

# VILLAGE OF TAHSIS

## Report to Council

**To:** Mayor and Council  
**From:** Chief Administrative Officer  
**Date:** November 2, 2023  
**Re:** Capital Projects Status Report

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### **TAHSIS FLOOD PROTECTION IMPROVEMENTS PROJECT PHASE 2**

#### Project description:

The project will upgrade the North Maquinna Drive Floodwall and include other related works. The proposed project area (North Village) has experienced repeated flooding over the last century, with significant flooding events recorded in 1975, 1989, 1990 and 2010. Recent hydrotechnical assessments have revealed that this section of the Village is highly susceptible to flooding and shows an immediate need for further protection. Once implemented, these proposed upgrades will protect residents of Tahsis and existing assets from both 1:20 and 1:200 year flooding events.

#### Works completed to date:

- Bank excavation and stabilization with riprap
- Footpath
- N. Maquinna block wall construction proceeding (see attached memos re: Appendices “A”, “B” and “C”.)
- Cast-in-place wall
- Drainage pipe replaced
- Property gates installed
- Detention pond culvert and swale

#### Works remaining:

- Block wall construction completed
- Stairs installed over cast-in-place wall
- Fish screens

Issues:

Due to the misfit of the lock blocks, an alternative construction methodology was adopted. The non-keyed side of the new blocks have been placed on the flat side of existing blocks. McElhanney structural engineers determined that based on 70% of the weight of the blocks, this placement provided a factor of safety above 1.0. Metal strapping is being installed to increase the level of safety. A mastic sealant and caulking have been applied to seal the joints on the upstream side between blocks to ensure impermeability.

Project Schedule – ahead of schedule (estimated completion date November, 2024)

Project Budget

The initial grant allocated for this project was \$1,896,920. As of October 31, we have claimed \$1,546,803 for phase I & II. Looking ahead, future cost projections include an estimate for bills outstanding from September to November (Pacificus & McElhanney) and the remaining Upland contract amounts and changes. In light of these factors, the project is currently projecting an overage of \$297,200, which will be funded by \$53,000 from the CWF (Gas Tax) and \$244,200 from Growing Communities Fund. While this projection is constantly changing, staff continue remain dedicated to managing these cost challenges effectively and keeping Council up to date on any budget changes.

Grant	\$ 1,896,920.00
Claimed phase one	\$ 868,389.03
Expenses claimed	\$ 678,413.82
<b>Future cost projections</b>	
McElhanney & Pacificus Estimate'	
Bills outstanding Sept- Nov	\$ 40,000.00
Upland- remaining contract amount	\$ 672,120.97
<b><u>Contract Changes</u></b>	
Savings from Excavating & Riprap	\$ (150,732.00)
Foot Path \$53k to be added	\$ 53,000.00
CO2 - Undermined Blocks	\$4,074.44
Wall Reconfiguration	\$11,957.50
Block Strapping	12,800.00
Watermain break	4,100.00
Move 5 blocks (waiting on EST)	
<b>Project Overage</b>	<b>\$ (297,203.76)</b>
Funded by Gas tax	\$ 53,000.00
Funded by Growing communities	\$ 244,203.76

**COMMUNITY PIER AND DOCK PROJECT**

Project description:

The project will increase access to the Village of Tahsis by constructing a new, multi-purpose community pier and dock that will be utilized by both for marine and air transportation. The project works include: - demolition and removal of the existing airplane dock; - construction of a new aluminum pedestrian access trestle to the floating docks. - construction of a steel access gangway to the main float; - construction of new floating docks and breakwater to provide moorage for both air and marine vessels; - construction of a float launch float and, subject to budget, shore loading crane for vessel loading/unloading - replacement of a new launch ramp with improved performance for larger vessel and lower tides - support services including fire suppression, potable water, and electrical supply

Works completed to date:

- Three contractors pre-qualified through RFPQ
- Invitation to tender package
- Environmental assessment
- DFO Avoid and Mitigate letter issued
- Indigenous consultation

Next steps:

- Issuing invitation to tender to the three pre-qualified contractors

Project Schedule – on schedule (estimated completion date – February 2025)

Project Budget

The grant amount allocated for this project is \$2,475,547. As of October 31, we have expended a total of \$306,657. It's important to note the time that has elapsed between the grant writing, approval, and ultimately the commencement of construction, resulting in this project being under significant budgetary pressure due to escalating construction industry costs during this period. The Village has worked to mitigate these financial challenges and has been actively exploring cost-saving options wherever possible. Until the tendered amounts are received, the current estimate for project overages stands at \$200,000, to be covered by the Growing Communities Fund.

**WASTEWATER TREATMENT RECONFIGURATION AND UPGRADE PROJECT (PHASE 1)**

Project description:

The project works will include:

- Installation of approximately 835 metres of sewer force main and gravity main;
- Lift station upgrades related to system realignment;
- Upgrades to south wastewater treatment plant including:
  - Repairing corroded equipment/infrastructure;
  - Installation of new plant safety equipment and walkways;
  - Replacement of return activated sludge trough;
  - Upgrades to building (roof, fencing, yard);
  - Replacement of HVAC components;
  - Installation of a new back up generator;
  - Installation of submersible pumps; and,
- Decommissioning of North treatment plant.

Works completed to date:

- Replacement of LS 4 pump
- Design work 75% completed

Next steps

- Pre-construction report submitted to the Ministry of Municipal Affairs
- Review drawings with McElhanney
- Preparing invitation to tender package

Project Schedule – behind schedule due to delays in scope change approval by the federal government (estimated completion date January, 2025)

Project Budget

The initial grant amount allocated for this project is \$1,308,941 with a total project cost of \$1,785,000. The Village's share of the project is to be funded by long-term debt (Loan Authorization Bylaw No. 653, to a maximum amount of \$490,000). As of October 31, we have expended a total of \$305,700. Again, this project is under budgetary pressure driven by escalating construction costs. Currently, there are no anticipated project overruns. Nevertheless, we anticipate more detailed budget information to become available once the project has undergone the tendering process.

**TAHSIS FIRE HALL RELOCATION PROJECT**

Project description:

Tahsis Council has approved relocating the Fire Hall into the former woodshop at Captain Meares School (CMESS) at a cost of approximately \$2 million, which will be funded by a \$1.89m Canada Community Building Fund grant and the Village of Tahsis.

The project works include:

- Renovation of an existing building to house fire trucks and equipment;
- construction of compressor room;
- construction of washrooms, kitchen area, storage areas, assembly and training rooms; and,
- related civil, mechanical, electrical, and plumbing work.

Works completed to date:

- Geo-technical assessment
- Structural assessment and design
- Electrical and mechanical retrofit design
- Building renovation design
- Civil design
- Demolition plan

Next step:

- Preparing invitation to tender package

Project Schedule – on schedule (estimated completion date December, 2024)

Project Budget

The grant allocated for this project was \$1,892,675. As of October 31, we have expended \$195,067. Currently, there is an anticipated project overrun of \$100,000 to be funded by Community Works Fund (Gas tax). Furthermore, we expect to obtain more comprehensive budget information after the project undergoes the tendering process.

Project description:

Improve mobility and accessibility features to meet current standards; resolve building code, structural/geotechnical and safety issues by undertaking building renovations and upgrades; redecorating the lobby welcome space for respectful acknowledgement of the territory, history and culture of the Mowachaht/Muchalaht First Nation; and making space available for local artisans and small businesses to display and sell products.

Works completed to date:

- Geotechnical investigation

Next steps

- Scope of work (structural and accessibility improvements) prepared for use in tendering

Project Schedule – on schedule (estimated completion date March, 2025)

Project Budget

The grant amount allocated for this project is \$497,479. The Village has not yet disbursed any funds related to the project this year.

Respectfully submitted:



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Mark Tatchell, CAO

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**From:** Mark DeGagne <mdegagne@mcelhanney.com>  
**Sent:** September 28, 2023 2:28 PM  
**To:** Mark Tatchell  
**Cc:** Alex Bates; Dwayne Cybak  
**Subject:** FW: Council Update on the Floodwall Project: Issue with the precast concrete blocks

Since we have learned of the issue of the fit of the purchased precast concrete blocks with that of the existing blocks, several conclusions and recommendations have been made:

To recap the events of the past few weeks, the following key dates are provided:

- Sep 7<sup>th</sup>: The contractor notified McElhanney that there was a poor fit with some of the initial blocks delivered to site for use in the project
- Sep 12<sup>th</sup>: After some investigation and initial assessment, McElhanney informed council of the issue. It was at this meeting that McElhanney stated that a test block was sent to the village for a fit test, which was conducted by village staff and may have unintentionally implied that there may be some responsibility on village staff in regard to accepting the blocks.
- Sep 14<sup>th</sup>: After some more testing for fit of the new blocks and the old, a meeting with Contractor, Supplier and Village was held to discuss options and remedies. By this time, it was now known that at least 6 molds were used in the block construction and that the quality control on the molds generally fit the supplied dimensions, but that they were with +/- 25mm in all directions (width, length and height). With this knowledge the need for a different solution to that prescribed on the McElhanney drawings was required.
- Sep 15<sup>th</sup>: McElhanney developed a solution to utilize the purchased blocks with contractor, and provided recommendations to the Village, which was then approved by Village Staff. The solution provided a no extra cost methodology (no extra cost for the installation moving forward) which maintained the integrity of the wall and will maintain the Contractor's schedule.
- Sep 19<sup>th</sup>: McElhanney issued a field memo, instructing the Contractor to proceed with a revised block pattern. Since this date, little progress has been made on rebuilding the wall, as the contractor has focussed on the construction of the footpath, and other work for the stairs, etc.,

From this incident the following conclusions can be made:

- **Village staff are in no way responsible for the mis-fit of the blocks.** There is no way a fit test could have been proven out with one block to use as a sample. The fit test only proved that the new blocks would fit the key-way on an individual basis. Village staff could not have known about dimensional issues at the time of the test. If there was an implied fault in what was said at the council meeting on Sep 12, it was not intended but only to state some factual events in the decisions made along the way to acquiring the blocks as did happen.
- This is a supplier quality control issue. No one was under the impression that the dimension of the blocks would vary so significantly in any direction. The supplier failed to inform anyone of the variability until after the blocks were delivered. Having this said, the blocks acquired came at a significant savings to the original Lock-Blocks™ which were twice the cost per block, plus significantly more expensive freight from the lower mainland to Tahsis. The savings allowed this project to proceed within the budget prescribed by the Grant.
- The revised design to accommodate the blocks supplied will provide a sound barrier to the flood waters, and the structural integrity of the wall will be as originally intended in the design.
- We are working hard to keep the contractor on schedule and on budget.

Regards,

**Mark DeGagné, MSc, PEng**  
Water and Wastewater Facilities – Business Leader  
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Attention: Mark Tatchell, CAO

Our File: 2221-49140-2026D

## Tahsis Flood Protection Project Phase 2 – CCO 2 Summary

Due to previously identified issues with the fit of the new precast concrete blocks with the existing blocks, the design has been revised such that the new blocks will now be placed on top of the existing flat-top blocks. As the name implies, flat-top blocks do not have a male key cast on top to interlock with the new blocks. While our structural team have indicated that this arrangement will provide sufficient resistance to movement from the water pressure caused by flood waters, the factor of safety is marginally above 1.0. In addition, it would be beneficial if the blocks were restrained to better resist impacts from floating debris in the river, or other accidental impact from the road side.

A Contemplative Changer Order was issued on September 9, 2023, to the contractor, Upland Contracting Ltd. requesting pricing for the proposed strapping. Upland responded with a unit rate price for supply and install of \$51.20 per block. This results in a total cost of \$28,160.00 to secure all new blocks along the wall.

While this expense is an investment in the additional safety and longevity of the project, it does have financial implications for the overall construction budget. Considering the inclusion of the block strapping, the overall construction costs are anticipated to come in at approximately \$49,000 under the original contract value. Below is a table highlighting the construction budget and the impacts of the approved and anticipated changes along with material quantity underruns:

Original Contract	\$1,189,600.00
CO1 - Path Behind Wall	\$53,000.00
CO2 - Undermined Blocks	\$4,138.50
CO3 - Wall Reconfiguration	\$11,957.50
CO 4 - Block Strapping	\$28,160.00
CO 5 – Watermain Repair	\$4,500.00*
Optional Work not Performed	-\$23,260.00
Bulk Excavation (Underrun)	-\$30,622.00
Class 100 Riprap Underrun	-\$95,225.00
Class 50 Riprap Underrun	-\$1,625.00
<b>Total</b>	<b>\$1,140,624.00</b>
<b>Under Budget</b>	<b>-\$48,976.00</b>

\*Estimated cost. Waiting for force account records from Upland

It is understood that the Village has had to contribute additional funds to the project to afford the original \$1,189,600 budget, but the long-term stability of the wall should be considered, which would keep overall project costs still below the original contract amount. On this basis, it is recommended that the Village approve and proceed with the installation of lock block strapping to improve the floodwall's factor of safety and provide additional stability in the event of an impact to the wall from floating objects or roadside activities. The Contractor has indicated that a timely response will aid them in acquiring the steel plate to fabricate the straps and then install them within the time frame of the existing project, which would allow them to be installed without additional travel costs or re-mobilization costs. As is the case with most contractual work, time is of the essence.

Sincerely,

McElhanney Ltd.



Dwayne Cybak, P.Eng, Contract Administrator  
[dcybak@mcelhanney.com](mailto:dcybak@mcelhanney.com) | 250-287-779



Our File: 2221-49140-2026D

October 22, 2023

Village of Tahsis  
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P.O. Box 219  
Tahsis, BC V0P 1X0

Attention: Mark Tatchell, CAO

## **Tahsis Flood Protection Project Phase 2 – Wall Construction Summary**

McElhanney was notified by the Village of Tahsis on October 10<sup>th</sup>, 2023 that members of the public had posted concerns on social media regarding the construction methods and design for the improvements to the existing flood wall along North Maquinna Drive. Mainly, there were concerns regarding the structural integrity of the wall and the application of sealants. Observers felt that the sealant wasn't being applied effectively and the wall may not be designed to resist the force of potential flood waters.

To address these concerns, McElhanney visited Tahsis on October 12, 2023 to review the wall construction completed to date and ensure the contractor was progressing with construction as per the engineered design.

### **Wall Structural Concerns**

Comments of concern were made by members the public regarding the ability of the top blocks to resist the hydrostatic forces from potential flood waters. The concern is that the existing second row of blocks are flat-topped and do not key into the new top row of blocks. McElhanney structural engineers had previously performed an analyse and determined that the unkeyed blocks will be stable and resist any forces applies from potential floodwaters. However, to ensure an adequate safety factor is met, McElhanney recommended that metal straps, secured with concrete wedge anchors, be applied between the top and second row of blocks. This addition of straps to the wall will result in a significantly higher factor of safety overall. Village has approved a change order for the strapping scope of work which has been issued to the contractor.

### **McElhanney**

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## Wall Sealant Design and Construction Methods

The flood wall design incorporates two measures to resist water from flowing between the stacked blocks:

1. **Surface Caulking Sealant** – This is a durable polyurethane-based sealant that is applied to all surface joints on the river face of the wall. It is applied with a caulking gun and provides a flexible, weatherproof seal. This is the primary measure for sealing the wall. **Figure 1** below shows a section of the wall where the white caulking has been applied to the joints along the top two rows of blocks with the lower joints still to be sealed.



*Figure 1: Flood Wall with Surface Sealant Applied*

2. **Mastic Sealant** – This is a putty like material that comes in rolls and is placed between joints prior to blocks being set in place. This is a secondary measure for sealing the wall, and **Figure 2** below shows a row of black mastic being placed.



*Figure 2: Mastic Sealant Applied to Floodwall*

### Sealant Placement Concerns

There may have been a misunderstanding from the public as to which side of the wall the sealant was being applied to. As the caulked surface sealant is intended for application along joints on the Tahsis River side of the wall, residents viewing from the Maquinna Drive side would not be able to see it applied.

There were, however, concerns from residents that the mastic sealant was not being applied correctly as to ensure a watertight seal. As such, McElhanney has reviewed the wall design and sealant application methods with the contractor. Any areas of concern were identified in the field, and the contractor confirmed plans to apply more mastic product as required to ensure a proper seal.

Where tolerances between vertical joints were extremely tight and mastic could not be properly applied without negatively impacting wall fitment, the contractor was instructed to omit mastic. It should be noted again that the mastic is a secondary sealing measure with the caulking acting as the primary sealing measure.

There were locations identified along the wall where the existing wall deflected resulting in larger vertical joints with gaps greater than  $\frac{3}{4}$ " (19mm). It isn't practical for mastic to be filled between large gaps, so instead, the contractor agreed to fill any larger gaps with grout.

### Moving Forward

The contractor has clear instructions and is progressing with the wall construction as directed. The contractor has confirmed that they intend to provide the Village of Tahsis with a high-quality product and they will make every effort to ensure the wall is sealed to the very best of their ability.

McElhanney will continue with regularly scheduled inspections and communication with the Village and the contractor to ensure the project is being executed as designed. Should there be any addition comments or concerns from residents or Village staff, please forward any comments to McElhanney they will be address as soon as possible.

Sincerely,

McElhanney Ltd.



Dwayne Cybak, P.Eng, Contract Administrator  
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