# **Giant Mine Designation Options**:

## Discussion Paper for the Mackenzie Valley Environmental Impact Review Board Environmental Assessment

March 30, 2012

Avens Associates Ltd.
for
Alternatives North

## Table of Contents

# Executive Summary

The remediation of Giant Mine is currently undergoing an environmental assessment through the Mackenzie Valley Environmental Impact Review Board. As part of the environmental assessment, Alternatives North, an NWT social justice coalition, organized a Perpetual Care Workshop in September 2011. One recommendation from the workshop was to consider applying for a UNESCO designation to help people remember what happened at Giant Mine and the area. This paper looks at a variety of designation types, commemorative and legal, from the municipal to the international. Comparisons are made between some Canadian and other national designations. This paper is intended to stimulate discussion on whether any of these designations are worthwhile pursuing as part of an overall perpetual care system for Giant Mine.

**What to Remember**
The concern about the size, severity and 'forever' nature of contamination at Giant Mine prompted the recommendation of an international designation. However, the story of Giant Mine is much broader than its contamination. Hence, while contaminated site designations are considered, the layers of stories make other forms of 'remembering' or designation worthwhile considering.

**Contaminated Site Inventories**
There are no international designations for contaminated sites. In Canada, the Treasury Board Secretariat maintains a Federal Contaminated Sites Inventory. The inventory contains all known contaminated sites for which federal departments and agencies are accountable. The United States and Australia have similar types of national inventories.

Designating an area a 'contaminated site' requires criteria for the types and amount of contamination. Inclusion in such an inventory is a way of tracking locations, types, and severity of contamination, along with progress made to remediation. It is a good 'first step', and Giant Mine is included in the Federal Contaminated Sites Inventory. Ensuring that resources continue for ongoing remediation and monitoring will require ongoing vigilance. In that regard, designations may be helpful by providing other 'watchful eyes'.

**Municipal Designations**
In theory, Giant Mine could have three municipal designations. A commemorative designation (one without legal force) would be a "Recognized Heritage Resources". This designation would given by the City of Yellowknife Heritage Committee. A "Designated Heritage Resource" would be given by City Council, under the City's

*Heritage By-law* (October 2009). Another legal designation would be a unique zone within the *Zoning By-law*. To date, the City appears interested in sorting out the remediation and ownership issues before pursuing any municipal designation.

**Territorial Designations**

The main commemorative designation that seems applicable to Giant Mine is a Territorial Historic Site. The designation aims to document the heritage of these places for present and future generations to enjoy. Pursuing such a designation would allow the multiple stakeholders and interest groups to 'weave' their stories in a way suitable for commemoration. Such work would be necessary to pursue international designations. Similarly, a Territorial Heritage Park under the *Territorial Parks Act* is a possible legal designation.

**Federal Designations**

Giant Mine does not immediately suggest itself as a National Historic Site; it would require research into the area's national historic significance to be so designated. A possible legal option is for a surface withdrawal under the *Territorial Lands Act.* Such a legal designation would restrict the types of activities in the area withdrawn. Additional research is needed into criteria and methods.

**International Designations**

International designations are all commemorative, not legal. These designations, as others, can provide various benefits, such as additional "watching eyes" to make sure we live up to our commitments; access to additional experts; economic benefits (direct, or through increased tourism); diminishing the likelihood of ad hoc changes; and encouraging "transmission" of understanding of the site to future generations.

While the Giant Mine site itself is unlikely to gain an international designation, the mine as part of a larger landscape might. Two possible designations are "Biosphere Reserve" and "Global Geopark". The biosphere reserve focuses more on the natural environment, and the geopark clearly more on geology. However, both designations:

- require that the local community, government agencies, industries, businesses and individuals work together;
- have a variety of 'types' of areas and uses within them; and
- seek a balance between development and conservation.

The NWT Mining Heritage Society considered spearheading the application process for a Global Geopark. Realizing the considerable efforts involved, the Society

instead concentrated their efforts on site projects. However, this does show an interest from another group in an international designation.

**How to Remember**

Remembering, whether with or without a designation other than 'contaminated site on the federal inventory' will be easier if the mine is worked into people's day-to-day lives. Including information about Giant Mine in the school curriculum, in government employee orientation information, and in Chamber of Mines for Northwest Territories and Nunavut membership packages are examples of continually bringing information about Giant into the 'here and now'.

Giant Mine, and our understanding of it, will continue to evolve. Local residents are a huge part of that, but international expertise is needed as well. A group of environmental professionals organized the Sustainable Remediation Forum (SURF). This group may have ideas, or started some actions, on international designations related to contaminated sites.

## Purpose

This discussion paper identifies and evaluates various options for land use and cultural designations for the Giant Mine, near Yellowknife, Northwest Territories (NWT), Canada. The designations examine possible ways to ensure that the site, the mining activities and their effects, and the remediation activities, are not forgotten. This paper is intended to stimulate discussion on whether any of these designations are worthwhile pursuing as part of an overall perpetual care system for Giant Mine. The potential for new types or categories of site designation are also considered.

## Background

The remediation of Giant Mine is currently undergoing an environmental assessment through the Mackenzie Valley Environmental Impact Review Board. Alternatives North, an NWT social justice coalition[1], has funding to participate in the environmental review. This paper forms part of Alternatives North's submission to the Review Board. In Alternatives North's opinion, the Developers Assessment Report for the Giant Mine Remediation Environmental Assessment did not adequately cover perpetual care measures. Hence it organized, in association with the Yellowknives Dene First Nation, a Giant Mine Perpetual Care Workshop in September 2011. One of the workshop recommendations was:

> Consideration should be given to designating Giant Mine as a special site such as a UNESCO (United Nations Education, Science and Cultural Organization) designation, so that people do not forget what happened here. (see http://www.reviewboard.ca/upload/project_document/EA0809-001_AN_Giant_Perpetual_Care_Workshop_Report_1328904093.PDF pg. 24)

Giant Mine was one of the earliest mines in the Yellowknife area.

According to the NWT Mining Heritage Society "In 1933, two men made the first free gold discovery up the Yellowknife River…In the fall of 1935, a Geological Survey of Canada mapping party under the direction of Dr. Alfred Jolliffe noted visible gold on the west side of Yellowknife Bay, triggering a frantic rush to get claims staked before freeze-up. This led to the discovery and development of the

[1] www.alternativesnorth.ca

Con Mine, which entered gold production in 1938, the first gold mine in the NWT. Many other mines followed, including Negus Mine in 1939, Ptarmigan Mine in 1941, Thompson-Lundmark Mine in 1941, Giant Mine in 1948, and Discovery Mine in 1950…In 1992, a bitter strike at Giant Mine claim[ed] the life of 9 miners, killed in a deliberately set explosion. A Miner's Monument at the city's Prince of Wales Heritage Centre provides a lasting memorial to those who perished in one of the most tragic incidents in Canada's labour history."

Giant Mine continued as a gold roasting operation until 1999. At that point, the owner (Royal Oak Mines Inc.) went into receivership. The owners of nearby Con Mine then mined the ore and processing it at Con site.

The site became a public liability in 2005. The federal and territorial governments, acting as co-proponents, developed a remediation plan for the Giant Mine. A major component of the remediation plan is what to do with arsenic trioxide, a by-product of the mine's roasting operation. Arsenic trioxide is a proven human carcinogen. There is now 237,000 tonnes of arsenic trioxide dust (highly water soluble) stored underground at the mine.

The remediation plan calls for freezing the arsenic trioxide in-situ forever using an active/passive system. The frozen blocks, minewater and other remediation measures will require perpetual care forever. This requirement for perpetual care is what drives concerns about how to communicate with future generations and ensure that what happened at the Giant Mine is not forgotten or lost to history. The act of site designation -- and whatever that may entail in terms of information management, research, communications and other requirements -- can help support long-term institutional and societal memory.

The effects of the mine on the Yellowknives Dene First Nation have not been well documented but there is deep resentment over the loss of traditional harvesting areas for berries and fish, a lack of economic benefits, sickness and even death from arsenic poisoning[2].

## Definitions

The field of 'perpetual care of contaminated sites' is relatively new, so various terms are encountered in literature and discussions of this idea.

Contaminated sites contain **hazardous substances** that are higher than normal for the region. The hazardous substances pose a risk to human health or the environment. Many contaminated sites can be fully cleaned up. In some sites, the contamination remains at levels that **don't allow for unrestricted use** of the site

[2] Perpetual Care and the Future of the Giant Mine. September 2011 Workshop Report. http://aged.alternativesnorth.ca/pdf/Perpetual%20Care%20Workshop%20Full%20Report%20(lo-res%20revised).pdf

(land and/or water) even after the clean-up is 'finished'. Nuclear waste is a typical example.

'Perpetual care' indicates ongoing **actions** are needed **even after a site has been cleaned up**. These actions go beyond merely monitoring the site.

Perpetual care is also called "long-term stewardship". How long is 'long-term' or 'perpetual'? We are trying to think in minimally of 10,000 years, or more broadly **250,000 years**. Arsenic doesn't 'degrade' with time, and it is unlikely humans will evolve to withstand arsenic ingestion within that timeframe. Yet people have difficulty 'even' with 10,000 years (twice as long as the pyramids have been around)[3].

In this report the term commemorative designation is used broadly for a **non-binding** historic, cultural, environmental or land use assignment. The designation can be municipal, territorial, federal or international. Commemorative designations have some sort of agreement to take care of the site (though not legally binding), and some type of communication plan.

Legal designations are also described, i.e., sites under municipal, territorial or federal legislation.

With a review of municipal, territorial or regional, national and international designations, and legal systems, the author could find no designation specific to contaminated sites. However, several inventories of contaminated sites were found.

Inventories are typically territorial (provincial) or national catalogues of sites. Inventories are public, but typically contain no plan to communicate the inventory to the public. Canada's federal government, as is typical to many nations, does catalogue contaminated sites.

## Components of Perpetual Care

Bauer and Probst[4] describe the core elements of perpetual care as including:
- site monitoring and maintenance,
- application and enforcement of legal or other mechanisms (often referred to as institutional controls) to restrict land and water use,
- information management,

[3] Raffesnperger, C. 2011. Principles of Perpetual Care. The Giant Mine, Yellowknife, Northwest Territories. http://www.reviewboard.ca/upload/project_document/EA0809-001_Principles_of_Perpetual_Care-_Report_from_Alt_North_1329867038.PDF

[4]Bauer, Carl and Katherine N. Probst. 2000. Long-Term Stewardship of Contaminated Sites Trust Funds as Mechanisms for Financing and Oversight. Discussion Paper 00–54, Resources for the Future. http://ndep.nv.gov/lts/future00.pdf

• environmental monitoring, and
• emergency responses and financing when remedies or controls fail.

Raffensperger (2010) describes five rules of perpetual care that are implemented through five components. The components are:

- information, warning, and memory systems;
- monitoring;
- technology;
- financial mechanisms; and
- restoration.

The categories are interrelated.

Monitoring is a clearly a key component of managing contaminated sites. Who does the monitoring, and how it is done, varies with the site. One possibility includes independent oversight. "The purpose of an independent oversight body is to provide a separate and vigilant set of eyes and ears… Oversight bodies…reveal a tension between… 1) serving as a conduit for communication between the public, project proponent and regulators, and 2) providing rigorous technical oversight of the monitoring process…Increased monitoring and oversight are seen as particularly critical to deal with environmental risks which are not fully known or knowable."[5]

In some ways, an additional designation fulfills in part the role of a site-specific independent oversight body. It brings and additional 'set of eyes and ears' and has a role in communication between the public and proponent. Though most types of designating bodies don't necessarily have the technical expertise on staff for a site such as Giant (e.g., chemical engineers, permafrost scientists) some oversight bodies will go out and obtain expert advice. If this is the case, they could also provide rigorous technical oversight.

## Inventories of Contaminated Sites

Inventories are the start of reclamation process, i.e., figuring out what the problem is. Once the criteria are developed for the inventories, and site identified, then appropriate remediation and monitoring actions can begin. If remediation is completed, sites can be declared cleaned. Leaving sites with 'cleaned' on the inventory is good practice. Our knowledge of contaminants and standards for

[5] Affolder, N., Allen, K. and Sascha Paruk. 2011. Independent Environmental Oversight. A Report for the Giant Mine Remediation Environmental Assessment. http://www.reviewboard.ca/upload/project_document/EA0809-001_Independent_Environmental_Oversight_Report_1328898833.PDF

clean-up are continually being updated. Leaving 'clean' sites in inventories gives people the opportunity to re-evaluate areas in the future. If sites are not able to be fully cleaned, then on-going efforts needed to contain the contaminants can be listed. As our understanding of contamination, and environment laws, standards and enforcement improve, in theory there shouldn't be any more contaminated sites. In practice, all are imperfect, and accidents occur.

Between new sites and needing to take care of existing sites, resources to maintain inventories are required. Properly resourced, they become in themselves an ongoing memory system.

This section contains a description of various systems to identify and keep track of contaminated sites.

## Government inventories

### Northwest Territories

In 2010, Indian and Northern Affairs Canada, through the Contaminants and Remediation Directorate produced a report called *The Big Picture 2010: contaminated sites in the NWT.* Along with descriptions of the sites, it includes the remediation of sites that are primarily under the department's responsibility, now called Aboriginal Affairs and Northern Development Canada (AANDC). Information is updated on http://www.aadnc-aandc.gc.ca/eng/1100100022939.

The sites are based on the federal contaminated sites inventory (see below). The federal inventory list 1,399 sites for the NWT. The report deals with 30 of those sites.

### Canada

The Treasury Board Secretariat of Canada maintains the Federal Contaminated Sites Inventory. "The inventory includes all known contaminated sites for which federal departments and agencies are accountable. There are over 18,000 such sites in the inventory, from across Canada." (The Big Picture 2010). Also included are non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility (Giant Mine is an example).

The inventory is based on the Federal Contaminated Sites and Solid Waste Landfills Inventory Policy (2000) which "requires custodian departments and agencies to establish and maintain a database of contaminated sites for which they are responsible."[6] Information from agencies is required annually, then updated on the federal inventory.

The inventory records include:

[6] http://www.tbs-sct.gc.ca/fcsi-rscf/home-accueil-eng.aspx

- site location,
- severity of contamination,
- contaminated medium,
- nature of the contaminant,
- progress made to date in identifying and addressing contamination, and
- how much liquid and solid-based media have been treated.

Search results can be displayed as a table or a map.

The website states: "According to the definition adopted by the government of Canada, a contaminated site is 'one at which substances occur at concentrations (1) above background (normally occurring) levels and pose or are likely to pose an immediate or long term hazard to human health or the environment, or (2) exceeding levels specified in policies and regulations.' In other words, the main qualification for including a site in the inventory is that there is a concentration of a substance in the soil or ground water (usually a petroleum product or a metal) that is higher than expected for that region of Canada. There must also be some evidence that this concentration poses a risk to human health or the environment."

Sites vary in their degree of contamination. For instance, Port Radium lists 950,000 tonnes of contaminated medium. Others can be a few cubic metres from an oil spill. Sites also vary in their degree of management. Some sites are considered remediated; some are being remediated or are under risk management; other sites are being assessed or awaiting assessment.

There is a Federal Contaminated Sites Action Plan (FCSAP) to deal with federal contaminated sites. It "is a cost-shared program that supports federal departments, agencies and consolidated Crown corporations in addressing contaminated sites for which they are responsible. The primary objective of this program is to address the risks that these sites pose to human health and the environment, and to reduce the associated financial liability." (Big Picture 2010)

### Australia

In Australia and New Zealand, the Environmental Protection Heritage Council[7] maintains a National Pollutant Inventory (NPI). The NPI is an Internet database designed to provide publicly available information on the types and amounts of certain substances being emitted to air, land, and water.[8] . The system is similar

[7] The Environment Protection and Heritage Council's objective is to ensure the protection of the environment and heritage of Australia and New Zealand. The members of the EPHC are Ministers, not necessarily environment Ministers, from participating jurisdictions (i.e., Commonwealth, State and Territory Governments, the New Zealand Government, and the Papua New Guinea Government).
[8] http://www.ephc.gov.au/taxonomy/term/57

to the Canadian inventory in that searches can be done through location, industry, substance or company. It includes an excellent map based search system.

Australia itself has a National Environment Protection Council. Members are generally the same as for the Environmental Protection Heritage Council, but only from Australia. It produces National Environment Protection Measures (NEPM), including general guidelines for the assessment of site contamination. **"**The NEPM establishes a nationally-consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, contaminated land auditors, land owners, developers and industry.**"**[9]

In 2006 there was a review of the NEPM for the assessment of contaminated sites.[10] The report notes "there was support from stakeholders for national guidance on management and remediation approaches." It recommends "that the Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites, published by ANZECC and NHMRC in 1992, could be revised and updated to provide the guidance that stakeholders in site contamination are seeking of these guidelines in relation to site management."

The 1992 report[11] says "Please note that this document has been rescinded by the NHMRC. It is provided for historical information purposes only." The report has a paragraph on decommissioning of sites, but no real direction on long-term management. It appears there is a jurisdictional issue surrounding management and contamination, as these are dealt with through state and territory legislation and policies. To the author, at this point, it appears there is little information or co-ordination of remediation.

The 1999 report Guidelines for the Assessment of On-Site Containment of Contaminated Soils for Australia and New Zealand[12] talks about design life span ranging from at least 50 years to several hundred years, and service life of containment components ranging (in best case scenarios) from 30 to "at least 500 years". That information is based on Government of Ontario research.

[9] http://www.ephc.gov.au/contam
[10] http://www.ephc.gov.au/sites/default/files/ASC_NEPM__Review_Report_200609.pdf
[11] http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/eh17.pdf
[12] http://www.ephc.gov.au/sites/default/files/ANZECC_GL__Assessment_of_on_site_containment_contaminated_soil.pdf

### United States

Kuyek characterizes the US Superfund as "the world's most effective contaminated sites remediation program."[13] The Superfund website states "Over the past 20+ years, Superfund has located and analyzed tens of thousands of hazardous waste sites, protected people and the environment from contamination at the worst sites, and involved states, local communities, and other partners in cleanup. Superfund measures its cleanup accomplishments through various criteria including construction and post construction completions of hazardous waste sites." [14] The sites are searchable by various means, such as state, region, federal agency, "Indian entity", and contaminant type. Information on the sites is updated by the regions every 90 days. Sites are listed as active or archived. A site may become active again if the site conditions change and/or new information becomes available.

Sites are added according to a Hazard Ranking System. The Superfund describes that as "a numeric estimate of the relative severity of a hazardous substance release or potential release based on (1) the relative potential of substances to cause hazardous situation (2) the likelihood and rate at which the substances may affect human and environmental receptors and (3) the severity and magnitude of potential effects. The score is computed using the hazard ranking system (HRS). A score of 28.5 or higher makes the site eligible to be placed on the National Priorities List."

## Non-government inventories

"MiningWatch Canada is a pan-Canadian initiative supported by environmental, social justice, Aboriginal and labour organisations from across the country. It addresses the urgent need for a co-ordinated public interest response to the threats to public health, water and air quality, fish and wildlife habitat and community interests posed by irresponsible mineral policies and practices in Canada and around the world." Mining Watch commissioned WOM Geological Associates Inc. to do an inventory of Abandoned Mines in Canada (2000)[15]. Though not specifically about contaminated mine sites, the author notes "Problems arising from some abandoned mines include: public health and safety, environmental safety, and aesthetic concerns. Ironically many complaints from the public address the latter.

---

[13] Kuyek, Joan. 2011. The Theory and Practice of Perpetual Care of Contaminated Sites. http://www.reviewboard.ca/upload/project_document/EA0809-001_Perpetual_Care_of_Contaminated_Sites_Theory_and_Practice_1328902866.PDF

[14] http://www.epa.gov/superfund/sites/index.htm

[15] http://www.miningwatch.ca/sites/www.miningwatch.ca/files/Mackasey_abandoned_mines_0.pdf

Commonly, little attention has been paid to the "hidden hazards" posed by chemical and physical stability attributes." The author relies on federal and provincial government inventories to compile the abandoned mine inventory.

Robin des Bois is a "Non Governmental Organisation for protection of Man and the Environment Since 1985" in France (www.robindesbois.org). They have produced an arctic inventory of contaminated sites: http://www.robindesbois.org/arctic/polar_star_2_EN.htm, but not at broader inventory. It compiles inventories from several government sources.

The United States site "Scorecard: the pollution information site" has a 'pollution locator' for various types of pollutants. The site notes "there is no comprehensive list of how many sites are contaminated, much less an analysis of the degree of contamination at various locations. In 1985 and 1987, the Government Accounting Office (GAO) issued two reports which estimated the universe of potential toxic waste sites in the United States to be in the range of 130,000 to 425,000 sites. In 1985, the Office of Technology Assessment (OTA) took a broader and more pessimistic view, estimating that there are more than 600,000 active or former waste disposal facilities in the U.S. that could pose threats to health and the environment. OTA estimated that perhaps as many as 10,000 of these would require federal attention to clean up. In addition, the National Research Council (NRC) has reported that as of September 1990, there were 17,482 contaminated sites at 1,855 Department of Defense military installations and 3,700 sites at 500 Department of Energy facilities.[16] It appears that this site also attempts to combine various government inventories. It make it more accessible to some because it includes information in Spanish as well as English.

## Commemorative designations options

This section describes existing commemorative designations that might be applied to Giant Mine to help us 'remember' it. No 'contaminated site designation' exists. Hence, designations are assessed according to whether the contamination at Giant mine could be considered 'part of the story' to be remembered.

### Why consider a commemorative designation?

Since commemorative designations are not legally binding and often take considerable effort, why bother? As noted above, it can provide additional

[16] http://scorecard.goodguide.com/env-releases/def/land_other_sites.html

"watching eyes" to make sure we live up to our commitments. Other possible benefits to consider in comparing designations include:

1. encourages review of management ideas by independent experts
2. provides access to sharing ideas with other parties using the same designation
3. has possibilities for funding targeted at various scientific objectives
4. increases tourism recognition, leading to increase tourism to Yellowknife
5. diminishes likelihood of ad hoc changes to the site that could disturb containment of arsenic trioxide[17]
6. though having no legal force itself, encourages some form of legal, regulatory or traditional protection
7. encourages sustainable use of the site
8. encourages "transmission" of understanding of the site to future generations

## City of Yellowknife Recognized Heritage Resource

**(**http://www.yellowknife.ca/Assets/City+Clerks/By-laws/By-law+Nos.+4501+to+4600/By-lawNo.4540.pdf**)**

This designation would be under the City of Yellowknife Heritage Committee. Under the City's *Heritage By-law* (October 2009) proposals for a heritage resource "to be Recognized or Designated" can be made to the City's Planning and Lands Division. The application is then evaluated by the Heritage Committee, who make a recommendation to City Council. Designation is then approved (or denied) by City Council. If legal designation is denied (see legal options, municipal below) "recognition" can be given through the Heritage Committee. A Recognized Heritage Resources "means any Heritage Resource that is not designated by a by-law of

[17] "Engineering controls...can be seriously compromised or rendered ineffective by uniformed modifications of site surface or subsurface conditions…systematically…consider the possible consequences of loss of containment under the proposed new land use arrangements" http://www.ephc.gov.au/sites/default/files/ANZECC_GL__Assessment_of_on_site_containment_contaminated_soil.pdf pg 55.

Council but is acknowledged as 'Recognized' through a motion of the Heritage Committee."

The By-law includes cultural history as a criterion, including "The Heritage Resource is associated with broad patterns of local area or civic history including ecological, social, political, economic or geographic change." The NWT Mining Heritage Society approached the City to have the Giant Mine area designated as a heritage area in the 2000s. The City had not used its by-law to designate a heritage area before; they had only done buildings. The request raised a lot of questions about what the rules would be if an area were to be designated, and what other areas might be designated heritage areas. As this was being discussed, the Society also asked if they could take over (and designate) some of the buildings, such as the Mine managers house and old post office. A number of other organizations were also interested in using some of the buildings. The City commissioned a study (A Visioning Project for the Giant Mine Waterfront and Town Site, Dillon Consultants. 2006.[18]) on the area, so help them decide what to do with the area. It appears that with the Environmental Assessment, the City didn't want to make any decisions on designations or what could be done with some of the buildings[19].

## Territorial Historic Site

(http://pwnhc.learnnet.nt.ca/programs/historicplaces/index.asp)

This designation is by the Government of the NWT, through the Minister of Education, Culture and Employment. Nominated sites are assessed by Prince of Wales Northern Heritage Centre staff, then are submitted for review by an *ad hoc* evaluation committee for a recommendation to the Minister. The committee members are chosen when there are enough applications to warrant a review. Members need to have a suitable background to evaluate the types of applications. There used to be a funding program for designating heritage sites, which led to more activity in nominating sites. There hasn't been a committee meeting for a couple of years, because of lack of applications.[20]

The designation aims to document the heritage of these places for present and future generations to enjoy. Sites are places or events that are honoured because they hold a special link to the past of the NWT. Sites need to be at least 50 years old, have kept the characteristic that makes it historic, and have the owner's consent.

[18] See also http://www.reviewboard.ca/upload/project_document/EA0809-001_Giant_Mine_Lease_Area_Land_Water_Use_Plan_1328900622.pdf
[19] Pers. Comm. Walt Humphries, NWT Mining Heritage Society.
[20] Pers. Comm. Shelley Crouch, Prince of Wales Northern Heritage Centre.

While applications have tended to be sites specifically important to Aboriginal peoples, Giant Mine appears to meet criteria for a Territorial Historic Site.

## National Historic Site

This designation would be under the National Historic Sites and Monuments Board. Areas or events must be of national significance and at least 40 years old. Considerations for on-going national significance (such as need for on-going maintenance) are not considered. For a 'disaster' area to be considered, it needs to show that there has been a change to policy or laws that was caused by or as a result of the event. Thus for Giant Mine to be considered, the applicant would need to show change in policy as a result of the activities, but at least 40 years old.

GNWT did change the *Commissioner's Lands Act* in 2010 largely as a result of the lack of financial security held by GNWT for Giant's surface lease[21]. Section 3.1 of the Act states "It is a condition of a lease of Commissioner's land for a commercial or industrial use that security, determined in accordance with the regulations, be posted for restoration of the land." [22]

However, as the change doesn't meet the 40 year historic criteria, and since it is territorial rather than national legislation, it does not appear that Giant Mine would meet criteria for a National Historic Site.

## UNESCO (United Nations Educational Scientific & Cultural Organization) World Heritage Site

In 1972, the United Nations adopted a convention concerning the protection of the world's cultural and natural heritage.[23] They felt that safeguarding unique and irreplaceable cultural and natural heritage, no matter who it "belongs to", is important for everyone in the world, and that when any part of the cultural or natural heritage of the world is harmed, it impoverishes the heritage of all people and nations.

The convention was signed so that parts of the cultural or natural heritage that are of outstanding interest to the world can be saved for mankind as a whole.

Under this convention,
"cultural heritage" includes (among other things) sites which are the combined work of nature and man, including archaeological sites.

[21] Pers. Comm. Kevin O'Reilly, Alternatives North.
[22] http://www.justice.gov.nt.ca/PDF/ACTS/Commissioners%20Land.pdf
[23] http://whc.unesco.org/archive/convention-en.pdf

"natural heritage", which include "natural features or sites of outstanding aesthetic or scientific interest; or of value from the point of view of science, conservation or natural beauty."

The convention says that it is the duty each country that signed the Convention (which includes Canada) to make sure these internationally important areas are identified, protected, conserved presented and "transmitted" to future generations.

Canada has 15 World Heritage Sites, and two are in the NWT: Nahanni National Park Reserve and Wood Buffalo National Park (also in Alberta). There is one Canadian World Heritage Site that focuses on geology: the Joggins Fossil Cliffs. The Joggins Fossil Cliffs reveal the most complete record in the world of terrestrial life in the Pennsylvanian "Coal Age" of Earth history.[24]

Auschwitz Birkenau German Nazi concentration and extermination camp (1940-1945) is an example of a World Heritage Site commemorated for an 'unhappy' event. The site was designated under the "Criterion (vi): be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal value." [25]

The full list of criteria for inclusion, contained in The Operational Guidelines for the Implementation of the World Heritage Convention[26] are:

(i) represent a masterpiece of human creative genius;

(ii) exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;

(iii) bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

(iv) be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;

(v) be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible

[24] http://www.pc.gc.ca/eng/progs/spm-whs/itm2.aspx
[25] http://whc.unesco.org/en/list/31
[26] http://whc.unesco.org/archive/opguide05-en.pdf

change;

(vi) be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria) ;

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

(viii) be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;

(ix) be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

(x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation.

The first step towards getting a Canadian site designated as a World Heritage Site is becoming part of Canada's inventory of its important natural and cultural heritage sites. This inventory "provides a forecast of the properties that a State Party may decide to submit for inscription in the next five to ten years and which may be updated at any time. It is an important step since the World Heritage Committee cannot consider a nomination for inscription on the World Heritage List unless the property has already been included on the State Party's Tentative List."[27]

## UNESCO Biosphere reserve

Biosphere reserves are part of the United Nations "Man and the Biosphere" programme. The Canadian Biosphere Reserves Association states "Biosphere reserves are ecologically significant regions that promote sustainability and conservation by engaging all community stakeholders. … Biosphere reserves address one of the most challenging issues we face today: how to maintain the health of natural systems while meeting needs of communities? [28] There is an important aspect of interdependence associated with Biosphere Reserves, whereby

[27] http://whc.unesco.org/en/nominations
[28] http://biospherecanada.ca/en/

the local community (or communities), government agencies, industries, businesses and individuals all need to work together for cultural, economic and environmental well-being.

The vision of the United Nations World Network of Biosphere Reserves (WNBR) "consists of a dynamic and interactive network of sites of excellence. It fosters the harmonious integration of people and nature for sustainable development through participatory dialogue; knowledge sharing; poverty reduction and human well-being improvements; respect for cultural values and society's ability to cope with change - thus contributing to the Millenium Development Goals. Accordingly, the WNBR is one of the main international tools to develop and implement sustainable development approaches in a wide array of contexts.[29]

Biosphere reserves should achieve three interconnected functions: conservation, development and logistic support. Rather than focussing solely on conservation, each biosphere reserve has three zones: core area(s), buffer zone(s) and transition zone(s).[30] The core area is required to be protected, and uses are limited to non-development uses such as research, monitoring, education, eco-tourism and traditional uses.

The buffer zone surrounds the core(s), and permits activities that do not hinder the conservation objectives of the core. The buffer zone "is used for cooperative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research. In addition to the buffering function related to the core areas, buffer zones can have their own intrinsic, 'stand alone' functions for maintaining anthropogenic, biological and cultural diversity. They can also have an important connectivity function in a larger spatial context as they connect biodiversity components within core areas with those in transition areas."

The transition area has the most intensive human activity. Here "stakeholders work together to manage and sustainably develop the area's resources". Management has a particular emphasis on the involvement of local communities, using a multi-stakeholder approach.

To qualify for selection as a biosphere reserve, the area should normally[31]:

[29] http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/world-network-wnbr/
[30] http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics/zoning-schemes/
[31] http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/designation-process/

a) be representative of a major biogeographic region or regions,[32] including a gradation of human intervention;

b) Be of significance for biological diversity conservation, including species of economic importance;

c) Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale/eco-regional scale (pilot projects are encouraged);

d) be of sufficient size to include conservation, development and logistic support;

e) have an appropriate zoning system, with a legally constituted core area or areas, devoted to long-term protection; a clearly identified buffer zone or zones, and an outer transition area.

f) have an organizational system in place or foreseen, that includes involvement and participation of a suitable public authorities, local communities and private interests;

g) have an implementation plan in place or foreseen, such as management plan, designated authorities, and research, monitoring and education programmes

Since biological reserves seek to reconcile conservation of biological and cultural diversity and economic and social development through partnerships between people and nature, they are ideal to test and demonstrate innovative approaches to sustainable development from local to international scales.

It may be possible to nominate a large area that includes important ecological resources, the communities of Yellowknife, Ndilo and Dettah, and the local mines (including Giant) as a biosphere reserve.

[32] The term major biogeographic region is not strictly defined. A biogeographic classification was devised by M.D.F. Udvardy and others in 1975 (Miklos D.F. Udvardy, A Classification of the Biogeographical Provinces of the World. Prepared as a contribution to UNESCO's Man and the Biosphere Programme Project No. 8. IUCN Occasional Paper No. 18. IUCN, Morges, Switzerland, 1975). The system organizes the world into a set of eight biogeographic realms. Within each realm, biogeographic provinces are defined according to similarities in their plants, animals and ecology. There are about 22 biogeographic provinces in North America. Yellowknife is in the Canadian Taiga province.

## Global Geopark

In 1999 the idea of UNESCO Geoparks was proposed. However, in 2001 UNESCO decided that rather than running the programme themselves, they would support efforts of individual nations. "Thus, today UNESCO gives its *ad hoc* support to national Geopark initiatives which are coordinated through a Global Network of National Geoparks (Global Geoparks Network [GGN]) where national geological heritage initiatives benefit fully from their membership of a global network of exchange and cooperation. The First International Geoparks Conference took place in Beijing, P.R. China, in 2004; as of September 2011 the GGN has 89 members in 27 countries."

"A Global Geopark is a unified area with geological heritage of international significance and where that heritage is being used to promote the sustainable development of the local communities who live there.

The Global Geopark brand is a voluntary, quality label and while it is not a legislative designation, the key heritage sites within a geopark should be protected under local, regional or national legislation as appropriate.

UNESCO offers support Global Geoparks on an ad-hoc basis via requests from Member States. Global Geopark status does not imply restrictions on any economic activity inside a geopark where that activity complies with local, regional or national legislation."[33]

Global Geoparks have been concentrated in China and Europe, but more recently the initiative has spread so there are now Global Geoparks or active applications world-wide. Canada has one Global Geopark: Stonehammer, on the Bay of Fundy in New Brunswick. It is labelled as "the birth place of geological research in Canada…The park includes geological stories from late Precambrian time a billion years ago to the most recent Ice Age, and almost everything between."[34] It includes several 'sites', including the Fundy Trail Parkway, Irving Nature Park, New Brunswick Museum and the Reversing Falls.

Giant Mine and surrounding area seems to meet criteria for a Global Geopark. The submission requirements are included in Appendix 1. The NWT Mining Heritage Society considered putting together an application for a Geopark. However, realizing the significant efforts required for such an application, the Society decided to focus their efforts on work such as the mining museum.

[33] http://www.unesco.org/new/en/natural-sciences/environment/earth-sciences/geoparks/
[34] http://stonehammergeopark.com

# Legal designation options

Legal designations can have similar benefits to commemorative designations as listed in the previous section. Possible advantages to legal designation include that management and communications may be legally required, and there may be more funding opportunities.

## Municipal legislation

The City of Yellowknife could use its zoning by-law to create a unique designation for the Giant Mine site. The Yellowknife Harbour Study recommended the establishment of a "Giant Mine Heritage Park" as follows:

> The NWT Mining Heritage Society has prepared a master plan for an interpretive centre and park on site of the current outdoor display. The outdoor display is one of the initial phases of the park. Mining equipment is displayed on a track that frames the parking lot. A log cabin was moved to the site and houses a static display. The master plan has a number of components including an interpretive centre using the old Recreation Hall and renovation of the shaft head frame, hoist room, power house for indoor and outdoor displays. Walking trails are to be expanded and underground tours from the open pit to one of the Shafts are proposed.
>
> The Heritage Society also has plans to save some of the buildings in the town site as other attractions in the park. The soil and water contamination of on-site arsenic dust, hydrocarbons and other industrial waste of the Giant Mine site are currently being assessed and managed by the federal government and GNWT.
>
> The Giant Mine Lease Area Land/Water Use Plan prepared in June 2006 acknowledged the importance of the integration of the heritage, including attractions, trails, interpretation and education into a long term development plan for the area. The Study recommended public access and passive recreation along the shoreline with consideration of a marina, pending the results of an analysis of feasibility. The protection the area's significant ecological and geological diversity was identified as an important consideration in determining the location, character and form of development.
>
> In terms of commercial and residential development, it was recommended that this area only be considered after 2019, unless the City is unable to develop enough of Tin Can Hill and Yellowknife Bay South. The 30-year lease, which expires in

> 2030, would have to be addressed in considering development options for this area. The issue of contamination and remediation of the Giant Mine site introduces a level of uncertainty for the ultimate use of this area and future plans will depend on the outcome of the current environmental studies.

### Territorial legislation

The Territorial Government has two parks under the *Territorial Parks Act*[35] that might be suitable. A Cultural Conservation Area is meant to protect culturally significant sites or landscapes; development is allowed if suitable to maintaining the values of the area. To date there are no such areas established; one near Jean Marie River is being considered. Giant Mine might be considered culturally significant, though it seems to be 'stretching' the definition.

A Heritage Parks is meant to preserve and protect significant cultural or historical
(i) natural areas,
(ii) physical features, or
(iii) built environments.

"A Heritage Park may be developed to provide service infrastructure and facilities for interpretation and recreation, and may permit a business or commercial enterprise to provide services and activities that are related to, and compatible with, the Heritage Park."

Since the mine is a built environment, and may be developed, this appears to be the more suitable territorial legislative option.

### National legislation

No legal national designation was found. For instance, National Parks are for the conservation of natural regions across Canada. They are meant to be relatively pristine; this is clearly not the case with Giant Mine. National Wildlife Areas are similarly not suitable.

However, there could be surface withdrawal under the *Territorial Lands Act.* It is possible this has been done for the former Thompson-Lundmark[36] mine. Additional research is needed. Such a legal designation would restrict the types of activities in the area withdrawn.

[35] http://www.justice.gov.nt.ca/PDF/ACTS/Territorial%20Parks.pdf
[36] Pers. Comm. Ryan Silke, NWT Mining Heritage Society

## Other Possible Remembrances

Remembering will be easier if the mine is worked into people's day-to-day lives. As such, consideration could be given to:

*Inclusion in school curriculum*

-Yellowknife school boards should include studies on Giant Mine at various years (e.g., Grades 4, 8, 10 and 12) in their curriculum. The complexity and the subject associated (e.g., science, northern studies, social studies etc.) should vary with the grade, but all students should be required to have the information (i.e., part of the requirement for graduation, not optional courses)

-other NWT school boards should be encouraged to include perpetual care of contaminated sites in their curriculum; with Giant Mine included as a case study

-the proponent would work with the EC&E to determine location in the curriculum and school boards to develop appropriate materials. Getting interview material now, when people are still alive from the early days of the mine, is needed. There are excellent opportunities for oral histories (audio and video) to be included in the curriculum. Ideas for inclusion:

-the work the Yellowknives Dene First Nation are doing on Traditional Knowledge and oral history research about the use and value of the Giant Mine site before, during and after development to the YKDFN could be adapted for the school curriculum. Ryan Silke did some oral history work on the early settlement of Yellowknife; as well as archive-based historical records. Some of this is published; much of the archival research has been compiled but not published. He would need to get permission for any use of tapes for school curriculum, since that type of use wasn't considered when he did the interviews.

-other First Nations came to Yellowknife to use the mine; their experiences could be researched and documented

-some comparisons to other mines would be needed for perspective on Giant. For instance, how Giant compares with Con Mine (clean-up by company) or with other contaminated sites (example, Port Radium)

*Inclusion in employee orientation*

-municipal, territorial, federal and First Nations governments should include information about Giant Mine. The level of information should vary with the

government involved, type of work, and the level of interaction the employee will have with the public. Employees expected to interact regularly with the public should be able to answer basic questions on location, history, and access rules of Giant Mine.

-the proponent should work with each level of government to provide written and on-line information packages and train the trainers

*Inclusion in Chamber of Mines for Northwest Territories and Nunavut information*

-information on abandoned mines in the NWT as part of membership package

*Inclusion in Northern Contaminants Program*

The Northern Contaminants Program (NCP) through AANDC works to monitor, reduce and, wherever possible, eliminate contaminants from traditional foods. The program deals with long range sources, focusing mainly on monitoring persistent organic pollutants (POPs) and heavy metals contaminants, such as mercury. They include "education and communication to Northern communities to build awareness and an understanding of contaminants, and help support the ability of communities to deal with specific contaminant issues. For example, NCP ensures that individuals and communities in the North receive the information needed to assist informed decision making in their food use." Even through long range pollutants is the focus, putting those sources into context with local contaminants could be helpful.

## Analysis and Recommendations

Since Giant is already in the Federal Contaminated Sites program, there is little to pursue in that regard, other than vigilance that the resources for ongoing remediation and monitoring are in place. No inventory researched gives any particular 'magic' to that other than citizen involvement. That is why some suggestions have been included regarding keeping the history of the site (all aspects thereof) in people's minds.

Pursuing almost any designation means bringing together many groups. It also means bringing together the 'hard' parts of the Giant story (First Nations relations, murders and contamination) with the 'happier' parts of the story such as development of Yellowknife and the NWT.

Basically, the 'higher up' the designation, the more difficult it is to pursue, but the larger the benefits in terms of gaining recognition for the area. It may be worthwhile to start with pursuing Territorial Historic Site designation. Though that

program no longer has any funding associated with it, it seems a good fit, and would be a way to 'work out' commemorative issues. That could then be used as background if it is decided to go further and pursue Global Geopark designation or Biosphere Reserve designation. The book "101 Things To Do With A Hole In The Ground" (Georgina Pearman, Post-Mining Alliance 2009) showcases a wonderful set of post-mining sites under themes such as entertainment and leisure; sport; mining heritage; medicine and therapy; community-led regeneration; and energy. While mining heritage has been used to date to highlight Giant Mine, the book gives a much broader range of ideas. Thinking in broad terms such as this would likely help with an international designation.

Contaminated sites are clearly a global problem. A group of environmental professionals organized the Sustainable Remediation Forum (SURF). SuRF Canada's mission (www.surfcanada.org) is: "To establish a Canadian network group to promote 'sustainable remediation' that aims to give systematic consideration to the three dimensions of sustainability (social, economic and environmental), in decision-making about rehabilitation of and management of contaminated sites. The network will bring together public and private organizations and launch an information and awareness initiative in Canada." There are SuRF groups in the US, Australia and the UK. This group may have ideas, or started some actions, on international designations related to contaminated sites.

*Further research*
A priority is research on surface land dispositions through the Department of Aboriginal Affairs and Northern Development.

Regarding the sustainability of the federal contaminated sites programme, research could be done on its sustainability, including whether there are dedicated positions and funding within the system; what agreement there are with other orders of government to maintain the inventory for historical purposes; what 'penalties' there are for not reporting annually or other requirements on maintaining records; and how contaminated sites are being discussed in terms of devolution.

For an international designation, research into whether this has been discussed at national or international remediation conferences would be a starting point. Issues to research include how the various national categories for contaminated sites compare; how those might be adapted to selection criteria; how standards for documentation and record preservation compare between nations, and what standards might be suitable for an 'international' site; and methods of public information, education and other ways to ensure institutional and societal memory.

# Appendix: Geopark Guidelines

United Nations Educational, Scientific and Cultural Organization
Organisation des Nations Unies pour l'éducation, la science et la culture


# Guidelines and Criteria for National Geoparks seeking UNESCO's assistance to join the Global Geoparks Network (GGN)

*(April 2010)*

# GEOPARKS – *Promoting Earth Heritage, Sustaining Local Communities*

## Global Network of National Geoparks - *a landscape approach for geological heritage conservation, research and sustainable development*

### *Introduction*

Geology and landscape have profoundly influenced society, civilization, and the cultural diversity of our planet. Although the World Heritage Convention does recognize geological sites of universal value there is no system of international recognition of geological heritage sites of national or regional importance. Many important geological sites do not fulfil the criteria for inscription on the World Heritage List. The initiative of UNESCO to support Geoparks responds to the strong need expressed by numerous countries for an international framework to conserve and enhance the value of the Earth's heritage, its landscapes and geological formations, which are key witnesses to the history of our planet.

Pursuant with the decision of its Executive Board in June 2001 (161 EX/Decisions, 3.3.1) UNESCO has been invited *"to support ad hoc efforts with Member States as appropriate"* to promote territories or natural parks having special geological features. National Geopark initiatives, which seek UNESCO's assistance, should integrate the preservation of significant examples of geological heritage in a strategy for regional sustainable socio-economic and cultural development, safeguarding the environment.

The present document provides guidelines for developing National Geoparks under the assistance of UNESCO for the inclusion in the Global Network of National Geoparks - generally referred to as the *Global Geoparks Network* (GGN). The guidelines include criteria which aspiring Geoparks adhere to through their voluntary participation in the GGN. Applicants for membership of the GGN should respect the terms of the present guidelines. UNESCO and supporting independent expert advisory groups will refer to these guidelines when assessing proposal applications for membership of the GGN.

The protection and sustainable development of geological heritage and geodiversity through Geoparks initiatives contributes to the objectives of Agenda 21, the Agenda of Science for Environment and Development into the twenty-first century adopted by the United Nations Conference on Environment and Development (UNCED, Rio de Janeiro, 1992) and which was reconfirmed by the World Summit on Sustainable Development 2002 in Johannesburg. The Geoparks initiative adds a new dimension to the 1972 Convention concerning the Protection of the World Cultural and Natural Heritage by highlighting the potential for interaction between socio-economic and cultural development and conservation of the natural environment.

The GGN operates in close synergy with the World Heritage Convention, the Man and the Biosphere (MAB) World Network of Biosphere Reserves, and with national, international, non-governmental organizations and initiatives active in geological heritage conservation. For national Geoparks in Europe, UNESCO has established a partnership with the *European Geoparks Network (EGN)* in 2001. As a result, the EGN coordinates membership of the Global Geoparks Network within Europe. UNESCO recommends the creation of related regional Networks, reflecting local conditions, elsewhere in the world. Networking among Geoparks is an important component of the GGN. UNESCO encourages many forms of cooperation, especially in the fields of education, management, tourism, sustainable development, and regional planning among GGN members.

**Part I - Criteria**

**1. Size and setting**

- A Geopark seeking to become a member of the GGN is an area with clearly defined boundaries and a large enough area for it to serve local economic and cultural development (particularly through tourism). Each Geopark should display though a range of sites of international, regional and/or national importance, a region's geological history, and the events and processes that formed it. The sites may be important from the point of view of science, rarity, education and/or aesthetics.

- A Geopark is a geographical area where geological heritage sites are part of a holistic concept of protection, education and sustainable development. The Geopark should take into account the whole geographical setting of the region, and shall not solely include sites of geological significance. The synergy between geodiversity, biodiversity and culture, in addition to both tangible and non-tangible heritage are such that non-geological themes must be highlighted as an integral part of each Geopark, especially when their importance in relation to landscape and geology can be demonstrated to the visitors. For this reason, it is necessary to also include and highlight sites of ecological, archaeological, historical and cultural value within each Geopark. In many societies, natural, cultural and social history are inextricably linked and cannot be separated.

- If the area of a Geopark is identical to, or partly or wholly overlaps with an area already inscribed, (for example, on the World Heritage List or registered as a Biosphere Reserve of the Man and the Biosphere Programme of UNESCO) it is necessary to obtain prior clearance from the appropriate national bodies of the said initiatives in their Member State before submitting the application. Geoparks may be located on the territory of more than one country.

**2. Management and local involvement**

- A prerequisite to any Geopark proposal being approved is the establishment of an effective management system and programme of implementation. The presence of impressive and internationally significant geological outcrops alone is not sufficient to be a Geopark. Where appropriate, the geological and non-geological features inside the Geopark area must be accessible to visitors, linked to one another and safeguarded though a clear responsible management body or partnership that has demonstrable local support. The management body or partnership should have an effective management infrastructure, adequate qualified personnel, and sustainable financial support.

- The establishment of a Geopark should be based on strong community support and local involvement, developed though a "bottom-up" process. It should demonstrate strong support from local political and community leaders, including in relation to the provision of necessary financial resources. The Geopark should have effective and professional management structures, deliver policy and action for sustainable regional socio-economic and cultural development across the territory where it is located. Success can only be achieved through strong local involvement. The initiative to create a Geopark must therefore come from local communities/authorities with a strong commitment to developing and implementing a management plan that meets the community and economic needs of the local population whilst protecting the landscape in which they live. With a view to fully inform Member States on requests for ad hoc support to UNESCO, it is necessary that in the planning stage the aspiring Geopark keeps the National Commission for UNESCO, and the relevant appropriate governmental authorities linked to UNESCO, briefed on all planned Geopark nominations in the country/countries concerned. Parallel to this the UNESCO Secretariat will systematically inform the embassies and/or Permanent Delegations to UNESCO of the requests from national Geoparks for UNESCO support.

- A Geopark shall involve public authorities, local communities, private interests, and both research and educational bodies, in the design and running of the Geopark and its

regional economic and cultural development plan and activities. This co-operation shall stimulate discussion and encourage partnerships between the different groups having a vested interest in the area and motivate and mobilise local authorities and the local population.

- The identity of a Geopark must be clearly visible for visitors. This should be achieved through a strong presentation and communication strategy including consistent branding of the sites within the Geopark, in all the publications and all activities related to it.

- Sustainable tourism and other economic activities within a Geopark can only be successful if carried out in cooperation with local communities. Tourism activities have to be specially conceived to match local conditions and the natural and cultural character of a territory and must fully respect the traditions of the local populace. Demonstrable respect, encouragement and protection of local cultural values, is a crucial part of the sustainable development effort. In many regions and countries it is vital to involve the indigenous population in the establishment of a Geopark.

- It is essential to seek advice from the Geoparks Secretariat at UNESCO and its independent Bureau during the preparatory phase of an application, and to submit an expression of interest prior to the proposal being lodged. Furthermore, the applicant should seek co-operation with respective national Geological Surveys, local public and tourism bodies, local communities, universities and research bodies, and private interest groups, and to broaden the composition of the start-up team in charge of the Geopark project. These groups should be representative of the scientific, cultural, conservation and socio-economic communities of the area. A wide local consultation process must involve the local population to facilitate local acceptance for the planned Geopark and to develop a strong concept for their Geopark application dossier and the necessary support to achieve its implementation.

**3. Economic development**

Sustainable development was defined by the World Commission on Environment and Development in *Our Common Future* (1987) as ‘development, which meets the needs of the present generation without compromising the ability of future generations to meet their own needs.’

- One of the main strategic objectives of a Geopark is to stimulate economic activity within the framework of sustainable development. A Geopark seeking UNESCO's assistance serves to foster socio-economic development that is culturally and environmentally sustainable. This has a direct impact on the area involved by improving human living conditions and the rural and urban environment. It strengthens identification of the population with their area, and stimulates “pride of place” and cultural development, which in turn aids direct protection of geological heritage.

- Often, aspects of a region’s cultural heritage are linked to the geological heritage. Respectful of the environment, the establishment of a Geopark shall stimulate, for example, the creation of innovative local enterprises, small business, cottage industries, initiate high quality training courses and new jobs by generating new sources of revenue (e.g. geo-tourism, geo-products) while protecting the geo-resources of the Geopark (e.g. encouraging casting instead of the sale of fossils). This provides supplementary income for the local population and shall attract private capital. 'Geo-tourism' is an economic, success-oriented and fast-moving discipline, a new tourist business sector involving strong multidisciplinary cooperation.

**4. Education**

- A Geopark must provide and organize support, tools, and activities to communicate geoscientific knowledge and environmental and cultural concepts to the public (e.g. through museums, interpretive and educational centres, trails, guided tours, popular literature and maps, and modern communication media). It also allows and fosters

scientific research and cooperation with universities, a wide discipline of scientists and the local populace.

- The success of Geopark educational activities depends not only on the content of tourism programmes, competent staff and logistic support for the visitors, but also on the personal contact with the local population, media representatives, and decision-makers. The aspects of wide community participation and capacity building on the local level (e.g. training of visitor guides) helps to develop a wide range of acceptance of the Geopark philosophy and transfer of knowledge and information within the community. It cannot be repeated often enough that the involvement of local people is of primary importance for the successful establishment and maintenance of a Geopark.

- Among the instruments available for the transfer of information are events such as excursions for school classes and teachers, seminars, and scientific lectures for the environmentally and culturally interested public and for residents who enjoy introducing their landscape to visitors. One of the main issues is to link geo-education with the local context, thus local students should learn about the importance of their geological heritage inter-related to the biodiversity and local cultural heritage. Creating Earth science curricula for primary and secondary schools, using the local information about geology, geomorphology, physical geography as well as all components of its heritage will help to preserve the Geopark while at the same time reinforcing local awareness, pride, and self-identity. Geoparks should be major educational tools at local and national levels.

- Within the educational concept, museums, 'discovery centres', interpretive centres and other innovative new tools must be developed to promote the principles of geological heritage conservation and the necessity of its safeguarding and protecting. The museums and centres also serve for developing different educational programmes for visitors and the local population.

**5. Protection and conservation**

- A Geopark is not specifically a new category of protected area or landscape and can be quite different from what is sometimes an entirely protected and regulated National Park or Nature Park, and the branding of an area as “Geopark” does not necessarily affect the legal status of the land. For legal protection for certain geosites within the Geopark, however, the authorities responsible for the Geopark must ensure its protection in accordance with local traditions and legislative obligations. It is the government of the country where the Geopark is situated which decides on the level and measures of protection of certain sites or geological outcrops.

- In accordance with national legislation or regulations, a Geopark shall contribute to the conservation of significant geological features including:

representative rocks and in situ exposures
minerals and mineral resources
fossils
landforms and landscapes

which provide information on various geoscientific disciplines such as:

solid earth sciences
economic geology and mining
engineering geology
geomorphology
glacial geology
physical geography
hydrology
mineralogy
palaeontology
petrology
sedimentology
soil science
speleology

stratigraphy
structural geology
volcanology

A Geopark explores and demonstrates methods and best practise in conserving geological heritage.

- The management authority of the Geopark ensures adequate protection measures, in consultation with relevant statutory bodies, to guarantee effective conservation and ensure physical maintenance, as appropriate. Those sites remain under the sole jurisdiction of the country (or countries) in which the Geopark is situated. It is each country's responsibility to decide how to protect the particular sites or areas, in conformity with national legislation or regulations.

- A Geopark must respect local and national laws relating to the protection of geological heritage. In order to be seen to be impartial in its management of the geological heritage, the Geopark managing body must not participate directly in the sale of geological objects* within the Geopark (no matter from where they are sourced) and should actively discourage unsustainable trade in geological materials as a whole, including the selling of Earth heritage, minerals and fossils. Where clearly justified as a responsible activity and as part of delivering the most effective and sustainable means of site management, it may permit sustainable collecting of geological materials for scientific and educational purposes from naturally renewable sites within the Geopark. Trade of geological materials (in accordance with national legislation on Earth heritage conservation) based on such a system may be tolerated in exceptional circumstances, provided it is clearly and publicly explained, justified and monitored as the best option for the Geopark in relation to local circumstances. Such circumstances will be subject to debate and approval by the GGN on a case by case basis.

**Geological objects refer to specimens of rock, minerals and fossils of a type that are commonly sold in so-called "rock-shops". It does not refer to material for normal industrial and household use which is sourced by quarrying and/or mining and which will be subject to regulation under national and/or international legislation.*

**6. The Global Network**

- The GGN provides a platform of cooperation and exchange between experts and practitioners in geological heritage matters. Under the umbrella of UNESCO and through cooperation with the global network partners, important local, and national, geological sites gain worldwide recognition and benefit through the exchange of knowledge and expertise, experience and staff between other Geoparks. This international partnership developed by UNESCO, brings the advantage of being a member of, and profiting from, this worldwide network, as compared to a local isolated initiative. It allows any participating Geopark to benefit from the experience and knowledge of other members of the Network.

- The Network comprises all regions of the world and brings together groups that share common values, interests, or backgrounds, to develop a specific methodology and management practices. It further serves to develop models of best practice and set quality - standards for territories that integrate the preservation of geological heritage in a strategy for regional sustainable economic development. The establishment of a Geopark aims to bring sustainability and real economic benefit to the local populations, usually through the development of sustainable tourism and other economic and cultural activities.

Geoparks that are part of the GGN:

1) preserve geological heritage for present and future generations

2) educate the broad public about issues in geological sciences and their relation with environmental matters

3) ensure sustainable socio-economic and cultural development

4) foster multi-cultural bridges for heritage and conservation and the maintenance of geological and cultural diversity, using participatory schemes and co-partnership

5) stimulate research

6) contribute actively to the life of the Network through joint collaborative initiatives (e.g. communication, publications, exchange of information, twinning, participation in meetings, common projects)

7) contribute articles to the GGN Newsletters, books and other publications.

- UNESCO supports the development of this initiative, among others, in order to establish the geosciences on the agenda of politicians and decision-markers at international, national and local levels, as well as promoting awareness within the private sector. A large number of activities within Geoparks are being developed worldwide to increase partnership with the private sector, e.g. the tourism industry. The private sector often requests an international cooperative framework that UNESCO can offer. UNESCO's umbrella also assists in raising the interest of government sectors in this effort. UNESCO has a strong awareness-raising role through informing the Ambassadors of the different Member States about Geoparks. This in itself will lead to a much better understanding of, and support for, local initiatives that want to join the GGN.

- The inclusion of an aspiring Geopark into the GGN is a sign of recognition of excellence in relation with the present guidelines and in no way implies any legal or financial responsibilities on the part of UNESCO. This relates also to the use of UNESCO's name and logo, which needs a special authorization respecting the regulatory framework of sponsorship of the Organization. For approved network members, a special logo was created for the GGN. It is important to understand that this logo and the mentioning of membership in the GGN can only be used after the successful evaluation of the application, and upon receipt of the official letter of approval from the Global Geoparks Network Secretariat. Further, the use of this common logo linked to the identity of the GGN Members is strongly recommended and is essential to create a common image for all Geoparks throughout the world.

- Should a member of the GGN wish to use UNESCO's logo ("temple logo") and name for a specific event or activity, it can obtain patronage through the National Commissions for UNESCO, or by special permission of the Director-General, which must be expressly authorized in advance and in writing. It is the responsibility of the managing body of the Geopark to avoid any misunderstandings with anyone in this regard. Directives concerning the use of the name, acronym, logo and internet domain names of UNESCO can be obtained at the following website: http://www.unesco.org/new/en/name-and-logo/

**Part II - Reporting and Periodical review**

- Geoparks that are a member of the GGN should represent quality in everything they do including conservation, tourism, education, interpretation, development. The specified processes of evaluation and revalidation help ensure the maximum level of quality in our Geoparks.

- The status of each Geopark, of its management and performance, shall be subject to a periodical review within 4 years. This review is based on a progress report prepared by the designated management body of the Geopark in cooperation with respective authorities that signed the original proposal, and forwarded to the Geoparks Secretariat at UNESCO. An expert mission is sent to review the status of the Geopark.

- If on the basis of this report, and examination of the Geopark by an expert mission, the independent expert group of UNESCO considers that the status or management of the park is satisfactory since it was designated or last reviewed, this will be formally acknowledged and the Geopark will continue to be a member of the GGN.

- If it is considered that the Geopark no longer fulfils the criteria of the GGN set out in the present guidelines, the management body of the Geopark will be recommended to take appropriate steps to ensure the accepted standards are adhered to and maintained. Should the Geopark not fulfil the criteria within two years, it shall be removed from the members' list of the GGN and cease to benefit from all the privileges associated with the Global Geopark Membership including the use of the GGN logo.

- UNESCO shall notify the management body of the concerned Geopark, the National Commission for UNESCO and relevant governmental authorities in the country of the outcome of the periodical review.

- Should a Geopark wish to withdraw from the GGN, its management body shall notify the Geoparks Secretariat, its National Commission, and relevant governmental authorities in the country concerned, and it is requested to give the reasons for its withdrawal.

- At any time it is possible for an existing Geopark to seek to modify its boundaries, which should first be approved by the Geoparks Bureau. Only following this approval may the GGN logo be used within any new enlarged territories. A request to change the boundaries should be notified to the Geoparks Secretariat of the GGN at UNESCO with details of the present and new boundaries, appropriate maps, and reasons for, and benefits from, the proposed change.

- The designation of an area as a member of the GGN shall be given appropriate publicity and promotion by the management body of the Geopark concerned. It shall also keep UNESCO regularly informed about the ongoing progress and developments in the Geopark. This refers to special events (e.g. twinning, inaugurations, etc.) and their promotion through appropriate publicity, including website links that can be easily connected and reach a worldwide public.

# Annex - Application procedure - a step-by-step procedure on how to become a Global Geopark Network member

- A Geopark under preparation can refer to itself an “Aspirant Geopark” or a “Geopark Project.” It is necessary to respect the use of the term “Geopark”, and to safeguard the reputation of Geoparks to ensure that they reflect quality in all aspects of their heritage, products and services. As such, areas applying to become members of the GGN should refrain from calling their areas “Geoparks” until such times as their membership application has been approved.

- In order to guarantee a balanced geographical representation of countries the number of active Geopark applications is restricted to two per country at any one time. Three Geopark applications at the same time can be permitted for countries, which apply for the first time, and are not yet participating in the GGN.

**1. Submission of an application dossier**

- Geoparks seeking UNESCO’s assistance must contact the Geoparks Secretariat at UNESCO, and submit an expression of interest prior to the submission of any application dossier.

**Geoparks Secretariat**
**Global Earth Observation Section**
**Division of Ecological and Earth Sciences**
**UNESCO**
**1, rue Miollis**
**75732 Paris Cedex 15**
**France**
**Phone: + 33 (0) 1 45 68 41 18**
**Fax: + 33 (0) 1 45 68 58 22**
**e-mail: m.patzak@unesco.org**
**www.unesco.org/science/earth**

- The Geoparks Secretariat at UNESCO shall verify the contents of the application dossier and supporting materials and, in the case of incomplete documentation, return it to the applicant for completion, with comments on the elements that require strengthening. Applications must be submitted between 1 October and 1 December every year and will be verified by a desk-top evaluation (between 1 January and 30 April) as well as a field evaluation mission (from May onwards), undertaken by independent Geoparks experts who will compile a report for submission to the GGN Bureau. Prior to the mission, the experts will contact the applying Geopark and agree on a mission's programme and itinerary. The application’s documentation and the findings of the expert mission will be assessed by the independent Geoparks Bureau that will meet at least once per year usually in the second half of the year. Membership to the GGN will be invited upon a positive assessment of the proposal. UNESCO shall notify the applicant with an official letter and certificate, as well as the National Commission for UNESCO, and relevant governmental authorities in the country concerned.

- The costs of travel, accommodation and local transportation costs of the experts in charge of advisory missions and on-the-spot evaluation should normally be borne by the country or territory where the Geopark is located, or by any other party or entity formally involved with the Geopark application.

- If in any country a "National Network for Geoparks" exists, then the applicant must first become a certified member of that national network before submitting its dossier for membership to the GGN. Comments made by the nationally competent body during a successful application procedure at the national level could form a valuable contribution to the dossier.

- As part of the application preparation any potential new member may wish to invite an advisor from the network to their area. The costs of such a visit should be borne by the inviting territory.

- The application should be written in English or French and submitted electronically and 1 printed copy (soft cover) should be mailed as well. Where possible, in order to facilitate distribution of the application file among the desk-top evaluators, a link could be provided to download the entire application dossier from the internet.

- With a view to ensure that Member States are fully informed about the application, i.e. the request to UNESCO for ad hoc support in the field of Geoparks, the National Commissions for UNESCO and/or the relevant appropriate governmental authorities linked to UNESCO in each Member State concerned, need to be properly informed and a letter of support from the relevant national authority submitted as part of the application.

**2. Application Form**

**Format of e-file:**
Max. 10 MB

**Hard copy format:**
Application dossier max. 50 pages
Annex 1 - self evaluation document
Annex 2 - an additional and separate copy of section B “Geological Heritage” of the application, prefaced by a geological summary (a maximum of 150 words)
Annex 3 - a letter of support from the relevant governmental authorities linked to UNESCO in the country where the proposed Geopark project is located

**The following topics form the guide to prepare the application dossier for the proposed Geopark. The application dossier must precisely follow the format and topics below, highlighting strong and weak points and will be studied by an independent group of experts verifying the Geopark project though a desktop study. The topics will demonstrate whether the applying area is already a de facto functioning Geopark fulfilling the criteria to become a member of the GGN, and whether or not an examination mission should be carried out. If the application dossier is considered to be complete and ready for assessment, the GGN Bureau will approve an evaluation mission to the application area.**

**A – Identification of the Area**
1. Name of the proposed Geopark
2. Surface area, physical and human geography characteristics of the proposed Geopark
3. Organization in charge and management structure (description, function and organigram) of the proposed Geopark
4. Application contact person (name, position, tel./fax, e-mail)

**B – Geological Heritage**
1. Location of the proposed Geopark (please include a geographical map and the geographic coordinates longitude and latitude coordinates)
2. General geological description of the proposed Geopark
3. Listing and description of geological sites within the proposed Geopark
4. Details on the interest of these sites in terms of their international, national, regional or local value (for example scientific, educational, aesthetic)

**C - Geoconservation**
1. Current or potential pressure on the proposed Geopark
2. Current status in terms of protection of geological sites within the proposed Geopark
3. Data on the management and maintenance of these sites
4. Listing and description of non-geological sites and how they are integrated into the proposed Geopark

**D - Economic Activity & Business Plan (including detailed financial information)**
1. Economic activity in the proposed Geopark
2. Existing and planned facilities for the proposed Geopark (e.g. geo-education, geo-tourism, tourism infrastructure etc)
**3**. Analysis of geotourism potential of the proposed Geopark
4. Overview and policies for the sustainable development of:
   - geo-tourism and economy
   - geo-education
   - geo-heritage

   Please include examples illustrating activities in these sectors
5. Policies for, and examples of, community empowerment (involvement and consultation) in the proposed Geopark
6. Policies for, and examples of, public and stakeholder awareness in the proposed Geopark.

**E – Interest and arguments for joining the GGN**

**Annex 1: Self evaluation document**

**Annex 2: An additional and separate copy of section B "Geological Heritage" of the application, prefaced by a geological summary of a maximum of 150 words (this will be used only for the geological desktop evaluators from IUGS – International Union of Geological Sciences)**

**Annex 3: A letter of support from the relevant governmental authorities linked to UNESCO in the country where the Geopark project is located**

**The full application must not exceed 50 pages (including all photographs, maps, figures and diagrams) and the electronic version must not exceed a file size of 10MB.**

**2. Application from European countries**

- A Geopark located in Europe wishing to become a member of the GGN, is invited to submit a full application dossier to the coordination office of the European Geoparks Network (EGN), which acts as the integration organization into the GGN for the European continent. The GGN and the European Geoparks Network were designed in parallel on a common conceptual basis. Pursuant to this, applications to the Global Network from European countries are implemented through the EGN. As a permanent member of the Advisory Board and expert committees of the EGN, UNESCO participates at every stage in the evaluation of, and decision on the applications.

- UNESCO and the EGN have signed two agreements in this respect, the "Agreement for co-operation between the Division of Earth Sciences of UNESCO and the Network of European Geoparks" (2001, Almeria, Spain), and the "Madonie Declaration" (2004, Madonie Italy). As a result, the EGN coordinates membership of the GGN in Europe.

- The EGN was established in June 2000 by four European Geoparks to: protect geological heritage and promote the sustainable development of their areas; to create a strong European thematic group of territories involved in sustainable development; and to prepare and negotiate new common European Programmes.

- If in any European country a "National Network for Geoparks" already exists, then the applicant must first become a certified member of that national network before submitting its dossier for membership to the European Geoparks Network. Comments made by the nationally competent body during a successful application procedure at the national level could form valuable appendices to the application dossier.

- European candidates must submit their application forms through the Coordination Unit of the European Geoparks Network, Réserve Géologique de Haute Provence, Digne-les-Bains, France from whom up-to-date advice and assistance should be requested in advance.

**Coordination Unit**
**European Geoparks Network**
**Réserve Géologique de Haute-Provence**
**BP 156**
**F-04005 Digne-les-Bains cedex**
**France**

**Phone: + 33 (0) 4 92 36 70 72**
**Fax: + 33 (0) 4 92 36 70 71**
**Contact Mrs. Sylvie Giraud**
**E mail : sy.giraud@free.fr**
**www.europeangeoparks.org**