MEMORANDUM

TO Sandra Pouliot, Canadian Malartic Corporation **DATE** December 12, 2017

CC Adam Auckland

FROM Erin Greenaway **PROJECT No.** 1656263 (DOC009_Rev 0)

2017 NATURAL ENVIRONMENT SCOPE OF WORK AT HAMMOND REEF

The natural environment baseline studies proposed in 2017 intend to address regulatory review comments on the *Supplemental Assessment of Access Road and Transmission Line Routing Alternatives* (AMEC 2016), satisfy the initial stages of the *Endangered Species Act, 2007* (ESA) information gathering process, and augment and complement the wildlife and vegetation baseline work that was undertaken during the Environmental Assessment (EA) studies. The studies planned for 2017 include:

- Bat studies;
- Breeding bird surveys (breeding bird point counts and raptor stick nest surveys); and,
- Vegetation surveys.

The proposed field surveys will take place along the preferred transmission line alternative (also known as Alternative 3-Hardtack/Sawbill Road and Sawbill Bay Alignment from the *Supplemental Assessment of Access Road and Transmission Line Routing Alternatives* (AMEC 2016) and is illustrated on Figure 1. The specific field study areas for the various field surveys outlined below are described within each section of this work scope.

The initial step is to consult with the Ontario Ministry of Natural Resources and Forestry (MNRF) prior to initiation of the field programs. This memo contains the details of the proposed scope of work to help guide a discussion with the MNRF in a teleconference.

Bat Studies

Little brown myotis (*Myotis lucifugus*), northern myotis (*Myotis septentrionalis*) and eastern small-footed myotis (*Myotis leibii)* are all designated as Endangered on the Species at Risk in Ontario (SARO) list. All three bats receive species and habitat protection under Ontario's Endangered Species Act (ESA). In the summer of 2013, Golder biologists undertook bat surveys on, and in the vicinity of, the Project site to determine if the listed species were present. All three species were acoustically recorded during both the maternity roosting season and the swarming season. As such, subsequent discussion took place with the MNRF to discuss any implications of the findings and the next steps with respect to the ESA permitting process. The following scope will initiate those next steps, as required by the MNRF.

Initially, the data from the EA field surveys including the locations of acoustic monitoring stations along the transmission corridor and the vegetation community ecosite mapping within the field study area will be reviewed to determine the target areas within which to perform the 2017 bat surveys.

The proposed bat field study program consists of three components: (1) habitat assessment, (2) acoustic monitoring during maternity roosting season, and (3) an assessment of use of potential hibernacula habitat.

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Bat Habitat Assessment

A site reconnaissance to assess potential bat habitat will be completed along the preferred transmission alternative plus 500 meters on either side of the route to fill in data gaps from the 2013 monitoring program. The intent of the bat habitat assessment is to determine:

- Whether there are any features such as caves or bedrock openings that may provide hibernacula for the listed bat species; and
- If there are forested communities that may have higher quality snags and cavity trees that serve as colonial maternity roosts for the listed bat species.

The MNRF Guidelines: *Bat Habitats: Guidelines for Wind Power Projects* indicate that maternity roosts are typically situated in mixed wood forests and deciduous forests (OMNR 2011). Therefore, the habitat assessment will focus on the identification of older, mature forested communities (i.e., forests with the potential to have trees of >25 meter diameter at breast height, tree cavities and snags) along the preferred transmission route and 500 meter buffer on either side.

The observations of potential (or candidate) bat habitats identified during the aerial reconnaissance will be delineated on maps so that further field studies can be completed to determine if these habitats are suitable and are being used by SAR bats.

If possible, the habitat assessment for bat habitat will be combined with the aerial raptor stick nest surveys (see below) as both surveys benefit from aerial coverage and are best performed in late winter/early spring during leaf off conditions. The aerial search for potential bat hibernacula needs to be conducted when there is no snow cover on the ground.

Acoustic Monitoring during Maternity Roosting Season

The females of the three listed species of bat form maternity roosting colonies in suitable trees or buildings during their birthing and rearing of pups. These maternity roosting habitats are critical habitats for these species during the maternity season from approximately May to July.

Acoustic recordings of bats at specific times of the year can give an indication of habitat usage. Acoustic survey of bats provides a measure of the passage rate of bats at a particular location which can then be used to determine relative abundance of each species recorded and determine species presence and potential use of the general landscape during the maternity season.

Acoustic monitoring is proposed within the potential (candidate) maternity roost habitat identified during the habitat assessment at up to ten stationary acoustic survey stations. Acoustic recording devices will be deployed for ten nights during the period from beginning of June to early July.

Assessing Use of Potential Hibernacula

The three listed bat species hibernate in caves and other openings in rock (e.g. mine adits). In 2013 Golder conducted swarming season visual assessment surveys concurrently with swarming season stationary acoustic surveys at the two mine adits on the Hammond Reef mine site. The adits were surveyed visually from August 12 - 21, 2013. Visual surveys entailed a surveyor watching for bat activity at the entrance of the potential hibernacula, supplemented with acoustic detection of bats using a hand-held device. Surveys were initiated

30 minutes before sunset and continued until at least two hours after sunset. Both adits were monitored concurrently and each surveyor also had an Echo meter (EM3) handheld bat detector. Surveyors observed the area for visual sightings of bats and monitored acoustically with the hand-held device. All bat observations were noted. Echo meter recordings were later analyzed using Kaleidoscope© and Sonobat© software and manual species identification was conducted by an experienced bat acoustic specialist. The stationary acoustic surveys entailed the deployment of bat detectors during the swarming season within 10 meters of the adit openings to record for up to 10 nights. A reference station was also surveyed at the same time, in similar habitat approximately 300 m away from the adits.

Although the swarming season visual surveys did not provide evidence of swarming, the concurrent stationary acoustic surveys documented higher levels of bat activity (including little brown myotis) at the two adits compared to the reference station (and to the majority of the maternity stations). This suggests that swarming activity may have been taking place at both mine adits.

To supplement the 2013 survey results and provide further evidence of bat activity during hibernation at these features, acoustic monitoring will be completed at the openings of these adits during the spring emergence period. Acoustic monitors will be set up in, or close to, the entrance/exit of the mine adits and left for a period of up to 1 month during the period of late March to the beginning of May when bats are coming out of hibernation. The acoustic detection of bats near the mine adits will determine whether or not they are hibernating in these features. Analysis of the recordings will assist in determining the species and number of individuals passing through the entrance/exit.

Analysis and Reporting of Results

At the end of the acoustic monitoring periods (spring emergence period and maternity roosting period), the bat detectors will be collected and the data analyzed using automated classifier software. The results of all the bat field surveys will be summarized in a comprehensive technical report that discusses the use of potential maternity roost habitats along the preferred transmission corridor and the potential hibernacula in the adits.

Additionally, as the first step in the ESA permitting process, the MNRF requires that an Information Gathering Form (IGF) be completed. The purpose of the IGF is to document and submit information that the MNRF needs to determine:

- Whether any protected SAR or their habitats are present at or near the location of the proposed activity;
- The potential effects of the activity on these species and habitats and whether the activity is likely to contravene subsection 9(1) or 10(1) of the ESA; and
- Whether it is advisable for the proponent to apply for an overall benefit permit under clause 17(2)(c) of the ESA prior to proceeding with the activity.

The results of the above work scope, in addition to the results of the 2013 bat survey and habitat information collected, will be reported in the IGF.

Breeding Bird Surveys

The breeding bird surveys proposed for this work scope are a result of the commitments in the *Supplemental Assessment of Access Road and Transmission Line Routing Alternatives* (AMEC 2016) to confirm bird species

presence and abundance along the preferred transmission line alternative and fill in the gaps that were not previously covered by EA field surveys in order to identify any further potential environmental constraints such as SAR habitats and bald eagle nests so that avoidance and mitigation of the route can be refined.

The proposed breeding bird field study program consists of two types of survey: (1) breeding bird point counts, and (2) raptor stick nest surveys.

Breeding Bird Point Count surveys

Breeding bird point count surveys will be carried out along the preferred transmission alternative plus 500 meters on either side of the route to fill in data gaps from the breeding bird surveys conducted in 2010, 2011 and 2012. Initially, the data from the EA field surveys including the locations of breeding bird point count station and the vegetation community ecosite mapping along the preferred transmission corridor will be reviewed to determine the target areas within which to perform the 2017 breeding bird point count surveys.

Surveys will take place on two separate occasions between late May and early July (i.e., the bird breeding season). Surveys will generally follow point count protocols used in the *Breeding Bird Survey* (Downes and Collins 2003), and the Ontario Breeding Bird Atlas (Cadman et al. 2007).

Raptor Stick Nest Surveys

Aerial raptor stick nest surveys will be conducted using a helicopter to allow for slower airspeeds and the increased mobility desired to facilitate identification of species and nest status of as many nests as possible. Raptor stick nests are most easily located in late winter to mid spring, prior to leaf out or when leaves are less mature. The aerial survey will be undertaken along the preferred transmission alternative plus 1 kilometer on either side of the route. Flight spacing would be parallel to the corridor at approximately 500 m intervals. The survey would be flown at an elevation of about 200 m above the trees. In addition, perimeters of the larger waterbodies would also be surveyed within the bounds of the survey study area. The raptor aerial surveys will be combined with the aerial habitat reconnaissance for bat habitat.

Following completion of the bird surveys, the results will be summarized in a technical report that includes data analysis, mapping and a discussion of any constraints on the location of the preferred transmission line route.

Vegetation Surveys

The vegetation surveys proposed for this work scope will address the commitments in the *Supplemental Assessment of Access Road and Transmission Line Routing Alternatives* (AMEC 2016) to conduct representative transect surveys for vegetation communities including surveys targeting the presence of rare plant species. The additional vegetation surveys will take place along the preferred transmission line and 500 meters on either side of the route to address knowledge gaps in the floristic populations and communities associated with the preferred route.

Initially, the vegetation community ecosite mapping developed for the EA along the preferred transmission corridor will be reviewed to determine the target areas within which to perform the 2017 vegetation surveys. Rare plants and plant communities with potential to occur along the preferred transmission line will be determined through the update to background information and agency consultation prior to field surveys. The updated background information in conjunction with a review of the vegetation community mapping developed for the EA and high-resolution satellite imagery will assist in focussing the field survey effort.

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A subset of plant communities, initially identified through desktop mapping exercise will be field verified and classified to the ecosite level using the Northern Ontario Forest Ecosystem Classification (FEC) system (Taylor et al. 2000) and the Northern Ontario Wetland Evaluation System, Northern Manual (MNR 2014) in detailed plots. Focus will be placed on ground-truthing potentially rare plant communities or communities capable of supporting rare plants. Transects to search for rare plants will be completed in conjunction with the detailed plot surveys to maximize the data collected in the field.

A description of soil, plant species, and relative abundance of the plant species observed in each plant community will be recorded at each plant community survey plot. Field notes, incidental wildlife observations and representative photographs will be used to provide an overall description of the plant communities. Sensitive or significant natural features, such as significant wildlife habitat, will be noted. Habitat use by wildlife in the area will be further characterized through observations of signs, or species sightings and the background information collected.

Surveys are scheduled to occur within the growing season (early June through late August) to capture early spring ephemerals as well as the late blooming species.

Following completion of the vegetation surveys, the results will be summarized in a technical report that includes data analysis and a discussion of any implications on the location of the preferred transmission line route.

Attachment:
Figure 1: Transmission Line Alignment Alternatives

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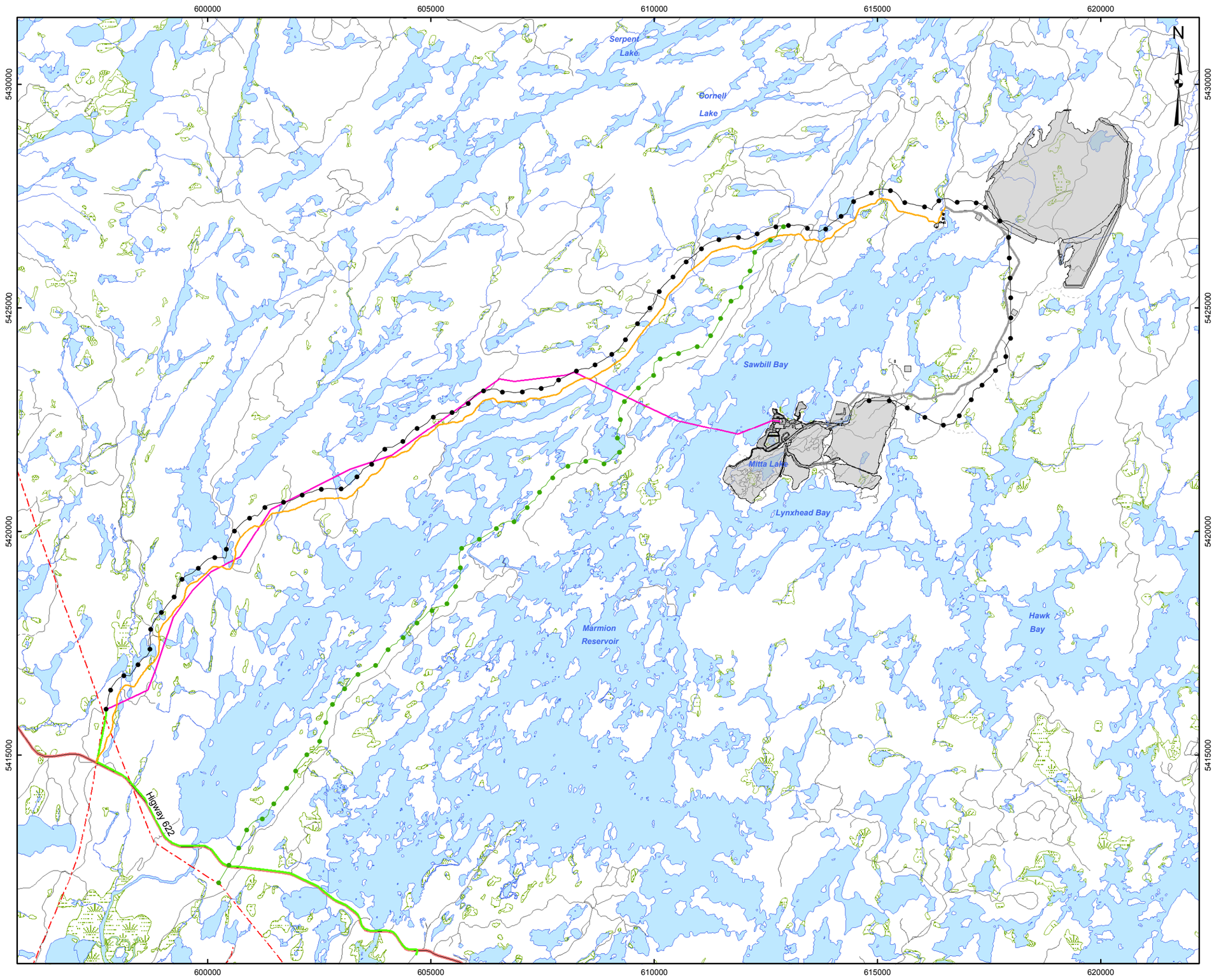

LEGEND

- Provincial Highway
- Road
- Trail
- Power Transmission Line
- Auxiliary Power Line
- River/Stream
- Lake
- Wetland

Transmission Line Alternatives

- Alternative 1 - Transmission Line Along Hardtack / Sawbill Road
- Alternative 2 - Transmission Line Along Raft Lake Road
- Alternative 3 - Transmission Line Along Hardtack / Sawbill Road and Crossing Sawbill Bay (Preferred Alternative)

- Project Facilities

REFERENCE

Base Data - Provided by OSISKO Hammond Reef Gold Project Ltd.
Base Data - MNR NRVIS, obtained 2004
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2008
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 15N

1,000 0 1,000 2,000 3,000 4,000
SCALE 1:85,000 METRES

PROJECT
HAMMOND REEF GOLD PROJECT
ATIKOKAN, ONTARIO, CANADA

TITLE
TRANSMISSION LINE ALIGNMENT ALTERNATIVES

Golder Associates
Mississauga, Ontario

PROJECT NO. 13-1118-0010			SCALE AS SHOWN	VERSION 2
DESIGN	CGE	14 Nov. 2008		
GIS	JO	2 Dec. 2013		
CHECK	CH	2 Dec. 2013		
REVIEW	CH	2 Dec. 2013		

FIGURE: 1

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