



AGENDA

Committee of the Whole
to be held on Tuesday March 12th, 2019 at 1:30 p.m. in the Council
Chambers
Municipal Hall, 977 South Maquinna Drive

Call to Order

Introduction of Late Items

None.

Approval of the Agenda

New Business 1 **Mark DeGagné, Branch Manager, McElhanney Consulting Services Ltd. Re:
Sea Level Rise and Floodplain Mapping Study**

Adjournment

All Regular Council Meetings, Committee of the Whole Meetings and Special Council Meetings are recorded unless otherwise specified.

Village of Tahsis
Committee of the Whole Agenda
March 12th, 2019



Tahsis and Leiner River Floodplain Mapping and Risk Assessment

March 12, 2019



A dark background with a light-colored topographic map showing contour lines and geographical features.

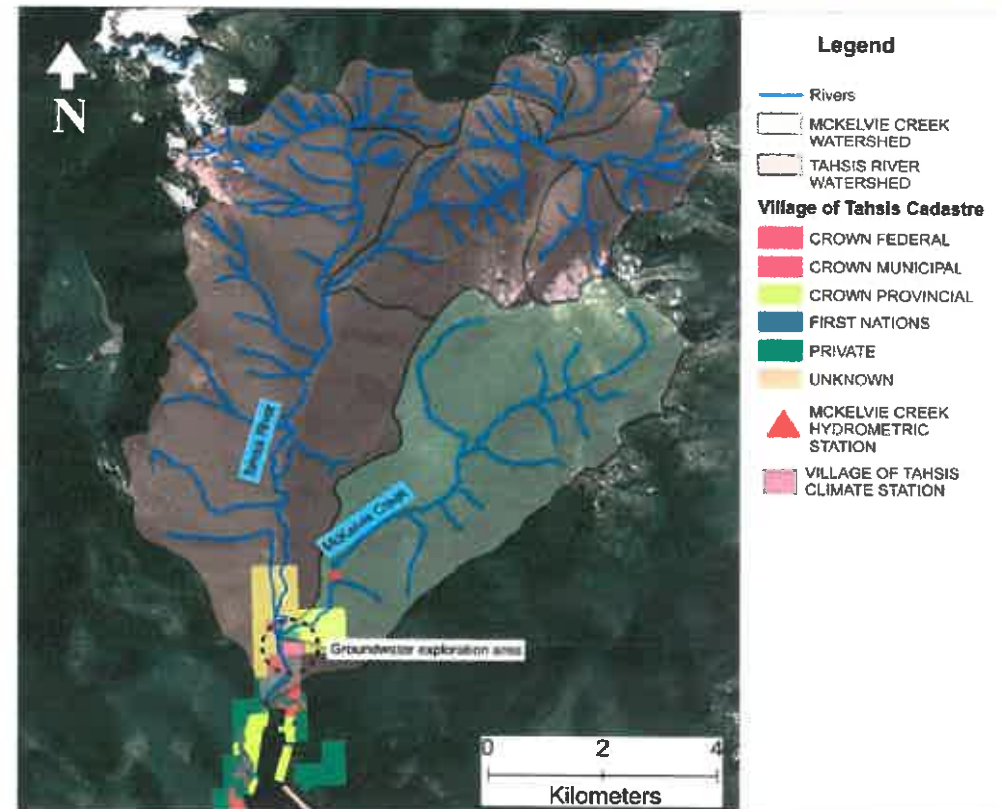
What are we talking about today?

- **Why re-study the floodplain issues now?**
 - **Things have changed since 1992. We need to get up-to-date!**
 - **Things will continue to change from 2020 to 2100. We need to plan for the future!**
 - **We need to look at the risks and plan to mitigate them**
- **Bring the past to the present and look to the future:**
 - **Updates to the Hydrology in the region are required. There is a lot more data and new data to consider.**
 - **New modelling to determine more accurate flood predictions**
 - **Look to the future by considering Changes to Climate and Sea Level Rise (SLR)**
 - **Evaluate the risks and make a plan to protect the community**
- **Review how you can help and participate**

The Watersheds

Tahsis River & McElvie Creek

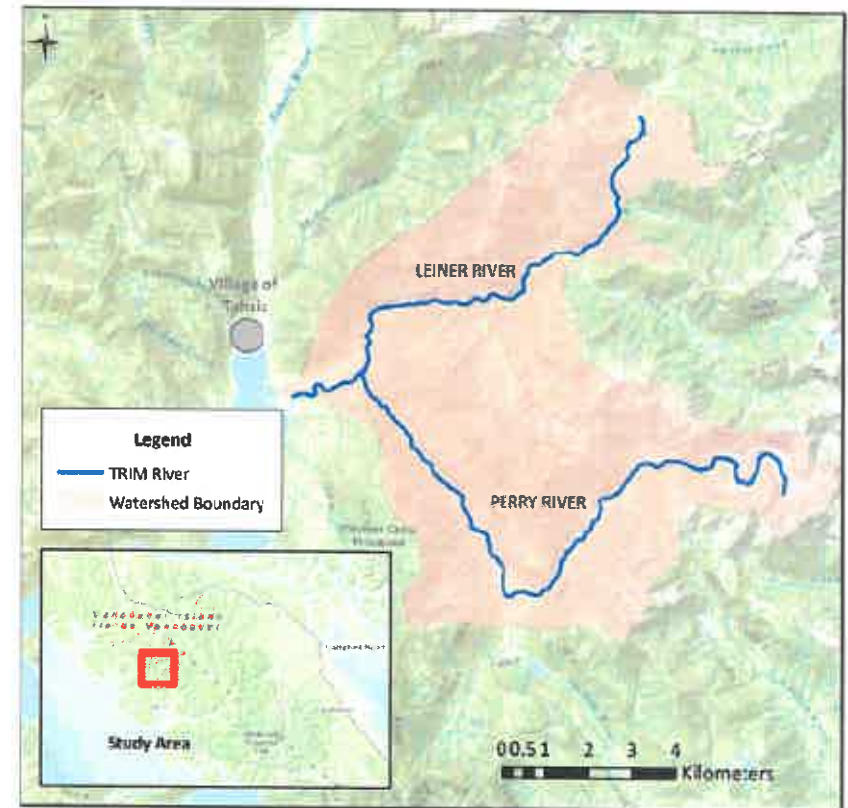
- Tahsis River Drainage Area is 78 km² with McElvie Creek about 22.2 km²
- In 1992 engineer's estimated the Peak Daily Flood Discharges for 1:200 Year Flood at:
 - Tahsis River = 452 m³/s
 - McElvie Creek = 231 m³/s
 - Combined Peak = 596 m³/s
- Discharges were based on records from Zeballos River (30 years of data) and Carnation Creek (18 years of data)



The Watersheds

Leiner River

- Leiner River Drainage Area is 108 km² and includes the Perry River
- In 1992 engineer's estimated the Peak Daily Flood Discharges for 1:200 Year Flood at:
 - Leiner River = 760 m³/s
- Discharges were based on records from Zeballos River (30 years of data) and Carnation Creek (18 years of data)



Historical Flooding

Nov 1989

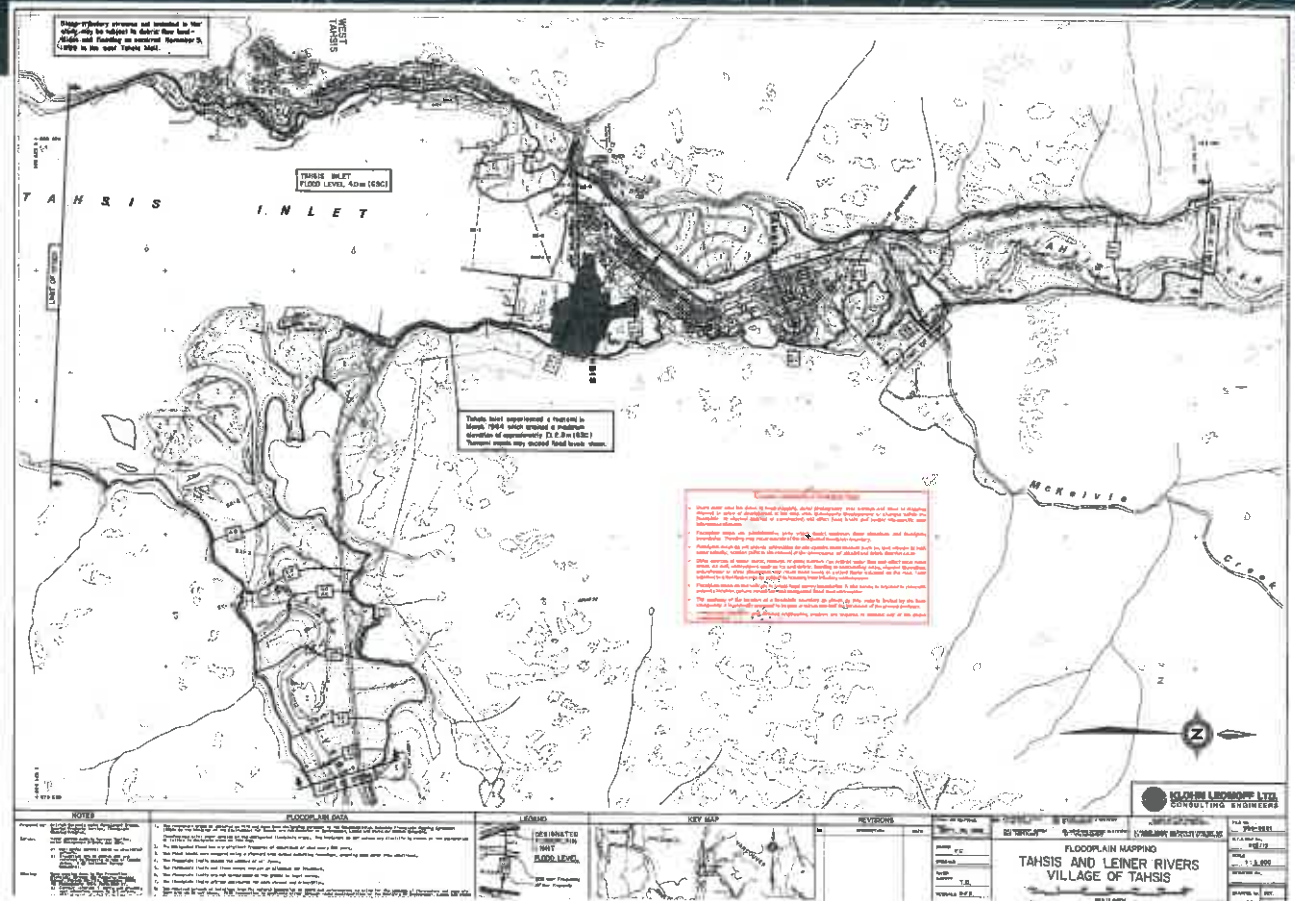
- **Worst Flooding Since 1975**
 - 400mm of rain (That's 16"!!)
 - North townsite Flooded
 - Roads Washed Out
 - No Drinking Water
 - Mud slides
- North Townsite was built-up from the floodplain, which flooded routinely
- Tsunami event of March 1964
 - Maximum Elevation of 2.8m
 - Not part of this study but should be reviewed with Emergency Preparedness Planning



Floodplain Mapping

1992

- Showed the need to protect the Village



Flood Protection Projects

**Cook Street Dike -
Registered as a dike
with the province,
continually
maintained**



**North Maquinna Drive
Flood Wall**

**Boston Street
Drainage Culvert and
Storm Pond**



What does the Future Hold?

Sea Level Rise (SLR)

- 1m rise as a guide for the year 2100

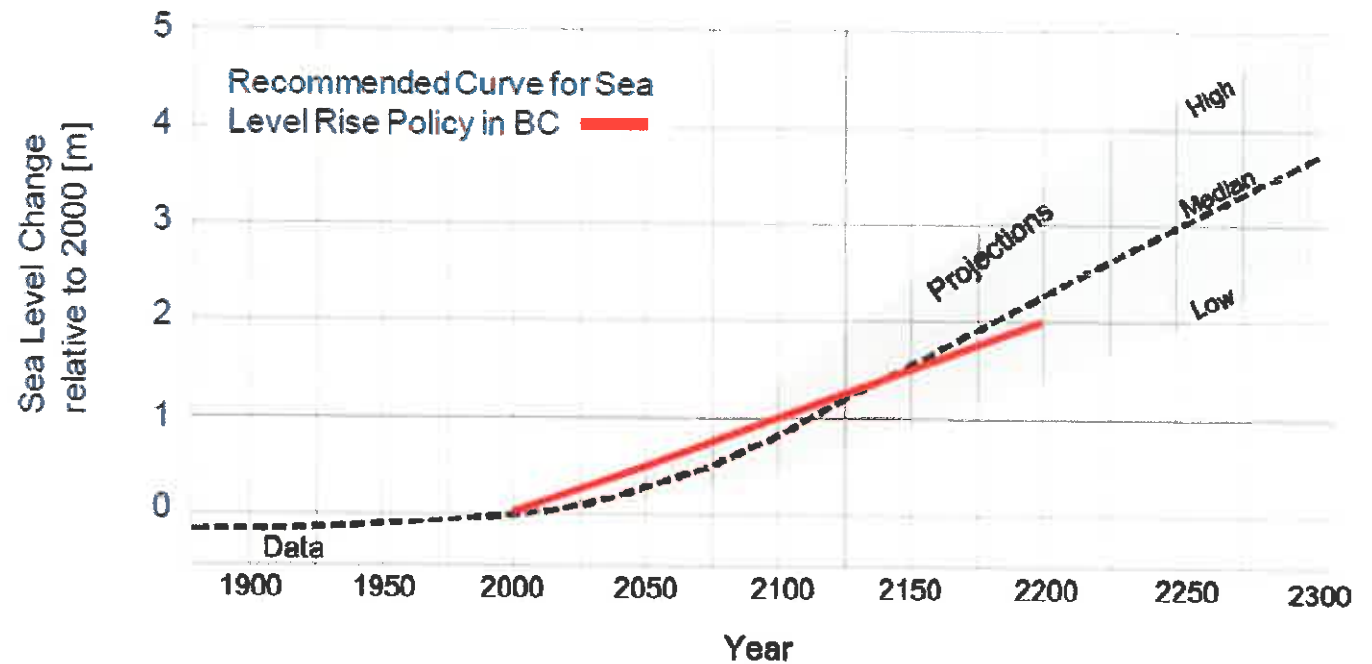


Figure 2-2: Recommended Global Sea Level Rise Curve for Planning and Design in BC (Ausenco Sandwell, 2011a)

What does the Future Hold?

Sea Level Rise (SLR)

- 1m rise as a guide for the year 2100
- Flood Construction Level for Tahsis is 5.3m, includes, tidal effects, storm surge, wave effects and freeboard (Safety Factor)

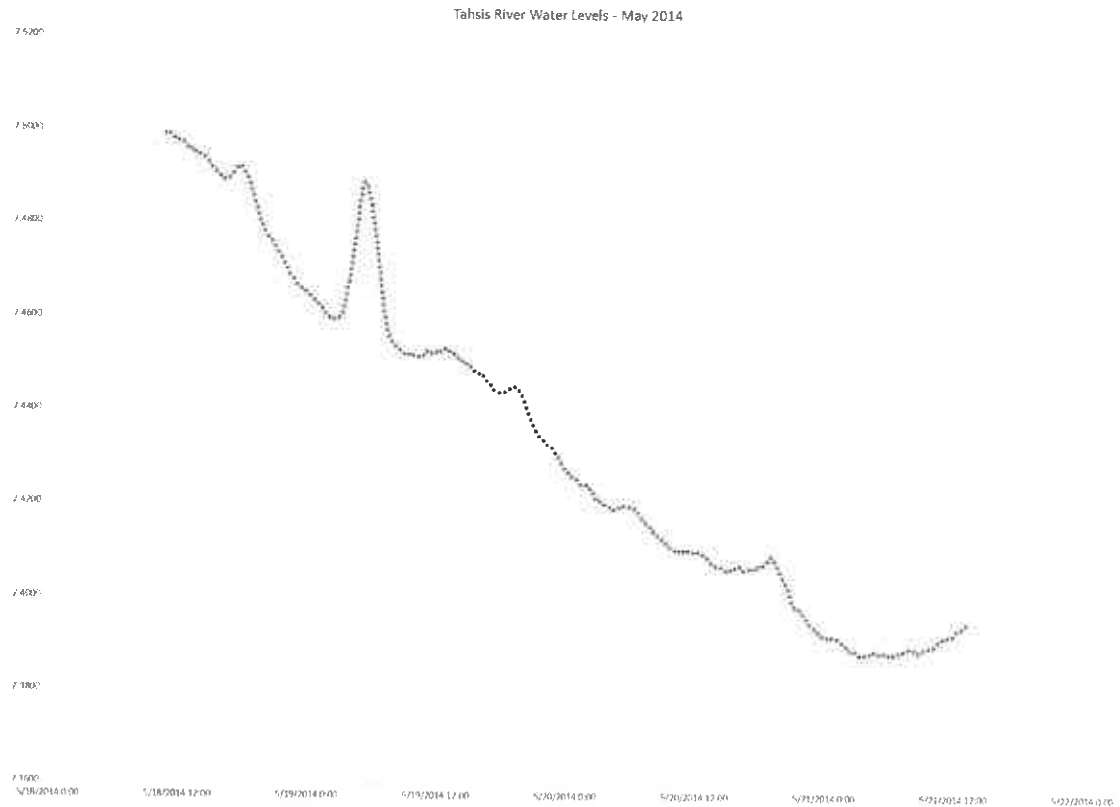
Table 2-4: Preliminary 2100 FCL Estimates for Various Locations (Ausenco Sandwell, 2011b)

FCL Component	Fraser River Delta	Vancouver Harbour	Squamish River Delta	East Vancouver Island	West Vancouver Island	Central and North Coast
Global SLR (2100)	1 m					
Regional Adjustment	+0.21 m	0 m	0 m	-0.17 m	-0.27 m	-0.22 m
HHWLT	2.0 m	1.9 m	2.05 m	1.6 m	2.0 m	3.8 m
Storm Surge	1.7 m	1.4 m	1.3 m	1.3 m	1.3 m	1.7 m
Wave Effect	0.65 m	0.65 m	0.65 m	0.65 m	0.65 m	0.65 m
Freeboard	0.6 m	0.6 m	0.6 m	0.6 m	0.6 m	0.6 m
FCL	6.2 m	5.6 m	5.6 m	5.0 m	5.3 m	7.5 m
Notes:						
1. Reproduced from Ausenco Sandwell (2011b), Table 3-2.						
2. Regional adjustment based on current values. Vancouver and Squamish assumed to be neutral.						
3. HHWLT = Higher High Water Large Tide. Varies by site and location in BC.						
4. Storm surge allowance includes allowances for local wind setup.						
5. Wave effect allowance assumes runup on natural gravel-pebble shoreline.						
6. FCLs are elevations relative to Canadian Vertical Geodetic Datum.						

Next Steps

Climate Change & Hydrologic Updates

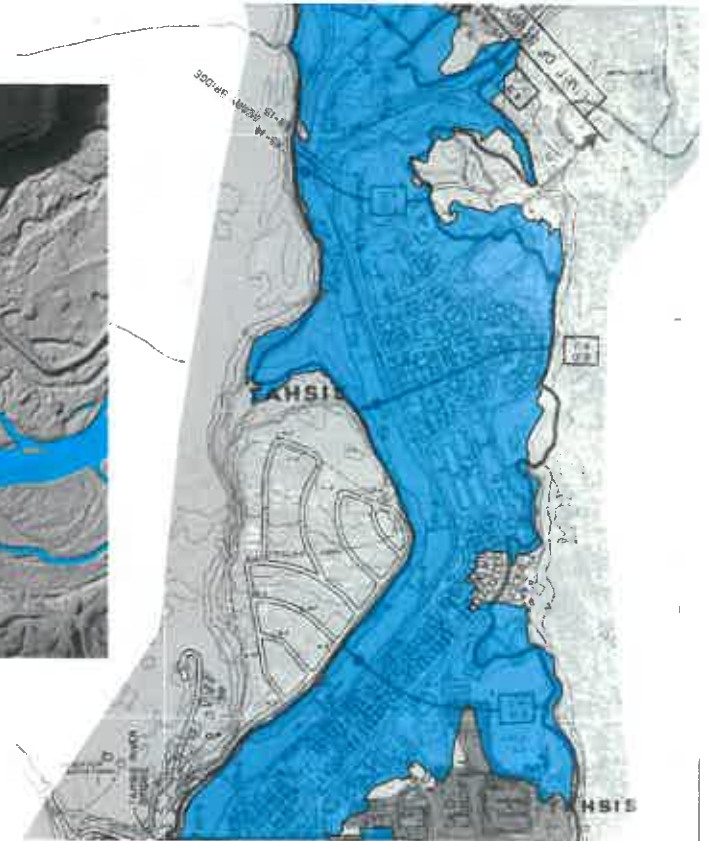
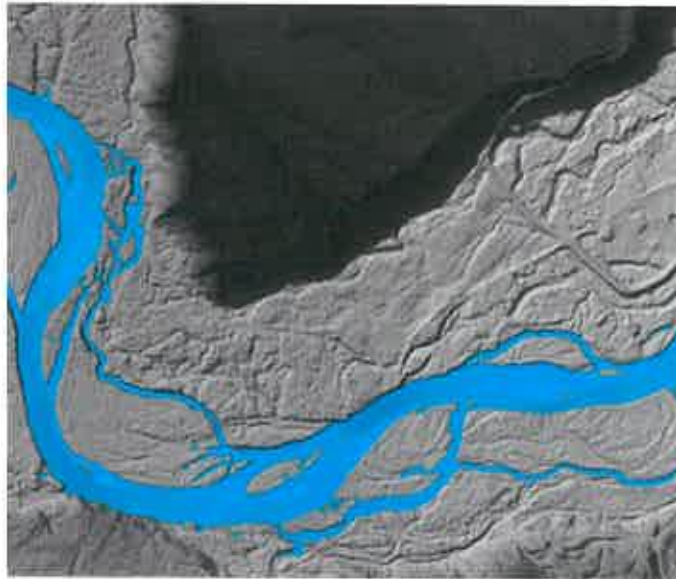
- More Data on Zeballos River
- Available Data on McElvie Creek
- Better models for regional effects
- Climate change according to PCIC – The Pacific Climate Impacts Consortium
- Drier summers, wetter winters
- 12-15% more rain in November and December



Next Steps

Update Flood Model

- Use latest elevation data. LiDAR data collected in 2018
- New 2D computer models



Next Steps

Identify the Risks

- Land Use and property values
- Hazardous Sites
- Critical Infrastructure
 - Roads & Bridges
 - Drinking Water Supply
 - Sewage Treatment Plants

Mitigation Strategy

- PROTECT
- ACCOMMODATE
- RETREAT
- AVOID



Planning and Bylaws

Capital Works – Upgrade dikes



Next Steps

Emergency Planning

- Preparation
- Emergency Response
- Recovery



Your Role

Public Participation:

- **Anecdotal Evidence of Historic Flooding is important**
 - Photos
 - Reports on property flooding
 - Duration
 - Depth
- **Get involved and provide feedback for potential bylaw creation-update**
- **Feedback on potential long-term planning impacts**



THANK YOU

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