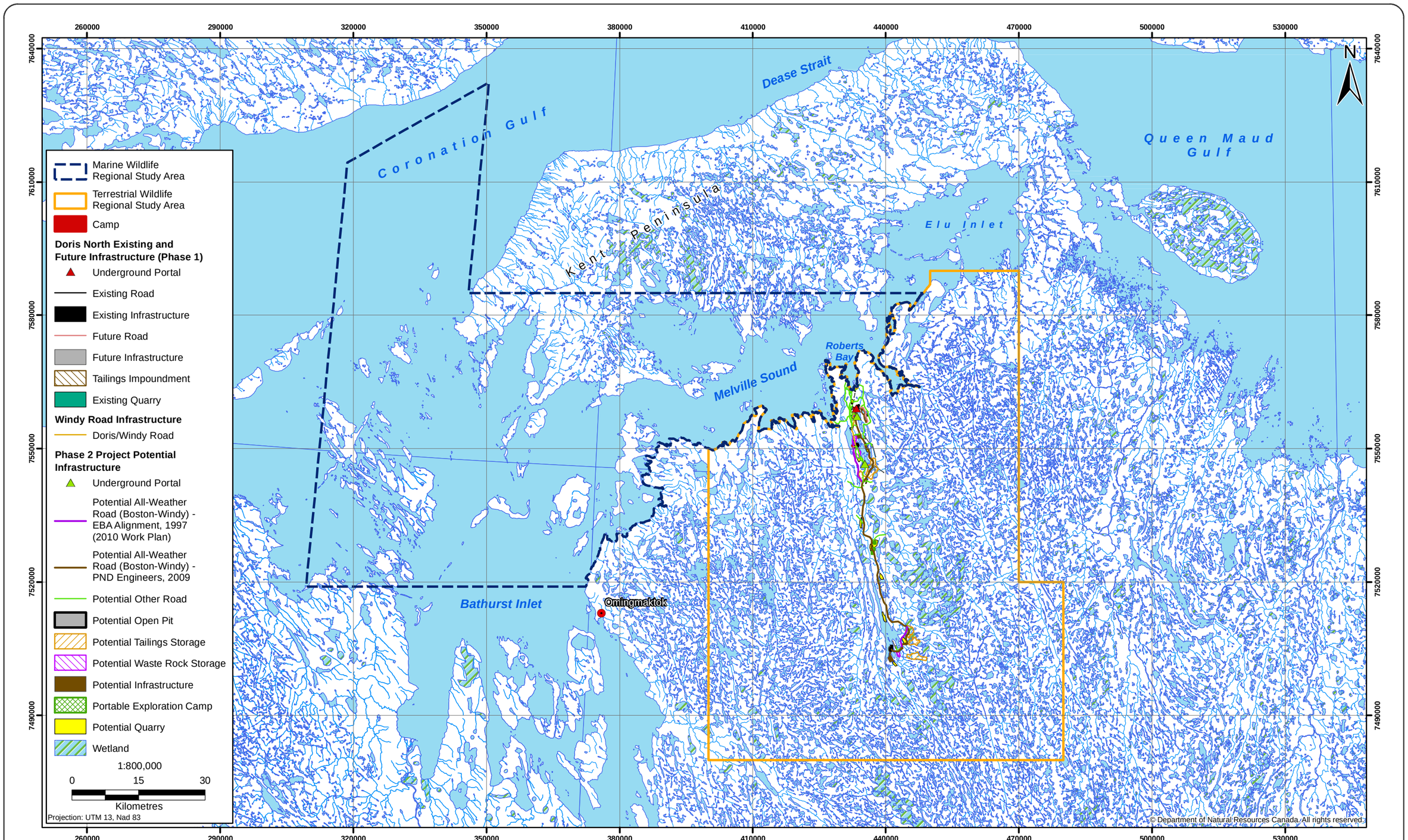

NEWMONT NORTH AMERICA

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Figure 1-3

Regional Study Area (RSA) for Marine Wildlife Baseline Studies

2. Caribou Ice Crossing

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2. Caribou Ice Crossing

2.1 INTRODUCTION

The Dolphin and Union herd winters on the Arctic mainland coast east and west of Bathurst Inlet, sometimes within the Hope Bay Project RSA. This herd migrates north at the end of April and May to Victoria Island to calve and spend the summer, returning to the mainland during the fall when the sea ice has frozen; typically in early November. In the early 1900s, the Dolphin and Union caribou herd was estimated at 100,000 animals (COSEWIC 2004). Overhunting and harsh winter conditions are reported to have caused a population crash between 1900 and 1920 to the point where caribou were not observed migrating between Victoria Island and the mainland (Gunn 2005; Poole et al. 2010). In the late 1980s and early 1990s, the Dolphin and Union herd had recovered to the point where they resumed their historic migrations between Victoria Island and the mainland (Gunn et al. 1997; Poole et al. 2010). Approximately 7,200 Dolphin and Union caribou were counted prior to migration in spring 1993 (Gunn et al. 1997). In 1997, the Dolphin and Union herd was estimated at 28,000 ± 3,350 animals (Nishi and Gunn 2004), which is approximately one third of its historic size.

Dolphin and Union caribou have recently been recognized as a genetically distinct population from the Peary caribou and barren-ground caribou (COSEWIC 2004). The Dolphin and Union herd is designated as a sub-population of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) due to high harvests without recent population estimates (COSEWIC 2004). Potential threats to this herd's long term viability are climate warming and shipping activity across the herd's migration route (COSEWIC 2004). Climate warming may shorten the amount of time caribou have to cross between the mainland and Victoria Island during the spring and fall migrations, since this movement is dependent on ice formation. Shipping and icebreaking make Dolphin and Union caribou "vulnerable to die-offs similar to those that have affected Peary caribou" (COSEWIC 2004). The herd is pending addition to Schedule 1 of the *Species at Risk Act* (SARA).

The objectives of the caribou ice crossing study in 2010 and 2011 were to identify the location of caribou trails in Melville Sound and upper Bathurst Inlet and to collect information on migration patterns of the caribou herd that may interact with the project.

2.2 METHODS

Aerial surveys were flown during the spring of 2010 and 2011. Surveys were conducted along pre-determined transect lines in Melville Sound and upper Bathurst Inlet within the RSA (Figure 2.2-1). Transect lines were parallel at a distance of 8 km apart. Eight transect lines were oriented in an east-west orientation in Melville Sound (Transects MS1 to MS8). Three transect lines were oriented in an approximately north-south orientation in upper Bathurst Inlet and Coronation Gulf (Transects CG1 to CG3; Figure 2.2-1).

Aerial surveys were conducted using a Bell 206LR Helicopter with a pilot, navigator, and an observer. The aircraft followed transect lines using an onboard Garmin global positioning system (GPS) at an elevation of 300 m and speed of approximately 150 km/hr. On occasion, poor weather conditions at higher altitudes were encountered and the flight level was lowered for safety reasons. All caribou and caribou tracks within 500 m on either side of the helicopter were counted during all surveys. Effort was placed on determining the orientation of caribou tracks to determine the direction of travel. All caribou or tracks that were seen off-transect (greater than 500 m from the helicopter) or during ferry flights between transect lines and to and from Doris Camp, were also recorded.

Incidental observations of caribou trails were also recorded during caribou surveys conducted on May 22, 2011 as part of the annual Wildlife Mitigation and Monitoring Program (WMMP). Over-ice surveys were conducted as part of annual caribou surveys using the same flight methodology as the 2010 ice crossing survey. The caribou study area is described in the annual WMMP.

2.3 RESULTS AND DISCUSSION

2.3.1 Caribou Movements in Marine RSA

A total of 18 caribou and 114 caribou tracks were observed during aerial surveys from June 3 to 5, 2010 (Figure 2.3-1; Appendix 1). One group of 13 bull caribou were observed off-transect along Transect CG2. Five bull caribou were incidentally observed during travel to and from Doris Camp (Figure 2.3-1). Of the 114 separate caribou tracks observed, the majority were documented along the shoreline of northern Melville Sound (Figure 2.3-1). In several areas, caribou tracks were grouped together, suggesting that larger groups of caribou (~5-10 individuals) were travelling together. Generally, caribou tracks were oriented in a northerly direction and followed shorelines of the Kent Peninsula (Figure 2.3-1).

A total of 10 caribou and 17 groups of trails were observed during the May 2011 caribou survey (Figure 2.3-2, Appendix 2). The majority of observations were recorded west of Roberts Bay and toward the western extent of the survey area, using a group of small islands to cross to the Kent Peninsula. The annual movement patterns of Dolphin and Union caribou vary between sexes. Cows generally start their northward migration in May; the median migration initiation date of female caribou based on a decade of satellite collar data was May 24 (Poole et al. 2010). Females generally take less than five days to complete the northward trip (Poole et al. 2010). Males and juveniles tend to be the last members of the herd to travel to Victoria Island, crossing well into June (Gunn et al. 1997). This pattern agrees with the results of the ice crossing survey, where only male caribou were observed. It is likely that at the time of the survey, most female caribou had crossed and were on their calving grounds on Victoria Island.

2.3.2 Nunavut-wide Movements

Dolphin and Union caribou exhibit fidelity to crossing areas across Dease Strait and within the Coronation Gulf and Queen Maud Gulf (Figure 1-1). Based on 20 years of satellite collar data, groups of female caribou began ice crossing from the same general area on the Arctic mainland for 5 or 6 years consecutively (Poole et al. 2010). Several areas east and west of Bathurst Inlet appear to be used consistently across years. West of Bathurst Inlet, many female caribou started their northward migration from around Grays Bay and proceeded northwards towards the Richardson Islands (Poole et al. 2010). East of Bathurst Inlet, several females consistently started their northward migration from the edge of the Kent Peninsula and crossed eastward towards Cape Colborne just south of Cambridge Bay as well as roughly northward towards Byron Bay (Poole et al. 2010). The annual fidelity may be an artefact of the shortest possible “over ice” crossing distance, for example, island chains shorten the ice crossing distance west of Bathurst Inlet (e.g., Richardson Islands). The results of the ice crossing survey agree with historical and current movement patterns of Dolphin and Union caribou. The majority of caribou tracks documented during the ice crossing surveys were oriented in a north or north-westerly direction, suggestive of caribou that pass from the northern edge of the Kent Peninsula towards Byron Bay on Victoria Island.