

Cold Ocean & Arctic Innovation for a Prosperous Canada

Memorial University of Newfoundland Submission to the
House of Commons Standing Committee on Finance

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INTRODUCTION

Looking to the sea and to the north

The Arctic and its ocean continue to grow in national significance as much of our future prosperity lies in the Northern reaches of land and sea. These regions are also the sites of major social, cultural, economic, and environmental changes and challenges. Benefiting from these opportunities will take a great deal of resourcefulness, ingenuity, innovation, resilience, hard work, and a community-based approach.

Newfoundland and Labrador is located on both the Arctic and North Atlantic and on the leading edge of northern research and development. The province has become a world leader in the innovative and sustainable development of cold ocean and Arctic resources and is committed to addressing challenges faced within these communities.

Memorial University is making cold ocean and Arctic research, innovation, and teaching a university-wide priority.

There is an unprecedented need for Memorial's expertise, experience, and capacity with research, teaching and learning in all disciplines related to these regions. We must ensure that opportunities and challenges are met in the most responsible and sustainable ways possible. Strategic, university-wide growth initiatives like Cold Ocean and Arctic Science, Technology, and Society (COASTS), Sustainable Northern Coastal Communities, and MUNnovation are examples of how Memorial is building upon existing strength in key areas to drive innovation and prosperity right across the country.

Two specific units that best exemplify these existing strengths are the Fisheries and Marine Institute and its Holyrood Marine Base as well as C-CORE and its Cold Ocean Oil Spill Centre of Excellence. These projects will both add considerable capacity to Memorial, our province and Canada as a whole. It will position us as a global leader in ocean innovation and clean technology, and bring tremendous benefits to our local and national economies.

Recommendation to Government

Memorial University recommends the Federal government make a strategic investment in the economic and environmental well-being of Canada through supporting the establishment of the Fisheries and Marine Institute Holyrood Marine Base Phase IIB (\$25 million) and the C-CORE Cold Ocean Oil Spill Response Centre of Excellence (\$35 million).

HOLYROOD MARINE BASE PHASE IIB

Project Background

THE FISHERIES AND MARINE INSTITUTE

As part of Memorial University, the mission of the Fisheries and Marine Institute (MI) is to foster economic development in strategic sectors of the Newfoundland and Labrador economy, particularly the fisheries and offshore, and to enable Newfoundlanders and Labradorians to participate in the marine industry nationally and internationally.

The Institute's success in pursuing its mission is dependent on having the capability to access the ocean for research, training and academic programs. Access to the ocean requires infrastructure, as well as marine research and support platforms that can be deployed for marine programs and services. MI is experiencing significant existing and growing demand for specialty marine services and vessel time.

TOWN OF HOLYROOD

The Town of Holyrood is a thriving, rural community located along the coast of Conception Bay about 50 kilometres from St. John's. The community is strategically pursuing its Oceans Holyrood Initiative (OHI), a long-term plan to position Holyrood as a center for oceans-related commerce, applied research, training and education.

HOLYROOD MARINE BASE - PHASE I

In 2008, the Marine Institute recognized that to pursue opportunities in the oceans sector, it would be necessary to develop its at-sea capability. With support from the federal (ACOA, DFO) and provincial governments, as well as Irving Oil, the Institute was able to develop and officially open Phase I of the Holyrood Marine Base (HMB) in 2010. The Town of Holyrood has been a strong supporter and partner in the development of the Marine Base since the initial phases of development.

Project Description: Overview of Phases IIA and IIB

Since the launch Phase I development, demands on this facility have increased significantly, including enhanced support for at-sea components, ROV training, and safety and survival training. To meet this need, the current development of a breakwater and marginal wharf must be combined with the construction of a new building. This will provide a strategic ocean front location that will be instrumental in further enhancing the Marine Institute's and Memorial University's contributions to oceans related research, education and training programs. Construction of Phase IIA (breakwater and marginal wharf) began in early 2016 and is expected to conclude within the year. Phase IIB (new building) construction is the next critical stage but financial support is required.

The Marine Institute engaged an architectural firm to develop a preliminary design and the initial renderings that included a large, high bay workshop with 16 ft. overhead doors and wharf access suitable for repair and maintenance of large platforms and equipment. They also included additional shops for electrical and mechanical activity and classroom/office space to accommodate education and training activities.

Benefits of Project

ECONOMIC IMPACTS

Once developed, the Holyrood Marine Base will generate significant economic benefits for the local region of Conception Bay and the province. Contracts with private companies and funds from research grants both have

the potential to create similar impacts. Finally, technological innovations and research projects facilitated by the HMB will contribute economically by forming the basis for new businesses and job creation.

REGIONAL DEVELOPMENT

Already possessing one of the largest ocean technology clusters in Canada, the revenue and investment associated with this sector in Newfoundland and Labrador has grown at a steady rate. The continued cultivation of the cluster within the province will create jobs, grow exports and foster innovation. It will also create an influx of highly qualified people and the associated demand for services and amenities. For Holyrood, in particular, this development could be transformative as it plays an important part in the Oceans Holyrood Initiative.

FINANCIAL REQUIREMENTS

Class C estimates were prepared for the construction of the new facility in 2012 as part of the initial design process. The estimated total cost at that time for construction, furniture and equipment was calculated to be \$18,371,000. Since then, significant inflationary factors (higher construction costs and an increased HST rate are two examples) will mean that Phase IIB will likely fall in the range of \$25,000,000.

COLD OCEAN OIL SPILL RESPONSE CENTRE OF EXCELLENCE (SEDNA CENTRE)

Project Background

C-CORE

C-CORE is a not-for-profit research, development and innovation (RDI) corporation established in 1975 to address the challenges of developing Canada's frontier resources, particularly offshore Newfoundland & Labrador (NL) and other ice-prone regions. It is globally recognized for unparalleled harsh environment expertise and world-leading capability in Remote Sensing, Ice Engineering and Geotechnical Engineering. C-CORE is also home to LOOKNorth, a Centre of Excellence for Commercialization and Research under ISED's NCE program, fostering remote sensing innovation to support northern resource development.

For more than 40 years, C-CORE has performed contract R&D and provided science-based advisory services and technology solutions to mitigate operational risk in harsh environments and to address security, sustainability, safety and regulatory issues. C-CORE works with a network of national and international RDI partners and bridges the gap between academia and industry, ensuring that RDI efforts meet market needs.

OIL SPILL RESPONSE CENTRE OF EXCELLENCE - SCOPING STUDY

Based on its record of success in large-scale, long-term R&D projects, C-CORE was engaged to conduct a scoping study for an Oil Spill Response Centre of Excellence. The \$500,000 study outlines: infrastructure requirements and capital cost, organization and governance structures, operational considerations, staffing, location, synergies with existing organizations provincially, nationally and internationally, and the R&D program itself. The "cornerstone" of the Centre will be a facility unique in the world.

Project Description: Sedna Centre - Canadian Innovation for the Polar World

The Sedna Centre will provide year-round capability to create real-world offshore conditions, from the calmest Pacific coast in summer to a wild North Atlantic storm, enabling controlled testing of technology and training of people to respond to oil spills in our oceans. The facility is designed to grow saline ice sheets and replicate all of Canada's ocean and coastline environments.

Its unique capabilities will complement current initiatives, enhance Canada's Arctic and ocean knowledge and technology capacity, and support marine habitat protection strategies. Further, the research program will provide opportunity for collaboration with a number of Canadian and international universities and research centres.

The Sedna Centre will conduct research in specific areas, particularly: remote detection of oil in challenging ocean conditions, as well as on, in and under snow and sea ice; spill behaviour and fate prediction; human factors under extreme conditions; well control and containment equipment; and oil recovery and coastline cleanup.

It will also provide response technology development and testing in priority areas, including mechanical recovery equipment; chemical herders, dispersants and sorbents; and in situ burning.

The training provided will create unique-in-the-world oil-in-ice response teams, through field response training with and without sea ice, and spill response command and control drills.

Benefits of Project

REGIONAL & NATIONAL DEVELOPMENT

Sedna will complement and enhance the NL ocean technology cluster and provide the infrastructure required to improve Canada's ability to respond to oil spills in ice, providing a social license needed to develop the Arctic.

ECONOMIC IMPACTS

The Sedna Centre will help grow and diversify the NL economy by establishing a much-needed capability to draw international clients to NL/Canada, leveraging existing facilities and expertise to generate a new innovation ecosystem for oil spill response. It will provide direct employment in high-quality environmental science and engineering jobs, and foster indirect employment in the surrounding cluster, supporting our knowledge economy. Additionally, it will bring 500-1000 visitors annually to Newfoundland & Labrador for week-long spill response drills, providing induced business opportunity and employment in surrounding communities.

ENVIRONMENTAL & SOCIAL BENEFITS

The Sedna Centre will be wholly dedicated to the protection of arctic and coastal environments, helping protect the traditional practices, food resources and economies of some of Canada's most vulnerable Indigenous, rural and remote communities. It will develop evidence-based policy for northern development and provide state-of-the-art training to Canada's northern communities and their environmental protection.

FINANCIAL REQUIREMENTS

The estimated cost is \$65M. Funding of \$35 million is required to build the Sedna Centre as a realistic infrastructure and economic development goal. C-CORE has also secured a \$30 million private sector commitment towards capital costs.

CONCLUSION

Canada's commitment to being a world leader in economic growth, innovation, clean technology, environmental stewardship, and climate change mitigation are embodied and advanced by the work of Memorial University across many academic disciplines, and in particular by the Fisheries and Marine Institute, and their Holyrood Marine Base, and C-CORE, and their Cold Ocean Oil Spill Centre of Excellence. With suitable Federal investment and collaboration in these projects, they will have a lasting impact on the economic and environmental well-being of our country for many years to come.

ABOUT MEMORIAL UNIVERSITY OF NEWFOUNDLAND

As Newfoundland and Labrador's only university, Memorial has a special obligation to the people of this province. Established as a memorial to the Newfoundlanders and Labradorians who lost their lives on active service during the First and Second World Wars, Memorial University draws inspiration from these shattering sacrifices of the past as we help to build a better future for our province, our country and our world.

We are a multi-campus, multi-disciplinary, public, teaching/research university committed to excellence in everything we do. We strive to have national and global impact, while fulfilling our social mandate to provide access to university education for the people of the province and to contribute to the social, cultural, scientific and economic development of Newfoundland and Labrador and beyond.

Memorial has more than 18,500 students spread across four campuses and nearly 85,000 alumni active throughout the world. From local endeavors to research projects of national concern, Memorial's impact is felt far and wide.

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