



# Minutes

Village of Tahsis

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<b>Meeting</b>	<b>Committee of the Whole</b>
<b>Date</b>	<b>Monday Tuesday May 7th, 2019</b>
<b>Time</b>	<b>1:30 p.m.</b>
<b>Place</b>	<b>Municipal Hall - Council Chambers</b>

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**Present**  
Mayor Martin Davis  
Councillor Bill Elder  
Councillor Sarah Fowler  
Councillor Lynda Llewellyn

**Regrets**  
Councillor Josh Lambert

**Staff**  
Mark Tatchell, Chief Administrative Officer  
Greg Feser, Director of Operations

**Guests**  
Mark DeGagné, Branch Manager, McElhanney Ltd.

**Public**  
16 members of the public.

**Call to Order**

Mayor Davis called the meeting to order at 1:30 p.m.  
Mayor Davis acknowledged and respected that Council is meeting upon Mowachaht/ Muchalaht territory

**Introduction of Late Items**  
None.

**Approval of the Agenda**

**Llewellyn : COW 049/19**  
**THAT** the Agenda for the May 5th, 2019 Committee of the Whole meeting be adopted as presented.

**CARRIED**

**Business Arising**      1      **Mark DeGagné, Branch Manager, McElhanney Ltd Re: Sea Level Rise and Floodplain Mapping Study**

**Llewellyn : COW 050/19**  
**THAT** this presentation be received.

**CARRIED**

Mark DeGagné answered questions from the public and Council. There was a general discussion regarding the information presented and the implications for future planning and development.

**Adjournment**

**Llewellyn : COW 051/19**

**THAT** the meeting be adjourned at 2:45 p.m.

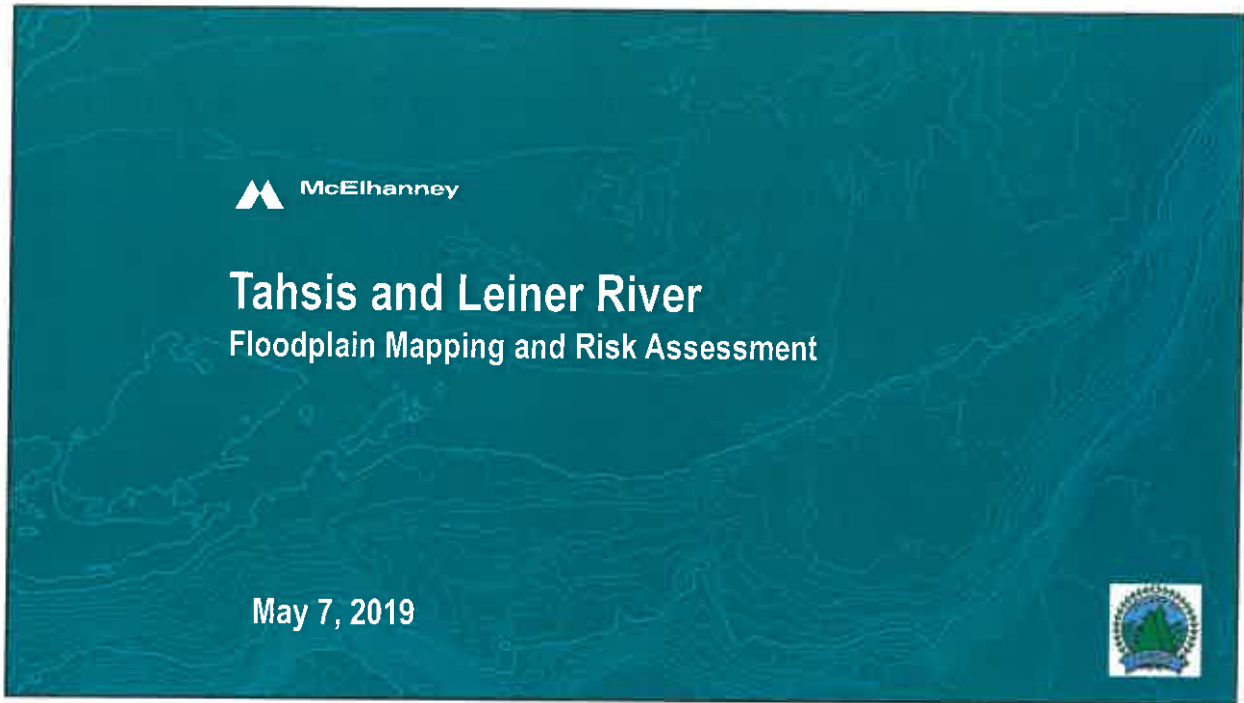
**CARRIED**


Certified correct this  
21st Day of May, 2019



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Corporate Officer




 **McElhanney**

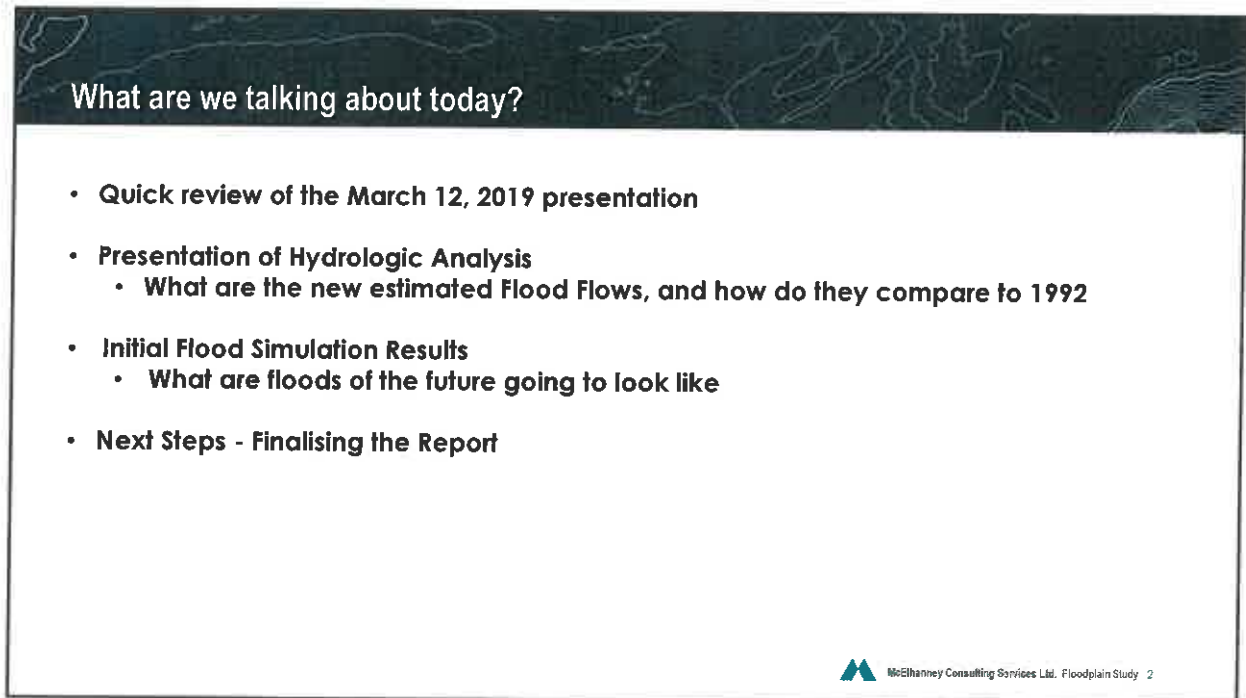
# Tahsis and Leiner River

## Floodplain Mapping and Risk Assessment

May 7, 2019




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### What are we talking about today?

- **Quick review of the March 12, 2019 presentation**
- **Presentation of Hydrologic Analysis**
  - **What are the new estimated Flood Flows, and how do they compare to 1992**
- **Initial Flood Simulation Results**
  - **What are floods of the future going to look like**
- **Next Steps - Finalising the Report**

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## Floodplain Mapping

**1992**

- **Showed the need to protect the Village**
- **Based on ocean levels of 4.0m, which is high high tide, plus ocean set-up and waves heights during a storm**

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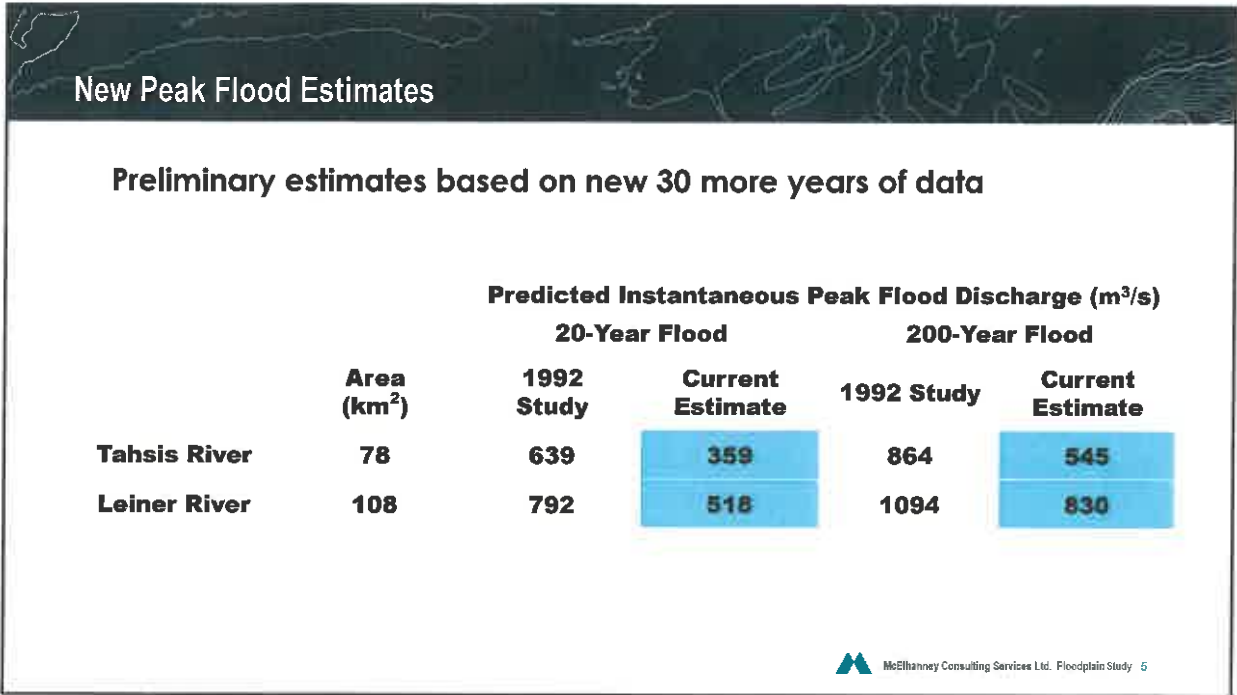
## The Watersheds

**Tahsis River, McKelvie Creek & Leiner River**

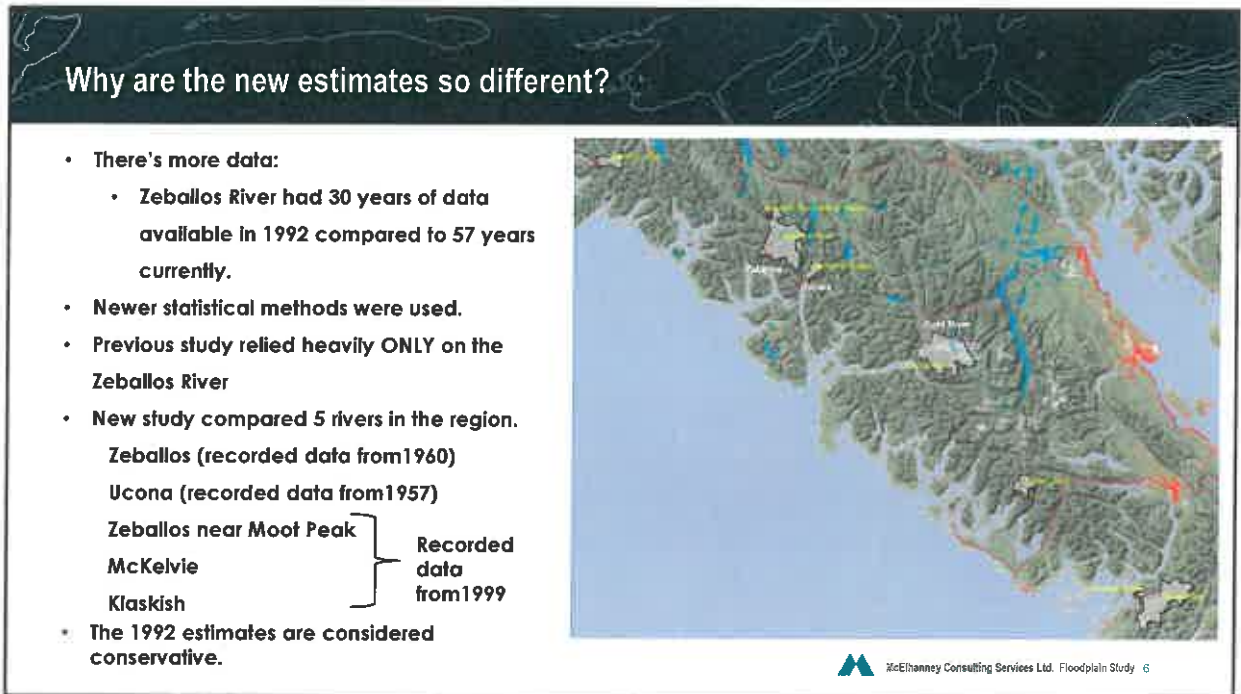
- **Tahsis River Drainage (above McKelvie Creek) = 54 km<sup>2</sup>**
- **McKelvie Creek = 22 km<sup>2</sup>**
- **Tahsis River at the mouth = 78 km<sup>2</sup>**
- **Leiner River Drainage (includes the Perry River) = 108 km<sup>2</sup>**

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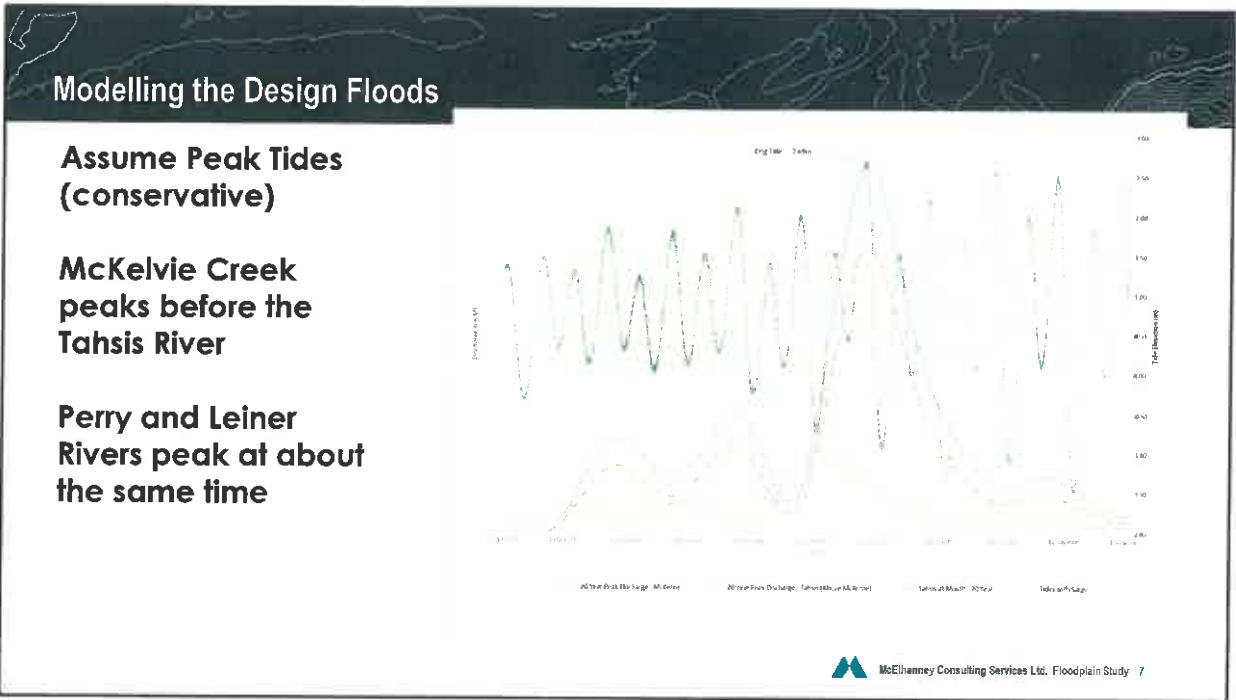
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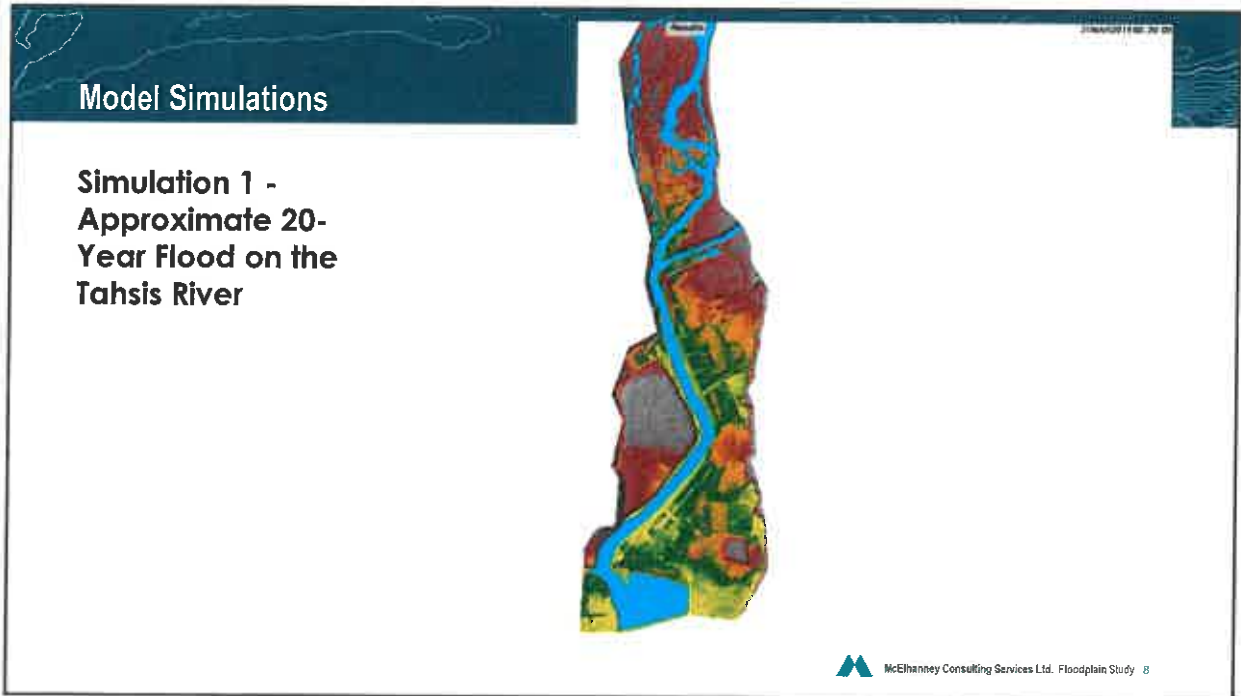
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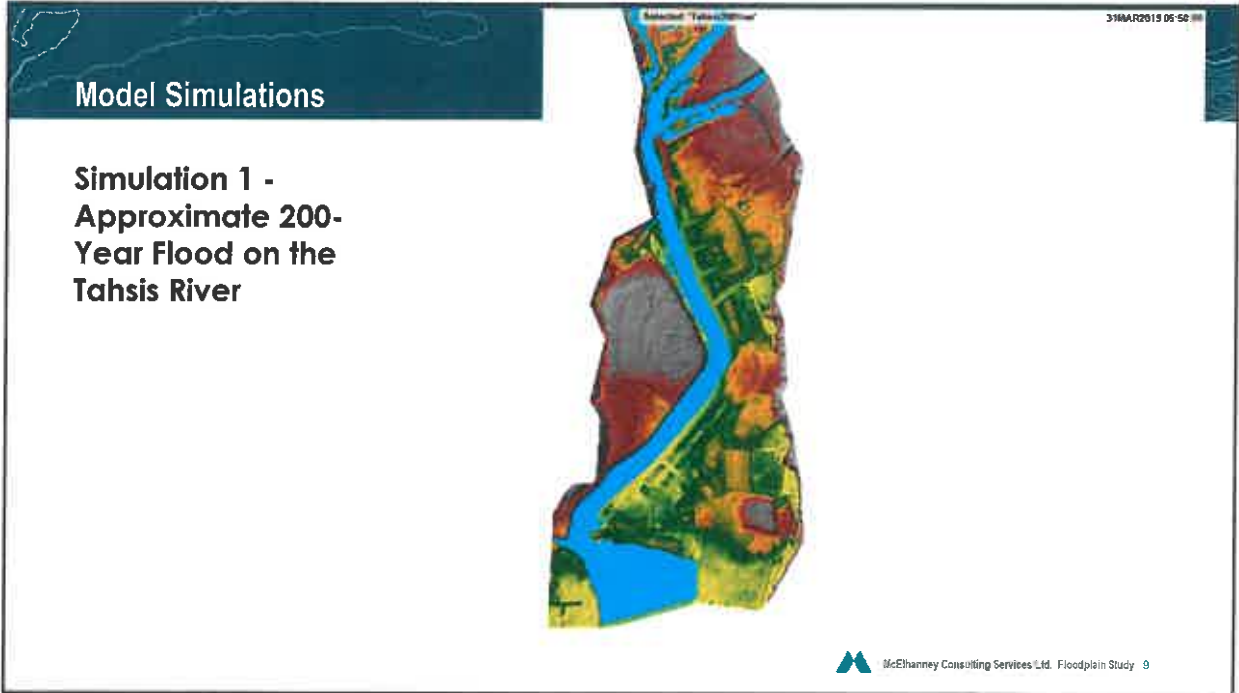
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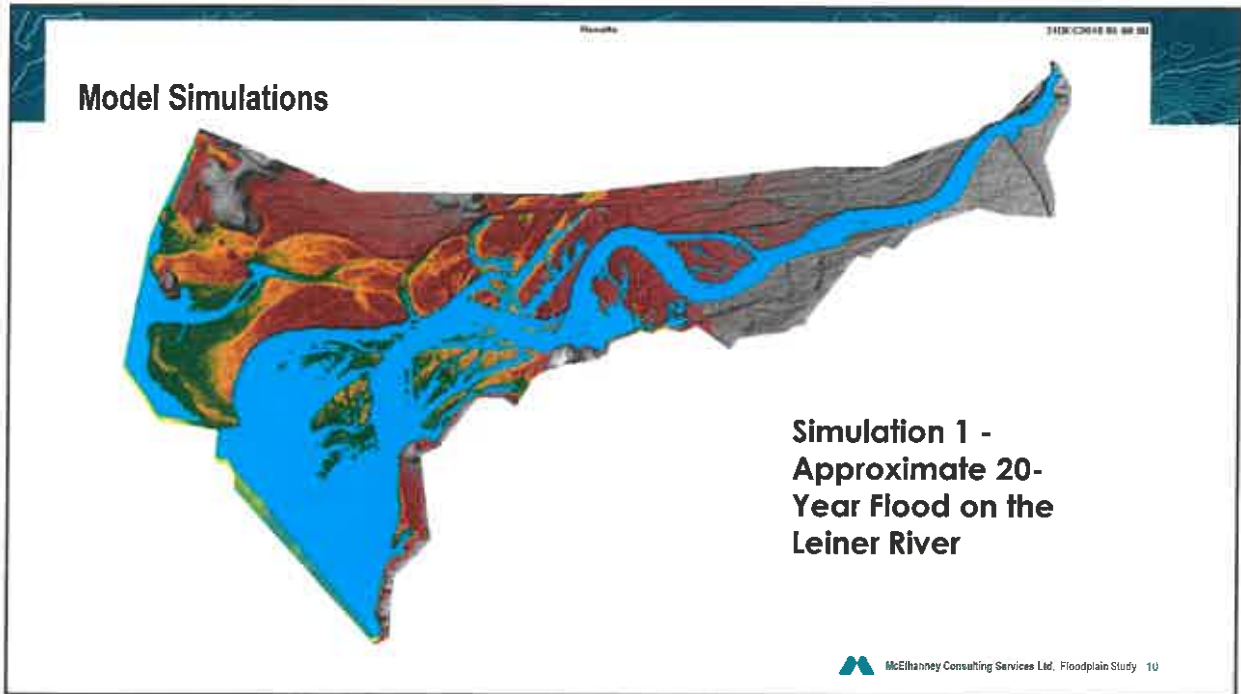
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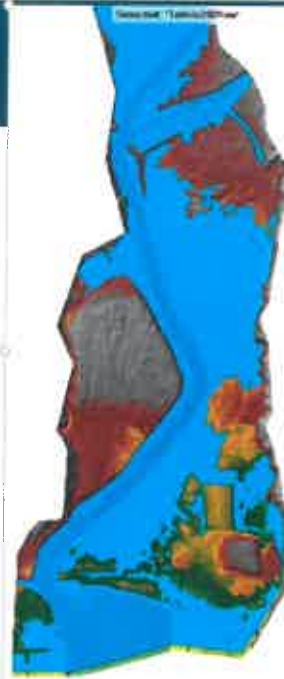


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## Model Simulations

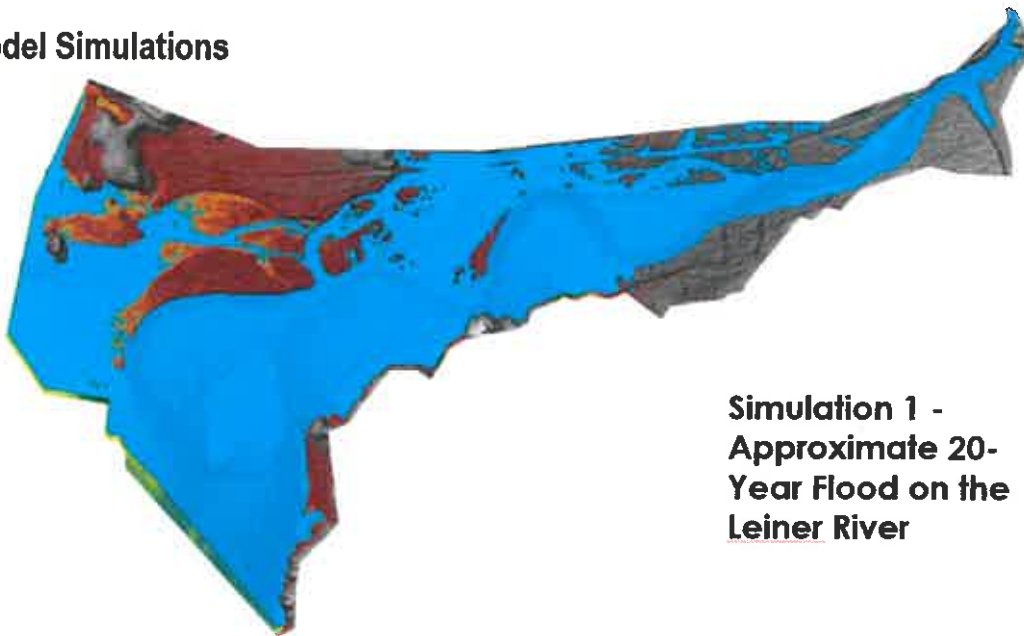
### Simulation 1 - Approximate 200- Year Flood on the Tahsis River



Simulated Flooding on the Tahsis River  
1:200 Year Peak Flood with Inlet levels at 3.7m

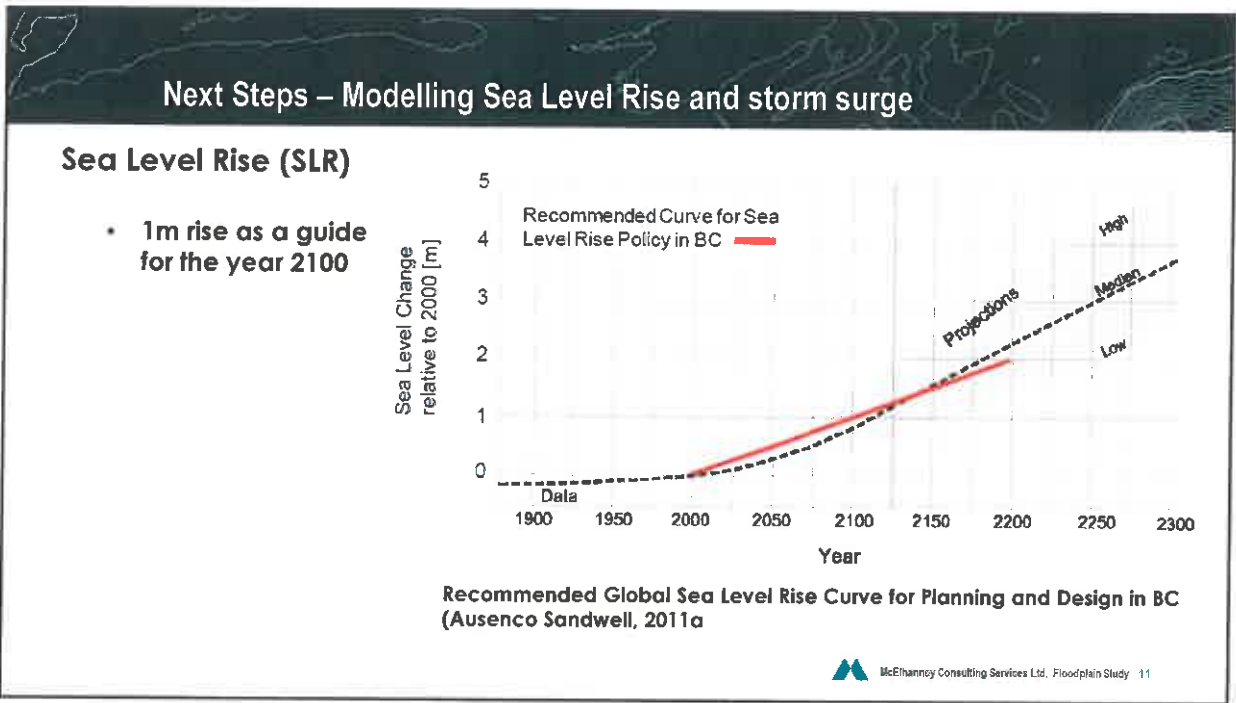
## Model Simulations

### Simulation 1 - Approximate 20- Year Flood on the Leiner River



Simulated Flooding on the Leiner River  
1:20 Year Peak Flood with Inlet levels at 2.7m





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### Establish Flood Construction Levels

#### Sea Level Rise (SLR)

- 1m rise as a guide for the year 2100
- Flood Construction Level for Tahsis recommended to be 5.3m, includes, tidal effects, storm surge, wave effects and freeboard (Safety Factor)
- Modelling to confirm this recommendation

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
<b>FCL</b>	<b>6.2 m</b>	<b>5.6 m</b>	<b>5.6 m</b>	<b>5.0 m</b>	<b>5.3 m</b>	<b>7.5 m</b>

**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 = Highest 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-ripple shoreline.  
 6. FCLs are elevations relative to Canadian Vertical Geodetic Datum.


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## Adjust Floods for Climate Change

### Model Climate Change

- Climate change according to the Pacific Climate Impacts Consortium
- Dryer summers, wetter winters
- 12% more rain in November, December and/or January



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#### Summary of Climate Change for Strathcona in the 2080s

Projected Change from 1961-1990 Baseline

Variable	Season	Ensemble Median	Range (95% Probability)
Mean Temperature (°C)	Annual	+2.5 °C	+1.3 °C to +3.7 °C
	Summer	+8%	+1% to +16%
Precipitation (%)	Summer	-12%	-32% to -9%
	Winter	+12%	+1% to +22%
	Winter	-35%	-59% to -13%
Snowfall* (%)	Spring	-72%	-86% to -54%
	Spring	-72%	-86% to -54%
Growing Degree Days* (degree days)	Annual	+521 degree days	+270 to +832 degree days
Heating Degree Days* (degree days)	Annual	-677 degree days	-1326 to -467 degree days
Frost-free Days* (days)	Annual	+35 days	+19 to +52 days

\* These values are derived from temperature and precipitation. Please select the appropriate variable tab for more information.

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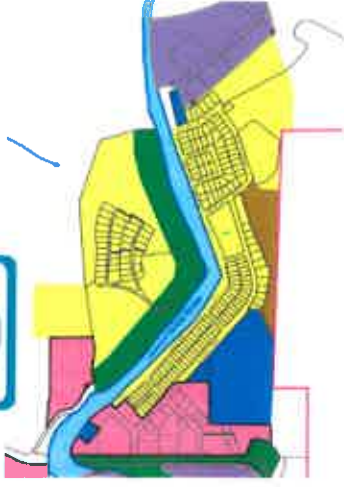
## Next Steps – Planning and Mitigation

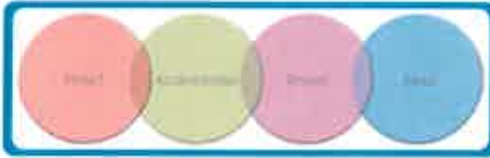
### Identify the Risks


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

### Mitigation Strategy

- PROTECT
- ACCOMMODATE
- RETREAT
- AVOID






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## Next Steps – Planning and Mitigation

**Protect**  
Planning and Bylaws  
Capital Works – Upgrade dikes

**Emergency Planning**

- Preparation
- Emergency Response
- Recovery



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## Reporting

**Draft Report:**

- Summarize all the findings and recommendations – DRAFT for early June
- Presentation to Council
- FINAL report by end of June

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# THANK YOU

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