

Hintonburg Pumphouse

Conservation and
Redevelopment Project

Final Technical Report

Revision 3
October 5, 2023



Image 1.0 View of the pumphouse and the Ottawa River - Source: James Peltzer, 2016, @jpeltzer [Tweet]



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Special thanks to the Community Organizations that participated in the community engagement sessions and provided feedback.

Introduction

The Hintonburg Pumphouse ruin, located at 5 Onigam Street near the Lemieux Water Treatment plant, is the remains of a former building on the shores of the Ottawa River. The original pumphouse structure was a feature of the town of Hintonburg in its early history, and its heritage value was acknowledged by the City of Ottawa in 1987 in a designation under Part IV of the Ontario Heritage Act.

The building was severely damaged by a fire in 1989, and the remaining structure is located on an approximately 6,000m² lot owned by the City of Ottawa that is currently zoned 'Parks and Open Space' (Image 1.1). Set in the surroundings of the river landscape and the NCC river parkway system, the structure and property are set to be revitalized as a recreational destination for residents and visitors to the City of Ottawa.

The City has engaged a team of consultants including CSW Landscape Architects, J.G. Cooke and Associates structural engineers, and masonry conservators MH Stoneworks to assist staff in the redevelopment of this property. After extensive analysis of the site and structure and preliminary consultation with representatives from City of Ottawa services, NCC representatives, and various stakeholders, a series of conservation approaches for the structure have been developed.



Image 1.1 View of existing pumphouse ruin - Source: CSW, 2022

History

It is important to first acknowledge the ancient and ongoing history of Indigenous peoples in the Ottawa River Valley, and of the locale and site. The current ruin and the condition of the land, however, are more directly related to the early days of the village of Hintonburg, which became independent of Nepean Township in 1893. In 1899, the construction of the pumphouse began, as part of a larger project to provide fresh water to the village. Hintonburg joined the City of Ottawa in 1907, and from 1912 to 1917, the pumphouse was gradually phased out of use as more comprehensive water supply infrastructure came online with the construction of the Lemieux Water Treatment Plant.

In 1924, the building and grounds were modified to serve a residence and gatehouse for the Lemieux Island facility (Image 1.2). The adjacent properties were largely used for industrial purposes. The last resident of the house, Carden Heeney, remained there until his death in 1980, after which the house was left vacant. The empty building was secured with a fence in 1987. The property was also restored and rezoned at this time to help support its eventual adaptive reuse but was destroyed by a fire in 1989 (Image 1.3). Since that time, the remains of the structure have been deteriorating behind chain-link fences.



Image 1.2 View of the original building - Source: City of Ottawa



Image 1.3 Fire that destroyed the pumphouse - Source: Kitchissippi.com, 2017, originally from Ottawa Citizen

Designation

The 1987 documentation for the designation under Part IV of the Ontario Heritage Act includes a Statement of Reason for Designation that describes the former building as follows:

“...a one and one-half (1 ½) storey cut limestone structure with a pitched roof and an open verandah on the south and east facades. The unique features of the building include a circular turret with a conical roof and a large half-round window on the north and south facades.”

“The entire exterior appearance of this building along with the surrounding grounds are included in this designation.”

It goes on to list the character defining elements as:

- Pitched Roof
- Open verandah on the south and east sides
- Circular turret
- Half round windows

After the 1989 fire, the roof, turret, and the floor of the verandah were all destroyed. In the subsequent years, the unprotected masonry has deteriorated such that little of the half round window on the south façade remains, and the north window aperture is unstable. The surrounding grounds are generally open, with some nearby forests, which have suffered from colonization from invasive species, unstable ground, and flooding.

In the 1990s, upgrades to the infrastructure associated with the Lemieux Water Treatment Plant resulted in some changes to the grounds, with a steep bank and blast-rock retaining wall installed at the edge of Onigam Street. The majority of the site was cleared and covered with gravel, providing better vehicular access to the river, which must be preserved to maintain better visibility of the ruin (Image 1.4). The vegetation on site is generally in poor condition.



Image 1.4 Current condition of the ruin - Source: Google Maps, 2022

Context and Wayfinding

The pumphouse is located at the tip of the peninsula that leads to the Lemieux Water Treatment Plant and is clearly visible while traveling along Onigam Street (Image 1.5). However, at the entrance to Onigam Street from Kichi Zibi Mikan that runs along the river, the pumphouse is obscured from view. The NCC bike pathway runs parallel to Kichi Zibi Mikan and passes in front of the entrance signage for the Lemieux Water Treatment Plant (Image 1.6). However, the views from either direction on the bike path are also obscured by the vegetated areas around the pumphouse (Image 1.7, 1.8). The pumphouse is slightly off the beaten path, which will enhance the sense of mystery and discovery when visitors find the ruins. Signage or small signals to those travelling on Kichi Zibi Mikan or the NCC pathway may aid in the discovery of the pumphouse, bringing more visitors to the ruin and the beautiful views of the Ottawa River.



Image 1.5 Location of the pumphouse



Image 1.6 Bike path and entrance to site



Image 1.7 Views along bike path



Image 1.8 Views along bike path

Stabilization Treatment Options

In 2021, John G. Cooke and Associates Consulting Engineers were engaged to assess the ruins and identify what options were available for their conservation. The report identifies critical repairs that are necessary to prevent further collapse and deterioration of the remaining structure. The options (Image 1.9) were outlined as follows:

- Option 1 – Stabilization: Remove any masonry in poor condition, restore the remaining masonry walls, and protect by capping skyward facing joints to prevent water infiltration.
- Option 2 – Preservation & Protection: Restore all remaining masonry elements by deep repointing, local dismantling and rebuilding, and core consolidation. Protect the masonry walls by capping skyward facing joints to prevent water infiltration, or by a partial self-supported roof structure.
- Option 3 – Restoration & Reconstruction: Restore all remaining masonry elements by deep repointing, local dismantling and rebuilding, and core consolidation. Reconstruct collapsed masonry elements based on existing physical evidence and historic photos or documentation. Protect the masonry walls by a self-supported roof structure, supported by the verandah posts. (J.G. Cooke, 2021)

These treatment options were illustrated and explained during the first engagement sessions to solicit feedback on their feasibility, and to assess the community's interest in the various options. The language used in the Cooke report does not conform specifically to the terminology used in 'The Standards and Guidelines for the Conservation of Historic Places in Canada', which outlines the three primary treatments of historic places as 'Preservation', 'Rehabilitation', and 'Restoration'. However, the Cooke report conservation options could be roughly translated into these terms.



Image 1.9 Illustrations of stabilization options - Source: J.G. Cooke, 2021

Through engagement, the final recommendation is to move forward with a modified “Stabilization/Preservation” approach (Image 1.11) as the most appropriate treatment. This approach accepts the events, such as the major fire that changed this former building into a ruin as part of the history of the structure, creating a new heritage character for the structure as a ruin and not a house. However, the ‘Restoration’ of some of the character-defining elements, such as partial restoration of the masonry of the half round windows, could enhance the value of the structure in its current incarnation as a ‘Ruin’.

Some of the considerations in arriving at the recommended approach include:

- There is no readily available water and sewer service to the site, curtailing a full restoration and enclosure of the building into a useable facility.
- Records of the building are limited, which makes it challenging for a true full heritage restoration, and the expected costs were anticipated to be much greater than what could be secured for such a project
- An initial proposal to provide a freestanding roof over the structure to expand its usefulness as an outdoor feature in inclement weather and to cap the skyward facing mortar joints, preventing further deterioration of the masonry. This was met with some concern that a roof would encourage undesirable usage of the site and create damp and shadowy microclimates within the structure.

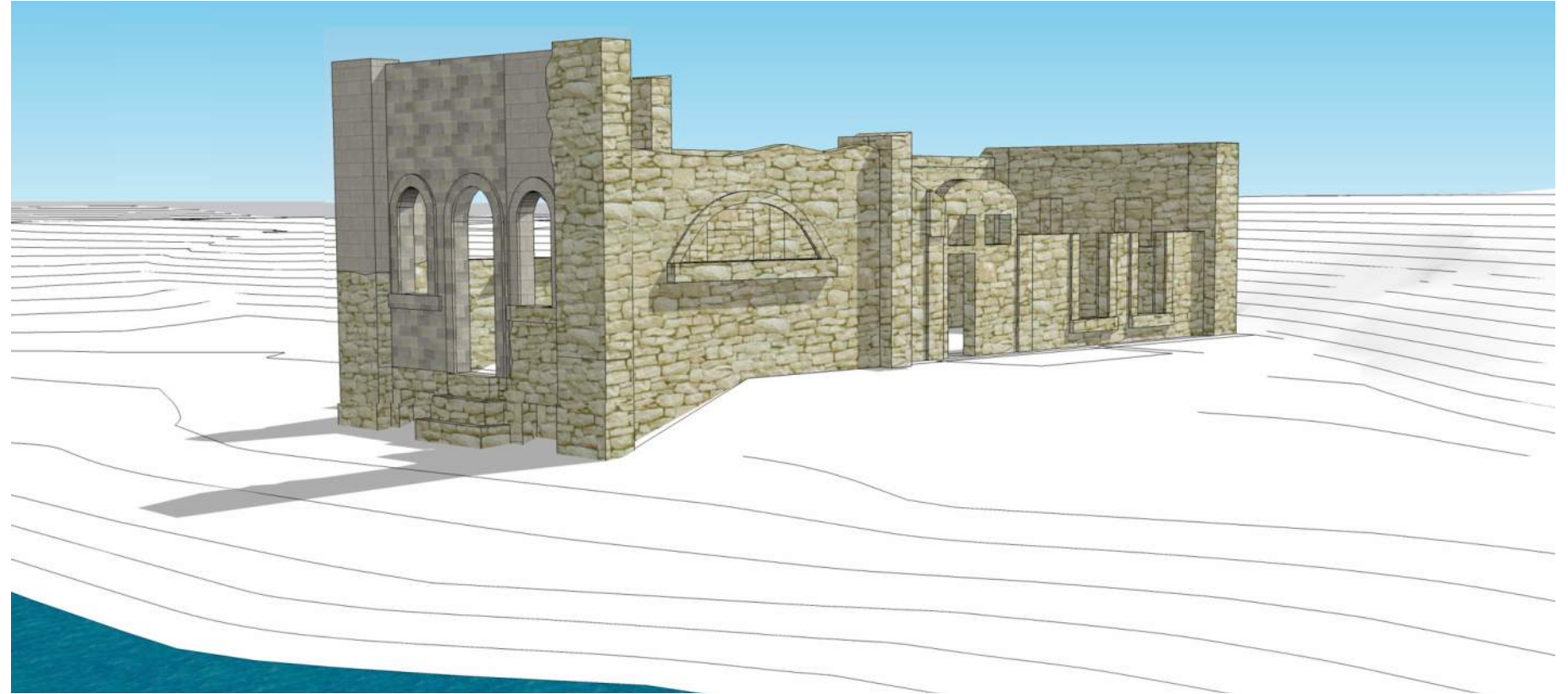


Image 1.10 Option 3 - Restoration

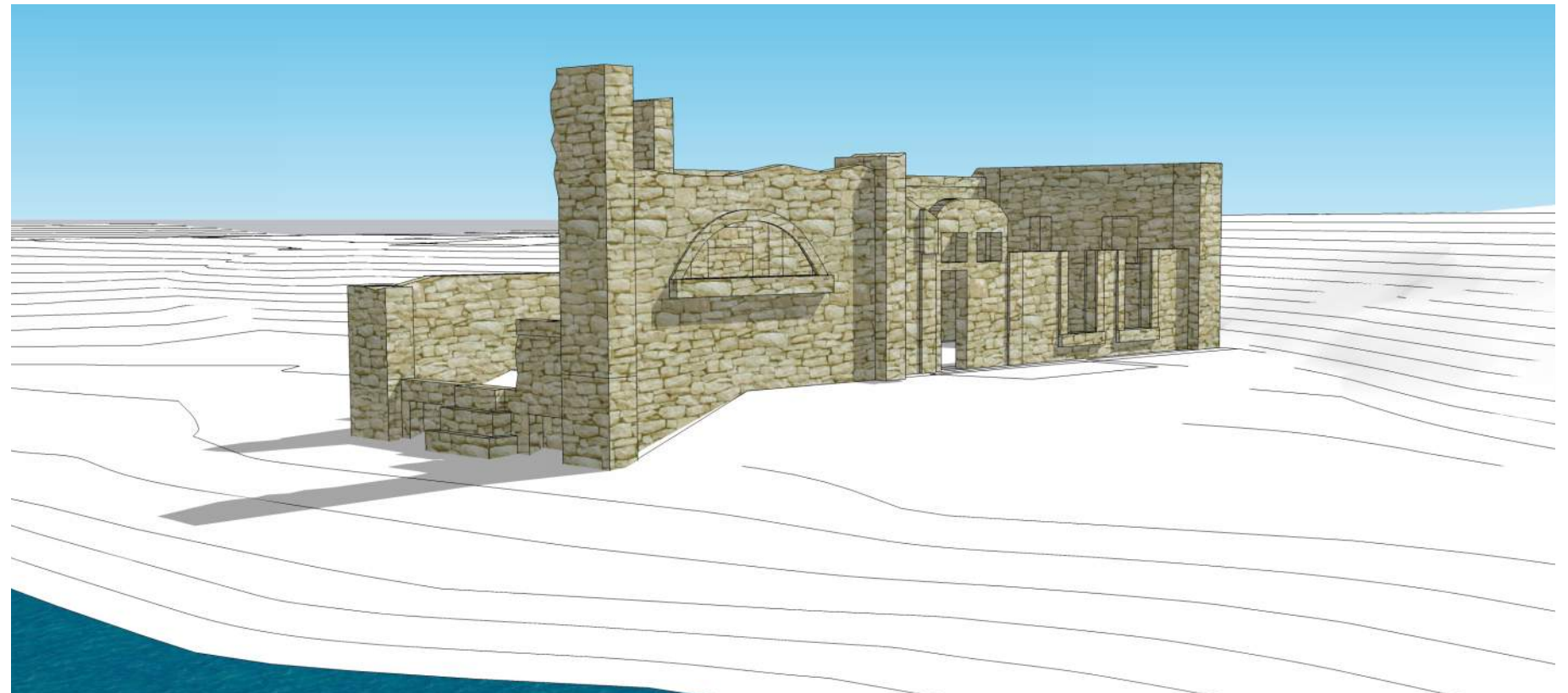


Image 1.11 Option 1 - Stabilization

Preferred Stabilization Treatment

The preferred option was the modified "Stabilization/ Preservation" approach of the ruin which includes (Image 1.12):

- Removal of the severely deteriorated components such as the roof.
- The addition of discreet structural elements to stabilize the stone walls.
- Removing unstable high wall portions of the west gable and consolidating the masonry along the top of the north and south walls.
- Reconstructing a portion of the east wall below the windowsill to define the original door and window openings to create seating opportunities.
- Restoration of all other stone masonry will be with comparable materials.
- Use of capping and flashing for the top of walls to prevent further deterioration. Walls below 1.2m in height will be capped with stone or a mortar bed to avoid creating a hazard for the public, as they would be accessible and may serve as seating.
- Demolition of a small cinder block structure added later in the building's history on the north façade, which is in poor condition and made with inferior materials.
- Filling the existing sub-floor crawlspace with granular and topping with a smooth concrete floor (Image 1.13) to improve accessibility, reduce ongoing maintenance challenges, and address inundation from flooding due to recent high-water levels in the Ottawa River.
- Further exploration of the use of metal grilles or other installations to contribute to stability of the opening and to control or limit access as needed.

For more detailed information regarding the masonry restoration, refer to Appendix A, the memo by John G. Cooke and Associates Consulting Engineers for the recommended conservation plan and drawings of the extent of interventions.

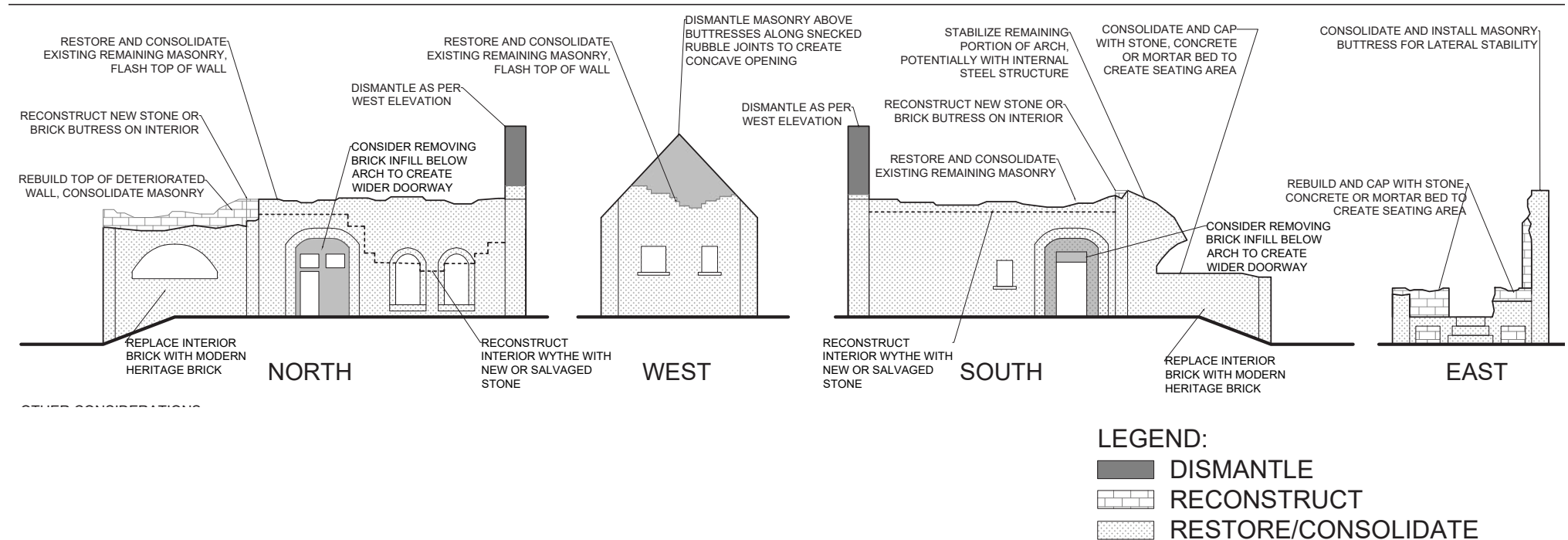


Image 1.12 Proposed conservation elevations prepared by Cooke & Associates, 2023



Image 1.13 Proposed interior treatment of the ruin

Ruin Interpretation Options

Multiple options for the possible ruin interpretation were considered, with a focus on the character-defining elements of the pumphouse, including the pitched roof (Image 1.14), the open verandah on the south and east sides (Image 1.15), the circular turret (Image 1.16), and half round windows (Image 1.17). A suggestion of a free-standing roof structure to emulate the pitched roof was discussed and was met with mixed responses. Generally, it was considered that a roof or shade structure would make the ruin too shaded and create undesirable microclimate conditions that may negatively affect the foundations of the ruin. Other ideas were presented, such as an outline or 'ghost building,' which included interpretative materials that illustrate the former elaborate character of the pitched roof or the circular turret limiting the covered space within the ruin. Security concerns arose during the discussion of the roof, which also extended to the entirety of the ruin and the site itself. Suggestions proposed to 'secure' the ruin included closing windows and access points with bars, grills, or gates. These techniques were met with some approval, but a sensitive design and deployment of these features was prioritized as a reminder that the sense of freedom to explore the site is important.

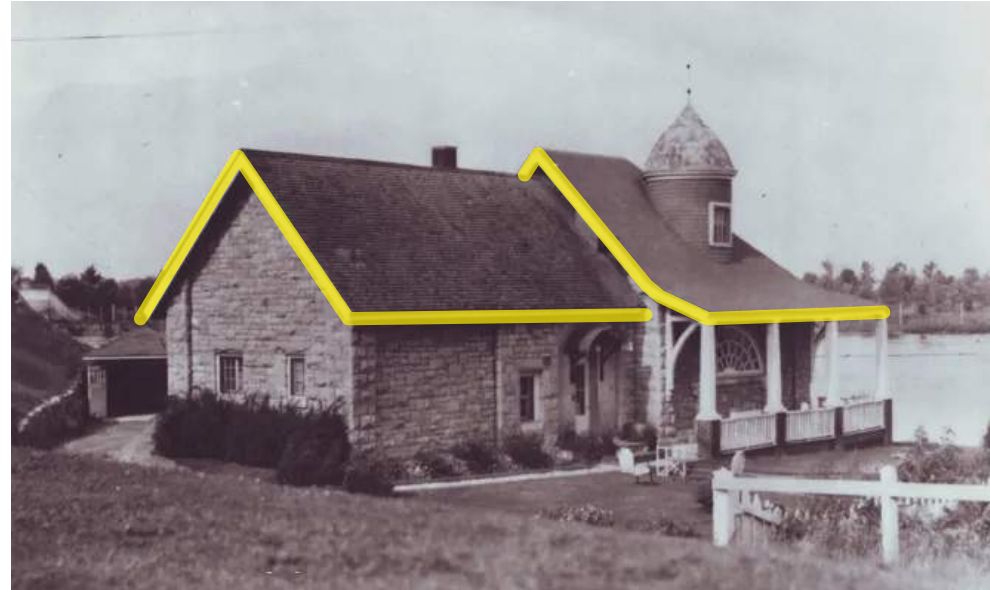


Image 1.14 Character defining element - pitched roof

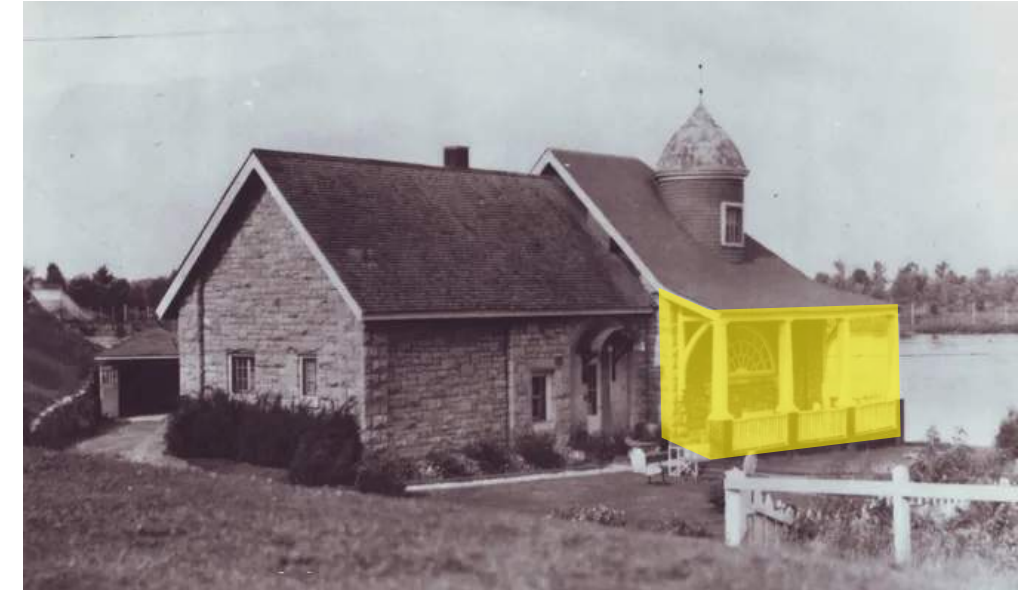


Image 1.15 Character defining element - verandah

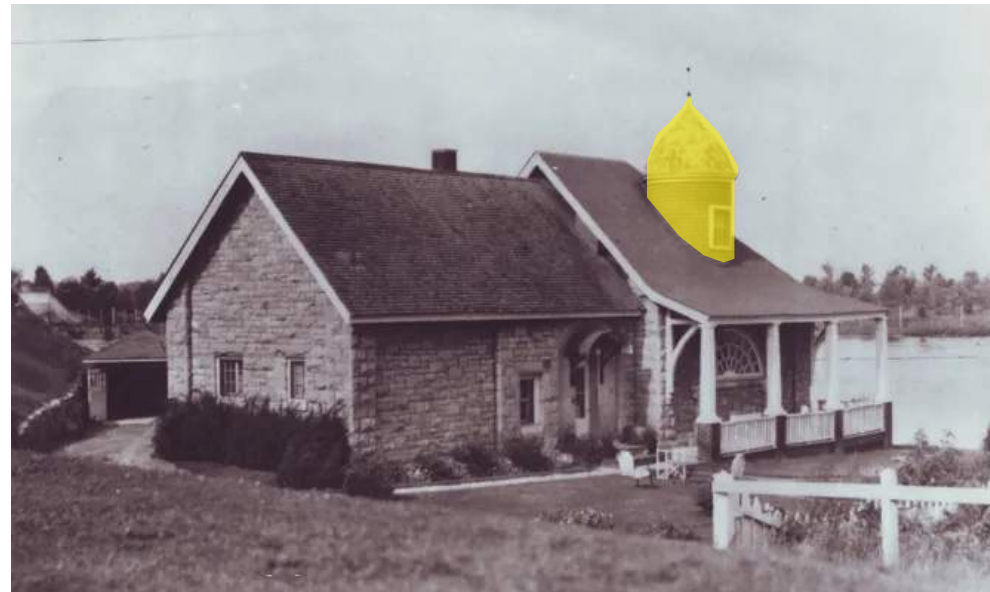


Image 1.16 Character defining element - circular turret



Image 1.17 Character defining element - half round windows

Preferred Ruin Interpretation

After the engagement sessions it became clear that the ruin interpretation should keep with "Stabilization/Preservation" approach to the preservation of the ruin. Therefore, the preferred ruin interpretation includes a small verandah on the east and south sides, with the possibility of metal grills within the openings. The verandah will be similar in scale to the original, with a discreet railing to not detract from the ruin, which would emulate the domesticity of the original pumphouse. The verandah will serve as a lookout onto the water and as a place to pause within the ruin. Concrete foundation walls are proposed to be built along the perimeter of the new verandah, with granular used as infill to support the new surface. This will prevent erosion during flooding events and limit access under the deck. The verandah surface will be similar to the interior surface, simple but rustic, such as concrete to provide a smooth surface for accessibility and enjoyment of the ruin. The surface material will be pulled away from the ruin to limit damage to the walls, as well as to allow for a small low-maintenance vegetated border, or decorative riverstone, along the masonry walls. The surface material of the interior could include a patterned or marked outline of the past uses of the building, either its industrial or domestic past. Metal grills are considered to emulate the half round window to the south to stabilize the stone or to secure the pumphouse during off-hours.

Other interpretive elements should focus on the history of the land and the building and should be clearly expressed through one or more interpretive options that can be incorporated into the site. Plaques with historical details (Image 1.18), sculptures, and other creative expressions (Image 1.19) could be included within the landscape, but preferably not on the ruin itself.

Lighting of the site is recommended as it is desirable for accessibility and can enhance the aesthetic experience of the ruin if implemented properly. Some possibilities are uplighting the ruin walls and implementing small low lighting such as pedestrian bollards along the pathway, with consideration given to avoiding negatively affecting wildlife or detracting from the peaceful, quiet character of the ruin (Image 1.20).



Image 1.18 Interpretive plaques in the landscape



Image 1.19 Other creative interpretive expressions



Image 1.20 Proposed lighting of the ruin

Site Treatment Options

Two options were presented in the engagement sessions to identify the most fundamental opportunities and constraints to the development of the site. These two options offer a high-level conceptual design of the site development including existing uses, exploring new opportunities, and allowing for universal accessibility. Both options were assessed based on the amount of open space, the amount of vegetation removal required, and accessibility.

The first option (Image 1.21) proposed a larger plaza space at existing unit paver pad and vehicular entrance that would serve as a combined entrance for vehicles and pedestrians. An accessible pathway would be provided to mitigate the steep grades. It would switch back and end on the south side of the site near the road, requiring pedestrians to cross the open space to visit the pumphouse. This would require extensive retaining walls to support the pathway and would have a longer travel distance from the entrance to the pumphouse. A simple vehicular roadway to the boat launch was proposed and included a small hammerhead turn around that would reduce the vehicular use of the open space next to the pumphouse. This option could incorporate the hammerhead within the open space to reduce the amount of vegetation removal required. However, it was agreed that a clearly defined vehicular space separate from the pedestrian space would be safer and limit conflicts.

The second option (Image 1.22) would create a plaza to the west of the vehicular entrance with an accessible pathway to the pumphouse. The pathway would include two switchbacks, which would deposit pedestrians directly adjacent to the pumphouse ruin. This would limit the amount of retaining walls required and the travel distance would be shorter to the pumphouse. However, this option creates additional impervious surfaces adjacent to the vehicular entrance and unit paver pad and has a longer travel distance to the parking lot (Image 1.23).



Image 1.21 Site treatment option 1



Image 1.22 Site treatment option 2

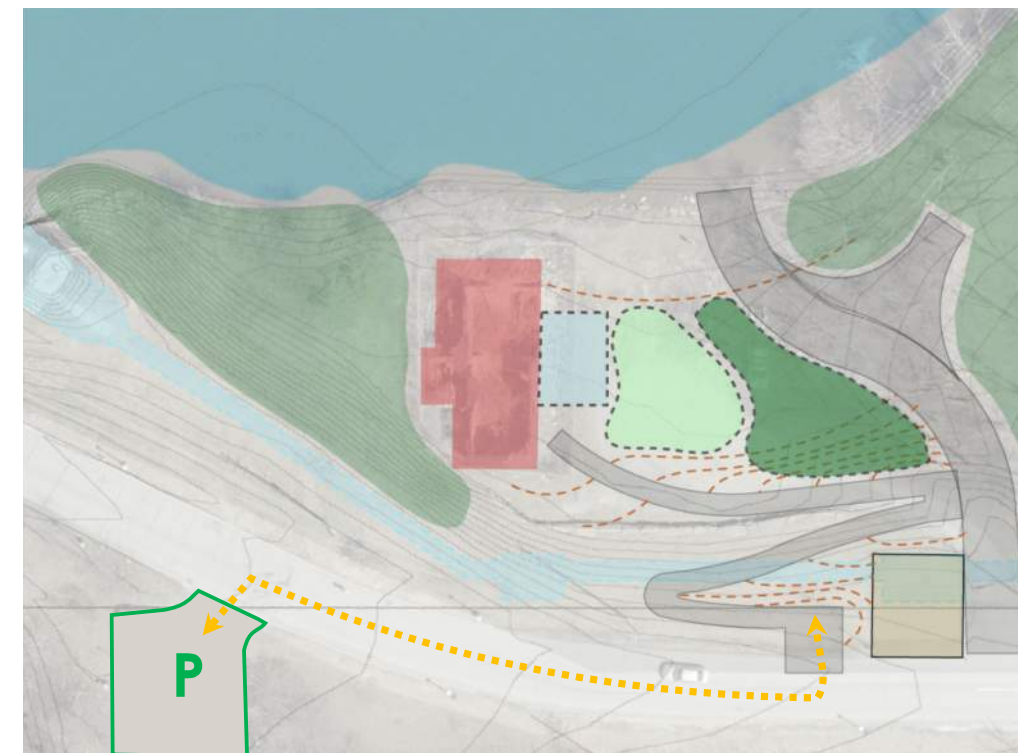


Image 1.23 Site treatment option 2 - distance to parking lot

Preferred Site Treatment

The preferred concept was developed based on the feedback from the engagement sessions and more in-depth design considerations. In the preferred site treatment plan, the pedestrian pathway is simplified to reduce the number of switchbacks and the entrance was moved to the north so that it has a direct connection to the parking lot (Image 1.24). The pathway entrance from the parking lot also provides a different perspective of the ruin when entering the site (Image 1.25). The pathway then leads the users directly to the pumphouse. The vehicular road and hammerhead are clearly separated from the open space. This will require the removal of some of the vegetated area, which is dominated by non-native invasive plant species and those in decline, while protecting more valuable trees and re-vegetating the area. The open space created is proposed to be treated as picturesque, relaxing, and serve as a contemplative space that enhances the ruin's presence to create a degree of mystery.

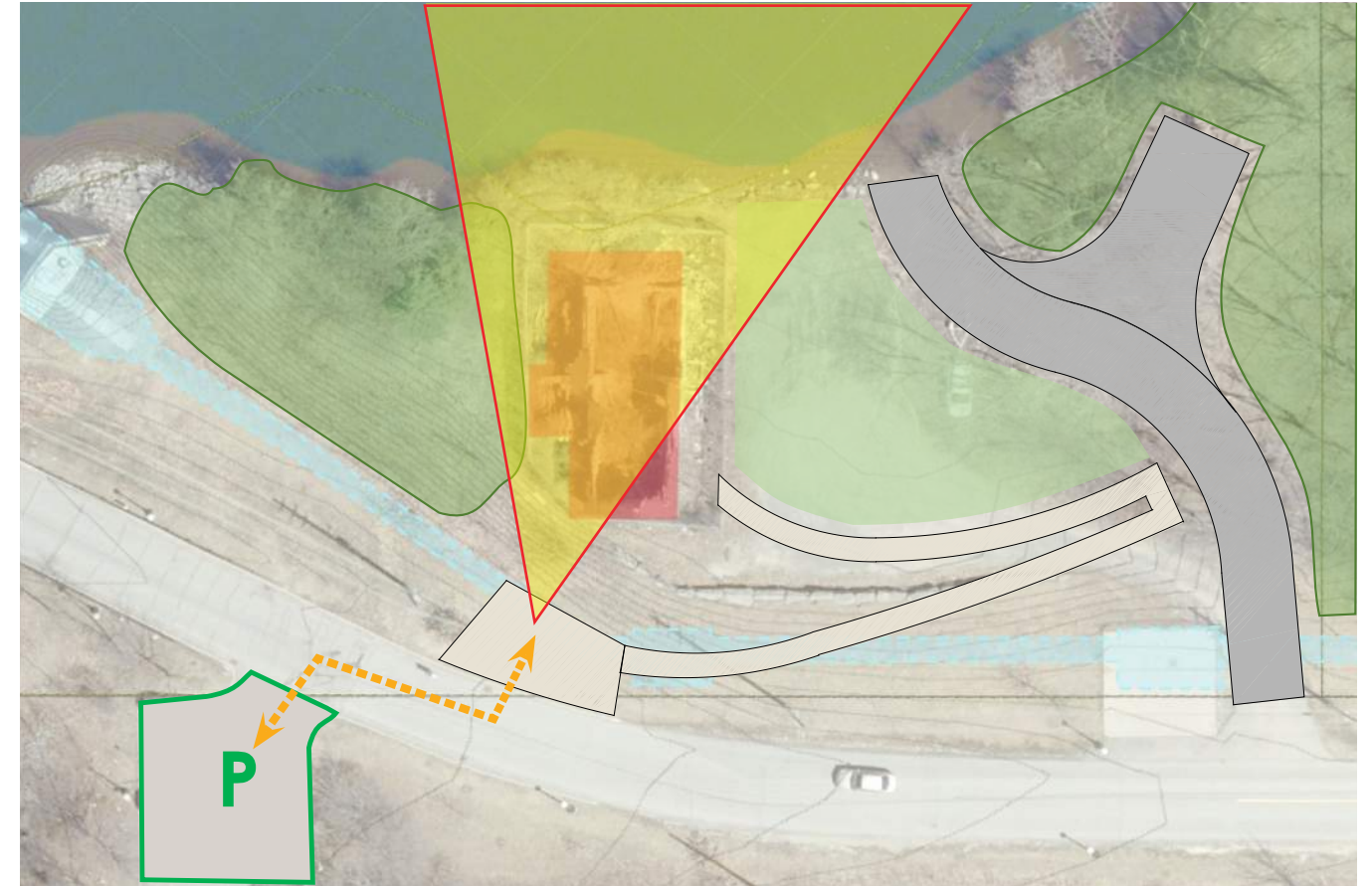


Image 1.24 Preferred site treatment



Image 1.25 Proposed view from pedestrian entrance

Proposed Concept Plan

The preferred site treatment plan was used as a basis for the development of the proposed concept plan. After some more in-depth review of the site and its requirements, a few changes were introduced in the proposed concept plan. Most notably is the vehicular entrance and boat launch turn-around which have been enlarged to accommodate the size of vehicle and trailer used by the Ottawa River Rafter. Bus parking or food truck parking was introduced next to the existing unit paver pad, which can be used as a small plaza for gathering to board the bus or an eating area if a food truck is present. A stair connection to the pathway provides a direct access down towards the open space and boat launch for group activities. The entrance of the pedestrian pathway was moved closer to the parking lot to ensure a safe road crossing for pedestrians. Following the overall concept plan (Image 1.28) is a comprehensive description of the proposed changes with supporting images and diagrams.

Open Public Space

The redevelopment of the site with a park-like open space includes shade trees and picnic tables to provide a comfortable user-friendly space. Trees and individual armour stones along the boat launch access road provides a clear delineation of uses and provides shade for visitors. Amenities such as benches, picnic tables, and bike racks are included under the shade of the trees, leaving the open unprogrammed space for larger gatherings (Image 1.26). The pathway into the site begins along Onigam Street, across from the parking lot, and provides an accessible sloped pathway directly to the pumphouse ruin (Image 1.27). The pathway is located approximately 8m away from the curb to avoid any conflicts with the large sanitary sewer below ground and to retain the street trees along Onigam Street. The pathway slopes at 4.8% and was designed to limit the removal of soils, as they may be contaminated, and to prevent conflict with the extensive utilities that run through the site. The pathway may need additional fill to be imported during construction to soften and better manage the steep slope on the site. Low maintenance, low growing shrubs may be planted between the pathway and the armour stone wall to help stabilize the slope and extend the naturalized area north of the ruin. The armour stone wall on site may be able to remain in place but may require additional stones or a railing, which can be determined during detail design. A retaining wall and railing along the vehicular road and along the stairs may need to be included to mitigate the grades along the pathway.



Figure 1.26 Proposed open space with amenities



Figure 1.27 Proposed pathway leading to the pumphouse

Proposed Concept Plan



- LEGEND**
- LIMIT OF DISTURBANCE
 - FLOODLINE 2019
 - EXISTING WOODED AREA
 - ⊗ EXISTING TREE TO BE REMOVED
 - ⊙ EXISTING TREES TO REMAIN
 - ⊙ EXISTING WOODED AREA TO REMAIN
 - EXISTING ARMOURSTONE WALL TO REMAIN
 - EXISTING UNIT PAVING
 - ⊙ LARGE DECIDUOUS TREE
 - ⊙ SMALL DECIDUOUS TREE
 - ⊙ CONIFEROUS TREE
 - ⊙ NATURALIZED VEGETATED AREA
 - VEGETATED BORDER ADJACENT TO RUIN WALLS
 - SEED/SOD
 - STONEDUST PAVING
 - CONCRETE PAVING
 - WOOD DECKING
 - ASPHALT PAVING (ROADWAY)
 - ASPHALT PAVING (PEDESTRIAN)
 - RETAINING WALL
 - NEW ARMOURSTONE WALL / FEATURE BOULDERS
 - BENCH
 - PICNIC TABLE
 - BIKE RACK

1/8" (200mm) SANIT

SCALE 1:150

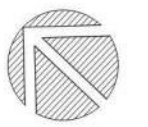


Figure 1.28 Proposed concept plan

Proposed Concept Plan

School Bus Drop-Off / Food Truck Station

The bus drop-off or lay-by space is an essential service for the site as the Ottawa River Rafter's often have large school groups. In the concept plan, the bus drop-off is provided adjacent to the vehicular entrance and the existing unit paver pad. This unit paver pad is required to be maintained to access the below utilities but may be renovated to serve a dual purpose as a small entrance plaza. This bus drop-off location can also be used for food truck services, which could utilize the new entrance plaza as a gathering space or seating area. As the food truck services may occur at the same time as a school bus may need the drop-off space, the bus could park further north along Onigam Street as it does now, or it could use the boat launch parking area (Image 1.30). Electrical service supply may be provided from the electrical poles along Onigam Street but will need to be determined during detail design.

Stairs have been included from the bus drop-off to the pathway of the ruin to provide direct access to the open space and boat launch. The stairs could be simple metal stairs using helical piles to reduce the construction cost and excavation of the site. An example of this type of stair was designed by CSW and constructed as a part of the Kizell Trail Expansion along Goulbourn Forced Road in Kanata (Image 1.29)



Image 1.29 Kizell Trail Expansion stair - Source: CSW

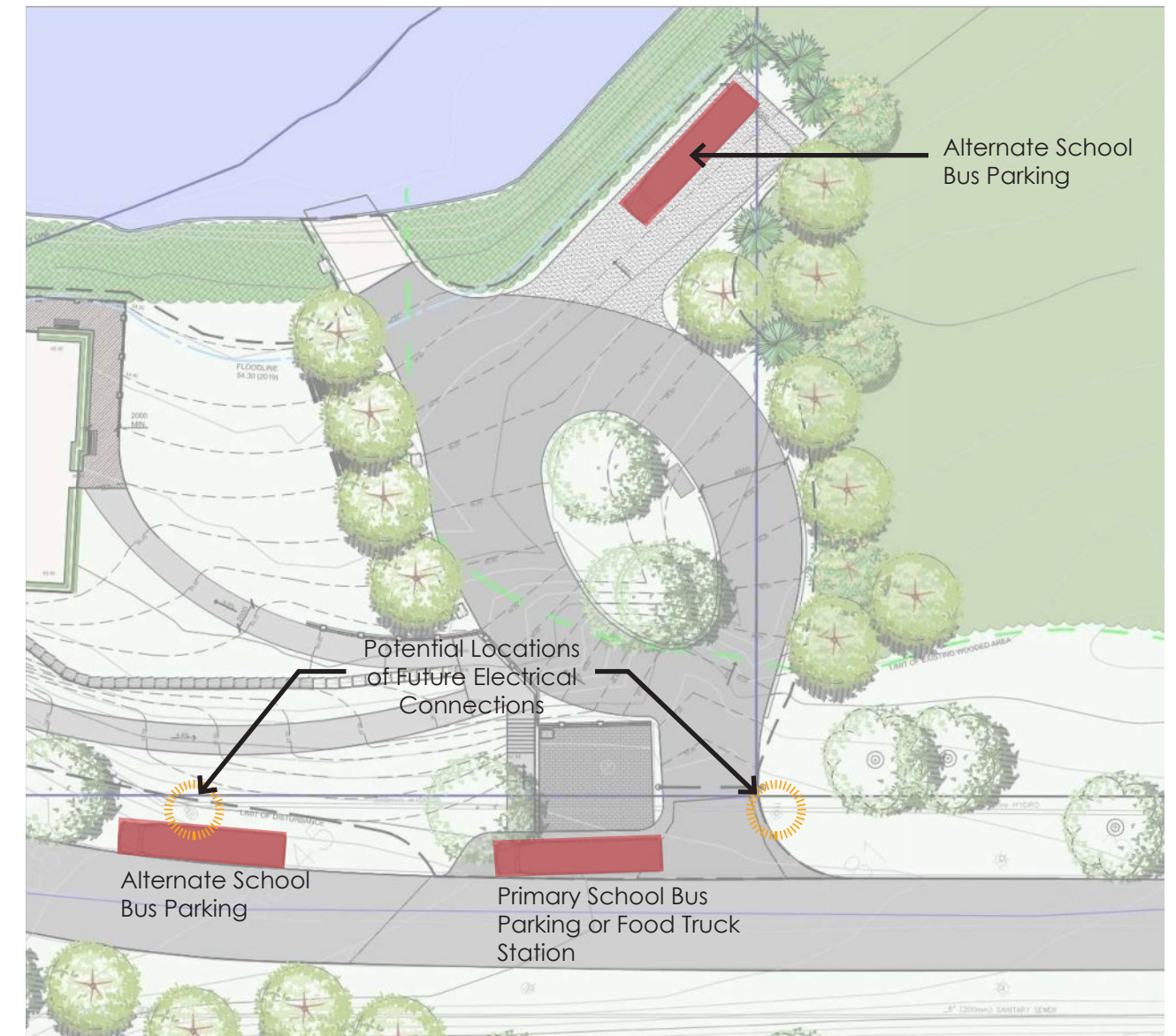


Image 1.30. School bus drop-off locations and possible food truck station

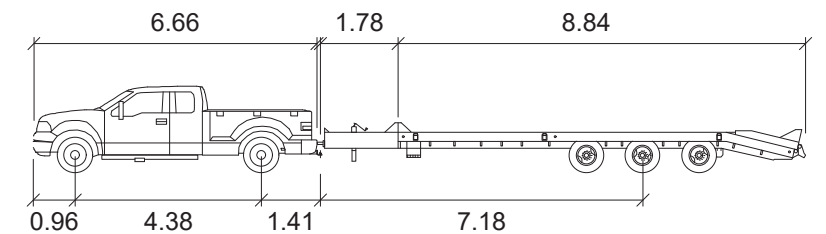
Proposed Concept Plan

Boat Launch and Access Road

The boat launch and access road have been modified since the community consultation after reviewing multiple possible travel route options. The Ottawa River Rafter's use a large van and 28' trailer to launch their boats (Image 1.31). Using the AutoTURN software, we tested a large truck with a trailer with a similar axle length as the van and boat trailer (Image 1.32). It became apparent that the vehicle would need much more room than the small hammerhead illustrated in the preferred site treatment option, and it would still be quite difficult (Figure 1.33). We assessed their current process, however it uses a good portion of the open space adjacent to the pumphouse and would reduce the open space for leisure and public use (Figure 1.34). Therefore, we explored an alternative that proposed the vehicle would continue from the entrance straight down to the river, through the vegetated area, and around some trees that are slated to be preserved (Figure 1.35). This allows for the vehicles to turn around the preserved trees and naturalized space and back into the boat launch (Figure 1.36). Parking for extra vehicles is provided to ensure safe coordination of the boat launch when there are multiple users (Figure 1.37). This parking could also serve as potential parking for the school bus if necessary. The access road was designed to accommodate the turning radius of the large vehicle and trailer, but modifications to slim down the extents of paved area can be reviewed during detail design. Potential locations for temporary bathroom/change facilities for the Ottawa River Rafter's could be accommodated within the central naturalized area, or by the parking (Figure 1.37).



Image 1.31 Ottawa River Rafter's vehicle and trailer - Source: CSW



Big Tex 5XPH-24+5 Heavy Hitch

	meters
Car Width	: 2.03
Trailer Width	: 2.59
Car Track	: 2.41
Trailer Track	: 2.59
Lock to Lock Time	: 6.0
Steering Angle	: 34.2
Articulating Angle	: 70.0

Image 1.32 Vehicle with trailer used for AutoTURN analysis

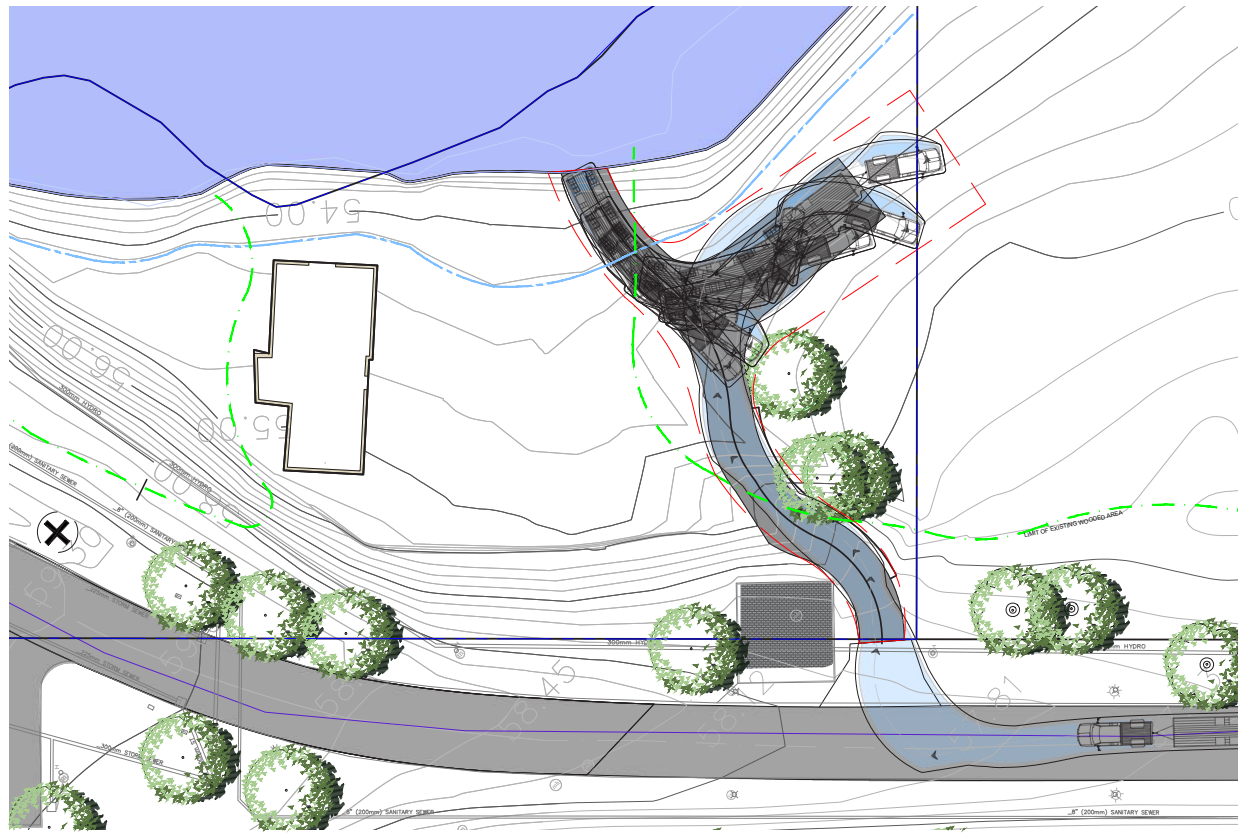


Figure 1.33 Proposed turn around hammerhead analysis

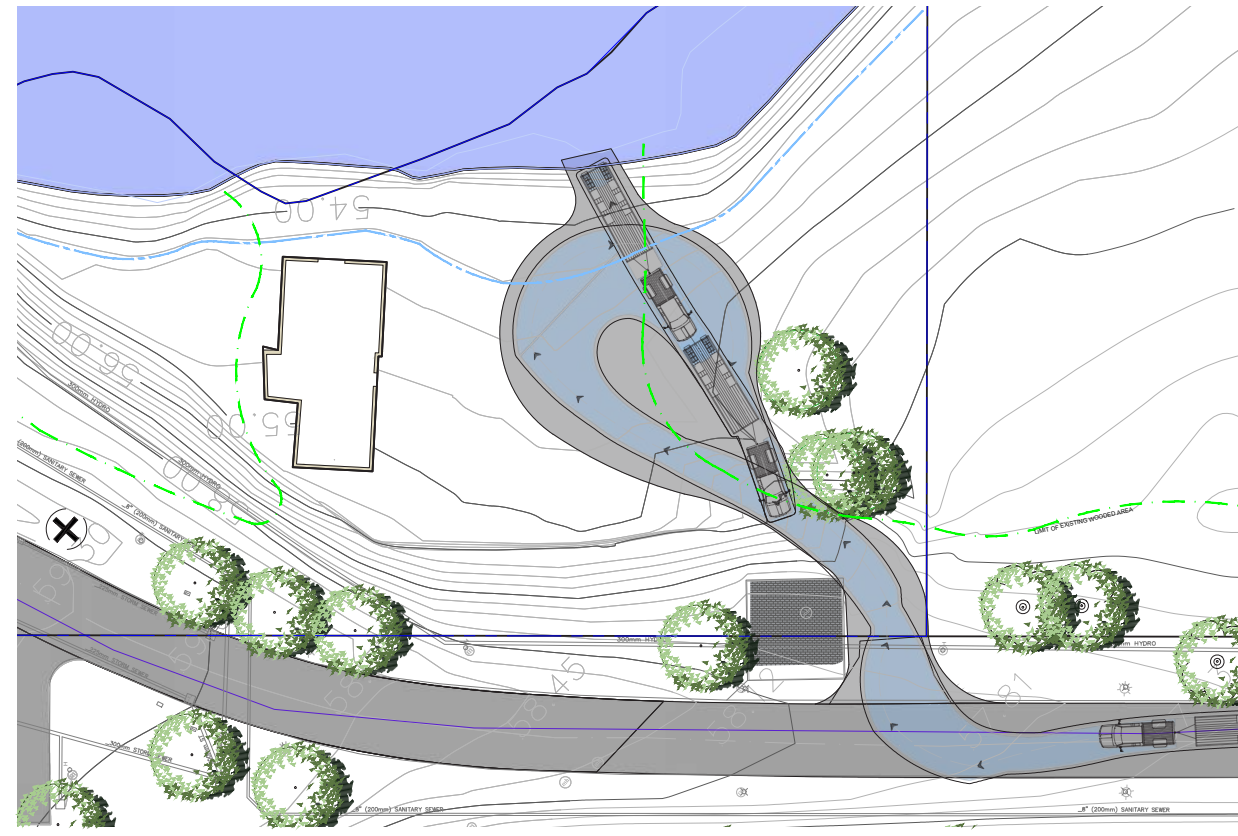


Figure 1.34 Optional turn around proposal

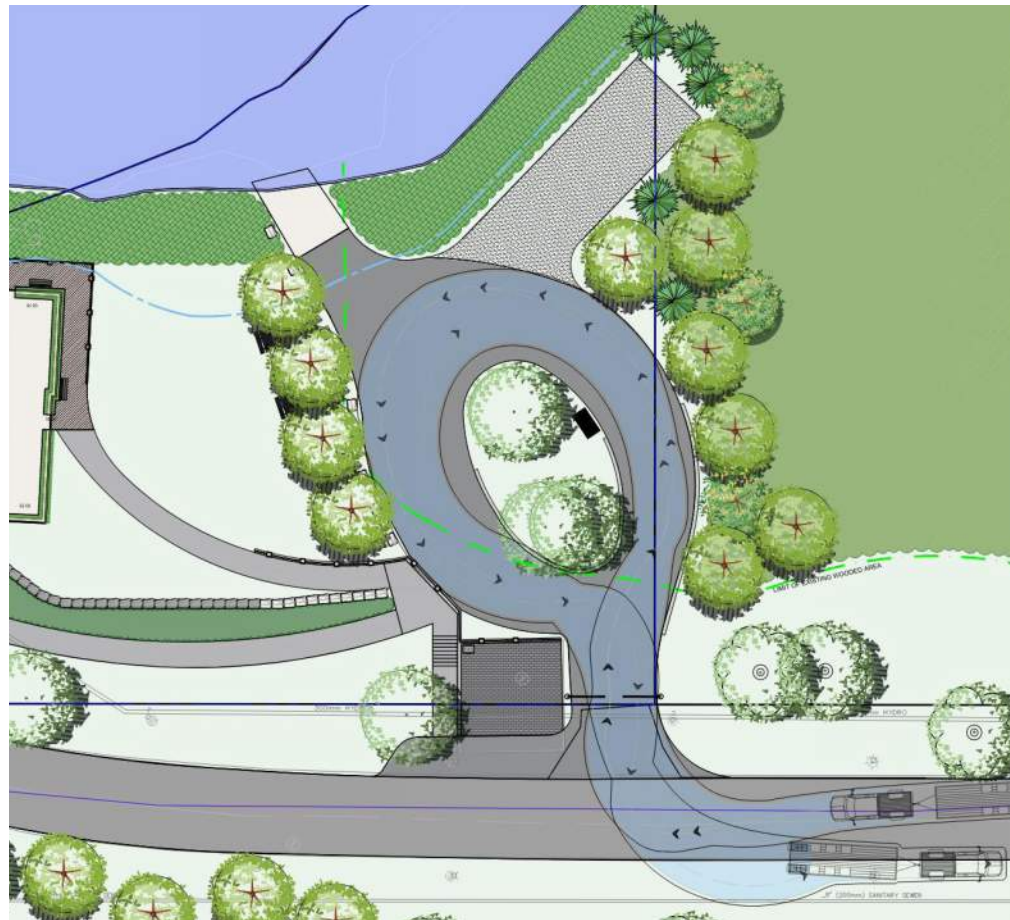


Figure 1.35 Proposed vehicular circulation through the site



Figure 1.36 Proposed vehicular circulation using the boat launch

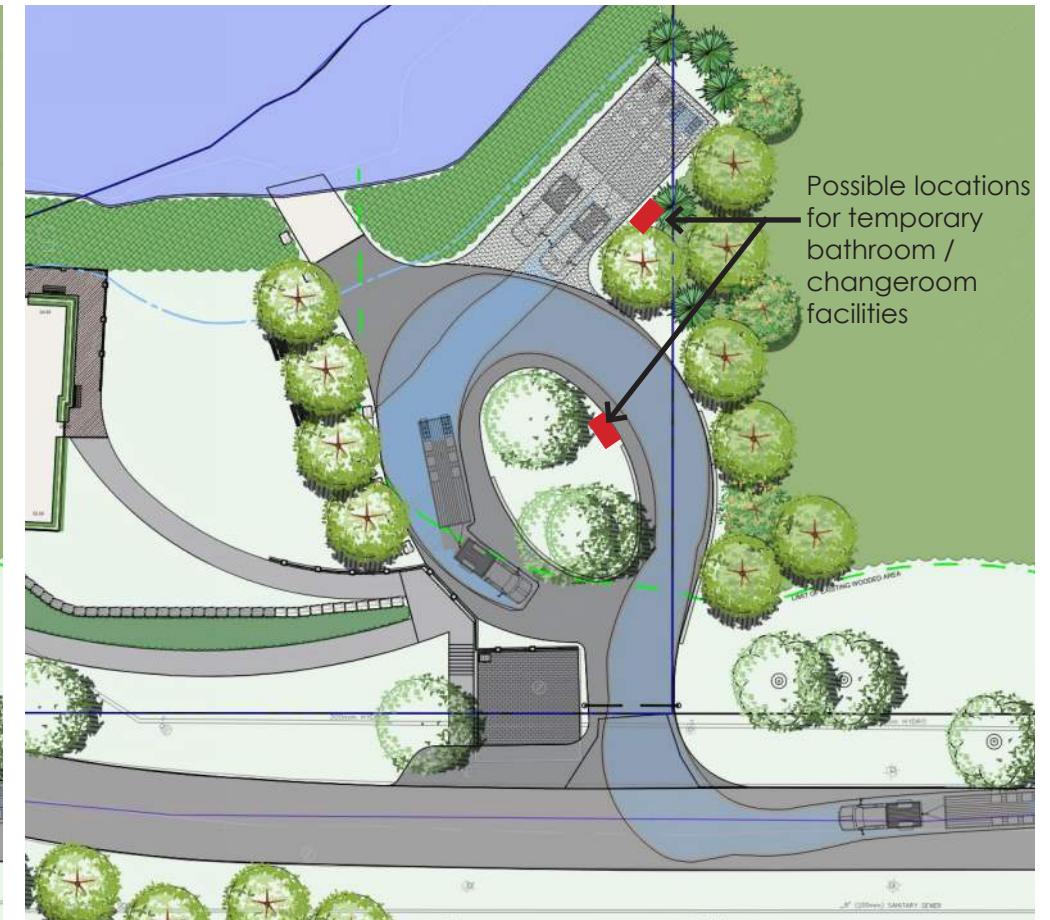


Figure 1.37 Proposed vehicular circulation using the parking area

Proposed Concept Plan

Planting Strategy

The new design of the access road and boat launch has a significant impact on the vegetated area on the east side. However, the vegetated area is not densely treed, but mostly small shrubby species, and it suffers from significant degradation and invasive species such as buckthorn. Additional trees could be planted along the new access road and along Onigam Street as compensation for the removal of this vegetated area. Native tree and shrub species could be planted along the edge of the new access road to replenish the vegetated area and reintroduce a healthier ecosystem. Larger hardwoods such as maples and oak should be planted upland, closer to Onigam Street, with fast-growing and water-loving poplars and aspens closer to the Ottawa river. Coniferous trees should also be added to provide habitat in the winter. Understory woody shrubs such as sumac, hazels, and elderberries should be planted upland closer to Onigam Street, with shoreline flood fringe shrubs species such as dogwoods, winterberries, nannyberries, and alders planted in the riparian zone. The naturalization of the shoreline on either side of the boat launch should be planted extensively with willows, sedges, and rushes to help stabilize the soil and prevent erosion during large flooding events. Rip rap in this area could also be considered to provide areas for fishing or dog play and provide another layer of shoreline protection (Image 1.38 and 1.39).

Conclusion

In summary, this report outlines the different conservation and site treatment options presented during the engagement sessions and outlines the feedback received for the preferred direction of the site. This feedback served as the basis for the proposed concept design. For further information regarding the masonry conservation of the pumphouse ruin, refer to the memo from John G. Cooke & Associates Ltd. Consulting Engineers in Appendix A. For the final proposed concept plan package, refer to Appendix B. This concept design and the recommendations from the engagement sessions will assist in the completion of the long-awaited conservation of the remains of the Hintonburg Pumphouse and the creation of a unique and exciting new public space along the banks of the Ottawa River.



Figure 1.38 Example of proposed shoreline condition - Source: Cooks River Naturalization project, 2023, <https://www.sydneywatertalk.com.au/>



Figure 1.39 Proposed vegetation along the Ottawa River

Appendix A

Conservation Treatment Memo

John G. Cooke & Associates Ltd. Consulting

City of Ottawa
110 Laurier Avenue West
Ottawa, Ontario, K1P 1J1

September 19, 2023
Project No. 22201

Attn: Nelson Edwards
Nelson.Edwards@ottawa.ca

RE: Hintonburg Pumping Station
Conservation Treatment

Terms of Reference

JCAL has been retained by the City of Ottawa to assist with the concept design of the public realm improvements envisioned at the former Hintonburg Pumping Station.

Built in 1899, the Hintonburg pumping station and surrounding grounds received municipal heritage designation in 1987 based on its architectural value and historic industrial significance. In 1989, a fire destroyed the interior of the building and caused significant damage to the roof and masonry walls. The ruins of the Hintonburg Pumping Station have since been left exposed to the elements, leading to further degradation of the surviving masonry walls.

John G. Cooke & Associates Ltd. (JCAL) was previously engaged in 2021 to conduct a structural condition assessment of the ruins located at 1 Onigam Street, in Ottawa. Based on our assessment, we prepared a feasibility analysis outlining potential conservation options. As the project has moved into the public consultation stage, the goals for the site have been established by the design team and the City.

The current report aims to develop a conservation approach for the recommended option which has been developed in conjunction with the City of Ottawa, CSW, and MH Stoneworks. JCAL and MH Stoneworks also prepared a Class C cost estimate for the restoration of the ruin which is included with the overall submission.

Observations

The initial condition assessment took place on June 15th and September 7th 2021. The findings with respect to the structural elements are outlined below. See report Issued December 3rd 2021 by JCAL for full details.

- **Roof:** Much of the original roof structure was destroyed by the 1989 fire. While some portions of the rafters still remain directly above the exterior walls, the roof has been severely damaged by the fire and subsequent weather exposure and the remains present a fall hazard.
- **Masonry walls:**
 - **Exterior Wythe:** The exterior wythe of the masonry walls which are still erect are generally in fair condition. Localized debonded or open mortar joints were noted throughout and some minor fractures were observed in the stone. This can allow moisture infiltration into the core of the wall, which creates large voids and reduces the structural integrity of the wall. Partial collapse was observed on the East wall and the Southern arched window. Though the foundations could not be reviewed, it can be assumed that it is in similar or worse condition than the masonry walls above due to exposure to moisture below grade.
 - **Interior Wythe:** Because the wall is not adequately protected at the top from moisture, water infiltration at the roof level has deteriorated the core of the masonry wall and washed out the mortar joints, leaving large voids. This has resulted in a loss of structural integrity

and the localized partial collapse of the inner wythe. In the West wing, this was observed along the top of the walls, the peak of the west gable and above the arched windows on the north wall. In the East wing, where the interior wythe is constructed from brick, years of exposure to moisture and freeze-thaw cycles have deteriorated the brick. Many bricks have spalled, fractured, or been displaced due to core settlement.

- **Interior brick partition wall:** A brick partition wall appears to divide the east and west wings of the building. The majority of this wall has collapsed at the center, but portions remain adjacent to the north and south walls. The base of an arch was observed in this wall, indicating a previous opening. The remaining portions of the wall may act as buttresses to the north and south walls.
- **North cinder block addition:** The cinder block addition on the north wall was found to be in poor condition. It appears to be a later addition to the structure and is not recognized in the heritage character statement.

Conservation Plan

The proposed conservation plan drawing (see attached) aims to preserve the ruined masonry building as-is without adding new elements, except where necessary for structural performance. This conservation plan embodies principles of minimal intervention to preserve the historic building fabric.

The proposal includes removal of all severely deteriorated or hazardous components, such as the roof and the north cinder block addition. The scope of the masonry conservation entails dismantling the unstable portion of the north gable, consolidating the masonry along the top of the north and south walls, and reconstructing a portion of the east wall below the window sill to create seating. All remaining stone masonry will be restored using compatible materials. In order to prevent further deterioration due to moisture ingress, the walls must be capped and flashed. Any loose stone can be salvaged and stored for reuse on site, either in the masonry walls, or as landscaping features on site.

In keeping with the landscaping plan laid out by CSW, the ruin will not be roofed and would not require locking during off-hours. A concrete pad may be installed inside the ruin, leaving a reveal along the walls to allow drainage and to keep the existing and new elements distinct. A porch may be added on the east façade to increase public access to the building and strengthen the building's relationship to the Ottawa river. Metal grilles imitating the form of the original window panes may be installed in openings if desired from an esthetic or security standpoint. In some cases, these grilles could be used to partially support overlying masonry. It is not anticipated that grilles must be used to support the masonry; instead they could be optionally used to support unstable masonry where constructing masonry supports is undesirable. For instance, at the partially collapsed arch window on the south elevation, a grille could be used to support the overhanging masonry and maintain the *ruin* appearance of the opening.



Photo 1: Black metal grilles installed at Chaudiere Falls Lookout, in Ottawa. Grilles were designed as guardrails to protect the public from a fall hazard. Spacing of metal bars mimic original window detailing.



Photo 2: A second example of metal grilles located in Westboro (at Richmond and Winston Ave) shadowing the architecture of homes in the area.

Recommendations

In order to facilitate the proposed conservation plan, the following interventions are required:

1. Remove all greenery inside or directly adjacent to the building to facilitate the work. Remove all debris, including loose wood, roofing material, and loose stone. Any stone in fair condition may be salvaged for reuse in masonry restoration or elsewhere on site
2. Remove any loose masonry materials from walls. Consider fall hazards >1200mm above grade
3. Remove existing floor and infill basement area with granular fill. Pour concrete slab on grade, leaving approx. 150-300mm reveal from masonry walls for vegetation infill.
4. Complete masonry restoration work as shown in conservation plan. Include for repointing foundation walls 600mm below grade. In order to prevent future maintenance issues, assume 100% replacement of existing brick in east wing. Cap the sky-facing joints of masonry walls greater than 1200mm above grade with metal flashing to protect from water infiltration.
5. For walls less than 1200mm in height, metal flashing should be avoided to avoid being damaged by the public. Instead, these walls may be capped with stone or a mortar bed. Where the height is suitable, half walls may be intended as seating.
6. Consider installing a deck over the water on the east side. Extent and layout to be determined by landscape architect.
7. Consider installing metal grilles in windows to match original layout of windowpanes.

Construction Schedule Considerations for Ruin Conservation

The following proposed schedule outlines a recommended timeline to complete the work prior to fall of 2024. The duration of each phase has been estimated based on previous projects on a similar scale.

Retain design team	October 1 st – October 21 st 2023
Design team prepares tender documents	November 1 st – January 15 th 2023
Package goes out for bid	January 31 st 2024
Bid Review	February 15 th 2024 -February 28 th 2024
Contract award	March 15 th 2024
Construction starts	Late April/early may
Construction end	October 31 st 2024

Masonry work should occur while daily low temperatures are above 5°C for the mortar to cure adequately. Generally, scheduling masonry work to be completed by early to mid-October is reasonable. If temperatures become too cold or work is scheduled over the winter, an insulated enclosure will need to be constructed and heated for the duration of the work, which incurs additional costs.

A four-to-five-month construction schedule is anticipated for the ruin conservation portion of this project. Therefore, it is advised to start construction as early as possible once the snow melts – typically April or May.

Masonry Contractor Pre-Qualification

Heritage masonry restoration work should only be completed by masons with experience in heritage stone and brick masonry. Masonry construction techniques with modern brick or stone veneer vary significantly from historical techniques. Typically, conservation engineers prequalify masonry contractors to perform the work with a minimum of 10 years of experience for the lead mason. Masons should have the knowledge and skills to reset displaced stones, perform crack repairs, perform dutchman repairs, and have an overall understanding of the structural system of masonry walls. A conservation engineer would provide

specifications for correct mortar mixes and review work during construction to provide quality control and general oversight.

We recommend including the minimum requirements of a heritage mason in the tender documents as follows:

The principal mason and site superintendent engaged by the Masonry Contractor must have a minimum of ten (10) years of experience with historic stone and brick masonry conservation similar to this project, and can demonstrate an ability to pass a hands-on test of skills, if so administered by the City. These individuals must have been identified in the Prequalification Documents, if applicable. The City has the right to reject either of these individuals if their qualifications cannot be substantiated or who does not demonstrate the appropriate abilities or experience on the following tasks listed below. Where, during the course of project, masons leave workforce, replacement masons must also meet requirements.

- a) Raking joints by hand
- b) Historical repointing
- c) Cutting stone
- d) Carving stone
- e) Replacing stone
- f) Stone dismantling and rebuilding
- g) Dutchman Repairs
- h) Pinning techniques
- i) Descaling
- j) Resurfacing/Refinishing
- k) Restoration mortar repairs: repairs involving proprietary stone restoration mortar shall be carried out by persons who have successfully completed the manufacturer's training course and have been certified by the manufacturer for the type of work required. Provide proof of accreditation by the manufacturer before work begins.
- l) Masonry contractor to have good level of understanding of structural behaviour of masonry walls when masonry work involves replacing or repairing stones and brick.

Estimate of Probable Cost

The cost estimate prepared by JCAL includes only the construction costs for the restoration of the ruin. CSW included the JCAL estimate in the overall construction costs. Our estimate is in 2023 dollars and are based on recent prices for similar projects we have worked on in the region. General contract soft costs such as mobilization have not been included.

Additional costing includes consultant fees, utilities, internal City costs, etc., as well as a 25% contingency and HST. The actual costs will depend on when this work is executed. Inflation of 2-3% per year can be assumed for planning purposes. However, higher rates could be considered due to recent escalated inflation rates. In recent years, non-residential construction consumer price indexes list the inflation at 10-15% per year.

Disclaimer and Limitations

This report is based on and limited to information supplied to John G. Cooke & Associates Ltd. by the client, and by observations made during the limited visual investigation. Only those items that are capable of being observed and are reasonably obvious to John G. Cooke & Associates Ltd. or have been otherwise identified by other parties and detailed during this investigation can be reported.

The work reflects the Consultant's best judgment in light of the information reviewed by them at the time of preparation. There is no warranty expressed or implied by John G. Cooke & Associates Ltd. that this investigation will uncover all potential deficiencies and risks of liabilities associated with the subject property. John G. Cooke & Associates Ltd. believes, however, that the level of detail carried out in this investigation is appropriate to meet the objectives as outlined in the Terms of Reference. We cannot guarantee the completeness or accuracy of information supplied by any third party.

John G. Cooke & Associates Ltd. is not investigating or providing advice about pollutants, contaminants or hazardous materials.

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We trust this report covers the scope of work as outlined in our Terms of Reference. Should there be any questions regarding this report, or if we can be of any further assistance to you, please contact us.

Sincerely,

JOHN G. COOKE & ASSOCIATES LTD.

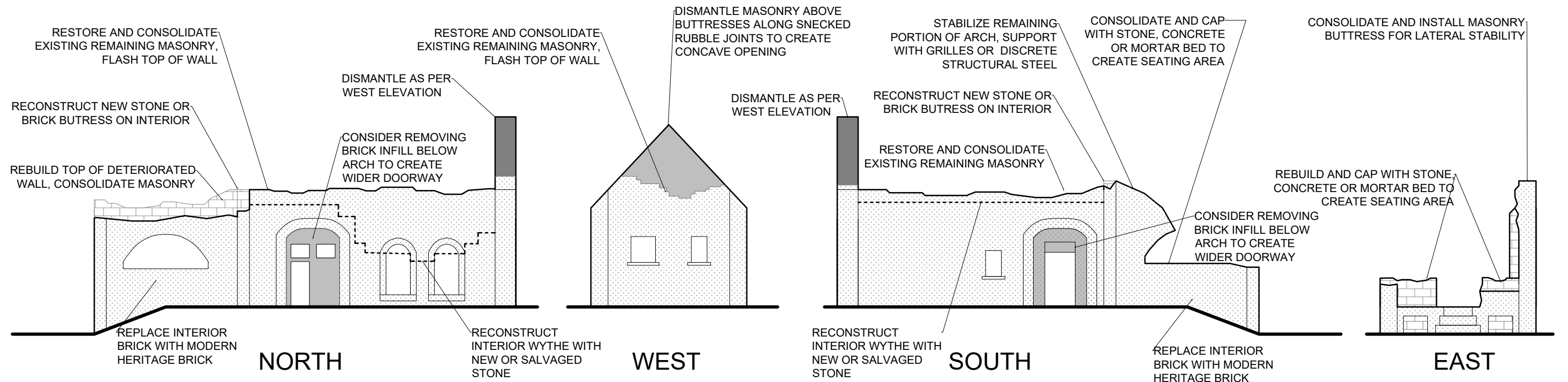


Justin Morton, P.Eng

A handwritten signature in black ink, appearing to read "N. Smith".

Natalie Smith, MAsc., EIT

JM/ns
22201



OTHER CONSIDERATIONS:

1. REMOVE GREENERY AND LOOSE MATERIAL, (I.E. ROOFING, WOOD DEBRIS) FROM SITE PRIOR TO START OF WORK. SALVAGE LOOSE STONE FOR REUSE IN MASONRY RESTORATION OR ELSEWHERE ON SITE. STORE IN PROTECTED AREA.
2. REMOVE EXISTING FLOOR AND INFILL BASEMENT AREA WITH GRANULAR FILL. POUR CONCRETE SLAB ON GRADE INSIDE STRUCTURE. LEAVE +/- 150mm REVEAL FROM STONE WALLS TO ALLOW FOR VEGETATION INFILL. CONSIDER CREATIVE FINISH OF CONCRETE (SUCH AS INLAYING A PATTERN INTO IT).
3. INSTALL METAL FLASHING TO PROTECT ALL SKYWARD-FACING JOINTS HIGHER THAN 1200mm ABOVE GRADE (AREAS THAT CANNOT BE USED FOR SEATING).
4. INSTALL GRILLES ON EXISTING WINDOW OPENINGS TO MIMIC ORIGINAL WINDOW PANES IF REQUIRED FOR SITE SECURITY, FALL HAZARDS, MASONRY SUPPORT, OR AESTHETICS.
5. INSTALL WRAP-AROUND PORCH ON EAST & SOUTH ELEVATION OVER WATER, SIMILAR TO ORIGINAL VERANDAH.
6. EXISTING BRICK - IN LONG TERM WILL BE A MAINTENANCE ISSUE. MANY BRICKS ARE DETERIORATED AND NEED TO BE REPLACED. CONSIDER REPLACEMENT OF ALL OR MOST BRICKS TO MINIMIZE FUTURE MAINTENANCE COSTS. EXISTING BRICKS SHOULD BE REPLACED WITH MODERN HERITAGE BRICKS OR SALVAGED STONE. REMAINING BRICKS SHOULD BE PROTECTED FROM WEATHER.
7. ANY SKYWARD FACING JOINTS LOWER THAN 1200mm FROM GRADE SHOULD NOT BE CAPPED WITH METAL TO REDUCE THE RISK OF DAMAGE. INSTEAD CAP WITH MORTAR/CONCRETE BED/ CAPSTONE TO BE USED AS SITTING AREA. SEATING AREAS CAN REFLECT THE IDEA OF A RUIN.
8. HALF WALLS OR OPENINGS SHOULD CONSIDER FALL HAZARDS GREATER THAN 600MM ADJACENT TO THE BUILDING.
9. FOR STRUCTURAL STABILITY, CONSIDER LATERAL LOADING REQUIREMENTS FOR WIND AND SEISMIC PER THE OBC 2012.

LEGEND:

-  **DISMANTLE**
-  **RECONSTRUCT**
-  **RESTORE/CONSOLIDATE**

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 HAMILTON, ON 57-B JOHN ST., SUITE 2 L8N 2B9 (289) 288-3638

SEAL:

PROJECT: HINTONBURG PUMPHOUSE - CONSERVATION APPROACH

DESIGNED BY: JM

SCALE: NTS

CLIENT: CITY OF OTTAWA

DRAWN BY: NS

DATE: 2023-08-03

DRAWING: PROPOSED CONSERVATION PLAN - ELEVATIONS

PROJECT No. 22201

DRAWING No. SK-S1

Appendix B

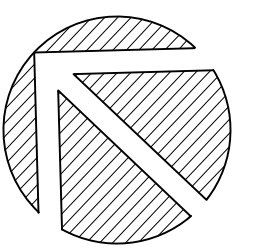
Landscape Concept Plan Package

CSW Landscape Architects

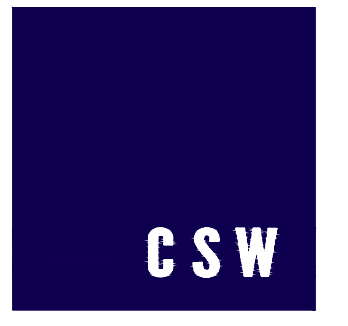


- LEGEND**
- LIMIT OF DISTURBANCE
 - FLOODLINE 2019
 - EXISTING WOODED AREA
 - ⊗ EXISTING TREE TO BE REMOVED
 - ⊙ EXISTING TREES TO REMAIN
 - ⊙ EXISTING WOODED AREA TO REMAIN
 - ⊙ EXISTING ARMOURSTONE WALL TO REMAIN
 - ⊙ EXISTING UNIT PAVING
 - ⊙ LARGE DECIDUOUS TREE
 - ⊙ SMALL DECIDUOUS TREE
 - ⊙ CONIFEROUS TREE
 - ⊙ NATURALIZED VEGETATED AREA
 - ⊙ VEGETATED BORDER ADJACENT TO RUIN WALLS
 - ⊙ SEED/SOD
 - ⊙ STONEDUST PAVING
 - ⊙ CONCRETE PAVING
 - ⊙ WOOD DECKING
 - ⊙ ASPHALT PAVING (ROADWAY)
 - ⊙ ASPHALT PAVING (PEDESTRIAN)
 - ⊙ RETAINING WALL
 - ⊙ NEW ARMOURSTONE WALL / FEATURE BOULDERS
 - ⊙ BENCH
 - ⊙ PICNIC TABLE
 - ⊙ BIKE RACK

SCALE 1:150



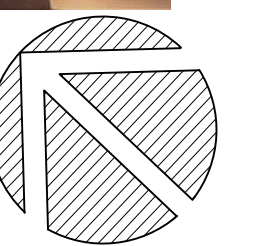
HINTONBURG PUMPHOUSE - PREFERRED CONCEPT PLAN CONSERVATION AND REDEVELOPMENT PROJECT



SEPTEMBER 2023

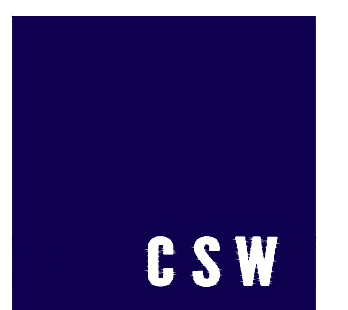
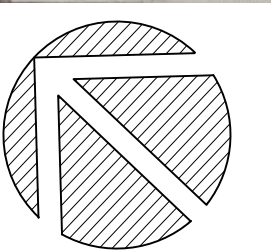


HINTONBURG PUMPHOUSE - RENDERED PERSPECTIVES
CONSERVATION AND REDEVELOPMENT PROJECT





HINTONBURG PUMPHOUSE - RENDERED PERSPECTIVES
CONSERVATION AND REDEVELOPMENT PROJECT



Appendix C

Class C Cost Estimate under a separate cover

CSW Landscape Architects
John G. Cooke & Associates Ltd. Consulting