



Nanaimo Regional General Hospital MRI Business Case



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Part A: Planning Future Service Delivery

Introduction and Background

Currently, Island Health serves the greater Nanaimo population MRI needs through a unit located at the Nanaimo Regional General Hospital.

On February 9, 2017 the Ministry of Health announced priority investment funding for four new MRIs across the province including one in Nanaimo. By adding an incremental MRI, Island Health can increase the number of scans and make access more timely.

The demand for MRIs has increased dramatically over the past several years, and as a result the wait times for these procedures (when not urgent) have grown.

Service Need

Wait Lists

Upon implementation of the MoH MRI strategy in 2015/16, the NRGH community was able to ramp up incremental volumes faster than any other community. This resulted in routine wait times dropping from over 600 days in April 2016 (highest in Island Health) to less than 120 by Q3. Since then, wait times have been growing and are now back up over 200 days. See *Appendix A for wait times*.

Capacity Vs. Demand

The Ministry of Health (MoH) has approved funding for an additional 65,286 MRI exams across BC with 12,803 incremental exams at Island Health, to bring the Island Health total to 41,731.

Island Health is accommodating the incremental exams by expanding capacity through extended shifts (6AM to Midnight, 7 days a week) for an estimated theoretical annual capacity of 42,109. This only provides a 378 exam or 0.9% buffer to meet a 41,731 exam target.

Demand for MRI at NRGH in 2015/16 was 9,600 scans. Existing capacity on the MRI is approximately 9,500 scans per year (assuming 6AM to Midnight operations), resulting in the Nanaimo wait lists growing by at least 100 patients per year. This indicates that there is need for additional MRI capacity in Nanaimo in the medium term.

However, it is evident from the data that demand is not static. Utilization has been steadily growing in Canada by between 2.5 to 3 MRI exams per 1,000 population for the last 10 years (and is growing much faster in other OECD nations – see Appendix B). This is compounded by a growing population on Vancouver Island. This can be absorbed for a short time period by increasing wait lists or expanding operating hours, but will eventually require a second scanner in Nanaimo.



Other Benefits

Two MRI's in Nanaimo would allow current demand to be met with day shift staffing. This would improve ability to recruit and retain staff, save on shift differential cost, and extend the life of the magnets thereby lowering total cost of ownership.

Additional MRI capacity improves patient safety by reducing exposure to ionizing radiation from CT scans. Ionizing radiation results in excess cancer risk to those exposed, and while the ionizing radiation received from a single CT scan is relatively low (roughly equivalent to one year's worth of background environmental radiation), an MRI reduces that exposure to zero.

Alternative Models for Providing Services and Preferred Approach

Island Health could increase operating hours on the existing Nanaimo MRI to 24x7, thereby increasing capacity to meet current and medium term future demand. However, because no other Island Health sites operate 24x7, and this is a less desirable shift to work, it would be difficult to retain technologists to operate the MRI overnight.

Island Health could also outsource to a private provider, but this would increase the cost of service by an estimated 300%.

Strategic Alignment

Island Health is addressing the Ministry of Health Cross Sector Priorities through a multitude of organizational initiatives including improved access to medical imaging, patient flow action plans to improve access and reduce occupancy, workforce planning, participation in ongoing opportunities to improve academics and training, and advanced research capacity. The proposed option will facilitate improved access and patient flow through the provision of more scans, it will improve ability to train, recruit, and retain MRI technologists by offering the latest technology, and it will facilitate capacity for research that must currently be done on private MRI. Additionally, this approach supports the MoH strategic priority of timely access to quality diagnostics, and provides Island Health patients with public access to higher quality MRI.

Part B: Service Delivery Options Analysis

Project Objectives and Scope

Objectives

The objective of this project is to increase the number of scans and make access more timely in Nanaimo. The demand for MRIs has increased dramatically over the past several years, and as a result the wait times for these procedures (when not urgent) have grown.



Scope

The project scope includes a 1.5T MRI machine being installed in a 106 square meter courtyard building addition. Further the project includes renovations to provide new safety zones III and IV to ensure compliance with the requirements of Diagnostic Accreditation Program (DAP) safety guidelines.

Risks

Risks related to the management, and balance, of approved scope, budget and timeline are present in all major infrastructure initiatives. When these risks are not managed, one of many consequences can emerge, including an inability to complete the approved scope within the timeline and/or budget.

Island Health will mitigate these risks by leveraging its established project management processes, which includes strong processes for ensuring appropriate governance, approval structures for advancing projects through project gates (which are related to the staged release of funding), and formal issues management and change approval processes.

Other risk mitigation will include:

- Development of detailed design and an independent quantity surveyor to confirm the construction projects cost estimates are within budget at the pre-tender stage;
- Ongoing consultation with user groups throughout the design phase; and
- Contractual documentation is based on industry-accepted templates.

Service Delivery Options Considered, Analysis and Recommendation

Option 1: Expansion Through Renovation of Existing MRI Facility

- **Description:** Expand the existing facility to accommodate an incremental MRI and Zone III ancillary areas through renovation of the existing Xray and EDS/Echo area located south of the existing MRI facility.
- **Assumptions:** Priority funding is available from the Province with the anticipation of traditional cost sharing from the Nanaimo Regional Hospital District.
- **Context and Rationale:** Attempt to meet needs within existing footprint.
- **Cost Estimate:** N/A
- **Specific Issues:** Deemed unfeasible given structural constraints (the shear wall separating the existing MRI facility from the area to the south does not permit the necessary penetrations) as well as functional and decanting issues.
- **Option Implications:** Abandoned given structural issues.

Option 2: Expansion Through Building Addition (1.5T MRI unit)

- **Description:** Expand the existing facility by providing a building addition in courtyard 4 to accommodate an incremental MRI and Zone III ancillary areas. Further information on the project scope is included in the Project Scope Report dated July 20, 2017.
- **Assumptions:** Priority funding is available from the Province with the anticipation of traditional cost sharing from the Nanaimo Regional Hospital District.



- **Context and Rationale:** In light of structural challenges, meets basic functional requirements in most cost effective manner.
- **Cost Estimate:** \$5.55 million (including \$1.97 million for equipment)
- **Specific Issues:** None identified.
- **Option Implications:** None identified.

Part C: Procurement Options Analysis

Procurement Objectives, Options, Analysis, Recommendation and Implementation Plan

Procurement of the equipment will be through a Directed RFP. The building addition will be procured through a Stipulated Sum Request for Proposal tender process.

Part D: Funding Analysis and Implementation Plan

Funding Analysis

Capital Expenditure

The total capital cost of Option 2 for the building addition, purchase and installation of the 1.5T MRI is \$5.55 million (including \$1.97 million for equipment).

A cost share of 60% priority funding from the Ministry of Health and an anticipated 40% Nanaimo Regional Hospital District (NRHD) cost sharing is expected to cover the full cost of the Nanaimo Regional General Hospital MRI. The NRHD 2017 Budget includes a placeholder for \$1.8 million for their share of the MRI based on a preliminary estimate of \$4.5 million. Island Health will make a formal request for \$2.22 million cost sharing to the NRHD based on the updated cost estimate of \$5.55 million.

Capital Funding Sources	17/18 (\$m)	18/19 (\$m)	19/20 (\$m)	Total (\$m)
<i>Provincial</i>	0.60	2.09	0.64	3.33
<i>Regional Hospital District</i>	0.40	1.40	0.42	2.22
Total Capital Costs	\$1.00	\$3.49	\$1.06	\$5.55

Operating Expenditure

The net increase in operating expense associated with this strategy is about \$150,000 per year for the maintenance service contract and about \$10,500 per year for utilities. It is expected that Island Health will fund incremental operating costs associated with the MRI through future planned budget increases from the Ministry of Health.



Preliminary Implementation Schedule

Event	Approximate Date
Design Consultants Retained	February 1, 2017
Schematic Design Report Complete	July 20, 2017
Approval to Proceed (MoH and RHD)	October 31, 2017 (estimate)
Working Drawings Complete	February 28, 2018
Tender Award	April 30, 2018
Construction Start	May 31, 2018
Construction Complete	May 31, 2019
Commissioning Complete	June 30, 2019
Available for Patients	July 31, 2019

Note: This implementation schedule is indicative and influenced by when final approvals are received from the Ministry of Health and the Regional Hospital District.

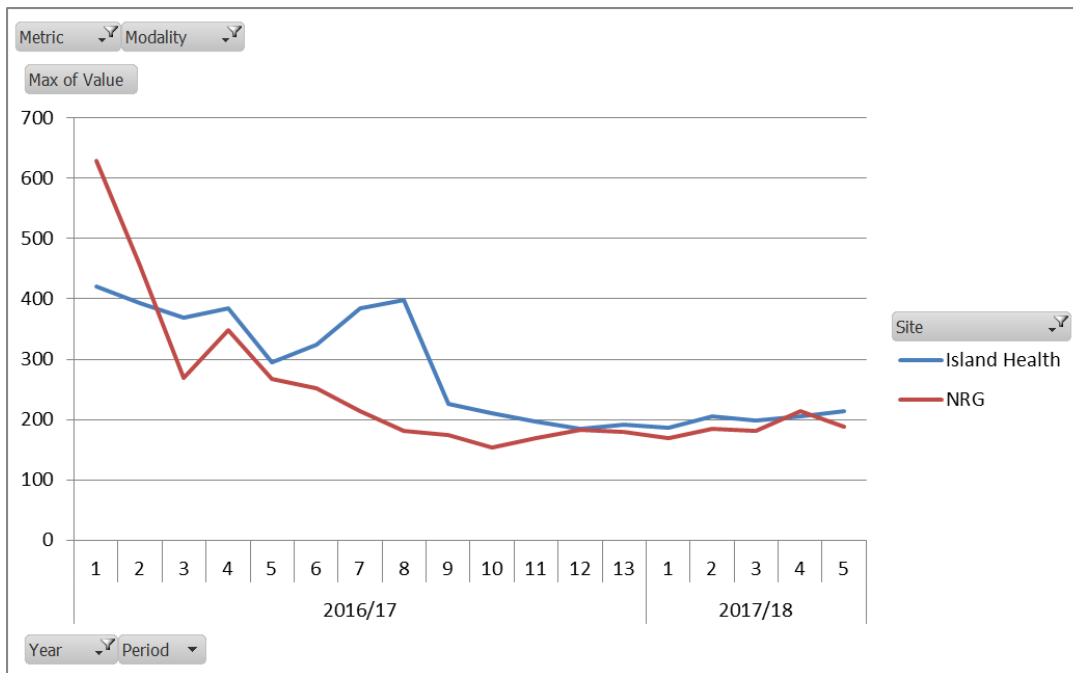
Part E: Communications and Public Consultation

A communication plan or public consultation will not be required for this project.



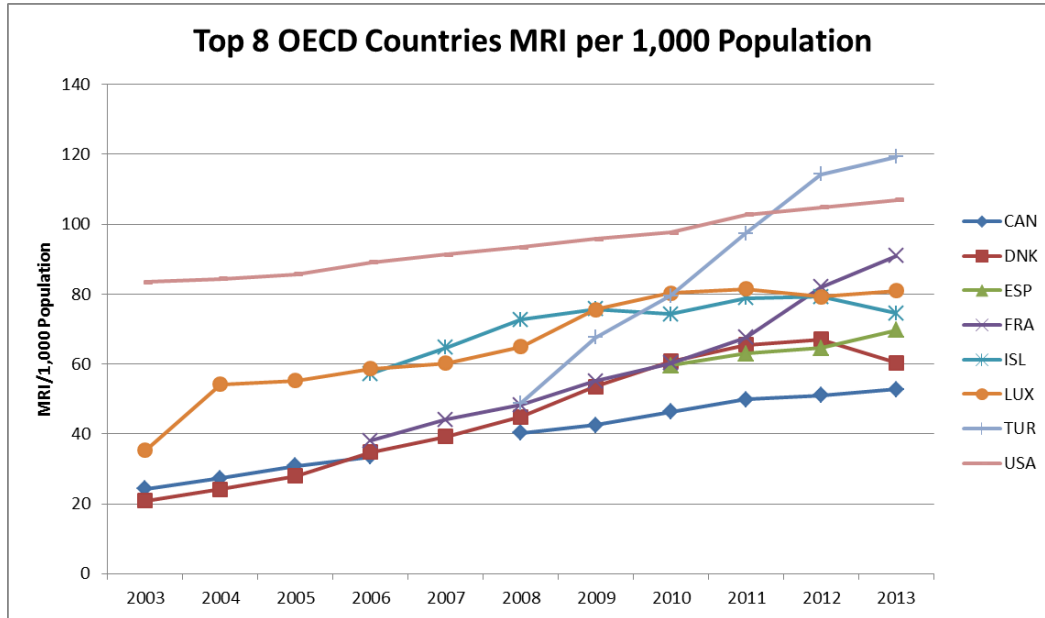
Appendix

Appendix A: 90th Percentile Routine MRI Wait Times (Days)





Appendix B: MRI Demand Growth





Appendix C: Site Plan

