Provincial Individual EA
Proposed Terms of Reference for the Côté Gold Project
Appendix B

Prepared for:
IAMGOLD Corporation

Prepared by:
AMEC Environment & Infrastructure

Project Number:
TC121522

APPENDIX B

MINE ROCK AREA ALTERNATIVES ASSESSMENT

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT



MINE ROCK AREA ALTERNATIVES ASSESSMENT

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NB101-497/3-2
Rev 0
March 5, 2013

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CONSULTING
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ISO 14001 - EMS 550121
OHSAS 18001 - OHS 550122

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
NB101-497/3-2

Rev	Description	Date	Approved
0	Issued in Final	March 5, 2013	

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EXECUTIVE SUMMARY

This report presents an assessment of alternatives for the Mine Rock Storage Area (MRA) for the Côté Gold Project. The selection of the preferred MRA options is the focus of this report. Environmental, socio-economic, technical and economic criteria were considered to determine the preferred Options.

An initial site selection and pre-screening review process identified six MRA Options as suitable candidates for mine rock storage. Six Options were carried forward to be evaluated further using a Multiple Accounts Analysis (MAA) to rank the options and select the preferred MRA options.

The MAA was completed by establishing accounts, sub-accounts and indicators to compare and rank the identified MRA Options. The MAA was completed by maintaining account weighting factors consistent with the recommendations suggested in Environment Canada's guidelines. Sub-account and indicator weighting factors were established based on discussions with IAMGOLD and input from a multidisciplinary team to ensure that the evaluation accurately reflected the project parameters. A multi-step matrix type evaluation was used to establish a numerical rating for each Option. The MAA was completed to limit bias towards any of the MRA Options that were considered.

The results of the MAA indicate that MRA 1, 2 and 3 are the preferred MRA Options for the Project. The results of the sensitivity analyses support the selection of MRA 1, 2 and 3.

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ABBREVIATIONS

EC ..... Environment Canada
ha ..... hectare
IAMGOLD ..... IAMGOLD Corporation
km ..... kilometre
KPL ..... Knight Piésold Ltd
m ..... metre
MAA ..... multiple accounts analysis
MRA ..... mine rock storage areas
m^3 ..... cubic metres
NAG ..... non-acid generating
O.Reg ..... Ontario Regulation
PAG ..... potentially acid generating
TMF ..... tailings management facility

1 – INTRODUCTION

1.1 PROJECT LOCATION

IAMGOLD Corporation (IAMGOLD) is in the process of developing the Côté Gold Project (the Project), which includes a large tonnage, low to medium grade gold deposit within Chester and Neville Townships, District of Sudbury, approximately 20 kilometres (km) southwest of Gogama, Ontario. The Project area is situated just west of Highway 144, approximately 200 km by road northwest of Sudbury. Work is currently being completed to support upcoming pre-feasibility design and permitting. Figure 1.1 shows the location of the Côté Gold Project and the nearby communities.

1.2 SITE DESCRIPTION

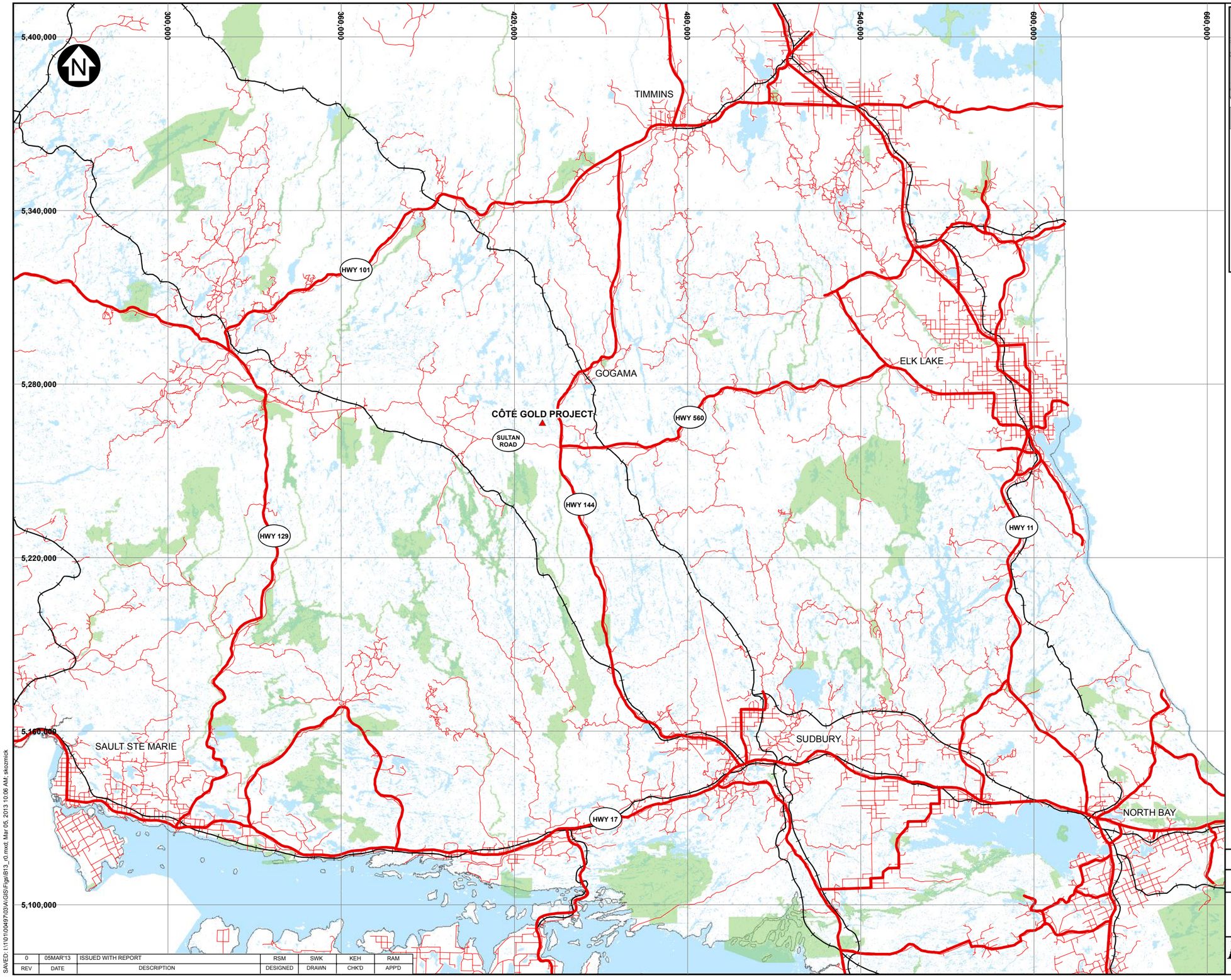
Topography at the project site is characterized by gentle to steep hilly terrain with ground surface elevations ranging from approximately El. 365 m to greater than El. 450 m. Low lying areas are characterized by abundant water bodies, including small to medium lakes, streams and swamps/boggy areas. Bedrock is exposed or very close to surface in most areas, with the exception of valley floors and low lying wet areas. The Project site is located within the Upper Mattagami River Watershed, which drains northward through the City of Timmins to James Bay. The site is located on two main sub-watersheds, the Mollie River system and the Mesomikenda River system. The intercontinental watershed divide is located south of the Project property. Surface water flows at the Project site are controlled by a number of lakes and creeks. The vegetation is generally dense in areas where the forest has not been historically harvested. The climate of this area is typical of northern areas within the Canadian Shield, with long cold winters, short warm summers and a moderate amount of precipitation throughout the year.

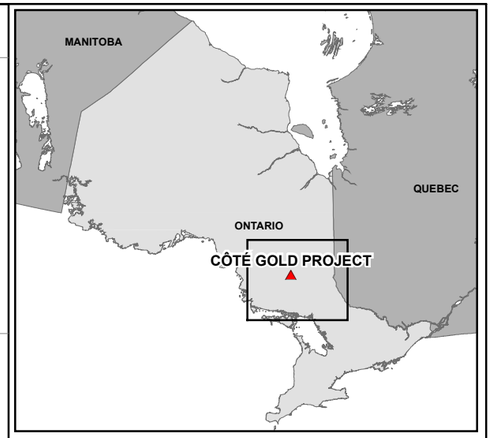
1.3 PROJECT DESCRIPTION

The Côté Gold Project will consist of a large open pit, Tailing Management Facility (TMF), Mine Rock and Overburden Storage Areas (MRA), Process Plant and ancillary facilities. A conceptual general site layout, detailing the proposed locations for the Project infrastructure, is shown on Figure 1.2.

Ore will be processed (crushed, ground, concentrated) at an on-site processing facility. During the operations phase of the Project, ore will be fed to the mill at an average rate of approximately 55,000 tonnes per day. The operating life of the mine is estimated to be approximately 15 years.

Disturbed areas within the Project footprint will be reclaimed in a progressive manner during all Project phases. Natural drainage patterns will be restored as much as possible. The ultimate goal of mine decommissioning will be to reclaim land within the Project footprint to allow future use by resident biota and as determined through consultation with the public, Aboriginal peoples and government. A certified Closure Plan for the Project will be prepared as required by Ontario Regulation (O.Reg.) 240/00 as amended by O.Reg. 307/12 (Ministry of the Northern Development and Mines, 2006)





LEGEND:

- CÔTÉ GOLD PROJECT LOCATION
- COMMUNITY/SERVICE CENTRE
- ROAD
- RAILWAY
- WATER
- PARK

NOTES:

1. BASE MAP: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA DEPARTMENT OF NATURAL RESOURCES (2009.) ALL RIGHTS RESERVED.
2. CO-ORDINATE GRID IS IN METRES.
   DATUM: NAD83
   PROJECTION: UTM ZONE 17

SCALE 20 10 0 20 40 60 km

IAMGOLD CORPORATION

CÔTÉ GOLD PROJECT

PROJECT LOCATION MAP

Knight Piésold CONSULTING

P/A NO. NB101-497/3 | REF NO. 2

FIGURE 1.1 | REV 0

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XREF FILE(S): TOPO-FEAT-LIO; TOPO-IMAG-FADE-2012; TOPO-LIDAR 2012 - 5m IMAGE FILE(S): 041O09A01 041O09A02 041O09A03 041O09A04 041O09A05 041O09A06 041O09A07 041O09A08 041O09A09 041O09A10 041O09A11 041O09A12 041O09A13 041O09A14 041O09A15 041O09A16 041O09B02 041O09B03 041O09B04 041O09G09 041O09G10 041O09G13 041O09G14 041O09G15 041O09G16 041O09H01 041O09H02 041O09H03 041O09H04 041O09H05 041O09H06 041O0

426 000 E | 428 500 E | 431 000 E | 433 500 E | 436 000 E

5 280 500 N | 5 278 000 N | 5 275 500 N | 5 273 000 N | 5 270 500 N | 5 268 000 N | 5 265 500 N | 5 263 000 N

SOMME RIVER
NEVILLE LAKE
MESOMIKENDA LAKE
TMF 14C
TMF 14A
BAGSVERD CREEK
TMF 2B AND 2C
TMF 11
POTENTIAL TAILINGS MANAGEMENT FACILITY AREAS
TMF 1B
SCHIST LAKE
BAGSVERD LAKE
MRA 4
POTENTIAL PLANT SITE LOCATION
MRA 6
WEE DUCK LAKE
THREE DUCK LAKES (UPPER)
MOORE LAKE
APPROXIMATE OPEN PIT LOCATION
CÔTÉ LAKE
MRA 3
THREE DUCK LAKES (MIDDLE)
CLAM LAKE
POTENTIAL MINE ROCK AREAS
MRA 7
MRA 2
MRA 1
THREE DUCK LAKES (LOWER)
CHESTER LAKE

SCALE A: 500 250 0 500 1000 1500 2000 2500 m

LEGEND:

- POTENTIAL PLANT SITE LOCATION
- EXISTING TRAIL/ATV/TRUCK ROADS
- POTENTIAL TAILINGS MANAGEMENT FACILITY AREAS
- POTENTIAL MINE ROCK AREAS

NOTES:

1. COORDINATE GRID IS UTM NAD83, ZONE 17.
2. PLAN BASED ON INFORMATION PROVIDED BY IAMGOLD CORPORATION, RECEIVED AUGUST, 2012.
3. CONTOUR INTERVAL IS 5 METRES.
4. ELEVATIONS ARE IN METRES.

REV	DATE	DESCRIPTION	DESIGNED	DRAWN	CHK'D	APP'D
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IAMGOLD CORPORATION

CÔTÉ GOLD PROJECT

OVERALL SITE LAYOUT

Knight Piésold CONSULTING

P/A NO. NB101-497/3 | REF NO. 2

FIGURE 1.2 | REV 0

1.4 SCOPE OF REPORT

Knight Piésold Ltd. (KPL) has been retained by IAMGOLD to complete the MRA alternatives assessment for the Project. The objective of this work is to identify the most appropriate locations to store the mine rock based on environmental, socio-economic, technical and economic considerations. The most appropriate areas shall have a minimal adverse effect on the environment and be technically sound with minimal potential for physical and economic failure. The alternatives assessment has been completed following Environment Canada's guideline (Environment Canada, 2011).

This report summarizes the results of the multiple accounts analysis used to rank the MRA Options for mine rock storage. The following items are addressed in this report:

1. Review and summary of the MRA Options evaluated.
2. A discussion of the multiple accounts assessment methodology, approach to value-based analysis, and subsequent sensitivity analyses.
3. Summary of the indicator values, scales and scoring.
4. Results of the Multiple Accounts Analysis and sensitivity analysis for the MRA Options.

1.5 BACKGROUND

A pre-screening assessment has been completed whereby a total of 12 candidate MRA sites were identified and investigated as part of an initial pre-screening assessment (KPL, 2013).

A pre-screening assessment, employing fatal flaw analysis included the identification of factors or elements that are so severe or unfavourable that they would eliminate the site as a candidate MRA Option. A comparative analyses of the remaining sites was employed to optimize the decision making process and allow the Options that have a reasonable likelihood of success to be focussed upon.

The screening and comparative evaluations carried out identified Sites 1, 2, 3, 4, 6 and 7 as suitable candidates for mine rock storage for further analysis. The general location of the MRA Options (Options MRA 1, 2, 3, 4, 6 and 7) are shown on Figure 1.2.

2 – MINE ROCK STORAGE

2.1 GENERAL

The MRA will be required to store approximately 840 million tonnes of mine rock and 13 million tonnes of overburden over a period of approximately 15 years based on the current mine plan. The required storage volume for the mine rock is approximately 442.1 million m^3 based on an estimated average in situ placed dry density of 1.9 tonnes/m^3.

The MRA will be founded on competent bedrock or surficial soils suitable to support the pile and provide long term stability. Foundation preparation will include, at a minimum, the removal of unsuitable materials to achieve the appropriate foundation conditions. The MRA foundation will be inspected during construction to confirm suitable foundation conditions exist.

The mine rock pile will be constructed with an overall slope of approximately 2.5H:1V. The slope will include 10 m tall benches with mid slopes at 2H:1V and 7 m wide mid-slope benches. The mine rock pile slopes will provide long term stability and allow for concurrent reclamation of the slope.

Based on the work completed to date, the potential for acid rock drainage and metal leaching from the MRA is low (KPL, 2012).

The mine rock stored in the MRA will consist of NAG rock. Geochemical test results to date indicates that approximately 10 % of the mine rock is PAG and that the PAG rock is associated with specific rock deposits in the open pit (KPL, 2012). PAG mine rock will be managed on surface during mine operations in segregated stockpiles to facilitate collection and treatment of runoff from the piles, as/if needed.

Water management is an integral part of the management and operation of the MRA. The MRA design will include runoff water management measures within the MRA catchment areas. If required, provisions will be included for collection, monitoring and controlled release of treated surface runoff.

Water quality will be monitored at runoff collection points for the MRA during initial construction, throughout operations and after closure. The majority of mine rock and overburden piles are expected to be relatively inert and the runoff likely suitable for direct discharge to the environment. Any water requiring treatment from the mine rock areas (i.e., including the PAG mine rock pile) will be collected and pumped to a runoff collection pond located near the plant site and ultimately managed in the TMF for eventual reclamation in the milling process. Excess water not needed in the process will be treated (as necessary) and discharged. Collection details will include site grading, ditches, catch basins and pipeworks.

Closure and reclamation are important considerations in the evaluation of the MRA alternatives. Closure of the facilities will address long-term physical and chemical stability and potential impacts to the surrounding environment. The fundamental considerations are for the physical stability of the mine rock piles, prevention of fugitive dust emissions from the mine rock surfaces and appropriate post-closure water management. An additional requirement is to ensure that water quality objectives will continue to be met after closure. Although a significant amount of further testing is required, results to date indicates that the mine rock is relatively inert and is not expected to produce acid rock drainage (ARD) or significant metal leaching after closure.

Specific reclamation activities will include physical stabilization measures, select capping and vegetation measures to meet closure objectives, surface water management details and implementation of appropriate water management and water quality measures.

2.2 SUMMARY OF MRA OPTIONS

The MRA options have been identified and preliminary concepts have been developed for each location. Various assumptions have been made with respect to foundation conditions and stability. It should be noted that no detailed analyses (stability, hydrology, hydrogeology, etc.) have been completed.

The general arrangement of the MRA Options is shown on Figure 2.1. Pertinent details of MRA Options 1, 2, 3, 4, 6 and 7 are summarized on Table 2.1 and described in the following sections.

2.2.1 Option MRA 1

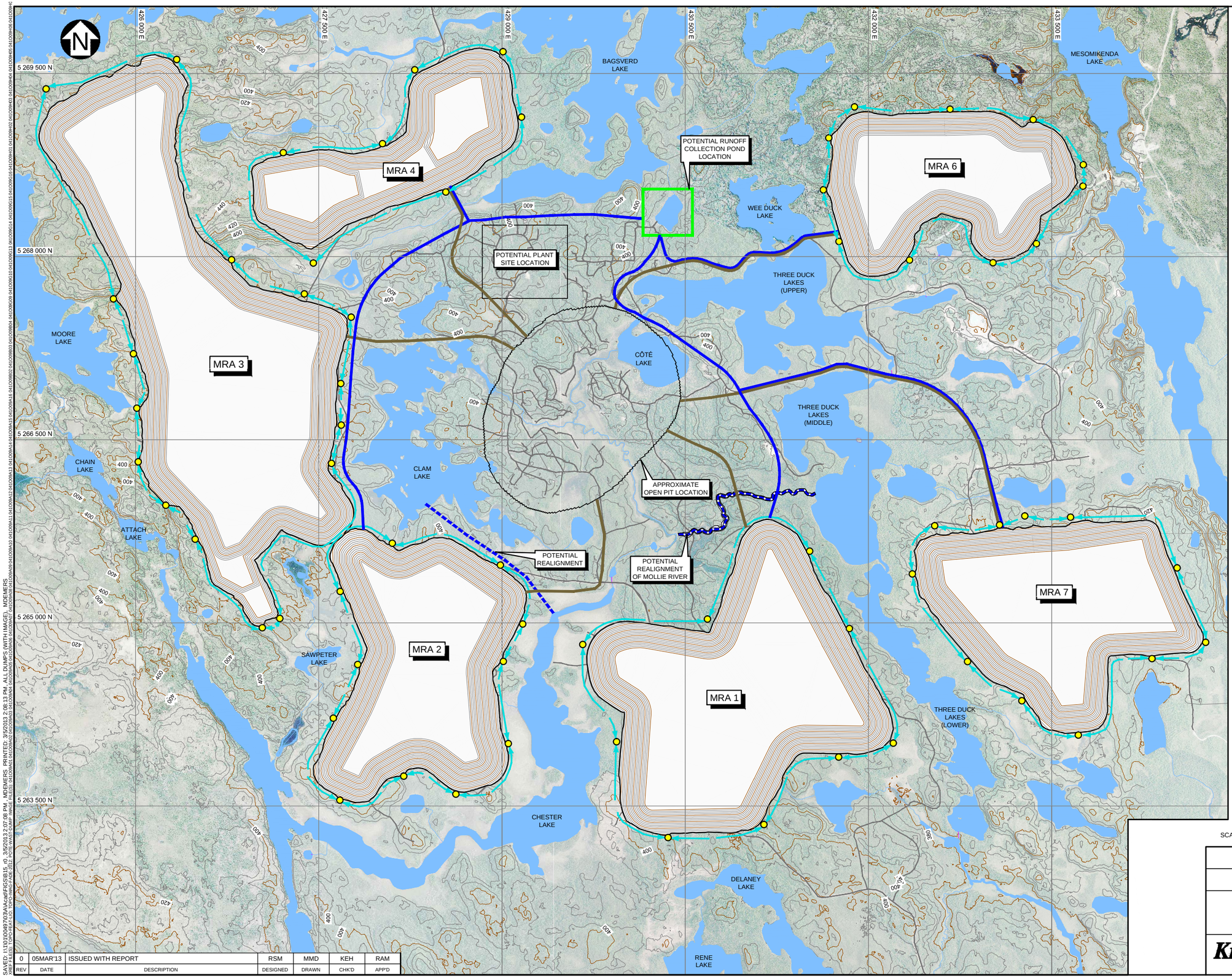
MRA 1 is located south-southeast of the open pit, directly east of Chester Lake and west of Three Duck Lakes (lower) in the Mollie River sub-watershed. The mine rock pile at this location has an approximate footprint area of 372 ha with a final elevation of 481 m (assuming a pile height of 100 m). Based on these dimensions, MRA 1 has the capacity to store 54 % (i.e., 240 million m^3) of the total planned mine rock production volume.

Specific comments on Option MRA 1 are provided below:

- Located close to the open pit
- Located entirely on IAMGOLD mine claims
- Some geotechnical investigations have been completed and this option is considered to possess moderate foundation conditions along the perimeter of the MRA
- Condemnation drilling has been carried out in the area and a reserve of ore is potentially present within the site
- One water crossing will be required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 150 m, which would store 72% (i.e., 319 million m^3) of the total planned mine rock production volume

2.2.2 Option MRA 2

MRA 2 is located south-southwest of the open pit, directly northwest of Chester Lake and south of Clam Lake in the Mollie River sub-watershed. The mine rock pile at this location has an approximate footprint area of 269 ha with a final elevation of 487 m (assuming a pile height of 100 m). Based on these dimensions, MRA 2 has the capacity to store 39 % (i.e., 174 million m^3) of the total planned mine rock production volume.



LEGEND:

- WATER
- EXISTING TRAIL/ATV/TRUCK ROADS
- POTENTIAL PLANT SITE LOCATION
- APPROXIMATE PIT LOCATION
- POTENTIAL RUNOFF COLLECTION POND
- POTENTIAL HAUL ROAD
- RUNOFF COLLECTION PIPELINE (IF REQUIRED)
- POTENTIAL RUNOFF COLLECTION DITCHING (IF REQUIRED)
- REALIGNMENT
- RUNOFF COLLECTION POINT (IF REQUIRED)

NOTES:

1. COORDINATE GRID IS UTM NAD83, ZONE 17 AND IS IN METRES.
2. PLAN BASED ON INFORMATION PROVIDED BY IAMGOLD CORPORATION (AUGUST 2012).
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 5 METRES.
4. DIMENSIONS AND ELEVATIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
5. REALIGNMENT SECTION OF THE MOLLIE RIVER WAS PROVIDED BY CALDER ENGINEERING LTD. (DECEMBER 12, 2012).

SCALE A: 300 150 0 500 1000 1500 m

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CÔTÉ GOLD PROJECT

MINE ROCK AREAS

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P/A NO. NB101-497/3 | REF NO. 2

FIGURE 2.1 | REV 0

Knight Piésold CONSULTING

TABLE 2.1

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
SUMMARY OF MINE ROCK AREA OPTION DETAILS

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Criteria	Option					
	MRA 1	**MRA 2**	**MRA 3**	**MRA 4**	**MRA 6**	**MRA 7**
Land Ownership and Mineral Rights						
Within Mine/Claim Boundary	Yes	Partially	Partially	Partially	Yes	Yes
Condemnation Drilling Completed	Yes	No	No	No	No	No
Underlain by Potential Ore	Potentially	Potentially	Potentially	Potentially	Potentially	Potentially
Watershed Considerations						
Number of Watersheds Within MRA Footprint	1	1	2	1	2	2
Requires Surface Water Realignment	No	No	No	No	No	No
Runoff Water Management (number of collection points)	9	11	16	7	12	11
Social						
First Nations / Métis Interests	Yes	Yes	Yes	Yes	Yes	Yes
Residences within MRA Footprint	No	No	No	No	No	No
Residences in Proximity to MRA	Yes	Yes	Yes	Yes	Yes	Yes
Visible from Residences	Yes	Yes	Yes	Yes	Yes	Yes
Environmental						
Potential Fisheries Compensation	Not Likely	Not Likely	Not Likely	Not Likely	No	No
Site Contains a Waterbody and/or Watercourse	Potentially (headwater stream)	Potentially (headwater stream)	Potentially (headwater stream)	Potentially (2 very small)	No	No
Mine Rock Pile Configuration						
Approximate Footprint Area (ha)	371.7	268.7	520.3	162.4	201.5	266.0
Approximate Stockpile Capacity (at a stockpile height of 100m) (Million m^3)	240.4	173.8	318.5	79.0	110.4	159.9
Storage Efficiency (at a stockpile height of 100 m or less) (Note 1 and 2)	54%	39%	72%	18%	25%	36%
Estimated Maximum Stockpile Elevation (at a stockpile height of 100 m or less) (m)	481	487	487	482	475	481
Sufficient Volume to Store Planned Mine Rock Volumes (at a stockpile height of 100 m or less)	No	No	No	No	No	No
Expandable (additional storage capacity if the pile is expanded from a height of 100 m to 150 m) (Million m^3)	78.4	40.8	110.4	10.7 (1)	30.7	54.0
Foundation Conditions	Moderate	Suspect Moderate	Suspect Good	Suspect Good	Suspect Good	Suspect Good
Straight Line Distance from the Pit to Centre of Area (km)	2.4	2.4	3.0	2.5	3.6	4.2
Elevation Difference - Pit Rim (El. 390 m) to Final Height (m)	91	97	97	92	85	91
Haul Distance from Pit Rim (min/max) (km)	1.1 / 3.5	1.3 / 2.4	1.5 / 4.2	1.5 / 2.9	2.1 / 4.1	3.4 / 5.2
Runoff Water Management - Pipeline Length (km)	12	12	16	8	8	12
Runoff Water Management - Pumping Requirements (m)	12	9	10	13	21	14

I:\1\01\00497\03\A\Report\Report 2, Rev 0 - MRA MAA\Tables\[Table 2.1.xlsx]Table 2.1

NOTES:

1. MAXIMUM HEIGHT OF MRA 4 PILE IS 138 m.

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Specific comments on Option MRA 2 are provided below:

- Located close to the open pit
- Not entirely located on IAMGOLD mine claims
- Condemnation drilling has not been carried out in the area; however, a reserve of ore is potentially present within the site
- One water crossing will be required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 150 m, which would store 48% (i.e., 215 million m^3) of the total planned mine rock production volume

2.2.3 Option MRA 3

MRA 3 is located west of the open pit and Clam Lake and east of Moore Lake in the Mollie River and Mesomikenda River sub-watersheds. The mine rock pile at this location has the largest footprint area of the options at approximately 520 ha with a final elevation of 487 m (assuming a pile height of 100 m). Based on these dimensions, MRA 3 is capable of storing 72 % (i.e., 318 million m^3) of the total planned mine rock production volume.

Specific comments on Option MRA 3 are provided below:

- Located moderately close to the open pit
- Not entirely located on IAMGOLD mine claims
- Condemnation drilling has not been carried out in the area; however, a reserve of ore is potentially present within the site
- Potentially no water crossings required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 150 m, which would store 97% (i.e., 429 million m^3) of the total planned mine rock production volume

2.2.4 Option MRA 4

MRA 4 is located northwest of the open pit and directly west of Bagsverd Lake in the Mesomikenda River sub-watershed. The mine rock pile at this location has the smallest footprint area of the options at approximately 162 ha with a final elevation of 482 m (assuming a pile height of 100 m). Based on these dimensions, MRA 4 has the capacity to store 18 % (i.e., 79 million m^3) of the total planned mine rock production volume.

Specific comments on Option MRA 4 are provided below:

- Located close to the open pit
- Not entirely located on IAMGOLD mine claims
- Condemnation drilling has not been carried out in the area; however, a reserve of ore is potentially present within the site
- One water crossing will be required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 138 m, which would store 20% (i.e., 90 million m^3) of the total planned mine rock production volume

2.2.5 Option MRA 6

MRA 6 is located northeast of the open pit, directly east Wee Duck Lake and west of Mesomikenda Lake in the Mollie River and Mesomikenda River sub-watersheds. The mine rock pile at this location has an approximate footprint area of 201 ha with a final elevation of 475 m (assuming a pile height of 100 m). Based on these dimensions, MRA 6 has the capacity to store 25 % (i.e., 110 million m^3) of the total planned mine rock production volume.

Specific comments on Option MRA 6 are provided below:

- Located moderately close to the open pit
- Located entirely on IAMGOLD mine claims
- Condemnation drilling has not been carried out in the area; however, a reserve of ore is potentially present within the site
- Potentially no water crossings required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 150 m, which would store 32% (i.e., 141 million m^3) of the total planned mine rock production volume

2.2.6 Option MRA 7

MRA 7 is located southeast of the open pit, directly east Three Duck Lakes (lower) and west of Mesomikenda Lake in the Mollie River and Mesomikenda River sub-watersheds. The mine rock pile at this location has an approximate footprint area of 266 ha with a final elevation of 481 m (assuming a pile height of 100 m). Based on these dimensions, MRA 7 has the capacity to store 36% (i.e., 160 million m^3) of the total planned mine rock production volume.

Specific comments on Option MRA 7 are provided below:

- Furthest from the open pit of the options
- Located entirely on IAMGOLD mine claims
- Condemnation drilling has not been carried out in the area; however, a reserve of ore is potentially present within the site
- Potentially two water crossings required for the haul road
- Insufficient storage capacity to store the total planned mine rock production volume
- Additional capacity can be achieved by expanding the pile from a height of 100 m to 150 m, which would store 48% (i.e., 214 million m^3) of the total planned mine rock production volume

3 – ALTERNATIVES ASSESSMENT METHODOLOGY

3.1 MULTIPLE ACCOUNTS ANALYSIS METHOD

A Multiple Accounts Analysis (MAA) has been developed for the MRA Options. The purpose of the MAA is to provide a clear and transparent evaluation methodology to compare the Options and select the preferred alternative(s).

The MAA is a multi-step process that develops a matrix to provide a numerical rating for each Option. The approach is set out in Environment Canada's guidelines (Environment Canada, 2011).

3.2 ACCOUNTS, SUB-ACCOUNTS AND INDICATORS

The MAA employs a three-tiered approach, starting with generalized accounts, specific sub-accounts, and measurable indicators.

- **Accounts:** These are basic elements that encompass and integrate comprehensive specific qualities developed through the scoring and evaluation of focused sub-accounts and measurable indicators.

  The accounts used to evaluate the Options include:

  - Environmental (water quality and impacts to fisheries, vegetation and wildlife)
  - Socio-Economic (effects to the population)
  - Technical (complexity of the design, construction and operating considerations)
  - Economics (basic cost factors)

- **Sub-Accounts**: These utilize factual characterization criteria and are developed independently of any consideration of the MRA Options that will be evaluated in the subsequent MAA process. Evaluation criteria consider the benefit or loss (material impact) associated with the evaluated Options.

- **Indicators**: These allow for the qualitative or quantitative measurement of impacts associated with any given sub-account. Indicators tend to be measureable; whereas sub-accounts cannot be measured directly. For this reason, indicators need to be focused, deconstructed components that inform their respective parent sub-account. The indicators are grouped by parent accounts and sub-accounts and are described briefly in Appendix A.

The accounts, sub-accounts and indicators selected to evaluate the MRA Options at Côté Gold are summarized on Table 3.1.

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TABLE 3.1

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
ACCOUNT, SUB-ACCOUNT AND INDICATOR RATIONALE

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Account	Sub-Account	Rationale	Indicator	Comments
Environmental	Hydrology	A greater hydrological footprint implies a greater potential for water resources to be potentially affected.	Number of Watersheds	A greater number of watersheds in the catchment area may allow for a greater distribution of potentially impacted runoff from the mine rock piles.
			Stream Length Removed	Disrupting stream flows is less desirable due to the potential impact on aquatic life and downstream waterbodies. Some MRA Options overly low order streams. This indicator is a direct quantitative measure of stream lengths affected under the MRA Options.
			Loss of Waterbodies	Disruption of existing waterbodies (excluding streams) and wetlands is less desirable due to potential loss of aquatic habitat.
			Flow Change	Minimizing changes in the hydrologic flow regime is desirable. Small headwater waterbodies and wetlands adjacent to the MRA and reliant on the catchment area of the MRA are the most susceptible to hydrologic flow impacts.
	Water Quality	Adverse changes to water quality is not desirable.	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage	Disruption of waterbodies from groundwater seepage from the MRA is not desirable. Small waterbodies are the most susceptible to impacts from groundwater seepage from the MRA. The ratio of the mine rock perimeter length overlying subsoils with high seepage potential and adjacent to small waterbodies, to the total perimeter length is compared.
	Aquatic	Removal or adverse impact to fish communities is not desirable.	Loss of Fish Bearing Water	The loss of aquatic habitat (quantity and quality) under the MRA Options has been estimated.
			Adjacent Fish Ecology	The potential change to aquatic habitat (quantity and quality) adjacent to the MRA Options has been estimated.
	Terrestrial	Removal or reduction in vegetation and wildlife habitat is less desirable.	Habitat of Species of Special Concern Altered/Lost	The loss of habitat preferred by species of special concern under the MRA Options has been estimated.
			Total Moose Winter Habitat Altered/Lost	Moose winter habitat is considered significant wildlife habitat and is designated by MNR. The loss of moose winter habitat under the MRA Options has been estimated.
			Total Moose Aquatic Feeding Habitat Altered/Lost	Moose aquatic feeding habitat is considered significant wildlife habitat and is designated by MNR. The loss of moose aquatic feeding habitat under the MRA Options has been estimated.
			Total Vegetative Habitat Altered/Lost	The smaller the MRA footprint the least adverse effect on the persistence of vegetative populations and communities.
			Total Wetland Area Altered/Lost	The loss of wetland area under the MRA Options has been estimated.
	Closure	Adverse changes to water quality post-closure is not desirable	Post-Closure Chemical Stability	Runoff from the closed out mine rock and overburden piles is likely suitable for direct discharge to the environment. Should development of a segregated PAG mine rock pile be required, runoff water quality monitoring will be required to ensure compatibility with the surrounding environment. Closure of the facilities will address long-term physical and chemical stability and impacts to the surrounding environment.
Socio-Economic	Human Health	Adverse effects on human health are not desirable.	Human Health (Direct Exposure)	The potential likelihood for the MRA to affect human health due to exposure to emissions or other releases to the environment, including dust generation and potential for groundwater seepage were included in the assessment of the direct exposure indicator. The measurement is a receptor-based qualitative assessment considering wind direction, receptors in the path of the wind, potential for seepage, etc.
			Human Health (Indirect Exposure)	The potential likelihood for the MRA to affect human health, including the consumption of impacted fish, wildlife, berries, etc. was included in the assessment of the indirect exposure indicator.
	Existing Communities and Human (Current and Historic) Land Uses	Adverse effects to the existing communities and land uses are not desirable. Sites with less impact on the existing communities and land uses are preferred.	Aboriginal Peoples Interests and Current Land Use	Adverse effect to Aboriginal Peoples interests is not desirable. The relative value of the potential effects to Aboriginal Peoples interests is estimated.
			Presence of Archaeological Sites	The archaeological potential of the MRA footprint is important to consider. Potential disturbance or destruction of sites without prior examination, recording and mitigation is not permitted. This ranking is based on preliminary field work. High scores are applied to MRA's that have no sites or the effects on the site can be mitigated.
			Proximity to Existing Permanent or Temporary Residences	Number of residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity of the MRA.
			Recreational Access	Reduction in recreational access is less desirable. The value of the potential effect on recreational access is estimated. A recreation area is defined as a provincial park, a cottage, fishing lakes, hunting grounds, etc.
			Visibility and Aesthetics	Reduced visibility of the MRA is preferred. Visual effects are qualitatively assessed to capture the effect on the visual aesthetic from receptor locations such as major routes, communities and existing temporary or permanent residences.
Technical	Mine Rock Pile Layout	Larger and higher mine rock piles are generally more complicated and less desirable.	Storage Efficiency (at pile height of 100 m)	Multiple areas may be required to store the planned mine rock volume. The storage efficiency in terms of the maximum storage volume possible within a given MRA to the total planned mine rock production volume is calculated.
			Vertical Expansion Capacity	MRA sites that can accommodate additional mine rock storage is preferred. The additional storage capacity if the pile is expanded from a height of 100 m to 150 m is compared.
	Mine Rock Pile Construction	Straightforward mine rock pile construction is preferred so that the piles can be constructed efficiently and safely.	Site Preparation	Less site preparation is preferred. This would include construction of haul roads, runoff collection systems, water crossings, and any other earthworks required in order to prepare the area.
			Haul Distance from Open Pit	A shorter haul road is preferred to simplify the haul road design details.
			Geotechnical Conditions	Good geotechnical conditions are preferred for ease of construction and to ensure long-term stability. The geotechnical indicator provides a measure of the inherent risk to stockpile stability of siting the MRA on deep overburden soils, weak bearing soils or potentially liquefiable soils, etc.
	Land Acquisition	Acquisition of land may present challenges. It is preferred that all development is on existing property rights.	Land Area and Title Holders	It is advantageous to locate as much of the MRA on existing mine property as possible. MRA Options that require the least amount of land acquisition are ranked higher.
	Water Management	Water management is an important component of the overall operations and simpler operating systems are preferred.	MRA Catchment Area	A smaller MRA footprint generally simplifies water management which is preferred.
			Pipeline Length	A shorter runoff and seepage pipeline (if required) is preferred to simplify design, reduce the risk of failure, and reduce monitoring and maintenance requirements.
			Pumping Requirements	Less pumping simplifies the design and decreases the risks for delays due to maintenance and problems during operations.
	Monitoring and Maintenance	Complex monitoring and maintenance of the mine rock pile is less desirable.	Ease of Runoff Management	A lower number of sump locations around the perimeter of the mine rock pile is desirable and an indicator of the estimated level of monitoring required.
			Consequence of Operational Error	A lower consequence of error is preferred. The relative value of operational error is estimated.
Economics	Capital Costs	Lower capital costs are preferred to reduce the pre-production cash flow requirements.	Foundation Preparation and Access Construction	Simpler and less foundation preparation and access construction is preferred.
			Water Management	Simpler water management details are preferred. The cost will be a function of the estimated number of water management locations.
	Operational Costs	Higher operational costs are less desirable.	Haul Distance	A shorter haul distance is preferred to reduce the cost to haul the mine rock to the storage area.
			Operational Costs	Managing runoff is used as an indicator of operational costs and is a function of the total catchment area that intercepts water. Lower operational costs are preferred.
	Closure and Post Closure Costs	Closure and post closure costs should be reduced as much possible to reduce long term liabilities.	Reclamation	Lower reclamation costs are preferred. The costs will be a function of the final surface area to be reclaimed after operations. The ratio of final surface area to the mass of mine rock stored in the pile is compared.
			Monitoring and Maintenance	Less monitoring and maintenance is preferred. The cost is estimated based on the number of monitoring locations.

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3.3 VALUE-BASED DECISION PROCESS

The value-based decision process is an essential component of the overall MAA. The process assesses the combined impacts of a given option by scoring and weighing all indicators, sub-accounts, and accounts. The results of weighting and scoring are then aggregated into an overall merit rating for each option.

The details of the weighting and scoring procedures are discussed below.

- **Weighting:** Weighting factors allow the analyst to introduce bias given a perceived relative importance of a given indicator or sub-account. Weighting factors are inherently subjective - often based on the perceptions of the Proponent or the outcomes of a potentially limited sampling from the public consultation process. As such, the selection of weighting factors is a value-based process.

  Weighting factors are applied to each indicator, implying the relative significance or importance associated with each indicator. The weighting factors have been bracketed to range from 1 (least important) to 6 (most important).

  The MAA was completed by maintaining account weighting factors consistent with the recommendations suggested in Environment Canada's guidelines. The sub-account and indicator weightings and relative importance were defined based on discussions with IAMGOLD and input from a multidisciplinary team to ensure that the evaluation accurately reflects the project parameters. Higher weightings indicate greater relative importance and reflect the issues relative to the Project and the site conditions. The selected weightings are summarized on Table 3.2.

- **Indicator Values:** Values for the indicators are defined based on the characteristics of each of the MRA Options. Indicator values were selected based on input from a multidisciplinary team specific to their area of expertise. The indicator values for the MRA Options are summarized on Table 3.3.

- **Indicator Value Scales:** It is important that the indicators be deconstructed to elements that can be measured and compared without bias. Building on this concept, 6-point qualitative scales that are specific to each indicator are developed. Quantifying the measureable differences between options allows for the systematic comparison of options. The indicator value scales are summarized on Table 3.4.

- **Scoring:** Using 6-point qualitative scales that have been developed for each indicator and the indicator values, scores are assigned using measurable quantities or parameters. A score of 6 is considered the most favourable, while a score of 1 is considered least favourable. The individual indicator scores are shown on Table 3.5.

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TABLE 3.2

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MINE ROCK AREA ALTERNATIVES ASSESSMENT
ACCOUNT, SUB-ACCOUNT AND INDICATOR WEIGHTS

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Account	Sub-Account	Indicator	Account Weight (W_A)	Sub-Account Weight (W_{SA})	Indicator Weight (W_I)
Environmental	Hydrology	Number of Watersheds	6	4	3
		Stream Length Removed			4
		Loss of Waterbodies			4
		Flow Change			5
	Water Quality	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage		5	5
	Aquatic	Loss of Fish Bearing Water		5	5
		Adjacent Fish Ecology			3
	Terrestrial	Habitat of Species of Special Concern Altered/Lost		4	5
		Total Moose Winter Habitat Altered/Lost			5
		Total Moose Aquatic Feeding Habitat Altered/Lost			5
		Total Vegetative Habitat Altered/Lost			4
		Total Wetland Area Altered/Lost			4
	Closure	Post-Closure Chemical Stability		6	6
Socio-Economic	Human Health	Human Health (Direct Exposure)	3	6	6
		Human Health (Indirect Exposure)			4
	Existing Communities and Human (Current and Historic) Land Uses	Aboriginal Peoples Interests and Current Land Use		3	6
		Presence of Archaeological Sites			4
		Proximity to Existing Permanent or Temporary Residences			4
		Recreational Access			4
		Visibility and Aesthetics			3
Technical	Mine Rock Pile Layout	Storage Efficiency (at pile height of 100 m)	3	5	6
		Vertical Expansion Capacity			4
	Mine Rock Pile Construction	Site Preparation		5	4
		Haul Distance from Open Pit			5
		Geotechnical Conditions			5
	Land Acquisition	Land Area and Title Holders		1	1
	Water Management	MRA Catchment Area		2	4
		Pipeline Length			2
		Pumping Requirements			3
	Monitoring and Maintenance	Ease of Runoff Management		3	3
		Consequence of Operational Error			5
Economics	Capital Costs	Foundation Preparation and Access Construction	1.5	5	3
		Water Management			5
	Operational Costs	Haul Distance		6	6
		Operational Costs			5
	Closure and Post Closure Costs	Reclamation		3	3
		Monitoring and Maintenance			2

I:\1\01\00497\03\A\Report\Report 2, Rev 0 - MRA MAA\Tables\[Table 3.1 to 3.5 - MRA MAA.xlsx]Table 3.2_Weighting Summary

NOTES:

1. GREATER WEIGHTS INDICATE GREATER RELATIVE IMPORTANCE.
2. POSSIBLE ACCOUNT, SUB-ACCOUNT AND INDICATOR WEIGHTS RANGE FROM 1 TO 6.

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TABLE 3.3

IAMGOLD CORPORATION
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MINE ROCK AREA ALTERNATIVES ASSESSMENT
SUMMARY OF INDICATOR VALUES

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Account	Sub-Account	Indicator	Parameter	Unit	Indicator Value					
					MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	Hydrology	Number of Watersheds	Quantity	No.	1	1	2	1	2	2
		Stream Length Removed	Length	m	300	530	450	0	0	0
		Loss of Waterbodies	Area	ha	0	0	8.6	0.2	0	0.9
		Flow Change	Area	ha	20	9	18	9	15	20
	Water Quality	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage	Ratio	%	9	42	8	5	9	6
	Aquatic	Loss of Fish Bearing Water	Value	-	None	None	Few habitats of limited quality	Few habitats of limited quality	None	None
		Adjacent Fish Ecology	Value	-	Many habitats of higher quality	Many habitats of higher quality	Many habitats of higher quality	Many habitats of higher quality	Many habitats of higher quality	Many habitats of higher quality
	Terrestrial	Habitat of Species of Special Concern Altered/Lost	Area	ha	372	61	526	162	200	266
		Total Moose Winter Habitat Altered/Lost	Area	ha	None	None	None	None	None	None
		Total Moose Aquatic Feeding Habitat Altered/Lost	Area	ha	None	None	None	None	None	None
		Total Vegetative Habitat Altered/Lost	Area	ha	372	269	520	162	202	266
		Total Wetland Area Altered/Lost	Area	ha	16.4	7.5	6.4	0.4	0.5	0.5
	Closure	Post-Closure Chemical Stability	Value	-	Stable	Stable	Stable	Stable	Stable	Stable
Socio-Economic	Human Health	Human Health (Direct Exposure)	Value	-	Low Potential	Low Potential	Low Potential	Low Potential	Moderate Potential (Mesomikenda Lake and Hwy 144)	Moderate Potential (Mesomikenda Lake and Hwy 144)
		Human Health (Indirect Exposure)	Value	-	Low Potential	Low Potential	Low Potential	Low Potential	Low Potential	Low Potential
	Existing Communities and Human (Current and Historic) Land Uses	Aboriginal Peoples Interests and Current Land Use	Value	-	No data on relative Aboriginal values or current uses	No data on relative Aboriginal values or current uses	No data on relative Aboriginal values or current uses	No data on relative Aboriginal values or current uses	No data on relative Aboriginal values or current uses	No data on relative Aboriginal values or current uses
		Presence of Archaeological Sites	Value	-	Sites mitigatable	Sites mitigatable	Sites mitigatable	Sites mitigatable	Sites mitigatable	Sites mitigatable
		Proximity to Existing Permanent or Temporary Residences	Value	-	None	None	Less than 5	Less than 5	Less than 5	None
		Recreational Access	Value	-	Permanent loss of access	Permanent loss of access	Permanent loss of access	Permanent loss of access	Permanent loss of access	Permanent loss of access
		Visibility and Aesthetics	Value	-	Highly visible and is considered a major change in landscape from baseline conditions	Partially visible and is considered a major change in landscape from baseline conditions	Partially visible and is considered a major change in landscape from baseline conditions	Partially visible and is considered a major change in landscape from baseline conditions	Highly visible and is considered a major change in landscape from baseline conditions	Highly visible and is considered a major change in landscape from baseline conditions
Technical	Mine Rock Pile Layout	Storage Efficiency (at pile height of 100 m)	Percent	%	54	39	72	18	25	36
		Vertical Expansion Capacity	Volume	million m^3	78.4	40.8	110.4	10.7 (1)	30.7	54.0
	Mine Rock Pile Construction	Site Preparation	Value	-	Moderate ease	Moderate ease	Moderate difficulty	Moderate ease	Moderate difficulty	Moderate difficulty
		Haul Distance from Open Pit	Distance	km	2.3	2.0	2.9	2.2	3.1	4.3
		Geotechnical Conditions	Value	-	Small area in suspected poor foundations	Small area in suspected poor foundations	Small area in suspected poor foundations	Small area in suspected poor foundations	Small area in suspected poor foundations	Small area in suspected poor foundations
	Land Acquisition	Land Area and Title Holders	Percent	%	0	69	83	72	0	0
	Water Management	MRA Catchment Area	Area per million tonne	ha/million tonne	0.81	0.81	0.86	1.08	0.96	0.88
		Pipeline Length	Length	km	12	12	16	8	8	12
		Pumping Requirements	Head	m	12	9	10	13	21	14
	Monitoring and Maintenance	Ease of Runoff Management	Quantity per km	No./km	1.1	1.5	1.2	1.1	1.9	1.6
		Consequence of Operational Error	Value	-	Low	Low	Low	Low	Low	Low
Economics	Capital Costs	Foundation Preparation and Access Construction	Value	-	Moderate ease	Moderate ease	Moderate difficulty	Moderate ease	Moderate difficulty	Moderate difficulty
		Water Management	Quantity per km	No./km	1.1	1.5	1.2	1.1	1.9	1.6
	Operational Costs	Haul Distance	Distance	km	1.1 to 3.5	1.3 to 2.4	1.5 to 4.2	1.5 to 2.9	2.1 to 4.1	3.4 to 5.2
		Operational Costs	Area per million tonne	ha/million tonne	0.81	0.81	0.86	1.08	0.96	0.88
	Closure and Post Closure Costs	Reclamation	Area per million tonne	ha/million tonne	0.84	0.85	0.89	1.14	1.00	0.91
		Monitoring and Maintenance	Quantity per km	No./km	1.1	1.5	1.2	1.1	1.9	1.6

I:\1\01\00497\03\A\Report\Report 2, Rev 0 - MRA MAA\Tables\[Table 3.1 to 3.5 - MRA MAA.xlsx]Table 3.3_Indicator Values

NOTES:

1. MAXIMUM HEIGHT OF MRA 4 PILE IS 138 m.

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TABLE 3.4

IAMGOLD CORPORATION
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MINE ROCK AREA ALTERNATIVES ASSESSMENT
SUMMARY OF INDICATOR VALUE SCALES

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Account, Sub-Account	Indicator	Value	Descriptor
Environmental, Hydrology	Number of Watersheds	6 (Best)	1 Watershed
		5	2 Watersheds
		4	3 Watersheds
		3	4 Watersheds
		2	5 Watersheds
		1 (Worst)	Greater than 5 Watersheds
	Stream Length Removed	6 (Best)	None
		5	Between 0 and 1.5 km
		4	Between 1.6 and 3.0 km
		3	Between 3.1 and 4.5 km
		2	Between 4.6 and 6.0 km
		1 (Worst)	Greater than 6.0 km
	Loss of Waterbodies	6 (Best)	None
		5	Between 0 and 15 ha of waterbodies (including wetlands) removed
		4	Between 15 and 50 ha of waterbodies (including wetlands) removed
		3	Between 50 and 125 ha of waterbodies (including wetlands) removed
		2	Between 125 and 250 ha of waterbodies (including wetlands) removed
		1 (Worst)	Greater than 250 ha of waterbodies (including wetlands) removed
	Flow Change	6 (Best)	No small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
		5	Between 0 and 5 ha of small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
		4	Between 5 and 10 ha of small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
		3	Between 10 and 30 ha of small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
		2	Between 30 and 70 ha of small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
		1 (Worst)	Greater than 70 ha of small waterbodies (including wetlands) adjacent to the MRA and reliant on the catchment area of the MRA
Environmental, Water Quality	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage	6 (Best)	Very Low (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is less than 15 %)
		5	Low (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is between 16 and 30 %)
		4	Low-Moderate (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is between 31 and 45 %)
		3	Moderate (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is between 46 and 60 %)
		2	Moderate-High (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is between 61 and 75 %)
		1 (Worst)	High (i.e. the ratio of the mine rock area perimeter length overlying subsoils with high seepage potential adjacent to small waterbodies to the total perimeter length is greater than 75 %)
Environmental, Aquatic	Loss of Fish Bearing Water	6 (Best)	None
		5	Few habitats of limited quality
		4	Many habitats of limited quality
		3	Few habitats of higher quality
		2	Many habitats of higher quality
		1 (Worst)	Loss of significant habitat
	Adjacent Fish Ecology	6 (Best)	None
		5	Few habitats of limited quality
		4	Many habitats of limited quality
		3	Few habitats of higher quality
		2	Many habitats of higher quality
		1 (Worst)	Loss of significant habitat
Environmental, Terrestrial	Habitat of Species of Special Concern Altered/Lost	6 (Best)	No habitat affected
		5	1 - 105 ha altered or lost
		4	106 - 210 ha altered or lost
		3	211 - 315 ha altered or lost
		2	316 - 420 ha altered or lost
		1 (Worst)	Greater than 421 ha altered or lost
	Total Moose Winter Habitat Altered/Lost	6 (Best)	No habitat affected
		5	(Scale not defined since there is no moose winter habitat present in the MRA Options)
		4	(Scale not defined since there is no moose winter habitat present in the MRA Options)
		3	(Scale not defined since there is no moose winter habitat present in the MRA Options)
		2	(Scale not defined since there is no moose winter habitat present in the MRA Options)
		1 (Worst)	Maximum available moose winter habitat altered or lost
	Total Moose Aquatic Feeding Habitat Altered/Lost	6 (Best)	No habitat affected
		5	(Scale not defined since there is no moose aquatic feeding habitat present in the MRA Options)
		4	(Scale not defined since there is no moose aquatic feeding habitat present in the MRA Options)
		3	(Scale not defined since there is no moose aquatic feeding habitat present in the MRA Options)
		2	(Scale not defined since there is no moose aquatic feeding habitat present in the MRA Options)
		1 (Worst)	Maximum available moose winter habitat altered or lost
	Total Vegetative Habitat Altered/Lost	6 (Best)	No habitat affected
		5	1 - 105 ha altered or lost
		4	106 - 210 ha altered or lost
		3	211 - 315 ha altered or lost
		2	316 - 420 ha altered or lost
		1 (Worst)	Greater than 421 ha altered or lost
	Total Wetland Area Altered/Lost	6 (Best)	Less than 1 ha altered or lost
		5	1 - 7.5 ha altered or lost
		4	7.6 - 15 ha altered or lost
		3	15.1 - 22.5 ha altered or lost
		2	22.6 - 30 ha altered or lost
		1 (Worst)	Greater than 30 ha altered or lost
Environmental, Closure	Post-Closure Chemical Stability	6 (Best)	Very stable
		5	Stable
		4	Moderate-high stability
		3	Moderately stable
		2	Low-moderate stability
		1 (Worst)	Unstable
Socio-Economic, Human Health	Human Health (Direct Exposure)	6 (Best)	No potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
		5	Very low potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
		4	Low potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
		3	Moderate potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
		2	High potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
		1 (Worst)	Very High potential for MRA to affect human health through exposure to emissions (air, noise) or other releases to the environment (water, etc.)
	Human Health (Indirect Exposure)	6 (Best)	No potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.
		5	Very low potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.
		4	Low potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.
		3	Moderate potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.
		2	High potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.
		1 (Worst)	Very High potential for MRA to affect human health through exposure to emissions (air) or other releases to the environment (water) via consumption of impacted fish, wildlife, berries, etc.

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TABLE 3.4

IAMGOLD CORPORATION
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MINE ROCK AREA ALTERNATIVES ASSESSMENT
SUMMARY OF INDICATOR VALUE SCALES

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Account, Sub-Account	Indicator	Value	Descriptor
Socio-Economic, Existing Communities and Human (Current and Historic) Land Uses	Aboriginal Peoples Interests and Current Land Use	6 (Best)	Proposed area has no importance to Aboriginal Peoples community (no current or historic uses)
		5	Proposed area has limited importance to Aboriginal Peoples interests (historic trail used by a few that is no longer used)
		4	Proposed area has low importance to the Aboriginal Peoples interests (seasonal trail to hunting or fishing area that could be re-routed)
		3	Proposed area has moderate importance to the Aboriginal Peoples interests (historic fishing, hunting or agricultural area no longer used)
		2	Proposed area has high importance to Aboriginal Peoples interests (regularly used for fishing, hunting, agriculture and is culturally significant)
		1 (Worst)	Proposed area has significant importance to Aboriginal Peoples interests (spiritual or burial grounds) and is currently heavily used to exercise Aboriginal or Treaty rights.
	Presence of Archaeological Sites	6 (Best)	No sites present
		5	Individual sites present but mitigatable
		4	Less than 5% of lands assessed as having moderate to high archaeological potential
		3	Less than 15% of lands assessed as having moderate to high archaeological potential
		2	More than 30% of lands assessed as having moderate to high archaeological potential
		1 (Worst)	Multiple high importance sites
	Proximity to Existing Permanent or Temporary Residences	6 (Best)	No residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
		5	Less than 5 residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
		4	6 to 10 residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
		3	11 to 20 residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
		2	21 to 30 residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
		1 (Worst)	Over 30 residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity to TMF
	Recreational Access	6 (Best)	No reduction in public access to recreation areas (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
		5	Short term loss (initial construction) of access to recreation areas (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
		4	Temporary loss (mine life) of access to a periodically used recreation area (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
		3	Temporary loss (mine life) of access to a heavily used public recreation area (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
		2	Permanent loss of access to a periodically used public recreation areas (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
		1 (Worst)	Permanent loss of access to a heavily used public recreation area (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.)
	Visibility and Aesthetics	6 (Best)	Not visible or partially visible (no noise emissions) from receptors and is considered a minor change in landscape from baseline conditions
		5	Highly visible from receptors and is considered a minor change in landscape from baseline conditions
		4	Partially visible from receptors and is considered a moderate change in landscape from baseline conditions
		3	Highly visible from receptors and is considered a moderate change in landscape from baseline conditions
		2	Partially visible from receptors and is considered a major change in landscape from baseline conditions
		1 (Worst)	Highly visible from receptors and is considered a major change in landscape from baseline conditions
Technical, Mine Rock Pile Layout	Storage Efficiency (at pile height of 100 m)	6 (Best)	Over 80 %
		5	Between 65 and 80 %
		4	Between 50 and 65 %
		3	Between 35 and 50 %
		2	Between 25 and 35 %
		1 (Worst)	Less than 20 %
	Vertical Expansion Capacity	6 (Best)	Greater than100 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
		5	80 to 100 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
		4	60 to 80 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
		3	40 to 60 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
		2	20 to 40 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
		1 (Worst)	Less than 20 million m^3 of additional capacity if mine rock pile expanded from a height of 100 m to 150 m
Technical, Mine Rock Pile Construction	Site Preparation	6 (Best)	Very easy
		5	Easy
		4	Moderate ease
		3	Moderate difficulty
		2	Difficult
		1 (Worst)	Very difficult
	Haul Distance from Open Pit	6 (Best)	Average haul distance is less than 2 km
		5	Average haul distance is between 2 and 3 km
		4	Average haul distance is between 3 and 4 km
		3	Average haul distance is between 4 and 5 km
		2	Average haul distance is between 5 and 6 km
		1 (Worst)	Average haul distance is greater than 6 km
	Geotechnical Conditions	6 (Best)	No risk of geotechnical conditions and/or hazards
		5	Low risk of geotechnical conditions and/or hazards that can be mitigated during design and construction
		4	Moderate risk of geotechnical conditions and/or hazards that can be mitigated during design and construction
		3	Significant risk of geotechnical conditions and hazards that can be mitigated during design and construction
		2	Moderate risk of geotechnical conditions and/or hazards that cannot be mitigated during design and construction
		1 (Worst)	Significant risk of geotechnical conditions and/or hazards that cannot be mitigated during design and construction
Technical, Land Acquisition	Land Area and Title Holders	6 (Best)	No land required for acquisition
		5	Between 0 and 10 % of MRA footprint area not on land controlled by IAMGOLD.
		4	Between 10% and 20% of MRA footprint area not on land controlled by IAMGOLD.
		3	Between 20% and 30% of MRA footprint area not on land controlled by IAMGOLD.
		2	Between 30% and 40% of MRA footprint area not on land controlled by IAMGOLD.
		1 (Worst)	Greater than 40% of MRA footprint area not on land controlled by IAMGOLD.
Technical, Water Management	MRA Catchment Area	6 (Best)	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is less than 0.75 ha/million tonne
		5	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is between 0.75 and 0.85 ha/million tonne
		4	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is between 0.86 and 0.95 ha/million tonne
		3	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is between 0.96 and 1.05 ha/million tonne
		2	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is between 1.06 and 1.15 ha/million tonne
		1 (Worst)	Ratio of the footprint area (ha) to the mass (million tonne) of mine rock stored is greater than 1.15 ha/million tonne
	Pipeline Length	6 (Best)	Less than 5 km
		5	Between 5 and 10 km
		4	Between 10 and 15 km
		3	Between 15 and 20 km
		2	Between 20 and 25 km
		1 (Worst)	Greater than 25 km
	Pumping Requirements	6 (Best)	7.5 m of head or less
		5	7.5 to 15 m of head
		4	15 and 22.5 m of head
		3	22.5 and 30 m of head
		2	30 and 37.5 m of head
		1 (Worst)	Greater than 37.5 m of head
Technical, Monitoring and Maintenance	Ease of Runoff Management	6 (Best)	Less than 0.5 monitoring and collection points per km of perimeter length
		5	Between 0.5 and 1.5 monitoring and collection points per km of perimeter length
		4	Between 1.5 and 2.5 monitoring and collection points per km of perimeter length
		3	Between 2.5 and 3.5 monitoring and collection points per km of perimeter length
		2	Between 3.5 and 4.5 monitoring and collection points per km of perimeter length
		1 (Worst)	Greater than 4.5 monitoring and collection points per km of perimeter length
	Consequence of Operational Error	6 (Best)	No measureable impact
		5	Re-grading of mine rock pile required
		4	Relocation of some mine rock required
		3	Low risk to people and environment, relocation of some mine rock required
		2	Moderate risk to people and environment, relocation of some mine rock required
		1 (Worst)	Significant risk to people and environment, relocation of some mine rock required

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TABLE 3.4

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
SUMMARY OF INDICATOR VALUE SCALES

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Account, Sub-Account	Indicator	Value	Descriptor
Economics, Capital Costs	Foundation Preparation and Access Construction	6 (Best)	Very easy
		5	Easy
		4	Moderate ease
		3	Moderate difficulty
		2	Difficult
		1 (Worst)	Very difficult
	Water Management	6 (Best)	Less than 0.5 monitoring and collection points per km of perimeter length
		5	Between 0.5 and 1.5 monitoring and collection points per km of perimeter length
		4	Between 1.5 and 2.5 monitoring and collection points per km of perimeter length
		3	Between 2.5 and 3.5 monitoring and collection points per km of perimeter length
		2	Between 3.5 and 4.5 monitoring and collection points per km of perimeter length
		1 (Worst)	Greater than 4.5 monitoring and collection points per km of perimeter length
Economics, Operational Costs	Haul Distance	6 (Best)	Maximum haul distance is less than 2 km
		5	Maximum haul distance is between 2 and 3 km
		4	Maximum haul distance is between 3 and 4 km
		3	Maximum haul distance is between 4 and 5 km
		2	Maximum haul distance is between 5 and 6 km
		1 (Worst)	Maximum haul distance is greater than 6 km
	Operational Costs	6 (Best)	Ratio of the total footprint area to the total storage capacity (million tonnes) is less than 0.75 ha/million tonne
		5	Ratio of the total footprint area to the total storage capacity (million tonnes) is between 0.75 and 0.85 ha/million tonne
		4	Ratio of the total footprint area to the total storage capacity (million tonnes) is between 0.86 and 0.95 ha/million tonne
		3	Ratio of the total footprint area to the total storage capacity (million tonnes) is between 0.96 and 1.05 ha/million tonne
		2	Ratio of the total footprint area to the total storage capacity (million tonnes) is between 1.06 and 1.15 ha/million tonne
		1 (Worst)	Ratio of the total footprint area to the total storage capacity (million tonnes) is greater than 1.15 ha/million tonne
Economics, Closure and Post Closure Costs	Reclamation	6 (Best)	Less than 0.75 ha of surface area to reclaim per million tonnes of mine rock stored
		5	Between 0.75 and 0.85 ha of surface area to reclaim per million tonnes of mine rock stored
		4	Between 0.86 and 0.95 ha of surface area to reclaim per million tonnes of mine rock stored
		3	Between 0.96 and 1.05 ha of surface area to reclaim per million tonnes of mine rock stored
		2	Between 1.06 and 1.15 ha of surface area to reclaim per million tonnes of mine rock stored
		1 (Worst)	Greater than 1.15 ha of surface area to reclaim per million tonnes of mine rock stored
	Monitoring and Maintenance	6 (Best)	Less than 0.5 monitoring and collection points per km of perimeter length
		5	Between 0.5 and 1.5 monitoring and collection points per km of perimeter length
		4	Between 1.5 and 2.5 monitoring and collection points per km of perimeter length
		3	Between 2.5 and 3.5 monitoring and collection points per km of perimeter length
		2	Between 3.5 and 4.5 monitoring and collection points per km of perimeter length
		1 (Worst)	Greater than 4.5 monitoring and collection points per km of perimeter length

I:\1\01\00497\03\A\Report\Report 2, Rev 0 - MRA MAA\Tables\[Table 3.1 to 3.5 - MRA MAA.xlsx]Table 3.4 Indicator Value Scale

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	05MAR'13	ISSUED WITH REPORT NB101-497/3-2	RSM	KEH	RAM

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TABLE 3.5

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
SCORING SUMMARY

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Account	Account Weight (W_A)	Sub-Account	Sub-Account Weight (W_{SA})	Indicator	Indicator Weight (W_I)	Indicator Values and Merit Scores											
						MRA 1		MRA 2		MRA 3		MRA 4		MRA 6		MRA 7	
						Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)
Environmental	6	Hydrology	4	Number of Watersheds	3	6	18	6	18	5	15	6	18	5	15	5	15
				Stream Length Removed	4	5	20	5	20	5	20	6	24	6	24	6	24
				Loss of Waterbodies	4	6	24	6	24	5	20	5	20	6	24	5	20
				Flow Change	5	3	15	4	20	3	15	4	20	3	15	3	15
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			77		82		70		82		78		74
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.8		5.1		4.4		5.1		4.9		4.6
		Water Quality	5	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage	5	6	30	4	20	6	30	6	30	6	30	6	30
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			30		20		30		30		30		30
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			6.0		4.0		6.0		6.0		6.0		6.0
		Aquatic	5	Loss of Fish Bearing Water	5	6	30	6	30	5	25	5	25	6	30	6	30
				Adjacent Fish Ecology	3	2	6	2	6	2	6	2	6	2	6	2	6
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			36		36		31		31		36		36
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.5		4.5		3.9		3.9		4.5		4.5
		Terrestrial	4	Habitat of Species of Special Concern Altered/Lost	5	2	10	5	25	1	5	4	20	4	20	3	15
				Total Moose Winter Habitat Altered/Lost	5	6	30	6	30	6	30	6	30	6	30	6	30
				Total Moose Aquatic Feeding Habitat Altered/Lost	5	6	30	6	30	6	30	6	30	6	30	6	30
				Total Vegetative Habitat Altered/Lost	4	2	8	3	12	1	4	4	16	4	16	3	12
				Total Wetland Area Altered/Lost	4	3	12	5	20	5	20	6	24	6	24	6	24
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			90		117		89		120		120		111
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			3.9		5.1		3.9		5.2		5.2		4.8
		Closure	6	Post-Closure Chemical Stability	4	5	20	5	20	5	20	5	20	5	20	5	20
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			20		20		20		20		20		20
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			5.0		5.0		5.0		5.0		5.0		5.0
		Account Merit Score ($\Sigma(R_S \times W_{SA})$)					117		113		112		121		123		120
		Account Merit Rating ($R_A = \Sigma(R_S \times W_{SA})/\Sigma W_{SA}$)					4.9		4.7		4.7		5.0		5.1		5.0
Socio-Economic	3	Human Health	6	Human Health (Direct Exposure)	6	4	24	4	24	4	24	4	24	3	18	3	18
				Human Health (Indirect Exposure)	4	4	16	4	16	4	16	4	16	4	16	4	16
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			40		40		40		40		34		34
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.0		4.0		4.0		4.0		3.4		3.4
		Existing Communities and Human (Current and Historic) Land Uses	3	Aboriginal Peoples Interests and Current Land Use	6	1	6	1	6	1	6	1	6	1	6	1	6
				Presence of Archaeological Sites	4	5	20	5	20	5	20	5	20	5	20	5	20
				Proximity to Existing Permanent or Temporary Residences	4	6	24	6	24	5	20	5	20	5	20	6	24
				Recreational Access	4	2	8	2	8	2	8	2	8	2	8	2	8
				Visibility and Aesthetics	3	1	3	2	6	2	6	2	6	1	3	1	3
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			61		64		60		60		57		61
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			2.9		3.0		2.9		2.9		2.7		2.9
		Account Merit Score ($\Sigma(R_S \times W_{SA})$)					33		33		33		33		29		29
		Account Merit Rating ($R_A = \Sigma(R_S \times W_{SA})/\Sigma W_{SA}$)					3.6		3.7		3.6		3.6		3.2		3.2

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TABLE 3.5

IAMGOLD CORPORATION
CÔTÉ GOLD PROJECT

MINE ROCK AREA ALTERNATIVES ASSESSMENT
SCORING SUMMARY

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Account	Account Weight (W_A)	Sub-Account	Sub-Account Weight (W_{SA})	Indicator	Indicator Weight (W_I)	Indicator Values and Merit Scores											
						MRA 1		MRA 2		MRA 3		MRA 4		MRA 6		MRA 7	
						Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)	Value (S)	Merit Score ($S*W_I$)
Technical	3	Mine Rock Pile Layout	5	Storage Efficiency (at pile height of 100 m)	6	4	24	3	18	5	30	1	6	2	12	3	18
				Vertical Expansion Capacity	4	5	20	3	12	6	24	1	4	2	8	3	12
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			44		30		54		10		20		30
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.4		3.0		5.4		1.0		2.0		3.0
		Mine Rock Pile Construction	5	Site Preparation	4	4	16	4	16	3	12	4	16	3	12	3	12
				Haul Distance from Open Pit	5	5	25	5	25	5	25	5	25	4	20	3	15
				Geotechnical Conditions	5	5	25	5	25	5	25	5	25	5	25	5	25
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			66		66		62		66		57		52
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.7		4.7		4.4		4.7		4.1		3.7
		Land Acquisition	1	Land Area and Title Holders	1	6	6	1	1	1	1	1	1	6	6	6	6
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			6		1		1		1		6		6
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			6.0		1.0		1.0		1.0		6.0		6.0
		Water Management	2	MRA Catchment Area	4	5	20	5	20	4	16	2	8	3	12	4	16
				Pipeline Length	2	4	8	4	8	3	6	5	10	5	10	4	8
				Pumping Requirements	3	5	15	5	15	5	15	5	15	4	12	5	15
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			43		43		37		33		34		39
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.8		4.8		4.1		3.7		3.8		4.3
		Monitoring and Maintenance	3	Ease of Runoff Management	3	5	15	5	15	5	15	5	15	4	12	4	12
				Consequence of Operational Error	5	3	15	3	15	3	15	3	15	3	15	3	15
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			30		30		30		30		27		27
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			3.8		3.8		3.8		3.8		3.4		3.4
		Account Merit Score ($\Sigma(R_S \times W_{SA})$)					72		60		70		48		54		58
		Account Merit Rating ($R_A = \Sigma(R_S \times W_{SA})/\Sigma W_{SA}$)					4.5		3.8		4.4		3.0		3.4		3.6
Economics	1.5	Capital Costs	5	Foundation Preparation and Access Construction	3	4	12	4	12	3	9	4	12	3	9	3	9
				Water Management	5	5	25	5	25	5	25	5	25	4	20	4	20
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			37		37		34		37		29		29
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.6		4.6		4.3		4.6		3.6		3.6
		Operational Costs	6	Haul Distance	6	4	24	5	30	3	18	5	30	4	24	3	18
				Operational Costs	5	5	25	5	25	4	20	2	10	3	15	4	20
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			49		55		38		40		39		38
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			4.5		5.0		3.5		3.6		3.5		3.5
		Closure and Post Closure Costs	3	Reclamation	3	5	15	5	15	4	12	2	6	3	9	4	12
				Monitoring and Maintenance	2	5	10	5	10	5	10	5	10	4	8	4	8
				Sub-Account Merit Score ($\Sigma(S*W_I)$)			25		25		22		16		17		20
				Sub-Account Merit Rating ($R_S = \Sigma(S*W_I)/\Sigma W_I$)			5.0		5.0		4.4		3.2		3.4		4.0
		Account Merit Score ($\Sigma(R_S \times W_{SA})$)					64.9		68.1		55.2		54.5		49.6		50.9
		Account Merit Rating ($R_A = \Sigma(R_S \times W_{SA})/\Sigma W_{SA}$)					4.6		4.9		3.9		3.9		3.5		3.6
Alternative Merit Rating ($A = \Sigma(R_A * W_A)/\Sigma W_A$)							4.5		4.3		4.3		4.1		4.1		4.2

I:\1\01\00497\03\A\Report\Report 2, Rev 0 - MRA MAA\Tables\[Table 3.1 to 3.5 - MRA MAA.xlsx]Table 3.5 Scoring Summary

REV	DATE	DESCRIPTION	PREP'D	CHK'D	APP'D
0	05MAR'13	ISSUED WITH REPORT NB101-497/3-2	RSM	KEH	RAM

3.4 MAA METHOD OF ANALYSIS

The methodology for completing the MAA is outlined below.

- The total weighted scores for each indicator within its specific sub-account are multiplied by the sub-account weighting factor and summed to determine the total weighted score for each sub-account. The maximum possible score is 6 and the minimum possible score is 1 for each sub-account. The individual indicator scores are shown on Table 3.5.
- The combined total weighted score for each indicator within its specific sub-account is multiplied by the sub-account weighting factor and summed to determine the total weighted score for each sub-account.
- The combined total weighted scores for each sub-account within its specific account are multiplied by the account weighting factor and summed to determine the total weighted score for each account.
- The final score for each Option is calculated by summing the total weighted score for each account to produce a final score. The highest value of these scores represents the highest ranked Option.

3.5 SENSITIVITY ANALYSIS

The weightings defined for the accounts, sub-accounts and indicators have been selected based on their perceived relative importance and will, therefore, introduce bias into the analysis. To understand the impact of this bias on the results of the analysis a sensitivity analysis has been completed by adjusting the weightings of accounts, sub-accounts and indicators. The scenarios evaluated are summarized as follows:

- **Sensitivity Analysis 1 - Economics Excluded:** The economics account, sub-account and indicator weightings was decreased to zero (0) to remove all project economic influences. This analysis tends to favour alternatives that protect the environment without being influenced by the cost of environmental controls or mitigation measures.
- **Sensitivity Analysis 2 – Land Acquisition Screening:** The land acquisition sub-account weight and indicator weight are decreased to zero (0) to remove land acquisition influences.
- **Sensitivity Analysis 3 - Terrestrial Ecology Screening:** The general account weighting factors for sensitivity analysis 3 are consistent with the Environment Canada base case recommendations; however, the project terrestrial sub-account weights and the corresponding indicator weights were all increased to 6 to increase the importance of the terrestrial habitat area on the final result.
- **Sensitivity Analysis 4 - Technical Screening:** This analysis evaluates each alternative from a technical perspective in the absence of consideration for the environment or socio-economic impacts. The technical account weighting was given full-weighting (6) while the project economics account was given a moderate weighting factor (3) to ground the assessment from a financial perspective (i.e., the best possible technical merits tempered by the comparative impact of cost). This analysis favours alternatives that are both technically sound and economically feasible.

- **Sensitivity Analysis 5 - Indicators Set to Unity:** All accounts, sub-accounts and indicator weightings were reduced to 1 to remove any factors or bias associated with the weighting factors and to compare the MRA Options relative to the indicator values.

4 – RESULTS AND SENSITIVITY ANALYSIS

4.1 MAA RESULTS

The MAA base case analysis was completed by maintaining account weighting factors consistent with the recommendations suggested in the Guidelines (EC, 2011), as follows:

- Environment: 6
- Socio-economic: 3
- Technical: 3
- Project Economics: 1.5

The weighting factors for all Accounts, Sub-accounts and Indicators are summarized on Table 3.2.

The Base Case account scores, total scores and ranking for each Option are summarized below:

Table 4.1 Ranking Summary - Base Case

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	4.9	4.7	4.7	5.0	5.1	5.0
Socio-Economic	3.6	3.7	3.6	3.6	3.2	3.2
Technical	4.5	3.8	4.4	3.0	3.4	3.6
Economics	4.6	4.9	3.9	3.9	3.5	3.6
WEIGHTED TOTAL	4.50	4.30	4.29	4.14	4.12	4.16
RANKING	**1**	**2**	**3**	**5**	**6**	**4**

- **Environmental** – MRA 6 ranked higher than the other Options. This Option benefited from limited wetland area altered/lost, less habitat of species of special concern altered/lost, less total vegetative habitat altered/lost, no loss of streams under the MRA.
- **Socio-economic** – MRA 2, 3 and 4 are located further away from potential receptors (i.e., residences) than the other Options and therefore ranked higher in this account than the other Options.
- **Technical** – MRA 1 ranked higher than the other Options. The main indicators contributing to MRA 1 scoring higher included, MRA on IAMGOLD mine claims, short haul distance, relatively good storage efficiency ratios and available capacity for vertical expansion.
- **Economics** – MRA 2 ranked higher than the other Options. MRA 2 scored highest due the lower haul distance and operating costs.

The results of the MRA MAA indicate that MRA 1, 2 and 3 are the preferred Options.

4.2 SENSITIVITY ANALYSIS

4.2.1 Sensitivity Analysis 1 - Economics Excluded

The account scores, total scores and ranking for each Option for Sensitivity Analysis 1 are summarized below:

Table 4.2 Ranking Summary - Sensitivity Analysis 1: Economics Excluded

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	4.9	4.7	4.7	5.0	5.1	5.0
Socio-Economic	3.6	3.7	3.6	3.6	3.2	3.2
Technical	4.5	3.8	4.4	3.0	3.4	3.6
Economics	0.0	0.0	0.0	0.0	0.0	0.0
WEIGHTED TOTAL	4.49	4.23	4.33	4.17	4.20	4.23
RANKING	**1**	**4**	**2**	**6**	**5**	**3**

As shown above, under Sensitivity Analysis 1, MRA 1, 3 and 7 are the preferred Options.

4.2.2 Sensitivity Analysis 2 – Land Acquisition Screening

The Account scores, total scores and ranking each Option for Sensitivity Analysis 2 are summarized below:

Table 4.3 Ranking Summary - Sensitivity Analysis 2: Land Acquisition Screening

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	4.9	4.7	4.7	5.0	5.1	5.0
Socio-Economic	3.6	3.7	3.6	3.6	3.2	3.2
Technical	4.4	4.0	4.6	3.1	3.2	3.5
Economics	4.6	4.9	3.9	3.9	3.5	3.6
WEIGHTED TOTAL	4.48	4.34	4.34	4.17	4.09	4.13
RANKING	**1**	**3**	**2**	**4**	**6**	**5**

As shown above, under Sensitivity Analysis 2, MRA 1, 3 and 2 remain the preferred Options.

4.2.3 Sensitivity Analysis 3: Terrestrial Ecology Screening

The Account scores, total scores and ranking for each Option for sensitivity analysis 3 are summarized below:

Table 4.4 Ranking Summary - Sensitivity Analysis 3: Terrestrial Ecology Screening

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	4.8	4.7	4.6	5.0	5.1	5.0
Socio-Economic	3.6	3.7	3.6	3.6	3.2	3.2
Technical	4.5	3.8	4.4	3.0	3.4	3.6
Economics	4.6	4.9	3.9	3.9	3.5	3.6
WEIGHTED TOTAL	4.46	4.30	4.25	4.15	4.13	4.15
RANKING	**1**	**2**	**3**	**5**	**6**	**4**

As shown above, under Sensitivity Analysis 3, MRA 1, 2 and 3 remain the preferred Options.

4.2.4 Sensitivity Analysis 4: Technical Screening

The Account scores, total scores and ranking each Option for Sensitivity Analysis 4 are summarized below:

Table 4.5 Ranking Summary - Sensitivity Analysis 4: Technical Screening

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	0.0	0.0	0.0	0.0	0.0	0.0
Socio-Economic	0.0	0.0	0.0	0.0	0.0	0.0
Technical	4.5	3.8	4.4	3.0	3.4	3.6
Economics	4.6	4.9	3.9	3.9	3.5	3.6
WEIGHTED TOTAL	4.56	4.14	4.21	3.31	3.43	3.64
RANKING	**1**	**3**	**2**	**6**	**5**	**4**

As shown above, under Sensitivity Analysis 4, MRA 1, 3 and 2 remain the preferred Options.

4.2.5 Sensitivity Analysis 5: Indicators Set to Unity

The Account scores, total scores and ranking for each Option for Sensitivity Analysis 6 are summarized below:

Table 4.6 Ranking Summary - Sensitivity Analysis 5: Indicators Set to Unity

Account	MRA 1	MRA 2	MRA 3	MRA 4	MRA 6	MRA 7
Environmental	4.8	4.7	4.6	5.0	5.0	4.9
Socio-Economic	3.5	3.6	3.5	3.5	3.2	3.3
Technical	4.8	3.5	3.8	2.9	3.9	4.1
Economics	4.7	4.8	4.0	3.8	3.5	3.7
WEIGHTED TOTAL	4.42	4.14	3.96	3.81	3.90	3.98
RANKING	**1**	**2**	**4**	**6**	**5**	**3**

The analysis favoured MRA 1, 2 and 7. The result suggests that the assigned weighting factors did marginally bias the results towards MRA 3 being the more favorable than MRA 7. MRA 7 compared to MRA 3, had lower indicator values for human health (direct exposure), vertical expansion capacity and storage efficiency, haul distance from open pit, and visibility and aesthetics which marginally bias the results for MRA 3 when the weightings are applied.

5 – CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSION

An alternatives assessment has been completed for the mine rock storage areas required for the Côté Gold Project. The analysis was based on the relative consideration of the environmental, socio-economic and technical merits and costs to develop each Option.

Six MRA Options were evaluated using a multiple accounts analysis to rank the options and select the preferred options for mine rock storage. The MAA was completed by establishing accounts, sub-accounts and indicators to compare and rank the identified MRA Options.

The results of the MAA indicate that MRA 1, 2 and 3 are the preferred MRA Options for the Project. The results of the sensitivity analyses support the selection of MRA 1, 2 and 3.

It should be noted that if land tenure is a significant issue and it can't easily be overcome, then MRA 1, 6 and 7 are the only options completely on IAMGOLD mine claims.

5.2 RECOMMENDATIONS

Recommendations based on the results of the MAA are as follows:

1. Additional site investigations carried out for MRA 2, 3, 4, 6 and 7 would verify geotechnical assumptions used in the alternatives assessment.
2. Initiate pre-feasibility level design for mine rock management.

6 – REFERENCES

Environment Canada. September, 2011. *Guidelines for the Assessment of Alternatives for Mine Waste Disposal*.

Knight Piésold. January 14, 2013. *IAMGOLD Corporation - Côté Gold Project Mine Rock and Overburden Storage Areas - Site Selection and Initial Screening.* Ref. No. NB12-00610. North Bay: Knight Piésold.

Knight Piésold. October 31, 2012. *IAMGOLD Corporation - Côté Gold Project – Phase I Geochemical Characterization Summary Report.* Ref. No. NB101-497/1-3. North Bay: Knight Piésold.

Ontario. Ministry of the Northern Development and Mines. 2006. *Mine Development and Closure Under Part VII of the Mining Act and Mine Rehabilitation Code of Ontario.* (O.Reg 240/00 as amended by O.Reg. 307/12) Queen's Printer for Ontario.

7 – CERTIFICATION

This report was prepared, reviewed and approved by the undersigned.

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APPENDIX A

DESCRIPTION OF INDICATORS

(Pages A-1 to A-8)

APPENDIX A

1 – DESCRIPTION OF INDICATORS

1.1 ENVIRONMENTAL ACCOUNT

The environmental account encompasses a range of issues pertaining to the direct and indirect influences on the surrounding environment as a result of developing each MRA option.

The environmental account is subdivided into a number of sub-accounts. Each sub-account is evaluated on the basis of a series of indicators. The environmental sub-accounts and indicators are summarized in the following table.

Table A.1 Environmental Sub-accounts and Indicators

Account	Sub-Account	Indicator
Environmental	Hydrology	Number of Watersheds
		Stream Length Removed
		Loss of Waterbodies
		Flow Change
	Water Quality	Potential for Negative Influence on Surface Water Quality from Groundwater Seepage
	Aquatic	Loss of Fish Bearing Water
		Adjacent Fish Ecology
	Terrestrial	Habitat of Species of Special Concern Altered/Lost
		Total Moose Winter Habitat Altered/Lost
		Total Moose Aquatic Feeding Habitat Altered/Lost
		Total Vegetative Habitat Altered/Lost
		Total Wetland Area Altered/Lost
	Closure	Post-Closure Chemical Stability

The indicators for the Environmental Account are described briefly below.

- **Number of Watersheds:** Alternatives that minimize the number of catchments and/or watersheds directly impacted may have fewer potential cumulative effects on the environment. It is preferable for a MRA to be located within a single watershed area in order to minimize risk for a greater distribution of potentially affected runoff from the MRA.
- **Stream Length Removed:** Disrupting stream flows is less desirable due to the potential impact on downstream waterbodies and aquatic life. This indicator is a direct quantitative measure of stream lengths affected under the MRA Options.
- **Loss of Waterbodies:** It is desirable to minimize disruption of existing waterbodies and wetlands due to potential loss of aquatic habitat. While wetlands do not offer discrete fish habitat, the hydrological contributions to larger waterbodies create linkages between the

wetlands and aquatic species habitat provided by larger associated waterbodies. Wetlands play an integral role in maintaining the water balance of the local environment through groundwater recharge, and flood flow alteration. The ranking is based on the relative area of waterbodies and wetlands that would be lost with each of the MRA Options. The total area of all waterbodies and wetlands within the MRA Option was used to assign the relative scores for this indicator. An option that does not disrupt a waterbody or wetland within the MRA footprint would receive a relative higher score than an Option with waterbodies and wetlands.

- **Flow Change:** It is desirable to locate the MRA sites such that there are minimal hydrologic impacts. Small headwater waterbodies and wetlands adjacent to the MRA piles and reliant on the catchment area of the MRA are the most susceptible to hydrologic flow impacts and the areas are compared.
- **Potential for Negative Influence on Surface Water Quality from Groundwater Seepage:** The potential for negative influence on surface water quality from groundwater seepage is assessed considering the seepage potential and the size and/or flow conditions in surrounding surface waterbodies. MRA Options with surrounding waterbodies that are smaller or have limited catchment areas with low flow are sensitive to influence from groundwater seepage from the MRA. The ratio of the mine rock perimeter length overlying subsoils with high seepage potential and adjacent to small waterbodies to the total perimeter length is compared. MRA Options with smaller percentages are preferred.
- **Loss of Fish Bearing Water:** The expected quality and quantity of fish habitat potentially lost under the MRA Options was used to assign relative scores as a measure of the impact of each option for this indicator. An option overlying many habitats of higher quality would receive a lower score than an option that overlies few habitats of limited quality.
- **Adjacent Fish Ecology:** The expected quality and quantity of adjacent fish habitat that could potentially be impacted by each MRA Option was considered to assign relative scores for each option. An option impacting many habitats of higher quality would receive a lower score than an option with few impacts on habitats of limited quality.
- **Habitat of Species of Special Concern Altered/Lost:** Four bird species, including the bald eagle (*Haliaeetus leucocephalus*), Canada warbler (*Wilsonia cnadensis*), common nighthawk (*Chordeiles minor*), and olive-sided flycatcher (*Contopus cooperi*), designated provincially as Special Concern and one bird species, rusty blackbird (*Euphagus carolinus*), designated federally as Special Concern were identified during the Baseline Terrestrial Studies completed for the Project (Golder, 2012). For the purpose of this alternatives assessment it is assumed that each of the five bird species has an equal potential to occur in their associated habitats identified throughout the Mine Site. The loss of habitat preferred by these species under the MRA Options has been estimated.
- **Total Moose Winter Habitat Altered/Lost:** Moose winter habitat (i.e. dense stands of coniferous trees) is considered significant wildlife habitat and is designated by MNR. No moose wintering habitat is present in the proposed MRAs.
- **Total Moose Aquatic Feeding Habitat Altered/Lost:** Moose aquatic feeding habitat (i.e. abundant food with adjacent stands of lowland conifers) is considered significant wildlife

habitat and is designated by MNR. No moose aquatic feeding habitat is present in the proposed MRAs.

- **Total Vegetative Habitat Altered/Lost:** Plant communities are distributed across the Mine Site and no plant species at risk were identified on the Mine Site (Golders, 2012). A smaller MRA footprint will have the least adverse effect on the persistence of vegetative populations and communities which is preferred. Options with smaller footprints are assigned higher relative scores.
- **Total Wetland Area Removed:** Wetlands serve several ecological functions. They increase vegetation and wildlife diversity by offering a greater variety of habitats and forage. The diversity of habitat types offered in an area is a good indicator of the wildlife diversity likely present within it. This indicator is a direct quantitative measure of loss of wetland area under the mine rock storage areas.
- **Post-Closure Chemical Stability:** Runoff from the closed out mine rock and overburden piles is expected to be relatively inert and likely suitable for direct discharge to the environment. Should development of a segregated PAG mine rock pile be required, runoff water quality monitoring will be required to ensure compatibility with the surrounding environment. Treatment would be provided if/as needed. Closure of the facilities will address long-term physical and chemical stability and impacts to the surrounding environment. A requirement of closure is to ensure that water quality objectives will continue to be met after closure. Specific reclamation activities will include physical stabilization measures, select capping and vegetation measures to meet closure objectives and implementation of an appropriate water management and water quality measures. All options have been deemed to be equally chemically stable post-closure.

1.2 SOCIO-ECONOMIC ACCOUNT

The socio-economic account addresses the social and cultural influences of the alternatives.

The socio-economic account is subdivided into a number of sub-accounts. Each sub-account is evaluated on the basis of a series of indicators. The socio-economic sub-accounts and indicators are summarized in the following table.

Table A.2 Socio-Economic Sub-accounts and Indicators

Account	Sub-Account	Indicator
Socio-Economic	Human Health	Human Health (Direct Exposure)
		Human Health (Indirect Exposure)
	Existing Communities and Human (Current and Historic) Land Uses	Aboriginal Peoples Interests and Current Land Use
		Presence of Archaeological Sites
		Proximity to Existing Permanent or Temporary Residences
		Recreational Access
		Visibility and Aesthetics

The indicators for the socio-economic account are described briefly below.

- **Human Health (Direct Exposure):** Fugitive dust may be released from vehicle and heavy equipment travel on gravel roads and from wind entrainment from the mine rock piles and other exposed earth materials. For the most part, dust can be adequately controlled on roads with water and other Provincially-approved dust suppressants. At the Project site the prevailing wind direction is primarily from the south or southwest during the summer months, and from the north or northwest during the winter months. The potential likelihood for the MRA to affect human health due to exposure to emissions or other releases to the environment, including dust generation and potential for groundwater seepage were included in the assessment of the direct exposure indicator. The measurement is a receptor-based qualitative assessment considering wind direction, receptors in the path of the wind, potential for seepage, etc.
- **Human Health (Indirect Exposure):** Dust can affect vegetation and subsequently affect forage availability and wildlife species. The potential likelihood for the MRA to affect human health, including the consumption of impacted fish, wildlife, berries, etc. was included in the assessment of the indirect exposure indicator. It is preferred to have a facility with reduced on-going dust generation and down-wind dispersion over water and land.
- **Aboriginal Peoples Interests and Current Land Use:** Adverse effect to Aboriginal Peoples interests is not desirable. The potential for the proposed Project to affect Aboriginal Peoples interests and current land use has not yet been determined. Traditional land use studies still need to be conducted to identify historic and current land uses in order to identify potential impacts to recent or ongoing traditional practices. All options have been given the lowest possible ranking until such studies have been completed.
- **Presence of Archaeological Sites:** Archaeological and historic heritage are non-renewable resources whose locations consist of the physical remains of past human activity. Unrecorded sites may be identified at any of the MRA Options; however, individual sites are assumed to be mitigatable for all options. Studies are ongoing to determine if archaeological, paleontological or historic structures have the potential to be affected.
- **Proximity to Existing Permanent or Temporary Residences:** It is desirable to maximize the distance of the MRA from potential receptors. This indicator represents the number of existing residences (e.g. temporary camp sites, trapper cabins, seasonal residences, permanent residences and outfitter establishments) in proximity (i.e., approximately 3 km) of the MRA.
- **Recreational Access:** Recreational use is generally a function of accessibility and opportunity. The expected duration (i.e., none, short-term (initial construction), temporary (mine life), permanent of loss of access and use (i.e., periodically, heavily) of public recreation areas (i.e. provincial park, cottages, favourite fishing lake accessible only by ATV, etc.) due to the MRA was used to assign relative scores as a measure of the impact of each option. An option with permanent loss of access to a heavily used public recreation area would receive a lower score than an option that impacts no reduction in access.
- **Visibility and Aesthetics:** Reduced visibility of the MRA is preferred. Visual effects are qualitatively assessed to capture the effect on the visual aesthetic from receptor locations such as major transportation routes, communities and existing temporary or permanent residences.

This indicator considered such items as height, shape, and contrast with the surrounding terrain. All options are assumed to cause a major change in landscape from baseline conditions.

1.3 TECHNICAL ACCOUNT

The technical account assesses the technical merits of each of the alternatives.

The technical account is subdivided into a number of sub-accounts. Each sub-account is evaluated on the basis of a series of indicators. The technical sub-accounts and indicators are summarized in the following table:

Table A.3 Technical Sub-accounts and Indicators

Account	Sub-Account	Indicator
Technical	Mine Rock Pile Layout	Storage Efficiency (at pile height of 100 m)
		Vertical Expansion Capacity
	Mine Rock Pile Construction	Site Preparation
		Haul Distance from Open Pit
		Geotechnical Conditions
	Land Acquisition	Land Area and Title Holders
	Water Management	MRA Catchment Area
		Pipeline Length
		Pumping Requirements
	Monitoring and Maintenance	Ease of Runoff Management
		Consequence of Operational Error

The indicators for the technical are described briefly below.

- **Storage Efficiency (at pile height of 100 m):** Multiple mine rock piles may be required to store the planned mine rock volume. Fewer but larger piles can be managed more efficiently, rather than having many smaller, scattered piles. The storage efficiency in terms of the maximum storage volume possible within a given mine rock area to the total planned mine rock production volume is calculated. MRA Options with higher storage efficiencies are assigned higher relative scores.
- **Vertical Expansion Capacity:** Depending on the nature of the orebody and potential for expansion of reserves, flexibility of the MRA site to accommodate additional volumes of mine rock is an important consideration. The additional storage capacity if the stockpile is expanded from a height of 100 m to 150 m is calculated. MRA Options with higher storage capacity are assigned higher relative scores.
- **Site Preparation**: This indicator is a qualitative measure of the need for and complexity of site preparation required for each MRA Option. Less site preparation is preferred. This would include construction of haul roads, runoff collection systems, and any other earthworks required in order to prepare the area.

- **Haul Distance from Open Pit**: A shorter haul road is preferred to simplify the haul road design details. MRA within reasonably close proximity to the open pit also minimize the overall Project environmental footprint, reduce greenhouse emissions and achieve economic efficiencies of operation. MRA Options with shorter haul distances are assigned higher relative scores.
- **Geotechnical Conditions:** The stability of a mine rock pile depends on a variety of site-specific factors, including topography of the site, foundation conditions, nature of the mine rock materials, regional seismicity, climate conditions and hydrology. Stability considerations will affect the design of the MRA either by lowering the ultimate height or reducing the overall slope. Good geotechnical conditions are preferred for ease of construction and to ensure long-term stability. The geotechnical indicator provides a measure of the inherent risk to mine rock pile stability of siting the stockpiles on deep overburden soils, weak bearing soils or potentially liquefiable soils, etc. The relative value of the geotechnical conditions is estimated.
- **Land Area and Title Holders:** It is advantageous to locate as much of the MRA on existing mine property as possible. Additional property would need to be obtained if the MRA footprints extended beyond the current limits of the IAMGOLD land tenure. Acquisition of land may present challenges. The area of land requiring further land acquisition for each MRA Option is calculated. MRA Options on lands that do not require any further land acquisition are ranked higher.
- **MRA Catchment Area:** The mine rock pile design will include measures to manage storm water and runoff. A smaller MRA footprint generally simplifies water management which is preferred. The ratio of the footprint area in hectares to the mass (million tonnes) of mine rock stored is compared. MRA Options with a smaller ratio are assigned higher relative scores.
- **Pipeline Length:** A shorter runoff water and seepage management pipeline (if required) is preferred to simplify design, reduce pipe maintenance and reduce the risk of potential spills. It is also recognized that shorter distances from the mill allows more frequent inspections and facilitates maintenance. MRA Options with the shortest pipeline lengths are assigned the highest relative score.
- **Pumping Requirements:** Less pumping simplifies the design and decreases the risks for delays due to maintenance and problems during operations. MRA Options with the smallest head difference between the runoff collection pond located near the plant site and the MRA are assigned the highest relative score.
- **Ease of Runoff Management:** The amount of monitoring and maintenance will be a function of the catchment area of the MRA, the number of collection points around the perimeter, the perimeter ditching (if required) length, the distance from the plant site, etc. Less monitoring and maintenance requirements are preferred. A lower number of sump locations around the perimeter of the pile per kilometer of perimeter length is desirable and an indicator of the estimated level of runoff management required.
- **Consequence of Operational Error:** The consequence of operational error indicator provides an estimated measure of the severity (i.e. minor or significant) of impact to the environment and duration (i.e. temporary or permanent) should the mine rock pile fail during operations. A lower consequence of error is preferred. The relative value of operational error is estimated.

1.4 ECONOMICS ACCOUNT

The project economics account considers issues pertaining to the direct and indirect costs associated with the development of each alternative MRA option.

The economics account is subdivided into a number of sub-accounts. Each sub-account is evaluated on the basis of a series of indicators. The economic sub-accounts and indicators are summarized in the following table:

Table A.4 Economics Sub-accounts and Indicators

Account	Sub-Account	Indicator
Economics	Capital Costs	Foundation Preparation and Access Construction
		Water Management
	Operational Costs	Haul Distance
		Operational Costs
	Closure and Post Closure Costs	Reclamation
		Monitoring and Maintenance

The indicators for the economics account are described briefly below.

- **Foundation Preparation and Access Construction:** Simpler and less foundation preparation and access construction is preferred. The cost is qualitatively assessed based on footprint areas overlying suspected deep unsuitable overburden material, seepage control measures (if required) and access construction.
- **Water Management:** Where runoff collected from the mine rock piles is unable to meet applicable final effluent discharge requirements directly, collected runoff and/or seepage from these areas will be pumped to a central runoff collection pond for use in the milling process. The cost to construct and manage the runoff will depend on a number of factors including; the pile perimeter length, number of collection sumps, pipeline distance to the plant, elevation difference between plant and MRA, amount of runoff collected, etc. The estimated number of water management locations per kilometer of perimeter length is used as an indicator of initial capital cost for runoff collection measures.
- **Haul Distance**: Material transport is often the largest proportion of the mine rock storage costs. As such, it is generally desirable to locate the MRA as close as possible to the open pit. MRA Options with shorter haul distances are assigned higher relative scores.
- **Operational Costs**: Lower operational costs are preferred. Managing runoff is used as an indicator of operational costs and is a function of the total catchment area that intercepts water. The ratio of the total catchment area to the total storage capacity (million tonnes) is compared.
- **Reclamation**: Specific reclamation activities will include physical stabilization measures, select capping and vegetation measures to meet closure objectives and implementation of an appropriate water management and water quality measures. Lower reclamation costs are preferred. The costs will be a function of the final surface area to be reclaimed after operations.

The ratio of final surface area to reclaim to the mass (million tonnes) of mine rock stored is compared.

- **Monitoring and Maintenance**: Less monitoring and maintenance is preferred. The cost is estimated based on the number of monitoring locations per kilometer of perimeter length.

2 – REFERENCES

Golder Associates. January 29, 2013. *Draft Summary of the Mine Rock Area Alternatives Selection Process Côté Gold Project, Chester Township, Ontario.* Ref. No. 12-1197-0005R. Sudbury, Ontario.