



To: Public Works and Transportation Committee **Date:** May 16, 2024
From: Milton Chan, P.Eng
Director, Engineering **File:** 10-6050-01/2024-Vol
01
Re: North Dike Upgrades Concept Plan - Lynas Lane to No. 2 Road

Staff Recommendation

That the concept plan presented in the staff report titled “North Dike Upgrades Concept Plan - Lynas Lane to No. 2 Road”, dated May 16, 2024, from the Director, Engineering be endorsed for the purposes of public consultation.

Milton Chan, P.Eng
Director, Engineering
(604-276-4377)

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF DEPUTY CAO
Transportation	<input checked="" type="checkbox"/>	
Parks	<input checked="" type="checkbox"/>	
Development Applications	<input checked="" type="checkbox"/>	
SENIOR STAFF REPORT REVIEW	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

Guided by the City's Council endorsed Flood Protection Management Strategy and Dike Master Plan Phase 2, the section of the North Dike, between Lynas Lane and No. 2 Road has been identified as a priority location for dike raising and upgrade works. The project scope includes raising the dike crest elevation along River Road between Lynas Lane and No. 2 Road, raising River Road, and relocating utilities. Funding to complete the project has been approved by Council as part of the Capital Program through the Disaster Mitigation and Adaptation Fund Projects. Preliminary design work for this project including the proposed general layout and new dike configuration has been completed.

The purpose of this report is to provide information on the concept plan for this dike upgrade project and seek Council's endorsement of the concept plan for the purposes of public consultation.

This report supports Council's Strategic Plan 2022-2026 Focus Area #3 A Safe and Prepared Community:

Community safety and preparedness through effective planning, strategic partnerships and proactive programs.

3.1 Advance proactive, sustainable, and accelerated flood protection in collaboration with other governments and agencies.

3.4 Ensure civic infrastructure, assets and resources are effectively maintained and continue to meet the needs of the community as it grows.

Analysis

At an average of one metre above sea level, Richmond faces flood hazards from sea level rise due to climate change, coastal storm surges, snowmelt flooding and extreme weather events. The City recognizes this risk and is currently advancing flood protection projects, including perimeter dike upgrades such as the North Dike Upgrades - Lynas Lane to No. 2 Road project.

The key objectives for this dike reach outlined in the Dike Master Plan Phase 2 include:

- Raise the dike by approximately 1.7 metres in elevation to meet the projected year 2100 flood levels while also allowing for further future height increases;
- Raise River Road to improve dike stability and resilience;
- Widen the dike on the land side rather than into the Fraser River; and
- Raise the dike on its existing alignment.

The expansion of the dike footprint to meet these objectives is critical for the successful implementation of flood protection infrastructure upgrade plans. This proposed preliminary design was developed following the objectives outlined above. The design includes raising the dike elevation from the current elevation by approximately 1.7 metres along the dike reach from Lynas Lane and No. 2 Road. The project location map is shown in Figure 1 below.



Figure 1 - Project location map

Raising the dike also allows for opportunities to improve facilities and accessibility while maintaining a focus on increasing the City's flood protection. The proposal to raise River Road is in alignment with the recommended action outlined in the Dike Master Plan Phase 2 report. The benefits of raising River Road include improved dike stability and performance, reduced impacts to environmental habitats due to water-side dike expansion, and facilitates future dike improvement projects. The dike at the No. 2 Road North Drainage Pump Station and portions immediately east of No. 2 Road have been raised. The remaining sections to the east will be raised in conjunction with new developments.

Currently, River Road is situated at a lower elevation in comparison to the dike crest. There is also an existing gravel pathway on the top of the dike crest and a paved sidewalk south of River Road. Figure 2 illustrates a cross section and plan view of the current conditions between Lynas Lane and No. 2 Road below.

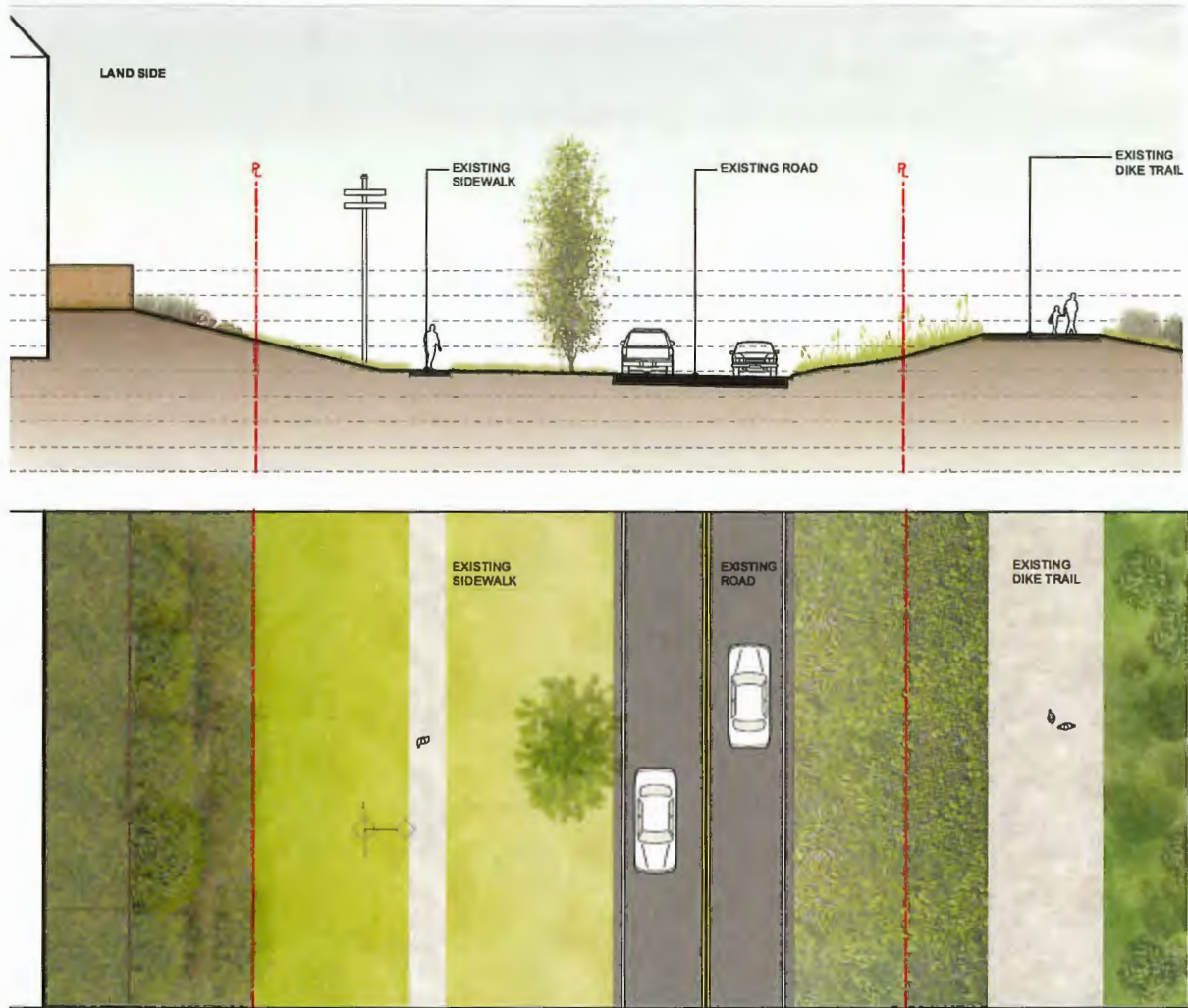


Figure 2 – Section and plan view of existing conditions between Lynas Lane and No. 2 Road

A typical cross section of the upgraded dike in this area would include a widened dike crest, raised roadway, and improved pedestrian and cycling pathways, as show in Figure 3 below.

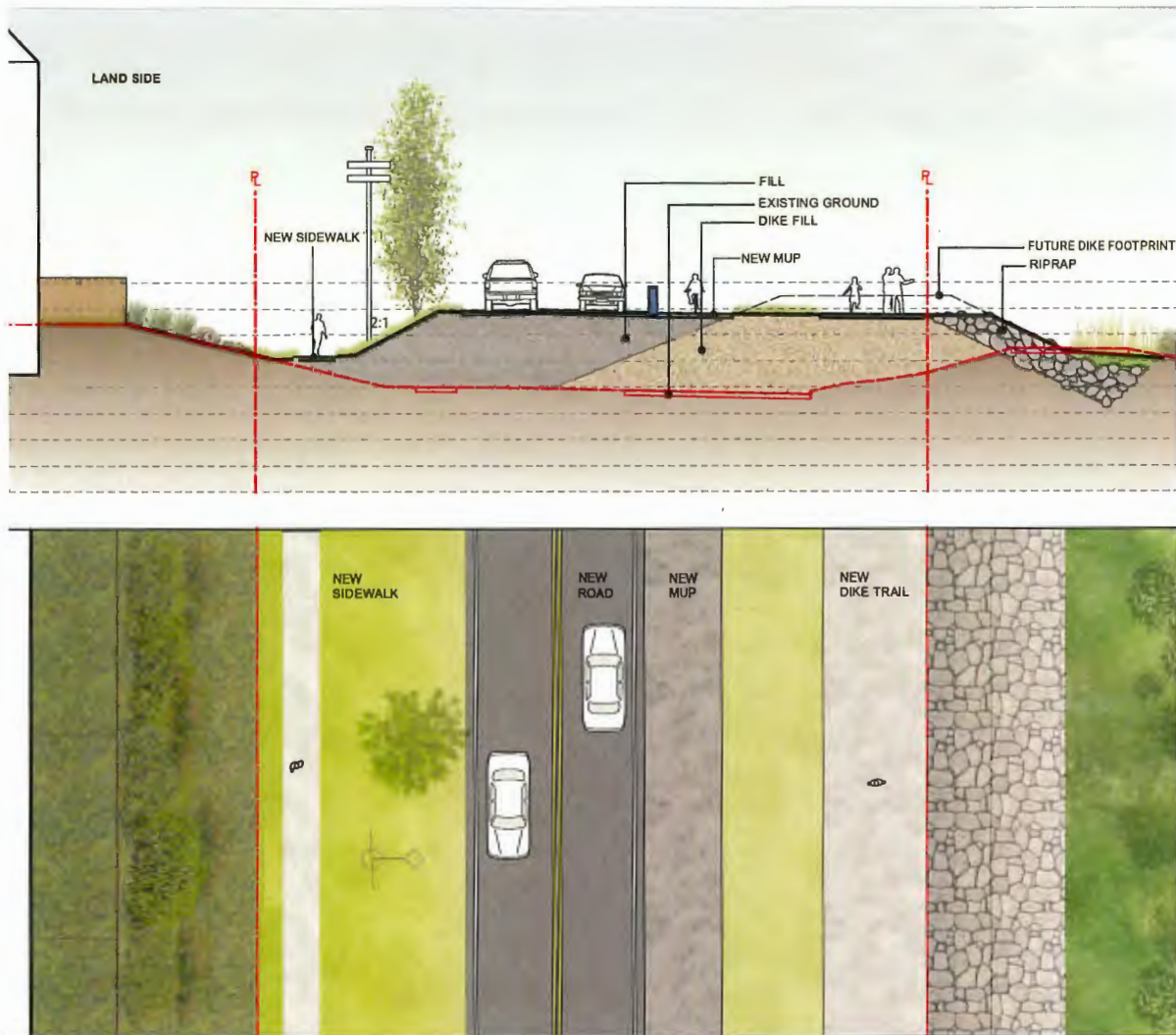


Figure 3 – Section and plan view of the upgraded dike between Lynas Lane and No. 2 Road

Design Co-ordination

The North Dike Upgrades – Lynas Lane to No. 2 Road project will overlap with the Council-approved River Road Multi-Use Pathway McCallan to No. 2 Road project. The design and construction of this MUP from Lynas Lane to No. 2 Road will be completed as part of the dike raising project. The existing sidewalk will be reinstated south of River Road and a new MUP will be introduced north of River Road. The design will maintain existing pedestrian connectivity to the dike crest pathway through the crosswalks at Lynas Lane, No. 2 Road, and the crossing located mid-block. The raised dike and River Road will transition down to the existing grades at Lynas Lane and No. 2 Road. The widened dike crest design allows for future, additional dike raising without increase in the dike footprint or impact to the roadway.

The expansion of the dike footprint to meet the project requirements, as outlined above, will interface with several private properties, notably the proposed development at 5900 River Road (DP22-022039) at the eastern end of the project boundary and the existing residential

developments situated south of River Road on Dover Crescent. No property encroachment is anticipated, however, the detailed design will include coordination with these private properties to ensure both existing and future access points can be maintained. The larger dike footprint will also result in the need to remove and/or relocate certain trees south of River Road. Replanting of impacted trees close to their original location is planned where possible. A compensation plan for tree replacement will be completed following detailed design and engagement with City departments and the public.

The Works Yards Replacement Project footprint falls outside of this dike project's boundary. Although no direct impacts to the Works Yards Replacement Project are expected, ongoing coordination between the project teams will continue to minimize the impacts resulting from the construction of these two projects.

Public Engagement

In 2022, the City of Richmond successfully led an extensive Flood Protection Public Engagement Campaign, including in-person and online engagement activities. Approximately 1,000 people attended the in-person engagement activities and events. Additionally, approximately 2,000 people participated online through the City's flood protection webpage and a Let's Talk Richmond project page that was set up to support community outreach. This engagement focussed on overall city-wide flood protection, with future engagements planned for site specific projects.

For the North Dike Upgrades - Lynas Lane to No. 2 Road project preliminary design, staff recommend engagement with key external stakeholders and the public. Key stakeholders include:

- Adjacent residential stratas, single family properties, businesses and the general public;
- Department of Fisheries and Oceans, Fish and Fish Habitat;
- BC Ministry of Forests;
- BC Ministry of Water, Land and Resource Stewardship;
- BC Inspector of Dikes;
- School District 38

The engagement will identify public interests and opportunities relating to this project, build community support and gather stakeholder feedback. Key external stakeholder groups will be engaged through direct contact and by leveraging the City's social media tools, such as Let's Talk Richmond, Facebook, and Instagram. In addition, staff will hold an in-person public open house targeted for summer 2024. Additional engagement sessions could be coordinated following receipt of feedback, if required.

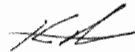
All feedback will be formalized and incorporated into the next design iteration. It is anticipated that the design will be finalized in Q1 2025. Once completed, the final design concepts will be brought forward to Council for information prior to proceeding with construction. Construction works are projected to commence in 2026 and conclude in 2027.

Financial Impact

This project is included in the Government of Canada's Disaster Mitigation and Adaptation Fund grant award, which provides the City with \$13.78M for the upgrade of drainage pump stations and perimeter dike upgrade projects, including this section along the North Dike between Lynas Lane and No. 2 Road. The grant funding is based on Federal funding up to 40% of eligible costs, up to a total project value of \$34.45 million. Funding to complete the design and construction of this project has been approved by Council as part of the Capital Budget through the Disaster Mitigation and Adaptation Fund Infrastructure Upgrades projects in 2020, 2021, 2022, 2023, and 2024.

Conclusion

Guided by the City's Flood Protection Management Strategy, Dike Master Plan Phase 2 and as approved through the Capital Budget, staff have advanced the preliminary design for the North Dike along River Road between Lynas Lane and No. 2 Road. The current concept plan is presented to inform Council of the project status and to seek Council's approval to proceed with public engagement.



Kevin Roberts, P.Eng
Senior Project Manager
Engineering Design and Construction
604-204-8512



Braeden LeBlanc, EIT
Project Manager
Engineering Design and Construction
604-204-8928