DE BEERS GROUP

March 31, 2021

Angela Love, EP
Regulatory Specialist
Mackenzie Valley Land and Water Board
P.O. Box 2130
Yellowknife, NT X1A 2P6

Via Email: angela.love@mvlwb.com

Dear Ms. Love:

RE: Gahcho Kué 2020 Annual Wildlife Report

De Beers is pleased to provide the Gahcho Kué 2020 Annual Wildlife Report, in accordance to the approved Wildlife and Wildlife Habitat Protection Plan, V.3.1, and Wildlife Effects Monitoring Program, V.2, under Land Use Permit MV2005C032. This report summarizes wildlife monitoring and management activities conducted at the Gahcho Kué Mine in 2019. This report has also been submitted to the Government of Northwest Territories under the Wildlife Research Permit WL500669 and General Wildlife Permit GW500697.

If you have any questions regarding this submission, I can be contacted at william.liu@debeersgroup.com or (867) 445-1485.

Sincerely,

William Liu
Regulatory Specialist
De Beers Canada Inc.

CC. Adrian Lizotte – GNWT ENR North Slave

DE BEERS GROUP

Gahcho Kué Mine

2020 Annual Wildlife Report

March 2021

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1 INTRODUCTION

De Beers Group operates the Gahcho Kué Mine (Mine), located at Kennady Lake about 280 kilometres (km) northeast of Yellowknife, Northwest Territories. Kennady Lake is north of the East Arm of Great Slave Lake and the small community of Lutsle K'e by approximately 140 km (Map 1-1). Construction of the Mine began in September of 2014, following the issuance of the Type A Water Licence (MV2005L2-0015) and Type A Land Use Permit (MV2005C032) by the Mackenzie Valley Land and Water Board (MVLWB) for mining and milling activities. Mine activities and infrastructure include dewatering of Kennady Lake, open pit mining of three kimberlite pipes, construction and operation of Coarse and Fine Processed Kimberlite (PK) Facilities, Mine Rock Piles, accommodation and maintenance facilities, all-season airstrip, site roads and annual winter access road (Map 1-2).

Since issuance of the Type A land use permit (August 11, 2014) and Type A water licence (September 24, 2016), various updates and changes to planned activities have been made. Most of these changes are accommodated through updates to the Environmental Monitoring and Management Plans; however, in two cases De Beers sought and received land use permit amendments. The first amendment was to add additional fuel storage capacity (LUP amendment #1) and the second amendment was to extend the life and capacity of the Fine PK facility (Land Use Permit Amendment #2, 2017). Both amendments were issued by MVLWB in 2017.

In 2017, De Beers discovered a geotechnical issue within the pits which required an adjustment of the pit designs. The pit slopes were adjusted outward, leading to an increase in the volume of mine rock that had to be removed and placed on the surface. The west mine rock pile was increased in size, and subsequent adjustments were made to other aspects of the mine plan. In March 2018, De Beers submitted an application for a Type A water licence amendment #1 and a Type A land use permit amendment #3 to accommodate those changes. A second water licence amendment application (WL amendment #2) was submitted in May of 2018 to accommodate a short term increase in water use until such time as amendment #1 could be approved. Water licence amendment #2 was approved in July 2018. Land use permit amendment #3 was approved by the Board on November 7, 2018 and the water licence amendment #1 was approved by the responsible Minister on December 14, 2018 (MVLWB, 2018).

In 2019, additional economically viable ore was defined at the north side of 5034 pit. This ore is an extension of the 5034 orebody. It is located between the 5034 pit and the Tuzo pit. Incorporation of this ore into the mine plan will require removal of additional mine rock and the deposit of additional processed kimberlite. The mine plan has therefore been adjusted to increase the capacity of the fine processed kimberlite containment facility, to incorporate additional mine rock into the current coarse processed kimberlite pile, to adjust the pit footprint and depth, and to extend the life of mine. In 2020, De Beers submitted a Type A water licence amendment application (WL amendment #3) and Type A land use permit amendment (LUP amendment #4) to the MVLWB. On September 18, 2020 received a letter confirming the MVLWB was satisfied with the preliminary screening.

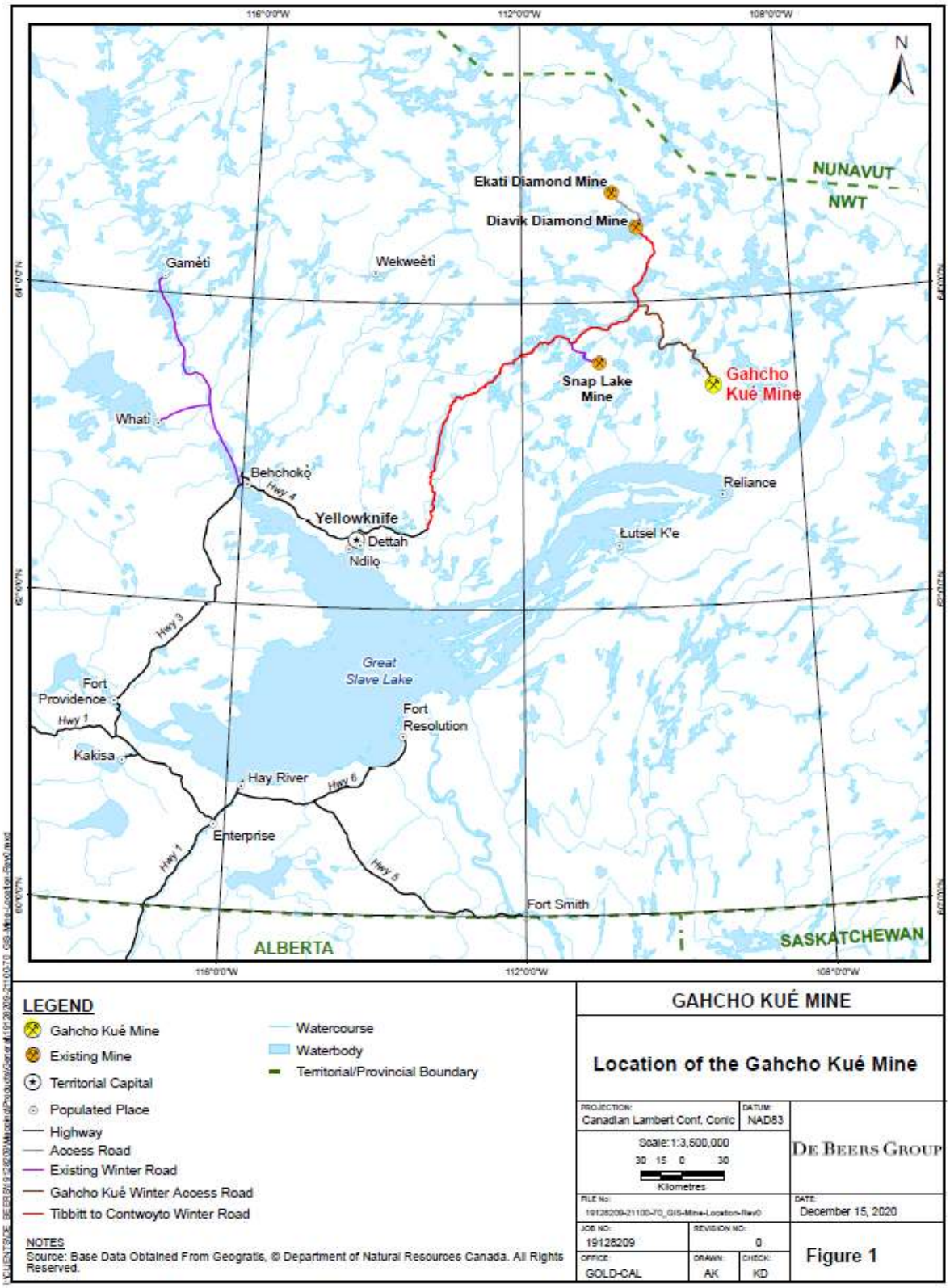
The Wildlife and Wildlife Habitat Protection Plan (WWHPP) describes wildlife mitigation and monitoring of direct effects within the Mine footprint, while the Wildlife Effects Monitoring Program (WEMP) describes monitoring of indirect effects that take place outside of the Mine footprint (ENR 2014). Pursuant to the WWHPP and WEMP (De Beers 2014a, b), this report describes mitigation and monitoring activities at the Mine and in the regional study area from January to December 2020 and includes:

- a summary of all the monitoring programs that occurred at the Mine;

- updates or recommended changes to mitigation, environmental design features, or other actions required to meet the WWHPP and WEMP objectives;
- occurrences of human-wildlife interactions, and incidents, accidents, injuries, and mortalities involving wildlife;
- disturbances to wildlife and wildlife habitat that were not predicted in the Environmental Impact Statement (EIS; De Beers 2010); and
- observations of recreational, traditional, and non-traditional activities near the Mine, including the winter access road.

A comprehensive analysis of mitigation and monitoring activities will be undertaken every five years. The first comprehensive analysis was done in 2019, with the next analysis scheduled for 2024. The comprehensive analysis report investigates Mine-related effects to wildlife, using all the relevant data available. In addition to programs designed for monitoring effects to wildlife from the Mine, monitoring of environmental indicators and contributed programs, such as small mammal monitoring, are completed to characterize natural changes or to contribute to regional monitoring initiatives. This schedule does not preclude focussed data analysis for specific issues or questions as they arise.

Map 1-1 Location of the Gahcho Kué Mine



Map 1-2 2020 Gahcho Kué Mine Site Infrastructure

Wildlife monitoring for the Mine was developed in consultation with regulators and indigenous communities. As a participant in wildlife monitoring workshops hosted by the Department of Environment and Natural Resources (ENR) and Government of the Northwest Territories (GNWT), De Beers updated monitoring programs for the Mine to be consistent with, and to support, regional monitoring for the assessment and management of cumulative effects by the GNWT. These changes included replacing past Mine-specific grizzly bear and wolverine monitoring with regional hair snagging programs for these species, and the addition of the Arctic Program for Regional and International Shorebird Monitoring (PRISM) in 2015. De Beers will continue to participate in ENR led monitoring initiatives and will update the wildlife monitoring and mitigation programs accordingly. However, in February 2021, the GNWT hosted wildlife monitoring workshops where it was determined that grizzly bear and wolverine hair snagging would be discontinued.

1.1 Content

The 2020 Annual Wildlife Report includes site-specific WWHPP and regional WEMP activities. The monitoring tasks may be continuous or seasonal, and on an annual or multi-year cycle. Supporting information is also collected through other monitoring programs (Table 1-1). This report will include descriptions and summaries of all of the wildlife monitoring that occurred during 2020.

Table 1-1 Schedule of Wildlife Monitoring under each Relevant Management Plan

Monitoring	Corresponding Monitoring Plans or Programs	Monitoring Schedule	Completed in 2020	Report Section
Mine Development Area and Direct Habitat Loss	WWHPP	Mine development area updates will be provided at the end of construction and updated every year.	Yes	3.2
Noise	WWHPP	Noise monitoring is anticipated to take place on a multi-year schedule at the Mine during operation in Years 1 (2017), 5 (2021), and 8 (2024).	No	3.3.1
Dust	WWHPP Vegetation and Soils Monitoring Program	Dustfall collectors are monitored at the Mine annually and are measured every 30 days during the growing season (May to October).	Yes	3.3.2
Wildlife Sightings	WWHPP	Wildlife sightings are monitored continually and reported annually.	Yes	3.3.3
Site Surveillance	WWHPP	Monitoring is completed weekly, and reported annually.	Yes	3.3.4
Public Use of the Winter Access Road	WWHPP	Monitoring is conducted daily when the winter access road is operational (usually February to March).	Yes	3.3.5
Wildlife Incidents	WWHPP	Wildlife incident monitoring has been ongoing and will continue to be undertaken as required. Wildlife incidents are reported immediately to ENR, in addition to being reported annually.	Yes	3.3.6

Table 1-1 Schedule of Wildlife Monitoring under each Relevant Management Plan

Monitoring	Corresponding Monitoring Plans or Programs	Monitoring Schedule	Completed in 2020	Report Section
Caribou	WWHPP WEMP	Caribou aerial surveys were completed from 1999 to 2005 and 2010 to 2012. As there were likely insufficient caribou in the study area to detect a change in distribution, aerial surveys were not undertaken from 2013 to 2020. De Beers is waiting for direction from the ENR Zone of Influence Technical Task Group for guidelines on future caribou aerial surveys.	No	-
		Aerial reconnaissance surveys are completed annually prior to the winter access road opening. The purpose of these surveys is to determine if caribou are present near the winter access road in numbers that would trigger caribou behaviour monitoring.	Yes. Surveys did trigger behaviour monitoring in 2020	3.4.1
		Caribou interactions and mortalities at the Mine are monitored through the wildlife sightings log, site surveillance, wildlife interactions and behaviour monitoring.	Yes	3.3.3, 3.3.4, 3.3.6
		Winter access road behaviour monitoring was first completed in 2014 and will occur annually when triggers for group size are met. Behavioural monitoring on the winter access road or at site was last completed in 2019.	No. Although triggered, due COVID-19 restrictions was not done	3.4.2
		Snow berm measurements were recorded in 2020.	Yes	3.4.3
Grizzly Bear	WWHPP WEMP	Grizzly bear interactions and mortalities at the Mine are monitored through the wildlife sightings log, site surveillance, and wildlife incidents.	Yes	3.3.3, 3.3.4, 3.3.6
		Grizzly bear hair snagging monitoring was completed in 2013 and 2014. Reports of the monitoring are completed by the University of Calgary in collaboration with De Beers. Grizzly bear monitoring in 2019 was coordinated with ENR and other industrial operators. Decision to discontinue hair snagging program made in 2021.	No	3.5
Wolverine	WWHPP WEMP	Wolverine interactions and mortalities at the Mine are monitored through the wildlife sightings log, site surveillance, and wildlife incidents.	Yes	3.3.3, 3.3.4, 3.3.6
		Wolverine hair snagging monitoring was completed in 2013 and 2014. Wolverine hair snagging monitoring was completed in 2019 and was coordinated with ENR and other industrial Operators. Wolverine hair snagging monitoring was not completed in 2020. Decision to discontinue hair snagging program made in 2021.	No	3.6

Table 1-1 Schedule of Wildlife Monitoring under each Relevant Management Plan

Monitoring	Corresponding Monitoring Plans or Programs	Monitoring Schedule	Completed in 2020	Report Section
Raptors	WWHPP WEMP	Raptor interactions and mortalities at the Mine are monitored through the wildlife sightings log, site surveillance, and wildlife incidents, as well as incidents of raptor nesting activity on Mine infrastructure.	Yes	3.3.3, 3.3.4, 3.3.6
		Raptor nest surveys in the regional study area were completed in 2015. Results were contributed to ENR for their regional nest monitoring database. A RSA was conducted by ENR in 2020. Regional monitoring is anticipated to continue every five years with the next nest surveys scheduled for 2025.	No	3.8
Upland Birds	WWHPP WEMP Migratory Bird Nest Management Plan	Upland bird interactions and mortalities at the Mine are monitored through the wildlife sightings log, site surveillance, and wildlife incidents.	Yes	3.3.3, 3.3.4, 3.3.6
		Vegetation removal in areas surrounding Lakes D2/D3 and E1 was completed in 2015, 2016 and 2017 to fulfill commitments made in the Migratory Bird Nest Management Plan. Vegetation removal will continue as needed.	No	3.9
		De Beers will deploy bird deterrent devices, as per the Migratory Bird Nest Management Plan, to mitigate the risk of birds nesting in the remaining low-lying vegetation or on the ground during the spring in areas anticipated to flood.	Yes	3.9
		Arctic PRISM surveys were completed in 2017 and in 2019.	No	3.7
Small Mammals	WEMP	Monitoring and reporting of small mammal abundance will be completed annually. All small mammal samples collected are provided to ENR for identification and analysis.	Yes	3.10
Environmental Indicators	WEMP	Annual monitoring of weather-related variables began in 2015 and has continued since. Reporting is annual.	Yes	3.11
Measures of Mine Activity	WEMP	Annual monitoring of staff numbers, fuel consumption, volume of mine rock removed and ore processed, and domestic water consumption began in 2015 and has continued since. Values are reported annually.	Yes	3.12

PRISM = Arctic Program for Regional and International Shorebird Monitoring; ENR = Department of Environment and Natural Resources, Government of the Northwest Territories; WEMP = Wildlife Effects Monitoring Program; WWHPP = Wildlife and Wildlife Habitat Plan.

1.2 Engagement

De Beers signed a legally binding environmental stewardship agreement, Ni Hadi Xa Agreement, with five indigenous parties, including Deninu Kué First Nations (DKFN), Łutsel K'e Dene First Nation (LKDFN), North Slave Métis Alliance (NSMA), Northwest Territory Métis Nation (NWTMN) and the Tłı̨chǫ Government (TG), in 2014. Yellowknives Dene First Nation (YKDFN) became the signatory of the Agreement in February 2019. The purpose of Ni Hadi Xa is to provide a meaningful way for indigenous communities to participate in the ongoing development and review of monitoring programs and management plans, review data generated from those plans, and to allow for Traditional Knowledge to be incorporated into operations. Ni Hadi Xa also creates an opportunity to build on collaborative relationships, increase efficiency in regulatory processes, and provide more opportunity for Traditional Knowledge monitoring. Ni Hadi Xa currently employs one full-time environmental monitor, Garrick Lafferty from Hay River, NT, stationed at the site and works closely with the De Beers environment team. Two Traditional Knowledge monitors and one Traditional Knowledge coordinator, Herman Catholique, Denecho Catholique, and Thomas Lafferty from Łutsel K'e, NT are monitoring any potential impacts of the mining operations based in the Ni Hadi Xa Cabin, established approximately 40 km north of the mine.

De Beers engaged with Indigenous communities in multiple forums throughout 2020 as outlined in the Engagement Plan (De Beers 2015). Due to COVID-19 travel and social gathering restrictions, De Beers was not able to host previously scheduled in person engagement events, such as mine site visits, community visits and fish tasting after March 2020. Majority of the engagement activities were undertaken through virtual platforms.

2 SPECIES OF CONCERN

The Northwest Territories *Species at Risk Act* (2010) provides protection for wild animals, plants, and other species classified as at risk in the NWT. The General Status Rank of wildlife and plant species targeted for conservation by the GNWT is updated regularly (NWT SAR 2021). Species may be considered to be of concern as a result of their territorial, national, or Committee on the Status of Endangered Wildlife in Canada (COSEWIC) status. There are nine species of concern that could potentially interact with the Mine, including grizzly bear, barren-ground caribou, wolverine, horned grebe, peregrine falcon, red-necked phalarope, rusty blackbird, short-eared owl and bank swallow. These species and their status are provided in Table 2-1.

Table 2-1 Species of Concern for the Gahcho Kué Mine

Species	NWT Species at Risk	Federal Species at Risk Act	COSEWIC	Potential Mine Impacts	WEMP Monitoring	WWHPP Monitoring
Mammals						
Barren-ground Caribou	threatened	no status	threatened	• may be affected by habitat loss • affected by increased access to harvesting • sensitive to noise, disturbance and human activity	Monitoring of Public use on Winter Access Road, Behaviour Monitoring, Snow Berm Measurements	habitat loss; surveillance monitoring
Grizzly Bear (western population)	special concern	no status	special concern	• may be attracted to the Mine if food is available, resulting in mortality risk • sensitive to disturbance, particularly when accompanied by young or during denning • long generation time means one individual may be affected by disturbance seasonally over multiple years, resulting in potential regional population effects	Hair snagging surveys (decision at 2021 workshop hosted by the GNWT to discontinue)	habitat loss; surveillance monitoring
Wolverine	not at risk	no status	special concern	• may be attracted to the Mine if food or shelter are available, resulting in mortality risk	Hair snagging surveys (decision at 2021 workshop hosted by the GNWT to discontinue)	habitat loss; surveillance monitoring
Birds						
Bank swallow	no status	no status	threatened	• may be attracted to nesting on Mine infrastructure, resulting in risk of injury/mortality • may be affected by habitat loss • sensitive to noise and disturbance and human activity during nesting	PRISM	surveillance monitoring (particularly for nesting activity), Mine Pit Deterrence Program
Horned Grebe (western population)	no status	no status	special concern	• risk of mortality or destruction of nests and eggs	PRISM	habitat loss; surveillance monitoring

Species	NWT Species at Risk	Federal Species at Risk Act	COSEWIC	Potential Mine Impacts	WEMP Monitoring	WWHPP Monitoring
Peregrine Falcon (anatum-tundrius complex)	no status	Schedule 1, special concern	special concern	• may be attracted to nesting on Mine infrastructure and open pits, resulting in risk of injury/mortality	ENR regional nest survey	habitat loss; surveillance monitoring (particularly for nesting activity), Mine Pit Deterrence Program
Red-necked Phalarope	no status	no status	special concern	• alteration of shoreline habitat for breeding • risk of mortality or destruction of nests and eggs	PRISM	habitat loss; surveillance monitoring
Rusty Blackbird	no status	Schedule 1, special concern	special concern	• may be attracted to nesting on Mine infrastructure, resulting in risk of injury/mortality • currently experiencing population declines as a result of changing environmental conditions on breeding and overwintering habitats	PRISM	habitat loss; surveillance monitoring
Short-eared Owl	no status	Schedule 1, special concern	special concern	• may be affected by habitat loss • sensitive to noise and disturbance and human activity during nesting	PRISM	habitat loss; surveillance monitoring

Source: COSEWIC (2021), Government of Canada (2021) and NWT SAR (2021).

NWT = Northwest Territories; PRISM = Arctic Program for Regional and International Shorebird Monitoring; COSEWIC = Committee on the Status of Endangered Wildlife in Canada; WEMP = Wildlife Effects Monitoring Program; WWHPP = Wildlife and Wildlife Habitat Plan.

3 MONITORING AND RESULTS

3.1 Local and Regional Study Areas

The wildlife effects monitoring regional study area (RSA) is defined by a rectangle with an area of 5,600 km^2 (70 km by 80 km), centered on the Mine site (Map 3-1). The local study area (LSA) comprises a 200 km^2 area within the RSA. The LSA was defined to capture the direct and immediate indirect effects from the Mine on wildlife and wildlife habitat. Both the RSA and LSA were selected for baseline monitoring programs to support the EIS for the Mine (De Beers 2010). The RSA is expected to capture the predicted maximum spatial extent of the combined direct and indirect effects from the Mine on wildlife.

3.2 Direct Habitat Loss

3.2.1 Mine Development Area

Wildlife habitat loss will occur from the construction of the Mine and from the flooding of areas resulting from dewatering of Kennady Lake and associated water diversions. Monitoring how much area is altered by the Mine is required to confirm that the permitted Mine development area has not been exceeded under Land Use Permit (MV2005C0032) and surface leases.

Methods

The Mine development area will be delineated through aerial photographs, satellite imagery, or ground surveys, and calculated using GIS software. The actual area of the Mine footprint will be compared to the permitted area, and monitored over the life of the Mine at key phases of development (e.g., end of construction and periodic points in operations [De Beers 2014a]).

Results

The Mine currently has a land footprint of 572.2 hectares (ha), and water (deep and shallow water) footprint of 639.9 ha, for a total footprint of 1,212.1 ha (Table 3-1). This is currently 94% of the total 1,235.4 ha predicted Project footprint in the approved 2020 Updated Project Description as part of the Water Licence Amendment.

The largest amount of disturbance, by area, has been to deep water, which is the dominant Ecological Land Class in the LSA (De Beers 2010). The footprint calculations in 2020 included all of Areas 1-7 of Kennady Lake, which have been disturbed through de-watering or storage of water for the Water Management Pond.

Map 3-1 Wildlife Effects Monitoring Program Study Areas

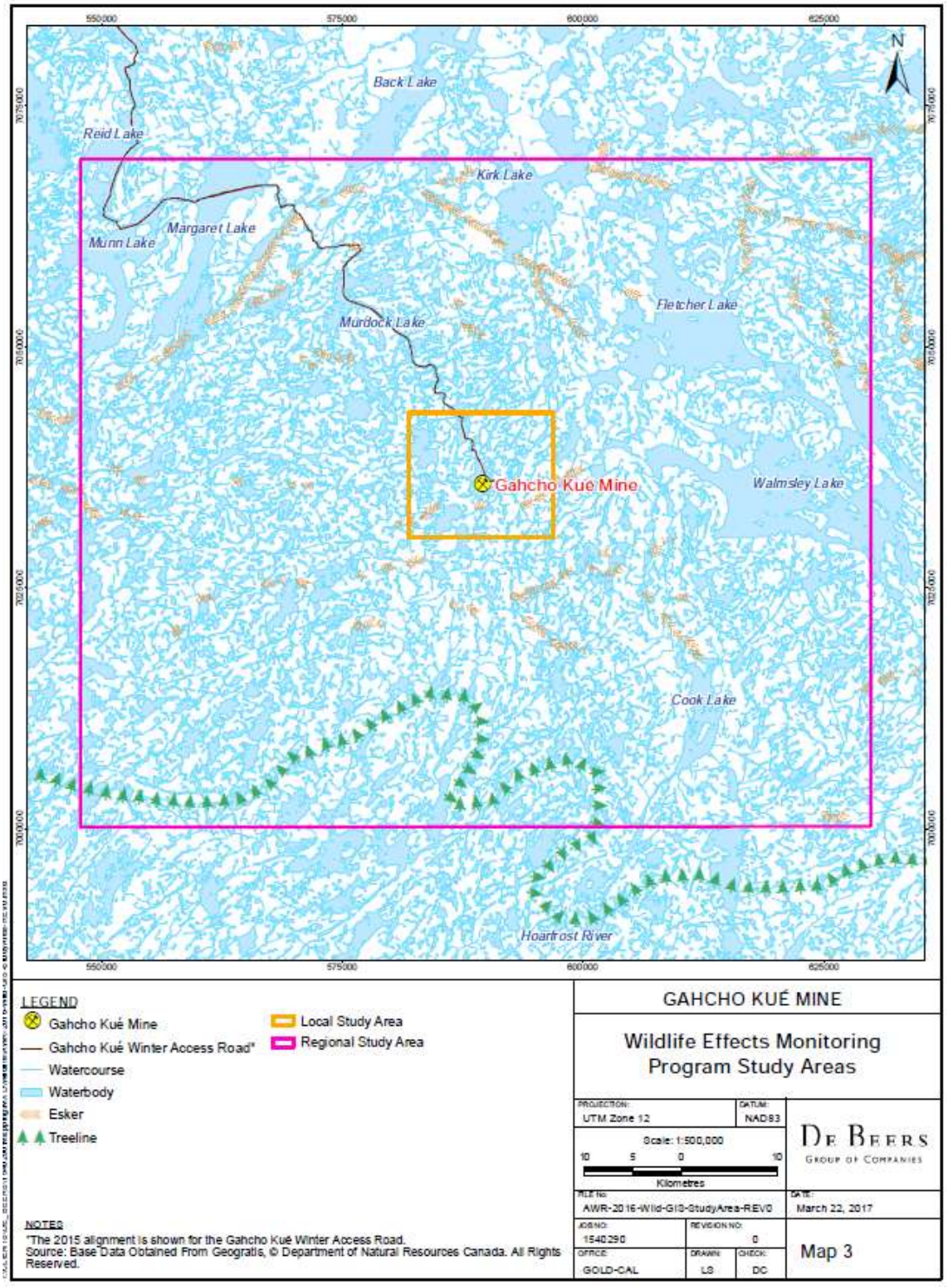


Table 3-1 Expected and Actual Loss of Habitat Types Associated with the Mine Footprint to the end of 2020

Ecological Land Class	Expected Distrubance (ha)a	Actual Disturbance (ha)b	Difference between Actual and Expected Disturbance (ha)
Bedrock Association	4	7.2	3.2
Birch Seep	26.1	30.9	4.8
Boulder Association	6.1	5.4	-0.7
Deep Water	503.2	476.7	-26.5
Heath Bedrock	31	47.4	16.4
Heath Boulder	18.6	23.0	4.4
Heath Tundra	58.8	86.2	27.4
Peat Bog	81.8	103.7	21.9
Sedge Wetland	132.1	106.6	-25.5
Shallow Water	193.9	163.3	-30.6
Spruce Forest	45.4	38.4	-7
Tall Shrub	39.5	34.6	-4.9
Tussock Hummock	85.9	78.6	-7.3
Esker Complex	0	0	0
Unclassified	9	10.1	1.1
Total	**1,235.40**	**1,212.11**	**-23.29**

(a) Based on the 2020 Updated Project Description for the Gahcho Kué Project (De Beers 2020)

(b) Delineated through ground surveys and calculated using GIS software.

ha = hectare

3.3 Indirect Habitat Loss

3.3.1 Noise

Noise is believed to cause sensory disturbance to some wildlife species, and may result in avoidance or reduction of time spent in otherwise suitable habitat. Although noise was not predicted to be a primary driver of indirect habitat loss for any of the wildlife valued components at the Mine, it is still a form of potential disturbance that should be minimized. Activities at the Mine that will generate noise include aircraft, vehicles, generators, blasting and the general presence of people.

Baseline noise levels were established by monitoring ambient noise at the Mine site as part of the EIS. A continuous, 24-hour assessment of baseline noise was completed at selected sites in June 2010. Using known sound emissions from anticipated Mine equipment and infrastructure, a model was developed that predicted the maximum distances Mine noise would attenuate to background levels (Appendix 7.II; De Beers 2010).

Monitoring of noise was completed in Year 1 of Mine operations in 2017, with future assessments planned for Year 5 (2021), and Year 8 (2024) of the operation phase to confirm EIS predictions and inform management practices at site (De Beers 2010). Methods and results can be found in the 2017 Wildlife Report.

3.3.2 Dust

The Mine will create dust through various sources including blasting and crushing rock, road construction, and traffic. Through engagement with communities and government, concerns have been expressed about the effects of dust on the environment and wildlife health, particularly caribou.

De Beers is committed to minimizing the amount of dust; however, dust cannot be completely eliminated and is predicted to settle in the area within and near the core Mine site. Fugitive dust will be reduced through the application of water in the area surrounding the Mine. Monitoring is conducted to measure the extent of fugitive dust deposition from emissions.

Methods

As described in the Vegetation and Soils Monitoring Program Version 3 (VSMP) (De Beers 2014), dustfall collectors were deployed in August 2013 and monitoring has continued through 2020.

Dustfall was measured approximately every 21 to 40 days throughout the growing season (May to October). In addition, dustfall was collected over the approximately 250 day winter period (2015-2019). Dust deposition is measured at nine sampling stations, at distances of 0 m, 50 m, 150 m, 500 m, 1 km, 5 km, 10 km, 15 km, and 20 km from the Mine. Dust deposition results from 2013 to 2014 were used as baseline data for comparing dustfall values collected during construction and operation. Dust deposition data will be used to determine if changes in plant communities and soil chemistry are related to dust from the Mine, and as a potential mechanism of the zone of influence on caribou (Golder 2019).

To examine the spatial and temporal patterns of dust deposition, geometric mean fixed dustfall deposition rates were examined both graphically and statistically. For 2020 data, spatial patterns of the dust deposition results were examined for the entire study area and within sampling areas. Temporal patterns were examined by comparing the geometric mean fixed dustfall deposition rate among sampling seasons across years: 2013 to 2014 as baseline years, 2015 and 2016 to represent mine construction, and 2017 to 2020 for Mine operations. To examine the spatial patterns of dust deposition rates with increasing distance from the Mine, regression analysis was conducted using R (R Core Team 2020). Bayesian linear mixed-effects regression (Chung et al. 2013) was performed with fixed dust deposition rates (mg/100 cm^2/30 days) and distance from the Mine (km). Fixed dustfall values greater than 122.3 mg/100 cm^2/30 days were considered anomalous outliers (n = 5) and omitted from analysis, based on the calculated statistical distribution defined by the mean and three standard deviation units.

Results

Dustfall is reported annually as part of the Vegetation and Soils Monitoring Program report (De Beers 2020). The results provided herein represent a summary of key findings from that report. Dustfall collection jars were deployed and collected four times at all nine sampling areas over the course of the 2020 monitoring year. Collections occurred over four periods beginning:

- September 22, 2019 to June 8 and 11, 2020 (winter);
- June 8 and 11, 2020 to July 13, 2020 (spring/early summer);
- July 13, 2020 to August 6, 2020 (summer); and
- August 6 to September 7 and 12, 2020 (fall).

A total of 52 samples (including duplicates) were collected and submitted for dustfall analysis (none were damaged in the 2020 sampling program).

In 2020, 10 of 39 (25.6%) measured values of fixed dustfall deposition during spring, summer, and fall were below the detection limit of 3.0 mg/100 cm^2/30 days (includes duplicate samples). In 2019, 20 of 28 (71.4%) measured values of fixed dustfall deposition during spring, summer, and fall were below the detection limit. In general, dustfall deposition increased from baseline through construction (2015-2016) and into the initial phase of construction and operation (2017-2018). Dustfall rates have declined substantially since 2018 and are within or below the range of baseline values.

Fixed dustfall deposition values measured in 2020 at the Northeast transect for the AQEMMP included 8 of 20 values below the detection limit from June to August (Table 3-4).

Table 3-4 Fixed Dustfall Deposition Rates at the Northeast Transect, 2020

Month	Fixed Dustfall [mg/100 cm^2/30 d][b]				
	NEDF01	NEDF02[a]	NEDF03	NEDF04	NEDF05
Overwinter[c]	<3.0	3.6	3.6	3.0	<3.0
June	35.7	7.7	<3.0	5.4	4.2
July	11.4	3.8	9.3	5.4	18.3
August	<3.3	<3.3	<3.3	<3.3	<3.3
Annual[d]	**19.7**	**3.8**	**3.7**	**3.3**	**3.1**

[a] Duplicate samples were taken at this station. The average value is presented.

[b] Calculated on a 30-day basis.

[c] Overwinter sampled from September 22, 2019 through June 8 & 11, 2020

[d] Values below detection limit were assumed to be one half of the detection limit for annual averages.

[e] mg/100 cm^2/30 d = milligrams per 100 square centimetre per 30 days; < = less than, with the value after it representing the detection limit.

Table 3-3 Mean fixed dustfall deposition rates (mg/100 cm^2/30 days) for sampling locations during baseline years (2013-14), construction (2015-2016) and operational (2016-2020) sampling periods

Sampling Period		Sampling Area									
		Approx Sampling Period (days)	0 km	0.05 km	0.15 km	0.5 km	1 km	5 km	10 km	15 km	20 km
Spring	**2013[a]**	-	-	-	-	-	-	-	-	-	-
	2014[b]	32	25.5	29.6	26.1	24.4	-	19.3	20.5	21.4	35.4
	2015[c]	44	24.9	18.1	24	29.6	23.7	26.6	20.2	19.9	19.2
	2016[d]	36	45.2	25.1	25.4	26.4	44.2	27.2	30.1	26.7	32.8
	2017	35	29.8	34.1	67.8	60	37.6	28.4	28.6	28.7	30.8
	2018[f]	28	30.4	47	52.8	50.2	75.6	52.3	42.9	73.6	37.1
	2019[g]	-	-	-	-	-	-	-	-	-	-
	2020[h]	-	-	-	-	-	-	-	-	-	-

Sampling Period		Sampling Area									
		Approx Sampling Period (days)	0 km	0.05 km	0.15 km	0.5 km	1 km	5 km	10 km	15 km	20 km
Summer	2013[a]	-	-	-	-	-	-	-	-	-	-
	2014[b]	-	-	-	-	-	-	-	-	-	-
	2015[c]	35	23.9	25.3	22.7	25.6	25.4	19.4	18.8	24.7	26.3
	2016[d]	28	27.1	25	17.7	35.7	44.7	37.1	34.6	<5.0	23.7
	2017[e]	26	-	-	-	-	-	-	-	-	-
	2018[f]	34	61.3	145	54.7	24.7	49.7	20.9	33.6	28.2	32.4
	2019[g]	40	12.9	26.1	12.3	<3.0	24.9	70.5	<3.0	<3.0	<3.0
	2020[h]	32	15.6	21.6	11.1	21.0	12.6	5.4	<3.0	8.1	12.0
Early Fall	2013[a]	44	10.3	13	22.2	11.6	17.8	13.4	14.6	15.9	12.9
	2014[b]	-	-	-	-	-	-	-	-	-	-
	2015[c]	-	-	-	-	-	-	-	-	-	-
	2016[d]	40	33.5	27.2	29.4	32.7	21.8	17.6	45.9	41.4	20.9
	2017	31	23.5	37	33.3	35	22.8	27.5	26.4	28.8	25.6
	2018[f]	37	13.3	12.7	26.3	19	43.4	19.1	24.6	13.6	19.8
	2019[g]	37	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	2020[h]	24	55.8	9.6	8.1	7.5	9.6	7.2	4.5	<3.0	4.5
Late Fall	2013[a]	-	-	-	-	-	-	-	-	-	-
	2014[b]	42	<5.0	4.8	<5.0	6.6	6	-	<5.0	9	11.4
	2015[c]	35	19.9	23.6	38.4	17.4	28.7	24.1	23.6	25.3	21.3
	2016[d]	30	23.4	15.4	24.7	<5.0	24.5	38.15	29.8	31.1	29.5
	2017	28	25.3	40.1	26	21.3	35.5	28.6	34	32.3	33.1
	2018[f]	21	<3.0	5.7	<3.0	5.4	<3.0	<3.0	<3.0	<3.0	<3.0
	2019[g]	21	<3.0	5.7	<3.0	5.4	<3.0	<3.0	<3.0	<3.0	<3.0
	2020[h]	32	3.6	4.2	7.8	<3.0	3.3	<3.0	<3.0	<3.0	<3.0
Winter	2013-14[a]	241	25.5	5.3	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	2014-15[b]	256	18.9	29.5	43.6	22.3	25.6	-	-	21.4	23.5
	2015-16[c]	241	11.2	15.9	13.7	7.9	6.1	<5.0	<5.0	<5.0	-
	2016-17[d]	234	<5.0	10	-	8	-	<5.0	-	<5.0	<5.0
	2017-18[f]	247	6.7	12.2	-	14.5	5.8	5	5.6	5.9	<5.0
	2018-19[g]	252	29.1	19.8	19.2	10.5	8.7	6.9	5.1	4.5	4.5
	2019-20[h]	260	6.0	21.6	9.0	5.1	6.9	<3.0	<3.0	<3.0	<3.0

- = No data

Lowest Detection Limit = 5 mg / 100 cm^2 / 30d

(a) Transect not established until August 2013 (Golder 2014); 2013 sampling periods were August to September (Early Fall), October 2013 to May 2014 (Winter 2013-14)

(b) 2014 sampling periods: May-June (Spring), August to October (Late Fall) and October to May 2015 (Winter)

(c) 2015 sampling periods: June (Spring), July (Summer), August to October (Late Fall) and October 2015 to May 2015 (Winter)

(d) 2016 sampling periods: June (Spring), July (Summer), August (Early Fall), September (Late Fall) and October 2016 to May 2017 (Winter)

(e) Summer 2017 results are anomalous, and included outlier values due to sample contamination and are thus not included

(f) 2018 sampling periods: June-July (Spring), July-August (Summer), August-September (Early Fall), September (Late Fall) and September 2017 to June 2018 (Winter)

(g) 2019 sampling periods: June-July (spring), July-August (Summer), August-September (Early Fall), and October 2018 to June 2019 (Winter)

(h) 2020 sampling periods: June-July (spring), July-August (Summer), August-September (Early Fall), and September 2019 to June 2020 (Winter)

3.3.3 Wildlife Sightings Log

The wildlife sightings log provides staff working at the Mine an effective means to record and report wildlife observations to the Mine Environment Department. While the information is not collected systematically and likely contains repeated observations of the same animals, it provides an indication of the presence of wildlife and the potential for wildlife incidents or problem wildlife. It also increases staff involvement with the environment programs and fosters awareness of wildlife issues.

Methods

Wildlife sightings logs were maintained at various locations around the Mine site to record observations of wildlife and wildlife sign. Staff were encouraged to add observations to the log, including observations of unusual species and potential problem wildlife. Reporting of sightings of medium to large wildlife (i.e., fox-size and larger) by staff and contractors was mandatory. Observations of species that posed a potential risk to human safety were reported to Environment staff immediately in addition to being documented in the wildlife sightings log.

Results

There were a total of 204 independent wildlife observations in 2020. The number of observations represents the number of independent and incidental observations of wildlife, and is not an indication of the number of individuals of a species observed. The number of people present at the Mine during 2020 is reported in Section 3.12.

Fox was the most commonly observed species in 2020, with 69 observations, of which red fox was observed 55 times and unknown species an additional 15 times. Arctic hare was also a commonly observed species during 2020, with 26 observations recorded. Other frequent species observed were the common raven and muskox (15 observations each). Six observations of Caribou were recorded in 2020. In 2020, 4 wolverine observations were recorded and 2 grey wolf observations. With the first sighting occurring July 7th, 2020 and last recorded sighting on October 9th, 2020, 4 grizzly bear observations were recorded. A full summary of observations recorded on Wildlife Sightings Logs for 2013-2020 can be found in Table 3-2.

Table 3-2 Wildlife Sightings Log Summary of Observations, 2013 to 2020

Species	Type	2013	2014	2015	2016	2017	2018	2019	2020
American robin	Bird	-		1		2	-		1

Species	Type	2013	2014	2015	2016	2017	2018	2019	2020
Arctic ground squirrel (sik sik)	Mammal	-	4	11	4	23	3	3	2
Arctic hare	Mammal	3	32	45	9	29	5	22	26
Bald eagle	Bird	-	-	1	4	1	2	11	5
Beaver	Mammal					1	-	1	-
Canada goose	Bird	-	1	2	-	2	-	1	3
Caribou	Mammal	17	37	45	-	2	61	16	6
Common raven	Bird	-	10	16	13	15	11	27	15
Fox spp.	Mammal	5	33	155	85	104	91	48	15
Goose spp.	Bird	-	-	4	6	3	-	7	1
Greater white-fronted goose	Bird	-	1	5	1		-		3
Grey wolf	Mammal	7	27	22	2	4	4	40	2
Grizzly bear	Mammal	-	-	3	3	2	4	11	4
Gull spp.	Bird	-	1	3	-	2	-	1	-
Gyrfalcon	Bird	-	-	1	1		-		-
Hare spp.	Mammal						5	14	1
Jaeger spp.	Bird	-	-	1	-		-		1
Loon spp.	Bird	-	-	2	-	2	-	1	-
Mink	Mammal	1	-	-	-		-		-
Moose	Mammal	-	-	5	-	4	1	5	2
Mouse spp.	Mammal	-	-	3	2	2	7	2	1
Muskox	Mammal	1	4	14	10	14	20	24	15
Muskrat	Mammal	-	-	-	2	5	-	1	-
Northern pintail	Bird	-	-	-	1		-		1
Owl spp.	Bird	-	-	2	4		-		-
Peregrine Falcon	Bird	-	1	12	1		2	1	-
Pine siskin	Bird					1	-		-
Porcupine	Mammal						1		-
Ptarmigan spp.	Bird	3	16	10	10	4	9	4	6
Ross's goose	Bird	-	1	-	-		-		-
Rough-legged hawk	Bird	-	2	-	-		-	1	1
Sandhill crane	Bird	-	-	-	1	1	-		1
Scoter spp.	Bird	-	-	1	-		-		-
Snow bunting	Bird	-	1	1	-	1	-		-
Short-eared owl	Bird	-	-	-	-	-	-	-	1
Snow goose	Bird	-	-	1	-		-		2
Snowy owl	Bird					1	1	1	2
Sparrow spp.	Bird	-	-	1	-		-		-
Tundra swan	Bird	-	1	1	-		-	1	-
Unidentified duck	Bird	-	-	2	1	1	-	2	-
Unidentified raptor	Bird	-	-	2	1	3	4		-

Species	Type	2013	2014	2015	2016	2017	2018	2019	2020
Unidentified songbird	Bird	-	-	2	1	1	2		-
Wolverine	Mammal	-	-	-	-	8	27	43	4

(a) The number of observations represents the number of independent observations for each species, and is not an indication of the number of individuals present.

- = none observed.

3.3.4 Site Surveillance

Wildlife are expected to be present near the Mine throughout construction, operation, and closure. Site surveillance monitoring, which is a regular scheduled program that occurs once per week, provides information of wildlife activity at the Mine, and direct feedback to Mine operations regarding the effectiveness of waste management and wildlife mitigation practices. Examples of wildlife activities that are documented through site surveillance monitoring include presence of wildlife in areas where food may be available, use of buildings for shelter or nesting, and use of water management ponds by waterfowl.

Through systematically monitoring for the presence of wildlife within and around the Mine site, Environment staff remain appraised of current and emerging issues, and are able to implement management actions to address these issues as required. To use a common example, site surveillance monitoring may detect that wildlife has gained access to a building on site or is taking shelter beneath it. The typical mitigation is to block the access through improved skirting, and follow-up with surveillance monitoring to confirm whether the mitigation was successful, or if further action is required.

Effective waste management practices and staff education are key to decreasing the availability of wildlife attractants at mine sites. Environmental design features, mitigation, and waste management are implemented at the Mine to limit the attraction of wildlife, and the associated increased risks of wildlife interactions and mortality. The effectiveness of the waste stream management system, as it pertains to wildlife attractants, is monitored through regular waste bag inspections, as per the Waste Management Plan (De Beers 2015a), and site waste audits.

Methods

Systematic site surveys of the Mine were conducted weekly to record all wildlife observations, recent wildlife sign (e.g., tracks, scat), and misdirected waste. Surveys were completed on foot and by truck, and staff recorded the area surveyed, and the nature and location of all observations. Surveillance monitoring included regular visits to areas of the Mine where there is risk of wildlife attractants (e.g., waste management areas), risk of wildlife using the Mine for shelter, denning or nesting, and where there were people working outdoors.

De Beers actively monitors for bird nesting activity around the Mine site, and in particular in areas scheduled for clearing or disturbance each year (Section 3.9.1). Bird deterrents are deployed in areas scheduled for disturbance during the breeding season to avoid and minimize the disturbance of any active nests of migratory birds, consistent with the Migratory Birds Convention Act. Bird deterrents are also deployed in and around pits each spring. Monitoring is conducted to detect raptors, and actively deter them prior to nest initiation.

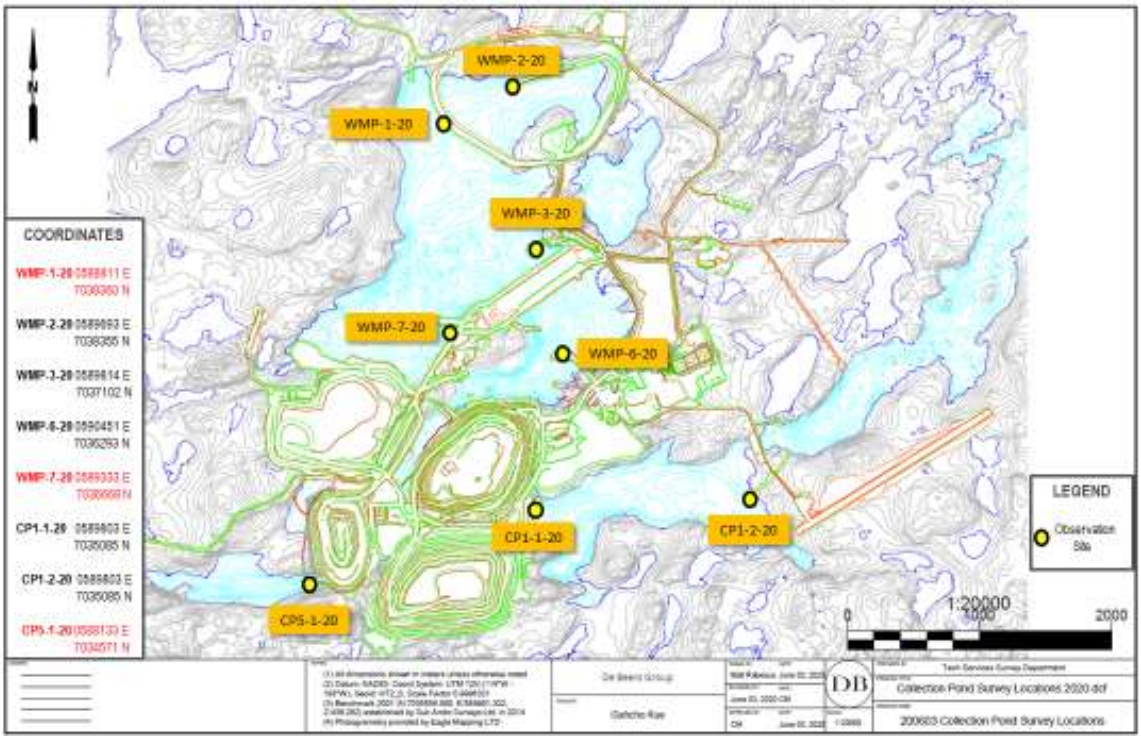
- In 2017, De Beers initiated systematic surveys of the water management pond and other water collection ponds on site to monitor for the presence and use of these water bodies by water birds. Collecting observations of waterbird use of the site provides a better understanding of which species are present at different times of the year at and near the Mine. This program was continued in 2020.

- To monitor the use of site water bodies by birds, nine (9) stations were selected as fixed observation points from which the 2020 surveys were conducted. Six of these stations are located around the Water Management Pond, and three stations at monitoring collection ponds 1 (CP1-1-20 and CP1-2-20) and 5 (CP5-1-20), Previous stations that had been in place during the 2017 season at settling ponds have been removed by active mining activity and are no longer in existence. The location of each of these survey stations is provided in Map 3-2. At each station, the observer conducts a 180° sweep using binoculars, focusing on both open water and shoreline habitats. Surveying at each station generally takes 10-15 minutes to complete. The observer records information including species type, activity (including evidence of nesting behavior), and number of individuals.

Table 3-3 Locations of Collection Pond Stations, 2020

Collection Pond Station	Easting	Northing
CP1-1-20	589803	7035085
CP1-2-20	589803	7035085
CP5-1-20	588133	7034571
WMP-1-20	588811	7038360
WMP-2-20	589693	7038355
WMP-3-20	589814	7037102
WMP-5-20	588289	7036177
WMP-6-20	590451	7036293
WMP-7-20	589333	7036668

Map 3-2 Collection Pond Survey Locations, 2020



Results

In 2020, a total of 38 weekly site surveillance surveys were completed. Wildlife or sign of wildlife (e.g., tracks, scat) was observed during 36 surveys (95%). Fox species were the most commonly observed species in 2020, with 55 observations of red fox, and 29 additional observations of unidentified species of fox (most likely related to fox sign in the area). Muskox were observed in large quantities, 95 individual muskox were counted over 4 observations during 2020 weekly surveys. Other commonly observed species were the common raven and arctic hare. A full summary of wildlife observations from weekly wildlife surveys can be found in Table 3-4.

Table 3-4 Wildlife and Wildlife Sign Observed During Site Surveillance Surveys, 2020

Species	Number of Surveys with Wildlife Observations	Total Number of Individuals Observed	Number of Surveys with Wildlife Sign
American pipit	1	2	
American plover	1	4	
Arctic hare	21	23	12
Bald eagle	8	8	
Cackling goose	1	19	
Caribou	1	1	
Common raven	41	47	9
Falcon spp.	1	1	
Fox spp.	29	31	26
Golden eagle	1	1	
Greater white-fronted goose	2	7	
Green winged teal	1	2	
Grizzly bear	1	1	
Ground squirrel	1	1	
Gull spp.	1	8	
Hawk spp.	3	3	
Lesser scaup	4	15	
Long tailed duck	1	30	
Muskox	4	95	
Northern harrier	1	1	
Northern pike	1	1	
Northern pintail	2	8	
Red fox	55	55	48
Red-breasted merganser	1	3	
Rock ptarmigan	8	76	5
Rough Legged Hawk	2	2	
Semipalpated plover	1	1	
Shrew spp.	1	1	1
Snow bunting	2	32	
Snow goose	1	20	
Sparrow spp.	2	30	
Unknown bird spp.	2	7	1

Species	Number of Surveys with Wildlife Observations	Total Number of Individuals Observed	Number of Surveys with Wildlife Sign
Grey wolf	1	1	1
Wolverine	1	1	1

In 2020, Collection Pond Surveys were conducted on a bi-weekly basis from May 16th to July 24th. During these survey events a total of 22 observations, consisting of 255 individual birds. Often birds could not be identified to species, and were classified to family group or as unidentified.

Table 3-5 Birds observations collected during the Collection Pond Surveys, 2020

Station	Number of bird groups detected	Number of individual birds detected	Average number of individual birds/station/survey
CP1-1-20	4	6	2
CP1-2-20			
CP5-1-20	2	27	14
WMP-1-20	5	152	30
WMP-2-20			
WMP-3-20	5	35	7
WMP-5-20			
WMP-6-20	4	28	7
WMP-7-20	2	7	4

WMP-1-20 had the highest number of individual birds observed with over 152 individuals counted during 2020 surveys. No observations were recorded at CP1-2-20, WMP2-20, or WMP-5-20 during any of the 2020 survey visits.

Table 3-6 Wildlife and Wildlife Sign Observed During Collection Pond Surveys, 2020

Species	Number of Individuals observed	Number of survey events (visit to a station) where bird group was observed)
Black scoter	2	1
Cackling goose	100	1
California gull	1	1
Canada goose	6	2
Duck spp.	26	2
Goose spp.	50	2
Greater scaup	2	1
Gull spp.	24	2
Long tailed duck	6	3
Northern pintail	5	3
Red throated loon	1	1
Rough legged hawk	1	1
Sandhill crane	25	1
Surf scoter	6	1

3.3.5 Public Use of the Winter Access Road

De Beers operates a winter access road from MacKay Lake to the Gahcho Kué Mine site from early February to late March each year (Map 1-1). De Beers conducts surveillance of the winter access road to document public use and provide safety and support to truck traffic. Public use of the road is typically dominated by hunting parties.

Methods

Each day the winter access road is open, security personnel drove from the Mine to MacKay Lake, and recorded wildlife observations and hunting/recreational activity. Observations of public use of the road were documented on a Winter Access Road User Survey Form (De Beers 2014a).

Results

In 2020, the winter access road was operational from January 31 to March 22 (i.e., 53 days). There were 1,704 loads on the winter road to supply the Mine with fuel, ammonium nitrate and general freight and equipment. During the daily security patrols, wildlife and wildlife sign observed included of wolf, wolverine, fox, ptarmigan, and caribou. Hunting parties were reported on the winter access road by security personnel on multiple occasions, no major incidents were reported.

3.3.6 Wildlife Incidents

A wildlife incident is defined in the WWHPP as:

- human-wildlife interactions that present a risk to either people or animals;
- wildlife-caused damage to property or delay in operations;
- wildlife deterrent actions; and
- wildlife injury or mortality (De Beers 2014a).

Following the principles of adaptive management, monitoring of wildlife incidents is undertaken to identify all incidents and to prevent future incidents or escalation of problems (Section 4).

Methods

Wildlife incidents throughout the year were reported, investigated, and had immediate follow-up actions completed by Environmental staff. If wildlife had to be deterred to reduce the risk of a wildlife-human incident, then an effort was made by Environment staff to start with the least intrusive method available, with all deterrent actions recorded in the wildlife deterrent log. All wildlife mortalities were reported immediately to Environment and Climate Change Canada and/or ENR. Documentation of wildlife incidents included photographs, names of people involved, the nature of the incident, and supporting information such as the time, date, location, and the follow-up actions that occurred.

Results

No wildlife incidents were reported in 2020. Programs educating workers to be vigilant with regards to waste management and keeping all doors closed were delivered to all departments. This lack of reward kept the animals from settling in the area, and as such, no adverse human-wolf encounters were reported.

3.4 Caribou

The Bathurst caribou herd is known historically to move through the RSA during the northern migration to the calving grounds near Bathurst Inlet, and to the wintering grounds at or south of the treeline during the post-calving migration (De Beers 2010). Bathurst caribou may also occupy the RSA in winter. Beverly/Ahiak caribou are also known to occupy the RSA during the winter months.

Objectives of caribou monitoring for the Mine are:

- to determine if caribou behaviour changes with distance from the Mine;
- to determine what the zone of influence is and whether it changes in relation to Mine activity; and,
- to determine if caribou abundance and distribution changes in the study area over time.

The monitoring objectives are met through:

- participation in the ENR led Zone of Influence Technical Task Group;
- aerial reconnaissance surveys of the winter access road;
- snow berm measurements along the winter access road; and,
- caribou behaviour monitoring.

3.4.1 Aerial Surveys

De Beers has contributed to the GNWT monitoring programs supporting the Barren-ground Caribou Management Strategy (ENR 2011). De Beers also participates in the ENR-led Zone of Influence Technical Task Group for development of a standardized set of guidelines to monitor the zone of influence for caribou. De Beers has committed to completing aerial reconnaissance surveys to determine if caribou are present near the winter access road. The information collected during this survey is used to inform haul truck drivers of the presence and location of any caribou groups near the road, and is used as a trigger for caribou behaviour monitoring (Section 3.4.2).

Methods

In 2020, an aerial reconnaissance survey was completed on February 8, 2020 along the Gahcho Kué winter spur road using a C-GTYC Aviat Husky aircraft at an altitude of 120-180 m. The number of wildlife and wildlife sign observations were recorded by pilot Dave Olesen and reported to De Beers Environment staff following the survey. An aerial survey is completed each year prior to the winter access road opening to provide information to the haul truck drivers of the presence and location of caribou near the road, and as a potential trigger for caribou behavioural monitoring.

Results

A total of 340 caribou were documented in 9 caribou groups during the reconnaissance survey, most of which were identified as bulls. Although less than 20 caribou groups were recorded during the survey, more than 100 individual caribou in total were observed, which exceeds the caribou trigger to implement the winter road caribou behaviour monitoring program. Due to COVID 19 restrictions, no additional monitoring could be completed for

the 2020 season. Caribou tracks, trails, trail networks, beds and feeding craters were also observed along most the winter access road.

3.4.2 Behaviour Monitoring

The objective for monitoring changes in caribou behaviour is based on recommendations from the Diamond Mine Wildlife Monitoring Workshop (Marshall 2009; Handley 2010). As noted for monitoring changes in caribou distribution, monitoring caribou behaviour around the Mine could contribute to future environmental assessments and the assessment and management of cumulative effects by government under different development scenarios. Caribou behavioural monitoring from the winter access road is conducted through the WWHPP (De Beers 2014a).

Large numbers of observations are required to detect differences in caribou behaviour, which is strongly affected by environmental conditions, such as wind, temperature, and insect (in summer) and predator abundance (BHPB 2004; Witter et al. 2012). Therefore, behavioural monitoring will be undertaken in each year when there are a minimum of 60 groups of caribou within 20 km of the Mine; this threshold is believed to provide sufficient sample size for detecting statistical differences in caribou behaviour as a function of distance from the Mine and natural environmental factors. Monitoring is anticipated to continue from construction through closure of the Mine.

The winter access road is located within the range of the Bathurst caribou herd, and De Beers has committed to implementing a behaviour monitoring program along the winter access road if sufficient caribou are present. Behaviour monitoring will be triggered when 20 or more groups of caribou are observed along the length of the winter access road during either the aerial reconnaissance survey (Section 3.5.1) or during public use monitoring (Section 3.4.3). Caribou in proximity to the winter access road is a cause for concern for both the safety of the animals and the drivers. It is also an opportunity to better understand the interactions between caribou and winter roads in the NWT through behavioural monitoring.

Methods

Behavioural monitoring methods are consistent with those implemented at other NWT mines. The behaviour monitoring will be conducted by a crew of two observers stationed along the winter access road or other Mine roads in a truck. Both focal surveys of individuals and scan surveys of caribou groups will be undertaken. Focal surveys provide information on activity budgets (i.e., the proportion of time an animal is engaged in different behaviours), the temporal sequence of behaviours relative to stressors or other stimuli, and the length of time it takes the animal to return to a non-stressed state following a stressor event. Scan samples of a group of animals are more useful for quantifying the frequencies of dominant behaviours in a group over a period of time (ERM Rescan 2014).

For focal surveys, an individual is selected from a group for observation. Behaviour and time of behaviour changes are recorded. Focal surveys will be undertaken on both cows and bulls, for a minimum of 20 minutes. For scan surveys, observers will make instantaneous behaviour observations of caribou groups at 8 minute intervals for at least 40 minutes (a minimum of four observations per group).

For both scan and focal surveys, the response of caribou to stressors, such as vehicle or aircraft traffic, will also be recorded. Behavioural observations will be repeated at multiple locations along the road where caribou are present. In addition to behaviour, observers will record the number, group composition, and location of each group.

Observers will make note of the location, composition, and herd size of any caribou or caribou tracks observed. They will also advise as to any additional factors that seem to stress caribou or alter their behaviour negatively (e.g., vehicle speed and type, and predators).

Results

Caribou behavioural monitoring was triggered in 2020, as per the WWHHPP Version 3.1 (De Beers 2014), by the detection of approximately 340 caribou while conducting an aerial survey. However, due to COVID-19 restrictions, behavioural monitoring could not be conducted.

3.4.3 Snow Berm Management

Snow berms associated with the winter access road may act as a partial barrier to caribou movement by deflecting caribou from crossing roads. For example, caribou have been shown to deflect from a road when snow berms are 1.6 m or greater in height (ERM Rescan 2011). Determining the aspects of the winter access road that influence caribou movements (e.g., snow berm heights) provide information specific to the operation of the Mine and potentially to features of the winter access road that may be mitigated, such as lowering of snow berm heights.

The objective of this component of the monitoring program is to determine heights of snow berms along the winter access road.

In 2015, De Beers made the commitment to implement additional mitigation to reduce snow berm heights if any measurements were observed over 1.6 m. This mitigation was implemented from 2016 onwards.

Methods

Snow berm measurements along the winter access road were recorded during three separate surveys:

- Survey 1 – 2nd February, 2020
- Survey 2 – 25th February, 2020
- Survey 3 – not completed due to COVID 19 personnel impacts

Snow berm height and slope were measured every 2 km along the winter road, at both lake and portage locations, to determine factors affecting the permeability of the winter road to caribou (i.e., whether caribou cross or are deflected by the winter road). These data were also used to inform the maintenance crew of any snow berm heights in excess of 1.6m.

Results

The average snow berm height for lake sections of the winter road was 0.20 and 0.21 m, with a maximum berm height recorded of 1.40 m during Survey 2. The average snow berm slope was 2° and 9°, with a maximum recorded slope of 65° during Survey 2. On portage sections average heights were 0.29 m and 0.13 m for Survey 1 and 2 respectively, with a maximum height of 1.30 m during Survey 2. Snow berm slopes recorded on portages were 5 for both Survey 1 and 2, with a maximum slope of 35° recorded during Survey 2. The proportion of measurements recorded at lakes was 47% over all three surveys, while 53% of the measurements occurred on portages. The total length of lakes along the winter access road is 100 km (83.0% of the total winter access

road), whereas portages account for 20 km (17.0% of the total winter access road). Summary of survey data is located in Table 3-7.

Table 3-7 Snow Berm Monitoring Results for the Winter Access Road, 2020

Measurements		Survey 1 (n = 116)		Survey 2 (n = 116)		Survey 3 (n = 116)	
		Lake	Portage	Lake	Portage	Lake	Portage
height (m)	average	0.20	0.29	0.21	0.13	not completed in 2020 due to personnel and logistics constraints	
	min	0.00	0.00	0.00	0.00		
	max	1.15	0.87	1.40	1.30		
slope (°)	average	2	5	9	5		
	min	0	0	0	0		
	max	20	19	65	35		

n = number of measurements.

Results from the snow berm monitoring program indicate that 100% of the snow berms measured along the winter access road were at or below 1.6 m during the operational season (Table 3-8). If snow berms were observed to be over 1.6 m during the snow berm measurement surveys, De Beers notifies the winter access road maintenance crew so that they could be decreased. No additional maintenance was required from observations recorded during winter road berm monitoring. The third survey was not completed during the 2020 season due to COVID-19 restrictions and impacts on personnel.

Table 3-8 Proportion of Snow Berm Height Measurements for the Winter Access Road, 2020

Height (m)	Survey 1	Survey 2	Survey 3	Average
<1.6	100%	100%	-	100%
≥1.6	0%	0%	-	0%

≤ = less than or equal to; ≥ = greater than or equal to;% = percent.

3.5 Grizzly Bear

The western population of grizzly bear is currently listed a species of special concern by COSEWIC, and was assessed as special concern the NWT SAR Committee in April 2017 (NWT SAR 2021). Barren-ground grizzly bears may be sensitive to human disturbance and may avoid mineral developments (Johnson et al. 2005). Alternately, some grizzly bears may be attracted to human activity by the odours associated with developments in remote areas (Gau and Case 1999; Johnson et al. 2005), which can lead to dangerous interactions between humans and bears, and the destruction of bears.

In 2013 and 2014, De Beers participated in a regional grizzly bear hair snagging program at the Gahcho Kué and Snap Lake mines using the same methods used at the Ekati and Diavik mines. The approach uses mark-recapture information on individuals identified through DNA analysis techniques. Hair samples also allow grizzly bears to be discriminated from black bears, which have been observed in the RSA.

In 2013, regulators, mine monitoring agencies, the mining companies, and community representatives at a wildlife monitoring workshop hosted by the GNWT (GNWT 2013a) reviewed the objective of the grizzly bear hair snagging program. The objective of this component of the monitoring program is to provide estimates of grizzly

bear abundance and distribution in the study area over time. However, in the 2021 wildlife monitoring workshop hosted by the GNWT, a decision was made to discontinue the grizzly bear hair snagging program.

Methods

Previous regional programs included hair snagging stations distributed across a 30,000 km^2 area (north and south study areas combined) surrounding the Ekati, Diavik, Gahcho Kué, and Snap Lake mines. DNA analysis was used to estimate the number, occupancy, and movement of grizzly bears in the study area.

Results

Initial sampling of grizzly bear hair snagging was completed in 2013 and 2014. Reports of the monitoring were completed by the University of Calgary in collaboration with De Beers (Jessen et al. 2013, 2014). The grizzly bear hair snagging program was not conducted in 2020. In February 2021, regulators, mine monitoring agencies, the mining companies, and community representatives at a wildlife monitoring workshop hosted by the GNWT determined that grizzly bear hair snagging would be discontinued.

3.6 Wolverine

Wolverine in the NWT are listed as a species of special concern by COSEWIC, but is not considered a species at risk in the NWT (NWT SAR 2021). Male wolverines occupy territories ranging from 230 to 1,580 km^2, and females from 50 to 400 km^2 in the NWT (Mulders 2000). The size of a home range will vary seasonally, annually, with habitat availability, and with the age of the animal (Banci 1987). Food availability (e.g., carrion) is the primary factor determining movements and home range requirements for wolverines (Hornocker and Hash 1981; Banci 1994).

Wolverines are attracted to areas of human activities presumably because human activities have odours and are potential food sources. For example, snow track surveys at the Snap Lake and Diavik mines indicated that the occurrence of wolverine tracks was statistically higher near mine sites in some years (DDMI 2007; Golder 2008, 2011, 2013, 2014).

In 2013, regulators, mine monitoring agencies, the mines, and community representatives agreed to apply standardized methods for monitoring wolverines across the North Slave Region using a hair snagging approach (GNWT 2013b). In 2013, 2014 and 2019, De Beers participated in a regional wolverine hair snagging program using analytical mark-recapture information on individuals identified through DNA techniques.

The objective of regional wolverine hair snagging monitoring is to:

- provide estimates of wolverine abundance and distribution in the study area over time (Handley 2010); and,
- support wolverine conservation and management by the GNWT.

Similarly to the grizzly bear hair snagging program, a decision to discontinue the wolverine hair snagging program was made in February 2021, at the wildlife monitoring workshop hosted by the GNWT.

Methods

The scope of the previous wolverine hair snagging programs is to deploy hair snagging posts to collect wolverine hair samples at 114 locations within a 5 km by 5 km grid around the Gahcho Kué Mine site. The posts used in the program are manufactured at site and transported to each location by helicopter. Once at the hair snagging post locations, the posts are deployed with bait and two lures applied to each post. Following deployment, posts are checked twice for hair samples. In addition to posts, remote cameras are installed at several locations to provide supplemental visual data. In previous years, eight locations were selected from the 114 to include remote wildlife cameras. Following the second check, posts are removed from location and cached at four locations near the Mine for future program use. Hair samples collected during the program are archived and submitted for DNA analysis.

Results

Wolverine snagging program was not implemented in 2020. In February 2021, regulators, mine monitoring agencies, the mining companies, and community representatives at a wildlife monitoring workshop hosted by the GNWT determined that wolverine hair snagging would be discontinued.

3.7 Arctic Program for Regional and International Shorebird Monitoring Surveys

De Beers is contributing to the Environment and Climate Change Canada Program for Regional and International Shorebird Monitoring (PRISM) surveys. These surveys are designed to document population numbers of Arctic shorebirds and contribute to regional knowledge in an effort to set population targets and assist with management and conservation of these species (EC 2012).

Methods

Monitoring methods adhered to standard techniques for surveying (CWS 2008). De Beers first partnered with Environment and Climate Change Canada to conduct ground-based rapid assessment surveys of 12 ha plots in 2015. PRISM surveys were conducted in 2017 and 2019 thereafter.

Results

PRISM surveys were not conducted in 2020.

3.8 Raptors

Raptor species (i.e., birds of prey) observed nesting within the RSA include peregrine falcon (likely the *tundris* subspecies), gyrfalcon, rough-legged hawk, and short-eared owl. The peregrine falcon and short-eared owl are currently listed as special concern by COSEWIC and have a general status rank of sensitive in the NWT (NWT SAR 2021). Both species are scheduled for assessment by the Northwest Territories Species at Risk Committee in March 2021 (NWT SAR 2018). Analysis of 13 years of nest site use and productivity monitoring data in the Ekati and Diavik mines study area found no relationship with proximity to mines (Coulton et al. 2013). The nearest active raptor nest site identified in the RSA is 18 km from the Mine site. Considering the distance of the Mine to the nearest known raptor nest, the Mine is not anticipated to affect local raptor populations.

There are two programs for raptors conducted by the Mine. The first is the Regional Raptor Nest Monitoring Program, which is conducted within the RSA as part of the WEMP. The second is monitoring and deterrence of raptors from nesting in the pits, conducted at site as part of the WWHPP.

3.8.1 Regional Raptor Nest Monitoring Program

The objective of the raptor nest monitoring program is to contribute nest survey data to ENR for inclusion in regional databases (De Beers 2014b).

Methods

De Beers conducted regional raptor nest data through collaborative aerial surveys at both the Gahcho Kué and Snap Lake mines. The timing and methods of these surveys are developed in partnership with ENR and other operators in the region.

Nest site visits are conducted by helicopter, using fly-by methods to identify occupying species, and to count eggs and young. Surveys are not carried out in the rain, and visits are kept as short as possible to limit disturbances to the birds. Nests are considered occupied if at least one adult bird was observed. Eggs are counted if visible. Nests are recorded as successful if at least one chick is observed in the nest. The number of chicks are also recorded. Although the monitoring is focused on raptor species, observations of other species (e.g., ravens) are recorded during the surveys and included in the summary statistics.

Results

Regional raptor nest monitoring was initially completed in 2015. The monitoring in the RSA was not conducted in 2020. The next regional survey will occur in 2025.

3.8.2 Pit Raptor Monitoring and Deterrence Program

As described in the WWHPP, raptor interactions and mortalities at the Mine are also monitored through the wildlife sightings log, site surveillance, and wildlife incidents (Sections 3.3.3, 3.3.4 and 3.3.6), as well as incidents of raptor nesting activity on Mine infrastructure (De Beers 2014a). Raptors that are observed in dangerous areas of the Mine, such as open pit areas, will be actively deterred from nesting. Deterrent methods include bear bangers, propane noise cannons, air horns and predatory effigies. The objective of this aspect of the program is to deter raptors from nesting on Mine infrastructure or pit walls.

Methods

De Beers actively deters raptors from nesting in the open pits through the use of visual and auditory deterrents and routine monitoring. The 2020 bird deterrent and surveillance program began on May 7, where initial visual observations commenced for the presence of nesting bird species within both the 5034 open pit and Hearne open pit, as well as the surrounding pit areas and active construction zones. The visual monitoring of nesting birds within pit areas was performed by environment staff during day shift using binoculars. Initial propane scare cannon deployment began on May 8, 2020 around the pit areas. Five cannons were deployed around the perimeter of the 5034 open pit, and two cannons were distributed to the airport for deployment. Cannon set up continued as bird presence increased on May 9 and May 10, 2020 with an additional eight cannons were deployed around the Hearne open pit. By May 21, 2020 environment crew had deployed 21 cannons, five of those at the airstrip, seven in Hearne, six in 5034, and two cannons at the dyke B till pile. Additional cannons were deployed in the 5034 open pit on May 28, 2020. In addition to Gahcho Kue environment staff, a full time

bird monitor (Grace Osted from Khione Resources) was brought on to continue visual observations, deployment, and management of deterrents on May 28, 2020. All bird sightings were documented on a daily field sheet. In addition to the use of cannon deterrents, scarecrows, flying falcon kits, phoenix wailers and eagle decoys were placed throughout open pit mine area. These additional deterrents were added and adjusted as needed as bird activity was observed. Visual observations by the full time bird monitor ceased June 15, 2020 but all deterrents were left active until June 30, 2020 to avoid any possible delayed nesting activity. Demobilization of bird deterrents began July 1, 2020 and was finished by July 3, 2020.

Results

There were a total of 212 individual birds observed in or around the 5034 and Hearne pits in 2020 (Table 3-9). Of the the birds observed in or near the pit, the most common was the peregrine falcon which were observed on 14 occasions. There was one instance (May 26, 2020) where an active nest build was removed from the south west wall of Hearne pit. A drone was used to confirm the absence of eggs in the nest structure prior to the removal of the nest.

Table 3-9 Observations Birds Within or Near 5034 and Hearne Pits, 2020

Species	Number of Occasions	Number of Individuals
Bald eagle	3	3
Cackling goose	1	60
Common raven	2	2
Goose spp.	1	2
Greater white-fronted goose	3	84
Gull spp.	3	11
Gyrfalcon	1	1
Northern Harrier	3	3
Peregrine falcon	14	15
Rough legged hawk	8	10
Snow bunting	1	7
Snow goose	1	10
Unidentified raptor	1	2
Unidentified songbird	1	2
Total	**43**	**212**

3.9 Upland Breeding Birds

In 2015, a Migratory Bird Nest Mitigation Plan was developed and submitted to and approved by Environment and Climate Change Canada (De Beers 2015b). This plan described mitigation actions to limit harm to migratory birds and the disturbance or destruction of nests and eggs and to comply with the *Migratory Birds Convention Act*. Each fall De Beers pro-actively clears standing vegetation in areas anticipated to flood the subsequent spring, therefore reducing the attractiveness of these areas to tree and shrub nesters. Each spring, prior to the 50% snow melt when nesting activity is typically initiated, De Beers deploys bird deterrents to those same areas

targeting ground nesting birds. Additionally, during the nesting season, De Beers re-visits these areas to confirm functionality of the deterrents and observe bird activity.

Upland birds include shorebirds, ptarmigan, and songbirds (excluding raven). The rusty blackbird, bank swallow and the red-necked phalarope are birds of concern that may occur in the RSA and are listed by COSEWIC (COSEWIC 2017). From 1998 to 2004, rapid assessment upland bird surveys were completed to provide a comprehensive species list in the RSA. In 2004 and 2005, permanent sample plots were established in the RSA to estimate the variation in upland breeding bird density and richness in the RSA and LSA, and to assess the importance of habitats in the LSA for upland bird nesting. Impacts to upland breeding birds are anticipated to be localized at the Mine site and not to influence regional populations (De Beers 2010). Monitoring for population trends during the operating life of the Mine would fill existing information gaps in ECCC's N7 Bird Conservation Region.

The objective of the nest management program is to avoid destruction of active upland migratory bird nests in areas scheduled for flooding or disturbance by mining.

The objective of monitoring for upland birds is to detect changes in regional bird populations over time. This objective is achieved through participation in Environment and Climate Change Canada PRISM surveys (Section 3.7).

3.9.1 Nest Management Program

Development and operation of the Mine has the potential to inadvertently disturb upland breeding birds and their nests through land clearing activities to develop site infrastructure and the raising of Lakes D2 and D3 (Lakes D2/D3) and E1. For the latter, during the operation of the Mine, terrestrial habitat around Lakes D2/D3 and E1 will be flooded through the establishment of diversion dykes in the D and E lakes watersheds (Table 3-10). Water levels in these lakes have increased following freshet each year since the diversion dykes were constructed in 2015. They were predicted to continue to rise until reaching full supply level in Year 2-3 for Lake E1, and Year 4 for Lakes D2/D3, after which water levels will stabilize until the dykes are removed at closure (Table 3-10). The actual extent of flooding in 2020 at Lakes D2/D3 and E1 is reported in Table 3-10. As the water levels will rise most rapidly during freshet, the period of flooding will overlap with the migratory bird nesting season, which is defined to occur annually from the beginning of May to mid-August (EC 2014).

Table 3-10 Predicted Timing and Extent of Predicted and Actual Flooding at Lakes D2/D3, and E1

Timing of Flooding	Incremental Extent of Flooding							
	Lake D2/D3				Lake E1			
	Predicted		Actual		Predicted		Actual	
	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)
2015	424.2	0	424.2	0	425.21	0	425.21	0
Year 1 (June - October 2016)	425.67	19.7	426.1	34.2	425.98	5.1	425.82	4.5
Year 2 (June - October 2017)	426.3	18	426.61	10.2	426	1.1	425.89	0.5
Year 3 (June - October 2018)	426.81	9.8	426.74	3.1	426	0	425.88	0

Timing of Flooding	Incremental Extent of Flooding							
	Lake D2/D3				Lake E1			
	Predicted		Actual		Predicted		Actual	
	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)	Elevation (masl)	Area (ha)
Year 4 (June - October 2019)	427	4.6	426.95	4.6	426	0	425.91	0.2
Year 5 (June – October 2020)	n/a	n/a	426.99	2.4	426	0	426.06	1.1
Total	**n/a**	**52.1**	**n/a**	**53.5**	**n/a**	**6.2**	**n/a**	**6.3**

Note: Annual flooding estimates are cumulative. masl = metres above sea level; ha = hectares; n/a = not applicable
Lakes D2 and D3 were joined as a single lake in 2016, and are therefore reported together.

Methods

The hydrometric station at Lake D2/D3 was established in 2015 and continuous monitoring of water surface elevations (WSE) have been ongoing annually since 2015. The hydrometric station on Lake E1 was established in 2016 and water level measurements and continuous monitoring of WSE have been conducted annually since 2018. Flooding (WSE) is monitored to verify predictions of water elevations. If water levels are on the rise, a vegetation clearing program will be put in place as mitigation.

Results

There was no vegetation clearing program conducted in 2020. The actual peak elevation in 2020 for Lake D2/D3 was similar to that estimated by the EIS with associated flooding being slightly higher than predicted. The peak WSE and actual area for Lake E1 was also similar to the predicted values from the EIS. The timing and extent of flooding predicted in the EIS is compared to actual observations is shown in Table 3-10 for both lakes. Until predictions can be verified, monitoring will continue.

3.10 Small Mammals

The periodic population cycles of small mammals can have strong influences on other species in the Arctic ecosystem such as clutch and litter size of raptors and foxes, respectively. The nearest small mammal monitoring location to the Mine is at the Daring Lake research facility (approximately 200 km northwest of the Mine), operated by ENR. In 2015, De Beers began annual monitoring of small mammals, including lemmings and voles, to provide an additional regional monitoring site to ENR.

Methods

The methods for the small mammal survey follow those outlined by Carrière (1999) and Outcrop Communications (2005). The small mammal program in 2020 was conducted from September 14-18, 2020 over five nights, with 100 traps set per night. The same two transects established in 2015 northeast of Area 2 of Kennady Lake were used again in 2020. This habitat is considered representative of tundra features typical to the Taiga Shield High Subarctic Ecoregion. Both transects measured 250 m in length and were parallel to each other, roughly 100 m apart. Traps were baited with a mixture of oatmeal and peanut butter and checked each morning.

Results

A total of four northern Red-backed Voles (*Myodes rutilus*) were captured over the five consecutive trap nights in 2020. Specimens were identified using the NWT Small Mammal Identification Guide (ENR 2005). All animals trapped were intact at the time of collection and appeared to be in good physical condition. Arrangements are being made to ship these samples to ENR laboratories in Yellowknife during the first quarter of 2021.

Table 3-11 Small Mammal Monitoring Program Catch Summary, 2020

Date	Transect No.	Site No.	Trap No.	Species
15-Sep-20	1	23	2	Red-Backed Vole
15-Sep-20	2	2	1	Red-Backed Vole
15-Sep-20	2	9	2	Red-Backed Vole
18-Sep-20	1	23	1	Red-Backed Vole

3.11 Environmental Indicators

To provide estimates of the annual changes in local environmental conditions surrounding the Mine, De Beers committed to monitoring basic environmental indicators or covariates (De Beers 2014b).

Methods

The indicators recorded by Environment staff included the following:

- snow melt (date of 50% snow cover and 10% snow cover);
- lake thaw (date of 50% ice cover and 10% ice cover on selected lakes);
- lake freeze (date of first ice across selected lakes);
- first snow (date of first snowfall that does not melt); and,
- migratory bird arrival (date of first and second observation of common and easily identified migratory birds, including raptor, waterfowl and upland bird species).

Results

The environmental indicators that were recorded in 2020 are summarized in Table 3-12.

Table 3-12 Gahcho Kué Environmental Indicators, 2020

Environmental Indicator	Date
Snow melt	May 19 2020 (50% snow cover)
	June 11, 2020 (10% snow cover)
Kennady Lake thaw	June 2, 2020 (50% ice cover)
	June 30, 2020 (10% ice cover)
Lake freeze	October 16, 2020 (100% ice cover on Kennady Lake
First Snow	October 6, 2020 (date of first snow that did not melt)
Migratory bird arrival	May 6, 2020 (Unidentified Geese flying over Kennady Lake)
	May 6, 2020 (Canada Geese at Lake N11 Outlet)

3.12 Mine Activity

Sensory disturbances, such as noise, smells, dust, or the presence of people resulting from mining activity may alter the behaviour or distribution of wildlife in habitats adjacent to development (Bayne et al. 2008; Boulanger et al. 2012). De Beers committed to record covariates contributing to overall Mine activity to help explain possible changes in wildlife behaviour and distribution (De Beers 2014b).

Methods

The indicators recorded monthly by the Mine included the following:

- occupancy (number of site staff);
- fuel consumption;
- mine rock moved;
- ore processed; and
- domestic water consumption.

Results

In 2020, average monthly occupancy ranged from 344 in December to 393 in September (Table 3-13). The total fuel consumption for 2020 was 48,765,880 L of diesel. The total amount of mine rock mined was 35,870,768 tonnes. The total amount of ore processed was 3,247,681 tonnes. The total amount of water consumed for domestic use was 27,998,000 L, which does not include the additional water drawn from the Water Management Pond for dust suppression within the Controlled Area (8,950,000 L).

Table 3-13 Gahcho Kué Camp Occupancy, 2020

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Occupancy	425	424	424	424	406	395	394	394	389	389	386	370

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5 ACRONYMS AND ABBREVIATIONS

AEMP	Aquatic Effects Monitoring Program
ANOVA	Analysis of Variance
AN PAD	Ammonium Nitrate Pad
ARKTIS	ARKTIS SOLUTIONS INC.
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
De Beers	De Beers Canada Inc.
DFO	Fisheries and Oceans Canada
DKFN	Deninu Kué First Nations
DNA	deoxyribonucleic acid
EBA	Tetra Tech EBA
EC	Environment Canada
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Statement
ENR	Department of Environment and Natural Resources, Government of the Northwest Territories
FRMC	Fort Resolution Metis Council
GIS	Geographical Information System
GNWT	Government of the Northwest Territories
Golder	Golder Associates Ltd.
GPS	Global Positioning System
ICRP	Interim Closure and Reclamation Plan
IEMA	Independent Environmental Monitoring Agency
LKDFN	Łutselk'e Dene First Nation
LSA	Local Study Area
Mine	Gahcho Kué Mine
Mine Ops.	Mine Operations
MVEIRB	Mackenzie Valley Environmental Impact Review Board
MVLWB	Mackenzie Valley Land and Water Board
NSMA	North Slave Métis Alliance
NWT	Northwest Territories
NWT SAR	Northwest Territories Species at Risk
NWTMN	Northwest Territories Métis Nation
PK	Processed Kimberlite
PKMRMP	Processed Kimberlite and Mine Rock Management Plan
PRISM	Arctic Program for Regional and International Shorebird Monitoring
RSA	Regional Study Area
SAR	Species at Risk
SHEOP	Safety, Health, and Environment Operational Procedure
sp.	species
spp.	multiple species
TCWR	Tibbitt to Contwoyto Winter Road
UPD	Updated Project Description
TG	Tłı̨chǫ Government

VSMP	Vegetation and Soil Monitoring Program
WEMP	Wildlife Effects Monitoring Program
WRD	Water Resource Division
WWHPP	Wildlife and Wildlife Habitat Protection Plan
YKDFN	Yellowknives Dene First Nation

6 UNITS OF MEASURE

≤	less than or equal to
≥	greater than of equal to
%	percent
+	plus or minus
>	greater than or equal to
°	degree
°C	degrees Celsius
h	hour
ha	hectare
km	kilometre
km/h	kilometres per hour
km^2	square kilometre
L	litre
m	metre
masl	metres above sea level
m^3	cubic metre

7 GLOSSARY

Abundance	The number of individuals
De Beers	De Beers Canada Inc.
Density	The number of individuals per unit area
Distribution	The pattern of dispersion of an entity within its range
Habitat use	The way and animal uses (or *consume*s, in a generic sense) a collection of physical and biological entities in a habitat
Hemostat	A plier-like locking medical instrument used to secure fine and delicate materials
Home range	The area traversed by an animal during its activities during a specific period of time
Mine	Gahcho Kué Mine
Population	Classically, a collection of interbreeding individuals
Transect	A method of sampling along a path or fixed line
Upland	Ground elevated above the lowlands along rivers or between hills; highland or elevated land; high and hilly country