter pilot wildlife reports, helicopter GPS tracks, and incidental wildlife observations were recorded to demonstrate compliance with the mitigation outlined in Section 7.2.2.7 of the WMMP Plan and the Fixed-Wing and Helicopter Operations SOP (B2Gold 2024d). Helicopter tracks were recorded using a GPS, which recorded the track, including the time, latitude, longitude, and altitude. Helicopter GPS tracks were summarized by flight and total distance traveled while onsite, including only flights made while stationed onsite.

Pilots recorded any wildlife observations during flights and reported them to the Environment Department. Information recorded includes location, date, time, species, number observed, behaviour, and any other descriptive information regarding the sighting. In some instances, it is challenging for pilots to record sightings while flying the aircraft safely. In these instances, incidental observations made during flight were either reported by the pilot to flight ops, or where passengers are present, recorded by passengers. Flight ops also record any wildlife presence near the airstrip and helicopter pads. Incidental observations were recorded and reported as outlined in Section 3.9.1.

2.4.3 RESULTS AND DISCUSSION

Fixed-Wing Aircraft

Fixed-wing aircrafts typically cruised at approximately 3,000 to 7,000 m, depending on whether or not they were pressurized. Descents and ascents to and from landing were conducted following standard procedures to maintain safe approach angles and minimum elevations. No fixed-wing pilots reported any emergencies or weather conditions that required low-level flight (below 610 m).

Prior to all aircraft take-off and landing at the airstrip, a survey for wildlife was conducted to ensure safe departure and/or arrival for aircrafts and for wildlife. Caribou were incidentally recorded near the Goose airstrip on 13 occasions between July 1 to July 19, and the MLA airstrip on four occasions between July 1 to July 12 (Section 3.9). Caribou presence near the MLA airstrip included two observations of one individual, one observation of three individuals, and one observation of four individuals. On all occasions, caribou were noted to be just walking through the MLA camp and not directly on the airstrip or within the trigger distance to require action; as a result, no additional measures were required. All observations of caribou near the Goose airstrip were made of one individual, typically linger off the airstrip between Echo Pit or Major Drilling. From July 1 to July 4, one caribou was noted lingering a bit closer to the airstrip by flight ops, with flight ops and the Environmental Department completing continuous monitoring the caribou during daylight hours when flight traffic may arrive. On three occasions, deterrence through yelling, waving sticks with flagging tape, and walking towards the animal was completed to move the caribou farther from the airstrip prior to the arrival of incoming aircrafts (further discussed in Section 9). On all occasions, deterrence methods were effective and no additional mitigation was required. As a result of proactive monitoring and mitigation, no interactions between wildlife and fixed-wing aircrafts occurred.

Mitigation and monitoring measures in place by B2Gold Nunavut was effective at ensuring no interactions between wildlife and fixed-wing aircrafts occurred. No fixed-wing aircrafts operated below 610 m, except when landing or takeoff. Therefore, no additional mitigation was required in 2024.

Helicopters

In 2024, helicopters stationed at site travelled a total distance of 90,031 km over 1,706 one-way flights between May 1 and October 10 (Table 2.4-1). Four helicopters were stationed onsite at different times during this period supporting drilling, regional monitoring programs, and shuttle flights between Goose and MLA. During these flights, pilots maintained a minimum 610 m vertical flying altitude or 1 km to 4 km horizontal distance from caribou if they were observed (as described above and in Section 7.2.2.7 of the WMMP Plan).

TABLE 2.4-1 HELICOPTER PRESENCE ONSITE, 2024

Helicopter	Arrival at Goose	Departure from Goose	Distance Flown (km)	Primary Task
CHH	May 13	September 30	32,688	Environment Support and Shuttle Flights
ATQ	May 1	June 10	4,434	Drill Support
ZAV	June 10	October 4	34,542	June 11 to June 20 Drill Support; June 21 to October 4 Exploration Support and Shuttle Flights
ATQ	June 20	September 19	16,405	Drill Support
AVF	September 21	October 4	1,962	Drill Support

There were a total of 229 wildlife observations made during flight recorded by either the pilots, passengers, or reported to flight ops (see the incidental observation section for each species), with 227 of these being made within the RSA during regional monitoring programs for various wildlife species. Observations from previous year support that wildlife are infrequently observed by helicopters during normal observations, with only two observations made during flights not associated with regional surveys for wildlife.

In all instances where wildlife was incidentally observed from the helicopter, helicopters increased altitude and moved out of the area to limit exposure on wildlife.

Helicopters are required to maintain a higher separation distance during calving, post-calving, and early summer (June 5 to July 31), when groups of more than 250 caribou are to be avoided by 610 m vertically or 4 km horizontally. Groups of more than 250 caribou were incidentally recorded on 2 days between June 5 and July 31, 2024:

1. On July 19, helicopter pilots reported two groups of caribou, one group of 200 and one of 600, both 2 km from Goose (Section 3.9). The pilots reported the sighting and followed flight procedures in compliance with the WMMP Plan and NIRB Conditions (B2Gold 2024a). This caribou observation triggered a change in caribou protection level as outlined in Section 3.2.

2. On July 26, when the Environmental Department recorded a group of 700 caribou 1 km south of Goose (Section 3.9). There were no helicopters operating in the area at that time. The group was moving quickly and by the time a change in protection level was to be sent, the group was 3 km south of site. As a result, a site wide warning email was sent signaling caribou presence that could trigger a level change, but no level change was required (Section 3.2).

In both instances, all helicopters in the area increased altitude and moved out of the area or were notified to avoid the area by either a 610 m vertically or 4 km horizontally separation until further notice.

Mitigation and monitoring measures in place by B2Gold Nunavut were effective at avoiding interactions between wildlife and helicopters. When caribou were observed, helicopters maintained a minimum 610 m vertical flying altitude or 1 km to 4 km horizontal distance, except when landing or takeoff, depending on time of year and caribou group size. No additional mitigation was implemented in 2024, and no interactions between wildlife and helicopters were reported. In all instances where wildlife was observed from the helicopter, helicopters increased altitude and moved out of the area to limit exposure on wildlife. Helicopter travel in 2024 was in compliance with the WMMP Plan (Section 7.2.2.7) and Project Certificate (No. 007 Amendment 1) Condition #60.

2.5 BLASTING MITIGATION AND MONITORING

NIRB Conditions #41, #43, and #44 require B2Gold Nunavut to manage blasting activities to avoid disturbance to caribou and other wildlife.

Prior to any blasting in 2024, surveys for wildlife were conducted by B2Gold Nunavut personnel to identify if wildlife were present. If animals were within a “trigger distance” of quarries, then certain mitigations applied. Trigger distances and management actions for quarries are summarized in Table 2.5-1.

TABLE 2.5-1 MANAGEMENT OF BLASTING WHEN WILDLIFE ARE OBSERVED

Species	Timing Window	Number of Animals	Distance	Notes
Caribou	Calving (June 5–15)	≥10 breeding female	≤2.5 km	Stop blasting until animals leave.
Caribou	All year	Group of ≥25 animals	≤2.5 km	Stop blasting until animals leave.
Caribou	All year	1–25 animals	≤2.5 km	Conduct behavioural monitoring. Blasting can proceed.
Caribou, Muskox, Grizzly Bear, or Wolverine	All year	≥1 animal	Blast safety distance (~500 m)[1]	If ≥1 animal is observed in the blast safety distance, then delay the blast until animals leave.

Note:
[1] The blast safety distance is often 500 m or greater, but is determined on a case-by-case basis by the blasting manager.

2.5.1 FEIS PREDICTIONS

Blasting was evaluated in the FEIS for its potential to pose a hazard to wildlife due to blast rock or noise disturbance. Disturbance due to instantaneous blasting noise was predicted to remain within the PDAs. To reduce the possibility of disturbing caribou (and other wildlife) due to blasting activities, pre-blasting surveys are completed and species-specific trigger distances and mitigative measures are applied (Table 2.5-1).

2.5.2 METHODS

Blasting at various sites (Table 2.5-2) occurred around the Goose PDA in 2024. Prior to blasts, B2Gold Nunavut personnel conducted a height of land survey of the surrounding tundra for caribou or other wildlife (muskox, grizzly bear, or wolverine). If any caribou or wildlife were observed, management actions described in Table 2.5-1 were followed.

Pre-blast surveys were conducted by observers scanning all directions around the blasting location from the nearest height of land site or nearest location with good visibility. Survey details (i.e., date, time, location) and observations were recorded. If any wildlife were observed, the Environment Manager and Blasting Manager were alerted and the appropriate mitigation implemented. Surveys for wildlife prior to blasting were conducted in accordance with the Wildlife Monitoring and Mitigation for Blasting Pre-construction, Construction and Operations SOP (B2Gold 2024e).

2.5.3 RESULTS AND DISCUSSION

Blasting occurred over 130 days at three locations at Goose (110 days) and one location at MLA (19 days) in 2024 (Table 2.5-2). Blasting frequency at each location is summarized in Table 2.5-2. Pre-blast survey datasheets were completed for 103 days when blasting occurred (96 days at Goose sites, 6 days at MLA). Pre-blast surveys were also recorded on 9 days where no blasting was reported. Additionally, there were 2 days where pre-blast surveys were completed at more than one location, but blasting was only completed at one location.

There were three locations at the Goose site where blasting occurred in 2024: Echo Pit, Key Trench, and Umwelt Pit. Of the 119 days when blasting occurred at the Goose site, there were 14 days where pre-blasting surveys were not documented for locations where blasting occurred at Goose. The missing documentation of these surveys does not confirm that they were not completed, as site personnel are required to incidentally report sightings of wildlife, particularly during blasting. Pre-blast surveys were not documented in January (2 days), February (3 days), June (1 day), July (1 day), August (1 day), September (2 days), November (1 day), and December (3 days). Surveys were documented for all blasting days in March, April, May, and October.

At the MLA, blasting occurred at one site. Of the 19 days when blasting occurred at the MLA, there were 13 days where pre-blasting surveys were not documented. The missing documentation of these surveys does not confirm that they were not completed, as site personnel are required to incidentally report sightings of wildlife, particularly during blasting. Pre-blast surveys were not documented in April (1 day), September (1 day), October (6 days), and November (5 days).

TABLE 2.5-2 SUMMARY OF BLASTING ACTIVITY AT THE GOOSE AND MLA SITE, JANUARY TO DECEMBER 2024

Month	Goose						MLA		Total Unique Blasting Days[1]
	Echo Pit		Key Trench		Umwelt Pit				
	Blast Days	Survey Days	Blast Days	Survey Days	Blast Days	Survey Days	Blast Days	Survey Days	
January	9	7	4	5	0	0	0	0	13
February	2	2	6	3	2	2	0	0	10
March	0	0	0	0	5	5	0	0	5
April	6	6	3	3	2	2	4	3	13
May	8	8	2	2	0	0	0	0	10
June	11	10	0	0	0	0	0	0	11
July	7	6	0	0	0	0	0	0	7
August	10	9	0	0	0	0	0	0	10
September	10	8	0	0	0	0	4	4	12
October	9	9	0	0	0	0	6	0	15
November	9	8	0	0	0	0	5	0	13
December	5	3	0	0	1	0	0	0	6
Total	**86**	**76**	**15**	**12**	**10**	**9**	**19**	**6**	**130**

Notes:
Pre-blasting survey data sheets were not received for 27 days where blasting occurred.
[1] The total number of unique blasting days in 2024 was 125 days. However, due to blasts being completed at both Echo Pit and Key Trench on 1 day in April 2024 and at both Goose and MLA on 1 day in April, 2 days in September, and 1 day in November, the number of blast days for all sites is 130.

During pre-blast surveys, caribou were only recorded on one occasion, with an unspecified number located 4 km from Echo Pit on October 5. The Environment Department was consulted and, as they were outside of the trigger distance (2.5 km), no mitigation was required. No additional mitigative measures were required in 2024 and no other mammals were observed during pre-blast surveys.

During the 20 days where blasting occurred but no datasheets were completed, caribou locations using collar data was investigated further. During all 20 of the days, the closest caribou collar point was approximately 5 km away from Goose and 50 km from the MLA. Incidental sightings of wildlife were also investigated further to determine if wildlife were observed during any of these 20 days. Four incidental observations of wildlife were recorded over 4 separate days at Goose (three sightings) and the MLA (one sighting). Incidental observations of wildlife at Goose included one caribou near Major Drilling over 1 km from blasting on July 2, one wolverine near the incinerator over 1 km from blasting on January 26, and a grizzly bear sow and three cubs located over 4 km from blasting on June 13. At the MLA, one caribou was observed over 7 km from the blasting on October 6. No additional mitigation was required as all sightings were outside of the blast safety distance.

Pre-blasting surveys and species-specific trigger distances (Table 2.5-1) were implemented at the Mine to address the potential hazard blasting may pose to wildlife, as assessed in the FEIS. No animals were reported within the designated trigger distances around blast sites in 2024. As a result, no additional mitigative measure were required in 2024. Although blasting was not halted due to wildlife presence within the blast safety distances, blasting was suspended on three occasions at Goose due to a change in caribou protection level (Section 3.1).

2.6 CAMP AND WASTE MANAGEMENT AND MONITORING

NIRB Condition #48 requires B2Gold Nunavut to limit the attractiveness of the site to wildlife. The WMMP Plan includes design mitigation and management to reduce the attractiveness of the Goose and MLA camps and infrastructure to wildlife (WMMP Plan, Section 9.2.6; B2Gold 2024a). To accomplish this, B2Gold Nunavut conducted the following:

- Managed the camp to reduce attractiveness;
- Reviewed waste management during routine inspections; and
- Conducted monitoring for grizzly bears and wolverine in the vicinity of the camp.

Section 9.2.6 of the WMMP Plan lists the mitigation implemented by B2Gold Nunavut (B2Gold 2024a). These include storing wastes properly, conducting regular road and camp cleanups, removing waste from collection sites regularly and incinerated, and monitoring for wildlife activity near waste infrastructure.

2.6.1 FEIS PREDICTIONS

The Back River FEIS predicted a not significant and low magnitude residual effect of attraction at a geographic extent of the Mine site footprint for wildlife (grizzly bears and wolverine).

2.6.2 METHODS

Waste management and monitoring is conducted in accordance with the Waste Management Pre-construction, Construction, and Operations SOP (B2Gold 2024f), which also includes preventative measures, safe waste storage, management, disposal, and monitoring procedures for site personnel.

Waste management and monitoring includes regular inspections of all Waste Management Areas (WMAs) at the Back River Mine by the Environment Department. Monitoring was completed through waste inventories, waste facility surveys, and waste management audits. Waste and camp monitoring inspections included assessment of:

- Proper storage of wastes;
- Proper segregation of wastes;
- Proper waste containment (including secondary containment);
- Proper waste disposal (including incineration or backhaul);
- Signs of wildlife in and around WMAs; and
- Any wildlife observed near WMAs.

Waste monitoring was completed as a part of regular site wide inspections by Environment Department staff. If deficiencies were noted (either during dedicated monitoring inspections or incidentally), a review of waste management activities and adaptive mitigation was triggered. Following implementation of additional measures to resolve the noted deficiency, the WMA or area requiring improvements was resurveyed.

2.6.3 RESULTS AND DISCUSSION

Inspections of WMAs were completed during 31 weeks at Goose and 6 weeks at MLA in 2024 (Figure 2.6-1). Specific locations where inspections were completed in conjunction with building and skirting surveys are reported in Appendix C. Findings from inspections were relayed to the appropriate departmental manager and site services, including instructions for improvements to waste management to reduce potential for wildlife attraction. Primary deficiencies recorded during inspections and subsequent actions implemented are outlined in Table 2.6-1. In all instances where deficiencies were noted, actions to resolve the situation were implemented, following guidance in the Waste Management Pre-construction, Construction, and Operations SOP (B2Gold 2024f) in 2024. Photos of the Goose and MLA camps are provided in Photos 2.6-1 through 2.6-4 to illustrate that the camps were kept clean and free of attractants for wildlife.

FIGURE 2.6 1 FREQUENCY OF WASTE INSPECTIONS COMPLETED AT THE GOOSE MINE AND MARINE LAYDOWN AREA IN 2024

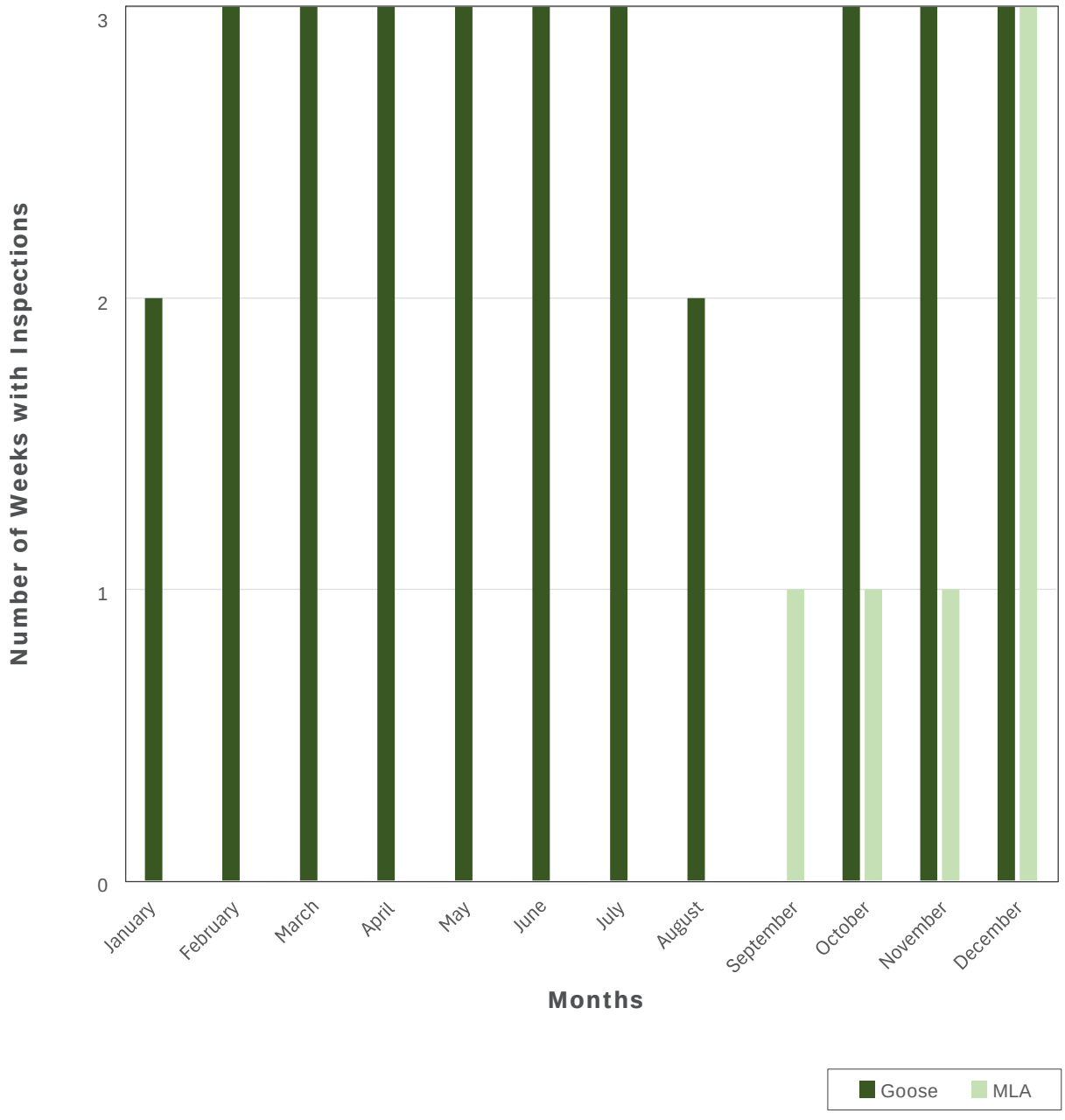


TABLE 2.6-1 SUMMARY OF PRIMARY OBSERVATIONS MADE DURING INSPECTIONS OF WASTE MANAGEMENT AREAS AND MITIGATION ACTIONS IN 2024

Deficiency Recorded	Actions
Misdirected Waste Within Bins	Misdirected waste was separated and disposed of correctly. Discussions held with area managers on proper waste disposal and segregation.
Waste Bins Without Lids	Ensure all bins that require lids or have the potential to collect water are fitted with the appropriate lids.
Waste Bins Without Signage	Ensure proper signage detailing waste permitted in each bin is present. Creation of a waste management brochure outlining proper waste disposal and segregation procedures to be distributed onsite.
Littered Waste	Waste was picked up, disposed of correctly, and proper waste disposal procedures were frequently discussed with all onsite personnel.

Photo 2.6-1 Goose exploration camp kept free of attractants, 2024.

Photo 2.6-2 Goose main camp kept free of attractants, 2024.

Photo 2.6-3 Goose tank farm and construction area kept free of attractants, 2024.

Photo 2.6-4 MLA kept free of attractants, 2024.

During regular inspections of WMAs, wildlife sightings or wildlife signs were recorded on 23 occasions, all of which were recorded at Goose. Of these 23 occasions, wildlife accessing attractants was recorded three times, including one fox seen carrying food waste (a piece of chicken), evidence that an unknown small mammal accessed food in a survival kit located in a storage building, and evidence that an unknown small mammal opened the plastic top to a drum of incinerator waste. The remaining 20 wildlife observations included the following:

- Fox presence or tracks observed or reported to the Environment Department were recorded at 11 locations;
- Small mammal tracks were recorded at five locations;
- Raven presence or tracks were recorded at three locations; and
- One caribou was recorded at the landfill.

During the inspections completed in 2024, no grizzly bear or wolverine signs were observed in or around WMAs at the Goose site or MLA. Incidental detections of these species were made in 2024 and are summarized in Section 5.4 and 5.6. Limited signs of wildlife accessing waste during inspections, specifically by grizzly bear and wolverine, supports that quick response in resolving deficiencies limited the attractiveness of the site to wildlife in 2024.

Incidental observations (i.e., observations that were not made during scheduled inspections) were also used to inform adaptive management in 2024. In April 2024, incidental sightings of wolverine accessing unsecured waste and attempting to access the incinerator were reported to the Environment Department, leading to increased monitoring at the incinerator. Adaptive management was applied to assess the source of attraction, remedy the issue, and monitor the success of the management actions applied. The following mitigation measures were implemented to prevent access and deter individuals:

- The incinerator building was further secured to ensure wildlife did not have access;
- All waste was housed in a locked Seacan;
- B2Gold Nunavut Environment Staff conducted continuous monitoring (including overnight) to ensure wolverines were deterred if they attempted to access the incinerator;
- Additional wildlife cameras were deployed to monitor use of the area by wildlife (see Section 3.7);
- B2Gold Nunavut Environment staff successfully used deterrence measures (e.g., bear bangers) during two of the nights, resulting in the wolverine being safely deterred, and did not return (further described in Section 9); and
- Observations made during waste management inspection of the Goose site for the remainder of the year were used to inform if measures were successful and if additional measures were required.

As a result of adaptive mitigation and improved waste management, the wolverines were deterred and no wolverine mortalities occurred in 2024. Incidental observations of wolverine in the vicinity of the incinerator were noted past April 2024 (Section 5.6), but were infrequent and only indicated wolverines moving through the area and that no access to the incinerator or attractants was evident.

As the Back River Mine transitions to operations in 2025, WMAs will be established with consistent bins and signage across the site. Throughout 2024, B2Gold Nunavut implemented steps to establish final WMAs and educate staff on waste management procedures. For example, wildlife proof bins for domestic waste were established at varying locations and a brochure was created and distributed to staff to guide proper waste disposal and to outline the importance of proper waste management procedures in limiting the attractiveness of site to wildlife. Actions implemented in 2024 to improve waste management proved successful in increasing compliance with waste management procedures and limiting the attractiveness of site to wildlife, and improvements to waste management practices is ongoing and will continue.

2.7 BUILDING AND SKIRTING INSPECTION

Building and skirting monitoring is outlined in Section 9.3.1.3 of the WMMP Plan (B2Gold 2024a). The objective of skirting and building monitoring is to evaluate whether mitigation measures to exclude bears and wolverine or other furbearers from buildings and other infrastructure has been successful and to trigger appropriate management if needed.

2.7.1 FEIS PREDICTIONS

The Back River FEIS predicted a not significant and low magnitude residual effect of attraction at a geographic extent of the Mine site footprint for wildlife (grizzly bears and wolverine) after implementation of mitigation measures, such as barriers/skirting on buildings and infrastructure to limit the attractiveness of the site.

2.7.2 METHODS

Environmental staff monitor skirting and fencing on a regular basis to evaluate whether mitigation measures to exclude wildlife (specifically bears and wolverine/furbearers) from buildings and other infrastructure has been successful, and to trigger appropriate management actions should changes to mitigation be necessary.

Building and skirting inspections were completed as a part of regular site wide inspections by Environment Department staff, in conjunction with waste management inspections, described in Section 2.6 (Figure 2.6-1).

During inspections, monitors walk the perimeter of the skirting/fencing looking for damage, downed fencing, animals, or animal sign inside the fence or building footprint. General inspection information recorded for each survey included date, time, and location. Where locations with damage to fence or skirting has been identified, the type of damage, type of material damaged, any animals or animal sign observed in the immediate area, potential causes of damage, and photos of the damaged area or any wildlife sign are recorded. Any damage to fences or skirting is reported to the Environment Department following inspection and communicated to the department responsible for the building and site services for repair.

Inspections were conducted in accordance with and using the inspection data sheet provided in the Building Skirting and Fencing Inspection SOP (B2Gold 2024g).

2.7.3 RESULTS AND DISCUSSION

During the 2024 reporting period, inspections of building and skirting were completed during 31 weeks at Goose and 6 weeks at MLA (Figure 2.6-1). Details on the specific locations where inspections were completed in conjunction with waste management surveys are reported in Appendix D.

Of the 37 weeks where inspections were completed, 27 weeks had locations where deficiencies were recorded (Figure 2.7-1), all of which were communicated to the responsible manager or site services for corrective action. Common deficiencies recorded in 2024 and the corrective actions implemented are outlined in Table 2.7-1. Photo 2.7-1 and 2.7-2 provide an example of maintained skirting at Goose camp and MLA camp respectively.

FIGURE 2.7-1 NUMBER OF DEFICIENCIES RECORDED AND RESOLVED DURING INSPECTIONS OF BUILDING AND SKIRTINGS IN 2024

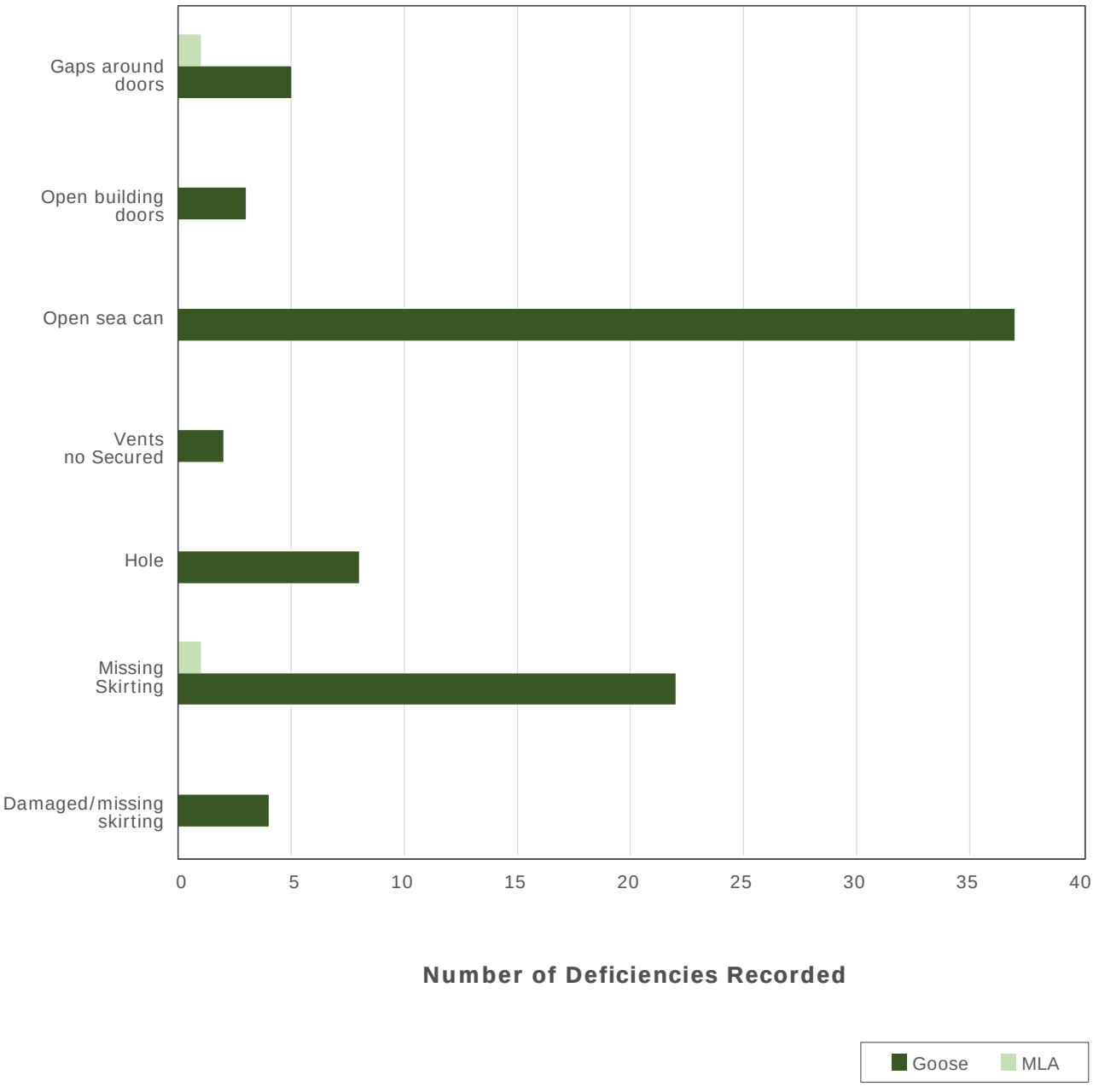


TABLE 2.7-1 SUMMARY OF PIRMARY OBSERVATIONS MADE DURING INSPECTIONS OF BUILDING AND SKIRTINGS IN 2024 AND ADAPTIVE MITIGATION

Primary Deficiencies Recorded	Actions
Damaged Skirting	Damaged skirting was repaired or replaced where necessary
Missing Skirting	Skirting was established where it was missing
Holes in Skirting	All holes were repaired
Vents Not Secured	Screening was replaced or resecured to cover all vents
Open Sea-Can Doors	Reminder to staff to ensure all doors are closed when not in use
Open Building Doors	Reminder to staff to ensure all doors are closed when not in use
Gaps Around Doors, Vents, and Hatches of Buildings	Gaps were secured and re-enforced with wood or metal

Photo 2.7-1 Maintained skirting at Goose camp, 2024.

Photo 2.7-2 Maintained skirting at MLA camp, 2024.

Signs of wildlife associated with building and skirting were recorded on four occasions, twice at the Goose incinerator, once at Major Drilling, and once at the Goose exploration camp. Signs of wildlife digging at one of the doors of the Goose incinerator were recorded on May 19 and June 2. The hole created by this was reported to site services and subsequently repaired. As summarized in Section 2.6, securing of the incinerator was ongoing throughout 2024, with improvements frequently made to ensure that wildlife continue to be effectively excluded.

On May 19, it was recorded that a small mammal gained access to a Major Drilling storage building and opened a survival kit containing food (as discussed in Section 2.6). It was noted during the inspection that gaps in the building around the doors and venting are likely how the animal gained access. A meeting with Major Drilling was held to outline the areas that required additional securing, and the gaps were subsequently repaired. Additionally, a small hole in the skirting of a building at the Goose exploration camp was observed on October 25 and had the tracks of a small mammal around it. The hole was reported to site services and subsequently repaired.

Mitigation and monitoring measures in place by B2Gold Nunavut was effective at excluding bears and wolverine or other furbearers from buildings and other infrastructure. During regular inspections of building and skirting, wildlife signs were recorded on four occasions (twice at the Goose incinerator, once at Major Drilling, and once at the Goose exploration camp), all of which were repaired and wildlife were not seen again at these locations.

2.8 NOISE MONITORING

NIRB Condition #10 requires B2Gold Nunavut to implement mitigation measures to reduce noise generated from project activities, equipment, and components during normal operations as well as during staged reduction events. Noise abatement measures developed to be implemented throughout the life of the Mine to meet safety regulations for Mine personnel and to reduce any disturbance to wildlife, as described in Section 6.2.2 of the WMMP Plan (B2Gold 2024a), include:

- Ensuring equipment is fitted with appropriate mufflers and silencers;
- Ensuring equipment is well maintained;
- Identifying enclosures, berms, acoustic screening, and shrouding where stationary sources require control;
- Strategic placement of waste rock piles to block plant sources of noise;
- The size of the WTGs will be selected to reduce potential effects of noise and disturbance;
- Housing stationary sources of noise in buildings; and
- Other possible general noise abatement measures that can be implemented onsite to minimize static noise due to generators, vehicles, and other sources.

Noise monitoring, as outlined in Section 7.3.2.5 of the WMMP Plan (B2Gold 2024a), is scheduled to be completed once during construction (presented here) and every third year of operations. The objectives of noise monitoring is to measure the amount of noise produced by the Mine at various distances from the Mine footprint to meet compliance requirements for personnel health and safety and to test the predictions of the FEIS and the Back River Energy Centre (EC) Addendum.

2.8.1 FEIS PREDICTIONS

Disturbance due to noise was evaluated in the FEIS for its potential to create habitat loss due to noise avoidance. The Back River FEIS predicted a not significant and low magnitude residual effect of disturbance, specifically by noise, from the Back River Project for all wildlife VECs.

The threshold for general Project noise used in the FEIS was 45 dBA. This noise level value was selected based upon the criteria outlined in the Environment Code of Practice for Metal Mines (Environment Canada 2010), which recommends that ambient noise from mining operations and its effect on wildlife should meet the objectives for residential areas. Specifically, the sound pressure level from mining activities should not exceed 55 dBA during the day and 45 dBA at night (Environment Canada 2010). Therefore, this assessment has taken a conservative approach and modelled the area where the sound pressure level occurs at 45 dBA and higher.

2.8.2 METHODS

The 2024 noise monitoring program was developed and completed following the guidance outlined in Section 7.3.2.5 of the WMMP Plan (B2Gold 2024a). Noise monitors were deployed in 2024 during the winter from April 6 to 13, and summer from June 17 to 29 at varying distances from Goose Camp. As outlined in the WMMP Plan, monitoring is to include sites at the following intervals to measure against potential effects predicted for specific wildlife groups in the FEIS and the EC Addendum:

- Birds: along the 45 dBA contour, at 1 km and 3 km;
- Caribou: at 1 km, 3 km, 5 km, and 14 km; and
- At a control site at a distance greater than 14 km from the site.

In winter, measurements were completed at six locations along the Winter Ice Road (WIR) that extends northwest from the Goose Site, at distances of 0 km, 1 km, 3 km, 5 km, 14 km, and 16 km (control site). For the winter monitoring program, all monitoring locations were situated along the WIR, as it provided easy access to deployment locations at the pre-determined distances from the Goose Site as no helicopter was stationed at the site at the time and snow, changing weather conditions, and time constraints limited the use of other vehicles, such as snowmobiles, to access alternate locations. Monitors were deployed approximately 100 m off the WIR to reduce the level of background traffic noise captured; however, measurements made in the winter do still include noise attributed with the WIR. In summer, monitoring was repeated at all of the WIR locations, with five additional sites south of the Goose Site at 0 km, 1 km, 3 km, 5 km, and 14 km.

Larson Davis Model 831 sound level meters were used for the monitoring program. Noise monitors were placed away from large reflecting surfaces to minimize the influence of sound reflections, which could artificially amplify or distort the measured sound levels. The noise meters were set to measure the A-weighted and C-weighted ambient L_{eq} (equivalent continuous sound pressure level), L_{max} (absolute maximum in dBA), and L_{min} (absolute minimum) sound levels on “slow” response and were programmed to measure and store the sound levels in 1-minute intervals. A-weighting is the most commonly used parameter when a single-number overall sound level is needed, since it approximates the human perception of sound. C-weighting is used to evaluate sounds containing strong low-frequency components.

Preferred weather conditions included wind speeds less than 20 km/h, relative humidity less than 90%, no precipitation (rain or snow), and temperatures within the manufacturer's specifications. Measurement periods were extended when there were durations of high wind speeds, in an attempt to get at least 24 hours under suitable conditions. Meteorological data were obtained from the meteorological stations located at the Goose Site for the duration of the monitors deployment. The data collected during deployment was filtered to only include noise levels collected when wind speeds were below 20 km/hr to help account for wind noise and variation in wind speeds during the deployment period.

Noise monitors recorded all environmental and anthropogenic noise sources, including noise produced by the Mine, wind, vehicle traffic (e.g., WIR traffic), helicopter noise, and other noise attributed to surrounding activities. In most cases, these cannot be differentiated from each other; therefore, results represent overall noise and do not represent Mine noise alone. In some cases, specific anthropogenic noise sources that lead to skewing of the results could be identified, and these details are reported where available. A threshold of 45 dBA was used to determine if construction noise exceeded the threshold identified by Environment Canada for humans at night (Environment Canada 2010).

2.8.3 RESULTS AND DISCUSSION

Continuous noise level measurements were captured for a minimum of 24 hours (where possible) at the six locations in the winter (April 6 to 13, 2024) and 11 locations in the summer (June 17 to 29, 2024; Figure 2.8-1). A reduced deployment time of 16 hrs occurred at one site, N 5KM, in the summer due to a wildlife encounter preventing access to the site (Section 5.6 and 9).

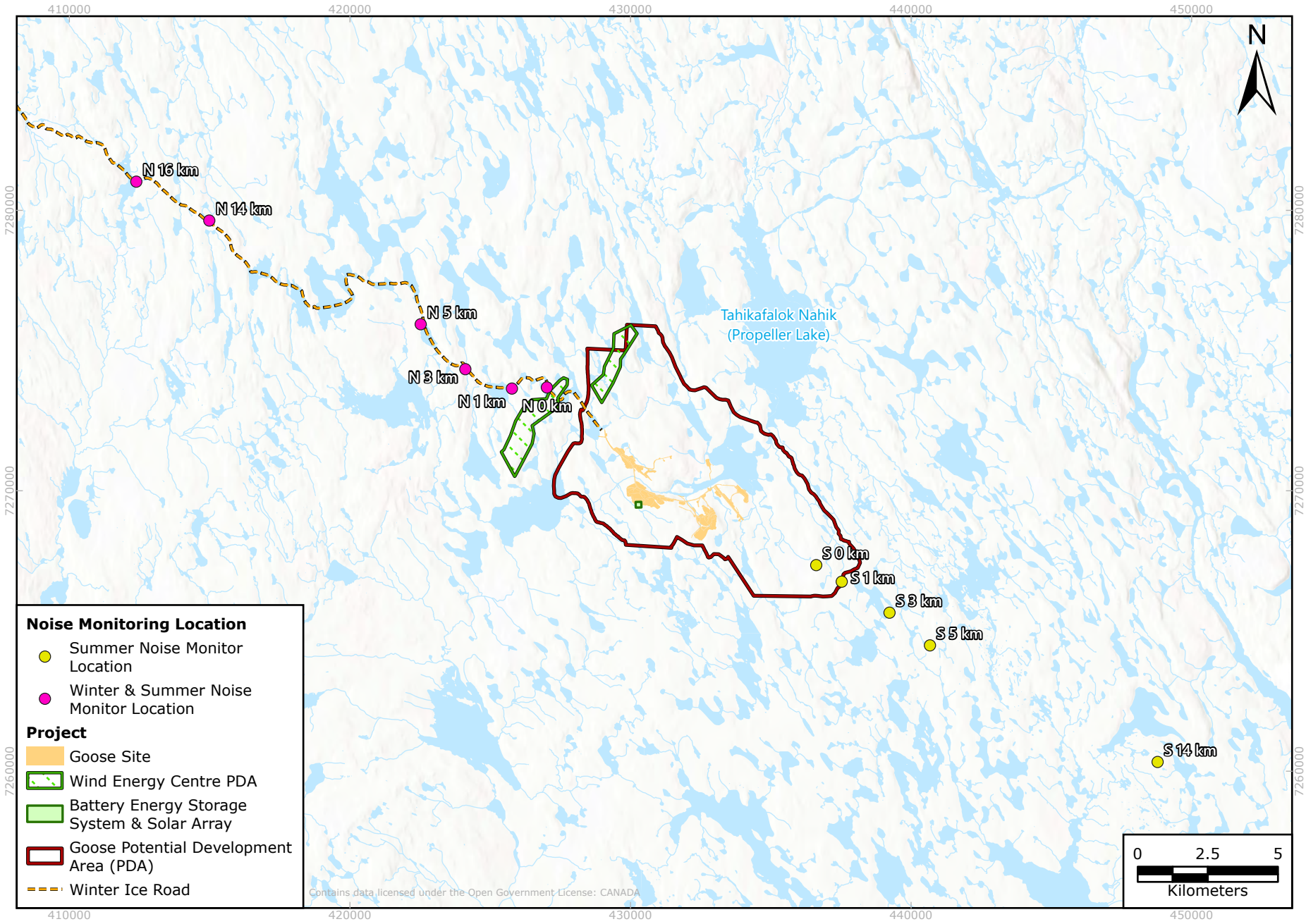
The logarithmic average L_{eq} for time periods where the average wind velocity was below 20 km/hr is presented in Figure 2.8-1. Average noise levels were typically higher north of the Mine when compared to south, with no clear trend at the noise monitoring stations in the north based on distance from the Mine. However, in the south, average noise levels decreased as distance from the Mine increased (Figure 2.8-2).

Noise levels were typically higher at the monitoring locations along the WIR during the winter when compared to the summer monitoring data for all locations. This is likely due to higher anthropogenic noise sources associated with vehicle use along the WIR. In the summer, the absence of vehicle use on the WIR likely contributed to lower noise levels compared to the winter.

During the summer, there was one site that had high noise levels, located 14 km north (site N 14 km). At this site, a sound pressure level of 54 dBA L_{eq} was recorded, while wind speeds were low (9.5 km/hr). Due to this anomaly, helicopter flight data was reviewed to investigate further. The review of helicopter flight data showed that this peak in noise correlated with a helicopter that was operating and landed in the area for a short time period (i.e., noise levels increasing as the helicopter entered the area, noise levels peaking and sustaining while it was landed, and noise levels decreasing as it departed).

Removing this time period when the helicopter noise is present, the average L_{eq} decreases to 40.7 dBA, which is similar to what was recorded during the winter (40.1 dBA).

FIGURE 2.8-1 2024 NOISE MONITORING LOCATIONS



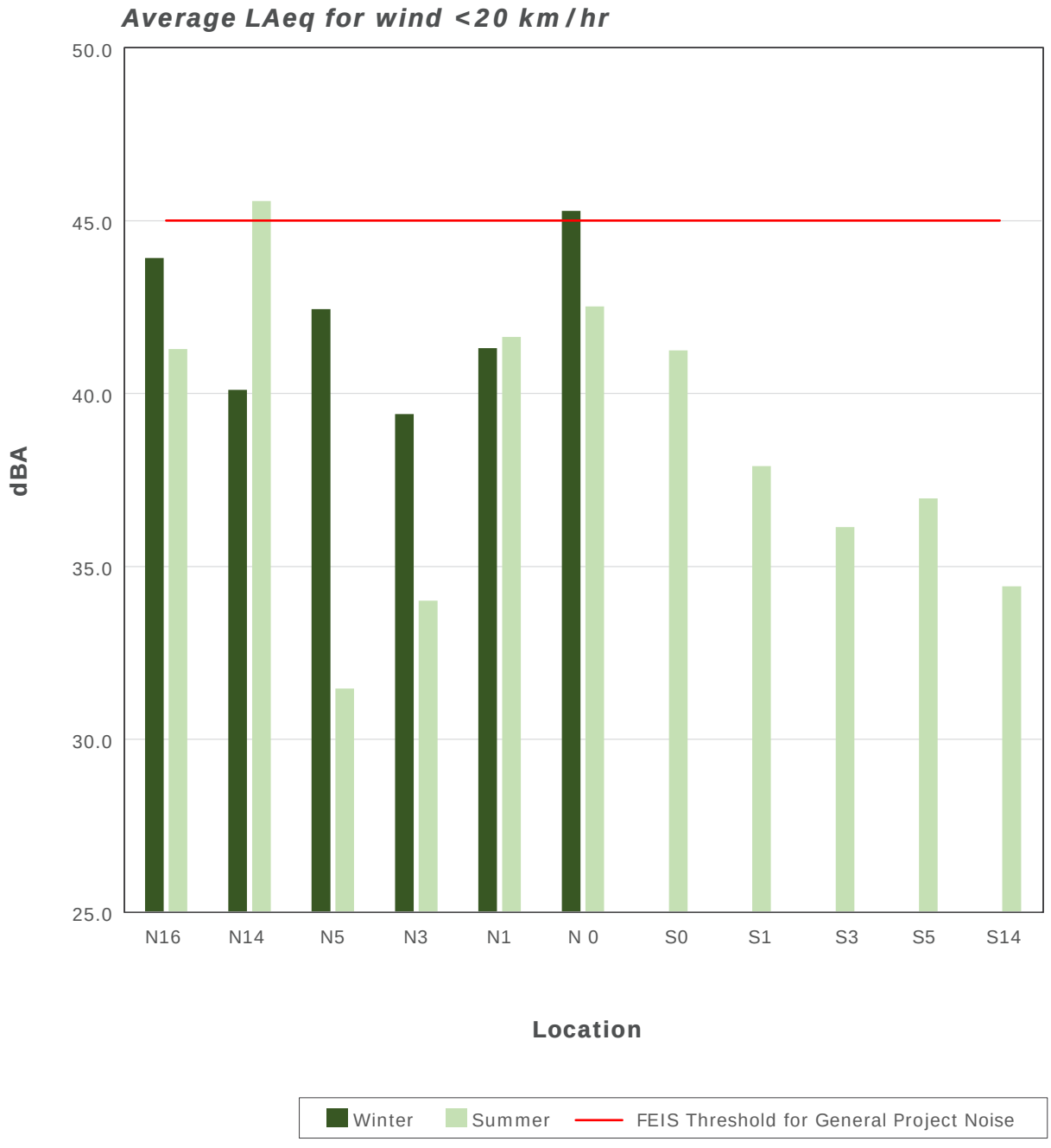
ERM

CLIENT: B2GOLD
GIS NUMBER: BAC-23-642-02

DATE: 03/19/2025

PROJECTION: NAD 1983 UTM Zone 13N
SCALE: 1:190,000 when printed at 8.5x11

FIGURE 2.8-2 SUMMARY OF OVERALL LOGARITHMIC AVERAGE LEQ NOISE LEVELS



Overall, average L_{eq} for noise levels were below the threshold of 45 dBA for general Project noise used in the FEIS at all locations, from near the Mine to 14 km from the Mine (Figure 2.8-2). Only two locations had an average L_{eq} slightly above this threshold, with a L_{eq} of 45.3 dBA at N 0KM in the winter and 45.6 dBA at N 14KM in the summer. Location N 0KM is located along the 45 dBA contour modeled in the FEIS and along the WIR, potentially capturing short-term noise associated with WIR traffic. The higher dBA at N 14KM in the summer is largely attributed to the helicopter presence previously noted; however, after removing the time period when the helicopter was present, the average L_{eq} decreases to 40.7 dBA, which is below the threshold of 45 dBA.