K'ómoks Estuary North Area Flood Resilience Strategy
OVERVIEW REPORT

23 April 2026

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Project Number: P273

Cover Art: **"Our Journey Together as a Community Through the Waters"**

This painting represents the journey undertaken by the Comox Valley Regional District through the flood resilience strategy process. It reflects a path grounded in collaboration, humility, and listening—beginning without all the answers, but with a commitment to building solutions together.

Like a canoe moving through flowing waters, the process welcomed many voices along the way. K'ómoks First Nation, farmers, Ducks Unlimited, and other partners came together, each bringing knowledge and perspective. Through this shared movement, a living community was formed—working not only for today, but for future generations.

The welcome figure symbolizes openness and the responsibility to hold space for all concerns. The salmon heads represent the life source of the waterways and the importance of protecting them. The K'ómoks-style canoe carries women's and men's paddles, alongside a Kwakwaka'wakw paddle, reflecting the weaving together of north and south. A neighboring community paddles beside us, emphasizing unity and shared direction.

The Coast Salish-style longhouse, with smoke rising, represents an active, living community and the ongoing work that continues—just as the waters flow beyond us.

Pamela Mitchell, K'ómoks First Nation

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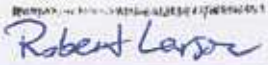
Robert Larson, M.Sc., P.Ag., PMP Project Manager	Ebbwater	

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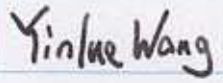
Yinlue Wang, M.Sc., Hydrotechnical Specialist	Ebbwater	

Revision History

Revision No.	Date	Author of Record	Description	Remarks
1	5 March 2026	Tamsin Lyle, P.Eng.	Draft	Provided to CVRD for comment
2	21 April 2026	Tamsin Lyle, P.Eng.	Final	Client comments incorporated. Document reissued.

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We also would like to thank Sạnala Planning for their participation in the decision process workshops in the role of witnesses. They provided feedback that helped us improve the engagement process and deepen our understanding and practice of risk and resilience from the perspective of Indigenous people.

Ebbwater would like to acknowledge that this report was written at the Ebbwater Consulting Inc. office (and home offices), which are located on the unceded and traditional Territory of the Coast Salish Peoples.

The analyses were completed, and the report written by a multi-disciplinary team as follows:

- Erica Crawford, MA (HeronBridge Consulting Inc.), led the design, coordination, and delivery of the engagement process, as well as managing feedback and writing results.
- Tamsin Lyle, M.Eng., MRM, P.Eng. (Principal of Ebbwater) was the project technical lead, which included directing and presenting the risk-based information through the decision process. Tamsin also provided general project direction and review of deliverables.
- Robert Larson, M.S., P.Ag., managed the project including supporting technical development, coordination, materials preparation, and report-writing.
- Yinlue Wang, M.Sc., conducted technical analyses and mapping.
- Lukas Holy, MLA, RLA (Hapa Collaborative), developed landscape design illustrations to facilitate visualization of the alternatives.

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List of Abbreviations and Acronyms

BC	British Columbia
CEPF	Community Emergency Preparedness Fund
CFAS	Coastal Flood Adaptation Strategy
CVEM	Comox Valley Emergency Management
CVRD	Comox Valley Regional District
DRIPA	Declaration of the Rights of Indigenous Peoples Act
DUC	Ducks Unlimited Canada
ECCC	Environment and Climate Change Canada
EMCR	Emergency and Climate Readiness (formerly Emergency Management BC)
IERs	Indigenous Engagement Requirements
IR	Indian Reserve (as defined by the Indian Act)
MOTT	Ministry of Transportation and Transit (previously Ministry of Transportation and Infrastructure)
MOU	Memorandum of Understanding
NGO	Non-Governmental Organizations
OCP	Official Community Plan
PARAR	Protect, Accommodate, (Managed) Retreat, Avoid, and Resilience-Building
UBCM	Union of British Columbia Municipalities

1 Introduction

The K'ómoks Estuary area is a vibrant place due to its natural features and the people who inhabit and visit the area. It is within the K'ómoks First Nation Traditional Territory and is characterized by dynamic riverine and coastal processes. Combined with human activities, these phenomena can create damaging flood conditions, wave action, and erosion. These will increase with time as river regimes change, storms become more intense, and sea levels rise. To respond to these events, the CVRD has recognized the need to adapt to these hazards. The CVRD has also recognized it is not alone in this process, given multiple governments, agencies, and interests in the area.

In 2022, the CVRD completed Phase 2 of a multi-phase Coastal Flood Adaptation Strategy (CFAS) (Ebbwater Consulting Inc. and SHIFT Collaborative, 2022). One of the outcomes from this large-scale project was the identification of four local areas where next steps could be taken to implement flood adaptation. The north area of the K'ómoks Estuary was identified as a good place to start. With support from the Community Emergency Preparedness Fund (CEPF), this project builds upon the previous two phases of the CFAS.

The goal of the current phase of the CFAS project was **to develop a collaborative framework and execute a decision process to define a strategy to advance flood resilience in the K'ómoks Estuary North Area.** To support this work, the CVRD retained Ebbwater Consulting Inc. (Ebbwater) to lead targeted engagement and analyze alternative coastal adaptation options. Ebbwater partnered with HeronBridge Consulting to lead the collaborative process, as well as design and delivery of the engagement sessions. As with the previous phase of work, an important component of this project wasthe capacity-building at CVRD and with its partners, to better enable understanding and action that addresses the complex nature of flood mitigation and climate adaptation.

1.1 CFAS Background

The CFAS is a multi-year initiative with an overall goal to minimize risks and increase community resilience from coastal flood that began in June 2019 with a coastal flood mapping project (Phase 1). Figure 1-1 shows an overview of the strategy's phases and timelines.

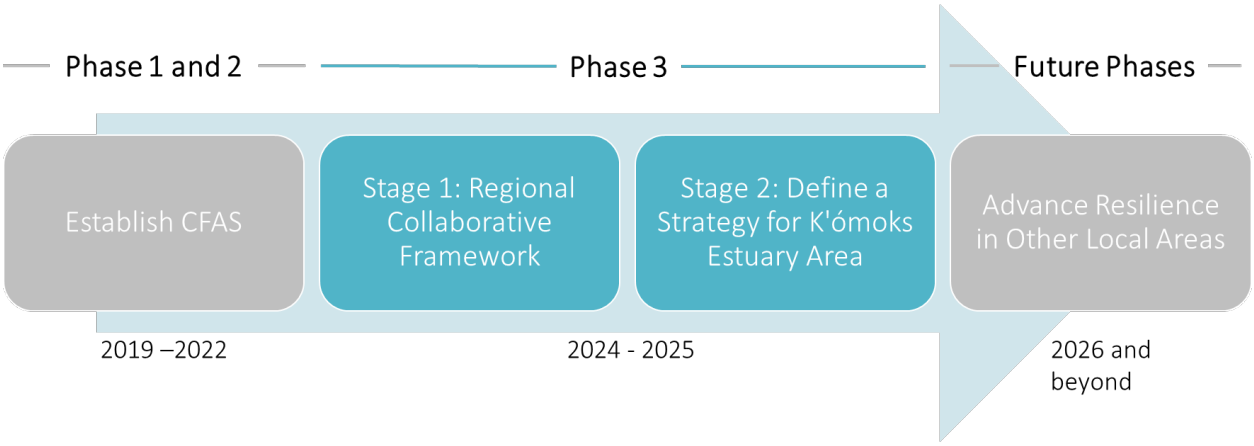

Figure 1-1: CFAS overview of phases and timelines.

Phase 2 of CFAS included engagement with a broad range of Rights holders and stakeholders to assess risks due to changing flood hazards. We also considered a range of ways to respond and adapt to these risks over time, to build resilience, and to generate guidance for how to plan and adapt as a region.

1.2 Project Objectives

The goal of this Phase 3 project was to reduce risk and increase resilience in the northern area of the K'ómoks River Estuary (Local Area 1 in CFAS Phase 2). The following objectives were identified to achieve this goal:

1. Build relationships among people, groups, and interests in the project area.
2. Create shared understanding of the issues by listening to diverse perspectives.
3. Explore adaptation approaches and identify a viable alternative for the area.

We reached the project objectives in two stages, as shown in Figure 1-1. In Stage 1 we completed a Regional Collaborative Framework. In this first stage, project participants collectively realized that more nuance was required to fully meet the project's third objective. In the project Stage 2, we undertook a decision process whose outcome was to define a strategy for the K'ómoks Estuary area. Collaboration is a central feature of the strategy, which was defined in terms of an approach, as well as next steps for implementation.

1.3 Report Structure

The purpose of this report is to summarize the *processes* undertaken to complete Stage 1 and Stage 2 of this project phase, as well as to present the *strategy* itself. In Section 2, we first provide a brief project background. In Section 3 we describe the collaborative framework conducted as part of Stage 1. Section 4 then describes the decision process that underpinned Stage 2. Sections 5 and Section 6 then present the strategy in terms of an approach, as well as an implementation road map. A conclusion is in Section 7, followed by a list of references, as well as Appendix A (Potential Strategy Tools Overview) and Appendix B (Strategy Tools Description by Area).

In addition to this report, the following supplementary files were provided to CVRD:

1. Collaborative Framework Development Process: Document providing more details on Stage 1 of this project.
2. Decision Process Engagement Summary: Report providing more details on findings and actions that were outcomes from the three workshops in Stage 2 of this project.
3. Decision Process Background: Files for materials shared during the Stage 2 workshops (e.g., posters, background reports, etc.).

2 Project Background

2.1 Project Setting

The project extent is the K'ómoks River Estuary and the delta floodplain to the northeast of the estuary (Figure 2-1). The project area is within the unceded traditional territory of K'ómoks First Nation. At its outset, the project was initially focused on a segment of Comox Road (also called Dyke Road, see below) between 17th St. Bridge and the eastern boundary of the K'ómoks First Nation Reserve No. 1 (also called Comox No. 1). While this segment crosses CVRD electoral areas and K'ómoks First Nation reserves, other jurisdictions are directly connected to the area. For example, people travelling by road between the Town of Comox and the City of Courtenay (e.g. via the 17th St. bridge), use this segment of the road. As explained below, upland areas within these jurisdictions also affect the project area; Therefore, the project considered a wider area of interest that includes these neighbouring areas and jurisdictions.

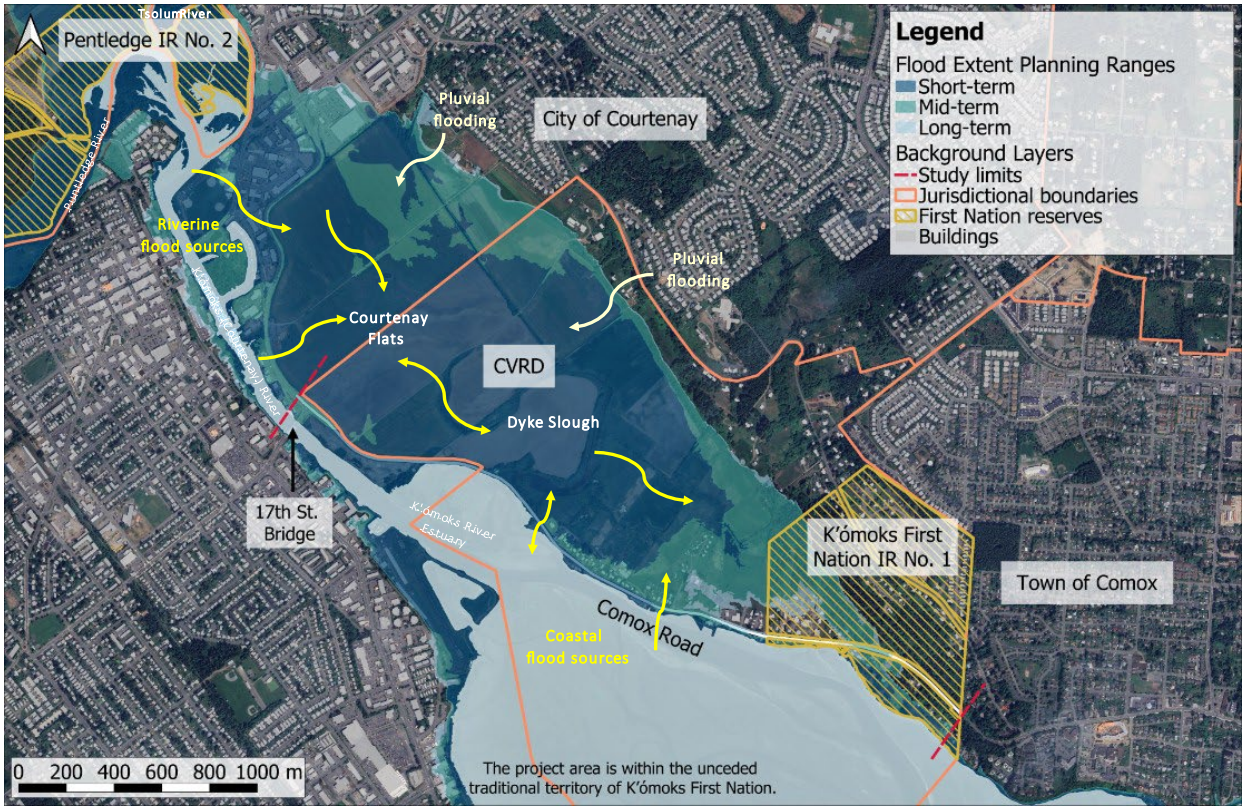

Figure 2-1: Project area jurisdictions and flood extents, overlayed with the interacting sources of riverine, coastal, and uplands flooding (yellow arrows and labels).

Figure 2-1 shows the extents of short-, mid-, and long-term flood hazards that were mapped for the area as part of the Phase 2 of the CFAS (Ebbwater Consulting Inc. and SHIFT Collaborative, 2022). Generally, riverine flood hazard is generated from water overtopping the banks of the K'ómoks (Courtenay) River, as well as its two upstream contributing waterways (the Puntledge and Tsolum Rivers). The dominant processes associated with this type of flooding are fall and winter heavy rainfall events. Coastal flood

hazard occurs near the mouth of the estuary, when the high water conditions in the Salish Sea move onshore

The two flood types can overlap in complex ways. The yellow arrows in Figure 2-1 show, at a conceptual level, how the combination of riverine and coastal flood waters can exacerbate flooding in areas such as Courtenay flats and K'ómoks First Nation Indian Reserve (IR) 1. Flood gate structures (see Sub-section 2.1.2) prevent coastal waters from entering Dyke Slough (Glen Urquhart Slough). Pluvial flood hazard[1] represents a third source of flooding into the area, especially from the northern hillsides (these sources are shown conceptually by off-white coloured arrows and are not included in the flood mapping shown). Figure 2-2 and Figure 2-3 show the result of a 200-mm rainfall event that occurred in the Courtenay watershed on 9 December 2014, in combination with a high tide. The water level exceeded the dike crest in multiple locations and the East Bank of the Courtenay River was overtopped. The City of Courtenay declared a state of emergency (Evacuation Alert and Evacuation Order). On 27 December 2022, smaller flood magnitude conditions occurred and threatened road closures (Figure 2-4). A detailed timeline of flooding in the region is provided in the City of Courtenay Flood Management Plan[2].

[1] Pluvial flood hazard occurs when heavy rain falls on the landscape. A combination of the rainfall intensity, slope, and land cover combine to limit infiltration into the soil and create excess overland flow, which creates localized flooding. This flood hazard has not been mapped as part of the CFAS, but was considered qualitatively.

[2] City of Courtenay Flood Management Plan – Appendix A: Historical Flood Events. Weblink: appendix-historic-flood-events. Accessed 18 September 2025.

Figure 2-2: Flooding of the project area, seen from the air, on 9 December 2014. Source: City of Courtenay.

Figure 2-3: Flooding of Comox Road near 5th St, on 9 December 2014. Source: City of Courtenay.

Figure 2-4: Lowest point on Comox Rd. 27 December 2022. Mainly due to high-tide conditions. Source: Comox Valley Emergency Management.

2.1.1 Elements-at-Risk

A range of assets and values are in the way of the flood and erosion hazards in the area. This includes agricultural lands and infrastructure, residential and commercial buildings, roads and utility infrastructure that run above and beneath it, as well as natural ecosystems. Archeological and cultural assets are particularly vulnerable and shoreline areas are particularly replete with sites of cultural significance to K'ómoks First Nation; exposed assets on their reserves have been identified (CWA and CMO Consultants, 2023). More details of the area are provided in Section 4.1.

2.1.2 Water Control Structures

Comox Road is commonly called Dyke Road because it acts to keep high coastal floodwaters from impacting the elements-at-risk. However, it is an unregistered dike. The road also has the effect of disconnecting natural estuary ecosystems whose habitats are defined by the tidal fluctuations.

A series of tide gates and flood boxes have existed at Dyke Slough (Figure 2-5) for several decades, including newer infrastructure that was installed in 1988 (Chatwin Engineering Ltd., 1989). The objective of this infrastructure has been to defend the farmland at Courtenay Flats from being inundated with salt or brackish water. We understand that the infrastructure is still being operated according to the 1988 manual cited above. The infrastructure is planned to be replaced in 2027 with climate change cited as a significant driver (Dyson, 2023)[3].

Figure 2-5: Tide gate outlet. Source: CVRD.

When the tide gates are closed during a high tide, the infrastructure severs the river and estuary from their natural floodplain.

2.2 Approach Overview

This project was predicated on participation from a range of Rights holders, jurisdictions, individuals, and interest groups. The following sections broadly explain the project process, which included two stages of participation. The process required constant "zooming-in" and "zooming-out" to continually learn about issues and consider the implications and opportunities at both smaller and larger geographic scales. Examples of this are provided in blue boxes in the next sub-sections.

2.2.1 Collaborating as a Region

The first stage of the project was to develop a Collaborative Framework as a way of guiding flood resilience work on a regional scale. Early in the process, participants from Comox Valley Emergency Management identified a need to ensure that K'ómoks First Nation was adequately engaged and that existing and ongoing experiences of flood hazard and risk within the study area were adequately understood. To support this process, the project team (CVRD staff and consultants) started working more directly with K'ómoks First Nation staff to learn and reimagine how K'ómoks First Nation would be involved in the process. This relationship, and options for collaboration and partnership, developed over the course of the two years of the project. It was influenced by the K'ómoks Treaty process, Chief and Council elections, personal relationships, and ongoing learning from the engagement activities. Critically, the project funder (UBCM) supported centering this relationship through an amendment to top up the grant allocation and extend the project completion date by one year.

[3] According to the staff report, remedial work was completed in 2017 resulting in improved functionality of the tide gates.

The project team also invited representatives of organizations with authority or responsibility for areas along or adjacent to the project's focus area (the north K'ómoks estuary coastline), to be part of a Steering Committee for this phase of work. In addition to CVRD staff, this included staff from:

- K'ómoks First Nation (Disaster Risk Reduction)
- Comox Valley Emergency Management (various)
- City of Courtenay (Engineering)
- Town of Comox (Engineering)
- Ministry of Transportation and Transit (MOTT) (Highways and Regional Services, North Island)

Zooming Out

Despite the project focus being on a relatively small geographic area, this first stage was critical. It allowed key partners in the region to strengthen relationships and agree on a path forward to work together.

Along with a few invited guests, this group together developed the Collaborative Framework in Stage 1 of this project, which occurred over a series of workshops (see Section 3 for more details). This stage of the project was led by HeronBridge Consulting.

2.2.2 Applying a Risk-Informed Lens

To understand and develop alternatives to address the impacts of riverine and coastal flood and erosion, and to align with best practice and provincial guidance (Province of BC, 2024) we took a risk-based lens to the work. Throughout the project we considered a combination of three components of risk, which are shown on the outside of the triangle in Figure 2-6: hazard (in this case flood and flood induced erosion), exposure (the elements-at-risk that people, Rights holders, and organizations care about), and vulnerability (the degree of impact to elements-at-risk, such as individuals or buildings, when they are exposed to the hazard). "Risk" can be understood as the total area inside the triangle and shrinks or grows as the vertices change. We leveraged quantitative and qualitative sources of information, obtained both from previous phases of the CFAS, as well as more detailed local information that emerged as this phase of the project progressed.

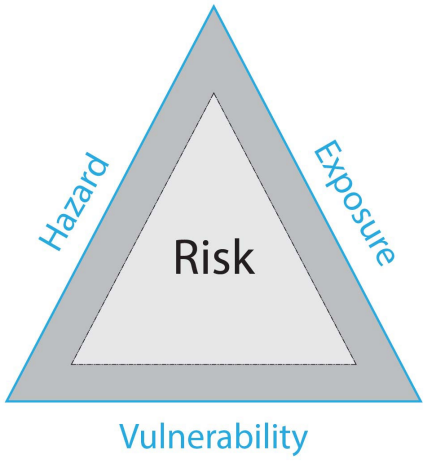

Figure 2-6: The main components of risk.

Risk can be reduced by decreasing one or more of the components on each side of the triangle. In the last one hundred or so years, settler governments have focused on trying to stop water from interacting with elements-at-risk through the construction of flood defences, such as dikes and shoreline armouring. This can create a path dependence on engineered infrastructure, and limit flood resilience options by focusing on hazards. A risk reduction approach considers opportunities to reduce all three components of risk shown in Figure 2-6. This more thoughtful, complex approach expands the range of available tools that can be used to reduce risk and increase resilience. However, the approach requires participation from differing interests to identify and consider values in different places.

Zooming In

To apply a risk lens, the project team considered assets-at-risk for different areas of the project. This became the basis to compare and evaluate how risk might change in different areas under different alternatives, in the short- and long-terms.

2.2.3 Making Values- and Place-Based Decisions

To build on the Collaborative Framework and apply a risk lens, we developed a decision process that included a broader group of Rights holders, community partners, and stakeholders in addition to the Steering Committee members. In this stage (2) of the project, as a group we defined values that were important to community members as a region, alongside values and ranging interests specific to sub-areas of the project.

We achieved this through a mix of in-person and online workshops. These were designed to create overlap between the steps of the Decision Process (further explained in Section 3):

Zooming In and Out

The decision process involved simultaneous consideration of project-wide issues and more localized values. This is reflected the values-based criteria, the design principles, and the sub-areas explained in the following sections.

Figure 2-7: Workshop 2 participants on Tour Bus. Source: CVRD.

- **Workshop 1 (in-person):** Reviewed key aspects of the Collaborative Framework; oriented participants to the project context; explored broad adaptation approaches; and introduced the Decision Process.
- **Workshop 2 (in-person):** Reviewed proposed alternatives; and conducted a tour to visit, listen, and learn about issues in the sub-areas (see Figure 2-7).
- **Workshop 3 (online):** Reviewed and refined a preferred alternative, identified priorities, and outlined next steps.

Before each workshop, we met with the Steering Committee to prepare and align our objectives for the workshop.

Landscape illustrations were developed by Hapa Collaborative to support placed-based understanding of alternatives within different sub-areas and used in later workshops.

2.2.4 Outcome Summary

The participatory process built a basis for future decisions that are more likely to be relevant, understood, and supported by interested parties, partner organizations, and the public. The decision process also significantly impacted the type of adaptation alternatives that were developed (Stage 2), due to the opportunity to weigh different values, impacts, and alternatives in discussion with others. Through the deliberative process and inclusion of different voices and perspectives, participants developed new ideas and ways of generating co-benefits that contribute to the bigger vision and intentions outlined in the Collaborative Framework, rather than remaining a narrowly defined flood mitigation project as was imagined at the outset.

Towards the end of the decision process, participants reviewed the proposed "Preferred Alternative" to refine and "ground-truth" the proposal. Further, we identified key trade-offs (where choices were made to prioritize some values over others, based on participant input and technical considerations) and made these explicit, to "pressure test" these choices and elicit additional ideas for where / how to strike an appropriate balance.

Ultimately, the project approach enabled the project team to move from considering a single area and vague future timelines, to defining a preferred approach in terms of three sub-areas and two future timelines.

3 Collaborative Framework

Through a series of working sessions in the spring of 2024, the project Steering Committee (see Section 2) and a number of invited guests, worked together to generate shared understanding around flood risk and resilience and the conditions that would support successful collaboration across the region. This took place through a three-step facilitated process and culminated in a set of elements that form the first version of the Comox Region Collaborative Framework. A visual summary of this framework is included as Figure 3-1.

The Collaborative Framework is a living document meant to provide a compass to guide, reflect, learn and adapt along the unfolding journey of collaboration and resilience-building in the region, and in fact already has.

The framework was applied to the Decision Process both directly (participants reflected on the guiding principles in each workshop), and in the background (as a guide to ensure the purpose, goals and principles were reflected in the process itself, and the outputs). But it was the process of developing the framework that really influenced the Decision Process. Having gone through a collaborative process together, the Steering Committee had already begun to encounter and address some of the conditions for deepening their relationships, collaboration and joint approach to the Decision Process. This propelled the project team (and CVRD staff specifically) to get creative and identify specific steps to help build relationships and support communication with K'ómoks First Nation, which led to an invitation to host three workshops at the K'ómoks First Nation Administrative Building and Community Hall and greater participation among K'ómoks staff and members. It also led to the intentional inclusion of a broader range of community interests, such as agricultural producers and community non-governmental organizations (NGOs) in the decision process to ensure it could achieve the group's stated goals and move towards its vision. This greatly shaped the resulting options and strategy outlined below, which goes well beyond typical flood mitigation options to more truly encompass an adaptive and resilient vision for the coastline.

3.1 Indigenous Engagement

Following the Collaborative Framework, the Comox Valley Emergency Management (CVEM) and its partners identified this project as a means for regional partners to pilot Indigenous Engagement Requirements (IERs) [4]. These are part of a broader legislative and policy framework [5] aimed at strengthening relationships with Indigenous Peoples, particularly in the context of emergency

[4] See the funding program and other guidance information here: https://www2.gov.bc.ca/gov/content/safety/emergency-management/local-emergency-programs/financial/ierfp. Accessed 10 September 2025.

[5] The Province's Emergency and Disaster Management Act, whose regulations are expected in the coming years. See https://www.bclaws.gov.bc.ca/civix/document/id/bills/billsprevious/4th42nd:gov31-1. Accessed 10 September 2024.

management, as well as land and resource decisions. As part of this pilot process, the workshops were attended by Sanala Planning[6], who acted as witnesses.

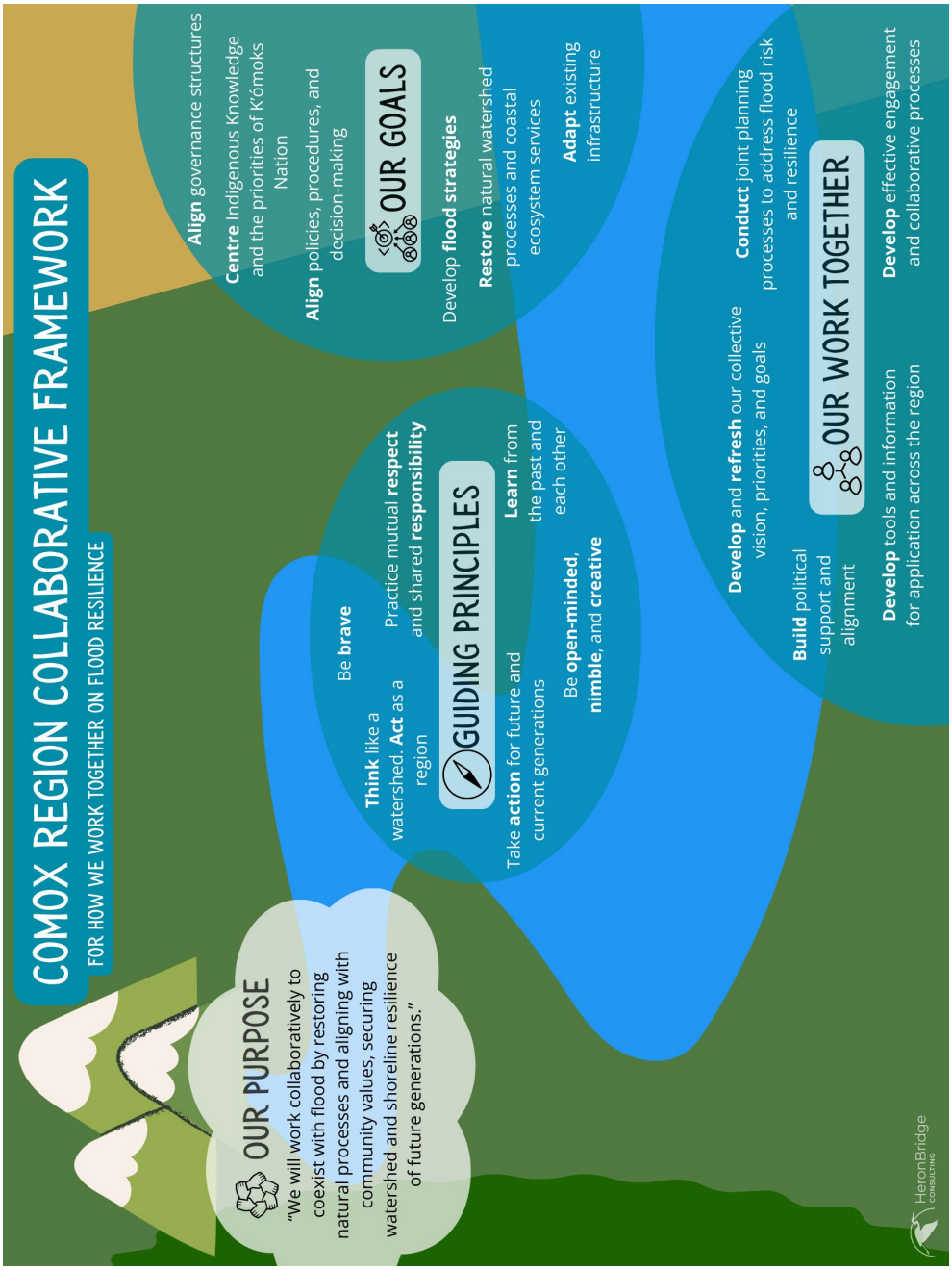

Figure 3-1: Summary of Collaborative Framework developed in Stage 1 of this project.

[6] The role of the Indigenous witnesses was to participate in the process and provide objective feedback on aspects related to engagement with Indigenous representatives. This was conducted in an open and transparent fashion, in the spirit of learning to improve the process for the current and future projects.

4 Decision Process

Consistent with the previous phase of the CFAS, the structured decision process[7] we followed was based on five broad steps, which are illustrated in Figure 4-1.

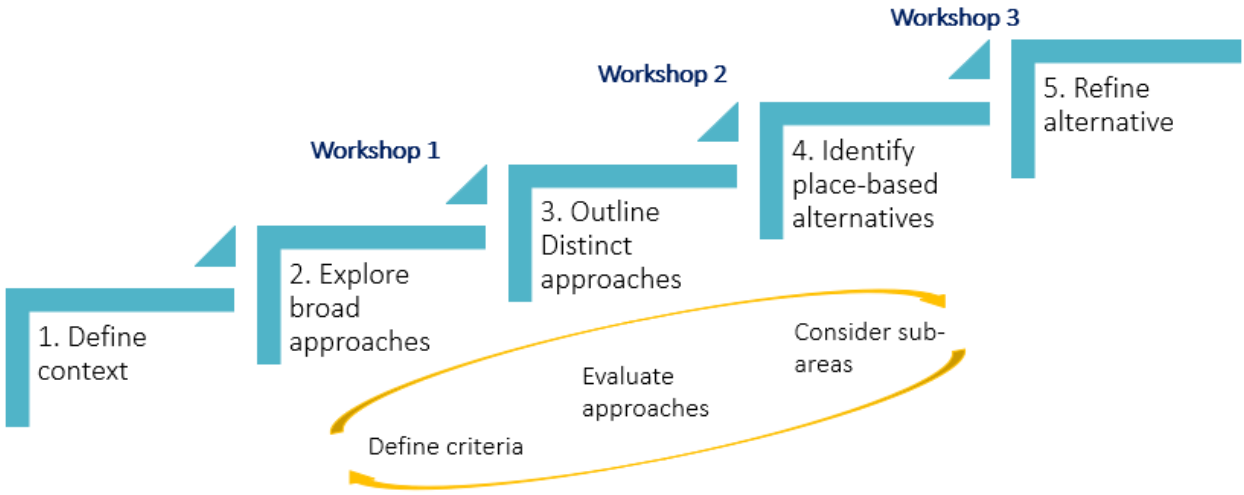

Figure 4-1: Decision process steps that were followed.

While technical information is needed to inform decisions, choosing between adaptation options often comes down to trade-offs based on values. For example, is it better to accept the loss of tax revenues from increased development in the floodplain and instead develop park spaces that can absorb flood waters, or to accept the occasional costs associated with response and recovery if these areas are developed? Should government help a location become more resilient to occasional floods, or try to prevent it from ever getting wet? These questions have no technically optimal answers. An informed deliberation of this kind requires discussion, understanding and analysis of trade-off and how various choices could affect the things people value the most. The participatory approach taken in this project helps to build a basis for future decisions that are more likely to be relevant, understood and supported by stakeholders, partner organizations and the public.

4.1 Exploring Possible Alternatives

So, what possible actions can we take to reduce hazard, exposure and vulnerability? In this project we considered five commonly used adaptation approaches: Protect, Accommodate, (Managed) Retreat, Avoid, and Resilience-Building (i.e., PARAR). Within each approach there are a range of actions that could be implemented.

[7] The process was inspired by Structured Decision Making, which is an organized approach for working together to make informed and transparent choices in complex decision situations. See https://www.structureddecisionmaking.org/. Accessed 18 September 2025.

Participants discussed the PARAR approaches in Workshop 1, which guided the project team to propose three possible directions that could be taken to uphold a range of values and preferences in this specific and unique project area. An overview of those three directions is provided in Table 4-1.

Table 4-1: High-level comparison of the distinct alternatives.[8]

Alternative Name	Philosophy	Tide Gate Operation
Reinforce the Road 	Aim to prevent flooding and maintain current land uses, development patterns and practices in the area. Build up or defend the road to stay the course.	Similar to current operations (see Sub-section 2.1.2 for details).
Adapt to Periodic Flooding 	Allow for the road to flood at times, and adapt built environment and land uses to accommodate flooding. Change expectations and behaviour in a more dynamic partnership with nature.	Allow coastal flood water to ingress more frequently over time, compared to current operation.
Make Room for Water 	Remove infrastructure from the floodplain, change current land uses and focus on restoring area to more natural conditions. Build community capacity and systems to shift to the new reality.	Remove gate and allow water to move freely, mimicking natural state.

4.1.1 Defining Sub-Areas

To consider different place-based contexts and values within the project area, three sub-areas were identified that were associated with more distinct communities and interests (see Figure 4-2). To further support the consideration of place-based alternatives, illustrative cross-sections of each of the sub-areas were created, to be able to visualize and compare alternatives (see Section 5).

The characteristics of each of the sub-areas are summarized in Table 4-2, along with notes on specific participants from communities or interests represented in each area[9]. We note that participants provided feedback and representation for all three areas (e.g., K'ómoks First Nation staff provided input on Area 1, and environmental groups and municipal staff provided insights on Area 2).

[8] More details on these initial alternatives are in the Decision Process Technical Background supplementary document.

[9] There was no specific participation from individuals or groups from Area 2, which is an important project limitation.

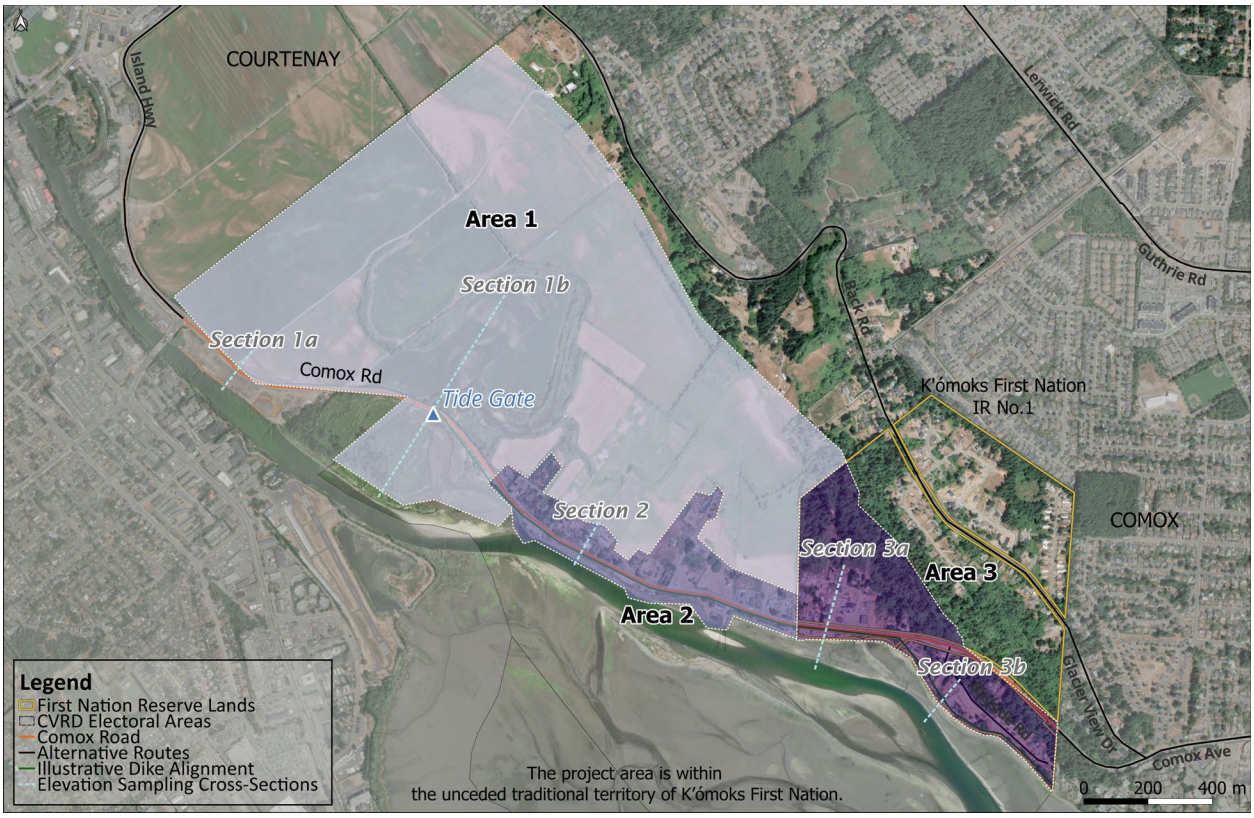

Figure 4-2: Sub-areas and the cross-sections used to compare visualizations.

Table 4-2: Sub-area descriptions and their representation during the project.

Area Number / Name	Area 1: Agriculture / Slough	Area 2: Mixed-Use	Area 3: K'ómoks First Nation IR No. 1
Description	Primarily rural agricultural land, and is mostly within the Courtenay Flats Drainage Service Area. Dyke Slough and its riparian area meander through the centre. The area is further illustrated using Sections 1a and 1b.	An area with mixed uses that include residential, commercial, and agricultural. The area is further illustrated using Section 2.	K'ómoks First Nation Indigenous Reserve (IR) 1. Bayside Road follows the shoreline in the southeastern portion of the reserve. The area is further illustrated using Sections 3a and 3b.

Area Number / Name	Area 1: Agriculture / Slough	Area 2: Mixed-Use	Area 3: K'ómoks First Nation IR No. 1
Specific Representation from Project Participants	Individuals such as farmers, as well as NGOs provided perspectives on this area during Workshop 2 (including the field visit) and Workshop 3.	No residents from this area participated in the project. Proxy representation from local government representatives.	K'ómoks First Nation were directly involved throughout the project. Note that the project partners are building relationships and sharing information, but have not yet established the basis for joint decision-making across governance systems.

Values identified in Area 1 were focused on preserving agricultural land, with an understanding that future impacts of flooding, and especially salt-water intrusion, cannot be easily mitigated[10]. Whereas, identified values in Area 3 were focused on flexibility in future development choices, especially given a desire to provide more services and housing for K'ómoks First Nation's growing population. Preservation of a way of life and protecting shorelines and archaeological sites were also expressed as high priorities.

This process led the group to consider many perspectives, values and angles, and generated creative solutions, as shared by one project participant in the box to the right. Through feedback obtained from Workshop 2 and the evaluation process, key considerations and trade-offs were identified, and the group together developed a deeper understanding of the place-based implications of various tools for actual people and values in the project area, as well as possibilities for achieving multiple benefits.

> *"[We should] not be afraid to think of some wild and creative ideas that will emerge from this not only as the solution, but way outside of that, like how we think about getting from a to b in the valley and the economic development and tourism opportunities, [and] integration into parks planning… this doesn't need to be a response to a problem but an opportunity to shape this incredible community we imagine can exist and think outside the box."*
>
> - Project participant

At this point, multiple perspectives and values came into dialogue stemming from a range of interests (e.g. agricultural, environmental, Indigenous, infrastructure, etc.) and found common ground by listening

[10] The operation of tide gates manages the flow of salt water into the area to protect the agricultural land. Dyke Slough is an important riparian area.

and being honest with each other. The result was that, as a collective, the group had to face the trade-offs more directly to test out which combination of approaches could strike a balance between general values and specific, place-based impacts.

4.2 Multi-Criteria Evaluation

To support this more nuanced approach to designing, understanding, and evaluating the merits of different options, a multi-criteria evaluation tool was developed that combines both technical and values-based considerations. This set of criteria, listed below, considers the option in terms of its effects during a flood, as well as the effects of the option itself, when flooding isn't occurring. Some additional criteria (e.g. traditional values) were embedded throughout and informed consideration of all criteria. The criteria were developed collaboratively and built on previous phases of CFAS.

Effect of the Alternative During a Flood on:

- People
- Environment
- Culture
- Critical Infrastructure
- Transportation and Transit Disruption
- Economy
- Safe Development Paradox

Effect of the Alternative Itself on:

- Community
- Social Equity
- Environment
- Recreation and Nature Access
- Agriculture
- Costs
- Feasibility

The criteria were used to evaluate each alternative using a relative scale based on how each performs compared to current conditions (Figure 4-3). The evaluation results are presented in Section 4.2.

Figure 4-3: Performance scale used for evaluation (relative to changes from current conditions under each alternative).

4.3 Refinement of Alternative

In workshop 2, participants indicated that a combination of all approaches would be needed, but that the "Adapt to Periodic Flooding" alternative offered the best starting place to build from. Based on this feedback, the "preferred alternative" was further defined by outlining a set of tools that could be implemented over both the short- and long-term and in each of the sub-areas, to reach the project objectives. As well, adjustments were made and tools were added from some of the other alternatives, to better achieve the full range of values in the multi-criteria evaluation tool, as shown in Table 4-3.

Table 4-3: Evaluation process results for the distinct alternatives, as well as the preferred alternatives.

Criteria	Do Nothing	Reinforce Road	Adapt to Flooding	Make Room for Water	Preferred Alternative
Effect of the Alternative During a Flood					
People	Worst	Better	Better	Better	Better
Environment	Worst	Better	Better	Best	Better
Culture	Worst	Better	Better	Worst*	Best
Critical Infrastructure	Worst	Best	Better	Better	Better
Transportation and Transit Disruption	Worst	Better	Better	Better	Better
Economy	Worst	Better	Best	Best	Best
Safe Development Paradox	Worse	Worst	Better	Best	Better
Effect of the Alternative Itself					
Community	Worst	Neutral	Best	Better	Best
Social Equity	Worst	Better	Best*	Best*	Best
Environment	Worse	Worst	Better	Best	Better
Recreation and Nature Access	Worse	Worst	Better	Best	Better
Agriculture	Worse	Neutral	Best	Worst	Best
Costs	Best	Worst	Worse	Better	Neutral*
Feasibility	Best	Better	Worse	Worst	Neutral

* Scoring of some elements was subjective and uncertain. Scores that are particularly subjective and/or uncertain are noted with an asterisk.[11]

4.3.1 Key Trade-offs Considered in Development of the Preferred Alternative

The multi-criteria evaluation highlighted a few trade-offs that needed to be considered in the refinement process. Table 4-4 outlines six key trade-offs and their considerations. These trade-offs received different degrees of support based on ratings provided by participants in Workshop 3.

> *"These are very hard decisions, but I think we need to look at where we want to land in the long-term and what is sustainable environmentally and financially".*
>
> - Project Participant

[11] More details on the evaluation of alternatives are provided in the Decision Process Technical Background supplementary document.

Table 4-4: Key trade-offs identified with the preferred alternative.

Theme	Trade-off	Issues and Considerations
Road design	Letting the road flood means it won't always be available for use; alternative routes cause disruption.	• Road is key for emergency access. • A transit system could potentially reduce disruption by reducing the number of vehicles on detour routes. • Other transport alternatives (e.g., water based) could be explored. • Need coordination and consistency regarding road closure communication, equipment, detour routes, etc. • Temporary diversions associated with current sewer conveyance project (in 2025) demonstrate that this is possible. • Need to invest in erosion protection to prevent road from washing out.
Archaeological sites	Hard armouring of these sites may reduce ecological function and transfer the hazard elsewhere	• Erosion protection is required for these irreplaceable assets. • Green shores may be inadequate for protecting against erosion in certain areas.
Retrofits and relocation of homes and businesses	This comes with substantial financial and emotional costs	• Need to remind ourselves that this is the cost of climate change impacts. • Details need to be worked out, with involvement of those affected, as it is unclear how relocation or retrofits could be achieved. • We need to think hard about relative costs of retrofitting in short-term if asset will be relocated in the long-term.
Slough restoration	Absorbing local flood water and restoring ecological function reduces productive agricultural area	• The floodplain is what makes the agricultural area productive. • Construction of Dyke Road and the installation of the floodgates, which has prioritized agriculture, also is partially responsible for exacerbating flood hazards. • There are different possibilities, but also a lot of unknowns around the cost and effectiveness of interventions. More understanding is required.
Future of IR 1	There is a desire to grow the number of people on reserve,	• The Nation is thinking about how they will operate and interact with the strategy with the Treaty is ratified.

Theme	Trade-off	Issues and Considerations
	but the area will experience more future flooding	• The Nation is thinking about how development planning can achieve their desire to bring members back with subdivisions and development
People being in relationship as recreational users.	The very roads and crossings that are to provide access to the area take away from the experience	• The road exists and is proposed to be maintained. Cars will continue to be an important way the majority of people will continue to enjoy the area when it's not flooding. • Encouraging people to think about travelling using other means (e.g. boats) during flood events will likely be problematic from a public safety standpoint. • There may be an opportunity to develop low-impact tourism using sloughs and waterways as transport.

5 Preferred Approach

This section briefly describes the preferred approach that emerged from the decision process. It is described in terms of two key messages, which is followed by a summary and visualizations of the approach for each of the sub-areas.

Key Message 1: Identify the range of actions needed when we accept the fact that the road will flood. Impacts need to be managed through a range of actions including road closures, public communications, and resilient road design.[12] This in turn relies on shifting mindsets and public expectations, requiring investment in community education and flood warning systems. It also recognizes the need to be considerate of the people affected by the changes and involve them early on, in determining the path forward over the years to come. Given the many overlapping areas of responsibility, aligning policies and regulatory tools across jurisdictions to support the proposed changes is an ongoing priority. Having reviewed the available knowledge and options, it is recognized that more information is needed to inform specific decisions; a key knowledge gaps have been identified. Accordingly, the preferred approach offers a set of tools that can be considered proactively and implemented adaptively, based on evolving knowledge and conditions.

Key Message 2: Acknowledge shifting priorities associated with changing flood risk and resilience over time. Short-term choices will be needed that take into consideration the context of longer-term changes due to sea level rise, climate change, and other factors. While some decisions will be appropriate and best suited to short-term priorities, there will be challenging decisions in the mid- to long-term as the flood hazard increases, particularly in relation to salt-water flooding. Short-term decisions should respond to current priorities while building understanding and capacity and keeping options openfor the future. When it comes to some larger, longer-term choices, we get to decide the extent to which we make choices "on our terms, or not" as one workshop participant put it. In other words, we can choose to be proactive and work together within the alternatives available to mitigate the flood challenges and improve the chances of a more desirable outcome. Otherwise, we can avoid the tough questions now, which will force more reactive, and less collaborative, responses in the long run.

[12] This approach is based in part on lessons learned from a recent process that looked at preventing localized flooding by raising a section of Ryan Road, which is adjacent to Comox Road within the City of Courtenay. That project was abandoned due in part to the technical challenges, risk transfer, and costs associated with an objective centred more on flood prevention.

The preferred approach for each of the sub-areas is summarized below, along with visualizations based on the sections shown in Figure 4-2. The visualizations were developed by Hapa Collaborative based on the engagement process, together with technical analysis and expertise from the project team[13].

5.1 Area 1

In this area, the focus is on maintaining agricultural production value in the short-term, while enhancing ecological values. One important challenge is managing local drainage and water retention while connecting fish habitat. Also, preventing saltwater intrusion in the short-term is critical, due to the profound and immediate impacts this would have on agricultural land viability and productivity. With this foundation, opportunities are sought to shift parts of the land base to enhance ecological function and to adapt cropping and land use to the presence of saltwater over the longer-term.

This approach recognizes that even within Area 1, there are variations in hydrology, hydraulics, ecology, and land use. The overall approach is to maximize the best use of sub-plots of land given the various pressures and opportunities. For example, land that will be flooded regularly and is suitable for high-quality habitat, should be identified for ecological restoration. Whereas, in areas that are less regularly wet, agricultural uses could be maintained and enhanced).

Figure 5-1 and Figure 5-2 show diagrams for the two sections located within Area 1 (shown in Figure 4-2). Section 1a shows the potential changes in agricultural land use over time. Section 1b shows more naturalization on the land side of the road in the long-term. The diagrams show estimated flood levels for each timeframe, illustratively. Annotations describe the general approach (some are further detailed in Appendix B) and some considerations.

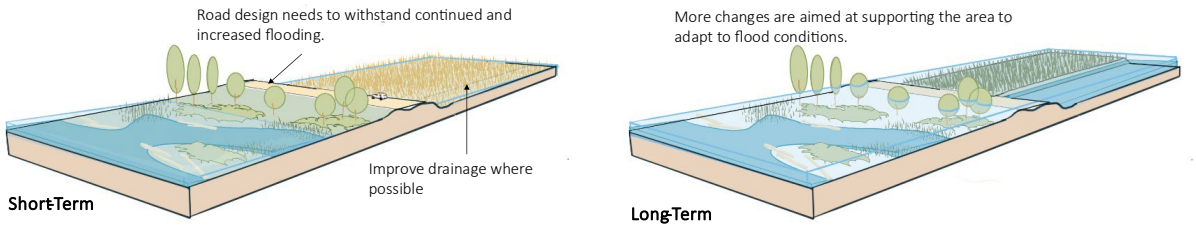

Figure 5-1: Section 1a potential changes over short- and long-term periods.

[13] Appendix A provides a visualization of where specific tools apply spatially across the project area, both in the short- and long-term timeframes. Appendix B provides more details about the specific tools that could be applied in the sub-areas.

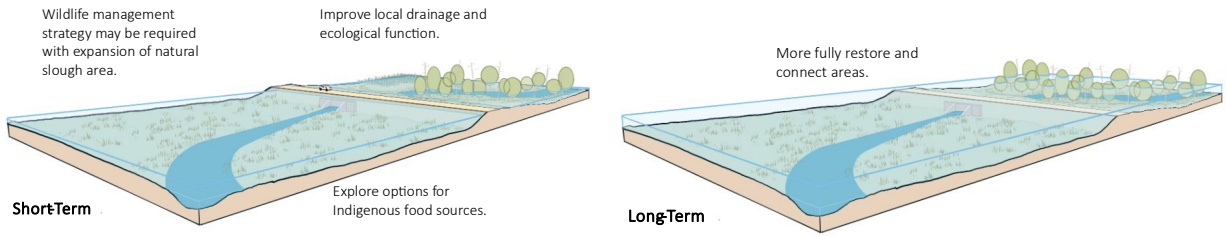

Figure 5-2: Section 1b potential changes over short- and long-term periods.

5.2 Area 2

In this area over the short-term, the recommended approach focuses on ensuring that existing land uses and buildings are adapted to limit flood damage when they inevitably become wet from periodic flooding. An engagement process is needed to support residents and businesses in considering the potential tools available for implementation of this approach over the short and long-term, and weighing the inevitable trade-offs between them. Over the long-term, with greater certainty of flooding, additional risk reduction may be chosen and implemented. The connection between the short and long-term is guided by the idea that any short-term actions should not lock-in mitigation pathways, allowing future generations to make the best decisions for themselves given the evolving flood risk.

The diagrams for Section 2 are shown with annotations in Figure 5-3. The diagrams show areas are flooded in both timeframes from either side of the road (i.e., water comes from the estuary and the land). In the long-term the flooded area is continuous. There is limited flood-proofing of buildings in the short-term, followed by flood-proofing and relocation of buildings in the long-term. Note that the area includes a few buildings on the water side of the road, which are not shown explicitly in the diagram. The diagrams show mapped flood levels for each timeframe, illustratively. Annotations describe relevant tools (some are further detailed in Appendix B), and considerations.

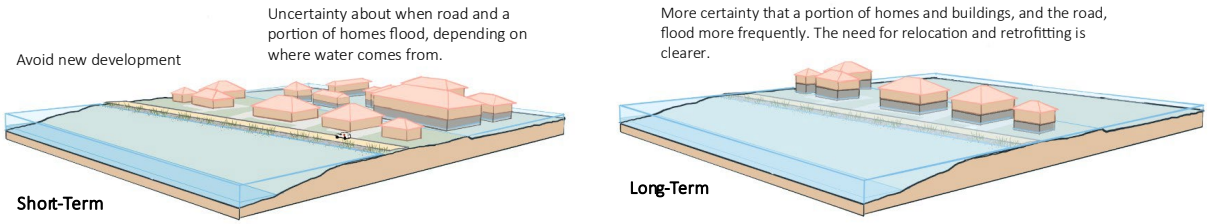

Figure 5-3: Potential changes to Section 2 over short- and long-term periods.

5.3 Area 3

In this area in the short-term, reducing shoreline erosion is a priority due to cultural values, preferably using "green" approaches. There is a desire to reduce the power of coastal water through shallow and offshore protection. Decisions need to be made by K'ómoks First Nation, who can manage longer-term uncertainty of potentially flooded areas.

Figure 5-4 and Figure 5-5 show diagrams for the two sections located within Area 3. Section 3a shows Comox Road with buildings located mostly on the land side of the road. Section 3b shows the Bayside

Road area. The diagrams show mapped flood levels for each timeframe, illustratively. Annotations describe relevant tools (some are further detailed in Appendix B) and considerations.

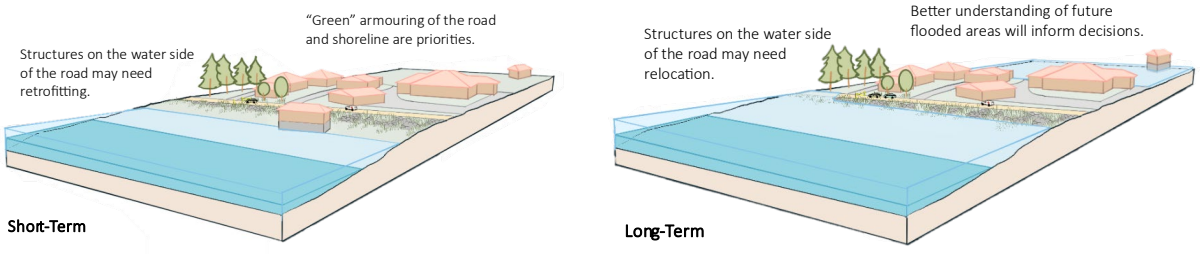

Figure 5-4: Potential changes to Section 3a over short- and long-term periods.

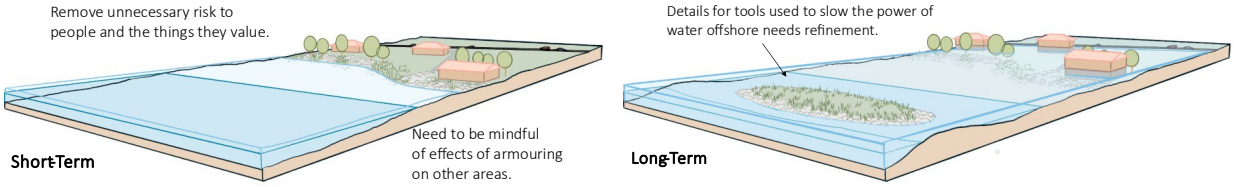

Figure 5-5: Potential changes to Section 3b over short- and long-term periods.

6 Strategy Recommendations

The proposed next steps for the project are explained in this section first in terms of broad guiding principles. This is followed by a description of recommended enabling actions for the short and long-term. Together, the information in these sections will support development of work plans and grant applications.

6.1 Guiding Principles

Due to the complexity of the area, multiple jurisdictions and values, and ongoing changes over time, coordinated decisions and trade-offs will continue to be needed. Guiding Principles (Table 6-1) have been developed to support the process and implementation of actions outlined in the subsequent sections of this report.

They are the backbone of a strategy that acknowledges that flood issues are complex and greatly influenced by human decisions, and that partners in the region must be *proactive* and *adapt* to climate change. Therefore, actions need to be values-based, collaborative and forward looking, while addressing the impacts of strategies and actions implemented in the past.

Table 6-1: Guiding principles established to support regional partners to think about how to take next steps to implement the approach, using the enabling actions.

Principle	Description/Additional Information
Work Collaboratively to Create Alignment Across the Region	• Align policies, procedures and decision-making across the region to reduce hazard risk and build resilience.
Centre K'ómoks Knowledge and Priorities	• In recognition that K'ómoks are the stewards of the region, their knowledge needs to be embedded in this and future strategies. This needs to be part of an ongoing process, and will be achieved based on direct input from K'ómoks First Nation. Other partners need to respect and acknowledge capacity issues.
Place Community and Nature at the Centre of Decision-Making	• Ecosystem / watershed approaches and nature-based solutions should be the basis of actions • Strengthened social resilience and equity should be considered within actions • Diversity should be seen as a strength.
Thoughtfully Combine Different Approaches	• The full toolbox of: Protect, Accommodate, Retreat, Avoid, Resilience-Building should be used, and specific actions selected based on local risks and conditions. • Consider impacts of options during an event and outside of an event and across multiple values.
Avoid Making the Problem Worse	• Keep options open, stay flexible.

Principle	Description/Additional Information
	• Prevent additional risk such as development and water management infrastructure.
Lead Bravely, and Acknowledge Learnings	• Prepare for tough decisions and trade-offs. • Draw on imagination and creativity.
Advance Actions at Individual and Collective Levels	• Invest in communication, education, and dialogue. • Engage affected parties broadly.
Sequence Adaptation Actions Over Time	• Keep the short and the long-term view in mind, and ensure that short-term actions do not impede long-term options. • Build momentum with small steps now, build into bigger ones over time. • Package a suite of work actions.
Enable Options Through Proactive Recovery Planning	• Plan for "windows of opportunity" to implement preferred actions when conditions allow.

6.2 Enabling Actions

The next sub-sections outline ten enabling actions, each containing recommended activities. At the top of each action we summarize the action's objective, which aligns with the Guiding Principles discussed in Section 6.1, as well as the relevant sub-area, related actions, and main partners expected to participate in implementation of the action. We provide short- and long-term activities to meet the action's objective. This recognizes that the process will evolve based on changing conditions; it is also important to acknowledge that failures are possible and part of the process of learning and adapting over time.

While inaction may be an attractive response to avoid the potential for failure, it needs to be weighed against associated risks to relationships, public perception, and more. Therefore, it is better to progress with actions using proactive and adaptive processes, which gives partners in the region a chance to reduce risk in ways that meet their needs. The first enabling action overarches all the others, and it is based on the foundation laid by this project. The subsequent actions also substantially interrelated.

In the following sub-sections, "regional partners" refers to the many partners involved in this project including those mentioned in Sub-section 2.2.1 as well as non-governmental organizations (NGOs) including Project Watershed, Ducks Unlimited Canada (DUC), etc.

6.2.1 Action 1: Continue Regional Collaboration and Planning

Objective	Work together to identify and advance actions with mutual benefit to the region		
Relevant Areas	1, 2, and 3	**Related Actions**	2 to 10
Main partners	CVRD, K'ómoks First Nation, City of Courtenay, Town of Comox, MOTT, CVEM, NGOs, agricultural producers and others such as BC Hydro		

This action is about ensuring that the momentum built in this project continues, as it will facilitate the execution of the other action areas. It will help to continue to build relationships and create shared language and experiences, which helps break down silos. This includes providing a space to build relationships and trust, share diverse perspectives, and continue to revisit the vision and strategic priorities.

In the **short-term**, the regional collaboration process should continue to strengthen partnerships and involve others, through thoughtful and inclusive invitations for engagement, including:

- Translate the collaborative framework into a Memorandum of Understanding (MOU) and invite endorsement from core organizations (local governments, K'ómoks First Nation, and MOTT).
- Share it with organizations and the public in the Comox Valley and invite their participation and endorsement.
- Develop terms of reference, priorities, and action plan for the ongoing work of this group.

The CVRD can take the lead on the development of an action plan:

- Update and revise the K'ómoks Estuary Management Plan[14], to reflect the results of all Coastal Flood Adaptation Strategy phases and include a strong governance framework (see Action 2 for ideas specific to decision-making with K'ómoks First Nation).
- Continue to build internal and external capacity
- Plan to align relevant policies and procedures across jurisdictions in support of flood resilience.
- Acquire political support regionally by presenting new information to elected officials at council meetings and other venues.
- Secure a mandate and funding to provide coordination and facilitation supports with a working group.
- Develop public education materials to share insights and results from this phase of the project and support ongoing communication and engagement.
- NGOs can play an important role in the action plan by reminding elected officials about the plan, that it is a high priority to the community, and that it can work. NGOs can also support the regional partners in prioritizing this work beyond political timelines. This could be achieved by disseminating project information through their own channels and audience, including through public education (see Action 8).

To support ongoing collaboration, CVRD and partners should explore opportunities for regular knowledge exchange across a broad group of organizations and individuals with interests in risk reduction and resilience building. Examples include:

- Establish a forum for regular check-ins with partners, with consideration for existing working groups and partnerships, like the Comox Lake Watershed Advisory Group.

[14] Weblink: K'omoks Estuary Management Plan - Project Watershed. Accessed 3 March 2026.

- Build on successful examples in the region such as the CVEM roundtable, and area-specific emergency management planning and operational partners that coordinate regularly with CVEM such as the River Forecast Centre, Emergency Management and Climate Readiness (EMCR), Environment and Climate Change Canada (ECCC), BC Hydro, etc..
- Invite K'ómoks First Nation to already scheduled quarterly meetings between CVRD and MOTT.
- Develop a means to track this strategy's progress, and related projects.
- Share presentation materials with regional partners.
- Organize additional field visits which enhance broad scale understanding of all the enabling actions (e.g., Source Encounters, CVRD Connected by Water program[15]).
- Integrate the vision for the K'ómoks Estuary area into regional transportation planning initiatives. This includes considering how shifting to more water-based transportation across the estuary could positively impact the region.

To support the strategy over the **long-term**, adaptive management practices can be followed including tracking progress, and revisiting the vision and strategic priorities as new knowledge becomes available. This will improve the chances that actions endure as physical and social conditions change. CVRD/Courtenay/Comox should use this work to inform the Regional Growth Strategy, and respective Official Community Plans (OCPs) and operational plans as appropriate.

6.2.2 Action 2: Work with K'ómoks First Nation to Clarify Governance and Decision-Making

Objective	Enable K'ómoks First Nation to play an active role in the management of the estuary area, while upholding their Rights and Title		
Relevant Areas	1, 2, and especially 3	**Related Actions**	1, 3 to 10
Main partners	CVRD, K'ómoks First Nation, City of Courtenay, Town of Comox, MOTT, CVEM, and NGOs		

The regional partners should actively support K'ómoks First Nation activities. The Nation's signed Treaty should be a starting point for specific actions, which should also be guided by the *Declaration of the Rights of Indigenous Peoples Act* (DRIPA) and the Indigenous Engagement Requirements (IERs).

In the **short-term**, regional partners can acknowledge and learn about the Nation's Treaty Rights and work with them to build capacity. For its part, the Nation can think about what governance role they would like to have related to management of the estuary area.

Specific issues that the Nation has outlined are as follows:

- Protecting ancestral remains. The proposed approach is to work to stabilize the shoreline using vegetated riprap, planted with native species. However, other potential solutions, such as installing a break water or offshore islands also need to be explored.

[15] Weblink: https://www.comoxvalleyrd.ca/connectedbywater Connected by Water | Comox Valley Regional District. Accessed 10 April 2026.

- Exploring opportunities to grow traditional food sources, both on land and in (salt)water.
- Protecting assets on IR1 to support the current and future population on reserve.
- Restoring and enhancing wildlife and aquatic habitats. This includes managing goose and improving fish passage between the estuary and the slough.

The regional partners should include the above priorities into the statement of intent and workplan for the updated K'ómoks Estuary Management Plan (see Action 1).

In the **longer-term**, regional partners can maintain relationships and continue to work with the Nation on the initiatives that it chooses to move forward. These will include those related to the issues mentioned above, as well as others. For example, they may wish to consider a process to adapt or relocate homes out of areas susceptible to repeated flooding. Such a process may have similarities with processes used to achieve similar objectives in other parts of the project area (see Action 8), but here it will be led by K'ómoks First Nation.

6.2.3 Action 3: Improve Flood Risk Related Operations, Data, and Information

Objective	Develop better understanding of the hydrology and hydraulics of the project area, as well as areas and operations that affect it.		
Relevant Areas	1, 2, and 3	**Related Actions**	1 to 10
Main partners	CVRD, K'ómoks First Nation, City of Courtenay, Town of Comox, MOTT, CVEM, NGOs, EMCR, and ECCC.		

This action is about establishing a better scientific understanding of the floodwater sources in the project area, as a basis to inform risk reduction and resilience building decisions. Monitoring and updates will be critical, as there is considerable uncertainty in many driving issues around climate risk and adaptation. This reflects the fact that existing flood hazard mapping (from Phase 1 of CFAS) was conducted at a regional scale and requires refinement that reflects local conditions for the project site.

Over the **short-term**, the development of detailed hydrology and hydraulics will be critical and can provide a better understanding of how the combination of riverine, pluvial, and coastal flood waters affects the project area (e.g., how, when, and where do flood waters occur) as well as flood water characteristics (e.g., salinity, depth, velocity). This model could be used to better understand the impacts and risk associated with different management scenarios.

Other activities include:

- Establishing collaboration between Provincial and Federal ministries, as well as CVEM to plan how a flood warning system could be developed.
- CVRD and Courtenay should revisit the operation of the flood gate, to more clearly understand the goals and objectives given present-day conditions and objectives. Key questions for CVRD and Courtenay need to be considered around seasonal operation, monitoring and measurement, and the role of agricultural operators in the decision making. Opportunities for improvement, now and in the future, can be identified.

- Leveraging citizen science to improve understanding of specific flood events[16].

Over the long-term, with the development of detailed hydrology and hydraulics, flood forecasting and warning can be improved:

- CVEM and government partners such as EMCR and ECCC should continue to coordinate effective use of the Coastal Flooding Prediction and Alerting Program to improve science-based flood forecasting in the region.
- CVRD should develop a plan to acquire necessary resources (e.g., from Information Services, Geographic Information Services, and Corporate Communications) to support the above initiative within the region.
- With CVRD, CVEM can continue to advocate for, and seek funding to develop an online dashboard and mobile application that can be easily accessed and understood by practitioners and the public (see Action 10). Existing tools[17] could be improved upon providing more specific content around flooded areas, and actions that local residents and business owners can take. The warning system can be integrated with potential changes to the management of Comox Road (see Action 5).

It is important to keep abreast of changes, including monitoring climate projections periodically (e.g., once per year through climatedata.ca and consult with the Pacific Climate Impacts Consortium) to understand how the science and modelling is evolving. Monitoring changes to the B.C. Flood Hazard Management Land Use Guidelines (i.e., an update or further information is expected in late 2026 or early 2027). Consider a review cycle for flood hazard mapping and associated regulations of every 5 years.

6.2.4 Action 4: Develop Systems to Manage Comox Road During Flood Events

Objective	Produce an alternative plan that can support a shift in expectations relating to traffic flow in the region when the road is too wet		
Relevant Areas	1, 2, and 3	**Related Actions**	1, 2, 3, 5 and 10
Main partners	CVRD, K'ómoks First Nation, MOTT, City of Courtenay, CVEM		

This action includes a combination of technical coordination and education. In contrast to Action 5, this action addresses activities that are relevant for disruptive road flooding. It is about shifting expectations relating to traffic flow, to reduce dependence on vehicular traffic and use a diversity of transportation modes.

[16] CrowdWater is an example app developed for the public to share photos and water level data, safely, during and after flood events. Weblink: https://crowdwater.ch/en/app-start-en/. Accessed 15 December 2025.

[17] The Provincial "EmergencyInfoBC" provides a good foundation, that could be improved upon. Weblink: https://www.emergencyinfobc.gov.bc.ca/, accessed 17 December 2025.

Over the **short-term**, a plan could be developed and implemented for shutting down the road and re-directing traffic during flood events. It builds on the previous actions and key activities include:

- Establish thresholds for when closures need to be implemented, based on flood modelling and flood forecasting information.
- Develop alternate route(s) and implementation plan to redirect traffic onto alternatives for times of road closure. Trade-offs in terms of traffic congestion and broader disruption should be considered.
- Work with MOTT to install traffic management infrastructure (e.g., signage, closure arms, web cams) for road closure.
- Develop public education materials to support this switch.
- Shift transportation systems to modify behaviours over time to rely less on the road as a primary artery.
- Promote alternate means of transport[18] such as increasing water-based transportation across the estuary (e.g., water taxis, harbour ferries).

Over the **long-term**, bigger ideas about changes to transportation mentioned above could be considered more closely. Further assessments could integrate emergency management, transportation, parks, and tourism planning to look at alternative ways to travel the estuary area. This could include moving toward more rapid transit, or even boat-based options. These ideas could offer more robust emergency routes, reduce congestion, and potentially attract visitors to the region.

6.2.5 Action 5: Mitigate Flood Damage of Comox Road

Objective	Target mitigation actions to reduce flood damages where possible on Comox Road		
Relevant Areas	1, 2, and 3	**Related Actions**	2, 3, 4, 7 and 10
Main partners	CVRD, K'ómoks First Nation, MOTT, City of Courtenay, CVEM		

This action is focused on trying to reduce flooding and erosion (and manage smaller flood events) on Comox Road. However, regional partners need to understand and prepare for more flooding and manage expectations across the region (see Action 4).

Over the **short-term**, to allow for water movement during times of flooding on Comox Road, MOTT can develop and implement erosion protection and drainage plans, including a review to expand the capacity, or add additional, culverts. Pre-designs of the road could be completed by MOTT so that they are prepared to re-construct to a more resilient design following a damaging event. As

[18] Current construction of the sewer conveyance infrastructure, which resulted in road closures, is an example of how the region is capable of finding alternatives.

mentioned in Action 1, K'ómoks First Nation, Courtenay, and Comox should be invited to quarterly meetings between CVRD and MOTT related to these plans.

To better manage flooding on the road, the City of Courtenay and CVRD should work together to:

- Revisit the objectives, operation, and design of the tide gate, to assess if these can be operated more effectively to keep the road dry for longer (also see Actions 3 and 7).
- Assess how the implementation of the City of Courtenay Flood Management Plan might road flooding.
- Consider how the road would be used in emergency evacuation situations (see Action 4). E.g., limiting the use to emergency vehicles only.
- Assess the viability of developing a multi-use path focused on active transportation and transit, while not directly related to this action, this reflects values and directions of process participants.

Over the **long-term**, there are other important linear assets along the road (both on surface and underground) that need to be considered in conjunction with changes to the road. Regional infrastructure asset management (e.g., by CVRD, MOTT, BC Hydro) needs to explicitly account for a review of hazard and risk over the lifecycle of the asset. Condition assessments or new siting of facilities and infrastructure should consider the flood and erosion hazard, and be integrated into long-term plans for the road (including potential decommissioning in the very long-term). The road operation needs to be integrated into emergency evacuation plans for all sub-areas, with consideration to potential shifts in transportation modes around the estuary (see Action 4).

6.2.6 Action 6: Manage Shoreline Erosion

Objective	Promote natural shoreline approaches to reduce erosion		
Relevant Areas	1, 2, and 3	**Related Actions**	2 and 3
Main partners	CVRD, K'ómoks First Nation, MOTT, City of Courtenay, and NGOs		

Erosion is effectively irreversible and can be catastrophic if irreplaceable assets are lost. It is also of utmost importance due to current and ongoing damage of cultural sites along the estuary. Natural shorelines are effective at limiting erosion at large scales and should be maintained. In contrast, engineered slopes can exacerbate larger scale erosion whilst trying to protect individual sites. However, the importance of protecting cultural sites means that these trade-offs may occur. This highlights the need to work with K'ómoks First Nation to identify where more or less erosion might be more acceptable (see Action 2).

Over the **short-term**, there is experience and lessons to be learned from several projects that have included erosion management within the project area (e.g., Dyke Road Park and Kus-kus-sum projects, and others on IR1). The Stewardship Centre for BC, with support from CVRD, can provide useful information on more natural, or "green" approaches (Green Shores™). However, engineered or more "grey" approaches may also be necessary in some cases. Steps are needed to ensure that this work is culturally appropriate by developing designs that are informed by Indigenous knowledge.

The CVRD can seek funding to conduct more detailed modelling (see Action 3) to inform the feasibility and design of green, grey, or hybrid approaches. Potential options will need to include an understanding of coastal processes within the area and potential impacts on several assets and values, and associated trade-offs. Examples include impacts to Goose Spit[19], as well as K'ómoks aquaculture interests in the estuary. Sediment control plans will be critical to develop based on the selected option.

Specific activities that can be undertaken include:

- Monitor cultural sites with K'ómoks First Nation to manage where erosion is already affecting sites, and to prevent erosion in priority areas.
- Use the coastal processes analysis, which is part of the aforementioned Goose Spit project, as well as the hydrology and hydraulics modelling (see Sub-section 6.2.4) to identify priority areas for shoreline management.
- Rehabilitate areas along IR1 where past approaches have failed.
- Maintain areas mentioned above (e.g., Dyke Road Park and Kus-kus-sum).

Over the **long-term**, the shoreline projects should be monitored and maintained to ensure that they are working as intended.

6.2.7 Action 7: Adapt Land Use and Agricultural Practices

Objective	Explore alternative land uses to inform decisions that will lead to uses and practices that are more adapted to future conditions.		
Relevant Areas	1	**Related Actions**	1, 2, 3, 5, 9, and 10
Main partners	CVRD, agricultural groups, provincial and federal agriculture ministries, local agricultural groups (e.g., Comox Valley Farmers Institute), K'ómoks First Nation, NGOs		

The main partners can work with agricultural producers to consider options to improve how land is managed and used, including potentially shifting agricultural practices.

Over the **short-term**, investigation processes can be established to support agricultural producers' access to information about a range of topics with key partners. These include water management, economic viability, crop science, multi-zonal land use, and food security:

- Work with CVRD and the City of Courtenay to review local water management practices, including management of runoff from uphill sources (see Action 9).
- Work with the CVRD Agricultural Planning Coordinator, provincial, and federal government agriculture ministries, and potentially other organizations (e.g., NGOs), to explore the economic viability, and different market interests, related to agricultural practices in the area.

[19] A coastal processes assessment is the main component of the Pélxwikw/ Goose Spit Climate Resiliency Project that CVRD is initiating.

- Related to the above, investigations need to consider the increasing incidence of saltwater intrusion, and how this could impact different crops. DUC can partner with agriculture producers to explore adaptive agriculture (e.g., plant breeding) through crop trials now, which will take time to yield results and recommendations.
- Work with the same partners above to explore a multi-zonal approach for how agricultural use, ecological function, and recreation could be accommodated. A review of tide gate operations (see Action 3) is a key component in these considerations.
- Work with K'ómoks First Nation to discuss food security and development of Indigenous food systems and ecological restoration (see Action 2).

Over the **long-term**, with more information obtained on water management, economic viability, multi-zonal land use, crop science, and food security under changing conditions, implementation decisions can be made.

6.2.8 Action 8: Adapt Residential Land Use and Buildings

Objective	Develop a sequenced strategy over time that combines avoiding, adapting, or retreating from highly affected areas		
Relevant Areas	2 and 3	**Related Actions**	1, 2, 3, 5, 9 and 10
Main partners	CVRD, K'ómoks First Nation, City of Courtenay, Town of Comox, CVEM, homeowners association		

This action focusses mainly on Area 2; however, K'ómoks First Nation may choose to inform their actions similarly. Regional partners can work with homeowners and businesses to proactively determine a strategy for land use / buildings in highly affected areas. Engagement and education (see Action 10) are key complements to this action.

Over the **short-term**, an engagement and education process needs to be established (see Action 10) among residents and business owners of Area 2. The process should be focussed on identifying the values held by people affected, and how these will be affected with changing flood risk and with flood mitigation actions (i.e., changes to buildings) . This will support the development of steps that can be taken sequentially over time to reduce risk, whilst maintaining the community values as much as possible.

In tandem with the engagement process, policies should be explored to avoid development in areas where floodwater can be more damaging:

- The CVRD should consider the resources needed to acquire private land and enhance tools to prevent development in high risk areas (e.g., zoning/bylaws).
- The CVRD should monitor evolving provincial processes related to managed retreat[20].

[20] See for example: https://www.livingwithwater.ca/decision-making-for-managed-retreat. Accessed 20 April 2026.

- CVRD/Courtenay/Comox should take a cross-jurisdictional approach to explore regulatory tools to limit redevelopment.

In areas that are flooded less frequently, the CVRD can also explore ways to adapt existing buildings to minimize damages. Upgrading and flood-proofing homes could include a range of approaches that need to be explored further (e.g., elevating foundations, flood barriers, smart home design). Example resources related to flood proofing include *Dwellings + Flooding: Measures for Residential Adaptation (Architecture Without Borders, 2024)*[21] fact sheets, *Reducing Flood Risk to Residential Buildings that Cannot be Elevated* (FEMA, 2015), and *Retrofitting for Resilience* (Barsley, 2020). The costs and feasibility of these approaches should be assessed. The groundwork for emergency evacuation planning should also be undertaken, including informing residents about this potential in residential areas.

A neighbourhood resilience program, specific to the residents and businesses in the project area, should be considered to build awareness, inform emergency planning and operations, and social connectedness. Flood response and recovery plans can also be considered to better respond and recover from periodic flooding. Any neighbourhood resilience efforts should consider and be aligned with broader regional planning.

Over the **long-term**, more tangible steps in the sequence can be taken to adapt or retreat buildings. These decisions can be informed by improved understanding of short versus long-term flooding of buildings and commercial assets based on more detailed hydrology and hydraulics modelling (see Action 3), as well as the engagement process. It may be determined that it makes sense to relocate some buildings and convert spaces for recreational use. However, the people affected and trade-offs will need to be carefully considered.

Alongside the land use and building-level actions, ongoing support is also needed to coordinate, cooperate and collaborate for emergency evacuation planning and response (see Action 4). This involves understanding how other potential changes (e.g., managed retreat in the area; operation of Comox Road under flood conditions, see Action 4; or flood mitigation activities, see Action 5) could affect evacuation procedures.

6.2.9 Action 9: Improve Regional Water Management and Stewardship

Objective	Take a cross-jurisdictional approach to consider the water quantity and quality trade-offs associated with managing water that enters the project area		
Relevant Areas	1, 2, and 3	**Related Actions**	1, 2, and 3
Main partners	CVRD, K'ómoks First Nation, City of Courtenay, Town of Comox, MOTT, CVEM, and NGOs		

[21] A newer more comprehensive draft guide titled Living with Water: Adaptation Guide for Flood-Proofed Buildings is also currently open for comment until 30 January 2026. The final version will likely be translated into English.

Flood risk and resilience in the project area is a subset of broader intentions in the region to manage at a watershed level. This action takes a watershed-wide approach to store and drain water to manage multiple issues (flood, drought, drinking water, in-stream requirements, etc.). Ecosystems that are intact and thrive can absorb flood waters more readily.

The amount of stormwater runoff entering the project area from the City of Courtenay and the Town of Comox is likely relatively small but should be better understood (see Action 3). Decision making related to increasing development in these jurisdictions needs to consider the regional trade-offs to avoid worsening flooding and sedimentation in the estuary area. Key activities to be considered in the **short-term** include:

- Courtenay can implement its recently developed flood management plan and specifically review the operation/function of stormwater ponds (e.g., behind the Superstore) and reduce impervious surfaces.
- The Province can work to limit sediment in runoff from upland forestry activities.
- Comox should work with K'ómoks First Nation to manage urban drainage near their boundaries.
- Project Watershed can support stewardship and participate in efforts to reduce runoff and sedimentation, through education and green infrastructure development.
- CVRD, Ducks Unlimited Canada (DUC), Project Watershed, and K'ómoks First Nation should continue conservation and restoration initiatives (e.g., for the estuary and slough areas). This can include fish habitat baseline studies and deliver connectivity and restoration opportunities, which provide important co-benefits.

Over the **long-term**, relationships should continue to be strengthened to allow partners to "think like a watershed". This should facilitate the other actions.

6.2.10 Action 10: Continue to Engage and Educate

Objective	Bring in diverse perspectives, to both support and implement approaches, and to spread responsibility for action		
Relevant Areas	1, 2, and 3	**Related Actions**	1-10
Main partners	CVRD, City of Courtenay, Town of Comox, NGOs, homeowner associations, development association, agricultural groups, business associations		

An all-of-society approach is required for project success. Engagement and education can be used to promote understanding and behaviour changes to allow for greater adaptability, responsiveness during flood events, and adopting ways of "living with water." It is also important to highlight to everyday people the trade-offs that decision makers need to consider. Regional partners (especially non-governmental actors such as Project Watershed) with networks of existing relationships with residents and organizations, could be a great asset in bringing this process into community.

Over the **short-term**, people representing a range of interests such as the residents, businesses, agricultural producers, environmental groups, and K'ómoks First Nation should be engaged to have conversations and obtain input on the strategy. In many cases, individuals may represent an

intersection of these interests. Education materials should be prepared thoughtfully to increase understanding about the complexity and trade-offs that will need to be made. These can be shared through the CVRD website and disseminated by regional partners.

Over the **long-term**, engagement and education will be an important part of advancing understanding and supporting behaviour and policy changes across the actions described above. This will be particularly helpful to shift mindsets from preventing all flooding, to allowing flooding in an adaptive and managed way over time, as the flood risk changes and increases.

6.3 Obtaining Grant Funding

Regional partners can seek opportunities for grant funding to advance any of the above actions. Individual funding applications may be done for specific actions, or larger applications may group enabling actions. In either case, due to their interconnectedness, progress on one enabling action area should naturally advance other enabling actions.

Due to the context explained above, the resourcing of future proposed projects may look different than how governments typically approach and award projects. Therefore, funding applications could be done collaboratively where possible, obtaining and clearly demonstrating support from regional partners (see Action 1). We note that NGOs such as Project Watershed have been successful in obtaining funding from different sources for collaborative work with partners, by emphasizing the co-benefits and importance of proposed projects.

7 Conclusion

The goal of this phase of the CFAS project was to develop a collaborative framework and execute a decision process to identify a preferred alternative to advance flood resilience in the K'ómoks Estuary North Area. The project evolved during the process, with the regional partners recognizing the importance of collaboration at the *regional level* to effectively reduce risk and increase resilience at the *local level*. Using the relationships and understanding developed through the regional collaborative framework, we embarked on the development of a strategy.

The knowledge tour and workshops that occurred during the decision process created shared experiences that allowed the broad group of participants to understand a diversity of perspectives—and the associated trade-offs—with the potential ways forward. The recommended preferred approach is based on a range of potential tools instead of a strict set of structural measures. The strategy also includes guiding principles and ten enabling actions for implementation. It provides flexibility and can be applied proactively and adaptively.

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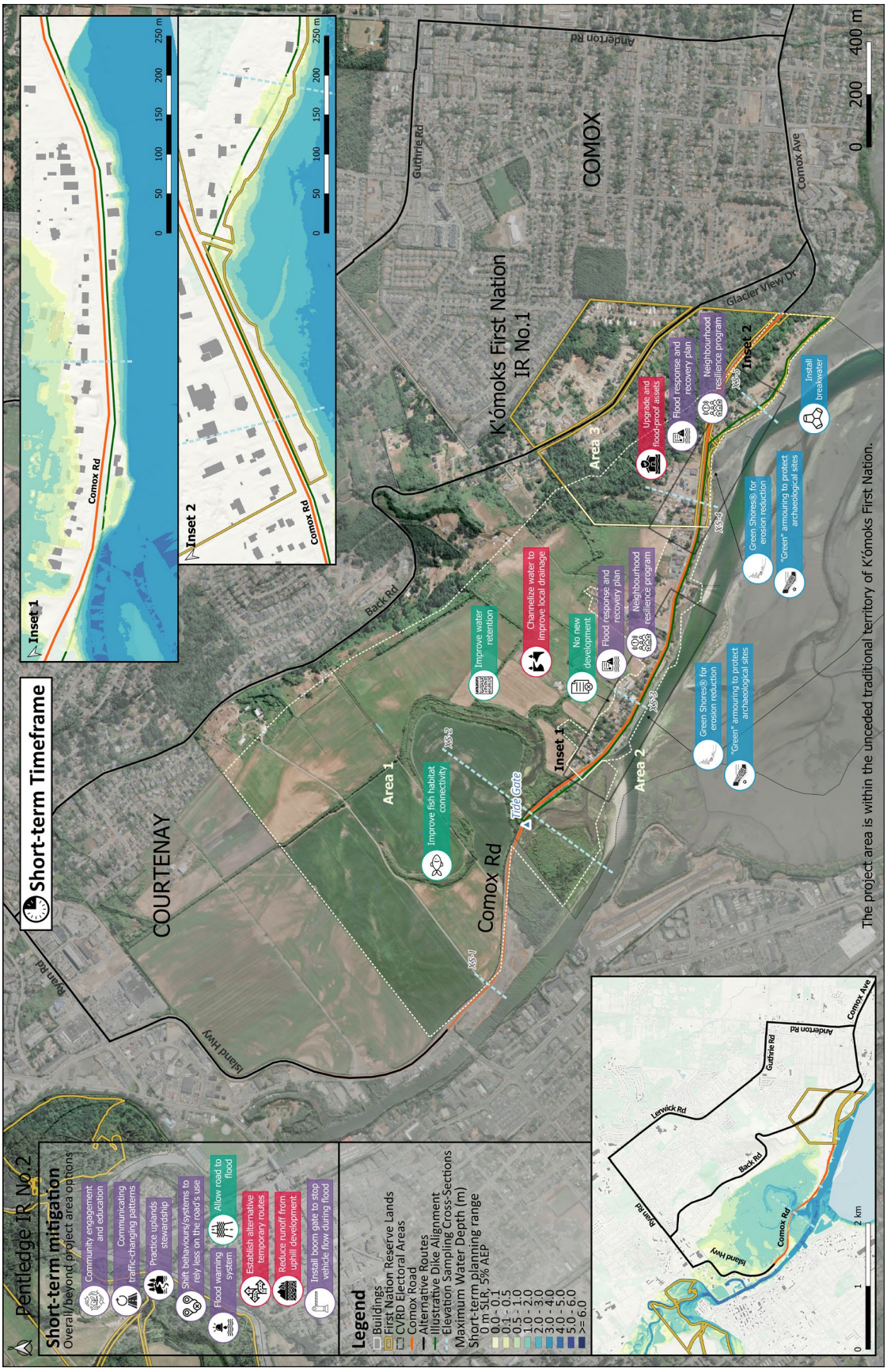
Appendix A – Potential Strategy Tools Overview

The following pages provide maps with potential strategy tools to be considered across the project area, for short- and long-term timeframes. These are provided for illustrative purposes to show how the tools were considered across the three sub-areas, and over the two timeframes.



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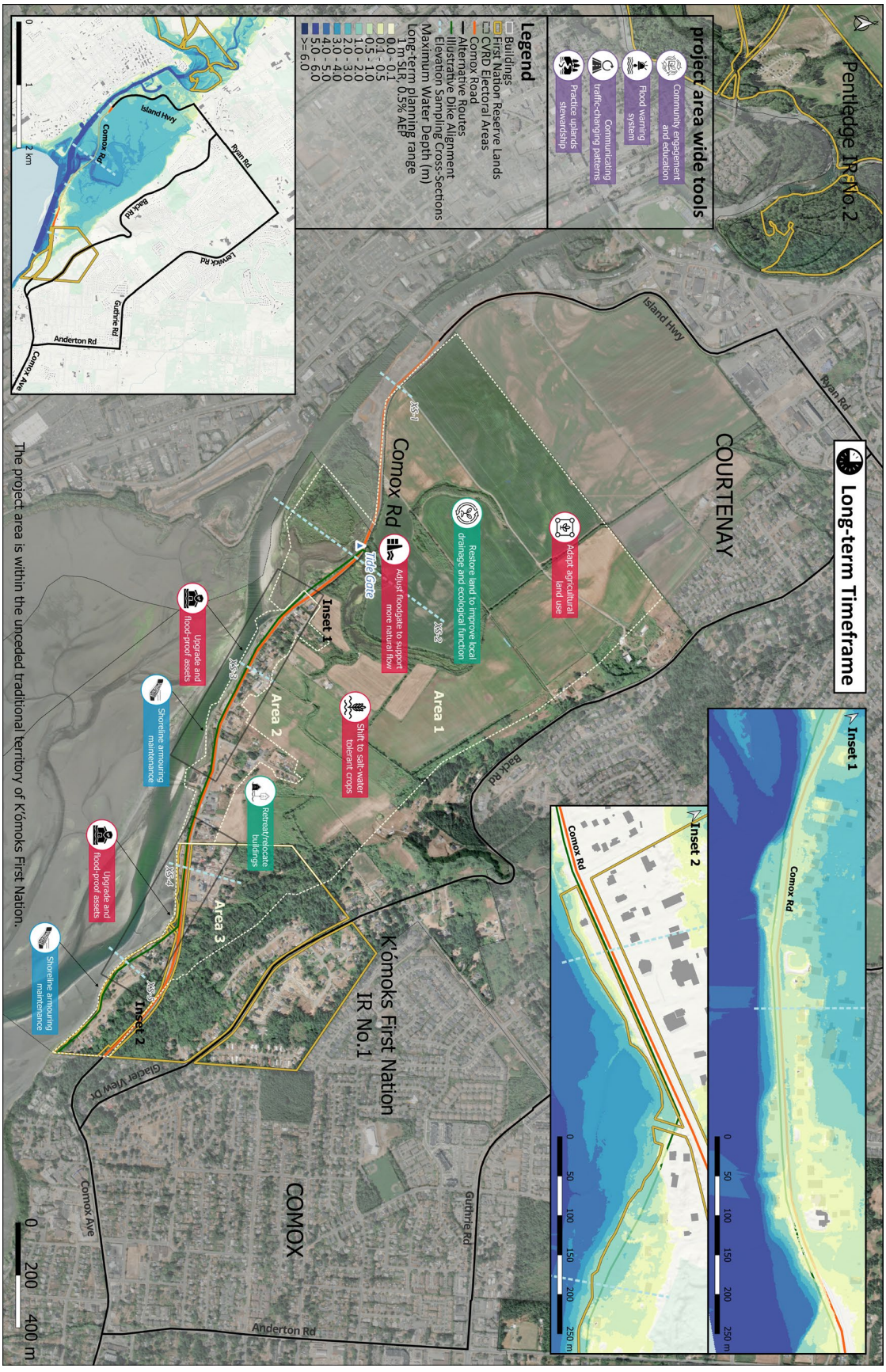

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Appendix B – Strategy Tools Description by Area

The following sections describes more specific tools and supporting tasks that can be applied in combination to each of the sub-areas. The intent of this approach is to best address varied needs in different parts of the project area.

Area 1: Agriculture / Slough Tools

The following tools could be considered for the area in the **short-term**:

- Improve road design to withstand increasing coastal flood and continue to act as a barrier to reduce saltwater intrusion.
- Improve local drainage and ecological function by assessing options based on more detailed understanding of local hydrology and hydraulics affecting this sub-area.
- Improve fish habitat connectivity by linking the slough with the ocean and other areas, while considering the need to reduce saltwater intrusion for agriculture.
- Investigate the viability and long-term value of different agricultural crops and practices with consideration of sea level rise and salination.

The following tools could be considered for the area in the **long-term**:

- Revisit the objectives, operation, and design of the flood gate to adjust toto support more natural flow.
- Shift to multi-zone land use accommodating agricultural use and ecological functioning in the sub-area.
- Shift to more salt-water tolerant and resilient crops.
- Adapt agricultural land uses as more information becomes available.

Area 2: Mixed-Use Tools

The following tools could be considered for this area in the **short-term**:

- Engage with people in the area to refine the proposed strategy. This will require a combination of education and resilience-building in the near term, leading a process to explore options over the medium term.
- Develop a Neighbourhood resilience program to build awareness, response capacity, and social connectedness.
- Selected "Green" armouring at specific locations to protect archaeological sites.
- Green Shores ® approaches (with emphasis on K'ómoks Traditional Knowledge in design and approach) to reduce erosion.
- Design and implement regulations to limit development to avoid increasing risk to the area; this will need to be balanced against other community needs (e.g., housing, economic development, etc.)
- Review building retrofit options for flood-resilience, and work with the community and others in the region, to develop guides and programs to implement these.

The following tools can be implemented in the area in the **long-term**:

- Retreat or relocate buildings out of frequently flooded areas.
- Upgrade and flood-proof assets in areas that are flooded less frequently. Flood-proofing homes could include a range of approaches that need to be explored further (e.g., elevating foundations, flood barriers, smart home design).
- Conduct maintenance of selected shoreline armouring.

Area 3: K'ómoks First Nation IR 1 Tools

The following tools can be considered for the area in the **short-term**:

- Flood response and recovery plan to support communities to absorb shocks and to build back better.
- Neighbourhood resilience program to build awareness and response capacity[22].
- Selected "Green" armouring at specific locations to protect archaeological sites.
- Green Shores ® approaches (with emphasis on K'ómoks Traditional Knowledge in design and approach) to reduce erosion[23].
- Offshore breakwater (or alternatives such as barrier islands) to slow water and reduce its power. The effects of these practices on other areas (e.g., Goose Spit, fish traps, and other archaeological sites) need to be assessed.
- Upgrade and flood-proof assets in areas that are flooded less frequently. Flood-proofing homes could include a range of approaches that need to be explored further (e.g., elevating foundations, flood barriers, smart home design).
- Review building retrofit options for flood-resilience, and work with the community and others in the region, to develop guides and programs to implement these.

The following tools can be implemented in the area in the **long-term**:

- Continue to upgrade and flood-proof assets in areas that are flooded less frequently.
- Conduct maintenance of shoreline armoured areas that is desirable for the community.

[22] The project findings can be used with the existing Neighbourhood Emergency Preparedness Program (NEPP) resources, to prepare a tailored plan for this area. The NEPP is planned to be revised and the current version weblink is here: Your Neighbourhood Emergency Preparedness Program (NEPP). Accessed 10 April 206.

[23] K'ómoks First Nation can build on learnings from past experiences, such as taking into account shoreline physiographic conditions (e.g. beach angle) to achieve the shoreline armouring objectives. Shallow and offshore protection measures need to work in tandem.