

# TARIUM NIRYUTAIT

## MARINE PROTECTED AREAS

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## MANAGEMENT PLAN



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# Tarium Niryutait Marine Protected Area

## Management Plan

Fisheries and Oceans Canada &  
Fisheries Joint Management Committee

2013



## Preface

This plan, like its predecessors, the successive versions of The Beaufort Sea Beluga Management Plan (BSBMP)<sup>1</sup>, was created by a partnership that has lasted, with ups and downs, for nearly 40 years. One partner is composed of all of the Inuvialuit whale hunters, especially those living in the camps of the Mackenzie River delta and the nearshore Beaufort Sea communities of Aklavik, Inuvik, and Tuktoyatuk. These whale hunters had for centuries past depended upon the annual visit of belugas to provide a winter's supply of food and oil (McGhee 1974, Alunik et al. 2003).

The other partner involved a group of biologists, fisheries officers, and managers of Fisheries and Oceans Canada (DFO) who worked out of their offices in Inuvik, Yellowknife, and the Freshwater Institute in Winnipeg. The partnership was never an easy one. The Inuvialuit mostly wanted to get on with their lives, hunting belugas as they had done for generations. While most in DFO supported this endeavour, they also felt the burden of carrying the "conservation conscience" for the nation, and increasingly worried that too many of the charismatic white whales were being harvested. The matter became even more complicated with the arrival of the hydrocarbon industry with their cat trains, work camps, seismic lines, barge and boat traffic, and drill rigs and drill ships. The hydrocarbon industry scattered all over the lower delta and the nearshore Beaufort Sea.

The first broad public recognition of a possible problem was raised by Justice Thomas Berger in his 1977 Mackenzie Valley Pipeline Inquiry Report. After weeks of meetings in the smallest communities and major centres, and months of consideration, he wrote: "I recommend that a whale sanctuary be established in west Mackenzie Bay covering the principal calving areas" ..... "the whale sanctuary will be an area in which oil and gas exploration will be forbidden at any time of year" (Berger 1977, p. xv).

Berger's statement provided the beginnings of an idea to consider beluga in an environment of industrial development. But what about harvest sustainability? Berger, in his assessment, estimated the beluga population at 5000 animals. Ten years later, after some new field work and much review, DFO provided a document (Strong et al. 1987) that contemplated Berger's sanctuary concept in an expanded form, but based its sustainability calculations on a population of 7000. It was not hard to see the possibility of beluga quotas. The recently implemented hunt-monitoring program provided accurate estimates of landed whales. However, the number of whales struck and lost was an unknown, so the actual total size of the Inuvialuit harvest was, at best, a low estimate. The harvest from the stock in Alaska as it made its annual migration to and from the Bering Sea also had to be counted.

Inuvialuit reaction to the idea of imposed restrictions on their traditional beluga harvest was prompt and firm. Their recently negotiated Inuvialuit Final Agreement (IFA) (IFA Canada 1984)<sup>2</sup> provided them with an equal seat at the management table, one that they were not going to abandon. Billy Day's message to a combined meeting of the Fisheries Joint Management Committee (FJMC), the Inuvialuit Game Council (IGC), and DFO representatives was quite clear: the Inuvialuit would no longer accept quotas that were established in Ottawa or Winnipeg. Rather, they would use the co-management provisions of their new IFA to work with DFO to develop a beluga management plan, a plan that might have provisions for restricting Inuvialuit harvests as well as provisions to deal with other pressures that could affect the stock, but those actions would be developed at home, in partnership, in the meeting rooms of the Inuvialuit Settlement Region (ISR).

And so it began. The FJMC accepted responsibility for developing the Strong strategy in 1987. IFA implementation funds were augmented by DFO Science and a huge input from the Science staff of DFO, funds from the oil industry, and some cooperative funding

1 See Appendix A for a list of acronyms used in the management plan  
2 *Inuvialuit Final Agreement* (1984): <http://www.irc.inuvialuit.com/publications/pdf/Inuvialuit%20Final%20Agreement.pdf>. (Accessed November 23, 2013.)



from Alaska, because of the shared nature of the stock.

The resulting consortium identified and implemented a scientific program that basically re-wrote the eastern Beaufort Sea beluga book. Studies included the age-structure of harvested animals, their reproductive capacity, aerial-survey-based population assessments, satellite telemetry studies to determine distribution and dive times (important in interpreting the visual surveys), genetic investigations to address stock identity, and sample collections to assess population health. The results of that decade of investigations can be found elsewhere but the general message was that, first, Inuvialuit harvests from the stock were, in a population sense, insignificant because the stock was much larger than the Berger and Strong numbers, and probably the largest in the world. Second, the stock not only had a near-shore distribution, but roamed widely in the eastern Beaufort, using habitat that was close to 10/10 ice covered, and reached areas such as far as Viscount Melville Sound, an area considered to be out of reach. The new science provided underpinnings for evolving BSBMPs (1991, 1993, 2001).



These results were welcomed at the FJMC meeting table, but members continued to worry that the BSBMP, and especially its core areas, the three beluga 1a zones had little more protection than a handshake agreement with industry and the regulators. The FJMC explored options to shore up that agreement, including using Environment Canada's (EC's) National Wildlife Areas legislation, but nothing seemed to be a perfect match.

Then, in 1996, the Canadian government announced its Oceans Act, which amongst its many other initiatives, made the creation of legislated Marine Protected Areas (MPAs) possible. The fit with FJMC and Inuvialuit concerns related to the beluga management zones was nearly perfect. DFO, in conjunction with the FJMC, initiated an intensive round of information and consultation meetings in all communities in the ISR, as well as with industry stakeholders to ensure a common understanding of the objectives of the project. Finally, in August 2011, Prime Minister Harper and Fisheries Minister Shea stood on the shores of the Beaufort Sea at Tuktoyaktuk and announced the formal implementation of the Tarium Nirvutait Marine Protected Area (TNMPA).

In a perfect world, this would be a completely good news story. But there are some further concerns. The biggest is environmental change with all of its implications, including diminishing ice cover and new predator-prey relationships, followed by increased hydrocarbon exploration and development, and Northwest Passage shipping.

However, in that light, this plan, which provides a high level of protection to the three areas that are important to the beluga stock, gives one some cause for optimism. Moreover, the plan provides legal certainty to the "gentleman's agreement" that was and is the core of the BSBMPs.

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Robert Bell

Teacher and Principal, Moose Kerr School, Aklavik, 1969–1975  
Chairman, FJMC, 1987–2010





Photo credit: Blythe Browne

“The completion of the TNMPA is a proud accomplishment for the Inuvialuit. One of the most important aspects of this new area is the protection of important calving areas for beluga whales in the Beaufort Delta. The TNMPA Management Plan provides greater clarity on what activities can and cannot happen in these areas. It helps to ensure that harvesting is protected for beneficiaries. I would like to thank the HTCs [Hunter and Trapper Committees], Community Corporations and Elders Committees for their work on the TNMPA and the support that they ultimately provided for its establishment.”

---

Frank Pokiak,  
Inuvialuit Beluga Harvester  
Chair of Inuvialuit Game Council



Photo credit: Blythe Browne

## Acknowledgements

We would like to thank the members of the ISR communities who became involved in the process, ensuring that the TNMPA will benefit their communities for years



Photo credit: Blythe Browne

to come. The Inuvialuit organizations and co-management bodies provided invaluable traditional knowledge, expertise, and unflagging support for the TNMPA. We would also like to thank all our intergovernmental and industry partners who recognized the certainty afforded by MPA regulations as a means of achieving a balance between economic development and ecological conservation.

Last, we honour the memory of the late Mr. Billy Day, without whom the TNMPA may never have been realized. An Inuvialuit elder and member of the Beaufort Sea Integrated Management Planning Initiative (BSIMPI) Working Group, his vision, his spirit, and his strength motivated us all throughout the years. He will continue to inspire us into the future.

“The Land, the animals, the waters, the whales and the fish were very important to our ancestors and still are to us. Even during negotiations for our land claims settlement, our elders told us that the land and waters had looked after them for centuries and would look after us for many more if we looked after our environment.”

Billy Day, 2002



## Executive Summary

The TNMPA management plan supports the *Tarium Niryutait Marine Protected Area Regulations* (2010)<sup>3</sup>. The plan provides guidance to the FJMC, DFO, communities, other regulators, partners, and proponents on aspects related to management of the TNMPA. The plan describes the regulatory authority related to the TNMPA in the ISR and the context within broader Oceans Management planning within the Beaufort Sea Large Ocean Management Area (LOMA). The ecological and socio-economic setting of the TNMPA is unique to Canada and the Arctic. The TNMPA provides important habitat for summer aggregations of one of the world's largest populations of beluga, the Eastern Beaufort Sea beluga. It is also an important beluga harvesting and fishing area for Inuvialuit, having supported generations of families from Inuvik, Aklavik, and Tuktoyaktuk. The areas surrounding the TNMPA have valuable hydrocarbon deposits. The TNMPA was established to strike a balance between protection of beluga whales and their supporting ecosystems, annual summer harvesting of beluga, and properly planned economic activity in the near-shore Beaufort Sea, thus preserving Inuvialuit cultural and spiritual connections to the land.

The TNMPA management plan is intended to capture the intent of the regulations and the needs identified by the communities and others related to shared management responsibilities. The plan describes the boundaries of the TNMPA and interprets the regulations that provide the legislative ability to manage activities. It describes governance aspects related to the shared management of the TNMPA between DFO and the FJMC. It also provides a historical perspective of conservation efforts leading up to the TNMPA, in particular the work on the Community Conservation Plans (CCPs) and BSBMP, which were the founding pieces that led to the establishment of the TNMPA.

The management plan sets out the first six-year (2013–2018) activity plan with priorities on: (1) consultation and communication about management of the TNMPA; (2) development of a monitoring plan; and (3) stewardship actions such as enforcement, public education, and evaluation. These elements will be critical at this early stage of implementation and to the ultimate success of the TNMPA. Reporting and review will occur through annual activity reports, a three-year State of the TNMPA Report, and through a six-year formal review.

The management plan is organized so that the main text provides the basic framework, which can be revised on a six-year schedule (or as needed should rapid changes occur in the area). A monitoring plan has been developed to support this document and contains information on indicators and protocols. The monitoring plan will be reviewed every six years and updated when necessary.

3 *Tarium Niryutait Marine Protected Area Regulations* (2010): <http://laws.justice.gc.ca/eng/regulations/SOR-2010-190/page-1.html>. (Accessed November 22, 2012.)



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# 1. Purpose of the Tarium Niryutait Marine Protected Area Management Plan

The TNMPA (Fig. 1) management plan supports the *Tarium Niryutait Marine Protected Area Regulations* (2010) under sub-section 35(3) of Canada's *Oceans Act* (1996)<sup>4</sup>. The plan provides guidance for day-to-day management, governance, priority activities, monitoring, and reporting to the FJMC, DFO, communities, other regulators, partners, and proponents. The plan describes the regulatory authority related to the TNMPA in the ISR and the context within broader Oceans Management planning for the Beaufort Sea LOMA. The plan describes the ecological and socio-economic setting relevant to the TNMPA. The plan also provides a historical perspective of conservation efforts leading up to the TNMPA, in particular the work on CCPs and BSBMP, which were the original pieces that led to the establishment of the TNMPA.

The plan captures the intent of the regulations and the needs identified by the communities and others related to shared responsibilities for management of the TNMPA. The plan describes the boundaries of the TNMPA and interprets the regulations that provide the legislative ability to manage activities. The plan also describes governance aspects related to shared management of the TNMPA, and a monitoring framework (DFO and FJMC 2013). The plan sets out the first six-year (2013–2018) activity plan with priorities on: consultation and communication about TNMPA management; development of a monitoring plan; and stewardship actions such as enforcement, public education, and evaluation. These items are critical at this early stage of implementation and to the ultimate success of the TNMPA.

The plan is organized so that the main text provides a basic framework that can be revised on a six-year schedule (or as needed should rapid changes occur in the area). The monitoring plan will also be reviewed every six years and updated when necessary.



Photo credit: Blythe Browne



4 *Oceans Act* (1996): <http://laws-lois.justic.gc.ca/eng/acts/O-2.4/>. (Accessed December 21, 2012.)

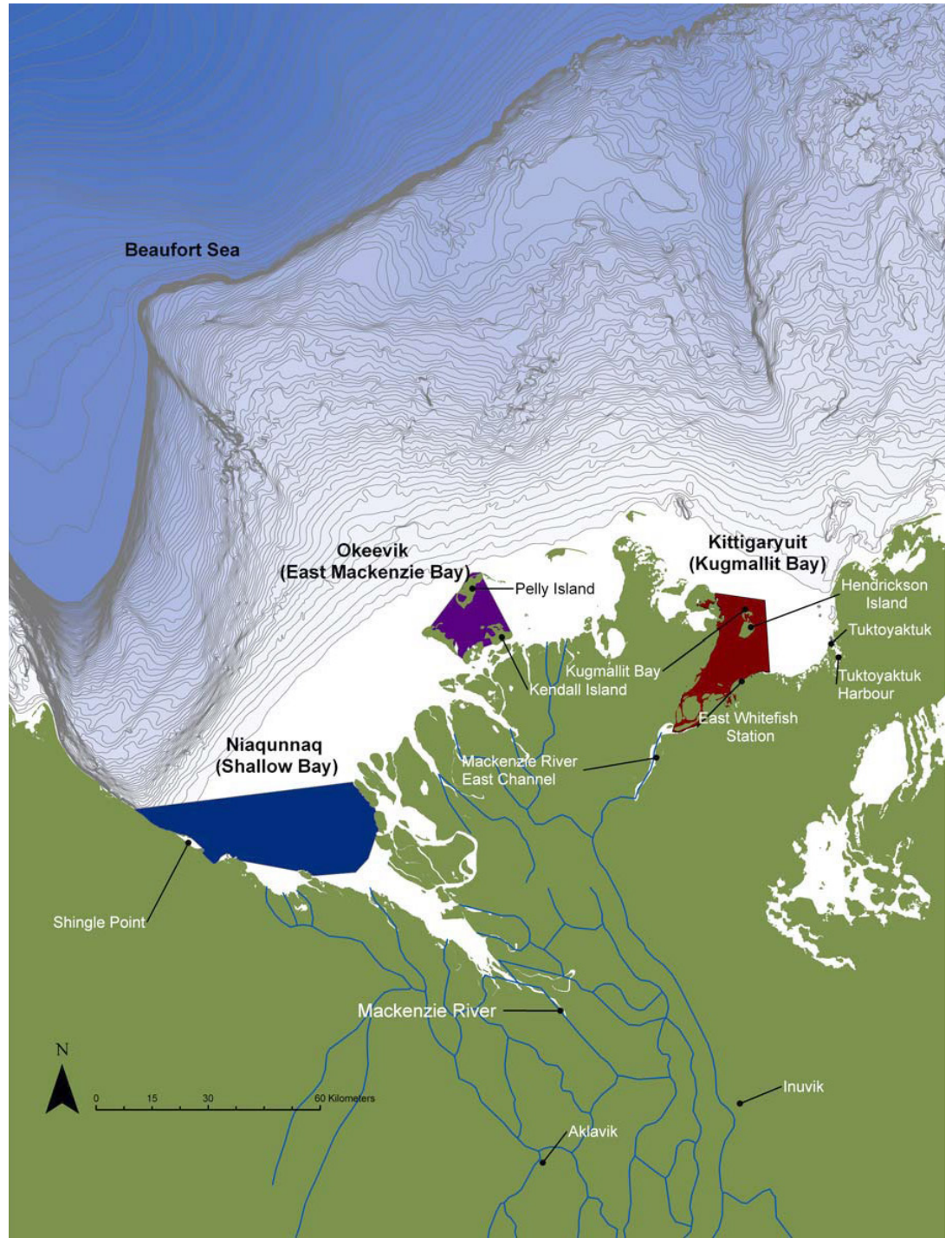


Figure 1. Location and names of the three TNMPA areas.

## 2. Introduction to the Tarium Niryutait Marine Protected Area

Beluga whales (*Delphinapterus leucas*, Pallas 1776) of the Eastern Beaufort Sea compose one of the world's largest populations of beluga, estimated at approximately 40,000 whales (Niemi et al. 2010).

Beluga have long been an important subsistence resource and culturally important species for people of the ISR, as is obvious within the CPPs of the ISR communities of Aklavik, Inuvik, Sachs Harbour, Paulatuk, Tuktoyaktuk, and Ulukhaktok. Community members there have identified traditionally important beluga and other marine-resource areas. Building on these CCPs, and to ensure the long-term sustainability of beluga, the communities, FJMC, and DFO developed the BSBMP in 1991 (amended for the third time in 2001) (FJMC 2001). Goals of the BSBMP are: "to maintain a thriving population of beluga in the Beaufort Sea, and to provide for optimum sustainable harvest of beluga by Inuvialuit" (FJMC 2001, p. 3).

Working with FJMC and DFO on the development of the BSBMP, communities have identified areas within the ISR that provide important seasonal habitat for beluga and/or areas that are important for harvesting of beluga. Different zones (Fig. 2) were delineated, and guidelines developed for these zones related to various activities that might affect the well-being of the beluga resource, the harvesting of the resource, or beluga habitat (FJMC 2001). The zones are:

### Zone 1

- Zone 1(a) consists of shallow waters within the Mackenzie estuary, where beluga aggregate and subsistence harvesting is done by the communities of Aklavik, Inuvik, and Tuktoyaktuk.
- Zone 1(b) consists of areas where residents of Paulatuk, occasionally Ulukhaktok, and Sachs Harbour have shown an interest in harvesting beluga in the future<sup>5</sup>.

### Zone 2

- Zone 2 includes waters along the Mackenzie Shelf out to depths of 20 m, not included in Zone 1. These waters include a major travel corridor for beluga to move into, out of, and between the various bays of the Mackenzie estuary.

### Zone 3

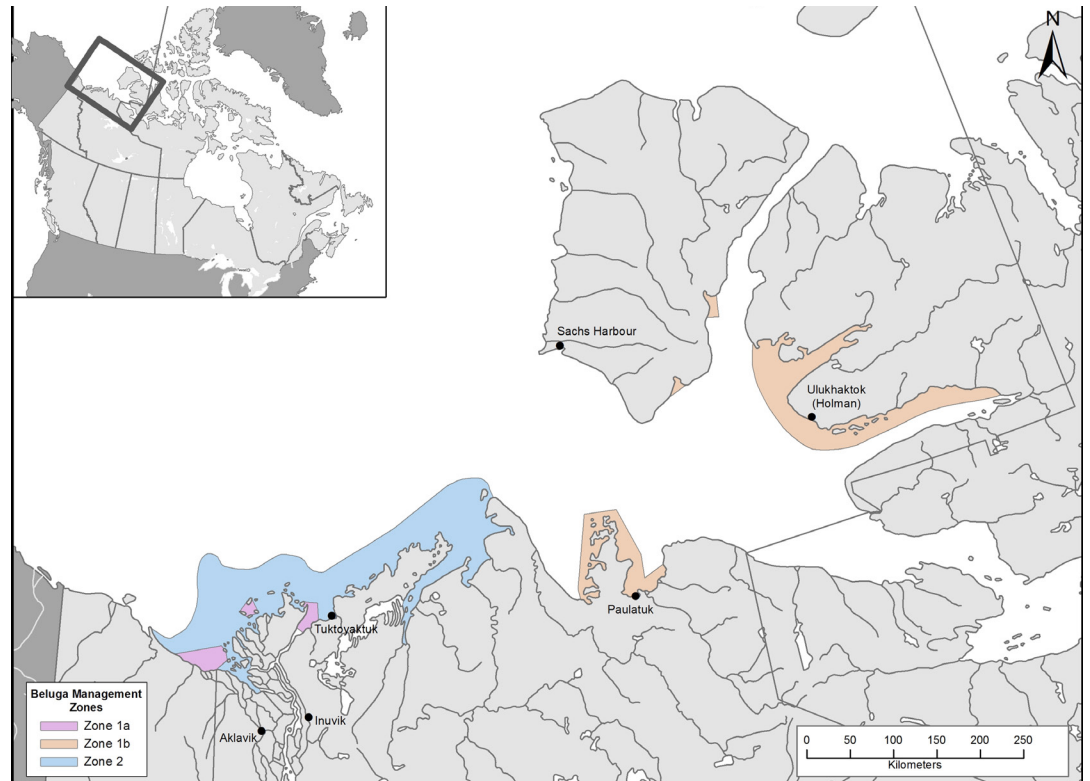
- Zone 3 includes the remaining area of the Canadian Beaufort Sea to depths >20 m and Amundsen Gulf, where beluga are known to travel for foraging, including areas north to the permanent ice pack and east to Victoria Island.

### Zone 4

- Zone 4 includes waters outside of Canada, but within the geographic range of beluga. These waters include the Alaskan Beaufort Sea, and Chukchi and Bering seas.

<sup>5</sup> Since the 2001 version of the BSBMP, residents of these communities have been harvesting beluga in Zone 1(b).





**Figure 2. BSBMP zones of the ISR. (Note: The white area corresponds to Zone 3)**

The BSBMP identified three Zone 1a areas in the Mackenzie estuary as very important beluga habitat, with annual summer aggregations of beluga. These three areas are also important for subsistence harvesting of beluga and fish by Inuvialuit. Of the four zones defined by the BSBMP, Zone 1a is afforded maximum protection. A more detailed historical account of conservation efforts leading to the TNMPA is described below.

Renewed interest in hydrocarbon development in the Beaufort Sea fostered a feeling that stakeholders needed to work in an integrated manner to ensure development occurred in a sustainable way. Beginning in 1999, the Inuvialuit, government, and industry agreed to collaborate in the development of integrated management planning for marine and coastal areas in the ISR. This agreement was called the Beaufort Sea Integrated Management Planning Initiative (BSIMPI). Under BSIMPI, a Working Group evaluated a proposal for the establishment of the TNMPA in Zone 1a of the BSBMP. To reflect the ecological importance of the TNMPA and to support the goals of the BSBMP, the BSIMPI Working Group developed the following conservation objective of the TNMPA

**to conserve and protect beluga whales and other marine species, their habitats, and their supporting ecosystem.**

The TNMPA consists of three areas covering approximately 1800 km<sup>2</sup>: Niaqunnaq, Okeevik, and Kittigaryuit (Fig. 1). The TNMPA was designated under Canada's *Oceans Act* on August 26, 2010 with its accompanying regulations coming into force on September 1, 2010. Designation of the TNMPA provided the long-term regulatory mechanism to support BSBMP goals. The BSBMP and its goals and objectives pertaining to sustainable harvest, conservation and protection, and related guidelines for development in the beluga zones will continue to apply throughout the ISR.



### 3. Legislative Authority for the TNMPA in the ISR

The geographic location of the TNMPA makes for a unique and compelling backdrop upon which to establish an MPA under Canada's *Oceans Act* (1996). The TNMPA is situated in one of Canada's Arctic land claims, the ISR. The ISR lies within the Western Arctic of Canada and was created with the signing of the IFA. The IFA, a comprehensive land claim protected under Section 35 of the *Constitution Act* (Canada 1982)<sup>6</sup>, describes the ISR as including portions of the Northwest Territories, the Yukon North Slope, and much of the Beaufort Sea. The IFA summarizes the basic goals of the Inuvialuit as:

- the preservation of Inuvialuit cultural identity and values within a changing northern society;
- ensuring the Inuvialuit are equal and meaningful participants in the northern and national economy and society; and
- protecting and preserving the Arctic wildlife, environment, and biological productivity.

The IFA includes a section on wildlife harvesting and management, with the principles of protection and preservation of wildlife through conservation practices and the need for special measures under the law to deliver that protection. The IFA established a natural resources co-management regime specific to fisheries resources. Under the IFA, the FJMC was formed in 1986 “to assist the Inuvialuit and Canada administering the rights and obligations relating to fisheries within the ISR as described in the final agreement, and to assist the Minister of Fisheries and Oceans in carrying out his responsibilities for the management of fisheries, and to advise the Minister on all matters relating to fisheries affecting the Inuvialuit and ISR” (FJMC 2001, p. i). Under this co-management arrangement, FJMC and DFO are partners relating to the management of fisheries in the ISR.

The Inuvialuit communities of Aklavik, Tuktoyaktuk, and Inuvik and the FJMC were instrumental in setting the course towards the TNMPA. The identification of important beluga areas by hunters and trappers from each of the three communities was an important part of the CCPs, (first produced in 1993, and updated in 2000 and 2008) (Community of Aklavik et al. 2008, Community of Inuvik et al. 2008, Community of Tuktoyaktuk et al. 2008). These important areas were considered primary protection areas (Zone 1a) in the BSBMP (FJMC 2001). The BSBMP is a community-based management plan for beluga that was prepared jointly by the Inuvialuit, the FJMC, and Government of Canada representatives. The purpose of the BSBMP is to “ensure the responsible and effective, long-term management of the beluga resource by the Inuvialuit and the Department of Fisheries and Oceans” (FJMC 2001, p. 3). The BSBMP supports the themes of resource conservation and cultural preservation that are emphasized in the IFA. The primary protection areas of Zone 1(a) of the BSBMP eventually formed the basis of the areas to be protected under the TNMPA.

6 *Constitution Act* (1982): [http://laws.justice.gc.ca/en/const/annex\\_e.html](http://laws.justice.gc.ca/en/const/annex_e.html). (Accessed November 22, 2012.)



### 3.1. Oceans Management Planning

The *Oceans Act* (1996) came into force in 1997. Part II of the *Act* authorized the development of Canada's Ocean Strategy (COS)<sup>7</sup> (DFO 2002a). The COS is based on the principles of sustainable development, integrated management, and the precautionary approach, and is designed to improve the management of our oceans for the benefit of all current and future generations of Canadians. The LOMA in the Beaufort Sea is guided by the Integrated Oceans Management Plan for the Beaufort Sea (IOMP) (BSP 2009). Consistent with the principles of the IFA, the main goal of the Beaufort Sea IOMP is: "The Beaufort Sea ecosystem is healthy and supports sustainable communities and economies for the benefit of current and future generations" (BSP 2009, p. 7). The TNMPA is located within the Beaufort Sea LOMA, and as such, efforts were made to ensure that the conservation goals of the TNMPA reflected the goals of the LOMA and the IFA.

Under sub-section 35(1) of the *Oceans Act*, there are five reasons for which an MPA can be designated:

- a) the conservation and protection of commercial or non-commercial fishery resources, including marine mammals and their habitat;
- b) the conservation and protection of endangered or threatened marine species and their habitats;
- c) the conservation and protection of unique habitats;
- d) the conservation and protection of marine areas of high biodiversity or biological productivity; and
- e) the conservation and protection of any other marine resource or habitat as is necessary to fulfill the mandate of the Minister.



Photo credit: Blythe Browne

The TNMPA meets the criteria under sub-paragraph 35(1) (a) and (c) of the *Oceans Act* (1996) stated above. The TNMPA was established to protect beluga and areas of traditional beluga harvesting, which are still used by the Inuvialuit. The habitat of the Mackenzie River estuary TNMPA area is essential for the beluga's life processes.

The *TNMPA Regulations* (2010) (Appendix B) came into force on September 1, 2010 with the designation the TNMPA and its geographic boundaries. These regulations establish the framework for the management of the TNMPA by outlining which activities are prohibited because of their potential to have detrimental effects on the beluga and their habitat, and which activities may be deemed exemptions to the prohibitions because, with proper planning and mitigation, these activities are not likely to result in harmful effects on beluga and their habitat.

<sup>7</sup> Canada's Oceans Strategy (2002a): <http://www.dfo-mpo.gc.ca/oceans/publications/cos-soc/pdf/cos-soc-eng.pdf>. (Accessed December 12, 2012.)



## 3.2. Links to Existing Protected Areas in and around the TNMPA

The southeastern side of the Okeevik area of the TNMPA overlaps slightly with the Kendall Island Bird Sanctuary (KIBS) established by EC under the *Migratory Birds Convention Act* (1994)<sup>8</sup>. Both departments will maintain a relationship of open consultation and information exchange. They will also cooperate regarding research and management actions affecting the overlapping area (DFO 2002b). The TNMPA management plan allows activities within KIBS as long as the activities are acceptable under the *Migratory Birds Convention Act*. A detailed description of the KIBS and the conclusions of a technical assessment (DFO 2002b) found that KIBS is not likely to be an impediment to the establishment of an MPA because both designations are conservation oriented, and existing overlap between the KIBS and BSBMP Kendall/Pelly Island Zone 1(a) has not yet been problematic. Collectively, the TNMPA and KIBS contribute towards a network of protected areas, one of the goals of the Government of Canada.

## 4. Background

### 4.1. Location & Boundaries

The TNMPA consists of three areas, Niaqunnaq, Okeevik, and Kittigaryuit (Fig. 1). Detailed maps and coordinates of the three areas can be found in Appendix C.

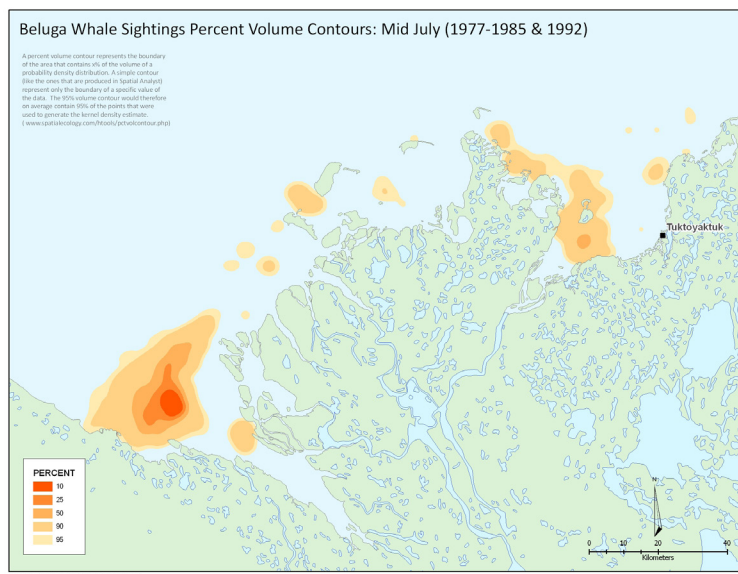
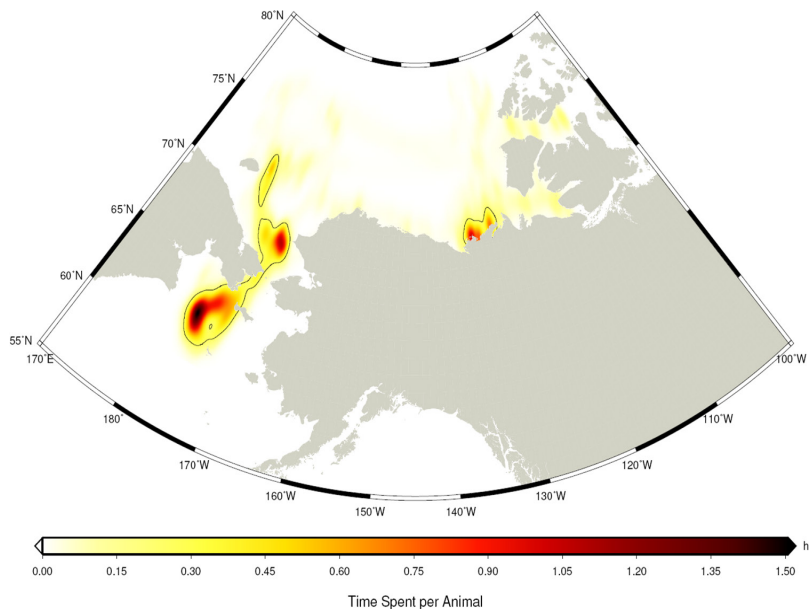
Niaqunnaq is the western-most area and encompasses the opening of Shallow Bay to the Beaufort Sea. The northern border runs straight from Olivier Island to Sabine Point. It then follows the coast to the Shingle Point spit and skips over the mouth of the inlet. The border follows the coast to the western tip of Shoalwater Bay before crossing over to Tent Island. It then dips southeast into Shallow Bay to the west channel of the Mackenzie River and returns along the island shores to Olivier Island.

Okeevik is the most northern area and includes portions of two hydrocarbon Significant Discovery Licences (SDLs). (See section 4.4.2. Oil and Gas/Mineral Development for a further description of SDLs.) It includes the waters between Pelly Island, Garry Island, and Kendall Island.

Kittigaryuit is the area furthest to the east. The border follows from the eastern coast of Summer Island into the east channel of the Mackenzie River up to the end of the small, unnamed islands. It then moves north along the mainland coast to Whitefish Point and turns north at a 90° angle to return to the eastern coast of Summer Island.

There are two zones in the TNMPA, the Primary Protection Zone (PPZ) and the Special Management Zone (SMZ). The PPZ covers about 99% of the TNMPA and bestows the highest level of protection and least amount of flexibility for developmental activities to occur. The SMZ, which covers about 1% of the TNMPA, is found within the Okeevik area and coincides with two SDLs for oil and gas exploration, SDL 025 and SDL 028.





**Figure 3. Beluga movement patterns within the ISR. A) Beluga migration between summer and wintering grounds. Data are from tagged whales (Luque and Ferguson 2009). Dark shades are aggregation areas; light shades show movement patterns. B) Mid-July beluga aggregations in the Mackenzie estuary. Calculated from aerial surveys (L. Harwood, DFO, Yellowknife, personal communication).**

#### 4.2. Ecology of the TNMPA

The dominant environmental factors that influence physical and chemical conditions in the TNMPA are the Mackenzie River and the seasonal land-fast ice (Carmack et al. 2006). The Mackenzie River freshwater plume influences the distribution of biota, including plankton, fish, and higher trophic level species. The discharge and resulting concentrations of nutrients, carbon, suspended mineral sediments, contaminants, and water temperatures in the Mackenzie River play vital roles in defining physical and biological conditions within the TNMPA. The presence of ice, largely consisting of grounded or land-fast ice during the



period from freeze-up, shapes the nature and function of the estuarine ecosystem (Carmack and Macdonald 2002).

All three areas of the TNMPA are located at major outflows of the Mackenzie River, and are generally shallower, more turbid, and of lower salinity than the rest of the Beaufort Sea Shelf. Re-suspension of sediments as a result of wind and/or storms in late summer (i.e., during the open-water season) in the shallow environment and wind-driven coastal upwelling are important mechanisms of nutrient replenishment.

The chemical composition of surface water and the ice regime in the Mackenzie River estuary is cyclic, changing seasonally as a function of temperature, solar radiation, ice formation and melting, variations in water circulation patterns, and discharge from the Mackenzie River. All of these characteristics are fundamental to the creation and maintenance of critical habitat and ecological processes in the area as a whole and contribute to making parts of the TNMPA ecologically and biologically significant (Paulic et al. 2009).

The three areas of the TNMPA have been identified as seasonal habitat for marine mammals, fish, and waterfowl (North/South Environmental Consultants Inc. and Inuvialuit Cultural Resource Centre 2003). The three areas are also used for subsistence harvesting of a number of species by the communities of Tuktoyaktuk (Kittigaryuit) (Community of Tuktoyaktuk et al. 2008), Inuvik (Okeevik and Kittigaryuit) (Community of Inuvik et al. 2008), and Aklavik (Niaqunnaq) (Community of Aklavik et al. 2008).

#### 4.2.1. Marine Mammals

Four species of marine mammals use the TNMPA seasonally. Large numbers of beluga, which overwinter in the Bering Sea, return to the southeastern Beaufort Sea each summer. The characteristic use of estuaries in the summer is prevalent in many beluga populations (Richard 2009). Beluga come to estuaries in summer for a number of reasons: feeding, to take advantage of warm water for newborn calves, socializing, rubbing on coarse substrates for moulting purposes, and as a general species-specific evolutionary behaviour related to use of shallow turbid water for predator avoidance (e.g., killer whales, *Orcinus orca*) (Loseto et al. 2010). The belugas arrive at the TNMPA area in June and are present until September (Community of Inuvik et al. 2008, Community of Aklavik et al. 2008, Community of Tuktoyaktuk et al. 2008). Individual whales are mobile; tagged individuals leave and return periodically, moving to offshore habitats likely to feed on Arctic cod (*Boreogadus saida*) (Loseto et al. 2010). The general migratory pathway to and from the TNMPA in spring and autumn follows the movement of ice flows in the area. Tagging and aerial surveys of beluga are providing a better understanding of seasonal migration and summer movements within the ISR (Fig. 3A,B).

Bowhead whales (*Balaena mysticetus*) feed on the periphery of the TNMPA, and within the outer edge of Niaqunnaq (Community of Aklavik et al. 2008), where the water is deep, and zooplankton is abundant and contains planktonic species with high fat content (Harwood et al. 2010). Bowhead can also be seen travelling past the TNMPA on their way to rich feeding grounds to the east. They can generally be found in the area in the spring heading east and again in the autumn heading west. Bowheads have been classified as a species of special concern under the *Species at Risk Act* (SARA) (2002)<sup>9</sup> since 2005.



Ringed seals (*Phoca hispida*) use the Yukon North Slope region of the Niaqunnaq area for late summer feeding during their autumn migration from the Beaufort Sea to their wintering grounds (Harwood and Stirling 1992, Harwood et al. 2012). Ringed seals can also be found on the north coast of the Tuktoyaktuk peninsula during the open-water season. In the winter, ringed seals are harvested along the shear zone north of the mainland coast. Bearded seals (*Erignathus barbatus*) can also be found in the area but are harvested less frequently than ringed seals because their abundance in the area has dropped over the years (North/South Environmental Consultants Inc. and Inuvialuit Cultural Resource Centre 2003).

#### 4.2.2. Fish

Within the TNMPA, there are over-wintering areas and feeding areas for a number of marine, estuarine, and anadromous fish species that contribute to the Inuvialuit subsistence fishery (Community of Aklavik et al. 2008, Community of Tuktoyaktuk et al. 2008, Community of Inuvik et al. 2008). These species seek the brackish water of the delta and TNMPA because of the layer of fresh water that accumulates between the ice cover and the heavier saline water. Pacific herring (*Clupea pallasii*) is the only species to potentially spawn under the ice in coastal embayments of the TNMPA. Several species of anadromous fish migrate in large numbers to and from spawning and overwintering grounds through the TNMPA annually, taking advantage of the band of low-salinity water along the Beaufort Sea coast (Bond and Erickson 1989, Chang-Kue and Jessop 1992). All three areas of the TNMPA support large concentrations of juveniles of the following species: broad whitefish (*Coregonus nasus*), lake whitefish (*Coregonus clupeaformis*), Pacific herring, inconnu (*Stenodus leuichthys*), Dolly Varden (*Salvelinus malma*), Arctic cisco (*Coregonus autumnalis*), and least cisco (*Coregonus sardinella*).

#### 4.2.3. Birds

A large number of waterfowl are found in the TNMPA, using the area for moulting, brooding, rearing, feeding, and staging habitat. Nesting sites can be found in the KIBS that overlaps the Okeevik area of the TNMPA. The ivory gull (*Pagophila eburnea*), which was listed as endangered by SARA in 2006, frequents the TNMPA near its ice edges. The Eskimo curlew (*Numenius borealis*) may also be present. Although it has not been sighted for many years, this species was also listed as endangered by SARA in 2009.

### 4.3. Threats to the TNMPA

The TNMPA is not considered a degraded area, but a number of human activities in the near-shore Beaufort Sea, if not properly managed, could cause a decline in the area's environmental health. Oil and gas extraction, as well as construction and maintenance of its infrastructure, could pose a risk to beluga and their habitat through disturbance or whale strikes from increased shipping noise and vessel traffic, disruption of the benthos, and discharge or accidental spilling of deleterious substances. Seismic operations could also pose a risk, depending on the season and the energy source used. Granular extraction could pose a risk to near-shore habitats.



Activities or stressors originating from upstream of the TNMPA (e.g., hydroelectric dams in the Mackenzie River watershed) and beyond the Beaufort Sea (e.g., climate change, long range atmospheric transport of pollutants) could pose a direct risk to the ecosystem and the health of beluga. Changes in physical oceanography (temperature, salinity, and nutrient cycling) could affect the overall food web of the Beaufort Sea (Niemi et al. 2010). Physical changes to coastal areas from increased erosion could directly affect beluga habitat within the TNMPA. Climate change may increase rates of erosion, beach migration, and extreme flooding events by increases in storm frequency, sea-level rise, and change in permafrost properties and sea-ice characteristics (Manson and Solomon 2007).

Ecosystem changes in beluga wintering grounds could also affect the beluga population. These external stressors are not directly manageable through this management plan or the *TNMPA Regulations* (2010), but the implications of these threats to the TNMPA can be a focal point for raising awareness at the national and international level, or for other management initiatives.

## 4.4. The Socio-Economic Landscape

### 4.4.1. The Communities and Subsistence Harvesting

The TNMPA is close to, and could directly affect, the communities of Aklavik, Inuvik, and Tuktoyaktuk (Fig. 1). Each of the communities uses areas of the TNMPA for the subsistence harvest of marine mammals, fish, and birds.

Aklavik (Aklaqvik) is situated on the shore of the Peel Channel on the west side of the Mackenzie River delta, and is several hundred kilometres from the Niaqunnaq area of the TNMPA (Fig. 1). Shortly after its original settlement, Aklavik became an important gathering place and regional centre, and by 1920 was the major community in the delta. Serious flooding and erosion in the 1950s prompted the Federal Government to relocate its administration offices and staff to Inuvik, and as a result the population in Aklavik began to decline (Community of Aklavik et al. 2008). Aklavik is home to 633 people (2011 census, Statistics Canada 2012), primarily Inuvialuit and Gwich'in. The economy is primarily subsistence-based, including trapping, hunting, whale harvesting, and fishing (Community of Aklavik et al. 2008).

Inuvik (Inuvvik) is situated on the East Channel of the Mackenzie River delta (Fig. 1). The Inuvialuit and Gwich'in have traditionally hunted and fished in the area. The community itself was established in 1956 in response to flooding and erosion in Aklavik (Community of Inuvik et al. 2008). Inuvik flourished in the 1970s and 1980s with the growth of the petroleum industry. Conversely, the economy suffered with the decline of the petroleum industry and closure of the Canadian Forces Base in the late 1980s. Today, Inuvik is the regional administrative centre for the Territorial Government and the Inuvialuit and Gwich'in land claims. Subsistence harvesting of animals and plants remains important to the Inuvialuit and Gwich'in people who reside in this area (Community of Inuvik et al. 2008). Inuvik has experienced a resurgence in exploration in the Mackenzie delta region starting in the late 1990s. This increase of economic stimulus to the Inuvik economy was associated with the proposed



Mackenzie Gas Pipeline, which has proceeded through Joint Review Panel hearings, received Federal Government approval, and is awaiting a decision by the proponents to begin construction. Most recently, hydrocarbon (mainly oil) exploration in the offshore Beaufort Sea has continued to support the economy of Inuvik. Inuvik has a population of 3484 (2011 census, Statistics Canada 2012).

Tuktoyaktuk (Tuktuujaaruuq), with a population of 854 (2011 census, Statistics Canada 2012), is located at the northern end of the Tuktoyaktuk Peninsula along the shore of Kugmallit Bay (Fig. 1). This area has been used by Inuvialuit for many years (Community of Tuktoyaktuk et al. 2008). Tuktoyaktuk has fluctuated from a traditional subsistence economy to one that is partially subsistence and partially wage-based because of the introduction of the petroleum industry and establishment of a radar station as part of the Distant Early Warning System. Tuktoyaktuk Harbour made the hamlet an attractive location for marine oil- and gas-related activity during the 1970s and 1980s. The wage-based economy has fluctuated significantly with the ebb and flow of hydrocarbon activity in the Beaufort Sea. Currently, approximately 75% of households in Tuktoyaktuk still harvest for subsistence purposes.

Because of their importance to these three communities, each of the BSBMP Zone 1(a) areas have been designated within the CCPs as Management Category 'E', defined as: "Lands and waters where cultural or renewable resources are of extreme significance and sensitivity. There shall be no development on these areas. These lands and waters shall be managed to eliminate, to the greatest extent possible, potential damage and disruption. This category recommends the highest degree of protection in this document [the CCP]" (Community of Aklavik et al. 2008, Community of Inuvik et al. 2008, Community of Tuktoyaktuk et al. 2008).

There is a local subsistence harvest of beluga, ringed seals, bearded seals, and marine and anadromous fish. The harvest of beluga has been monitored by the FJMC and DFO for over 30 years (Harwood et al. 2002, Niemi et al. 2010). Ninety-five percent of all belugas harvested within the ISR annually during July and August are from the TNMPA. The harvest is generally limited to a few animals per family per year. The community of Aklavik has established hunting camps at Shingle Point, conducting subsistence harvesting of beluga, ringed seal, bearded seal, and bowhead in Niaqunnaq. The community of Inuvik traditionally harvests beluga in the Okeevik area, with camps on Kendall Island and Baby Island. They also harvest beluga and anadromous fish at East Whitefish Station of the Kittigaryuit area. The community of Tuktoyaktuk harvests beluga, anadromous fish, and ringed seal in the Kittigaryuit area, with camps on Hendrickson Island. Furbearers such as polar bear (*Ursus maritimus*) and fox (*Vulpes spp.*) and birds, such as geese, are also harvested in the TNMPA.

In the past, bowheads were harvested by the Inuvialuit, and this traditional harvest has only been re-established in recent years as a means of retaining traditional hunting methods. Harvesting of bowhead whales for subsistence purposes is allowed under the *Fisheries Act*, but only when authorized under a licence issued by the Minister of Fisheries and Oceans. The IFA, which supersedes the *Fisheries Act*, stipulates that the Inuvialuit



have a right to harvest marine mammals, subject only to human safety considerations and conservation of the stock. Neither safety nor conservation (considering the take of only one whale) was an issue in this case, so the Inuvialuit do not legally require a licence from DFO. Nevertheless, the Inuvialuit chose to obtain a licence and sanctioning of the hunt by DFO. One whale was taken in each of 1992 and 1996.

#### *4.4.2. Oil and Gas/Mineral Development*

Oil and gas exploration in the ISR started in the late 1950s and early 1960s, with a focus on finding oil resources. During the most recent round of exploration, significant gas discoveries were made in the Mackenzie-Beaufort basin. The economic feasibility of proceeding from exploration to production hinges on moving the hydrocarbon resources to markets in the south. In the 1970s, a proposal to construct a pipeline to transport gas from the Mackenzie delta to southern markets was tabled. The Federal Government responded by holding an inquiry into the impacts surrounding the construction of a pipeline along the Mackenzie River valley. The Mackenzie Valley Pipeline Inquiry, headed by Justice Thomas Berger, became one of the most thorough and longstanding inquiries ever held into a development proposal, and arguably, was the first environmental and social impact assessment that considered the views and knowledge of affected aboriginal inhabitants. The Report of the Mackenzie Valley Pipeline Inquiry (Berger 1977) recommended a 10-year moratorium on the construction of a pipeline to allow time for settling land claims (DFO 2002b). As expected, the result of the moratorium was a considerable slowdown in hydrocarbon exploration in the Mackenzie delta/Beaufort Sea. In the mid-1990s, a combination of political and economic factors stimulated a renewed interest in exploration and development in the ISR.

Several of the impediments from the first round of hydrocarbon development have been removed, including the settling of land claim agreements and approval of the Mackenzie Gas Pipeline. However, global demand and market factors will continue to dictate the pace at which future hydrocarbon development will occur. Within the past five years, an interest in offshore oil and gas has shifted the focus away from the Mackenzie estuary. However, activities associated with offshore exploration and development could affect the TNMPA.

Special consideration was given to concerns over renewed interest in oil and gas exploration. There are 116 SDLs within the Northwest Territories, and two of these (SDLs 028 and 025) exist within the Okeevik area of the TNMPA (Fig. 4). An SDL is defined as an area that confirms a hydrocarbon discovery that satisfies specific technical criteria and describes the area over which the discovered resources extend (INAC 1995)<sup>10</sup>. When a discovery is made, the company must apply for it to be recognized and declared a Significant Discovery Area by the National Energy Board (NEB). The company can then apply for an SDL. The SDL is issued by AANDC, and allows the licensee company to hold the area and the rights to its potential production in perpetuity. Although small in size, implications for the establishment of the TNMPA in areas covered by SDLs were carefully considered and provisions were made in the TNMPA Regulations (2010) for addressing the overlap by explicitly recognizing the rights of the SDL licence holder (DFO 2002b).

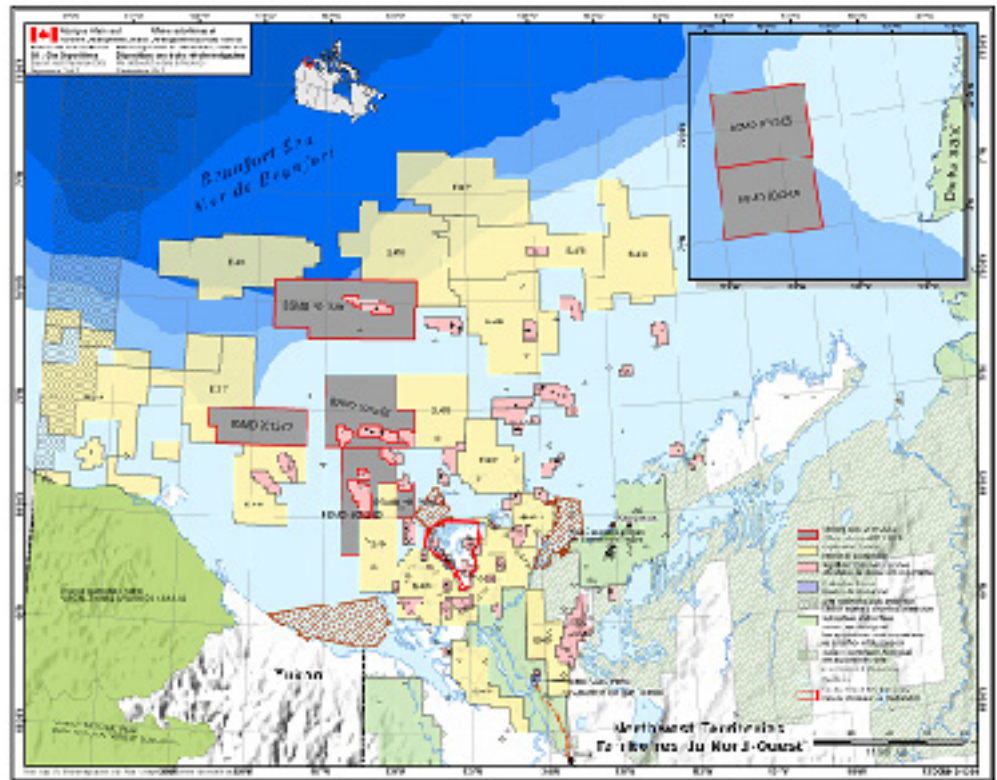
Exploration licences (ELs) surround and abut the north, south, and west boundaries of the Kittigaryuit area of the TNMPA.

<sup>10</sup> Note: Indian and Northern Affairs Canada (INAC) has been renamed to Aboriginal Affairs and Northern Development Canada (AANDC).



The proximity of the ELs and SDLs to the TNMPA is of concern because conflicts could arise if incompatible activities, i.e., harvesting of beluga, and construction and production of hydrocarbon resources, occur simultaneously. Concerns also exist surrounding the direct impacts on beluga and beluga habitat that are associated with oil and gas production. Examples include: transportation issues, such as the movement of crews and equipment to the production site by ship or helicopter; construction activities, such as dredging for artificial islands; and production activities, such as drilling that create noise or result in discharges into the marine environment.

Along with the development of offshore hydrocarbons, there is continuing risk of a major oil spill somewhere in the Beaufort Sea. Depending on conditions at the time (e.g., wind, ice, when the spill occurs, and oceanographic currents), a large spill could have catastrophic effects on coastal marine habitats (AMAP 2007), including the TNMPA. There are currently no mining interests in or adjacent to the TNMPA.



**Figure 4. Oil and gas exploratory lease blocks in the Canadian Beaufort Sea, 2012 (adapted from AANDC Oil and Gas Rights Issuance Map).**

#### 4.4.3. Tourism

Tourism is the third leading economy in the Northwest Territories. Popular tourism activities include wildlife observation, sport hunting and fishing, and hiking. There is interest in developing appropriate beluga-watching activities in the TNMPA areas as well as the traditional whale harvest (Kavik-Axys 2003). This interest could increase with the designation of the TNMPA.

Repeated disturbance from unregulated eco-tourism activities may have biological





consequences for beluga. The potential conflict between harvesting of beluga and whale watching, caused the FJMC and Hunters and Trappers Committees (HTCs) for each of the communities to develop guidelines related to tourism. In recognition of the priority of the ongoing subsistence beluga harvest, water-based tourism and related activities have not been permitted within the BSBMP Zone 1(a) areas. HTCs have also prepared tourism guidelines for their respective hunting areas in the ISR. Additional provisions pertaining to tourism include (FJMC 2001):

- subsistence hunting takes priority over tourism activities;
- HTCs will designate areas to be used for whale watching/tourism within the ISR;
- tourism operators must have a written agreement with the appropriate HTC;
- specific guidelines are provided covering harassment, timing of activity, tour length, and photography; and
- specific guidelines are provided covering use of aircraft and protection of the environment.

#### *4.4.4. Shipping and Transportation*

The health and prosperity of communities in the Mackenzie delta region depends on the arrival of goods shipped by barge and transported by truck on winter ice roads. Maintaining regular shipping activity and winter ice roads is, therefore, of utmost importance to these communities. Bathymetry of the seafloor limits shipping activities to corridors that run through Zone 1(a) areas, so avoidance of these areas is not possible. With regard to shipping activity in Zone 1(a) areas, the BSBMP states: “All shipping activities (including dredging) should be confined to designated shipping routes and areas. Passage through or close to Zone 1a outside of designated routes, even if it’s the shortest route, should be avoided from break-up to 15 August” (FJMC 2001, p. 14). When construction of the Mackenzie Gas Pipeline begins, increased barge traffic could become an issue for the TNMPA. Non-regulatory mitigation measures specific to transportation through the TNMPA will have to be developed by the appropriate regulatory agencies (see section 6.3.3. Non-Regulatory Management Measures). Hydrocarbon exploration and development in the offshore and Beaufort Sea Shelf break (Fig. 4) may result in increased shipping in the area, including Kugmallit Bay.

Clearly the TNMPA is surrounded by significant economic activity (Fig. 4), and the future prospect is for increased activity as dictated by demand for, and economic drivers of, hydrocarbon development in the Beaufort Sea.



## 4.5. Historical Development of the TNMPA

The Beaufort Sea has supported subsistence needs of the Inuvialuit for millennia. The importance of these natural resources has been documented throughout the oral and archaeological history of the region (Kavik-Axys 2003). The importance of the beluga harvest to the Inuvialuit extends beyond its monetary and subsistence value. The beluga subsistence harvest has been, and continues to be, one way by which the Inuvialuit pass down values, traditions, and knowledge to their children, and help maintain their ties to the land (Storace 1998). The importance of beluga in the ISR, and specifically aggregation sites in the Mackenzie estuary, have been recognized by the Inuvialuit in their CCPs and the BSBMP. These areas have been identified as significant ecological areas nationally and internationally. It is important to capture the key historical milestones in support of marine conservation and of direct relevance to the establishment of the TNMPA to fully appreciate the significance of the TNMPA (Table 1).

Table 1. Selected key milestones supporting Arctic marine conservation of relevance to the TNMPA (modified from DFO 2002b).

Year(s)	Milestone
1975	IBP Ecological Sites in Subarctic Canada
1977	Report of the Mackenzie Valley Pipeline Inquiry (Berger Inquiry)
1984	Signing of the <i>IFA</i> (and subsequent establishment of the FJMC in 1986)
1984	Report of Task force on Northern Conservation
1986	National Marine Parks Policy
1987	DFO Arctic Marine Conservation Strategy
1987-1991	Mackenzie Delta Beaufort Sea Regional Land Use Plan
1988	Inuvialuit Renewable Resource Conservation and Management Plan
1989	Arctic Environmental Strategy (AES)
1991	Beaufort Sea Beluga Management Plan – 1 <sup>st</sup> release
1990-1994	1990-1994 Community Conservation Plans
1994	National Marine Conservation Areas Policy
1995	Canada's National Marine Conservation Areas System Plan
1997	Canada's <i>Ocean's Act</i>
1998	Beaufort Sea Beluga Management Plan – update & 3 <sup>rd</sup> printing (FJMC 2001)
2000	Inuvialuit Inupiat Beaufort Sea Beluga Whale Agreement
2002	<i>Species at Risk Act</i>
2007	AMAP Oil and Gas Assessment (AMAP 2007)
2008	Beaufort Sea Strategic Regional Plan of Action
2009	AMAP Arctic Shipping Assessment (AMAP 2009)
2009	Identification of Beaufort Sea Ecologically and Biologically Significant Areas (EBSAs)(Paulic et al. 2009) (re-assessed in 2012)
2009	Integrated Ocean Management Plan for the Beaufort Sea: 2009 and beyond (BSP 2009)

Faced with renewed interest in oil and gas exploration and development in the Beaufort In 1999, faced with renewed interest in oil and gas exploration and development in the Beaufort Sea, DFO, the FJMC, the Inuvialuit Regional Corporation (IRC), the IGC, and representatives from the Canadian Association of Petroleum Producers (CAPP) agreed to collaborate on the integrated management of the marine area of the ISR. These groups formed the Senior Management Committee (SMC) of the BSIMPI to provide oversight and direction to the Initiative. A working group consisting of the BSIMPI SMC, with the addition of AANDC, was struck to conduct planning activities and report back to the SMC.

BSIMPI was responsible for the integrated management planning process for marine activities in the ISR portion of the Beaufort Sea. In 2001, the working group established under BSIMPI evaluated the merits of establishing an MPA in the Zone 1(a) areas of the BSBMP, where beluga aggregate and are traditionally harvested by Inuvialuit. The BSBMP provided



guidance on voluntary measures of protection for the area. Before the establishment of the TNMPA, there was concern by some stakeholders that voluntary compliance to the guidance set out in the BSBMP would falter under economic pressures.

BSIMPI then began investigating the feasibility of creating an MPA in the Beaufort Sea. The BSIMPI working group commissioned a number of assessments as required under the National Framework for Establishment and Managing Marine Protected Areas (DFO 1999) under the Oceans Act. These assessments included:

- **ecological assessment of an MPA of interest in the Mackenzie River estuary** (North/South Environmental Consultants Inc. and Inuvialuit Cultural Resource Centre 2003) to assess the ecological merits of the proposed MPA and whether it complied with the reasons for MPAs as stated in the Oceans Act;
- **socio-economic assessment of a proposed MPA** (Kavik-Axys 2003) to examine the economic and social impacts of an MPA on all potential interests in the area, and ways in which social and economic benefits of the proposed MPA could be enhanced or the costs reduced; and
- **technical assessment of a proposed MPA** (DFO 2002b) to assess the feasibility of an MPA in the ISR, administration and co-management issues, and the level of public and stakeholder support.

Several additional reports were commissioned by BSIMPI to further examine the economic impacts of the establishment of an MPA in this area of interest, including:

- a review of conventional and non-conventional petroleum reserves and undiscovered resources of the Mackenzie delta–Beaufort Sea petroleum province (Osadetz et al. 2004);
- economic and strategic significance of petroleum resources potentially affected by the proposed MPA (Morrell 2003); and
- anticipated positive or negative impacts associated with the management objectives for the proposed MPA (Gislason and Associates 2003).

An MPA under the *Oceans Act* was chosen over other management tools (e.g., Marine Park or National Marine Conservation Area) because of the uniqueness of the TNMPA as a habitat supporting summer aggregations of beluga and because of its use as a major substance harvesting area by Inuvialuit. This option offered the flexibility to protect beluga while minimizing economic impact on the Inuvialuit (see DFO 2002b for a full analysis).

Regular meetings and workshops between BSIMPI and the Inuvialuit communities of Aklavik, Inuvik, and Tuktoyaktuk were held to discuss each step of the MPA designation process. The Government of the Northwest Territories (GNT) and the Yukon Government were also consulted to ensure that the MPA would work in concert with territorial legislations. Considerable efforts were taken to ensure that all territorial rights were maintained as the TNMPA process moved forward, an important consideration because the TNMPA crosses the border between the Northwest Territories and the Yukon Territory. Industrial representatives were consulted and participated in community workshops. Topics covered throughout the consultation period included: conservation objectives of the TNMPA, regulatory intent, exceptions to the regulations, boundaries of the TNMPA, and governance structure. Discussions at these consultations ensured that local hunters and trappers and traditional-knowledge holders had input to the topics covered.

In total, 82 organizations were contacted during an extensive period of consultation



(Appendix D). Not all organizations were consulted to the same extent because the level of engagement and interest varied considerably. Some groups were only interested in periodic updates, whereas other groups wanted to be fully engaged in all steps of the process.

## 5. Governance

Governance and daily management of the TNMPA will be shared between DFO and the FJMC, with one designated person from each forming the TNMPA management committee. The management committee is tasked with annual operations, TNMPA planning processes, and community liaison. A letter of agreement (LOA) establishes the framework for cooperation between DFO and the FJMC regarding the management of the TNMPA. It provides for certainty, consistency, effectiveness, and efficiency in the management of the TNMPA, and identifies and confirms resource arrangements. The LOA clarifies the respective roles and responsibilities of DFO and the FJMC in the implementation of the management plan. Decisions regarding changes to the TNMPA, its principles, or conservation objective will be brought to the TNMPA steering committee, formerly known as the BSIMPI SMC. The TNMPA steering committee will be composed of DFO, FJMC, IRC, IGC, and industry representatives who were members of the original BSIMPI SMC. These organizations were integral to the creation of the TNMPA and are well placed to consult on possible future changes.

## 6. Management Framework

A management framework guides stakeholders in the management of the TNMPA. Figure 5 explains how the parts of the management plan work during the six-year cycle of the management plan. The management framework includes the overall purpose (conservation objective) for establishing the TNMPA, and the various organizations with responsibilities related to management of the TNMPA. A number of supporting objectives ensure that the conservation objective is being met, and management actions are established and prioritized. The management plan will be monitored and assessed periodically to ensure overall success of the management plan, or to identify changes that are required to the plan. The management framework includes regulatory management measures (including prohibited and exempted activities) and non-regulatory management measures. Last, the framework includes a process for review; the plan will be modified prior to year six.

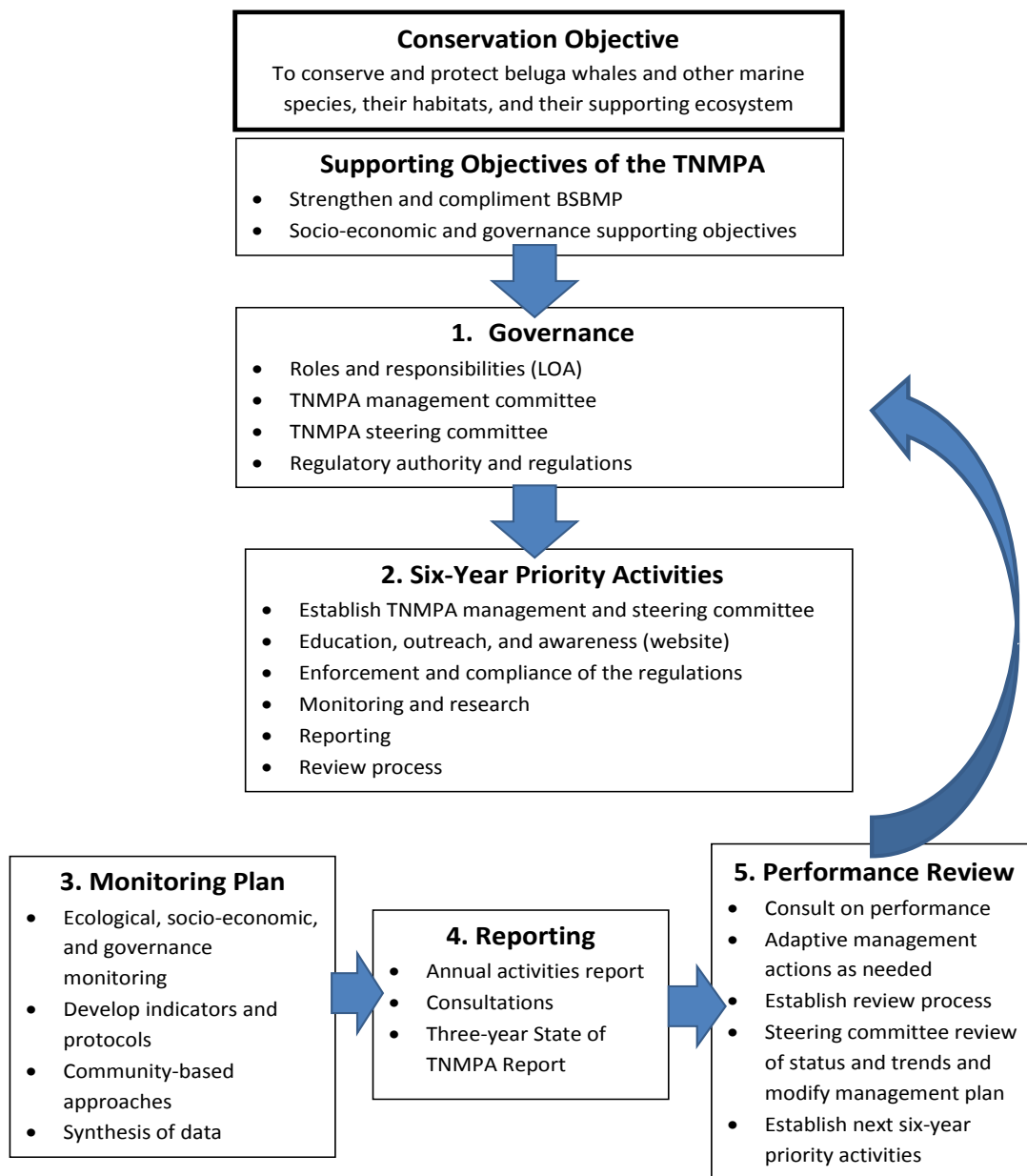
### 6.1. TNMPA Conservation Objective

The conservation objective of the TNMPA is:

**“to conserve and protect Beluga Whales and other marine species, their habitats and their supporting ecosystem”**

Photo credit: Blythe Browne





**Figure 5. TNMPA management framework.**

A number of supporting objectives have been defined to achieve the conservation objective, and specific short- and long-term actions will be undertaken to achieve each of the supporting objectives. The supporting objectives are: (1) to strengthen and support the goals and objectives set out in the BSBMP; (2) to manage human pressures to meet the conservation objective and sustain quality of life, including food security and health of the food resource for those associated with the TNMPA, while ensuring sustainable socio-economic benefits; and (3) to ensure governance structures and tools established to manage the TNMPA are efficient, effective, and economical. Indicators have been selected and protocols have been developed for a companion TNMPA monitoring plan (DFO and FJMC 2013) to ensure the ecological and socio-economic objectives are achieved and the conservation objective of the TNMPA is not compromised.



## 6.2. Priority Activities 2013-2018

The initial years of any management plan are critical in determining its long-term success. The extent to which these activities are carried out depends on available resources and funding. It is advisable to start with a few realistic activities for the first six-year cycle to ensure success and to gain momentum from these successes.

Key activities (Table 2) include creating a jointly agreed upon governance model that is formalized through an LOA between DFO and FJMC, which establishes clear roles and responsibilities for implementation of the plan. Establishment of the two-person TNMPA advisory committee is a necessary first step to coordinate activities. Establishment of the TNMPA steering committee during the first six-year cycle should be a high priority, to ensure the necessary stakeholders have a role to play in the management of the TNMPA. One of the most important activities will be consultation, education, and outreach between the TNMPA managers and ISR communities, industry, and government agencies. Awareness of the TNMPA should take place through attendance at scientific, MPA, and Ocean Management conferences. Establishment and implementation of indicators, protocols, and a monitoring plan will be based on available resources and is meant to assess success in meeting MPA objectives. Some of these activities are ongoing and need to be tracked, whereas other monitoring program activities will have to be developed. Monitoring activities should involve community-based monitoring as a priority.

## 6.3. Regulatory Management Measures

Many meetings were held at which industry, community organizations, and regulators discussed the kinds of activities that should or should not be allowed. The *TNMPA Regulations* (2010) were developed based on the outcomes of these meetings (Appendix B). These regulations describe the “prohibited” activities, i.e., not allowed because of the likelihood of a threat to the conservation objective. The regulations also list “exemptions” to these prohibitions, which are activities that, if managed properly, will not threaten the conservation objective.

It is important to note that, within the ISR, approval processes exist for environmental assessments applicable to activities that could occur in the TNMPA (Appendix E). Any activity that is defined as a development according to the IFA is subject to review by the Environmental Impact Screening Committee (EISC)<sup>11</sup>. The EISC solicits information from experts, regulators, and co-management bodies to ensure a well-informed decision-making process. If the EISC finds that the activity in question could lead to “significant negative environmental impacts” it will forward all information related to this activity to the Environmental Impact Review Board (EIRB)<sup>12</sup> for a more comprehensive environmental assessment.

It is intended that the *TNMPA Regulations* (2010) can work within these processes without having to create a new structure that would become onerous to DFO, its co-management partners, and other regulatory authorities. Therefore, no new activity approval process has been created.

11 Environmental Impact Screening Committee: <http://www.screeningcommittee.ca/>. (Accessed December 12, 2012.)

12 Environmental Impact Review Board: <http://www.eirb.ca/>. (Accessed December 12, 2012.)

Table 2. Priority actions for the management of the TNMPA (2013-2018). (The nature of these actions is contingent on the availability of funds and resources).

Management Priorities	Actions
Roles and Responsibilities	<ul style="list-style-type: none"> <li>• Ensure shared management between DFO and FJMC is established through an MOU, or other similar instrument, which describes roles and responsibilities of each co-management partner.</li> </ul>
Respecting the provisions of the BSBMP TNMPA advisory body	<ul style="list-style-type: none"> <li>• Ensure roles and responsibilities between DFO and EC are established with respect to the KIBS through an agreement.</li> <li>• Ensure that the implementation of the TNMPA management plan is consistent with and respectful of the goals and objectives of the BSBMP.</li> <li>• Ensure advisory body is established with membership from FJMC, DFO, CAPP, IGC, and IRC to direct and participate in formal review of the management plan.</li> </ul>
Education, Awareness and Outreach	<ul style="list-style-type: none"> <li>• Ensure consultations with the ISR communities, industry, and government agencies to report on the TNMPA management plan; monitoring activities and results, and revisions to the plan should they be required.</li> </ul>
Monitoring Program	<ul style="list-style-type: none"> <li>• Promote the TNMPA at workshops and conferences</li> <li>• Work with DFO Science sector to develop indicators and sampling protocols, and assess feasibility of indicators through monitoring studies.</li> <li>• Develop community-based monitoring programs with DFO Science sector in support of the TNMPA.</li> <li>• Partner with other science-based departments and academia conducting ongoing monitoring projects in or near the TNMPA and to ensure the most efficient means of conducting monitoring.</li> <li>• Partner with other agencies collecting socio-economic information (e.g., Arctic Borderlands Knowledge Co-op, DFO policy and economics sector, FJMC beluga harvest monitoring) to develop socio-economic indicators and conduct monitoring.</li> <li>• Track literature on the Beaufort Sea ecosystem for changes occurring outside of the TNMPA which could affect Beluga Whales.</li> <li>• Track literature on changes within the TNMPA which result from global sources, but which could affect functioning of the TNMPA ecosystem.</li> </ul>
Research	<ul style="list-style-type: none"> <li>• Conduct research within the TNMPA in support of the conservation objectives and a better overall understanding of the ecosystem supporting the TNMPA.</li> <li>• Further research on the development or refinement of indicators, protocols and monitoring programs.</li> </ul>
6- Year review	<ul style="list-style-type: none"> <li>• Establish a formal management plan review process in the 5<sup>th</sup> year of the plan.</li> <li>• At end of year 5, review and assess results of governance, socio-economic and ecological indicators to assess the success of the TNMPA management plan in meeting its conservation objective.</li> <li>• At end of year 6, review and update the TNMPA management plan as required.</li> </ul>



Within the pre-existing assessment structure, it is the responsibility of DFO and the FJMC to advise all proponents, co-management bodies, and federal authorities of the *TNMPA Regulations* (2010) and management measures and how they may affect the activities in question. Proponents of proposed activities must submit activity plans to DFO. In keeping with the spirit of the IFA and co-management principles, proponents should consult with local communities through their HTC, community corporations, and other local organizations.

The Oceans Act does not contain or have provisions for the permitting or authorizing of activities that purposefully contravene its regulations. Therefore, no activities can take place in the TNMPA that would contravene the prohibitions as they have been laid out in the *TNMPA Regulations* (2010) unless the activity adheres to the exceptions as laid out in the *TNMPA Regulations* (2010). Activities that adhere to the exceptions section of these regulations will be managed through appropriate environmental assessment procedures, mitigating measures, and applicable legislation.

AANDC, DFO, EC, Transport Canada (TC), and the NEB are the main federal departments and agencies that hold regulatory authority for activities that could take place in the TNMPA (Appendix E). Activities that require authorization by a federal department or agency are subject to a review by that department and may trigger the Canadian Environmental Assessment Act (1992)<sup>13</sup> (or Joint Review as negotiated by CEAA and the EIRB for trans-regional proposals), which would require a larger and more comprehensive environmental assessment.

### 6.3.1. Prohibitions

Certain activities carried out within the TNMPA would result in undesirable ecological effects. To prevent this situation, the regulations prohibit such activities. The TNMPA has a general prohibition (section 6, *TNMPA Regulations*, 2010) (Appendix B) against disturbing, damaging, or destroying living marine organisms within its boundaries. Both direct and indirect activities could disturb marine organisms. The TNMPA also prohibits the depositing, discharging, or dumping of any substance that would directly or indirectly cause disturbance, damage, destruction, or removal of a living organism.

### 6.3.2. Exceptions

The TNMPA has made exceptions (section 7, *TNMPA Regulations*, 2010) to the prohibitions for activities that would not contravene the conservation objective, if proper mitigation were applied. These activities and conditions are listed below.

**Subsistence harvesting** by Inuvialuit, a right that is constitutionally protected under the IFA, is maintained within the TNMPA. The provisions within the IFA must be followed. Under the IFA, the Inuvialuit have preferential harvesting rights to natural resources in the ISR and are not required to obtain a fishing licence for subsistence purposes.

**Sport and commercial fishing** activities that are carried out according to the *Fisheries Act* (1985)<sup>14</sup> may be exempt from the prohibition of removing a marine organism. All other prohibitions would still apply to this activity.

13 *Canadian Environmental Assessment Act* (1992): <http://laws-lois.justice.gc.ca/eng/acts/C-15.2/>. (Accessed December 12, 2012.)

14 *Fisheries Act* (1985): <http://laws.justice.gc.ca/eng/acts?F-14/>. (Accessed December 12, 2012.)





**Dredging activities** can be exempt if a proper and applicable environmental assessment process is followed. The activity must be authorized by a competent government authority and it should be recommended by the EISC as laid out in section 11 of the IFA. The activity must be carried out according to the *Navigable Waters Protection Act* (1985)<sup>15</sup> and the *Fisheries Act*. Last, the activity must not lead to the disturbance, damage, destruction, or removal of a marine mammal.

**Scientific activities** may be exempt if they are for the purposes of managing the TNMPA or for monitoring the effectiveness of conservation measures implemented in the TNMPA. Exemption from the prohibitions is possible if the activity is conducted in accordance with the *Fisheries Act*. The activity must undergo a proper and applicable environmental assessment process and must be authorized by a competent government authority.

**Geophysical operations** that are defined in section (2) of the *Canada Oil and Gas Geophysical Operations Regulations* (1996)<sup>16</sup> may be exempt if they occur on, through, or under the ice cover of the TNMPA, at a time when no beluga are present. The activities must be conducted according to the *Navigable Waters Protection Act*, the *SARA*, the *Fisheries Act*, and the *Canadian Environmental Protection Act (CEPA)* (1999)<sup>17</sup>. These activities should be recommended by the EISC as laid out in section 11 of the IFA, must undergo a proper and applicable environmental assessment process, and must be authorized by a competent government authority. Last, these activities cannot result in the disturbance, damage, destruction, or removal of a marine mammal from the area.

**Exploratory drilling** may be permitted only in the SMZ of the Okeevik area, to maintain the rights of owners of the SDLs that are within the SMZ. These activities must occur on, through, or under the ice cover of the Okeevik area. The activities must conform to the *Navigable Waters Protection Act*, the *SARA*, the *Fisheries Act*, and the *CEPA*. These activities should be recommended by the EISC as laid out in section 11 of the IFA, must undergo a proper and applicable environmental assessment process, and must be authorized by a competent government authority. Last, these activities cannot result in the disturbance, damage, destruction or removal of a marine mammal from the area.

**Oil and gas production** may be permitted only in the SMZ or the Okeevik area. The activities must conform to the *Navigable Waters Protection Act*, the *SARA*, the *Fisheries Act*, and the *CEPA*. These activities should be recommended by the EISC as laid out in section 11 of the IFA, must undergo a proper and applicable environmental assessment process, and must be authorized by a competent government authority. Last, these activities cannot result in the disturbance, damage, destruction, or removal of a marine mammal from the area.

**The construction and eventual decommissioning of an oil or gas pipeline** may be permitted if they occur on, through, or under the ice cover of the area. The activities must conform to the *Navigable Waters Protection Act*, the *SARA*, the *Fisheries Act*, and the *CEPA*. These activities should be recommended by the EISC as laid out in section 11 of the IFA, must undergo a proper and applicable environmental assessment process, and must be authorized by a competent government authority. Last, these activities cannot result in the disturbance, damage, destruction, or removal of a marine mammal from the area.

15 *Navigable Waters Protection Act* (1985): <http://laws.justice.gc.ca/eng/acts/N-22/>. (Accessed December 12, 2012.)

16 *Canada Oil and Gas Geophysical Operations Regulations* (1996): <http://laws.justice.gc.ca/eng/regulations/SOR-96-117/index.html>. (Accessed December 12, 2012.)

17 *Canadian Environmental Protection Act* (1999): <http://laws-lois.justice.gc.ca/eng/acts/C15.31/>. (Accessed December 12, 2012.)



**The maintenance of an oil or gas pipeline** may be permitted if the activities conform to the *Navigable Waters Protection Act*, the *SARA*, the *Fisheries Act*, and the *CEPA*. These activities should be recommended by the EISC as laid out in section 11 of the IFA, undergo a proper and applicable environmental assessment process, and must be authorized by a competent government authority. Last, these activities cannot result in the disturbance, damage, destruction, or removal of a marine mammal from the area.

**Operation of ships, submarines, or aircraft** working in the area may be exempt if the activities are for the public's safety, law enforcement, or national security and sovereignty. Foreign military craft may be permitted if they are working with the Canadian Armed Forces. Air and watercraft working under the direction of the Canadian Coast Guard (CCG) in response to an emergency also may be permitted.

**Operation of air and watercraft** working in the area for public health and safety reasons may be exempt. This includes locally organized search and rescue (SAR) efforts.

### *6.3.3. Non-Regulatory Management Measures*

Certain activities may be conducted within the TNMPA; however, these activities are not included in the regulations. It is important that these activities are still managed appropriately. The activities that are included in this category are listed below, with the appropriate guidelines, or existing management conditions. Many of the guidelines that have been developed for the BSBMP (FJMC 2001) will also apply to the TNMPA.

**Tourism activities** would not necessarily contravene the prohibitions because it is possible to conduct these activities without disturbing organisms or habitat. However, these activities should still be managed. All tourism operators will need to be properly licenced by the GNT. Prior to commencing activities, the licenced operators should be screened in accordance with the IFA and should consult with local communities and their HTC's as to what activities would be appropriate in their area. The FJMC has developed guidelines for tourism operators to follow<sup>18</sup>, which would serve as guidelines for the TNMPA.

**Transportation activities** would not necessarily contravene the prohibitions but active mitigation is needed, such as employing observers for whales. These activities should still be managed, and guidelines contained within the BSBMP would apply. Community members and non-commercial traffic may travel through the TNMPA throughout the year. No one is allowed to approach the traditional beluga harvest, or to approach beluga unless they are directly associated with the traditional harvest. Further information regarding the traditional harvest can be gained from the FJMC<sup>19</sup>. If any watercraft is in jeopardy of disturbing beluga, it must shut down its engines and wait for the whales to move away before restarting. No one is allowed to chase beluga unless directly associated with the traditional harvest.

**Commercial vessels** should remain in community supply routes for safety reasons and to minimize the exposure of beluga to propeller noise and ship strikes. These routes are generally marked by CCG buoys and they should be followed whenever possible. Any activities that support an SDL in the SMZ will be subject to specific regulatory conditions. A Notice to Mariners regarding the TNMPA has been issued and can be found at <http://www.notmar.gc.ca>.

18 Tourism guidelines are found within the BSBMP: <http://www.fjmc.ca/>.

19 The FJMC can be contacted at: [fjmc-rp@jointsec.nt.ca](mailto:fjmc-rp@jointsec.nt.ca).



**Aircraft** should avoid flying over the TNMPA while beluga are present in the area. Otherwise, the guidance provided by the BSBMP is that the aircraft should maintain an altitude of 762 m (2500 ft) above ground over any areas designated as Zone 1 (which includes the TNMPA) in the Beaufort Sea, except during take-off, landing, or during an emergency.

**Ice road construction, use, and maintenance** may be considered within the TNMPA subject to a recommendation from the EISC and possibly an environmental assessment by a competent government authority.

**Education and outreach** should be an important part of the management of the TNMPA. Information regarding the TNMPA, including the regulations, the management plan, and the conservation objective will be disseminated to the public to encourage voluntary compliance through a communication plan. The plan will inform the public through a variety of means including community meetings and seasonal notices. Tourism and other businesses can receive a notice prior to the traditional beluga harvest reminding them of the management measures. Information can be brought to public forums such as the Inuvik Petroleum Show to educate potential proponents and partners about the TNMPA. Involvement of the communities in the planning and designation of the TNMPA can lead to their further participation in education within the communities and across the generations. The TNMPA protects not only the beluga but also their traditional harvest, so there is an opportunity to combine the two and educate youth about not only their culture but also the species on which the culture depends and the efforts being made to conserve both.

There are a few different management approaches in the areas surrounding the TNMPA because of the presence of Ivvavik National Park, KIBS, and Herschel Island Yukon Territorial Park. These areas each have their own management goals and regimes that must be considered when planning an activity in the area.

#### *6.3.4. Other Responsible Authorities Relevant to Management of the TNMPA*

Currently, the only individuals responsible for the enforcement of the *TNMPA Regulations* (2010) are enforcement officers designated under the Oceans Act. Only DFO Conservation and Protection (C&P) officers hold this designation. The Royal Canadian Mounted Police, by virtue of the *Royal Canadian Mounted Police Act* (1985)<sup>20</sup>, can assume these rights if necessary for enforcement purposes. Authorities empowered by other pieces of legislation may enforce pieces of legislation inside the TNMPA, e.g., EC pursuing an investigation regarding spilled hydrocarbons under the Fisheries Act.

There are several government departments and agencies with regulatory responsibilities for offshore oil and gas development (Appendix E), including the NEB, DFO, AANDC, TC, and EC. TC indirectly has regulatory abilities through the shipping requirements and EC is able to issue permits for offshore dumping. Natural Resources Canada and the Geological Survey of Canada do not have regulatory responsibilities in the Beaufort Sea, nor do they participate in the CEAA screening done by the Responsible Authority (generally NEB or DFO). However, they are dedicated to assisting environmentally responsible sustainable development. See Erlandson and Sloan (2002) for a comprehensive overview of the regulatory approval process for oil and gas exploration and production in the Beaufort Sea/Mackenzie delta, including pertinent acts and legislation.

20 *Royal Canadian Mounted Police Act* (1985): <http://laws.justice.gc.ca/eng/acts/R-10/>. (Accessed December 12, 2012.)



## 6.4. Monitoring and Reporting

Monitoring and reporting are critical components of any management plan. They provide managers and stakeholders with regular feedback on the achievement of conservation objectives, and enable managers to take appropriate corrective action to achieve desired results. Monitoring is the systematic collection of information on a regular and extended period of time to determine the degree of achievement of some goal or standard (Kenchington 2010). The TNMPA management plan provides a framework to allow the identification of “indicators” (measured or observed variables used to represent the whole), “protocols” (methods used and frequency of collection of information), and some desired “threshold” (an upper or lower limit that triggers a management action) (Appendix F). This framework will be the basis of the monitoring plan, which has been developed as a supporting document (DFO and FJMC 2013). The monitoring plan also describes the roles and responsibilities for its implementation (e.g., administration, partners, etc.).

Three types of indicators are appropriate to the TNMPA monitoring plan:

- **Governance indicators** measure the performance of the management plan (e.g., status of the planning and implementation process, meeting of action items, reporting to Canadians).
- **Ecological indicators** reflect trends in the state of the environment (both internal and external to the TNMPA area). They are prescriptive if they describe the state of the environment in relation to some stressor (e.g., climate change). They become performance indicators if they compare actual conditions within the TNMPA with target ecological conditions, and can be affected by direct management actions (e.g., noise levels resulting from anthropogenic activities).
- **Socio-economic indicators** reflect the state of the human component of the TNMPA (e.g., economic activity). They help to measure the extent to which a management plan is successful in managing human pressures in a way that meets the conservation objectives but sustains quality of life for those associated with the TNMPA, while ensuring sustainable socio-economic benefits.

Different approaches to communicate the findings will be used. For example, managers need information that concisely synthesizes complex scientific data, and ultimately enables them to make informed and scientifically defensible management decisions. A frequently applied communication tool to simplify scientific information is commonly referred to as the “traffic light” approach (DFO and FJMC 2013). There will be an annual activities report produced by the FJMC and DFO that will describe the monitoring and research activities in the TNMPA. This report can be distributed to co-management partners during community tours, and to a wider range of stakeholders to maintain open communication about the TNMPA. Every three years, a State of the TNMPA Report will be produced, showing status and trends of selected indicators. A broader Canadian and International audience will be reached through Health of the Oceans reporting, Ecosystem Status and Trends reporting, and scientific publications. The TNMPA monitoring plan will be reviewed every six years and changed if required.



## 6.5. Surveillance, Enforcement, and Compliance

DFO has overall responsibility for ensuring compliance and enforcement of the *TNMPA Regulations* (2010) through its legislated mandate under the *Oceans Act*. All enforcement actions, such as investigations, laying of charges, and/or the issuing of fines, will be done by DFO through its C&P sector.

Surveillance will be done through a variety of means, including patrols of the areas by DFO C&P staff, TC pollution prevention flights, and Canadian Forces security flights, contingent on available resources. There may also be future opportunities to collaborate with other regulators and stakeholders to obtain surveillance data. The CCG will contribute to the protection of the TNMPA through its activities that aid in navigation, marine communications, and traffic services as well as its responsibility for marine pollution response.

## 6.6. Management Plan Evaluation Cycles and Performance Review

This management plan and supporting monitoring plan document are living documents and will be reviewed every six years by the TNMPA steering committee and as requested by scientific experts. There will be a formal review process developed to ensure input from all ISR communities and other stakeholders.

Performance indicators will be developed in anticipation of the six-year review, and will allow the evaluation of the extent to which each of the priority actions has been achieved. The TNMPA's objective is to maintain a healthy stock of beluga and their environment, so the performance indicators will include this objective. The performance of this management plan can also be measured by assessing public awareness and education about the TNMPA.

Monitoring of the TNMPA plays an important role in performance review and management plan evaluation. TNMPA ecosystem health will be mainly measured through selected TNMPA ecological indicators. Monitoring will be done by scientists and community members as described in the monitoring plan (DFO and FJMC 2013). Monitoring data and information will be analyzed to determine the performance of the TNMPA, i.e., are we making good progress toward the TNMPA conservation objective? The monitoring data may point to the need for adaptive management, which should be considered when the TNMPA management plan is up for review.

The TNMPA is one management tool within Integrated Oceans Management (IOM), and as such will benefit from strong relationships among our partners. These relationships, and the TNMPA, will also benefit IOM in the broader sense.



Photo credit: Emily Choy



## 7. Beyond the TNMPA Management Plan—Forward Thinking



Photo credit: Blythe Browne

Completion of the TNMPA management and monitoring plans does not signify the end of the process; rather, these plans provide guidance for the work ahead. There will be challenges ahead moving from the planning stage to implementation. For example, operational logistics of coordinating field monitoring programs will have to be worked out annually. Continued development and testing of indicators will require cooperation between experts in ecological science, social science, economics, and management. Data management and sample archival protocols will have to be formalized to ensure that long-term data and meta-data are maintained and that tissue samples collected from various focal species to determine their health are available for follow-on analysis as new analytical methods are developed.

This time is exciting for the Inuvialuit, FJMC, and DFO. It should be rewarding to go from community-based monitoring to analysis, to reporting, and to adaptive management, with the common goal of ensuring that the conservation objective for the TNMPA is maintained and that the spirit of the BSBMP continues to guide the TNMPA.



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## Appendix A: List of Acronyms used in the TNMPA Management Plan

AANDC	Aboriginal Affairs and Northern Development Canada (formerly INAC)
AMAP	Arctic Monitoring and Assessment Programme
BSBMP	Beaufort Sea Beluga Management Plan
BSIMPI	Beaufort Sea Integrated Management Planning Initiative
BSIMPI SMC	Beaufort Sea Integrated Management Planning Initiative Senior Management Committee
C&P	Conservation and Protection (officers of DFO)
CAPP	Canadian Association of Petroleum Producers
CCG	Canadian Coast Guard
CCP	Community Conservation Plan
CEAA	Canadian Environmental Assessment Act
CEPA	Canadian Environmental Protection Act
COS	Canada's Ocean Strategy
DFO	Fisheries and Oceans Canada
EC	Environment Canada
EIRB	Environmental Impact Review Board
EISC	Environmental Impact Steering Committee
EL	Exploration Licence
FJMC	Fisheries Joint Management Committee
GNT	Government of the Northwest Territories
HTC	Hunter and Trapper Committee
IFA	Inuvialuit Final Agreement
IGC	Inuvialuit Game Council
INAC	Indian and Northern Affairs Canada (now AANDC)
IOM	Integrated Oceans Management
IOMP	Integrated Oceans Management Plan
IRC	Inuvialuit Regional Corporation
ISR	Inuvialuit Settlement Region
KIBS	Kendall Island Bird Sanctuary
LOA	Letter of Agreement
LOMA	Large Ocean Management Area
MPA	Marine Protected Area
NEB	National Energy Board
PPZ	Primary Protection Zone
SAR	Search and Rescue (CCG)
SARA	Species at Risk Act
SDL	Significant Discovery Licence
SMZ	Special Management Zone
TC	Transport Canada
TNMPA	Tarium Niryutait Marine Protected Area



## Appendix B: TNMPA Regulations

Tarium Niryutait Marine Protected Areas Regulations  
SOR/2010-190

### OCEANS ACT

Registration 2010-08-25

Tarium Niryutait Marine Protected Areas Regulations  
P.C. 2010-1081 2010-08-25

Her Excellency the Governor General in Council, on the recommendation of the Minister of Fisheries and Oceans, pursuant to subsection 35(3) of the *Oceans Act*, hereby makes the annexed *Tarium Niryutait Marine Protected Areas Regulations*.  
aS.C. 1996, c. 31

### INTERPRETATION

1. The following definitions apply in these Regulations.

“Agreement” means the Inuvialuit Final Agreement as approved, given effect and declared valid by the *Western Arctic (Inuvialuit) Claims Settlement Act*. (Convention)

“Areas” means the Tarium Niryutait Marine Protected Areas. (zones) “waters” includes the seabed and subsoil below the waters to a depth of five metres. (eaux)

### DESIGNATIONS

2. The Areas consist of

(a) the Niaqunnaq Marine Protected Area designated under section 3;

(b) the Okeevik Marine Protected Area designated under section 4; and

(c) the Kittigaryuit Marine Protected Area designated under section 5.

#### Niaqunnaq Marine Protected Area

3. The area of the sea in Mackenzie Bay consisting of the waters within the boundaries described in plan number FB36305, certified on February 19, 2009 and depicted in plan number CLSR 91991, Sheet 2, which plans are deposited in the Canada Lands Survey Records, is designated as the Niaqunnaq Marine Protected Area.

#### Okeevik Marine Protected Area

4. (1) The area of the sea in the Mackenzie River Estuary consisting of the waters within the boundaries described in plan number FB36305, certified on February 19, 2009 and depicted in plan number CLSR 91991, Sheet 3, which plans are deposited in the Canada Lands Surveys Records, is designated as the Okeevik Marine Protected Area.

(2) The Okeevik Marine Protected Area is comprised of Special Management Zones 1 and 2 and the Primary Protection Zone as described in plan number FB36305, certified on February 19, 2009 and depicted in plan number CLSR 91991, Sheet 3, which plans are deposited in the Canada Lands Surveys Records.

#### Kittigaryuit Marine Protected Area

5. The area of the sea in the Mackenzie River Estuary consisting of the waters within the boundaries described in plan number FB36305, certified on February 19, 2009 and depicted in plan number CLSR 91991, Sheet 4, which plans are deposited in the Canada Lands Surveys Records, is designated as the Kittigaryuit Marine Protected Area.

### PROHIBITED ACTIVITIES

6. No person shall

(a) disturb, damage or destroy in the Areas, or remove from them, any living marine



organism or any part of its habitat; or

(b) carry out any activity in the Areas — including depositing, discharging or dumping any substance, or causing any substance to be deposited, discharged or dumped — that is likely to result in the disturbance, damage, destruction or removal of a living marine organism or any part of its habitat.

#### EXCEPTIONS

7. The following activities may be carried out in the Areas:

(a) fishing in accordance with the Agreement;

(b) dredging

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority,

(ii) that is carried out in accordance with the *Navigable Waters Protection Act* and the *Fisheries Act* and their regulations, and

(iii) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(c) fishing in accordance with the *Fisheries Act* and its regulations;

(d) a scientific activity that is carried out in accordance with the *Fisheries Act* and its regulations or

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority, and

(ii) that is carried out for the purpose of managing the Areas or for monitoring the effectiveness of conservation measures implemented in the Areas;

(e) a geophysical operation, as defined in section 2 of the *Canada Oil and Gas Geophysical Operations Regulations*,

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority, (ii) that is carried out on, through or under the ice cover of the Areas,

(iii) that is carried out in accordance with the *Navigable Waters Protection Act*, *Species at Risk Act*, *Fisheries Act* and *Canadian Environmental Protection Act, 1999* and their regulations, and

(iv) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(f) exploratory drilling for oil or gas in the Special Management Zones of the Okeevik Marine Protected Area

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority,

(ii) that is carried out on, through or under the ice cover of the Areas,

(iii) that is carried out in accordance with the *Navigable Waters Protection Act*, *Species at Risk Act*, *Fisheries Act* and *Canadian Environmental Protection Act, 1999* and their regulations, and

(iv) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(g) oil or gas production in the Special Management Zones of the Okeevik Marine Protected Area,

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority,

(ii) that is carried out in accordance with the *Navigable Waters Protection Act*, *Species*



*at Risk Act, Fisheries Act* and *Canadian Environmental Protection Act, 1999* and their regulations, and

(iii) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(h) the construction or decommissioning of an oil or gas pipeline

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority,

(ii) that is carried out on, through or under the ice cover of the Areas,

(iii) that is carried out in accordance with the *Navigable Waters Protection Act, Species at Risk Act, Fisheries Act* and *Canadian Environmental Protection Act, 1999* and their regulations, and

(iv) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(i) the maintenance of an oil or gas pipeline,

(i) that has been recommended in accordance with the Agreement and authorized by a competent government authority,

(ii) that is carried out in accordance with the *Navigable Waters Protection Act, Species at Risk Act, Fisheries Act* and *Canadian Environmental Protection Act, 1999* and their regulations, and

(iii) that does not result in and is not likely to result in the disturbance, damage, destruction or removal of a marine mammal;

(j) any movement or other activity of a ship, submarine or aircraft if the movement or other activity is carried out for the purpose of

(i) public safety, law enforcement or national security or for the exercise of Canadian sovereignty and the ship, submarine or aircraft is owned or operated by or on behalf of Her Majesty in right of Canada or by a foreign military force acting in cooperation with, or under the command or control of, the Canadian Forces, or

(ii) an emergency response under the direction, command or control of the Canadian Coast Guard; and

(k) any activity carried out for the purpose of public health and safety.

#### REPORTING OF ACCIDENTS

**8.** Every person who is involved in an accident that is likely to result in any disturbance, damage, destruction or removal prohibited under section 6 shall, within two hours after its occurrence, report the accident to the Canadian Coast Guard.

#### COMING INTO FORCE

**9.** These Regulations come into force on the day on which they are registered.



## Appendix C: Coordinates and Maps of TNMPA Areas. Values given are degrees, minutes, and seconds

### Kittigaruit sub area

Point #	Latitude North	Longitude West
1	69 35 10	133 48 36
2	60 34 00	133 28 00
3	69 23 37	133 26 40
4	69 20 34	133 40 37
5	69 19 05	133 42 21
6	69 19 01	133 42 31
7	69 20 39	133 43 20
8	69 16 42	133 54 54
9	69 15 20	134 06 53
10	69 16 33	134 05 56
11	69 20 42	134 02 44
12	69 24 00	133 59 10
13	69 24 34	133 53 49
14	69 28 21	133 48 15
15	69 28 02	133 50 59
16	69 33 20	133 47 29
17	69 34 33	133 47 42
18	69 32 55	133 51 09
19	69 32 56	133 51 54
20	69 33 46	133 55 48
21	69 33 46	133 55 31

### Niaqunnaq sub area

Point #	Latitude North	Longitude West
1	69 08 00	136 16 44
2	69 04 25	136 07 45
3	69 03 43	136 07 08
4	69 01 19	136 04 45
5	69 01 14	136 04 45
6	69 00 57	136 05 42
7	69 00 12	136 07 08
8	68 57 00	136 10 00
9	68 55 00	136 15 00
10	68 54 22	136 31 50
11	68 55 00	136 38 33
12	68 56 15	137 00 41
13	68 56 29	137 03 03
14	68 55 48	137 11 00
15	68 57 50	137 21 30
16	68 59 20	137 21 30
17	69 03 09	137 44 54

### Okeevik sub area

Point #	Latitude North	Longitude West
1	69 38 19	135 25 09
2	69 38 03	135 25 11
3	69 37 46	135 24 52
4	69 29 49	135 12 49
5	69 30 45	135 16 56
6	69 29 26	135 18 53
7	69 29 23	135 19 06
8	69 28 07	135 20 25
9	69 27 36	135 24 25
10	69 25 51	135 32 27
11	69 26 32	135 34 54
12	69 28 21	135 35 24
13	68 28 35	135 36 40
14	69 28 39	135 37 58
15	69 30 34	135 45 54
16	69 35 15	135 35 42
17	69 36 00	135 22 10
18	69 34 40	135 20 09
19	69 34 00	135 20 09
20	69 34 00	135 27 39
21	69 36 00	135 27 39
22	69 27 00	135 31 11
23	69 27 00	135 34 45

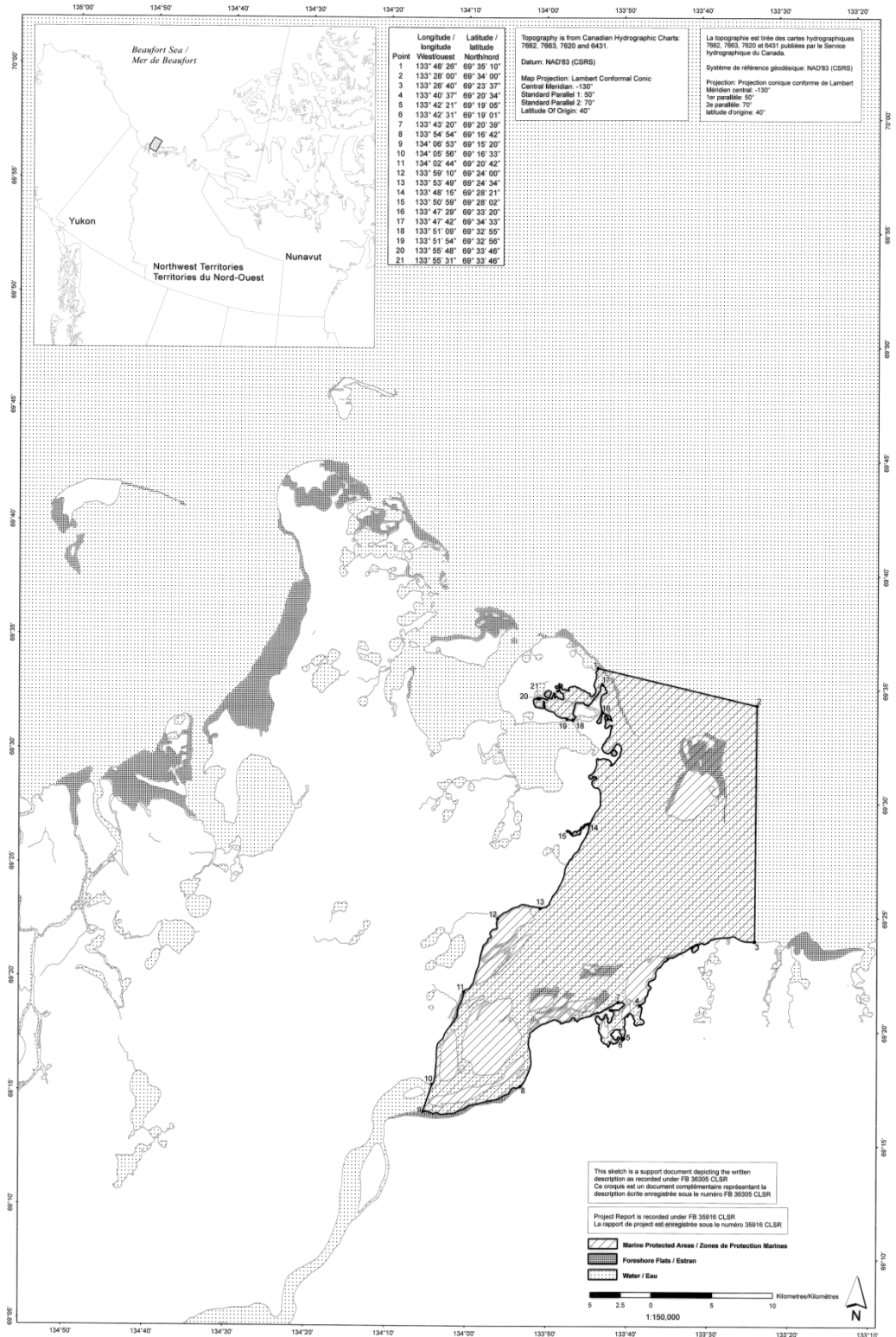


# SKETCH OF KITTIGARYUIT MARINE PROTECTED AREA CROQUIS DE ZONE DE PROTECTION MARINE DU KITTIGARYUIT

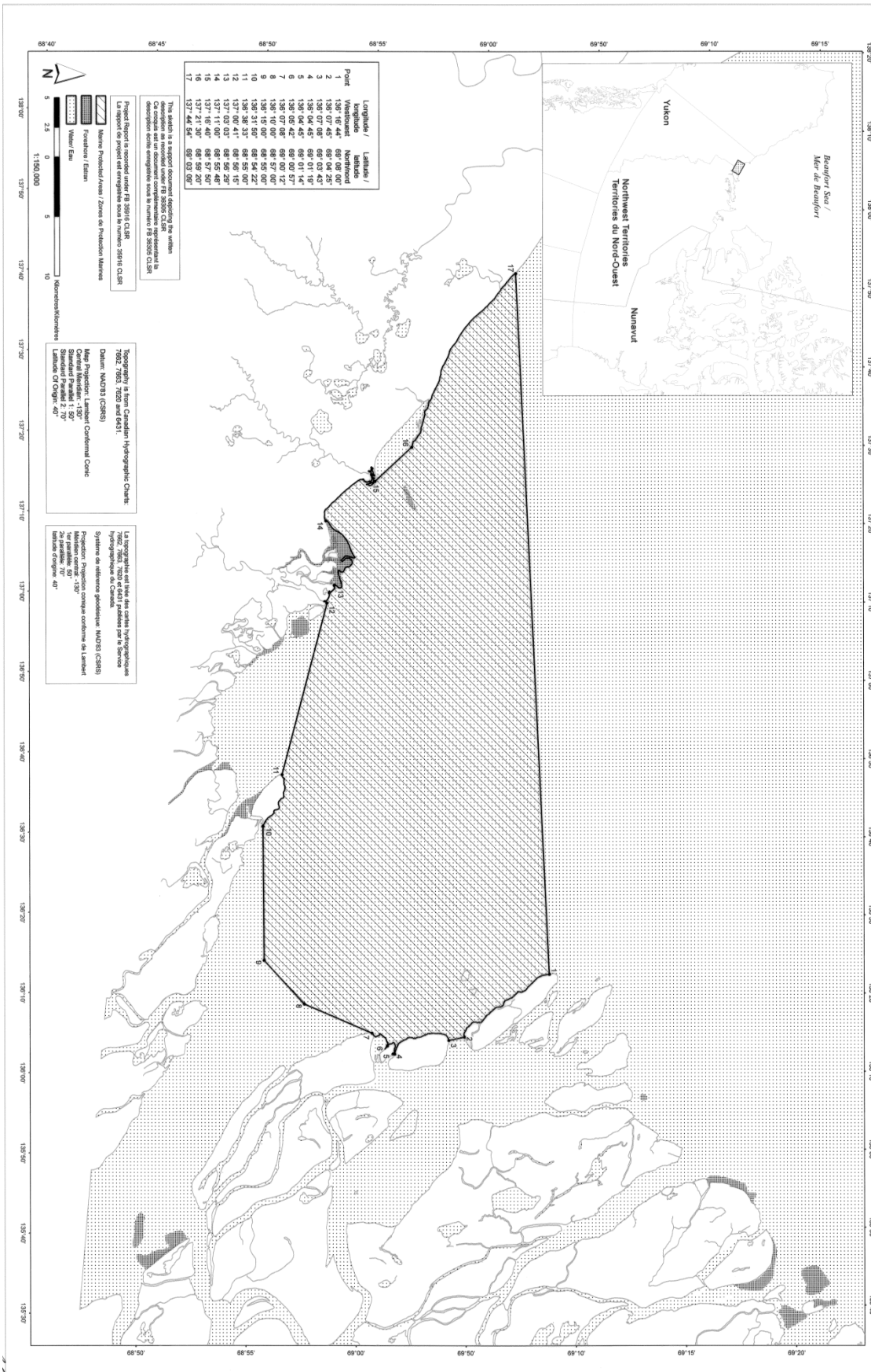
CANADA LANDS SURVEYS RECORDS  
ARCHIVES D'ARPENTAGE DES TERRES DU

91991

Date: Feb. 20<sup>th</sup> 2009





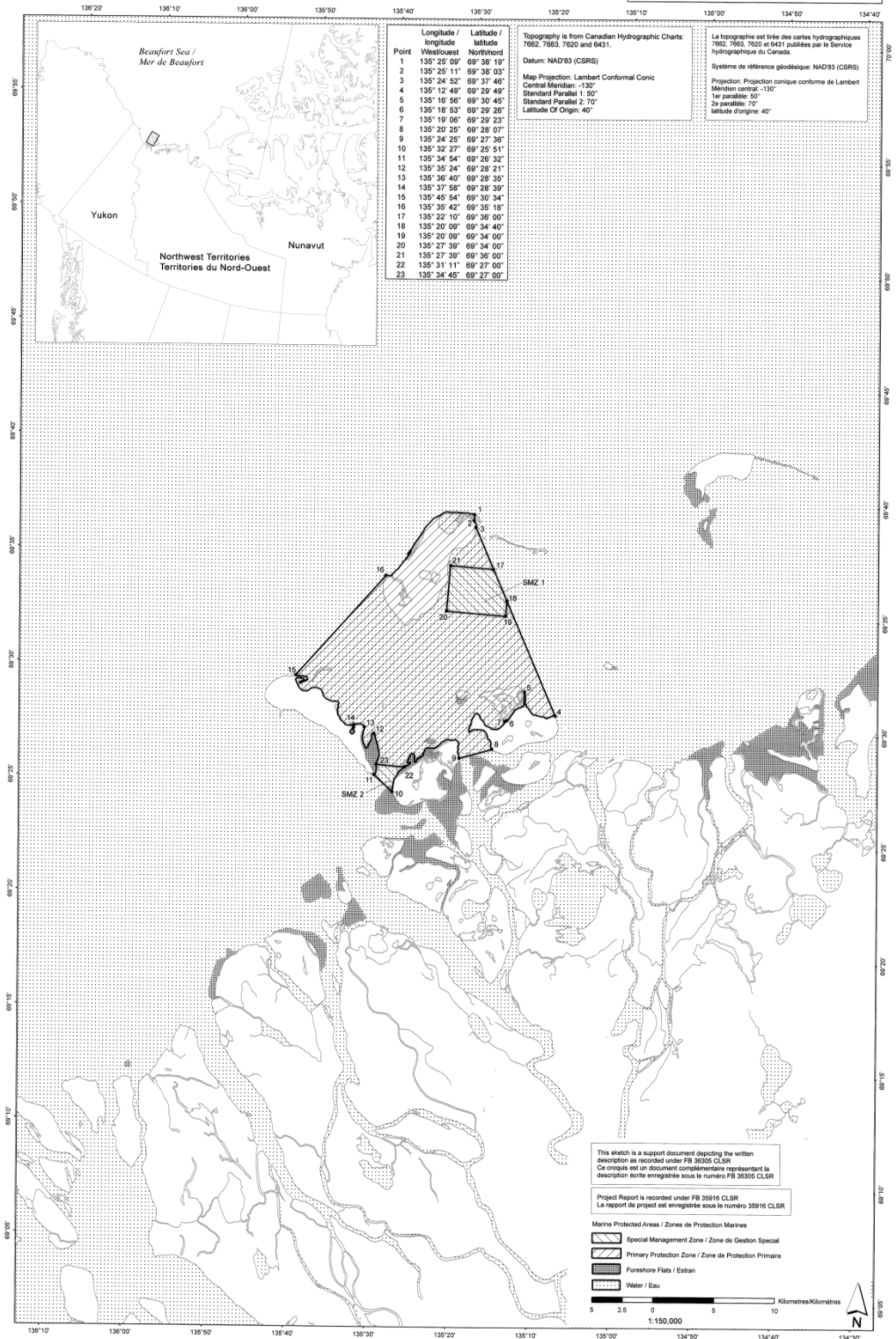


# SKETCH OF OKEEVIK MARINE PROTECTED AREA CROQUIS DE ZONE DE PROTECTION MARINE DE OKEEVIK

CANADA LANDS SURVEYS RECORDS  
ARCHIVES D'ARPENTAGE DES TERRES DU CANADA

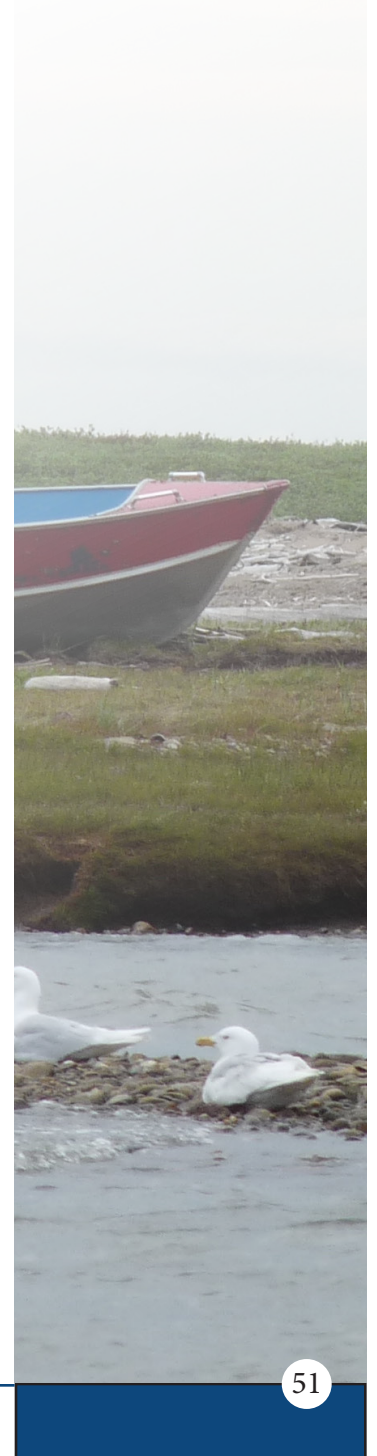
9 1991

Date: Feb 20<sup>th</sup> 2009



## Appendix D: Organizations Consulted During the TNMPA Designation Process.

1. Aklavik Community Corporation
2. Hamlet of Aklavik
3. Aklavik Hunter and Trapper Committee
4. Aklavik Elders Committee
5. Aklavik Youth Committee
6. Aklavik Public
7. Environmental Impact Screening Committee
8. Fisheries Joint Management Committee
9. Ulukhaktok Community Corporation
10. Hamlet of Ulukhaktok
11. Olokhaktomiuk Hunter and Trapper Committee
12. Ulukhaktok Elders Committee
13. Ulukhaktok Youth Committee
14. Ulukhaktok Public
15. Inuvialuit Game Council
16. Inuvialuit Joint Secretariat
17. Inuvialuit Regional Corporation
18. Inuvik Community Corporation
19. Inuvik Youth Committee
20. Town of Inuvik
21. Inuvik Hunter and Trapper Committee
22. Inuvik Elders Committee
23. Inuvik Public
24. Paulatuk Community Corporation
25. Paulatuk Elders Committee
26. Paulatuk Youth Committee
27. Hamlet of Paulatuk
28. Paulatuk Hunter and Trapper Committee
29. Paulatuk Public
30. Sachs Harbour Community Corporation
31. Sachs Harbour Elders Committee
32. Sachs Harbour Hunter and Trapper Committee
33. Sachs Harbour Youth Committee
34. Sachs Harbour Public
35. Tuktoyaktuk Community Corporation
36. Tuktoyaktuk Elders Committee
37. Tuktoyaktuk Hunter and Trapper Committee
38. Tuktoyaktuk Youth Committee
39. Tuktoyaktuk Public
40. Hamlet of Tuktoyaktuk
41. Wildlife Management Advisory Committee – Northwest Territories
42. Wildlife Management Advisory Committee – North Slope
43. Ehditat Renewable Resource Council
44. Canadian Environmental Assessment Agency
45. Canadian Wildlife Service
46. Department of National Defence
47. Environment Canada
48. Indian and Northern Affairs Canada



49. National Energy Board
50. Natural Resources Canada
51. Parks Canada
52. Transport Canada
53. Northwest Territories Resources Wildlife and Economic Development (now Environment, Natural Resources, and Industry Tourism and Investment)
54. Northwest Territories Federal Council
55. Yukon Department of the Environment
56. Yukon Department of Energy Mines and Resources
57. Anadarko
58. British Petroleum
59. Canadian Association of Petroleum Producers
60. Carbon Energy
61. Chevron
62. ConocoPhillips
63. Devon
64. EnCana
65. Imperial
66. Mackenzie Gas Group
67. Mackenzie Valley Pipeline Producers Group
68. NYTIS Exploration Company
69. Petro Canada
70. Shell
71. Suncor
72. Ookpik Tours
73. Arctic Nature Tours
74. E Grubens Transport
75. Northern Transportation Company Limited
76. Northern Canadian Marine Advisory Council
77. Inuvialuit Environmental and Geotechnical Consulting
78. Arctic Borderlands
79. World Wildlife Fund
80. Canadian Parks and Wilderness Society
81. Canadian Arctic Resources Committee



## Appendix E: Regulatory Rules and Responsibilities in the Management of the TNMPA.

Agency	Agency Mandate	Roles and Responsibilities in the TNMPA
Aboriginal Affairs Northern Development Canada (AANDC), formerly Indian and Northern Affairs Canada (INAC)		<ul style="list-style-type: none"> <li>• Coordination of federal government research and regional assessments in support of oil and gas development.</li> </ul>
Canadian Coast Guard (CCG)	<ul style="list-style-type: none"> <li>• Responsible for maintenance of navigational aids, waterways, management, ice breaking, marine communications and traffic services, search and rescue and environmental response.</li> <li>• Conducts search and rescue (SAR) and provides platforms for arctic scientific research.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintenance of navigational aids to mark the normal shipping route.</li> <li>• SAR.</li> <li>• Environmental response.</li> <li>• Marine communication through the TNMPA.</li> </ul>
Canadian Environmental Assessment Agency (CEAA)	<ul style="list-style-type: none"> <li>• Administers and promotes compliance with the federal environmental assessment process, assists in the process and promotes sound environmental practices.</li> </ul>	<ul style="list-style-type: none"> <li>• Administers and promotes compliance with the federal environmental assessment process, coordinates joint reviews with the EIRB should development of one of the two SDLs occur.</li> </ul>
Department of National Defense (DND)	<ul style="list-style-type: none"> <li>• Responsible for national defence and security.</li> <li>• Conducts SAR.</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible for national defence and security.</li> <li>• Conducts SAR.</li> </ul>
Environment Canada (EC)	<ul style="list-style-type: none"> <li>• Responsible for regulating pollution discharged into the marine environment (Section 36 <i>Fisheries Act</i>) and for managing disposal of waste at sea (<i>Canadian Environmental Protection Act</i>).</li> <li>• Manages Environmental Emergencies.</li> <li>• Monitors and protects migratory birds (<i>Migratory Birds Convention Act</i>).</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible for regulating pollution discharged into the marine environment and for managing disposal of waste at sea.</li> <li>• Manages Environmental Emergencies.</li> <li>• Monitors and protects migratory birds.</li> <li>• Manages the KIBS.</li> </ul>





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<p>Fisheries and Oceans Canada (DFO)</p>	<ul style="list-style-type: none"> <li>• Lead authority for managing Canada’s oceans (<i>Oceans Act</i>).</li> <li>• Development of system of Marine Protected Areas (<i>Oceans Act</i>).</li> <li>• Development and implementation of integrated management plans (<i>Oceans Act</i>).</li> <li>• Undertakes marine research (<i>Fisheries Act</i>).</li> <li>• Regulates fisheries (<i>Fisheries Act</i>).</li> <li>• Protects fish habitat (<i>Fisheries Act</i>).</li> <li>• Protects critical habitat and develops recovery plans for aquatic species at risk (<i>Species at Risk Act</i>).</li> <li>• Produces navigation charts (Canadian Hydrographic Services).</li> </ul>	<ul style="list-style-type: none"> <li>• Lead federal department in management of the TNMPA.</li> <li>• Enforces the <u>Oceans Act</u> and <i>Fisheries Act</i>.</li> <li>• Provide information about the TNMPA to industry, stakeholders, and the public.</li> <li>• Undertakes monitoring and research within the TNMPA.</li> <li>• Responsible for the authorization of a harmful alteration, disruption and destruction of fish habitat pursuant to Subsection 35(2) of the <i>Fisheries Act</i>.</li> <li>• Produces navigation charts of the lower Mackenzie River and Mackenzie River Estuary.</li> </ul>
<p>National Energy Board (NEB)</p>	<ul style="list-style-type: none"> <li>• The National Energy Board’s (NEB) mandate is to promote safety, environmental protection and economic efficiency in the Canadian public interest while respecting individuals’ rights within the regulation of pipelines, energy development and trade.</li> <li>• The NEB grants permits for many of the activities involved in oil and gas exploration and development, including the drilling of wells and seismic activities.</li> </ul>	<ul style="list-style-type: none"> <li>• The NEB grants permits for many of the activities involved in oil and gas exploration and development, including the drilling of wells and seismic activities.</li> </ul>

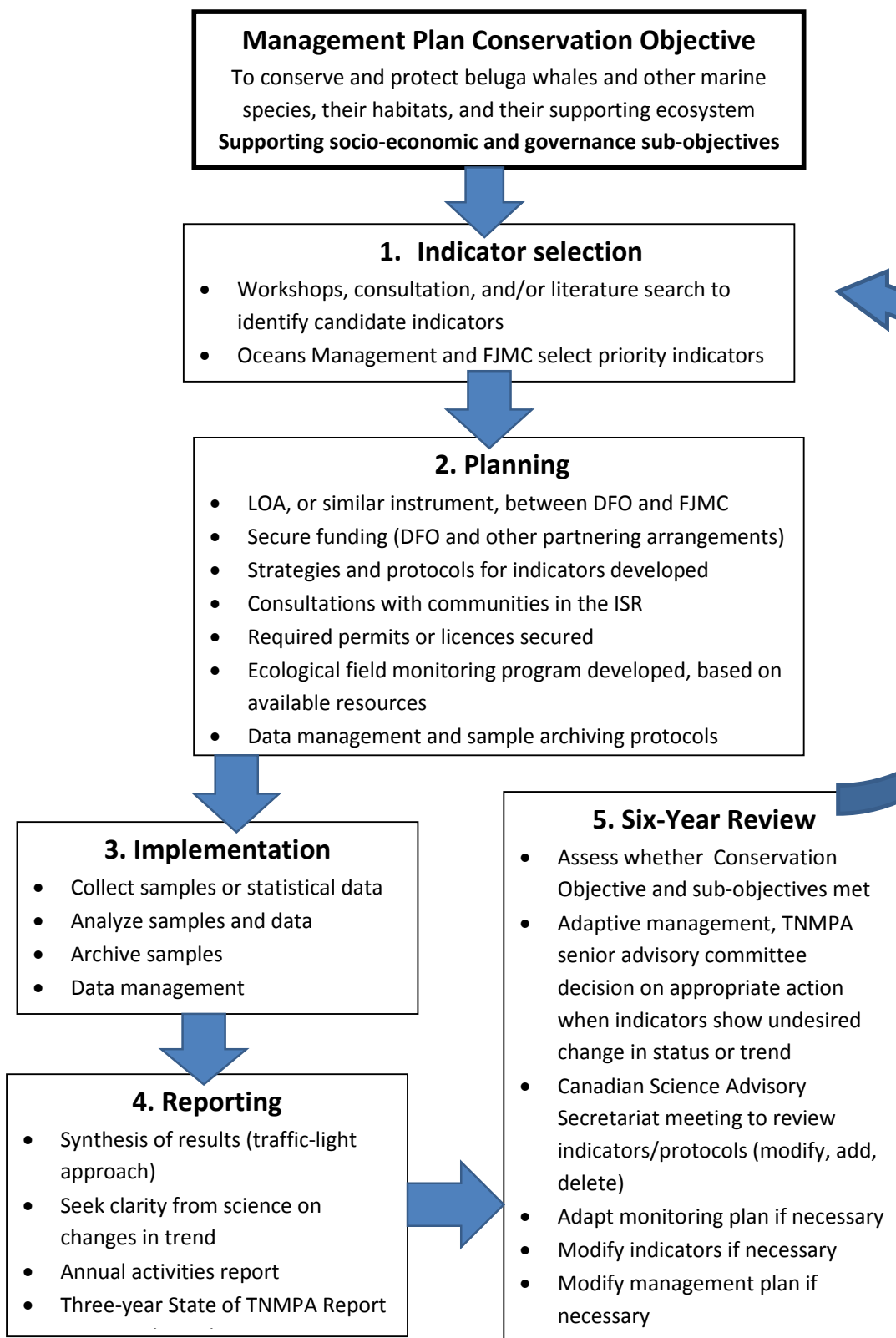




<p>Transport Canada</p>	<ul style="list-style-type: none"> <li>• Responsible for ship safety, ship source pollutions prevention and surveillance for all commercial vessels (<i>Canada Shipping Act</i>)<sup>21</sup>.</li> <li>• Regulates ballast and bilge discharges.</li> </ul>	<ul style="list-style-type: none"> <li>• Responsible for ship safety, ship source pollutions prevention and surveillance for all commercial vessels (<i>Canada Shipping Act</i>).</li> <li>• Regulates ballast and bilge discharges.</li> </ul>
<p>Environmental Impact Screening Committee (EISC) and Environmental Impact Review Board (EIRB)</p>	<ul style="list-style-type: none"> <li>• Any activity identified as a development according to the <i>IFA</i> (1984) is subject to review by the EISC.</li> <li>• If the EISC finds that the activity in question could lead to “significant negative environmental impacts” they will forward all information related to this activity to the EIRB for a more comprehensive environmental assessment.</li> </ul>	<ul style="list-style-type: none"> <li>• All development activities within the TNMPA will be screened by the EISC.</li> </ul>

21 *Canada Shipping Act* (2001): <http://www.tc.gc.ca/eng/acts-regulations/acts-2001c26.htm>. (Accessed December 12, 2012.)









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