Road Assessment Project

Presentation to Council

The Village of Belcarra

September 18, 2017

Presentation Agenda

1. Roads Asset Management Program – Review
2. Road Assessment Overview
3. Road Assessment Methodology
4. Existing Road Condition
5. Health and Safety Considerations
6. Level of Service Considerations
7. Recommended Next Steps
8. Discussion / Q&A

Asset Management Program - Review

- 2017 Program deliverables included:
  - Compilation of Roads Inventory and Field Investigation
  - 20 Year Replacement Cost and Lifecycle Optimization
  - Asset Management Report and Presentation

Asset Category	Replacement Value - Total	Average of Expected Remaining Life	Sum of Infrastructure Deficit (Backlog)	Sum of 20 Year Average Annual Investment	Sum of Average Annual Life Cycle Investment
Road System - Provided SLs	$2,056,000	73%	$0	$97,000	$81,000
Road System - 25 Year SLs	$2,056,000	73%	$181,000	$103,000	$83,000
Average	**$2,056,000**	**73%**	**$90,500**	**$100,000**	**$82,000**

Road Assessment Overview

Objective:

- Identify functional and physical characteristics of Belcarra's roads
- Improve the accuracy of the Asset Management Program
- Develop a surface condition rating
- Consider maintenance, resurfacing and reconstruction needs
- Inform the asset management road renewal timing

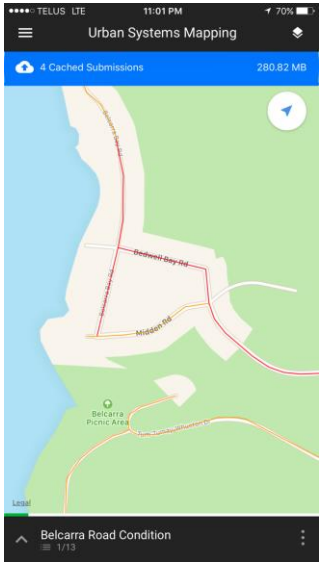
Technical roadway characteristics:

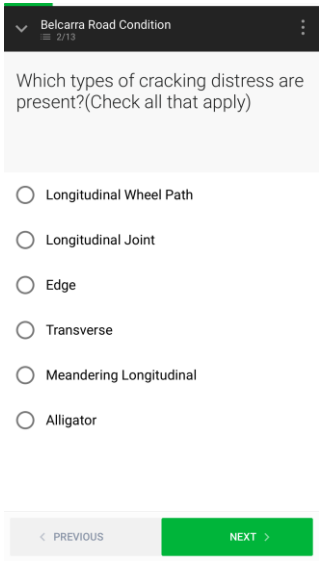
- Surface condition
- Type of defect
- Inventory retaining walls and bus stops
- Identify notable curb and sidewalk deficiencies
- Specific risks, hazards, anomalies and factors
- Cross-sectional elements

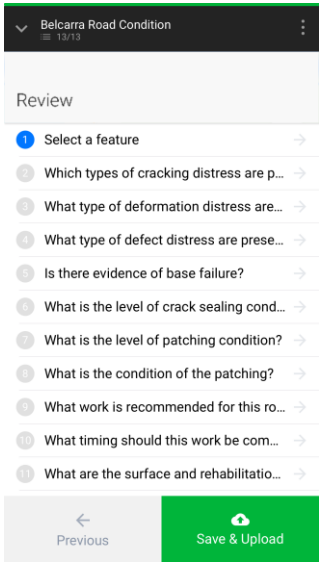
Road Assessment Overview

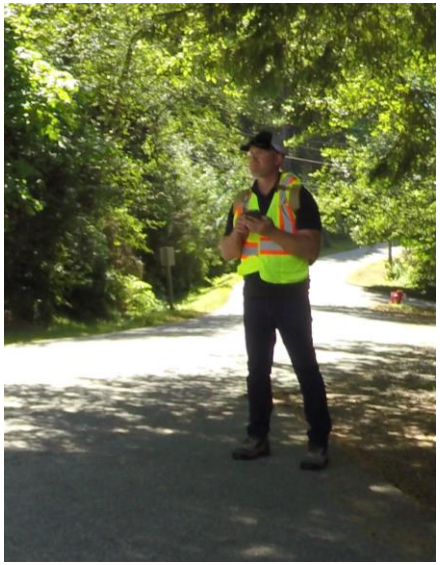
Road Assessment Methodology

- Prepared GIS-Based Road Information
- Prepared Mobile (Digital) Inspection Forms
- Visual field roadway corridor assessment
- Collect photos and provide comments based on inspection
- Prioritize roadwork for review with Village
- Conduct workshop to review roadwork, clarify levels of service, priorities
- Produce summary maps and summary report
- Prepare Class “C” cost estimates – Years 1-5 years
- Asset Management Report Update









Pavement Distress Rating System

Pavement Distress Rating System – Severity Levels			
Distress Type	**Low Severity**	**Moderate Severity**	**High Severity**
Longitudinal Wheel Path Cracking (LWP)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Longitudinal Joint Cracking (LJC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Pavement Edge Cracking (PEC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Transverse Cracking (TC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Meandering Longitudinal Cracking (MLC)	Single cracks with no spalling; mean unsealed crack width < 5mm	Single or multiple cracks; moderate spalling; mean unsealed crack width 5-20mm	Single or multiple cracks; severe spalling; mean unsealed crack width >20mm; alligator
Alligator Cracking (AC)	Not rated	Interconnected cracks forming a complete block pattern; slight spalling and no pumping	Interconnected cracks forming a complete block pattern, moderate to severe spalling, pieces may move and pumping may exist
Rutting (RUT)	Less than 10mm	10 to 20mm	Greater than 20mm
Shoving (SHV)	Barely noticeable to noticeable	Rough ride	Very rough ride
Distortion (DST)	Not rated	Noticeable swaying motion; good car control	Fair to Poor car control
Bleeding (BLD)	Not rated	Distinctive appearance with free excess asphalt	Free asphalt gives pavement surface a wet look; tire marks are evident
Potholes (POT)	Less than 25mm deep and greater than 175cm2 in area. (~15cm Ø)	25 to 50mm deep and greater than 175cm2 in area. (~15cm Ø)	Greater than 50mm deep and greater than 175cm2 in area. (~15cm Ø)
Ravelling (RAV)	Not rated	Aggregate and/or binder worn away; surface texture rough and pitted; loose particles exist	Aggregate and/or binder worn away; surface texture is very rough and pitted

Source: MOTI Pavement Surface Condition Rating Manual – Forth Edition

Field Visual Assessment

Field Assessment

- Surface condition
- Type of defect
- Retaining walls
- Bus stops
- Curb
- Sidewalk
- Risks and hazards

Deficiencies Observed

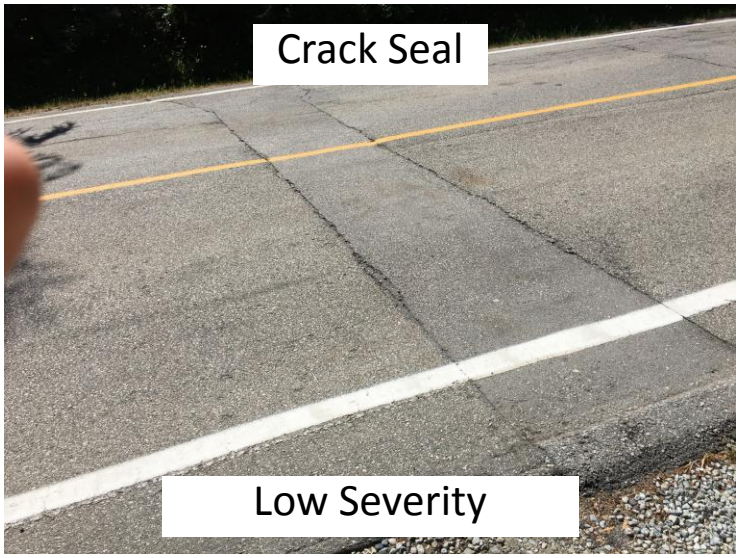
- Trench Patch Deterioration
- Pavement Edge Cracking
- Alligator Cracking

Trench Patch with Moderate Edge Cracking and Moderate Alligator Cracking

High Severity Alligator Cracking With Surface Distortion

High Severity Edge Cracking with High Severity Edge Cracking

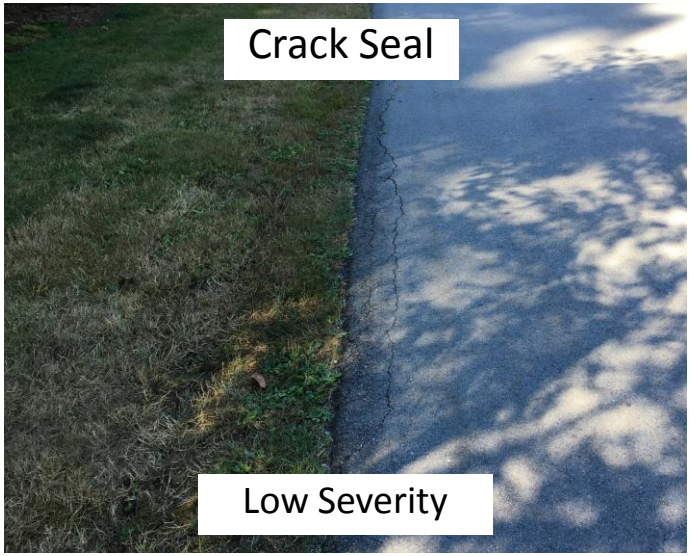
Trench Cut Deficiencies

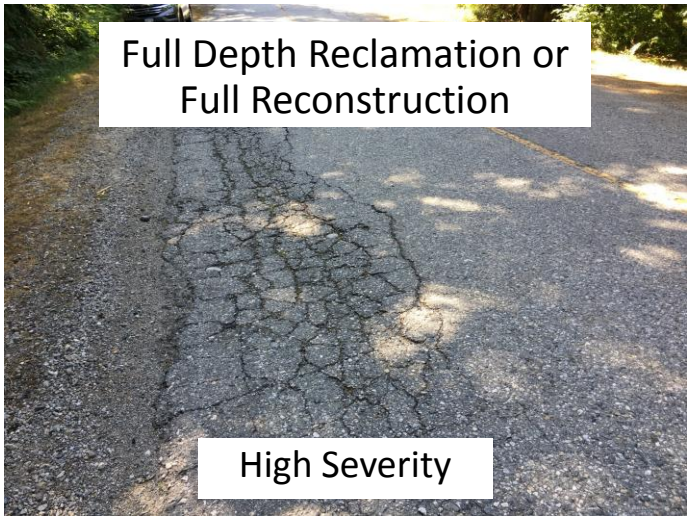


Reason to Act

- Reduce further deterioration
- Increase surface quality
- Lower cost options

Pavement Edge Deterioration





Reason to Act

- Reduce further deterioration
- Increase surface quality
- Improve safety
- Delaying work reduces options and increases cost

Alligatored Road Surface

Reason to Act

- Reduce further deterioration
- Increase surface quality
- Address deformation
- Delaying work reduces rehabilitation options

Retaining Walls

Gabion Wall – Bedwell Bay Rd & Main Ave

Gabion Wall – Bedwell Bay Rd & Kelly Rd

Lock Block Wall – Bedwell Bay Rd

Failure of Private Retaining Walls

- Gabion Wire Deterioration
- Bulging and Undercuts

Bus Stops

Deficiencies Observed

- Paint pealing
- Minor rotting of wall and roof boards

Curb

Main Road – Curb in Good Condition

West Road – Disturbed Curb

Belcarra Bay Road – Fair Condition

Bedwell Bay Road – Fair Condition

+/- 3 km of Curb

Safety Considerations

Vehicle and Cycling Hazards


Shoulder Drop-off


Road Edge/Corner Failure


Pole in Road Surface


Catchbasin Failure


Edge Failure/Potholes


Blind Corner

Safety Considerations

Vehicle, Cycling and Pedestrian Hazards


Bedwell Bay Road

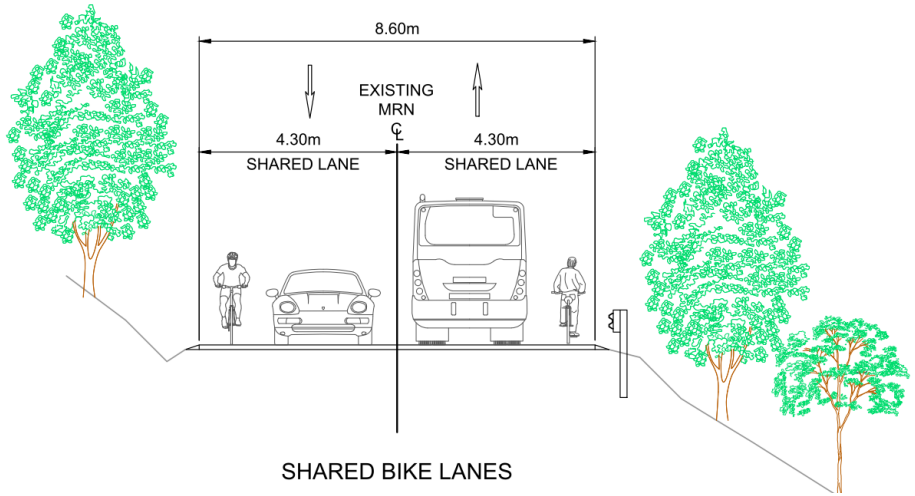

Bedwell Bay Road


Bedwell Bay Road

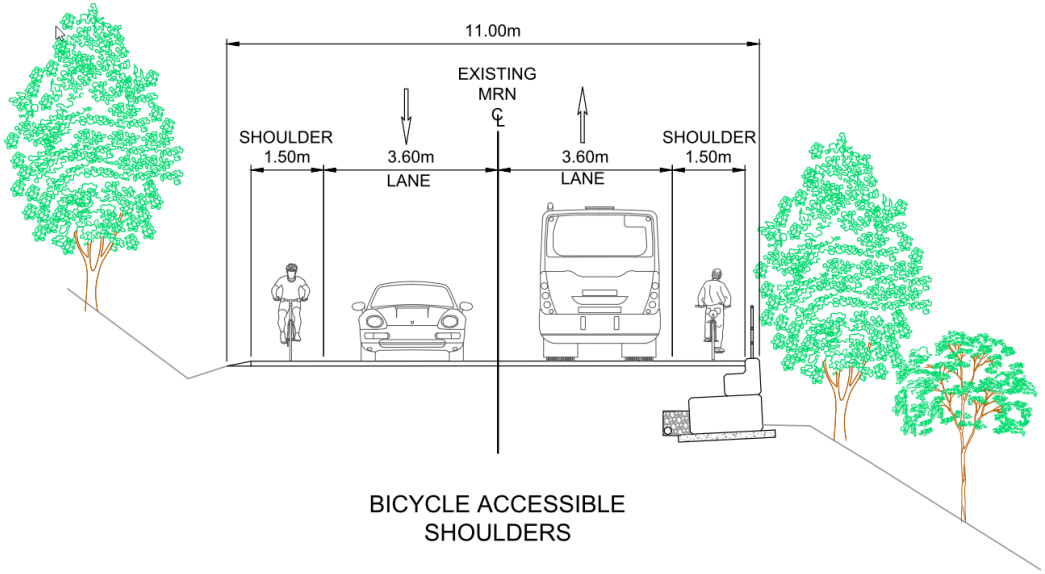

W Beam Guardrail

Addition of Guardrails
along steep slopes
+/- $80 per meter

Level of Service Considerations

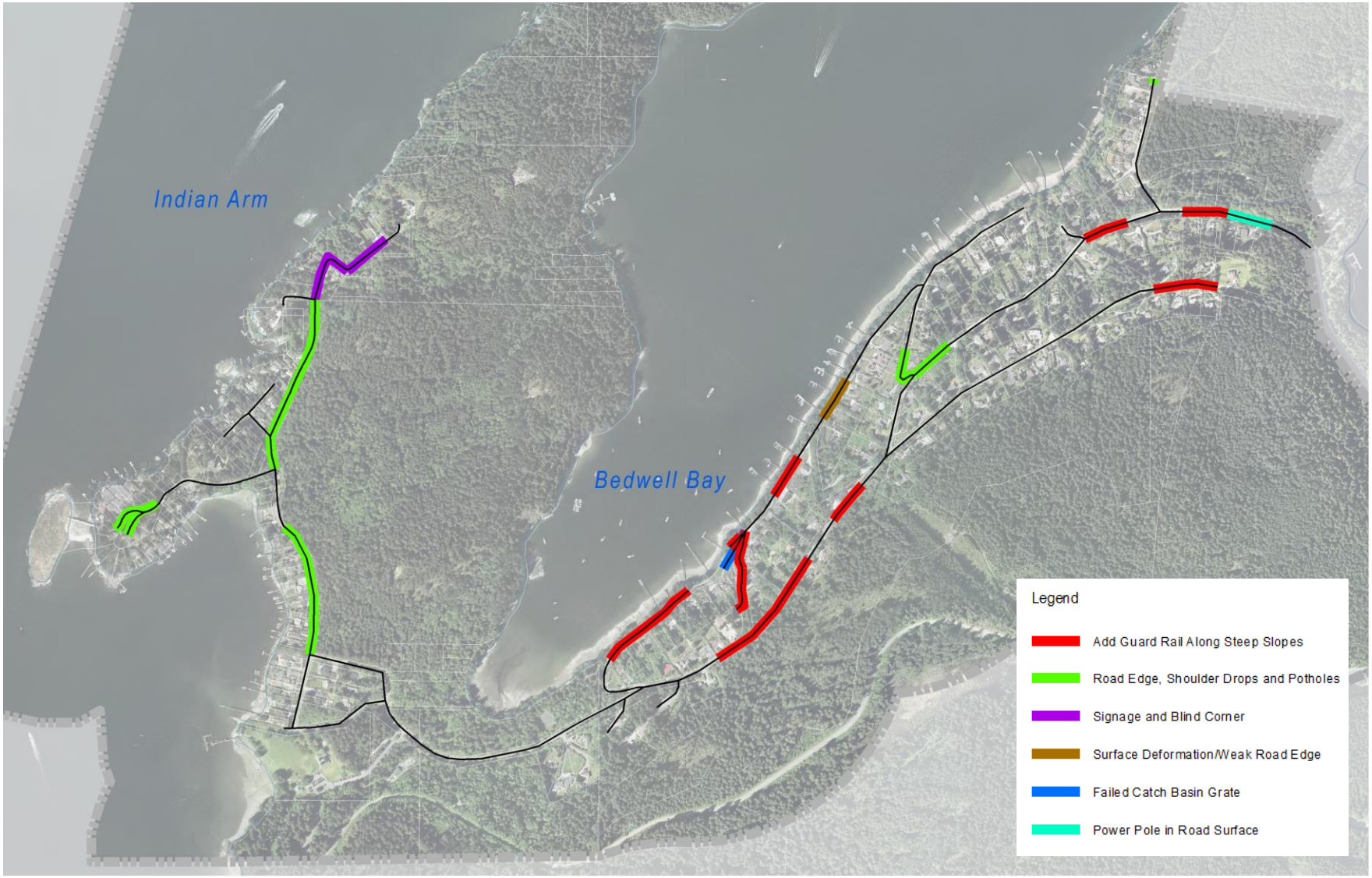


SHARED BIKE LANES

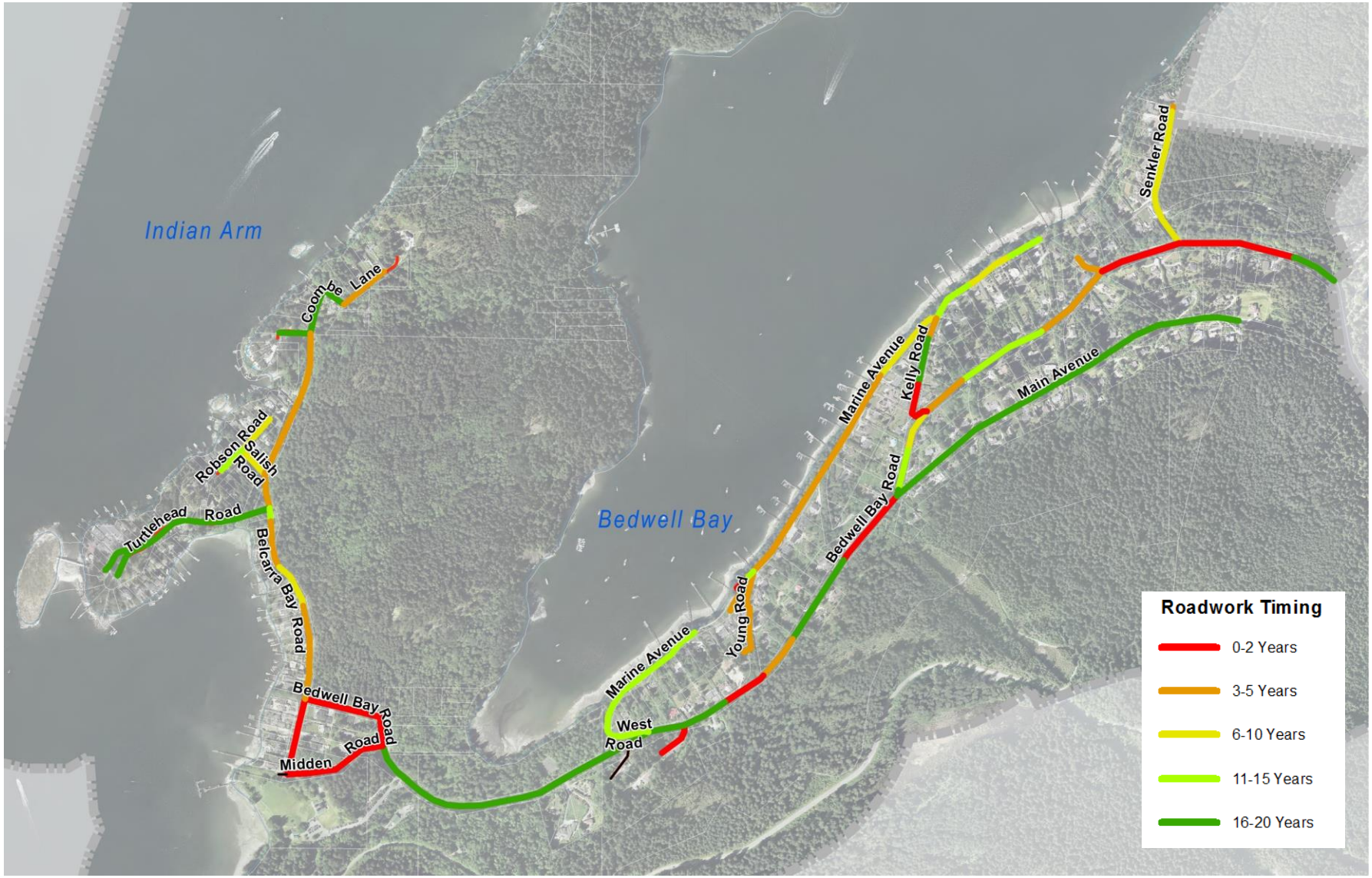


BICYCLE ACCESSIBLE
SHOULDERS

Safety Concerns



Timing for Roadwork Based on Condition



Next Steps

- Determine Preferred Rehabilitation Method
- Prepare “Class C & D” Cost Estimates
- Prepare Road Corridor Assessment Report
- Update the Asset Management Plan (AMIP)

Questions?