

**Environmental Assessment
Terms of Reference**

of the

BHP Diamonds Inc.
Beartooth, Pigeon and Sable Kimberlite Pit
Mine Extension

Issued by:

**The Mackenzie Valley Environmental Impact Review
Board**

Draft

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41 **1.2 Public Consultation**

42 The purpose of public consultation is to inform those who may be affected by the
43 proposed development and to provide them the opportunity to participate in the process.
44 This includes the residents and organizations in existing and proposed pick-up
45 communities, and the respective first nations and Metis organizations. Industrial,
46 recreational, environmental and other recognized groups and individuals who have an
47 interest in the proposed development should also be included. The developer will
48 provide adequate public notification that it is preparing an environmental assessment
49 report and advise the public of opportunities to provide input so that they may be
50 involved in the environmental assessment process.

51
52 BHP Diamonds Inc. shall describe public consultation objectives including programs and
53 activities undertaken and committed to regarding:

- 54 I. Methods used to identify, inform and solicit input from potentially interested
55 parties
- 56 II. Those that provided comments and input
- 57 III. Outcomes of consultation including any additional information provided by
58 those consulted
- 59 IV. Key concerns identified
- 60 V. Major differences in views between those consulted
- 61 VI. Agreements or commitment to agreements with interested participants and/or
62 communities
- 63 VII. Issues tracking and management
- 64 VIII. An indication of how consultation affected the outcome of predicting impacts
65 and determining mitigation, as well as, affecting the design of the proposed
66 development.

67
68 **1.3 Traditional Knowledge**

69 BHP shall make all reasonable effort to collect and facilitate the collection of traditional
70 knowledge for integration into the environmental assessment report in collaboration with
71 aboriginal communities and organizations. Where traditional knowledge is not available
72 to the developer despite appropriate diligence, the developer will describe efforts taken
73 to obtain it.

74
75 Describe where and how the information was used and the effect that it had on
76 predicting impacts and determining mitigation.

77 **2. SCOPE OF DEVELOPMENT**

78 The Review Board is required to provide a scope of development determination
79 according to ss.117(1) of the Act. This section describes what the Review Board
80 considers the development to be. The scope was developed according to the principles
81 laid out under "scope of development" in the definitions section. The EAR will be
82 structured according to the scope of development.

83
84 ***If anyone has any problems with the scope of development as***
85 ***described, please provide those concerns in writing to the Review***
86 ***Board (attn. Luciano Azzolini). The Review Board will consider any***
87 ***comments received. Deadline for comments is November 30, 1999,***
88

89 The proposed Ekati™ Diamond Mine extension scope of development is as follows:

90 **2.1 Mining**

- 91 I. Beartooth, Pigeon and Sable Open pit mining
- 92 II. Pigeon and Sable underground mining
- 93 III. Ramps
- 94 IV. Above ground and below ground mining support infrastructure

95
96 **2.2 Mined Rock**

- 97 I. Waste rock storage
- 98 II. Overburden storage
- 99 III. Ore storage stockpiles
- 100 IV. Borrow pits and quarry sites
- 101 V. Tailings

102
103 **2.3 Water Management**

- 104 I. Water management structures (dikes, diversion channels, intake and delivery
105 systems)
- 106 II. Lake dewatering
- 107 III. Pit water management system
- 108 IV. Water management facilities
- 109 V. Sewage treatment and containment areas
- 110 VI. Sedimentation ponds

111
112 **2.4 Transport**

- 113 I. All weather haul road from the Sable, Pigeon and Beartooth pits to the
114 processing plant

115 II. All weather haul roads to waste dumps

116 **2.5 Existing Ekati™ Diamond Mine**

117 Changes to existing facilities infrastructure and facilities as a result of the proposed
118 development, including:

119 I. Existing infrastructure and facilities to be used for processing, disposal,
120 storage and transportation

121 II. Solid waste management and containment areas

122 III. surface structures (process plant, power plant, magazines, camp(s), roads,
123 airstrip, etc.)

124 IV. Petroleum and chemical storage areas

125

126 **2.6 Related Considerations**

127 **2.6.1 Development Sequence**

128 The proposed Ekati™ Diamond Mine extension development sequence, in the context of
129 the entire mining operation including traffic on existing haul roads and transportation
130 corridors, current and anticipated exploration activities that will utilize the proposed
131 development infrastructure, and future exploration plans as they relate to the proposed
132 development.

133 **2.6.2 Hazardous Materials**

134 Plans for transporting, handling, storing, using and disposing of hazardous materials
135 forming part of the proposed development.

136 **2.6.3 Accidents and Malfunctions**

137 Probability of an accident and/or malfunction occurrence, related to:

138 I. fuel and other hazardous material spills, as well as, pipeline failure

139 II. water inputs, which exceed retention capacity of the containment areas

140 III. key development components such as the tailings (processed kimberlite)
141 containment areas and all dikes

142 IV. use of pumping as a long-term water management activity to direct surface
143 flow around the Beartooth pit - feasibility and contingencies

144 V. the tailings (processed kimberlite) containment areas, waste rock (country
145 rock), ore stockpile and overburden storage sites, open pits, sewage facilities
146 and underground workings in the event of a temporary shutdown

147 VI. failures during the milling process

148 VII. general emergency situations (i.e., fire, natural disasters)

149

2.6.4 Closure

150 Describe, report and evaluate the level of confidence associated with implementing and
151 or amending or modifying, the following:

- 152 I. salvaging soils (volume and type) and lake sediments
- 153 II. re-establishing plant communities and a productive landscape
- 154 III. reclamation of containment areas
- 155 IV. reclamation of the waste (country) rock piles
- 156 V. reclamation of all weather haul roads
- 157 VI. reclamation of the dikes
- 158 VII. reclamation of the open pits (mine sites)
- 159 VIII. re-establishing stable surface drainage and lake recharge
- 160 IX. all site facilities (e.g. camp, borrow pits)

161

2.6.5 Reclamation

162 Describe opportunities, plans or amendments to existing plans for progressive
163 reclamation, experimentation and research work that can begin as early as possible in
164 the life of the proposed development; and how the design of proposed development
165 components can assist in meeting the objectives for reclamation.

166 **3. ENVIRONMENTAL ASSESSMENT**

167 This section summarizes how the Review Board expects the environmental impacts will
168 be reported, described, and evaluated. The elements in this section are deemed
169 necessary to satisfy ss.117(2) of the Act. The developer should provide information on
170 the environmental resources, and the resources to be used that could be affected by the
171 proposed development. They should also provide a sufficient base for the prediction of
172 positive and negative impacts, and the extent to which negative impacts may be
173 mitigated by planning, development design, construction techniques, operational
174 practices and reclamation techniques.

175
176 Where a determination on significance is provided in the EAR, the developer must
177 identify and explain the criteria used in forming their views. The Review Board shall
178 make the final determination of significance.

179
180 **3.1 Environmental Assessment Methodology**

181 Explicit documentation of the assumptions, models, information sources used as well as
182 information limitations and associated levels of uncertainty shall support all steps of the
183 environmental assessment report. The analysis should be quantitative where data are
184 available but where data or models are lacking, best professional judgement may be
185 used. The approach and methodologies used to identify and assess cumulative effects
186 shall be explained.

187 **3.1.1 Alternatives**

188 Include a description of the main development/production/technical alternatives
189 considered for implementing the proposed development. Focus on alternatives related to
190 key elements (infrastructure or activities) of the proposed development, in particular
191 those associated with alternative mine design; alternative sites for waste rock and
192 tailings disposal such as back filling depleted pits; alternative technologies for tailings
193 management; alternative transportation modes or routes; and decommissioning and
194 reclamation options.

195
196 Alternative development design and mitigation measures considered shall be reported
197 and reasons provided for their rejection. For greater clarity, the tradeoffs between cost
198 savings achieved in the proposed development's design shall be compared with the
199 development's design effectiveness at maximizing economic return and minimizing
200 environmental impacts.

201

202 **3.1.2 Description Of The Existing Environment**

203 The developer shall provide sufficient information on the existing environment, including
204 the existing mining operation, to give a brief but clear picture of the existing
205 environmental resources and their uses. Enough information shall be provided for the
206 prediction of positive and negative impacts and the extent to which negative impacts
207 may be mitigated by e.g., planning, project design, construction techniques, operational
208 practices and reclamation techniques. Baseline data in a digital format contained in
209 existing reports and documents should be digitally hyper-linked and/or appropriately
210 referenced. For greater certainty, BHP shall clearly and succinctly describe the following
211 environmental components:

- 212 I. air quality and climate
- 213 II. water quality and quantity
- 214 III. aquatic organisms and habitat
- 215 IV. wildlife and wildlife habitat, including migratory birds
- 216 V. vegetation and plant communities
- 217 VI. terrain, surficial geology, bedrock and soils
- 218 VII. human health
- 219 VIII. economy
- 220 IX. employment, education and training
- 221 X. infrastructure
- 222 XI. government
- 223 XII. social and cultural patterns
- 224 XIII. cultural resources

225 **3.1.3 Spatial Boundaries**

226 Spatial boundaries shall be scoped to indicate the range of appropriate scales at which
227 particular baseline descriptions and the assessment of impacts are presented. The
228 developer is not required to provide a comprehensive baseline description of the
229 environment at each of the above scales, but shall provide sufficient detail to address
230 the relevant impact issues.

231 **3.1.4 Temporal Boundaries**

232 In assessing the impact of the proposed development, the developer shall consider,
233 describe and evaluate the environmental impacts of the proposed development for all
234 phases of the proposed development including construction, operation, care and
235 maintenance, closure and post-closure.

236 **3.1.5 Impact Prediction**

237 Provide the methodology used in the analysis, and impact prediction including
238 assumptions made. The methodology shall describe predicted environmental impacts

239 after mitigation. Information gaps shall be identified along with actions needed to
240 remedy them.

241 **3.1.6 Impact Description and predicted outcomes after mitigation**

242 Describe the impacts resulting from the proposed development and present those in
243 sufficient detail to ensure reviewers can easily understand how the direct and indirect
244 impacts were analyzed, and how residual impacts were determined. BHP shall describe
245 each impact identified and the proposed mitigation measure(s) for all phases of the
246 proposed development (i.e., construction, operation, care and maintenance, closure and
247 post-closure).

248
249 The developer shall include a risk assessment of the reliability of planned mitigation
250 measures and consequences (environmental impacts) of potential failure. The residual
251 impacts should be described at least in terms of the following parameters.

- 252 I. magnitude
- 253 II. geographic extent
- 254 III. timing
- 255 IV. duration
- 256 V. frequency
- 257 VI. irreversibility of impacts
- 258 VII. ecological resilience
- 259 VIII. probability of occurrence and confidence level

260 **3.1.8 Environmental Optimization**

261 The environmental assessment report shall report the comparative costs of proposed
262 development alternatives and the corresponding environmental benefits. Any
263 assumptions or uncertainty surrounding implementation of mitigation measures, such as
264 untested technology, will be reported. The reporting of development impacts should
265 provide readers with a summary and comparative understanding of development
266 impacts.

267 **3.1.8.1 Land Use**

268 Describe land and resource uses potentially impacted by the proposed development.
269 Include maps of these land and resources uses in relation to the proposed development.
270 For additional clarity, describe at least the following land and resource uses:

- 271 I. rare or ecologically significant areas
- 272 II. land and resource use
- 273 III. traditionally or spiritually significant areas
- 274 IV. renewable resource harvesting areas
- 275 V. seasonal camp areas
- 276 VI. permanent camp areas

- 277 VII. recreational and tourism land uses
- 278 VIII. snowmobile trails
- 279 IX. wildlife outfitting area
- 280 X. Echo Bay winter road
- 281 XI. Echo Bay winter road camps and quarry land use permits

282

283 **3.2 Environmental Impacts**

284 The environmental assessment report shall report impacts resulting from the proposed
285 development on the physical, biological and social, economic and cultural components
286 of the environment.

287 **3.2.1 Air Quality and Climate**

288 Report the impacts of the proposed development on air quality. The analysis shall
289 include a discussion of measures considered to minimize the release of air contaminants
290 (dust, particulate exhaust fumes and other air contaminants). The analysis should also
291 include:

- 292 I. atmospheric dispersion of emissions on a local and regional scale
- 293 II. CO₂ emissions
- 294 III. atmospheric conversion processes of emissions (e.g. secondary particulates)
295 and linkages between chemical species, the environment and human health
- 296 IV. impact on biological receptors such as vegetation and wildlife
- 297 V. potential environmental impacts from particulate matter deposition should be
298 addressed, e.g., dust emissions from road traffic and construction.

299 **3.2.2 Terrain**

300 Report the impacts on the environment when surficial geology, bedrock or soils are
301 disturbed or used for construction purposes. The environmental assessment shall report
302 impacts resulting from, or on the following terrain and geological components:

- 303 I. impact to the Long Lake processed kimberlite containment area resulting
304 from any changes in tailings disposal management and accelerated water
305 inflow resulting from Pigeon pipe development
- 306 II. impact of remedial actions at the mine site (waste dumps, tailings)
- 307 III. the proposed development's impact on the thermal milieu
- 308 IV. the proposed development's impact to permafrost physical conditions and
309 thermal regime
- 310 V. impact of pit mining activities and infrastructure on permafrost regime and
311 changes to physical strength characteristics
- 312 VI. impact of draining of lakes/disposal of lake waters and sediments to access
313 kimberlite
- 314 VII. impact of alternatives such as "backfilling" the mined out kimberlite pits with
315 waste rock (especially for pipes that are close together).

- 316 VIII. impact on potential thermal erosion in relation to altered drainage around
- 317 the Pigeon and Beartooth kimberlite pipes
- 318 IX. the thermal impacts of mining
- 319 X. permafrost and drainage impacts
- 320 XI. impacts of pit dewatering on the water table and surface drainage
- 321 XII. rock types
- 322 XIII. slope stability of pit walls
- 323 XIV. aggregate use
- 324 XV. chemistry of pipes and stability of kimberlite by-products
- 325 XVI. permafrost temperatures and ground ice conditions at mines and roadways,
- 326 and in material being moved
- 327 XVII. sensitivity of boggy / wetland terrain to drainage and thermal alterations
- 328 (notably in relation to Pigeon pipe development)
- 329 XVIII. amount of overburden and rock to be removed, and its effects
- 330 XIX. acid rock drainage potential and its remediation (including sub-aqueous
- 331 disposal option)
- 332 XX. capacity / impacts on existing frozen-core dams
- 333 XXI. massive ground ice and granular resource extraction - limitations on
- 334 volumes of resource material and minimizing terrain disturbance associated
- 335 with ground ice thaw
- 336 XXII. expected post-closure modifications to regional groundwater chemistry and
- 337 flow patterns caused by flooding mining excavations
- 338 XXIII. quantity and quality of waters (including suspended sediments) draining
- 339 from waste rock and tailings facilities; provisions for disposal and mitigation
- 340 XXIV. quantity and quality (salinity, phosphate, nitrogen, heavy metal content) of
- 341 mine discharge waters; provisions for disposal and mitigation
- 342 XXV. seismicity
- 343 XXVI. rock heave

344 **3.2.3 Vegetation and Plant Communities**

345 The EAR shall analyze potential development impacts on:

- 346 I. local plant communities (i.e. vascular, non-vascular and wetland)
- 347 II. plant phenology
- 348 III. rare or highly valued species
- 349 IV. long-term habitat loss or alteration
- 350 V. biodiversity
- 351 VI. vegetation productivity

352
 353 This should include a quantitative account of loss of plant communities and could be
 354 presented in conjunction with wildlife habitat data. The information will be useful to
 355 reclamation programs in terms of re-establishing plant communities.

356

3.2.4 Water Quality and Quantity

- 357 The environmental assessment report shall provide an analysis of proposed
358 development impacts on surface and ground waters. This analysis shall include the
359 impacts on water quality and quantity, catchment areas and permafrost in relation to:
- 360 I. dredging, in-filling, and impacts of blasting and its associated residues
 - 361 II. lake bed sediment placement and control of runoff
 - 362 III. impact of Pigeon and Sable kimberlite pipe development on the Exeter water
363 shed
 - 364 IV. dewatering of 393,000m³ of water from Sable to Two-Rock Lake and
365 resulting impacts on the water balance, lake levels, outflow rates, etc. in
366 October and November in Two-Rock Lake
 - 367 V. dewatering lakes in October and November and related impacts (i.e., on
368 Panda Lake and the diversion channel i.e. increased flows, increased
369 nutrients, alterations in hydrography)
 - 370 VI. impact on ephemeral streams and permanent streams which collect and
371 disperse surface water flow
 - 372 VII. impact on water quantity, including changes in timing, volume and deviation
373 of peak and minimum flows due to physical changes in topography,
374 landscape and drainage patterns
 - 375 VIII. impact on the surface and groundwater flows to associated wetlands
 - 376 IX. siltation effects, e.g., runoff along roadways and drainage channels
 - 377 X. subaqueous disposal of potentially acid-generating rock and impact on water
378 quality and aquatic organisms in the subject Lake(s)
 - 379 XI. the road to the Sable kimberlite pit and water crossings
 - 380 XII. nutrient passage in fish and non-fish bearing water courses

381

3.2.4.1 Water chemistry of spoil

- 382 I. impacts of surface runoff
- 383 II. pit dewatering impacts including the experience gained from previous and on-
384 going BHP Ekati™ Diamond mine operations, and other comparable
385 operations and its applicability to this proposed development;
- 386 III. ground water seepage impacts (through water retention dikes, into pits and
387 underground); and
- 388 IV. contingencies for dealing with icing on the pit walls as well as ice removal
389 from the pits

390

3.2.4.2 Water Balance

391 A water balance must be included for the open pits, water retention dikes, underground
392 workings, mill and tailings (processed kimberlite) containment areas.

393 **3.2.4.3 General Water**

394 The assessment of impacts on water quality should also consider:

395

- 396 I. contaminant loading and dispersion (including surface runoff and airborne
397 contaminants)
398 II. acid rock drainage, metal leaching and geochemistry
399 III. sedimentation (plumes and dispersion)
400 IV. associated kimberlite toxicity and implications for aquatic wildlife

401 **3.2.5 Aquatic Organisms and Habitat**

402 The impacts on aquatic organisms and their habitat shall be considered taking into
403 account predicted water quality and quantity impacts from the construction of additional
404 open pits from the dewatering of lakes, excavation of on-land pipes and the associated
405 effects of this activity on fish, fish habitat, local drainage patterns. The analysis of
406 development impact shall include:

- 407 I. productive capacity of aquatic systems during construction, operations,
408 closure and post-closure
409 II. impacts of works and activities such as creek diversions, pit restoration
410 III. fisheries resources of Two Rock, Beartooth, Ulu, Sable and Upper Panda
411 Lakes
412 IV. habitat loss or alteration
413 V. rare and/or sensitive fish species and habitat
414 VI. mortality (includes fishing)

415

416 The principle of *No Net Loss (Policy for the Management of Fish Habitat, DFO, 1986)* of
417 fish habitat is to be addressed when the loss of lake and stream habitat is being
418 considered and when various proposed development components are restored (i.e.
419 dikes and waste rock piles). As such, the environmental assessment report shall
420 include an overview of how this principle will be achieved during the construction,
421 operation, care and maintenance and closure stages of the proposed development.

422 **3.2.6 Wildlife and Wildlife Habitat**

423 The environmental assessment report shall provide an analysis of potential development
424 impacts (both direct and indirect) on wildlife and wildlife habitats, including migratory
425 birds giving consideration to and demonstrating linkages between predicted physical and
426 biological changes resulting from the proposed development. Special consideration
427 shall be given to species listed as vulnerable or endangered on the Committee on the
428 Status of Endangered Wildlife in Canada (COSEWIC) list. The analysis of development
429 impacts should include:

- 430 I. loss of terrestrial habitat that was not covered in the 1995 EIS
431 II. habitat loss or alteration (e.g. fragmentation, connectivity)

- 432 III. disturbance of feeding, nesting, denning or breeding habitats
- 433 IV. improved or altered access impacts
- 434 V. wet-land habitat alteration, loss
- 435 VI. linear facilities and habitat disruption
- 436 VII. sensory disturbances to wildlife
- 437 VIII. physical barriers to wildlife
- 438 IX. disruption of movement (e.g. migration, home ranges, etc.)
- 439 X. blockage of daily or seasonal movements
- 440 XI. rare, vulnerable, threatened or endangered species as outlined in the
- 441 Canadian Organization of the Status of Endangered Wildlife in Canada
- 442 (COSEWIC), as well as, species of international significance.
- 443 XII. direct wildlife mortality
- 444 XIII. indirect wildlife mortality
- 445 XIV. reduction in wildlife productivity
- 446 XV. implications of the proposed development acting as an attractant for
- 447 particular species
- 448 XVI. Impact on birds
- 449 XVII. displacement impacts

450
451 The report should assess the implication of these impacts on the overall health of wildlife
452 populations, communities, and ecosystems.

453

454 **3.3 Social, Economic and Cultural Components**

455 **3.3.1 Human Health**

456 The environmental assessment report shall analyze the potential development impacts
457 on human health (i.e. physical health, including death and disease rate, psychological,
458 emotional, spiritual, or mental health and wellness).

459

460 Information shall also be provided on the toxicological risks associated with substances
461 hazardous to human health and human exposure to identified hazards via water, air,
462 vegetation and wildlife. Routes of exposure to human populations using an
463 environmental pathway analysis shall be provided, including both routine and accidental
464 release of materials or disposal of waste products.

465 **3.3.2 Economy**

466 The impact of the proposed development over its life on the economy, having regard to
467 direct, indirect and induced impacts on income and employment. Consideration must be
468 given to the impacts on:

- 469 I. wage and salary employment by skills category over the life of the proposed
470 development, including estimates of local and aboriginal participation

- 471 II. activities such as tourism, outfitting, harvesting and recreation
- 472 III. opportunities for local, regional and territorial businesses to supply goods and
- 473 services both directly to the proposed development and to meet the demand
- 474 created by the expenditure of contractors and new employees
- 475 IV. opportunities to diversify the northern economic base to produce and to
- 476 supply new goods and services
- 477 V. barriers to employment
- 478 VI. availability and use of skilled workers in the NWT to meet job requirements
- 479 VII. impacts on the subsistence economy
- 480 VIII. impacts to hunters, trappers
- 481 IX. federal and territorial revenues and costs
- 482 X. local government finances
- 483 XI. inflation and the cost of living impacts
- 484 XII. economic diversification

485 **3.3.3 Land and Resources Use**

486 Assess the impacts of the proposed development on changes in the use of land and
487 renewable resources, including traditional land use, hunting, trapping or outfitting areas,
488 commercial, Aboriginal and sport fishing areas, protected areas (see 6. Definitions),
489 recreation areas, navigable waters, and industrial and commercial areas.

490 **3.3.4 Renewable Resources**

491 Assess the impact of the proposed development on existing renewable resource
492 activities impacted by the proposed development including wildlife harvesting, availability
493 and abundance of wildlife, fishing, recreational and commercial land based activities.
494 The developer shall report impact identification, prediction or evaluation conflicts.

495 **3.3.5 Visual and Aesthetic Resources**

496 Assess the impact of the proposed development on areas having identified scenic value
497 and on special landscape features identified by government and first nations.
498 Development design components designed to mitigate visual and aesthetic impacts shall
499 be reported.

500 **3.3.6 Noise**

501 Assess the impact of the proposed development on the environment resulting from
502 changes to ambient noise levels, continuous exposure versus acute exposure (i.e.,
503 blasting) and the effect of these changes on humans and wildlife.

504 **3.3.7 Infrastructure**

505 Assess the impacts of the proposed development on existing social, institutional and

506 community services, transportation facilities, services, infrastructure (e.g. transportation
507 safety and public satisfaction with infrastructure), and permanent changes to the
508 infrastructure and services arising from the proposed development.
509

510 **3.3.8 Government**

511 Assess the impacts of the proposed development on revenues accruing to federal and
512 territorial governments, and the net incremental costs or losses to these governments
513 arising from the proposed development.

514 **3.3.9 Cultural Resources**

515 Describe potential impacts of the proposed development on heritage resources and sites
516 of paleontological significance.

517

518 **3.4 Impacts of the Environment on the Proposed Development**

519 The environmental assessment shall include a discussion of the impacts of the
520 environment on the proposed development and what BHP has learned to date that it will
521 incorporate into the proposed development. BHP shall consider such things as severe
522 weather events and climate change.

523

524 The discussion must specifically describe and assess how the potential for climate
525 change (global warming) could affect permafrost and soils with high ice content in
526 relation to the integrity of the proposed development infrastructure, particularly the
527 tailings (processed kimberlite) containment impoundment, water retention dikes and
528 waste rock piles).

529 **3.4.1 Cumulative Impact**

530 Cumulative impacts that are likely to result from the proposed development in
531 combination with the existing BHP Diamond mine development, and other existing
532 developments, including confirmation that all existing facilities, infrastructure, etc., BHP
533 plans to use can adequately handle the demands generated by the proposed
534 development. Include cumulative impacts in relation to

535

- 536 I. the environment
- 537 II. social environment
- 538 III. economic environment
- 539 IV. cultural environment
- 540 V. heritage resources

541

542 Cumulative effects assessment (CEA) involves determining how the proposed

543 developments' impacts, over the lifetime of the development, interact with other
 544 developments that are being carried out, and their combined effects.
 545
 546 Explicit documentation of the assumptions, models, information sources used as well as
 547 information limitations and associated levels of uncertainty shall support all steps of the
 548 CEA in the environmental assessment report. The analysis should be quantitative where
 549 data are available but where data or models are lacking, best professional judgement
 550 may be used. The approach and methodologies used to identify and assess cumulative
 551 effects shall be explained.

552 **3.4.2 Abandonment and Restoration**

553 BHP shall provide a complete description of regulations (regulatory framework), industry
 554 standards and government agreements that are needed with respect to the closure
 555 phase of the proposed development. Where regulatory requirements, industry standards
 556 or government agreements exist, their minimum standards, criteria, etc.... shall be
 557 reported. Based on the implementation of regulatory requirements, government
 558 agreements and industry standards, BHP shall identify and report and describe
 559 environmental impacts resulting from the proposed development, and mitigation taken to
 560 address the impacts. BHP shall provide a clear (visual and textual) description of the
 561 proposed development site at closure, and after restoration.

562 **3.4.3 Follow-up Programs**

563 Describe reporting (feedback) procedures, proposed amendments to existing
 564 procedures and any changes within the company's organization in regards to the
 565 environmental impacts monitoring program. The intent is to ensure that remedial actions
 566 are taken if the results of a monitoring program deviate from any established operational
 567 standards on environmental performance or predictions on environmental impacts.
 568
 569 Provide information on any proposed environmental impacts monitoring program(s) or
 570 amendments to existing environmental monitoring program(s), designed to determine
 571 the actual environmental impacts as compared with those predicted during the
 572 environmental assessment process, measure the performance and of the mitigation
 573 measures, and identify unexpected environmental impacts and alternatives. Adaptive
 574 management practices already undertaken and incorporated in the mitigation measures
 575 should be clearly identified.
 576
 577 Provide information on any proposed environmental management plans or amendments
 578 to existing environmental management plans such as air quality, water quality, materials
 579 management, wildlife, traffic, aquatic life, waste, quarry and environmental monitoring
 580 and social, economic and cultural monitoring as required.

581

3.4.4 Compensation

582 The developer shall provide key elements of its policy on individual compensation and
583 on compensation agreements, contracts or other forms of compensation they have or
584 will negotiate as it relates to mitigating adverse environmental impacts, within the
585 confines of confidentiality.
586

587 **4. ADDITIONAL DIRECTION FOR THE ENVIRONMENTAL**
588 **ASSESSMENT**

589
590 **4.1 Executive Summary**

591 BHP shall provide a concise description of all the key facets of the proposed
592 development including the need and purpose for the proposed development in
593 appropriate languages. This executive summary should also provide a general outline of
594 the key impacts issues and proposed mitigation strategies and measures. A succinct
595 description of information distribution, as well as first nations and public consultation
596 measures taken shall be included.

597
598 **4.2 Developer Identification**

599 BHP shall provide developer information including name of company representatives
600 managing the proposed development. Include company incorporation and structure.

601
602 **4.3 Tenure**

603 Clearly delineate the geographic area that BHP intends to control through lease or other
604 tenure arrangements.

605
606 **4.4 Developer's Policies**

607 BHP Diamond Inc.'s shall provide its corporate policies on the following:

- 608 I. preserving the environment
- 609 II. limiting the use of fresh water (i.e., recycle, re-use)
- 610 III. the impending Protected Areas Strategy
- 611 IV. abandonment and reclamation and progressive reclamation
- 612 V. reporting and sharing of adaptive management or learned experiences
- 613 VI. measures to encourage contractors to hire northerners
- 614 VII. education for appropriate personnel to ensure they are aware of their role in
615 the protection of the environment and in emergency response plans;
- 616 VIII. contracting and procurement, including those which promote local sourcing,
617 participation of local businesses and opportunities for northern businesses

618
619 **4.5 Performance Record**

620 Briefly summarize, the developer's corporate history in Canada and the Northwest
621 Territories, and that of its partners. The discussion shall include proposed development
622 ownership, organizational structure identifying organizational responsibilities for mine
623 development and operations, an environmental performance record at the current site.
624

625 BHP shall include a brief and succinct compliance report from the independent
626 environmental monitoring agency. The developer shall provide a summary of adaptive
627 and incremental improvements incorporated to date in the construction, operations,
628 remediation and reclamation of the mine, and measures that have contributed to
629 mitigating and/or improving the environmental, economic and human effects of the
630 existing mining operation.

631

632 **4.6 Regulatory Regime**

633 Provide a tabular list of all relevant licenses, permits and other authorizations that are
634 required, or require amended to allow the proposed development to occur.

635 **5. PRESENTATION**

636
637 **5.1 Conformity**

638 The environmental assessment report shall include a conformity table outlining to
639 reviewers the areas in the environmental assessment report (including appendices and
640 technical reports) that address the specific sections of the Terms of Reference.

641
642 **5.2 Format**

643 The environmental assessment report shall contain an executive summary that is non-
644 technical and suitable for community and general public use in appropriate format and
645 languages.

646
647 The format of the environmental assessment report is largely left to the discretion of the
648 developer although reviewers must be able to clearly identify where specific issues have
649 been addressed and directions followed.

650
651 **5.3 Appendices**

652 Detailed data shall be contained in appendices and technical reports submitted in
653 support of the primary environmental assessment report.

654
655 **5.4 Data Presentation**

656 The developer should present the environmental assessment report in the clearest
657 language possible. Where technical language is used a glossary defining technical
658 words and acronyms, should be included. BHP should provide charts, diagrams and
659 maps wherever useful to clarify the text. Where possible, maps should be of common
660 scale and orientation to allow for comparison and overlap of mapped features.

661

662 **6. DEFINITIONS**

663

664 The following are terminology and definitions applied to this Terms of Reference for
665 environmental assessment.

666

667 The following are terminology and definitions necessary to understand this terms of
668 reference for environmental assessment.

669

670 **Abandonment** - The point in time when the acquired lease or other tenure
671 arrangements are relinquished and the pipeline and associated facilities are closed.

672

673 **Closure** - The point in time when the pipeline and associated facilities permanently
674 ceases production. This includes the decommissioning and reclamation of the site and
675 the implementation of monitoring post-closure programs.

676

677 **Developer** - any person carrying out an existing or proposed development.

678

679 **Development** - means any undertaking, or any part of an undertaking , that is carried
680 out on land or water and, except where the context otherwise indicates, wholly within the
681 Mackenzie Valley, and includes measures carried out by a department or agency of
682 government leading to the establishment of a national park subject to the *National Parks*
683 *Act* and an acquisition of lands pursuant to the *Historic Sites and Monuments Act*.

684

685 **Environment** - means the components of the Earth and includes a) land, water, air,
686 including all layers of the atmosphere; b) all organic and inorganic matter and living
687 organisms; and c) the interacting natural systems that include components referred to in
688 a) and b).

689

690 **Factors to be considered** - ss. 117(2) Every environmental assessment and
691 environmental impact review of a proposal for a development shall include a
692 consideration of a) impact of the development on the environment, including the impact
693 of malfunctions or accidents that may occur in connection with the development and any
694 cumulative impacts that is likely to result from the development in combination with other
695 developments; b) the significance of any such impact; c) any comments submitted by
696 members of the public in accordance with the regulations or rules of practice and
697 procedures of the Review Board; d) where the development is likely to have a significant
698 adverse impact on the environment, the imposition of mitigative or remedial measures;
699 and e) any other matter, such as the need for the development and any available
700 alternatives to it, that the Review Board or any responsible minister, after consulting the
701 Review Board, determines to be relevant.

702

703 **Follow-up program** - means a program for evaluating a) the soundness of an
704 environmental assessment or environmental impact review of a proposal for a
705 development; and b) the effectiveness of the mitigative or remedial measures imposed
706 as conditions of approval of the proposal.

707
708 **Harvesting** - in relation to wildlife, means hunting, trapping or fishing activities carried
709 on in conformity with a land claim agreement or, in respect of persons and places not
710 subject to a land claim agreement, carried on in pursuant to aboriginal or treaty rights.

711
712 **Heritage Resources** - means archaeological or historical sites, burial sites, artifacts,
713 and other objects of historical, cultural or religious significance, and historical or cultural
714 records.

715
716 **Impact on the environment** - means any impact on land, water, air or any other
717 component of the environment, as well as on wildlife harvesting, and includes any
718 impact on the social and cultural environment or on heritage resources.

719
720 **Mitigative and remedial measures** - means a measure for the control, reduction or
721 elimination of an adverse impact of a development on the environment, including a
722 restorative measure.

723
724 **Post-Closure:** The period of time following closure until lease or tenure arrangements
725 are relinquished.

726
727 **Protected Areas:** Those areas meeting the criteria under the International Union for the
728 Conservation of Nature (IUCN) definition being an area of land or sea especially
729 dedicated to the protection and maintenance of biological diversity, and its associated
730 natural and cultural resources, managed through legal or other effective means and
731 those existing protected areas designated under federal and territorial legislation, and
732 land claim agreements.

733
734 **Reclamation:** Activities undertaken to modify and reclaim the land and water to
735 acceptable standards.

736
737 **Scope of development** - Scope of development is about defining what makes up the
738 development. That is, what parts of the overall development will be included for
739 consideration in the environmental assessment. Rule of thumb for determining scope of
740 development include: identifying the principle development and any accessory
741 developments and activities.

742
743 *Accessory Developments and Activities* - other developments or activities that are
744 associated with the principle development that are necessary for the principle
745 development to proceed. In order to identify accessory developments or activities the

746 following checks can be applied:

747

748 • Linkage: It is accessory if the decision to undertake the principle development makes
749 the decision to undertake other developments and activities inevitable.

750 • Interdependence: It is accessory if the principle development could not proceed
751 without these other developments or activities.

752

753 *Principle Development* - the undertaking or part of an undertaking that a developer
754 proposes.

755

756 **Tailings**: Material rejected from the mill after the recoverable valuable minerals have
757 been extracted. Also referred to as processed kimberlite.

758

759 **Waste Rock**: All materials, except ore and tailings, which are produced as a result of
760 mining. Also referred to as country rock.