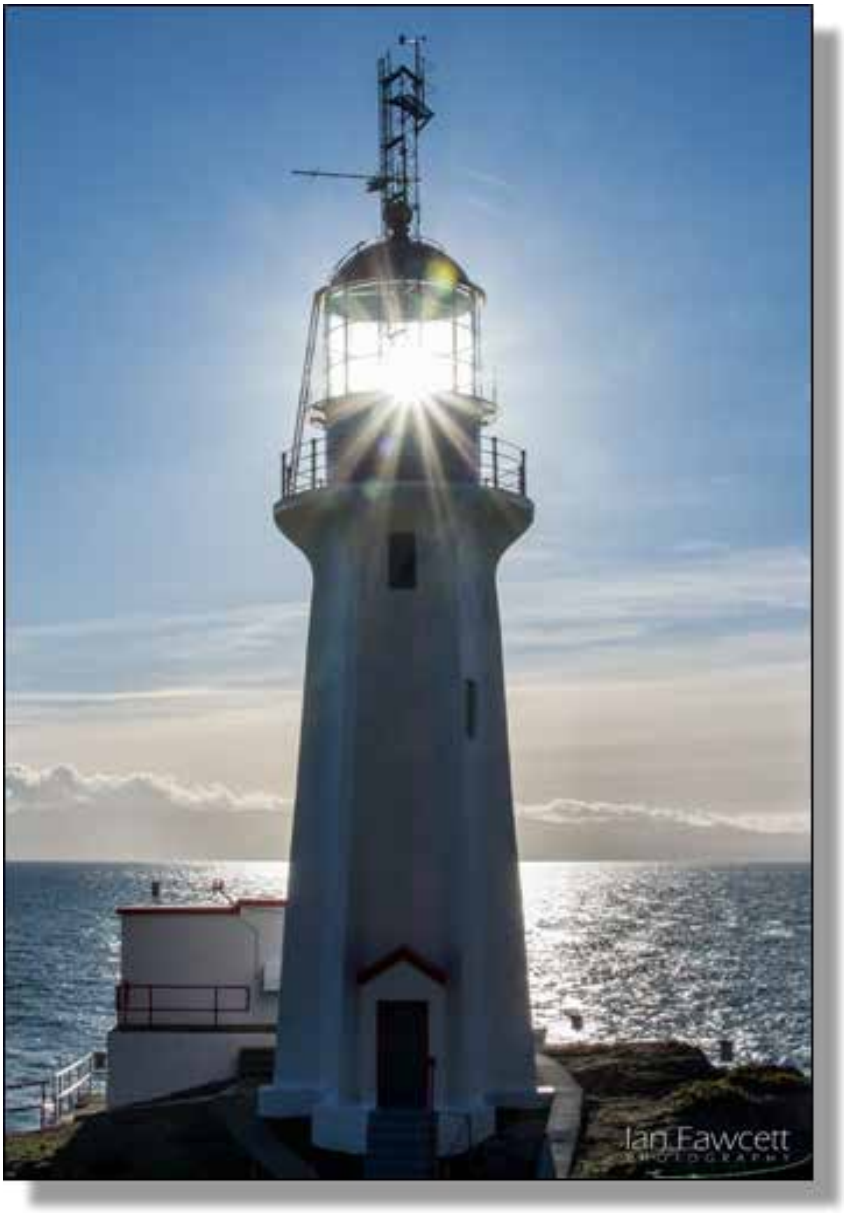
SHERINGHAM POINT LIGHTHOUSE

RESTORATION
2015 - 2019

Final Report
&
Documentation



Sheringham Point Lighthouse
Preservation Society

Change Canada
CONSULTANTS

Sheringham Point Lighthouse: Restoration 2015-2019

FINAL REPORT & DOCUMENTATION

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Sheringham Point Lighthouse
Restoration 2015-2019

FINAL REPORT & DOCUMENTATION

1. BACKGROUND

In the fall of 2015 the historic Sheringham Point Lighthouse, along with 5 acres of surrounding property, was transferred from the Government of Canada to the Sheringham Point Lighthouse Preservation Society (SPLPS). This transfer launched a 3.5-year project to restore the site and the lighthouse structures and to begin the process of converting the site for use as a passive community park, open to the public for recreational and educational purposes.

This report documents the restoration process as well as the decision-making and strategic approaches governing the work, and provides specific documentation on the work that was done. Where necessary and appropriate, it also provides commentary and/or recommendations for further work that could or should still be undertaken to further the ongoing protection and conservation of the site and its structures.

(Note: for the purposes of this document, a "passive community park" refers to an informal park area – not officially designated by any level of government as a park – which is provided for informal public access, at the public's own discretion and initiative, with limited amenities, facilities and programming, and subject to conditions set by the Society Board of Directors).

1.1 HISTORICAL OVERVIEW OF THE SITE

The Sheringham Point Lighthouse was constructed in 1912, in response to the tragic sinking of the SS Valencia which ran aground in January 1906 at Pachena Point with a loss of 136 lives. This was the latest in an ongoing series of shipwrecks around the coast of Vancouver Island (over 240 during the previous 100 years). Following a Commission of Enquiry, the Government of Canada ordered that 12 additional lighthouses be erected around the southern coast of British Columbia, one of which was Sheringham Point Lighthouse. This light was to provide navigational aid between the light stations constructed at Carmanah Point and Race Rocks. Options for siting the lighthouse included Point No Point, but eventually the site at Sheringham Point was chosen, with 4 acres of land purchased in 1911 from local resident Edwin Clark.

Construction began early in 1912, under the supervision of Thomas Stedman and L. Cullison of Victoria. The tower, a lightkeeper's dwelling, a boathouse and oil shed were completed by the end of September that same year, and the lighthouse activated.

The tower was designed by William Anderson, the pre-eminent (and most prolific) Canadian lighthouse designer at that time, who worked for the Department of Fisheries and Oceans. His design was a hexagonal, reinforced concrete tower with six pilaster-like buttresses, 19.5 metres high, and placed on a concrete foundation that rises one metre above grade. Atop the tower was a cast iron lantern room, with 36 curved windows arranged in three rows of twelve, and topped by a copper dome. The lantern room was 3.5 metres in diameter and seven metres tall.

The lens was acquired from the Inglis Co. of Toronto, and was a third order Fresnel lens. It stood over 2 metres high, and weighed approximately 4 tons. Originally illuminated with whale (or seal) oil lamps, the lens was rotated with a clockwork mechanism of weights (approximately 180 kg each) and pulleys, and seated in a bed of liquid mercury to facilitate rotation.

Over the years, additional land was purchased to add to the site, and by 1925 road access was completed. Also in 1925, a diaphone foghorn was added, requiring construction of a "fog-alarm" building. As the fog alarm required a compressor which operated on diesel fuel, diesel engines were also brought on to the site and housed in the fog alarm building.

Additional outbuildings were constructed in the ensuing years, including a naval watch building and bomb shelter built during WWII. A new lightkeeper's residence was constructed in 1964, the original fog alarm building was replaced with the current structure ("engine room") in 1976.

The lighthouse was automated in 1989. Since then, most of the structures on site have been removed, including the original residence in 1986 and the new residence in the mid 1990s, after being vandalized.

The historical structures remaining on site are the tower (intact with lantern room), the engine room, and concrete pathways leading along the causeway to the lighthouse, and around the base of the other structures.

Image 1 (left): tower under construction (1912)

Image 2 (right): tower, original lightkeeper's residence and boat house (ca 1913)

1.2 HISTORICAL OVERVIEW OF THE RESTORATION PROJECT

Since it was de-staffed in 1989, and left essentially vacant, the condition of the site and the remaining structures continued to deteriorate year after year. Most of the structures on the site were removed, often as a result of vandalism, and it was feared that the lighthouse tower itself could also be destroyed – either intentionally, or by neglect. It was also feared that the property, no longer being required as a lighthouse, could be transferred to other ownership for uses that may have been incompatible with the community's interests.

In response, the Sheringham Point Lighthouse Preservation Society was founded in 2003, with a mission to protect and preserve the remaining lighthouse structures and surrounding lands, and to ensure continued public access to the site. The society worked hard to build community awareness and support, raise funds, and lobby all levels of government to achieve its goals.

In February 2010, the Society was notified that the Government of Canada had formally declared the Sheringham Point Lighthouse (along with many other Canadian Lighthouses) to be "surplus" to its needs, providing the opportunity for the site to be transferred to other government agencies. However, later in 2010, Parliament also passed the Heritage Lighthouse Protection Act (HLPA) which provided a procedural framework both for the designation of appropriate lighthouses as "Heritage Lighthouses" and for the transfer of such lighthouses into the ownership and care of municipalities, community groups or other agencies upon presentation of an acceptable business plan.

This prompted the society to re-focus its efforts to work within the framework of the HLPA, to ensure the heritage designation of the site and to acquire ownership and control under the auspices of the society. In January 2011, the society formally petitioned the government for heritage designation. (Attachment 1). Sheringham Point Lighthouse was officially designated as a "Heritage Lighthouse" in June 2015.

The society also worked during the next several years with officials from Parks Canada, the Capital Regional District and others to develop a proposal which would enable the transfer of the site to the ownership of the society. In November of 2015, the Sheringham Point Lighthouse, along with 5 acres of surrounding land was formally transferred to the society.

With Title to the property now secured, the society was now able to turn its attention more directly to the needs of the site – in particular, the need for physical protection and restoration of the built structures, as well as the need to facilitate appropriate management of the site's infrastructure. While the broad scope of the work to be done had been anticipated for a number of years, the specific details, including the time frame, were still to be determined. Accordingly, the society took two initial steps in November 2015 to start the restoration project:

a) Initiation of a condition assessment by a qualified heritage engineer
b) Contracting with a project manager to work out further details, oversee the project and begin implementation of the restoration work.

2. PERSONNEL

The following personnel/contractors were engaged in the completion of this project:

2.1 PRIMARY CONTRACTOR / PROJECT MANAGEMENT

Ian Fawcett of **Change Canada Consultants Ltd.** was engaged as the primary contractor/project manager. Fawcett has a background in both government and non-profit management, including a wide range of project management expertise. He also brings specific knowledge and experience in the oversight of heritage conservation projects. In addition, he has had an ongoing working relationship with the site and the Sheringham Point Lighthouse Preservation Society for over 10 years, first in a (casual) advisory capacity through his (former) position as the Deputy Executive Director and Heritage Programs Director at the Land Conservancy of British Columbia, and more recently as webmaster and fundraising consultant for the Society.

Dominique Bernadet serves as the site coordinator for SPLPS. He looks after the day-to-day site operations (opening, closing, maintenance and volunteer coordination). He provided ongoing support and counsel for all activities on site.

Michael Galizio (President), John Walls (Vice-President) and Bill Turner (Director) provided project oversight as required on behalf of the Board of Directors. Turner is also a principal of Change Canada Consultants Ltd., with considerable expertise in heritage conservation and management, and in that capacity also provided ongoing advice for project details (on a voluntary basis).

2.2 SUB CONTRACTORS / TRADES

Selection of sub contractors and trades was determined by the project manager, based on recommendations received from a variety of sources, both local and institutional. In addition to technical capability, as this project was also viewed by the society as a "community development" initiative, locally based companies and tradespeople were employed wherever possible.

John Dam & Associates was hired to provide a condition assessment of the Lighthouse Structures. Victoria based, **John Dam** is a building conservation engineer, with considerable experience working on heritage structures. In addition to the condition assessment, he was also called upon from time to time to assist in resolving specific technical issues and providing engineering assurance as necessary.

Island Applicators Ltd. was hired to provide the main component of the restoration work on the tower and engine room – specifically: concrete repairs, corrosion removal and painting. IA was recommended to the Society by the Coast Guard as the company was responsible for the previous restoration/painting of the facility in the late 1980's. The company is based in Victoria, but the primary project supervisor/on-site personnel, **Shane Burkett**, is based in Sooke. Burkett also worked on the previous restoration, and as such had considerable familiarity with the site and buildings.

Viridian Energy Co-operative was engaged to plan and install the new solar array to provide power to the facility. Highly recommended (and one of only a couple of solar energy equipment installers on Vancouver Island), the principal planner and installer, **Steve Unger**, is based in Sooke.

Otter Point Electric Ltd. was hired to do all the required electrical work at the site. Electrician **Clayton Fischer** is based in Shirley, and has done considerable work in the area and was highly recommended. In addition, he also works as the primary electrician for Viridian Energy Co-operative.

Good Neighbours Fencing Ltd. was contracted to build a protective fence around the solar array, and to restore handrails along the pathway leading to the lighthouse. Based in Shirley, installer **Darren Rice** had a number of local recommendations.

Sooke Glass Ltd. was hired to carry out the window restoration in the lantern room. Based in Sooke, owner and installer **Dave Dion** was recommended by a number of local residents, as well as by other window installers.

Gilchrist Glass Bending Ltd. was engaged to manufacture replacement windows for the lantern room. The only glass bending/manufacturer on lower Vancouver Island, Gilchrist is based in Mill Bay, and was recommended to us by several glass installers as well as by Vintage Woodworks a highly reputable heritage window specialist in Victoria.

Minten Fine Woodworking Ltd. was hired to build the new electrical shed required as part of the revised electrical plan for the site. **Chuck Minten** is based in Shirley and has long time family connections to the lighthouse site. He is a well-known local contractor and comes with many recommendations for his work.

Vivi Curutchet, a design consultant in architecture, was contracted to provide the design and architectural drawings for the electrical shed. Vivi lives in Shirley and also volunteers for the Lighthouse society.

Foggy Mountain Forge was engaged to perform various metal fabrication and restoration tasks. Based in Shirley, blacksmith **Marty Gilbertson** is a well-known local welder and metal artisan, and is highly recommended.

4M Bobcat & Trucking Ltd. was contracted to do the trenching work required for the power installation, as well as the erosion control. Based in Sooke, the company and principal **Dave McClimon**, do considerable work in the local area, are well recommended and are well known to the society.

Clarkston Construction Ltd., based in Sooke, was hired to build a retaining wall as part of the necessary erosion control. **Paul Clarkston** is a well-known local contractor, and was recommended to us by Dave McClimon at 4M Bobcat & Trucking.

Ryzuk Geotechnical was hired to provide engineering advice and oversight for the erosion control work to be done on site, as well as for the solar array installation. Based in Victoria, Professional Engineer **Bruce Dagg** was recommended by both 4 M Bobcat & Trucking and Viridian Energy Co-operative.

3. PLANNING AND PREPARATION

Planning and preparation for the restoration project had been ongoing informally by the Board of Directors of SPLPS for some time, in anticipation of the project. Once the property transfer was confirmed, the Project Manager took on the task of formalizing the process, identifying key components and parameters, and setting criteria for the work to be done. This task was subject to a number of considerations, as set out below, and in consultation with the Board of Directors.

3.1 PROJECT PARAMETERS AND REQUIREMENTS

The transfer of ownership of the Sheringham Point Lighthouse site from the Government of Canada to SPLPS contained specific conditions with respect to the care, operation and restoration of the facility.

a) Restrictive Covenant

With the transfer, the government registered a Restrictive Covenant, in its name, on the Title of the property. This covenant – agreed to by the Society – set out certain conditions for the use of the site and any changes which may be made to the site. (For the full text of the covenant, see Appendix 1). The key elements are:

- The site may only be used as a public park
- The "heritage character" of the site must be maintained
- All maintenance and any alterations to the site and its structures must be done in accordance with the Standards and Guidelines for the Conservation of Historic Places in Canada.

b) Statement of Significance

The "heritage character" of the site is defined as the heritage values and character-defining elements described in the Statement of Significance that was prepared as part of the designation of the site as a Canadian "Heritage Lighthouse," under the Heritage Lighthouse Protection Act. (For the full Statement of Significance, see Appendix 2). The key elements include:

- The historic, architectural and community values of the lighthouse
- The character-defining elements, which include the intact structural form of the tower and lantern room, along with the associated building (engine room), the windows, its paint scheme, and its visual prominence.

Note: a "Statement of Significance" is a formal document which sets out in clear terms what is considered of value and what is to be protected and conserved for a specific heritage place. It defines the consensus of values, removing individual bias and preference. It is adopted by the owners/stewards of a specific heritage place to provide the highest level of consideration to govern how and why it is to be conserved and cared for.

The Sheringham Point Lighthouse Preservation Society agrees with and adopts the Statement of Significance as written as the overarching guiding document for its management and care of the site. In addition, the society also considers the following features which are not included in the SOS (which tends to focus on the built/historical aspects of the site) to be of value to the site and the society's considerations:

- the connection and significance of the site – known as p'aachiida – to the culture of the local Ditidaht First Nation
- the surrounding 5-acre parcel of land which provides a visual and physical buffer from the adjacent developed lands, and which also contains footprints and/or remnants of former structures related to the lighthouse and its operations;
- the unobstructed viewscape of the tower and its associated structures, both from the land and from the water;
- the narrow promontory of land adjacent to the tower, which provides pedestrian access to the tower and associated structures.

c) Standards and Guidelines for the Conservation of Historic Places in Canada

The Standards and Guidelines for the Conservation of Historic Places in Canada are a collaboration of the Federal, Provincial and Territorial governments of Canada, to create provide consistent, sound, pragmatic guidance for the conservation of Canada's heritage assets. Based on best practices gathered over the years, the Standards and Guidelines set out principles and strategies, outline the decision-making processes which can best used, and provide advice with respect to materials standards and methodologies to tackle virtually all conservation and restoration challenges that may be encountered.

A copy of the Standards and Guidelines may be viewed and/or downloaded at: https://www.historicplaces.ca/media/18072/81468-parks-s+g-eng-web2.pdf

The Standards and Guidelines were used as a reference document throughout the project, and were consulted regularly as appropriate. It is believed that all decisions, activities and work accomplished are in keeping with the principles and recommendations outlined in the document.

d) Building Inspection & Bylaw Compliance

To ensure that the applicable building codes, bylaws and inspection requirements were understood, the regional Building Inspector and Planning Officer (Capital Regional District) visited the site with the Project Manager to review the site and the restoration plans. It was confirmed that as long as code requirements for the electrical installation were met, and appropriate measures were taken at all times to ensure both visitor and contractor safety, that there were no specific bylaws that would need to be addressed, nor would inspections be required. The Building Inspector, however, was extremely helpful in offering a number of suggestions as to how he felt we might best accomplish some of the objectives we had discussed. His suggestions were integrated into the plans and considerations set out below.

The one area that specifically would need to be addressed, however, is that of zoning. With the change of ownership to the Society (from Government), and the change of use to a publicly accessible park function, a zoning change would be required and the Society was asked to submit an application and follow through the legally required rezoning process, including public hearings. With the assistance of the CRD planning department, that process was subsequently followed and successfully concluded with no issues.

3.2 STRATEGIC CONSIDERATIONS: APPROACH & METHODOLOGY

In determining the approach to be taken to this project, the scope of the work to be done and the manner in which that work should best be done, four major criteria were considered:

- The constraints imposed by heritage designation and values of the site.
- The physical condition of the structures and the surrounding lands, given the age of the structures, the history of amendments and changes to the structures and land, and the relative neglect of the site during recent years.
- The proposed future use of the site, as a community park, which is a change of use for the facility. The invitation for the public to visit and use the site for recreational and educational purposes implies a responsibility for the society to ensure that such usage can be accommodated and public safety maintained without deleterious impacts on the lands or structures.
- The cost of the work to be accomplished. As a not-for-profit, charitable organization, funded largely by donations from its members and supporters, the society's funds are limited and hard to come by. Accordingly, cost effectiveness must be ensured.

3.2.1 HERITAGE PRECINCT

In assessing the site, it was noted that virtually all of the significant remaining heritage structures were located in the lower section of the site (along the causeway and waterfront promontory. The remainder of the five-acre site, while still having heritage values, did not contain many overt heritage features (and none that were included in the Statement of Significance), and its heritage character was more an issue of interpretation than structural features.

Accordingly, it was decided that the site be divided into two precincts:

- The Heritage Precinct – which is the area below (i.e. waterside) of the lower fence separating the causeway from the lower field. In this area, heritage values would take the highest precedence and no alterations or amendments would be undertaken without diligent and appropriate consideration for the impact on those values.
- The Support Precinct – which is the area above the fence, comprising the field, the waterfront to the east of the causeway, and the forested area stretching to the top gate. Recognizing that some site disruption (e.g. installation of solar array, interpretive measures) would be necessary to support the ongoing protection of the historic structures as well as visitor management, this area would be treated somewhat more flexibly, allowing amendments as required to support site management (while still maintaining consideration on the impacts of any amendments on the overall heritage character of the site).

3.2.2 CONDITION ASSESSMENT

John Dam & Associates were contracted in November of 2015 to conduct a condition assessment of the lighthouse. This condition assessment was to be undertaken using a review of existing (and available) documentation as well as a visual, on-site, examination of the structures. A report was provided to the Society on March 7th, 2016. (A full copy of the report is attached as Appendix 3).

The key findings/recommendations of the report (including follow-up conversations) were:

a) Lantern Room:

- The exterior of the lower section, comprising curved cast iron wall panels, has surface corrosion but appears to be in fair condition. The interior of these walls does not show corrosion and appears to be in good condition.
- The door is more significantly corroded, due primarily to the fact that it no longer closes properly and is more exposed to the elements. The hinges and hardware appear to be in relatively good condition.
- The mid section, comprising 36 curved window panes mounted on 12 rectangular cast iron posts (which also support the roof) is in relatively poor condition. Most of the window panes are broken (some significantly) and the upright posts show significant corrosion both inside and outside.
- The extent of the corrosion on these posts could not be fully determined without further (destructive) examination, requiring removal of one or more of the posts.
- The roof structure (a series of 12 curved panels believed to be cast iron, riveted, and supported by ribs and structural braces) was assessed to be in fair condition. Surface corrosion was present both externally and internally.
- The weather vane at the top of the roof could not be examined in detail, as it could not be accessed.
- Other features, including the walkways and handrails were assessed to be in fair condition, while some features such as the external ladder were found to be more significantly corroded and were of greater concern.

b) Tower:

- The concrete tower was assessed to be in good condition, with few signs of deterioration beyond a number of cracks and minor spalls marked on the interior surface.

- The exterior is discolored with iron oxide, due to runoff from the corrosion on the lantern room.
- The wooden door jamb on the entrance portico was found to be in poor condition with significant decay (especially on one side).

- The cast iron staircase was found to be in good condition, with only minor corrosion.

c) Engine Room:

- The engine room is constructed with concrete block walls with a concrete slab roof and is placed on what is believed to be the concrete foundation of the original fog-alarm building. It was assessed to be in good condition, with only minor deterioration including peeling paint, some spalling and chips in the exterior concrete walls and roof.

- The interior was found to have no significant issues, beyond some small patches of mould.

d) Recommendations:

It was recommended that the lantern room – and particularly the mid-section (glazing and upright posts) be the top priority to be addressed. It was suggested that this be addressed within the first year, or alternatively that the structure be reinforced if it could not be addressed in a timely manner.

Other recommendations included, essentially, removal of corrosion, and repainting, with minor concrete patching as required. These recommendations were accepted by the society as written.

3.2.3 USAGE AND PRESENTATION

Since early in its existence, the society had specified that one of its primary objectives was to ensure public access to the site for use as a "passive park". This objective was included in the society's application to the Government of Canada for transfer of ownership of the site to the society. It was also reflected in the transfer documents, with the restrictive covenant specifying that the site could only be used for "public park" purposes.

The public (in particular residents of the local area) had been accessing the site informally for some time prior to the transfer of ownership. Immediately following the transfer, the society formalized public access to the site, and visitation numbers have steadily increased since then.

3.2.3.1 SAFETY CONSIDERATIONS AND LIABILITY

In addition the society had, and continued to, promote the site as a place for public visitation. This was done through local media, by direct mail and through a variety of on-line vehicles (website,

Facebook and Twitter pages, YouTube, etc.).

By "inviting" the public on to its site (what is, legally, private property) the society acknowledged and accepted a certain level of responsibility for the safety and well-being of visitors while on their property. The society does have appropriate insurance coverage protecting itself from such risks, but for that protection to be upheld in court, common law dictates that the society ensures due diligence is done and that reasonable measures are taken to ensure that safety and well-being.

Accordingly, a risk assessment was conducted for the site. This was completed by the Project Manger, in consultation with the Site Coordinator and others. Four areas of concern were identified, as follows:

- Surrounding the historical structures, the terrain comprises steep, rocky cliffs extending to the water. The footing adjacent to these cliffs is rocky and uneven, and presents a risk of falling. It was concluded that these areas need to be fenced off in a manner consistent with the historical character of the fencing in the immediate area. Also it was concluded that an additional short concrete pathway be constructed to connect the two existing concrete pathways.

- The terrain leading to the Lighthouse structures (i.e. the "causeway") is eroding from wave and storm action over the years. It was feared that, at any point, the erosion could extend to such a degree that access to the lighthouse structures could be severed entirely or, at least, could be made extremely difficult and dangerous. Due to the steepness of the terrain at the erosion point, there was also significant danger of falling. Accordingly, a geotechnical engineer was consulted who assessed the situation and recommended that:
    - a concrete retaining wall, anchored into the bedrock, be constructed on the east side of the causeway (at the point of erosion), and that the slope be lessened with backfill behind the retaining wall.
    - a retaining wall comprising stacked boulders be constructed on the west side of the causeway (at the point of erosion).

  The recommendations of the engineer were accepted.

- Direct access to the water line along the eastern side of the site is dangerous, uncontrolled and steep. Most, but not all of this access is currently prevented by vegetation. It was concluded that this access should be prevented, and that it could best be achieved with selective plantings to supplement that natural vegetation that is already there. In the interim, cuttings from site clearance were piled in these areas to discourage access.

- The walkway around the engine room and the "lookout" platform to the east of the structures both have sharp drop offs to the rocks below (in some areas a drop of several metres). While these areas have guardrail fencing, it was feared that the large gaps in the existing fencing would not adequately protect small children from the risk of, potentially catastrophic, falls. Accordingly, it was concluded that infilling the large spaces between existing rails with horizontal steel cables would provide the additional safety required with the most unobtrusive visual impact.

3.2.3.2 ACCESS FOR PERSONS WITH DISABILITIES OR MOBILITY CHALLENGES

Given the nature of the lighthouse site as a remote, partly forested, foreshore area with relatively steep and uneven terrain, access to and around the site (and in particular to the Lighthouse structure itself) is not easy and can be strenuous for all visitors. It is particularly difficult for those with physical disabilities, as well as for seniors or others with mobility challenges.

In taking on the responsibility, on behalf of the community, to care for this site and open it for public visitation, the Society Intrinsically accepts that it does so on behalf of the entire community. It recognizes and accepts that all members of the community, as de-facto owners, have equal rights of access to the site, regardless of their age or physical ability. Accordingly, the Society acknowledges that it has a duty – as well as its desire – to consider options to provide access, to the extent feasible, for people with disabilities, and for elderly people or others with limited mobility. (To be clear, in this circumstance, accessibility is not viewed as a legal requirement, but a moral one. The BC Building Code allows a number of exemptions, in particular an exemption for circumstances in which providing access is unusually difficult. That circumstance, we believe, applies in this case, but it does not mean that nothing can be done).

This matter was raised during a Society general membership meeting by individuals who are advocates for people with disabilities, and in response the Society asked the Project Manager to review and consider options and opportunities and to prepare a report outlining those considerations, spelling out the approaches to be taken as part of the restoration project, and providing options for further actions that may be taken subsequently as additional resources are secured.

The project manager reviewed written materials provided by the individuals who raised the matter at the GMM, and consulted with a number of concerned individuals and advocates. In particular he consulted with a representative of the Rick Hansen Foundation, who visited the site and assessed it for a variety of accessibility issues. Based on the feedback received, it was concluded that:

- Amendments could not be made to enable wheelchair access throughout the site without major changes to the heritage character in specific locations (e.g. along the causeway and, in particular, around the heritage structures). Such changes would significantly conflict with the Statement of Significance. Accordingly it was felt that access should be restricted to ambulatory access only.

- To assist with access for mobility challenges the handrails along the causeway should be restored with heavy chain, rather than rope (both of which were used historically) to provide a more secure handhold. Also, the handrails along the eastern side of the causeway should be relocated slightly to be more usable while walking the full length of the causeway.

- A new trail access through the site should be cut which would provide a flatter (albeit slightly longer) path to the lower field.

- Benches should be installed at key locations along the new pathway and adjacent to the lower field.

Additional options were also suggested for future consideration, including a potential viewing platform at the top of the site (just inside the gate) which could also potentially be made wheelchair accessible.

3.2.3.3 VISITOR MANAGEMENT AND PROGRAMMING CONSIDERATIONS

Beyond the safety considerations outlined above, it was felt that the formalization of the site as a public park, with significantly increased visitation, could potentially impact the physical restoration of the structures and, in particular, the remainder of the site, and especially with respect to sightlines and to the ambience of the site.

To better understand the needs, interests and objectives of visitors while on site (and in general), a "Community/Visitors Survey" was conducted during the spring and summer of 2017. This survey was conducted with funds provided by Parks Canada under the National Cost Sharing Program for Historic Places, and was primarily intended to inform the Society's ongoing site operations. However, it did also provide some insight to help guide the restoration and site development process. Key information from the survey included:

- Virtually every visitor indicated an interest in a certain level of engagement while on site, primarily to learn more about the site, its history and its natural features.
- Also, virtually every visitor indicated an interest in being able to access the Lighthouse structures, with many indicating an interest in being able to go to the top of the tower.
- Many indicated an interest in being able to see (and learn from) various site artifacts, and in particular the lens.
- A significant portion of visitors (primarily those who were older, or who were accompanying older relatives/friends) indicated that the steepness of the terrain was an impediment, and felt that mitigation measures would be beneficial.
- Responses were mixed on whether or not amenities (e.g. a washroom, garbage receptacles, benches, potable water) would be beneficial. Regardless of how they felt about this however, virtually everyone was clear that any such amenities should not affect the nature or ambience of the site, which should not be altered.

While further initiatives, such as the installation of amenities or interpretive features are not part of this current project, and are still to be determined, it was felt that the current work should be careful not to preclude options. Accordingly, it was concluded that:

- The electrical capacity of the solar array, electrical shed and new wiring in the lighthouse structures should be capable of meeting additional requirements as they develop (or, should be expandable to meet such requirements, including providing power to other sectors of the site).

- Cabling (CAT-5) to enable internet and Wi-Fi connection at the lighthouse should be installed at the same time as the trenches are dug to supply power to the structures. It was noted that this also will enable enhanced security measures to be installed.

- The need for easier trail access and restored/relocated handrails along the causeway (see previous section) was reinforced.

- The option of public access inside the tower should be retained with the careful location of electrical fixtures, and relocation of cables and equipment in the lantern room.

- The option of public access inside the engine room should be retained with the careful location of fixtures and equipment, as well as the installation of shelving as required.

With respect to interpretation of the site, it was noted that continual changes and upgrades to the site and the structures were made over the years by the Lightkeepers and the Canadian Coast Guard during their tenure. The structures are no longer intact forms as of their establishment in 1912, but are amended structures up to the point of the departure of the last lightkeepers in the mid 1980s. Also, the equipment remaining on site and the artifacts acquired by the Society are from more the more recent era, with the exception of the Fresnel lens and foghorn, which date to an earlier period. It was concluded that attempting to restore the lighthouse to its earlier (1912) character and form would not be an honest or complete portrayal of the lighthouse and its life. It would, in fact, be a re-creation. It was therefore concluded that:

- The restoration should target the period at which the last lightkeepers left the property – i.e. mid 1980s.

- The artifacts acquired by the society which are outside of this period could still be displayed, but should not be interpreted as being the working components of the restored lighthouse, but as historical items of interest. The details of how and where these artifacts would be displayed is subject to further deliberation by the Society, and the restoration work will strive to keep all options open.

3.2.4 FINANCIAL CONSIDERATIONS & TIMING

Since its inception, the Society has diligently raised funds both for its operations and advocacy work, as well as for the potential needs of restoration work. This fundraising was done mostly by direct ask, through membership fees, product sales, on-line fundraising and direct (householder) mail. It generated continuous funding, but only in modest amounts. It was however, boosted by one significant gift of $200,000, by Dr. Martin Carruthers in memoriam for his partner, Jennie. These resources were carefully managed by the Society, and at the outset of the restoration project, a portion of the funds were still remaining and potentially available for use.
When the transfer of the site and structures was confirmed, in 2015, and it became clear that the Society would, indeed, be responsible for the restoration of the Lighthouse, it was clear that the funds on hand (even with a contribution of $25,000 from the Government of Canada upon transfer) would not

be anywhere near what would be required, and at the current rate of fundraising it was anticipated that the restoration project would necessarily be a long-term project (potentially in the range of 15 years).

However, as the property was in the process of being transferred, the Society was contacted by Peter Westaway, who indicated that he may be in a position to help with the restoration. Westaway and his partner Brigitte are "lighthouse aficionados", who bought, restored and now live in the Long Point Lighthouse in Southern Ontario. They are also the principals in the Westaway Charitable Foundation. Following an initial contribution of $1,000, Peter and Brigitte met with John Walls and Elanie Bruton, Society directors. The Westaways indicated that they were impressed with what the Society was attempting to achieve, and offered to help to a much more significant degree, by supplementing the Society's funds with up to $500,000 to be used for the restoration of the lighthouse structures.

The project manager was asked to prepare a fully costed proposal to develop a partnership agreement with the Westaway Charitable Foundation (WCF). This agreement would set out the scope of work to be accomplished, a timeline for the project and a provisional budget. At first, it was anticipated by both parties that this would be a ten-year project, with annual contributions from WCF. An initial proposal was presented to WCF at the beginning of April, 2016.

However, as the scope of work was more specifically defined, it became clear that it could be completed more effectively within a three-year window, and it was agreed to compress the time frame. This would require more up-front funding from WCF, and more aggressive efforts by the Society to secure matching funds. A revised proposal was submitted to WCF at the end of June, 2016 and was approved shortly thereafter.

The agreement required that the Society strive to match the WCF contributions to the extent possible. Available funds on hand were transferred to this project, as well as ongoing fundraising appeals. In July, 2018 the Society was also able to secure a Capital Gaming Grant from the Province of B.C. (in the amount of $105,000) to meet its obligations for matching funds. This grant allowed the completion of the scope of work outlined in the WCF document, as well as some additional necessary site development components.

4. SCOPE OF WORK

The scope of work outlined in the WCF document included: site preparation (and support activities); re-installation of power supply; fencing upgrades and restoration; restoration of the Lantern Room, Tower and Engine Room; and project management. Specifically, it involved the following components:

Work Component	Contractor(s)	Start	End
Site Preparation & Support Activities			
Removal of fencing to enable access	· Good Neighbours Fencing	Sept '16	Sept'16
Erosion control	· 4M Bobcat & Trucking	Nov '16	Dec '16
	· Clarkston Construction		
	· Ryzuk Geotechnical		
Extension of concrete pathway in front of engine room	· Clarkston Construction	Dec '16	Dec '16
Delivery & removal of waste material bin for construction debris	· Sooke Disposal	Jan '18	Jan '19
Delivery, installation & removal of temporary toilet facilities for contractor employees	· Coast Environmental	Jan '18	Jan '19
Power Installation			
Trenching for electrical cables & CAT-5 cables	· 4M Bobcat & Trucking	Mar '17	Apr '17
Concrete cap over cables around tower & engine room	· Minten Woodworks	Apr '17	May '17
Installation of solar array	· Viridian Energy Co-op	Aug '16	July '17
	· Ryzuk Geotechnical		
	· 4M Bobcat & Trucking		
Construction of electrical shed	· Minten Woodworks	Jan '17	June '17
Cabling & electrical connections from solar array to electrical shed, and to lighthouse structures (including connection to power grid)	· Otter Point Electric	Mar '17	July '17
Replacement of wiring and installation of replacement electrical fixtures in engine room and base of tower	· Otter Point Electric	July '17	Jan '19
Fencing Restoration			
Powder coating & repainting of handrails around engine room and to lookout	· Victoria Powder Coating	April '18	June '18
Drilling of holes for insertion of safety cables in handrails	· Island Applicators	April '18	April '18
Insertion of safety cables in handrails around engine room and lookout	· Good Neighbours Fencing	t.b.d.	t.b.d.

Moving & restoration of chain handrails along causeway	· Good Neighbours Fencing	Jan '19	Jan '19
Lantern Room Restoration			
More detailed analysis of condition of metal support structures in lantern room	· Island Applicators	Jan '18	Feb '18
	· John Dam & Assoc.		
	· Foggy Mtn. Forge		
Corrosion removal and repainting of lantern room exterior	· Island Applicators	Feb '18	Sep '18
Corrosion removal, restoration and repainting of weather vane	· Island Applicators	June '18	Sep '18
	· Foggy Mtn. Forge		
Corrosion removal and repainting of lantern room interior	· Island Applicators	Sep '18	Dec '18
Corrosion removal and restoration of lantern room door (exterior)	· Island Applicators	May '18	May '18
	· Foggy Mtn. Forge		
Corrosion removal and restoration of lantern room vents	· Island Applicators	Mar '18	Apr '18
	· Smith Bros. Foundry		
Removal/relocation of electrical & equipment cables in lantern room	· Island Applicators	Sep '18	Sep '18
	· Otter Point Electric		
	· Coast Guard / EC		
Re-wiring of beacon & weather station, and batteries to main electrical feed and removal of solar panels	· Otter Point Electric	Oct '17	Dec '17
	· Coast Guard / EC		
Installation of scaffolding & hoarding around lantern room	· Great West Scaffolding	Feb '18	Feb '18
Removal of scaffolding & hoarding from lantern room	· Great West Scaffolding	Aug '18	Aug '18
Temporary relocation of beacon during lantern room restoration	· Coast Guard	Mar '18	Aug '18
Manufacture of replacement windows for lantern room	· Gilchrist Glass Bending	July '17	July '18
Manufacture of replacement mounting bands for lantern room windows	· Foggy Mtn. Forge	July '18	July '18
Installation of replacement windows and mounting bands for lantern room	· Sooke Glass	July '18	July '18

Tower Restoration			
Detailed assessment of condition of concrete in tower interior	· Island Applicators	Dec '17	Dec '17
Concrete repair in tower interior	· Island Applicators	Dec '17	Mar '17
Removal of old paint as necessary and repainting tower interior	· Island Applicators	Oct '18	Dec '18
Installation of new electrical feed, panel and replacement fixtures in tower	· Otter Point Electric	July '17	Jan '19
Restoration of rotted wood exterior door frame at tower entrance	· Island Applicators	Sep '18	Sep '18
Excavation at base of tower and waterproofing area of water ingress at base of tower exterior	· Island Applicators	June '18	June '18
Waterproofing around tower base	· Island Applicators	June '18	June '18
Power washing of tower exterior	· Pacific Coast Power Washing	Sep '18	Sep '18
Minor concrete repairs on exterior of tower	· Island Applicators	Sep '18	Sep '18
Repainting tower exterior	· Island Applicators	July '18	Oct '18
Engine Room Restoration			
Concrete repairs & patching around engine room base and stairs	· Island Applicators	Dec '17	Feb '18
Manufacture & installation of replica vent hood in engine room	· Foggy Mtn. Forge	Sep '18	Oct '18
	· Island Applicators		
Repainting engine room exterior and roof	· Island Applicators	Sep '18	Oct '18
Mould removal in engine room interior	· Island Applicators	Nov '18	Dec '18
Repainting engine room interior	· Island Applicators	Nov '18	Jan '18
Installation of replacement electrical fixtures in engine room	· Otter Point Electric	Jan '18	Jan '18
Project Management & Coordination			
Restoration plan development & funding	· Change Canada Consultants	Feb '16	Current
Project coordination & oversight	· Change Canada Consultants	Feb '16	Current
Condition Assessment	· John Dam & Associates	Dec '15	Mar '16
Heritage building & materials advice	· John Dam & Associates	Mar '16	Sep '18
Documentation & reporting	· Change Canada Consultants	Feb '16	Current

5. RESTORATION ACTIVITIES

Components of the restoration work were assessed both individually and in the larger project context, and were carried out according to contractor availability and overall project needs and coordination. Accordingly, the time frame for individual components was sometimes longer than may have been expected. Also, as is often the case with restoration projects, there were constantly many unknown details which could only be uncovered as the work progressed, requiring considerable flexibility on behalf of all involved. It should be noted here that all of the contractors involved in this project were extremely helpful and supportive, and provided sound and timely advice throughout.

5.1 SITE REMEDIATION & PREPARATION

Prior to starting the physical restoration of the tower and engine room structures, it was necessary to address a number of site-related issues and preparatory activities.

5.1.1 EROSION CONTROL

The first task identified was the need to address erosion issues on the causeway leading to the lighthouse structures. Originally, there had been a deep gully separating the point of land on which the lighthouse currently stands from the rest of the point. This gully had been filled during the early days of the lighthouse's construction and operation. After more than 100 years of weather and wave action, it was eroding from both sides, and there was concern that a significant winter storm could breach the causeway, cutting off access to the Lighthouse.

A structural engineer (Ryzuk Engineering) recommended that a concrete retaining wall be constructed on the east side of the causeway, anchored into the bedrock, and that a stacked boulder wall be constructed on the west side of the causeway. This necessitated removal of the barrier fence (chain link) at the top of the causeway as well as removal of vegetation to enable machine access across the causeway.

A form was built on the east side of the causeway, and concrete poured to create a retaining wall. The wall was reinforced with re-bar, and was anchored to the bedrock. It was located several feet away from the inside wall of the gulley, to ensure it was in a spot with stable bedrock, but not also close enough to ensure the wall span was a narrow as possible. Once it had cured, aggregate fill was placed behind the wall to fill the gap in the gulley.

On the west side, a backhoe was used to place large boulders, individually in a stacked wall adjacent to the inside wall of the gulley. The stacked wall tilts slightly inward to ensure the greatest stability.

Following construction, Ryzuk engineering was called back to the site to inspect and approve the work. (See following photographs).

Image 3 (top left): erosion on the east side of the causeway

Image 4 (top right): erosion on the west side of the causeway

Image 5 (mid right): causeway erosion seen from above

Image 6 (bottom left): reinforced retaining wall, with aggregate fill on east side of causeway

Image 7 (bottom right): stacked boulder wall on west side of causeway

5.1.2 NEW PATHWAY

Previously, there was no defined pathway connecting the existing concrete pathway that led around the east side of the tower to the concrete pathway along the eastern side of the engine room (and leading down the stairs to the lookout). This area was just bedrock, and was uneven. As it was one of the areas most heavily used by visitors, it was a serious tripping hazard. A decision was made to build a new concrete pathway to connect the two existing pathways. As Clarkston Construction was on site with a cement mixer (for the retaining wall), they were asked to also install the pathway. This now provides a safer walkway all around the heritage structures. (See following photographs).

Note: while it is acknowledged that this new construction interferes with the visual integrity of the existing site (within the heritage precinct), it was determined that it does not affect the character-defining elements, and as such it was agreed that the compromise should be allowed in the interest of visitor safety.

Image 8 & 9 (above): new pathway under construction & completed

Image 10 (left): removal of fencing to permit access. Note: upon replacement the fence was re-designed so that this section can be removed easily to permit future access without requiring cutting.

Image 11 (right): removing vegetation to provide machine access to the lower causeway.

5.1.3 OTHER ACTIVITY

As there was anticipated to be a considerable amount of waste material produced during the restoration project, and there were no disposal facilities near the site, a construction bin was brought on site for the duration of the project. It was located outside of the fence in the lower west field, where it was easily accessible.

Also, as there were no washroom facilities on site, it was a requirement that temporary facilities (porta-potty) be brought on site. This was discretely located behind vegetation above the east field. It was serviced monthly for the duration of the project.

5.2 RESTORATION OF ELECTRICAL POWER SUPPLY

Prior to any physical restoration of the tower or engine room, the main priority was to re-establish power to the facility, both for the site's requirements and to facilitate the restoration work (without having to bring generators on to the site).

5.2.1 CONDITION OF EXISTING MATERIALS AND EQUIPMENT

Originally drawing power from on-site diesel generators, the lighthouse was later fully electrified and connected to the BC Hydro power grid via overhead power lines strung on several power poles (one centrally located adjacent to the second lightkeepers residence, two in the lower west field, and others in the adjacent property to the west). From the last pole, conduit ran underground, surfacing immediately to the west of the tower (due to bedrock conditions) and entered the engine room underneath the concrete base, then via an external conduit and through the west wall of the building. Power was connected to the tower from the engine room via underground conduit.

Everything visible was in poor condition, except the central power pole, which was in good condition. The underground conduit running from the pole to the engine room was exposed in the area of erosion along the causeway (see image 2 above). The condition of the conductors (cabling) was unknown at first, but following a more detailed examination by Otter Point Electric, were determined to be corroded beyond usability. Also, the electrical panels in the engine room and tower, as well as the heating and lighting fixtures in both buildings, were in relatively poor condition.

Since de-staffing, power had been re-established to the beacon and the weather station equipment by use of small solar panels mounted on the southern exterior of the lantern room and inside the lantern room (on top of the lens mount). Power to the hydrophone and computer monitor equipment had, in recent years been provided by a small solar array mounted on the roof of the engine room. All of these installations negatively impacted the character-defining element of the lighthouse (although, because they were installed prior to heritage designation, they were not technically in contravention).

While on-site equipment was powered with the solar panels, the operation of the facility (i.e. heat and light) was not. This resulted in further deterioration of the structures through continual dampness

(and the growth of considerable black mould in the engine room walls and ceiling) and restricted options for the use of the buildings.

5.2.2 REQUIREMENTS AND OPTIONS FOR POWER RESTORATION

Restoring power appropriately to the lighthouse structures would require:

- Connection to a power source, either:
  - Replacing one or two rotted power poles and re-connection to the BC Hydro grid, or
  - Installing a larger solar array, and connecting that array to the lighthouse structures (with a further option of also connecting it to the BC Hydro grid as a backup and to provide opportunity for net-metering)
- New trenches to be dug for underground conduit between the power supply and the lighthouse structures
- New conductors to be laid in the trenches and to connect to the lighthouse structures
- New panels to be installed
- New or restored fixtures to be installed
- Ensuring that all installations would meet current code and the highest safety standards.

After some consultation and comparison of the cost of options, it was decided that power would be restored via a 24-panel solar array, connected to the grid with the potential for net metering. While this was a more costly option at the outset, it was felt that the marginal cost difference (estimated at about $30,000) could be recovered over a 10 – 12 year period through net metering. Also, it was important to the Society that it also demonstrate to the community that recognition of broader social values (i.e. consideration of the impacts of climate change) was a significant consideration and that communities could, in fact, take steps to address such concerns.

It was also decided that a new configuration for the power supply would best serve the site's needs (see map). Accordingly it was decided to also install a small electrical shed near the base of central power pole, to hold equipment and serve as the centre point of the on-site system. Trenching would bring power from the solar array to the shed, and from there it would both extend to the lighthouse structures as well as connecting back to the power pole. This also allowed for the

two smaller (and rotting) power poles to be removed, as well as the (now dormant and unnecessary) overhead lines connecting them.

5.2.3 INSTALLATION OF SOLAR ARRAY

Specific siting of the array was determined by measuring ambient light levels throughout the day to find the ideal (i.e. sunniest and least shady) spot on site that also provided ease of access. A location at the northeast corner of the east field was determined to be the best location. The terrain at this location (as with all other potential options) was sloped, requiring fill to be brought on site and the base pad for the array to be levelled. Also, careful consideration was given to the nature of this fill to ensure proper drainage through the pad to prevent excessive pooling of water or excessive (and quick) erosion of the pad. The work was carried out by 4M Trucking and Bobcat.

Once the site had been cleared, levelled and compacted, it was assessed by a geotechnical engineer (Ryzuk Engineering) to ensure that it was stable and would provide a secure base for the array. After engineering approval, four concrete ballasts were moved into place on the pad as the foundations for the array. The aluminum frame infrastructure was installed and attached to the base and the solar panels attached to the frame. Twenty-four 265-watt solar panels were installed, facing south and tilted at an angle of 30 degrees.

Trenching was dug from the array to the electrical shed in as direct a path as possible (see map above), the cabling located in conduit and connected to the array. Once the trenching and connections were completed, a 6 foot high chain-link fence was constructed around the entire array. (See following photographs).

Image 12 (above left): cleared site for installation of solar array

Image 13 (above right): array site filled, compacted and levelled with concrete ballasts installed

Image 14 (above left): 24 solar panels installed

Image 15 (above right): digging post holes for installation of protective fencing

Image 16 (right): completed array with fence

5.2.4 INSTALLATION OF ELECTRICAL SHED

Following consultations with the electrical contractor and solar power installer, it was decided that placing the backup batteries and inverters as well as the new panel and monitoring equipment in a new electrical shed would provide a more effective and more efficient on-site power grid. To connect this directly to the BC Hydro grid (via the existing power pole) it was necessary for the shed to be located within about 25 metres of the pole. A location was selected to the western side of the site, accessible by the old driveway, but mostly obscured from view by several trees.

Options were considered to install a prefabricated shed, or even to use a small shipping container, but in the end a decision was made to build a new shed that would, in its appearance, replicate the look of ancillary buildings (e.g. the boat shed) that had previously been built on site. Such a building, it was felt would be sturdier in construction, be more secure and last longer, and it would also better meet the objectives and ambience of the site. It was also decided to keep the building small, to ensure it would not require a separate building permit and approvals under the CRD building bylaws.

Design and architectural drawings were provided by Vivi Curutchet, and the construction contract awarded to Minten Woodworking.

In preparing the site for the building, an error was made in the excavation, which was deeper than originally anticipated. As a result, it was decided to place the shed on a foundation, rather than a concrete pad, in order to bring it back up to grade. The building itself was a frame construction, approximately 10' x 10' in diameter, with a peaked roof. It was vented at each gable end and the entrance door located in the west wall. Hardy plank siding was used to finish the exterior and a sheet metal roof installed. Final painting of the shed (interior and exterior) was done by Society volunteers. (See following photographs).

Image 17 (top left): excavation and foundation forms

Image 18 (top right): foundation completed and conduit installed

Image 19 (bottom left): re-filled and concrete floor installed

Image 20 (bottom right): framing and sheathing completed



Image 21 (left): shed interior, prior to installation of equipment

Image 22 (centre): completed shed, rear view

Image 23 (right): completed shed, front view

5.2.5 CONNECTION TO THE ENGINE ROOM AND TOWER

The entire length of conductor feeding the tower and engine room was corroded and had to be replaced, requiring a new trench to be dug from the electrical shed to the lighthouse structures. Also, it was decided that we should take the opportunity, while the trench was being dug, to install CAT-5 communication cable at the same time. This would, in the future, enable us to have real-time internet connection at the site, usable for a variety of functions. Modern Code requirements (and functionality) stipulate a minimum of 18" separation between power and communications cables, necessitating that the trench dug to the tower be larger than previous.

It was possible to dig a trench of the required size and depth to approximately 10 feet before the tower. At that point, the bedrock rises to the surface, meaning that the conduit had to be laid across the surface for the rest of the way around the tower and to the base of the engine room. (For obvious reasons, we did not want to blast the rock in order to bury the conduit, as it was so close to the structures). Current building codes stipulate that there be at least 8" of concrete encasement above any exposed power lines, requiring us to be a concrete covering to this depth, and approximately 2 feet wide to cover the cables. (Note: previously the power cables that came above ground had been covered by a small mound (about 3") of asphalt that was much less noticeable. This approach would no longer be permissible as it would violate the building code).

Clearly, this had a significant visual impact on the lighthouse, adding a noticeable new feature that had not been present previously. It did not, however, affect the character defining elements, so it was felt that we had no other option but to proceed.

Upon reaching the structures, we had to find a new path inside the buildings to connect to the panel. The previous ingress (into the engine room) was no longer useable (due to inaccessibility and corrosion). We had the option of either drilling through the wall of the tower, or cutting a path across the concrete base of the engine room. Both options were not good, and would negatively affect the historic fabric of the structures. It was decided that the tower structure was of the greatest historical value and should not be compromised. Therefore a trench was cut into the concrete base of the engine room. Care was taken to ensure that this cutting was as minimal as possible. Once the conduits were laid, it was concreted over. New conduit was placed on the exterior of the west wall of the engine room, replacing the existing corroded conduit, and entered the engine room through two new holes drilled through the concrete block wall. The corroded conduit was removed and the entrance hole filled. (See following photographs).

Image 24 (left): previous above-ground asphalt covering - not to code

Image 25 (centre): digging the trench along the causeway

Image 26 (right): power and communications conduits extending above the bedrock at base of tower

Image 27 (top left): forms for concrete conduit cover

Image 28 (top right): incursion into engine room base

Image 29 (bottom left): finished concrete cover around tower base

Image 30 (bottom right): finished concrete cover connection to engine room base

5.2.6 ELECTRICAL AND SOLAR CONVERSION EQUIPMENT

A new 200 amp main electrical panel, an essential loads panel, disconnects and pull boxes were installed in the electrical shed, along with lighting and a baseboard heater. A power consumption meter was installed on the outside of the electrical shed, as well as an 8-foot aluminum pole to elevate the power and communications cable connections to the main power pole beyond reach.

A new 100 amp sub panel and a 30 amp essential loads panel were installed in the engine room. The existing conduits were used to connect power from the sub panel to the tower, and a new 240-volt receptacle was installed in the tower.

The solar power energy system included:

- 12 Magnum GT500 micro-inverters
- Magnum MagWebGT monitoring tool
- Discover 48V and 6.65 kWh AES Lithium-ion battery
- Magnum PAE4048 4,000W battery inverter/charger
- Magnum AC Load Diversion controller
- Magnum ARC remote control
- Electrical connections and baseboard heaters (as overload sinks)

All of this equipment is located in the electrical shed. Also, breaker switches were installed at the array site. (See following photographs).

The 24 solar panels are 265W Hanwha Q.Pro photovoltaic modules. The solar panels provide power to the lighthouse loads first, and any surplus energy is fed back through the BC Hydro grid, providing a credit to the society. The battery remains charged and in stand-by. If the grid goes down, the system automatically switches to battery power.

Note: it was decided to install Lithium-ion batteries as the backup power source, rather than lead-acid or salt-water batteries. While a newer technology (and, accordingly, less field-tested), they are rated with a longer life and greater charging capacity. Also, the manufacturer offered the society a discount as a demonstration user.

Image 31 (top left): electrical panel and solar power equipment in shed

Image 32 (top right): Lithium-ion battery in shed

Image 33 (bottom left): solar power controller in shed

Image 34 (bottom right): breaker switches at array site

5.2.7 TOWER AND ENGINE ROOM FIXTURES

The basic electrical fixtures in both the engine room and tower were corroded beyond usability and were replaced. This included overhead lighting (fluorescent) and baseboard heaters in the engine room, and wall –lights and baseboard heaters in the tower. Efforts to find exact replicas of these fixtures in reasonable working order were unsuccessful, so near-approximations were used. In addition protective steel cages were installed over the bare lightbulbs in the tower to ensure user safety. (See following photographs).

Image 35 (top left): previous, corroded baseboard heater in tower

Image 35 (top right): Replacement baseboard heater in tower

Image 37 (bottom left): Replacement lighting in engine room

Image 38 (bottom right): Safety cage over bare bulb in tower

5.3 RESTORATION OF HISTORICAL STRUCTURES

Once power had been reconnected to the lighthouse tower and engine room, the restoration work on the historical structures began, in November 2017.

5.3.1 LANTERN ROOM RESTORATION

It was clear from the outset that the most challenging and complex component of the restoration would be the engine room. There were a number of issues which still needed to be resolved, and it was feared that without urgent attention there could be a catastrophic failure (in the window section) within a year or two that may not be repairable. It was therefore critical to move as quickly as possible to begin work on the lantern room.

5.3.1.1 CONDITION ASSESSMENT

The first order of business was to determine, in greater detail, the condition of the mullions (upright stanchions) in the mid-section (window section) of the engine room. The mullions were visibly corroded on the exterior, but the extent of that corrosion into the interior could not be determined from a visual inspection – it would require removal and (potentially) cutting of one of the mullions to assess the level of damage. This was critical, as the 12 mullions were the supporting structures for the dome roof. If they were extensively corroded they would have to be repaired or replaced, and this would have to be done one or two at a time. It would dictate the strategy and methodology for the entire lantern room restoration.

John Dam & Associates were consulted as to how to extricate one of the mullions without damaging the surrounding structure, as well as how to re-install the original (or replacement) mullion without having to cut into the surround structure. As it was secured in place, and could not be removed without cutting either the mullion itself or either the wall or roof structure to which it was attached, it was decided to cut the mullion on site in order to remove it. This required prior removal of six window panes (one column on either side of the mullion) and installation of two screw jacks to support the roof. The gap in the windows was also boarded up.

The removed mullion was taken to Smith Bros. Foundry and Machine Works, where it was cleaned to permit examination by John Dam. Fortunately the corrosion was found to be limited to the exterior of the mullion, and its structural integrity was sound. This meant that the remaining mullions (which were not as badly corroded as the test one) could be left in place, and just surface cleaned. This also meant that the strategy for restoration and, in particular, the window replacement, would be significantly simpler (and cheaper) in that no shoring would be required and all windows could be replaced at once. The removed mullion was later re-installed by welding it back together on site, with a small extension (about ½ inch) added to replace the material that had been cut away. (See following photographs).

Image 39, 40 and 41 (top row): corrosion on lantern room mullions, prior to treatment

Image 42 (bottom left): Engineer John Dam assessing extent of corrosion on lantern room posts and base mounting ring

Image 43 (bottom right): re-installed mullion following removal and testing in shop. Weld is at top, just under the connection to the roof mounting ring

5.3.1.2 SCAFFOLDING

In order to safely access the exterior of the roof structure and the windows for restoration work, it was necessary to erect scaffolding around and covering the entire lantern room. The scaffolding was erected by Great West Scaffolding, and was then entirely shrink-wrapped in heavy plastic sheathing to prevent weather disruptions which could both impede the work and potentially seriously damage the lantern room structure.

The scaffolding was erected at the beginning of March, 2018, and the sheathing put in place a few days later. It was removed at the end of August 2018.

The presence of the scaffolding and, in particular, the sheathing caused issues for the navigational aid and weather monitoring equipment on site. The Canadian Coast Guard attended the site and relocated the beacon, mounted on extension bars, to the outside of the housing. Following removal of the hoarding, the Coast Guard returned and re-mounted the beacon on its bracket attached to the exterior of the lantern room.

Following consultations with Environment Canada, it was decided not to re-locate the weather monitoring equipment, but to simply accept reduced information from the equipment that was now located inside the sheathing (the wind-speed monitor, mounted at the top of the mast, outside of the sheathing, still provided accurate information). The primary issue was that the antenna had become damaged at some point during the restoration work, and it was necessary to manually reset the system several times during the work. When the restoration work on the lantern room was completed, Environment Canada staff attended the lighthouse to service the equipment and install two new antennae. (See following photographs).

Image 44, 45 and 46: scaffolding (in process) and completed sheathing erected around lantern room

5.3.1.3 EXTERIOR CORROSION REMOVAL AND PAINTING

Once the scaffolding and sheathing was in place work began on the exterior of the lantern room. The dome roof, the lower walls, the exterior window hardware, the catwalk and rails all were covered with surface corrosion. This corrosion was worse in some areas than others, but a closer inspection did not give any indication of the corrosion being deeper than on the surface that would necessitate re-fabrication. It was decided that the most effective – and the most careful – means of corrosion removal was by grinding with a hand-held electric grinder. This methodology was also discussed with and approved by John Dam & Associates.

The lower walls, catwalk and rails required moderate grinding to remove the corrosion and prepare them for painting. The dome, however, required a heavier grinding and was taken right down, in some sections, to bare metal. In so doing, it was discovered that the dome was constructed of copper, not cast steel as had been previously thought (and as the remainder of the lantern room walls and structures are). Also the downspout water drains from the roof were also found to be copper.

Following corrosion removal, the entire exterior of the lantern room was painted. It received:

- A primer coat – epoxy primer sealer (Amerlock sealer)
- A base coat – high solids epoxy coating (Amerlock2 /Sigmacover 2)
- A top coat (two top coats on the dome) – gloss aliphatic polyurethane topcoat (Amercoat 450H)

There was some concern regarding the riveted seams fastening together the panels of the dome roof. It had been noted that these were the points (toward the top of the dome) at which water was ingressing, causing leakage and interior corrosion. After consultation with John Dam & Associates it was decided that an extra coat of epoxy sealer along the seams would be sufficient to seal them effectively and prevent further leakage, without needing to resort to refabrication.

Paint colours were chosen to match the Canadian Coast Guard's specifications with respect to its lighthouse maintenance. The Coast Guard uses the European RAL design system standards, with identification of colours as:

CCG Red (Flame Red)	- RAL 3000 (Pantone 484; Hexadecimal AF2B1E)
White (Signal White)	- RAL 9003 (Pantone 705; Hexadecimal F4F4F4)
Deck Grey (Traffic Grey A)	- RAL 7042 (Pantone 430; Hexadecimal 8D948D)

(See following photographs).

Image 47 (top left): lantern room exterior showing extent of corrosion on walls and roof

Image 48 (top centre): rails and ladder showing corrosion - extensive in some localized spots (e.g. bottom of ladder)

Image 49 (top right): exterior of door, showing corrosion typical of the surface of all exterior walls

Image 50 (left): exterior of vent showing extent of corrosion in localized areas

Image 51 (bottom): gutter of dome showing extensive corrosion, also around rivets which is a likely source of water leakage into the lantern room

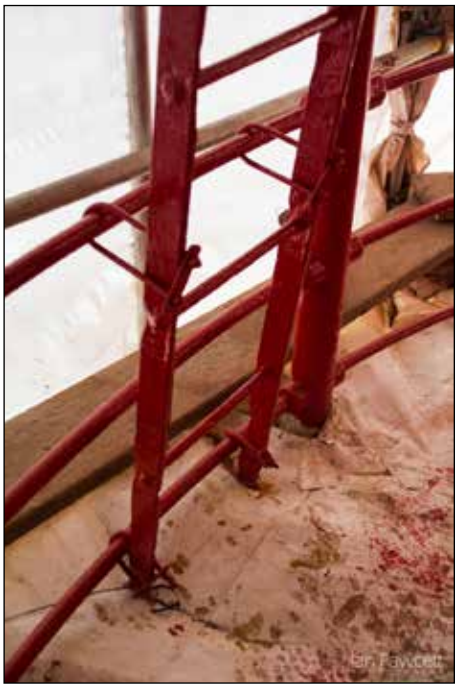


Image 52 (top left): dome exterior, in progress, with surface corrosion removed and prepped for painting - showing it is made of copper

Image 53 (top centre): downspout cleaned and prepped - showing it is made of copper)

Image 54 (top right): ladder and rails, in progress, prior to final top coat of red paint

Image 55 (bottom left): dome, in progress, with base and intermediate coats, prior to red top coats. Weather vane and housing removed.

Image 56 (bottom right): dome, in progress, with red top coat freshly added. Weather vane housing replaced.



Image 57 (left): exterior lantern room wall, platform and rails, completed

Image 58 (centre): lantern room catwalk and window bands, completed

Image 59 (right): completed lantern room exterior

5.3.1.4 WEATHER VANE

As we were able to access the top of the dome, we were able to assess the condition of the weather vane at the peak. It was severely corroded, to the point that it no longer was able to rotate or serve any function as a weather vane. The outer panels were cracked and deteriorating, and it was suspected that this was another point of water ingress, causing leakage into the interior of the lantern room.

The options were to:

- Leave it in place, clean out as much of the corrosion as possible and reseal and repaint it. This would mean it would be permanently frozen in place.
- Remove it from the roof, and restore it in a foundry, cleaning out the corrosion and replacing the deteriorated components. This would allow the weather vane to rotate again, and function as it should.

The second option was chosen. Unfortunately, the corrosion was so extensive at its base that it could not be removed without cutting it out, meaning that a new mounting collar would need to be fabricated.

The weather vane was cut from the tower, the external panels removed and taken to Foggy Mountain Forge for restoration and refabrication. Once cleaned, restored and repainted, it was reassembled. In its complete form, it was too large to be taken back to the top of the tower through the internal hatches, so it had to be raised with a winch up the outside of the tower, once the sheathing had been removed, but prior to the scaffolding being removed. It was reconnected with the new mounting collar, and now functions properly as a weather vane. (See following photographs).

Image 60 (top left): weather vane showing corrosion and damage,

Image 61 (top right): weather vane mount, showing corroded mounting ring

Image 62 (bottom left): weather vane cleaned and restored

Image 63 and 64 (bottom centre and right): weather vane restored and reassembled atop lantern room

5.3.1.5 EXTERIOR DOOR

The exterior door leading from the lantern room to the exterior walkway was severely corroded, on both the interior and exterior sides. Blacksmith Marty Gilbertson (Foggy Mountain Forge) was consulted about how best it could be restored and it was recommended that the interior cast steel panel be removed and replaced, as it was too corroded to be repaired. It was felt that the exterior could be cleaned and restored.

The door was removed from its hinges and taken to Foggy Mountain Forge, where the work was completed (except the painting). The restored door was rehung in the lantern room, but it was found not to close properly, due to the rigidity of the new plate that had been attached. This required that it be removed again, returned to the forge where it could be slightly bent, and then rehung. It now fit relatively well, and it was decided to install some weather stripping around the edges to provide a better seal. The door was then painted along with the rest of the lantern room. (See following photographs).

Image 65 (left): lantern room door interior, showing corrosion and beginning of separation of top panel from the rest of the door

Image 66 (centre): lantern room door exterior, showing extensive corrosion

Image 67 (right): lantern room door rehung, restored with new top interior panel, new mounting bolts and painted

5.3.1.6 WINDOW RESTORATION

There are 36 window panes in the lantern room, arranged in twelve columns of three panes. The columns are separated by cast steel mullions, extending from the base wall to the dome roof. The panes are separated by rubberized caulking, which is covered on the exterior with cast metal strapping attached to the mullions, and on the interior with metallic tape. The panes are 8 mm thick, approximately 3 ft. square and curved.

Of the 36 panes, several had been, in the past replaced with Plexiglas, which had since yellowed and deteriorated. Of the remaining glass windows, all but two were broken or had significant cracks. The remaining two also had small chips along the edges. (A number of the panes facing the water had been broken by being shot – several had bullet holes. Of the others, it was determined that the caulking between the windows had deteriorated to the point that much of it was missing, and the windows were rubbing against each other when buffeted by the wind, thus causing excessive wear and cracking.

It was decided to replace all of the windows. Twelve new panes were already on hand (as surplus) when the lighthouse was transferred to the society. One of these windows was taken to Gilchrist Glass Bending in Mill Bay as a pattern, and 24 new windows were manufactured from that pattern.

The existing windows were removed. A couple of the least damaged were carefully removed intact, and were stored for use as emergency replacements. The remainder of the broken windows were smashed and removed from the site.

Once the mullions, the window base and the dome roof interior had been painted, Sooke Glass installed the new windows, applying new caulking compound on all sides, and covering the internal seams with metallic tape. A problem was encountered in re-installing the cast metal belly bands on the exterior seams. It turned out that not every window pane was exactly the same size (the bottom row was fractionally shorter than the other rows). Because all of the new panes were fabricated based on one sample provided – and that (unknowingly) was one of the smaller panes – it meant that upon reinstallation there was a fractionally larger gap between each of the rows. The existing belly bands were fractionally too narrow to cover the gap. Accordingly, new bands had to be fabricated (by Foggy Mountain Forge) that were slightly wider. After fabrication, these bands were painted and installed.

(See following photographs).

Image 68 and 69 (top row): lantern room windows showing extent of breakage

Image 70 (centre left): window installation, showing gap between panes

Image 71 (centre right): original mounting straps, too narrow

Image 72 and 73 (bottom row): replacement lantern room windows installed, with replacement, wider, mounting straps

5.3.1.7 INTERIOR CORROSION REMOVAL AND PAINTING

The interior walls, floor, catwalk, dome roof and structural beams were in relatively good shape, although they were stained in some areas (especially the roof) by water leakage. It was decided that the existing paint did not need to be removed, but could be simply ground down for painting preparation. Applications of paint were made as required (two or three coats in some critical areas – primer/sealer and topcoat). Colours were as indicated above (white walls, roof, beams and mullions, deck grey catwalk and floor).

Note: the lens housing in the centre of the lantern room was not painted at this point, as it has not yet been determined what is to be done with it. If the electric lens is reinstalled, then the housing would be more intricately restored and repainted. If the Fresnel lens is reinstalled then this housing would need to be removed and replaced with the housing required for that lens. If neither lens is reinstalled, then the future of this housing will need to be discussed further. (See following photographs).

Image 74 and 75 (top row): original condition of lantern room interior, showing some corrosion

Image 76 and 77 (bottom row): lantern room interior after painting

5.3.1.8 VENTS

There are twenty small round vents located in the lower walls of the lantern room. They open and close by means of a central, hand-turned screw handle. All of these vents had several layers of paint, some had signs of corrosion, and all were non-functional (i.e. they could not be opened or closed as they were "painted shut"). It was decided to remove the vents, to be taken to the foundry (Smith Bros.) where they could be sandblasted to remove the existing paint and corrosion. Upon completion, it was discovered that these vents were made of brass, which was not previously known. Also, it was determined that many of the central screw-handles were no longer functional, nor were many of the mounting screws. Accordingly, replica parts were fabricated at the foundry.

Rather than repaint the (now) cleaned and functional vents, it was decided to leave them as bare brass, and reinstall them in that condition, both to improve their functionality and to show them more clearly in the lantern room. (See following photographs).

Image 78 (top left) and 75 (previous page): show vents in original condition

Image 79 (bottom left): shows vent covers removed

Image 80 (bottom right) and 77 (previous page): show brass vent covers cleaned of paint residue and re-installed

5.3.1.9 ELECTRICAL AND CABLE CLEAN UP

As the lantern room had been largely unused for many years (except for periodic maintenance of the beacon and weather station), consideration had not been given to any spatial functionality. Equipment supporting the beacon and weather station (solar panels, batteries) were occupying floor space, and the cabling connecting the various pieces of equipment was laid somewhat haphazardly around both the interior and exterior. Some cables were still functional, others were not. All of this provided a safety hazard and simply made it difficult to move about inside the lantern room.

The solar panels were removed, and the beacon and weather station were connected to the site's power supply (the batteries were retained as backup). Extraneous cables were removed, and the remaining cables were replaced, relocated and restrung in an orderly fashion, as necessary, to enable easier movement within and around the lantern room.

The main challenge was that the cables feeding the exterior equipment had been fed casually through the vents, rendering them non-functional. As the vents were being restored, an alternate route for these cables was necessary. An option was considered of routing the cables through a more-recently-added aluminum frame window, rather than cutting into the historic fabric of the lantern room itself, however, after consultation with an electrician, it was determined that this option would not be possible (to provide a secure exit) without further damage to the lantern room wall. Accordingly it was decdided to re-route these cables through a small hole drilled adjacent to one of the vents to provide proper, sealed and permanent access to the exterior (the same as had been done previously for other cables). (See following photographs).

Images 81, 82 and 83: previous arrangement of cables in lantern room, going through vents to the exterior, and loose cables exiting vent on the outside

Image 84(left): showing cleanup of cables in lantern room

Image 85 (right): cables re-routed through new holes/couplings in lantern room wall adjacent to vent

5.3.2 TOWER RESTORATION

Work on the componenents of the tower restoration was undertaken in phases, starting with interior concrete work during the colder months, before it was possible to paint. As the weather warmed, the interior painting was brought forward, and the exterior work was completed during the summer months.

5.3.2.1 INTERIOR CONCRETE RESTORATION

The original condition assessment noted a few areas in the tower interior where the paint was peeling and or chipped, and anticipated that only minimal repairs would be required. However, on closer inspection it was determined that significant sections of the interior concrete walls were soft and decaying, requiring much more substantive restoration. This was the major (negative) variation from the original assessment and plans, and resulted in approximately 3 months of additional work to be required.

Among the first steps taken was an inch-by-inch examination of the entire interior of the tower walls, to identify every weak spot and mark it for repair. It was decided that repairs would be done by using hand-held equipment to chip away and deteriorated concrete. This was the safest and most "heritage-sensitive" approach, removing as much deteriorated material as necessary, but as little as possible. The exposed areas were then refilled with a pre-mixed, polymerized cement mortar compound (Planitop-X). In larger exposed, the mortar was reinforced with a re-bar grid. (See following photographs).

Images 86(top left) and 87 (centre left): show repair target areas chipped out with stainless steel reinforcing bar (grid) inserted

Image 88 (centre centre): showing repaired areas (dark patches) along one side of the mid section in the tower

Images 89 (centre right), 90 and 91 (bottom row): showing finished patch areas in various states of drying

5.3.2.2 INTERIOR PAINTING

Outside of the repaired areas, the concrete and paint cover was in relatively good condition. It was not known, however, whether the existing paint was lead based. Accordingly, following consultations, it was determined that it was better (particularly from an environmental perspective) not to remove the paint but to leave it in place and cover it. There were also some areas of corrosion (not significant) on the metal staircases. This corrosion was removed by hand-grinding.

The same paint materials were used as in the lantern room, with white for the walls, and deck grey for the staircase and floor. Two coats were applied, a base coat/sealer and a top coat. (See following photographs).

Images 92 and 93 (top row): showing stained and flaking condition of paint in tower interior

Images 94 and 95 (bottom row): tower interior following patching and repainting

5.3.2.3 EXTERIOR DOOR JAMB

The wooden door jamb surrounding the exterior opening of the portico at the base of the tower had partially rotted (mostly on the west side), due to the effects of weather over the years. The rotted wood was cut out and replaced with a new wood of the same dimensions, then painted along with the remainder of the exterior of the tower. (See following photographs).

Images 96 and 97: showing rotting door jamb (right side of door), and restored door jamb after painting

5.3.2.4 WATERPOOFING

For some time, water had been pooling in the base of the tower following rain. It was believed initially that this was a result of the leaking in the lantern room, as water was periodically seen on the interior walls (which were also stained from the leaking). However, following the restoration of the lantern room, with no further evidence of leaking at that location, water was still found to be pooling at the base of the tower. This caused us to investigate further, and it was determined that due to the topography of the bedrock immediately to the south (water-side) of the tower, rainwater was collecting in the spaces between the buttresses on that side of the tower, and seeping through the concrete base into the tower.

Accordingly, the area was excavated to expose the concrete base below ground level. The entire concrete surface was then treated with two coats of a waterproofing agent (Sonoguard MasterSeal TC 225 HC (base coat) and Sonoguard MasterSeal M200 (top coat). This was applied both to the

affected area on the south side of the tower, as well as to the entire tower base above ground which was showing signs of increased erosion due to splashback from rain.

As part of the landscaping work to be completed in the coming months, the disturbed area will be regraded to the extent possible, and refilled with gravel to improve drainage and help reduce water retention. It is likely, however, that due to the bedrock topography (which slopes toward the tower base) that this may be an ongoing issue, and should be monitored regularly.

(See following photographs).

Images 98 and 99 (top row): excavation to address leakage issue - compound patches are points of water ingress

Images 100 and 101 (bottom row): water-proofing around base to protect from splash-back

5.3.2.5 EXTERIOR PAINTING

The exterior of the tower was painted approximately 26 years ago. The work was done by Island Applicators (in fact some of the same personnel worked on the previous project), so its condition was better known than the interior or the lantern room. At that time the paint was entirely stripped down to bare concrete, and extensive concrete repairs were undertaken. It is therefore known that the existing paint is not lead based.

Other than the staining from the rust running down from the lantern room, there were only a few small spots that could be found (by visible examination) where the paint had chipped or blistered, nor could any significant areas be seen of concrete degradation. It was felt that only minor repair work would be needed, and that the existing paint did not need to be removed, but could remain as a substantive base.

This was critical to help determine the methodology for accessing the tower for the work to be done. Three options were considered:
- Erecting scaffolding to provide access around the entire tower.
- Bringing a large hydraulic lift vehicle ("cherry picker") on site to provide access.
- Attaching a platform cradle with an electric winch to the lantern room base, which could be raised and lowered to provide access.

There were pros and cons to each option. Scaffolding was (by far) the most expensive option, but also the safest. It would also take somewhat longer, in total, due to the additional time required to design, set up and then remove the scaffolding. The hydraulic lift was the medium price option (would have to be rented), and safer than the cradle. The cradle was the least expensive option, as Island Applicators already owned the equipment, and therefore could bring it on site at minimal cost. It was also the riskiest option. It could not be used in inclement conditions, especially in windy conditions which were prevalent at the site.

Following discussions it was decided that Island Applicators were best suited to determine the methodology they felt most comfortable using. They eventually opted to use the platform cradle and were careful to schedule the work for the right weather conditions, which were calm for several consecutive days.

Each of the six sections of the hexagonal lighthouse (i.e. the column between two buttresses) was addressed individually – first a closer assessment for any areas of paint or concrete failure, and then patching as necessary, followed by application of a sealer coat and a top coat of paint. Deckcote EXT paint was used for the tower exterior (colour white). The cradle was then relocated to the next section and the process repeated.

Also, the trim around the doorway entrance was painted (red) as well as the metal door, portico floor and stairs (Deckcote EXT, deck grey).

(See following photographs).






Image 102 (top left): pre-painting condition, showing staining at top, along buttresses and around base

Image 103 (top centre): power washing prior to paint application

Images104 (top right), 105 (bottom left) and 106 (bottom centre):: painting from cradle (upper sections) and from ground (lower sections)

Image 107 (bottom right): exterior painting completed

5.3.3 ENGINE ROOM RESTORATION

Restoration of the engine room was tackled in three phases: concrete work was done at the same time as concrete work on the tower interior, external painting during the summer months at the same time as the tower exterior, and the interior work later in the fall as the temperatures cooled.

5.3.3.1 CONCRETE RESTORATION

While the engine room building itself was found to be in good shape, with no evidence of structural issues, the original concrete base upon which it was built (which was also the base for the previous engine room) had numerous areas where surface disintegration was apparent, resulting in cracking and flaking. It was determined that surface repair (parging) was all that was required, and this was carried out.

One area of specific concern was the stairs leading up to the engine room. These stairs were cracked and required repair. However, and more significantly the three stairs were not at consistent heights, as would normally be expected for stairs, but each was a different height. The height of the top step was greater than would normally be found in any functional staircase. This was felt to be a safety hazard (although minor).

Consideration was given to removing and rebuilding the stairs. However this would be an interference with one of the character defining elements of the site (the intact structural form), and so was rejected as an option. Consideration was also given to adjusting the heights of the stairs by adding a thin layer of concrete (of varying depth) over the existing stairs, to even out the heights of the steps. Again, this was considered to be changing (albeit only slightly) the character of the structure, and so it was decided simply to repair the cracks and leave the heights of the steps as they were.

Note: should the stairs prove to be a hazard, the second option could be reconsidered in the future at minimal cost. Also, future consideration could be given to extending the handrail from the engine room walkway at a 90-degree angle down the west side of the stairs, to provide a handhold. (See following photographs).




Images 108, 109 (previous page and 110 (top left): showing cracking and crumbling in concrete base and stairs of engine room

Image 111 (top right), 112 and 113 (bottom row): concrete surface restored

5.3.3.2 ENGINE ROOM EXTERIOR PAINTING

The exterior paint on the engine room was significantly weathered, patchy and flaking in a number of areas. It was scraped for preparation, and the old rusted conduit removed. A base coat and two top coats of paint were applied (same specifications as for the tower). The walls were painted white, and the roof was painted red, and the door painted deck grey.

Note: since the painting was completed, a small water leak from the roof has been detected. The point of ingress is where a dish transmitter (installed by the Department of Fisheries and Oceans for it whale monitoring program) is attached to the roof. The point of attachment will be caulked until such time as the transmitter is removed (connection will be via the Society's communications cable), at which point the area will be sealed. (See following photographs).

Images 114. 115 (top row) and 116 (centre left): show paint condition on walls, roof and base

Image117 (centre right): painting in progress

Images 118 and 119 (bottom row): show finished painting

5.3.3.3 VENT REPLACEMENT

An air vent hood attached to the north wall of the engine room was seriously corroded, with parts of it completely eaten away. Also the metal brackets that attach it to the wall opening were seriously corroded, beyond repair. The vent hood was removed and taken to Foggy Mountain Forge, where a replica hood and mounting brackets were manufactured. The hood new hood was installed, and then painted. (See following photographs).

Images 120 (left): vent hood showing extensive corrosion damage

Image 121 (right): replacement vent hood, installed and painted

5.3.3.4 ENGINE ROOM INTERIOR PAINTING

The interior walls, ceiling and floor were all showing wear, but not severe in most places. The main issue was the presence of black mould at several locations on the walls of both the main and back rooms. This was noted to have grown considerably in the past year, and is attributed to the lack of heat in the building during the past number of years. Especially in winter, the interior of the building is cold and damp. The damp had also caused the paper surface of the wallboard to wrinkle in some locations in the main room.

The first task was to remove the mould, using a commercial mouldicide. It is intended that this application will not only remove the existing mould, but will also inhibit any further growth (or re-establishment).

With respect to the wallboard, it was determined that the damage was restricted to the surface, and could be repaired with sanding and re-sealing, rather than removing and replacing the wallboard. Accordingly the walls were sanded, and a coat of sealer applied, followed by primer and a topcoat.

Products used for the walls and ceiling were Dulux branded. The floor was painted pearl grey, with a primer coat and two top coats. Products used for the floor were Deckcote. (See following photographs).

Images 122 (top left) and 123 (bottom left):: showing condition of interior walls and floor - note mould in corner and wrinkling along bottom

Image 124 (top right):: back (small) room painting completed

Image 125 (centre right): main room painting completed, showing interior of vent hood

Image 126 (bottom right): main room painting completed, also showing venting painted

5.3.3.5 METAL FIXTURES RESTORATION

A number of metal fixtures in the engine room (venting for the diesel engine) were significantly corroded. It was determined, however, that the corrosion could be treated in place and the vents did not need to be removed or replaced. Accordingly, the vents were stripped as necessary, the corrosion ground as necessary, and a coating of Corroseal Rust Converting Primer applied. The vents were then repainted with Amerlock pearl grey. (See images 120 and 121 above).

5.3.3.6 REFERENCE MARKER

The reference marker, which is located between the engine room and the tower, marks the location of the Canada-Us boundary. Its condition was good but getting worn, so it was decided to give it a coat of paint for protection. (See following photographs).

Image127 (left): reference marker prior to painting

Image 128 (right): reference marker after painting

5.4 PATHWAYS AND RAILINGS

In addition to the restoration issues regarding the pathways and railings at the site, visitor use and safety was also a paramount consideration, prompting a number of changes to the existing fabric.

5.4.1 SAFETY RAILINGS AROUND ENGINE ROOM

The safety railings around the engine room platform, and stretching down to and around the lookout platform had previously been powder-coated. Accordingly, the rails were removed from the concrete and taken to the paint shop (Victoria Powder Coating) where they were sandblasted and re-coated. They were then replaced in the same positions from which they were removed (the rails were anchored to the concrete by a metal base (cemented in) with attached bolts.

The railings running down to and around the lookout platform, however, could not be removed without significant damage, as they were cemented in to the concrete pathway/platform. Accordingly, they were cleaned on site, through hand-grinding, and then given a coat of primer/sealer and two top coats of Amerlock (red).

It had been noted, through observation of on-site visitors, that it was quite common for people – especially children – to lean through the existing safety railings to gain a better view of the rocks/water below. This was also a concern expressed by the CRD building inspector during his visit. The vertical drop (especially on the south side of the engine room platform is significant (estimated at about 20 ft.) and is a severe hazard. Accordingly, it was decided to insert braided, stainless steel cables (3/8") horizontally in the gaps of the railings to prevent people from leaning through. A design was developed, and the holes through which the cables would be strung were drilled (prior to painting). Unfortunately, the hardware fasteners (in-line stainless steel tensioners) required to install the cables as designed could not be found. As a result, this component of the work was put on hold until such time as the fasteners can be sourced. This component of the project was moved to the Capital Gaming Grant project, and work continues to find the appropriate materials. (See following photographs).

Images 129 and 130: rails removed for powder coating

Images 131 and 132 (top left and centre): condition of remaining rails

Images 133 and 134 (top right and centre left: rails primed and ready for top coats

Images 135 and 136 (centre right and bottom): finished rails

5.4.2 CAUSEWAY HANDRAILS

Handrails along the pathway were previously installed after the concrete pathway was constructed. They comprised upright galvanized stanchions approximately 3 feet in height and space about 8 feet apart. The "handrail" had at different times been a length of (3/4" to 1") rope or a length of 1" galvanized chain (according to historic photographs). It was decided to use chain to restore the handrails, as this appears to have been the later option, therefore more likely in keeping with the mid 80's restoration target.

The larger problem was that both handrails (east and west side of pathway) were located approximately 3 feet from the edge of the concrete pathway, rendering them unusable as handrails. (It is not known why they were located this far from the pathway, but it is surmised as the prime users were lightkeepers and their staff or coast guard personnel they did not require the handrails per se, and they were there simply to define the pathway for safety reasons).
With the number of seniors (and others with mobility challenges) now using the site, the need for handrails to assist in accessing the lighthouse and (particularly) returning up the relatively steep pathway was critical. It was decided to relocate the stanchions on the east side of the pathway so that they would be within reach of the pathway users.

In addition, four of the required stanchions had been lost over the years, and these were replaced with new stanchions of the same size and design. (See following photographs).

Image 137 (left): pathway and stanchions, in original location and without chain rails

Images 138 and 139 (centre and right): east side stanchions relocated and chain rails added

5.4.3 CAUSEWAY PATHWAY

The concrete pathway was constructed in the mid 1960s by lightkeeper Jim Bruton. Accordingly it was deemed to be a significant historical feature, and as such it was decided that no changes should be made to it. There are nine steps, in groups of 1, 2 or 3, along the path, which are mostly non-standard heights. Also one of steps is not at right angles to the rise, but slopes downward at about 70 degrees. All of these steps pose a hazard. However, it was decided to leave the pathway as is (as historical fabric), as it was felt the relocation of the handrail would compensate in large part for the hazard. It is recommended that this continue to be monitored (especially the sloping step), and if necessary to install a small caution sign by the step (located on the adjacent stanchion).

Image 140 (left): heritage pathway across causeway

Image 141 (right): showing steps on pathway; unlevel step is 2nd from bottom

5.5 LANDSCAPING

Following the restoration work, there is some site remediation required to return the landscaping back to its original condition prior to the restoration work. This is primarily in the area of the causeway, where substantial vegetation was removed to enable machine access, and around the base of the tower where the new concrete cable cover was constructed and where grass and soil were removed to address waterproofing needs.

There are also many other landscaping projects which would benefit the society's objectives and improve the site's functioning (both in the heritage zone and the support zone). These projects will necessarily take a number of years to fully implement, so it was decided to combine all of this work and move it forward to future projects (including the Capital Gaming Grant project). To itemize this work and frame it appropriately, a comprehensive Landscaping Plan was developed, proposing that implementation begin in the summer/fall of 2019 and continue for at least two more years.
This landscaping plan combines three objectives:

- continued recognition and attention to the historic landscaping at the site, including specific plantings done by the Lightkeepers and their families
- allowing the site to re-naturalize, as appropriate, taking advantage of the abundance of native vegetation on site (and including removal of invasive species as appropriate)
- recognition of the society's limited resources to maintain and care for the site and its landscaping (especially in light of the fact that there is currently no source of usable water on the site, except for rainwater runoff)

A copy of the Landscaping Plan is attached as Appendix 4.

Image 142 (left): daffodils planted by lighkeeper's family

Image 143 (right): mix of open field (grass) maintained by Coast Guard and naturalized shrubs

6. ADDITIONAL FEATURES / SITE IMPROVEMENTS

In addition to the Lighthouse Restoration work outlined above, a number of related activities were carried out during the duration of the restoration project. These additional features and site improvements are beyond the scope of the project (as developed with the Westaway Charitable Foundation), but nevertheless have significant impact on the full site development. They are included here for reference.

6.1 ACCESS ROAD

Sheringham Point Road is the only legal access to the lighthouse site. (While Seaside Drive/Lighthouse Drive) also access the site gate, the society does not currently have legal access (easement) to use that portion of Lighthouse Drive, which is a private road owned by the Strata Council. The society does have legal access to use the pedestrian trail from the parking lot at the end of Sheringham Point Road, across Lighthouse Drive to the site gate. It also has legal right of vehicle access through the strata gate, down the extension of Sheringham Point Road and along that portion of Lighthouse Drive to the site gate.

During discussions regarding future use of the area, including the loop trail and the parking lot, the Capital Regional District asked that the Society take responsibility for upgrading the condition of the lower 500 m of Sheringham Point Road. That section of the road (now privately owned) had previously been chip-sealed but was now in deteriorating condition and in need of grading and either chip-sealing or paving. The local area director offered to provide the funds (as possible) for the work to be done, from the federal gas-tax rebates provided to the municipality by the Government of Canada.

To determine the needs and specifications for the work to be done, a civil engineer (Herold Engineering) was contracted to provide drawings and advice. As well consultations were undertaken with the CRD and with the Provincial Department of Highways. It was decided that, due to the volume of traffic on the road, and the potentially restricted budget to complete the work, chip sealing the surface (following surface preparation and grading) would be a satisfactory approach. Three bids were solicited for the work to be done (with two bids submitted) and a selection made (a combination of 4M Trucking and Bobcat and Shades Tankers).

The first task was to re-establish three turn out areas that would allow vehicles to pass on the one-lane road. This was done in 2017, as well as some clean up of the road and filling of eroded areas. Unfortunately, it proved not possible to schedule the chip-sealing equipment (which can only be used in summer temperatures) prior to the end of the season. The following season was also tight for scheduling the equipment, and it was learned that the Department of Highways had scheduled upgrading work to be done on the upper portion of Sheringham Point Road for that summer (via Main Road Contracting). It was hoped that the two projects could be combined, providing a potentially significant saving to the Society/CRD funds. While this initially appeared positive, at the last minute it was determined by Main Road that they would be unable to do the work. It was then too late in the season for the work on the lower section of the road to be completed.

In 2019, it was arranged that the chip-sealing work would be done at the beginning of the season, before

the equipment was otherwise employed in other locations. By then, the condition of the road had deteriorated further, and it was necessary to do additional surface preparation and filling prior to chip sealing. 4M Trucking & Bobcat was unavailable to do the work, and Rumsby Construction was brought in at the last minute to do the preparation. The road was then chip sealed to the extent that the Society's budget would allow, with a single coat extending all the way from Lighthouse Drive to the CRD parking lot (about 600 m), with an additional coat in the more challenging (i.e. steeper and more eroded) areas.

Directional signs were created and will be installed shortly, as well as speed limit signs (recommendation only for 20 km/hr). The signage plan was recommended by the engineer, and was approved by both the CRD and Department of Highways.

Image 144 (left): original road condition, with vehicle turnout (passing area) under development

Image 145, 146 and 147 (bottom row): showing road after chip sealing (still in process of setling) at the upper parking area, the hill by the water tower and the gate

6.2 WESTAWAY INTERPRETIVE PLAZA

As a component of the Public Engagement and Education Project, funded through Parks Canada's National Cost Sharing Program for Heritage Places, the society established a dedicated area for installation of interpretive signage for the site. This work included filling and levelling the identified area (adjacent to the large Sitka Spruce tree at the edge of the east field), construction of a boulder retaining wall, and installation of interpretive signs. The ground work was completed by Rumsby Construction. The signage was designed by the project manager, with the help of graphic designer Noella LeDrew. The framing was designed both to be simple (and not distract from either the interpretive information or the lighthouse itself) and to replicate the feel of an industrial/working site. The frames were created by Foggy Mountain Forge, and installed by Society volunteers. In recognition of the significant financial contribution to the site, the interpretive area was named the "Westaway Plaza."

Image 148 (top left): placing boulders to create retaining wall for interpretive area

Image 149 (top right: filling and levelling interpretive area

Image 150 and 151 (bottom row): installation of interpretive signs

7. FINANCES

Budgets for the Restoration Project and associated projects were developed by the Project Manager, based on estimates provided by contractors. They were approved by the designated Board oversight committee, with the support of the Board. Tracking of expenditures against the budget was done on a consistent basis by the Project Manager with assistance from the society's Bookkeeper and the overisght committee. As necessary, periodic adjustments were made to the budget. Also, periodic reports were provided to the funders (Westaway Charitable Foundation).

7.1 RESTORATION PROJECT FINANCES

The total project cost for the restoration project components was originally estimated at $337,800 as outlined in the proposal to the Westaway Foundation in June 2016. This number was admittedly quite speculative at the time with several elements still somewhat unknown until the work could begin. As preparations continued during that summer, it quickly became clear that a number of changes were required to the scope of work, and various elements were further clarified, resulting in a revised starting estimate of $364,233 in the fall of 2016.

As the work got underway, more detailed examinations of the condition of the tower and lantern room were undertaken, resulting in amendments to the restoration strategy. This, as well as expanded requirements for the power restoration, caused us to review and revise the cost estimates in the fall of 2017 to $460,298.

Several items (the viewing platform, benches, security system and landscaping), totalling an estimated $23,000, were moved from this current project into future projects (including the Capital Gaming Grant project) and were not yet implemented. Also, the interior set up of the engine room, to create a temporary visitors centre, (estimated at $2,500) is still to be completed, as is the safety cable insertion around the engine room, (estimated at $3,000), and these items are also moved into future projects. There is also the remaining invoice for management and coordination, for work since January 1, 2019 until project completion, (estimated at $8,260). The final project cost will be $389,866.33, with a further $29,000 deferred to future projects.

A breakdown of the costs is as follows:

Item	Estimate (Original)	Estimate (Revised)	Actual Costs	Pending Costs	Deferred Costs
Erosion Control					
Engineering	1,500	1,500	1278.90		
Retaining wall & pathway	6,500	6,500	6,825.00		
Fill & stacked boulder wall	10,500	10,500	10,185.00		
Power Supply					
Solar array installation	35,000	40,000	41,746.60		

Clearing, filling, levelling array site	2,500	5,000	5,000.00		
Install footings (prefab)	3,000	3,000	0		
Trenching & conduit	10,000	15,000	17,349.58		
Power pole installation	2,500	0	0		
Electrical work	14,200	18,198	18,822.10		
Electrical shed	1,000	8,000	10,549.59		
Connection & account set up	1,500	1,500	1,500.00		
Fencing & Safety Rails					
Chain link (solar array)	5,200	5,200	5,200.00		
Safety fencing	5,000	5,000	2,800.00		3,000
Landscaping	1,000	2,000	0		2,500
Lantern Room Restoration					
Scaffolding	0	15,000	34,127.80		
Metal re-fabrication	25,000	25,000	3,902.58		
Stripping & re-painting	40,000	60,000	65,392.65		
Window manufacture & installation	20,000	38,000	42,490.50		
Install dehumidifier, fan, heat	2,500	5,000	1,242.53		
Engineering & technical advice	0	3,000	1,987.50		
Tower Restoration					
Interior re-painting & patching	14,000	35,000	65,145.12		
Exterior re-painting & patching	40,000	44,000	18,198.72		
Scaffolding	20,000	25,000	0		
Restoration of entrance door	3,500	4,000	1,000.00		
Engine Room Restoration					
Interior surface prep. & re-painting	1,000	7,000	8,939.12		
Exterior re-painting & patching	2,000	8,000	6,724.98		
Concrete Restoration					
Foundations	3,000	5,000	1,350.67		
Stairs	1,500	1,500	400.00		
Accommodations for Mobility Challenged					
Viewing platform	7,000	7,000	0		7,000
Benches	4,000	4,000	0		4,000
Visitor Centre Set-Up	2,500	2,500	0		2,500
Enhanced On-Site Security	10,000	10,000	0		10,000
Planning & Coordination	42,400	39,900	27,650.20	8,260	
TOTAL	337,800	460,298	381,606.30	8,260	29,000

7.2 ADDITIONAL FEATURES FINANCES

In addition to the restoration work itemized above, the society also needed to finance (at the same time) the work that was being done on the additional features and site development. Fortunately, in both the case of the upgrades to Sheringham Point Road and the development of the interpretive plaza, external funding was found which paid for a substantial portion of that work.
For Sheringham Point Road, the Regional Director for the Juan de Fuca Electoral Area (Mike Hicks) agreed to fund the work up to $40,000 over three years. The funds were drawn from the Government of Canada's gas-tax rebate to municipalities. As indicated in Section 6.1 above, the extent of chip-sealing was tailored to the available budget. Therefore, the total cost (including: chip-sealing, clearing the turnouts, surface preparation, engineering, sign production and installation, administrative costs and project management) was capped at $40,000.

For the interpretive plaza and signage, funds were acquired from Parks Canada's National Cost-Sharing Program for Heritage Places, which provided a maximum of 50% of the project costs. The total contribution from Parks Canada was $25,000 for the entire project, and a further $28,326 was drawn from society funds. Of this amount, approximately $8,000 is attributed to the interpretive plaza and its interpretive signs (split evenly between the Parks Canada funds and society funds).

8. FUTURE CONSIDERATIONS

A number of additional features have been considered, or are under active consideration, for the site. While not components of the restoration project per se (as identified with the agreement with the Westaway Charitable Foundation), they are nevertheless key elements of the overall site development objectives of the Society. As they will have major impacts on the visual aspects and functionality of the site as a whole, they are included here for reference.

8.1 ACCESS TRAIL

The current access from the site gate to the lighthouse is by means of a service vehicle roadway, which encroaches partially on to the neighbouring property (to the west). It is a strenuous walk (about 350 m), especially for seniors and others with mobility challenges. It would be preferable if a new trail access could be developed which provides easier (i.e. less steep) terrain, and could also function as a "nature trail". Consultations with a trail designer have been undertaken, and a tentative route identified. Pending clarification of a number of legal (boundary) issues, work will continue on this trail in the fall of 2019, under the Capital Gaming Grant project.

8.2 BENCHES

Following consultations (and surveys) with site users, it has been determined that installation of benches along the access route would significantly improve the ease of access through the site. Plans are underway to design and source two to four benches, and to determine locations for the benches to be installed.

8.3 SECURITY GATE

The current entrance gate is chain link, and is rather flimsy. Also, it was struck by a truck in 2018, and as a result it is slightly warped. The society would like to replace the gate with a more substantive and more secure entrance gate. The gate has been designed (by former society VP Rob VanVeen). The design is deliberately fairly simplistic, with clean lines, and reflecting the industrial/institutional/working character of the site. An installer has been identified and, pending clarification of a number of legal (boundary) issues, will be installed either later in 2019 or the spring of 2020.

8.4 DISABLED ACCESS VIEWING PLATFORM

As outlined above (section 3.2.3.2) careful consideration was given to how, and to what extent, access could be provided to the site for people with disabilities and/or with mobility challenges. One of the key considerations is the construction of a viewing platform at the top of the site, which could be made accessible for wheelchairs and those who, for any reason, are unable to walk (along either the service road or the proposed nature trail) to the lower sections of the site.

This platform would be relatively small (about 10-12 feet square), with safety rails around the edge, and a wheelchair ramp for access. It would be constructed at the top of the site in a location where there is a clear and unobstructed view of the lighthouse and surrounding terrain, as well as the waterscape behind it. Interpretive signage (replicating the information at the Westaway Plaza) would be attached at the platform. The location is on a slope, requiring only a one or two foot rise from the service roadway, with the outer edge being about 10 feet above grade.

A funding source for this project has not yet been identified, although several possibilities exist. It remains under active consideration.

8.5 MAINTENANCE AND FUTURE RESTORATION PLANS

Following many years of disuse after the lighthouse was de-staffed, and only minimal attention paid to its upkeep during that time, the Society (and the community) was fortunate that the tower, in particular, and the engine room were not in worse condition. This current restoration was done in time to prevent catastrophic damage to the structures that could well have resulted in their loss. Now that the condition of the structures has been stabilized, it is important that it be kept in such a condition.

Accordingly, a maintenance plan will be developed as soon as practical – to begin within the current year – that will:

- monitor the condition of the structures (with periodic engineering assessments)
- address condition issues, where feasible, as soon as practical after they arise
- provide for a preventive seasonal and annual maintenance program
- provide for a ten-year cycle of more substantial maintenance, including exterior painting, concrete maintenance and metal protection

Funding sources for this ongoing work have not been fully identified, but the Society fully recognizes the significance and importance of this work, and it will form the core of the Society's ongoing fundraising and budgeting activities.

8.6 ACQUISITION AND REPATRIATION OF ARTIFACTS

During the past couple of years, discussions ensued with the Sooke Region Museum with respect to Sheringham Point Lighthouse artifacts which had been accessioned into their collection. These artifacts included the original 3rd Order Fresnel Lens and its mounting, the original fog horn and a compressor. Other artifiacts may also be in the collection. The Museum agreed to provide the lens, fog horn and compressor to the Society on a long-term loan for display at the site. The lens mounting is currently in use at the museum (in connection with the Triangle Island lighthouse display at the museum) and is therefore not available for loan or transfer at this point.
Also, the 1960s–1980s era electric lens (which replaced the Fresnel lens) is currently in storage in the Coast Guard warehouse in Victoria. There may be other Sheringham Point Lighthouse artifacts still on hand at

the Coast Guard as well. Other potential sources of artifacts also exist within the community – in particular with the families of former lightkeepers. (For example, two diesel engines and generators have been offered to the society, as the current owners believe they have provenance with Sheringham Point Lighthouse. We have not, at this point, been able to verify that provenance).

In addition to these (and potentially other) artifacts, the Society has also been able to acquire copies of a varitety of documents (including original architectural drawings, photographs, etc.), and is aware of other materials potentially available both from the Coast Guard and from within the community (again, especially from the Lighkeepers' families). These may also include some original documents.

Over the coming months, consideration will be given to what should be done with these objects and materials. This work will include:

- adoption of a comprehensive Archives and Collections Management Policy that will govern how the Society will acquire, manage, care for and use the objects and materials;
- further discussions with the Sooke Region Museum regarding additional materials and objects which may be in their care to explore opportunities for accessing those materials and objects. In particular, discussions will ensue with respect to the lens mounting for the Fresnel lens, to explore the options of either being provided with a loan or of being able to manufacture a facsimile for demonstration purposes;
- further discussions with the Coast Guard with respect to the electric lens to determine whether or not it is of any further use to the Coast Guard, or whether it can be donated to the Society for display purposes;
- further discussions with the Coast Guard with respect to other mateials and objects which may be in their possession to determine whether the Society can be gifted any appropriate objects and hav the opportunity to acquire electronic copies (scans) of documents and other materials;
- establishment of an on-line archive of pertinent materials and documents which would be publicly accessible through the Society's website;
- development of a plan to display and interpret the artifacts and objects in the Society's care. This would include:
    - potentially re-locating the electric lens on the housing currently in the lighthouse lantern room;
    - potentially re-building the Fresnel lens (it is currently dismantled for storage) and displaying it in the lighthouse engine room (with an option of a purpose-built display facility at some future time);
    - acquiring or manufacturing a facsimile of the Fresnel lens mounting for use in properly displaying and interpreting the lens;
    - installing shelving, interpretive signage and other features as necessary in the lighthouse engine room to enable display of materials and objects as appropriate;
    - consideration of how to display and protect larger items, such as the compressor, on site.

Funding sources for this work have not yet been identified. Further consideration will be given to the resources required, and built in to the Society's longer term financial planning.

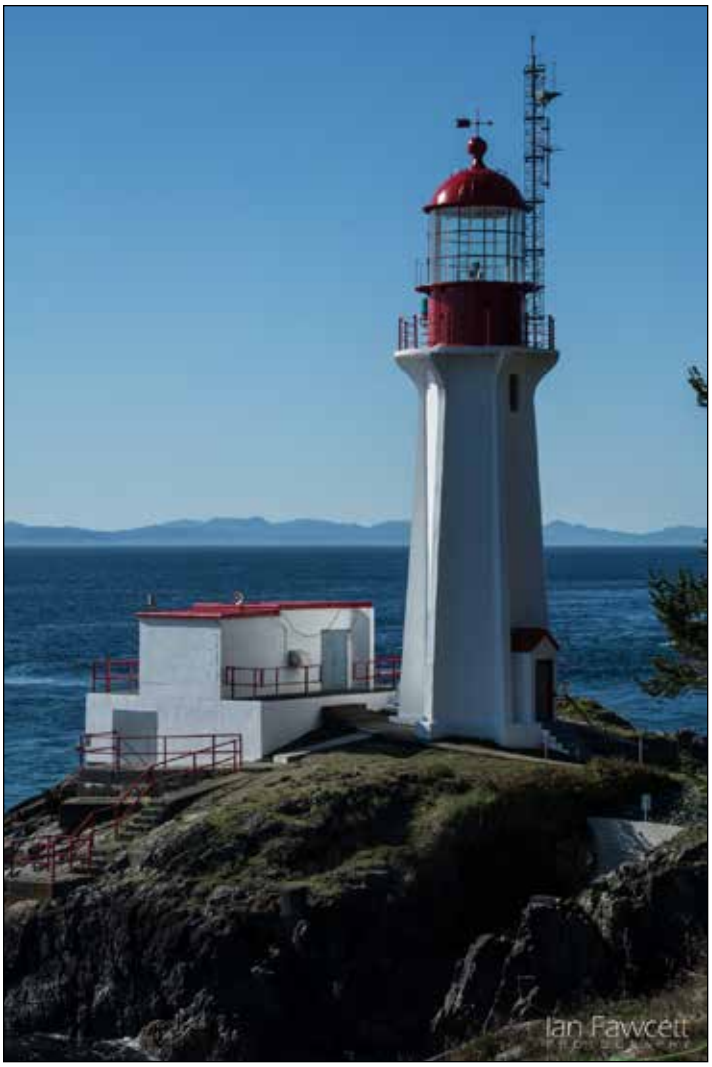
9. SUMMARY

Restoration of the Sheringham Point Lighthouse is a "dream come true" for many. Only a few years ago, it was essentially derelict with no foreseeable future. The persistent and dedicated efforts of a small group of neighbours, who simply would not accept that such an iconic symbol of their community's history could be lost – either deliberately or through neglect – eventually paid off when they gained ownership of the site on behalf of their community.

With the support of many other individuals, some local and some from afar, they set out on a formidable journey to protect and restore the lighthouse to ensure it could be enjoyed and appreciated as a significant part of the their community's – and Canada's – heritage, for decades to come. Two additional sources of support made their task possible in a much shorter time frame than originally expected. First, the contribution from Dr. Marvin Carruthers anchored the operations and efforts of the society as it sought to protect the lighthouse. And second, the remarkable contribution from Peter and Brigitte Westaway – with the largest known donation to a lighthouse project in Canadian history – which ensured that the restoration work could proceed and succeed.

It is to the credit of all involved, that this project has been able to be completed in a timely, efficient and effective manner. It was a principle of the project management from the outset that the work be done as diligently, as carefully and as thoughtfully as possible – that it be done properly, not cheaply. Corners were not cut. Every decision that was made considered and respected the heritage character and values of the site. While there were some small incursions of the heritage character, they were kept to a minimum and were always necessary and the least intrusive option available.

The results speak for themselves. The community of Shirley, and all of Canada, now has a protected, restored – and beautiful – historical icon of which they can be truly proud. It has been our pleasure and our honour to have had the opportunity to undertake this project on behalf of our neighbours and our community.



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