City of Richmond

Report to Committee

To:	Parks, Recreation and Cultural Services Committee	**Date:**	March 30, 2021
From:	Todd Gross Director, Parks Services	**File:**	06-2345-20-MINO1/Vol 01
Re:	**Minoru Lakes Renewal Detailed Design Plan and Next Steps**		

Staff Recommendation

That the Minoru Park Renewal Detailed Design Plan be received for information and that the Minoru Lakes Renewal project proceed to contract award and construction, as detailed in the staff report titled "Minoru Lakes Renewal Detailed Design Plan and Next Steps," dated March 30, 2021, from the Director, Parks Services.

Todd Gross
Director, Parks Services
(604-247-4942)

Att. 5

REPORT CONCURRENCE		
ROUTED TO:	**CONCURRENCE**	**CONCURRENCE OF GENERAL MANAGER**
Public Works & Operations	☑	
Project Development	☑	
Sustainability & District Energy	☑	
Financial Planning & Analysis	☑	
SENIOR STAFF REPORT REVIEW	**INITIALS:**	**APPROVED BY CAO**

Staff Report

Origin

The Minoru Lakes were designed and constructed in the 1970's and are nearing 50 years of age. Due to their age and general wear-and-tear, the lakes infrastructure including the pump, liner and banks have surpassed the end of their useful life and have failed. As a result, the water quality is poor in terms of health-and-safety and aesthetics. Over the past several years, allocation of City resources towards maintenance of the lakes, including potable water and staff time, have increased.

The neighbourhood areas surrounding the Lakes District have continued to grow and densify since the lakes were constructed. From 2011 to 2016, the population in the City Centre area has increased by 25 per cent and has seen the highest density development in Richmond. The current population within a 400 metre radius (5 minute walking distance) of the Minoru Lakes District is approximately 20,000 and is expected to double by 2041. The existing park infrastructure such as pathway widths, furnishings and landscapes no longer meet the needs of the growing surrounding community.

As part of the Consolidated 5 Year Financial Plan process, Council approved capital funding requests in 2018 towards Minoru Lakes Renewal Detailed Design and in 2019, 2020 and 2021 towards Minoru Lakes Renewal Construction. The purpose of this report is to provide an overview of the Minoru Lakes Renewal Detailed Design Plan and process to date and outlines the next steps towards implementation.

This report supports Council's Strategic Plan 2018-2022 Strategy #2 A Sustainable and Environmentally Conscious City:

> *Environmentally conscious decision-making that demonstrates leadership in implementing innovative, sustainable practices and supports the City's unique biodiversity and island ecology.*
>
> *2.2 Policies and practices support Richmond's sustainability goals.*
>
> *2.4 Increase opportunities that encourage daily access to nature and open spaces and that allow the community to make more sustainable choices.*

This report supports Council's Strategic Plan 2018-2022 Strategy #4 An Active and Thriving Richmond:

> *An active and thriving community characterized by diverse social and wellness programs, services and spaces that foster health and well-being for all.*
>
> *4.2 Ensure infrastructure meets changing community needs, current trends and best practices.*
>
> *4.3 Encourage wellness and connection to nature through a network of open spaces.*

This report supports Council's Strategic Plan 2018-2022 Strategy #8 An Engaged and Informed Community:

> *Ensure that the citizenry of Richmond is well-informed and engaged about City business and decision-making.*
>
> *8.2 Ensure citizens are well-informed with timely, accurate and easily accessible communication using a variety of methods and tools.*

Analysis

Background

The Minoru Lakes District (the "Lakes District") is a multi-faceted site located in Minoru Park that supports recreational, cultural and environmental functions and services. It encompasses the canal and park areas to the north totaling approximately sixteen-acres (see Attachment 1). Due to its central location in the city centre, the multiple amenities it contains, and its close proximity to key services and destinations such as Richmond Hospital, Richmond City Hall, Richmond Centre, several hotels and restaurants, the No 3 Road mixed-use commercial spine, and the Richmond Brighouse Canada Line Station, the Lakes District attracts visitors from across Richmond and beyond. The Lakes District supports multiple functions including informal recreation and community use, and hosts a variety of facilities, attractions and events such as Minoru Chapel, Pierrefonds Garden, Gateway Theatre, the future Bowling Green Community Activity Centre, and the Harvest Full Moon Celebration. The Lakes District also supports local wildlife such as great blue heron and owls, making it a key component of Richmond's Ecological Network identified in the Ecological Network Management Strategy.

The Lakes District was originally designed and constructed in the 1970's and envisioned as a pastoral strolling garden centered around reflecting ponds. While the tree and plant material have matured since then, the area remains largely unchanged in terms of character, and continues to be a key feature of the Lakes District and Minoru Park. Consistent with the goals outlined in the Ecological Network Management Strategy, the site offers opportunities for residents and visitors to connect with nature and seek respite from the surrounding city centre. Input received during the Minoru Park Vision Plan process confirmed that the community highly values the Minoru Lakes District and that there is a strong desire for Minoru Lakes to be retained as a central feature of the area, similar to how they are today.

Current Lakes Condition

Water analysis test results and several studies conducted as part of the Minoru Park Vision Plan and Minoru Lakes Renewal Detailed Design processes revealed that the lakes have declined. The lakes infrastructure including the pump, overflow, liner and banks have surpassed the end of their useful life and are no longer functioning as intended. The water quality has deteriorated from both an aesthetic and health and safety perspective. Allocation of resources towards maintaining the lakes, including staff time, operating budget, and use of potable water has increased.

The following table provides an overview of the key issues contributing to the decline of Minoru Lakes based on test results and studies conducted from 2016 to 2020 as part of the Minoru Park Vision Plan and Minoru Lakes Renewal Detailed Design processes.

Table 1: Overview of Key Minoru Lakes Issues

Key Issues	Overview
Infrastructure Failure	The existing pump, overflow and liner, including the lake edges have failed and are no longer functioning.
Poor Water Quality	The water in the lakes has E.coli and fecal coliform counts above regulatory limits as well as an unpleasant odour during hot summer weather. The poor water quality is attributed to: • Poor water circulation due to failed infrastructure; • A large amount of organic build-up due to ducks, geese and vegetation; and • Shallow water depths.
High Allocation of Resources	In 2019, around 23,500 cubic meters of potable water were used to top up Minoru Lakes and approximately $190,000 was spent on maintenance of the Minoru Lakes District. 5.2 million gallons or 84% of the potable water used was due to the liner leaking.

Minoru Park Vision Plan Process: Minoru Lakes

The Minoru Park Vision Plan process included two phases of public and stakeholder engagement. Gaining community input on values, issues and opportunities for the future renewal of Minoru Lakes was a key component of the engagement process.

The phase one engagement process took place from February to March 2017, and was focused on gathering input on Minoru Park's existing key features and opportunities for the park's future renewal. This phase included stakeholder workshops, two public open houses and online engagement via LetsTalkRichmond.

When asked how Minoru Lakes should be renewed in the future, the vast majority of participants (80%) favored keeping the lakes similar to how they are today. A smaller percentage of participants (16%) wanted to see the lakes reduced in size with alternate park uses added to the area, and a small portion of participants (4%) wanted to see the lakes removed entirely and replaced with other park uses.

A detailed overview of the phase one engagement process and results are included in the staff report titled, "Minoru Park Vision and Guiding Principles," dated April 4, 2017, from the Senior Manager, Parks.

The phase two engagement process took place from June to July 2017 and was focused on receiving feedback on vision plan options for future renewal of Minoru Park. This phase included stakeholder workshops, two public open houses and online engagement via LetsTalkRichmond.

When asked which vision plan option they preferred, the majority of participants supported the concept plan titled Nature in the City (66%) over the concept plan titled Urban Oasis (22%). The Nature in the City concept plan showed the lakes retained as a key feature of the Minoru Lakes District, similar to how they are today. Respondents preferred the more organic and natural character of this concept plan.

A detailed overview of the phase two engagement process and results are included in the staff report titled, "Minoru Park Vision Plan," dated February 14, 2018, from the General Manager, Community Services.

Feedback received during the Minoru Park Vision Plan process combined with test results, analysis and studies conducted during the Minoru Park Vision Plan and Minoru Lakes Renewal Detailed Design processes underscored the importance of renewing Minoru Lakes, while retaining them as a key feature of the Lakes District and Minoru Park.

Minoru Lakes Renewal Detailed Design Process

As part of the Consolidated 5 Year Financial Plan process (2018-2022 and 2019-2023), Council approved capital funding towards Minoru Lakes Renewal Detailed Design. A Request for Proposals for detailed design services was prepared and posted to BC Bid on March 4, 2019. In early June 2019, the contract was awarded to a team of qualified professionals, led by ISL Land Services Inc. The Minoru Lakes Renewal detailed design consultant team is comprised of Hydrological, Geotechnical, Civil, Structural, Electrical, and Mechanical engineers as well as Hydrogeologists, Qualified Environmental Professionals, Landscape Architects and ISA Certified Arborists.

The Minoru Lakes Renewal detailed design process to date has included site analysis, background research, exploratory testing, City staff interviews, best management practice studies, investigation of integrated rainwater management options, detailed design plans, costing, development of an environmental management plan, and a stormwater management plan. The site analysis, background research and testing included an arborist report, lake water testing, groundwater testing, geotechnical report, environmental inventory, and hydrotechnical report. Investigation of integrated rainwater management options included potential to use alternative water sources to service the lakes such as groundwater, rainwater runoff, water from the Minoru Centre for Active Living cistern, and stormwater from surrounding catchment areas.

Staff presented the detailed design plan to Advisory Committee on the Environment on Wednesday, March 10, 2021 at their regularly scheduled meeting. The Minoru Lakes Renewal

plan was generally well received and staff will address the feedback received as the project progresses. Staff are also scheduled to present the detailed design plan to the Richmond Garden City Conservation Society on Thursday, April 1, 2021 to inform them of the process, answer questions and receive input.

The detailed design process and plans are and will continue to be co-ordinated with the Bowling Green Community Activity Centre project.

Guiding Principles

Guiding principles, goals, objectives and outcomes based on community values and concerns as well as studies conducted during the Minoru Park Vision Plan process, were developed to direct the Minoru Lakes Renewal detailed design process.

The table below was included in the request for proposals for detailed design services and have served as touchstones throughout the detailed design process.

Table 2: Minoru Lakes Renewal Guiding Principles, Goals and Objectives

Guiding Principle	Minoru Lakes will be sustainable.
Goal	Increase the long-term sustainability of Minoru Lakes and reduce reliance on municipal water.
Objectives	• Explore options for integrated rainwater management consistent with the City's Integrated Rainwater Resource Management Strategy (IRRMS); • Explore the potential for groundwater to be pumped into Minoru Lakes; and • Employ more efficient infrastructure to reduce water loss and operational requirements.
Desired Outcomes/ Indicators of Success	Increased efficiency and longevity of Minoru Lakes infrastructure; Decreased reliance on municipal water; and Decreased maintenance requirements.
Guiding Principle	Minoru Lakes will support beneficial native wildlife species and provide greater opportunities to connect with nature.
Goal	Enhance opportunities for the community to connect with nature while also increasing habitat value for beneficial native wildlife species.
Objectives	• Retain and protect existing large, high value trees; • Replace removed trees; • Use native plant material that support native, beneficial wildlife species, such as songbirds, bats and aquatic insects; • Explore options for enhancing native habitat consistent with the City's Ecological Network Management Strategy (ENMS); and • Protect and enhance opportunities for people to connect with nature

	and seek respite from the surrounding urban environment.
Desired Outcomes/ Indicators of Success	An increase in spaces/opportunities for people to linger in the lakes area and engage with nature; Increased presence of beneficial, native wildlife species; and Decreased maintenance requirements of plant beds as a result of naturalization.
Guiding Principle	Minoru Lakes will be healthy and appealing
Goal	Improve water quality, making it safe for human contact (operational staff) and pleasant to be in close proximity to (public).
Objectives	• Reduce water temperatures; • Improve water circulation; • Decrease algae growth; • Reduce/eliminate sedimentation; • Explore methods to discourage waterfowl – education and management; and • Provide more opportunities for people to get close to the water's edge.
Desired Outcomes/ Indicators of Success	The water quality in Minoru Lakes is safe for human contact and welcomes people to get close to the water's edge.
Guiding Principle	Minoru Lakes will be Safe and Welcoming
Goal	Improve the overall sense of safety, comfort and arrival of the Minoru Lakes Area
Objectives	• Enhance the sense of arrival at the entry points to the Minoru Lakes area; • Improve pathway connections in and around the Minoru Lakes area; • Create a hierarchy of pathways that are reflective of the volume of users; • Better integrate Minoru Lakes with other park areas; • Establish view corridors between key locations to enhance visibility and comfort; and • Explore options for lighting that enhances safety while not detracting from the natural function and character of the Minoru Lakes area. For example, choosing light fixtures that minimize impacts on wildlife while still offering safety for the community.
Desired Outcomes/ Indicators of Success	The community generally feels more welcomed into the Minoru Lakes area and more comfortable while in it; and The pathways in the Minoru Lakes area are easy to navigate and reflective of the volume of users and desired connections to destinations in and around the park.

In addition to the goals outlined above, the Minoru Lakes Renewal project will help meet several Circular Economy objectives as well as goals outlined in the City's Integrated Rainwater Resource Management Strategy (IRRMS) and Ecological Network Management Strategy.

Existing versus Proposed Minoru Lakes Properties

Based on feedback received during the Minoru Park Vision Plan process, the Minoru Lakes Detailed Design Plan (Attachment 2) shows the lakes being retained as a key feature of the Lakes District in the same location, in a similar configuration, and with a similar, organic character as today. The general design approach, including integrated rainwater management, for the detailed design of the lakes is based on the guiding principles, background studies, and testing.

Existing Lakes:
The existing lakes have a surface area of approximately 10,200 square metres and a volume of around 4,500 cubic metres. The liner is bentonite clay and the depth is an average of 0.3 to 0.45 metres, but is as shallow as 0.15 metres in some areas. The edges are comprised mostly of riprap, which has been added over time to help protect and retain the lake embankments from sloughing. There is an overflow to the canal and pump located along the southwest edge of the lakes. The pump used to recirculate water to the upper pond and waterfall, which are located at the north end of the lakes.

Proposed Lakes:
The proposed lakes have a surface area of approximately 7,000 square metres and volume of 9,000 cubic metres. Depending on the extent of damage to the existing liner, which will be investigated prior to construction, the existing bentonite clay liner will either be repaired or replaced with geotextile that has a protective aggregate layer overtop. The proposed depth is 1.4 metres maximum. The deepened water depth will help improve water quality and lower evaporation through reduced solar heat gain and resulting lower water temperatures. The edges of the lakes will be finished in durable stone including boulders, stacked stone and stone-faced concrete retaining walls.

The reduced surface area of the lakes is due to slightly infilling and raising the edges of the lakes to preserve trees and increase the water depth. The existing southeast lobe that is currently filled with aggressive cattails will be converted to a flexible picnic lawn area.

Excavation to increase water depth is not a viable option due to the high water table underneath the lakes. Excavation would require significant dewatering, which has a high associated cost, and encroachment into the water table. Encroachment into the water table could result in seepage of groundwater through the liner over time and would trigger regulatory requirements under the Water Sustainability Act, which could add delays to phase one construction of the project.

Based on the results from rainwater management investigations, it was determined that use of water from the Minoru Centre for Active Living cistern, wastewater from Richmond Hospital, and groundwater are not viable alternative water sources for Minoru Lakes due to provision of inadequate water volumes, water quality and feasibility. Use of rainwater runoff from the catchment area east of Minoru Park offers the closest, cleanest and largest (by volume) alternative water source.

Rainwater runoff from the stormwater catchment area east of Minoru Park, which includes Minoru Boulevard and Richmond Centre, will be diverted to a detention pond located southeast of the lakes, via a box culvert being provided via the development of the site at 6333 Mah Bing. Water in the detention pond will be circulated to a renewed upper pond and waterfall with any excess water in the detention pond overflowing to the adjacent canal, which overflows to the City's storm system. Water will travel north to south through the lakes with excess water overflowing to the detention pond via a shallow open channel. See Attachment 3 for a diagram of the proposed lakes system.

Table 3: Minoru Lakes: Existing versus Proposed Properties

Properties	Existing Lakes	Proposed Lakes
Surface Area	10,200 square metres	7,000 square metres
Depth	0.3 to 0.45 metres average	1.4 metres average
Volume	4,500 cubic metres	9,000 cubic metres
Water Source	Potable water	Rainwater and stormwater
Liner Treatment	Bentonite Clay	Bentonite clay and/or geotextile with aggregate
Edge Treatment	Riprap	Boulders, stacked stone and stone-faced concrete retaining walls

Construction Phasing:
The detention pond and channel are included in phase two construction (see Attachment 4). In phase one, the existing pump will be retrofitted so it is in working condition and water will be circulated to the waterfall directly from the south end of the lakes. This phased approach will allow additional time for the Provincial permitting process required for the detention pond and canal modifications as part of the Water Sustainability Act, without holding up phase one construction. Various provincial and federal permits will apply to this project and the City will work with Qualified Environment Professionals to secure the applicable permits during construction.

Minoru Lakes District: Detailed Design Plan Features

Based on the guiding principles, community input, need for aging infrastructure replacement, and in response to the growing surrounding neighbourhoods, the detailed design plan includes enhanced entries, bridges, pathways, furnishing, signage, planting, irrigation and lighting. The lake islands will be renewed and become accessible for public enjoyment and maintenance. New seating areas that increase opportunities to view the lakes and be close to the water's edge will be provided. New flexible open spaces that offer informal recreation and gathering such as picnicking will be added.

Entry and Arrival Areas:
In response to existing and future planned connections to the Lakes District, a hierarchy of entry and arrival areas are included in the detailed design. The primary north entry aligns with Alderbridge Way improving connections to the growing Oval and Lansdowne Village areas north of Westminster Highway. The primary east entry aligns with Gollner Avenue, which

connects to Minoru Boulevard. The primary southeast entry aligns with the future greenway connection being provided through the 6333 Mah Bing Street development. The primary southwest entry aligns with the central north-south pathway running through Minoru Park. The primary arrival areas include plazas with special paving, entry markers with lighting, furnishings and signage. The secondary connections are located near the Gateway Theatre parking lot, the Bowling Green Road parking lot and the central bridge crossing over the canal.

Revitalized minor connections to the Richmond Hospital site will remain in place until the hospital redevelops, at which time, new connections will be co-ordinated. See Attachment 5 for a circulation diagram, which includes entry areas.

Bridge Crossings and Overlook Areas:
The detailed design includes new seating areas of varied scales along the lake edge, a renewed east-west bridge, and improved canal bridge crossings. Two primary seating areas are included along the north and east edges of the lakes. These areas offer expansive views over the lakes, a welcoming lake arrival experience, and seating. There are also two smaller seating areas located on the west edge of the lakes. The proposed central east-west bridge crossing will be shifted further north from its current location to better align with the proposed pathway along the proposed Bowling Green Community Activity Centre. This bridge will be wider and more robust than the existing one. The new canal bridge crossings will also be more robust and will be made more visible and inviting with the introduction of entry markers that include lighting.

Lake Islands:
The Minoru Lakes Renewal Detailed Design Plan includes one north and one south island roughly in the same location as they are today.

The north island will be removed and replaced. The existing north island is lower than the proposed lakes high water level and it contains Willow Trees that are in poor condition. The new island includes a bridge connection and viewing platform for both public and maintenance access. Habitat areas that are located outside of the viewing platform, which will only be accessible to maintenance staff, will include new trees and offer nesting and perching opportunities for local songbirds, great blue herons and raptors, such as owls. Biofiltration beds with native planting located on either side of this island will filter water and deter geese, who require long landing paths, from landing on the lakes.

The existing south island will be retained and enhanced. It is located above the proposed high water level and contains large Atlas Cedars that are in good condition. Island enhancements will include access for public and maintenance staff, a small perimetre pathway and new understory planting.

Flexible Open Space:
Two new flexible open spaces are included on the northeast and southeast sides of the lakes. These areas will offer opportunities to gather, relax, connect with nature, and view the lakes. Both areas will include picnic tables, informal seating, open lawn, and shade trees.

Pathways:
Based on public concerns regarding wayfinding and safety, the pathway network in the Lakes District will be simplified, and include enhanced connections to entry areas and key destinations such as Minoru Chapel. New paths will be paved, accessible and widened. There will be one set of stairs located near the upper pond above the waterfall, with an alternative accessible route provided nearby. Seating areas, serving as rest stops, will be included at regular intervals along all new pathways.

A hierarchy of pathways that reflect anticipated levels of use will be included. Primary pathways will be 3.6 metres width minimum, and secondary pathways will be 2.25 metres wide. All primary pathways and entries will be lit in response to community concerns regarding lack of a sense of safety in the Lakes District.

Bike paths are not proposed at this time in order to preserve the tranquil nature of the Lakes District and to minimize potential conflicts between mobility groups. Bike racks will be provided at key entries to accommodate and encourage cycling to the area.

Existing Facilities:
Minoru Chapel, Pierrefonds Garden, and Gateway Theatre are outside of the Minoru Lakes Renewal scope of work. These facilities and the immediate surrounding areas, including the Gateway Theatre parking will be retained in their current condition. The draft Minoru Park Vision Plan includes proposed changes to the Gateway Theatre parking, which will be reviewed and planned as part of that process.

Tree Impacts

The detailed design plan incorporates multiple measures to reduce tree impacts, including:

- Prioritizing retention of large trees, particularly coniferous species;
- Relocating instead of removing impacted trees as viable;
- Routing pathways around existing trees;
- Building up proposed pathways located close to existing trees over existing grade, instead of excavating; and
- Bringing the edges of the lakes slightly in and up.

Due to the large number and high density of existing trees, however, renewing and enhancing the Lakes District without impacting trees is a great challenge. A summary of tree impacts is provided on the following page.

Table 4: Summary of Tree Impacts

Existing Trees within the Project Scope	649
Phase 1 Construction Tree Removals	27 (*15 in good, 4 in fair, and 8 in poor condition) **note that 12/15 trees in good condition are small Acer circinatum (Vine Maple)*
Phase 1 Construction Tree Relocations	30 (16/30 will be relocated within the Minoru Lakes District with 14 being relocated elsewhere within Minoru Park and to other parks such as the Gardens Agricultural Park)
Phase 2 Construction Tree Removals	5 (4 in good and 1 in poor condition)
New Trees (both phases)	61
Total Trees within the Project Scope Post Construction	664

Next Steps

The next step in advancing the Minoru Lakes Renewal process is to finalize the contract documents, which will include detailed design drawings and specifications. A request for proposals for construction services will then be developed, issued to market, and the contract awarded to the successful bidder.

With a contractor onboard and the construction schedule established, staff will employ a communications plan. The plan will include, at a minimum, letters to surrounding residents and businesses, site signage, a news release, and project information on the City Parks webpage. Should COVID-19 protocols allow, in-person information sessions will be offered to stakeholders and the public. Updates will be provided throughout construction via the City's social media accounts and the City Parks webpage.

Phase 1 construction is estimated to take six months depending on weather and potential unanticipated site conditions. Work areas will be fully fenced for public safety reasons, and alternative pathway connections will be provided for the full duration of construction.

Table 5: Overview of Next Steps

Tentative Dates	Activity
May-July 2021	Finalize Minoru Lakes Renewal contract documents
August-November 2021	RFP and contract award process
February/March 2022	Construction start
Fall 2022	Tentative Phase One Construction completion

The preliminary construction schedule for the Bowling Green Community Activity Centre project is November 2021 to February 2023. Staff will co-ordinate the construction schedules, sequencing, laydown areas, site access and scope of work for the Minoru Lakes Renewal and Bowling Green Community Activity Centre projects.

Financial Impact

None. Funding for Minoru Lakes Renewal construction was previously approved by Council as part of the Consolidated 5 Year Financial Plans (2019-2023, 2020-2024, and 2021-2025).

Conclusion

Minoru Lakes and the surrounding Lakes District are highly valued by Richmond residents and visitors as a place to connect with nature and seek respite from the surrounding city centre. The condition of the lakes and surrounding park amenities have declined and there is a need to renew the lakes and district area so that they are more self-sustaining and better suited to the growing surrounding community. Renewal of the Lakes District will offer new and enhanced amenities for the public to enjoy, ensuring that the area meets the needs of the growing community into the future.

Miriam Plishka, BCSLA, CSLA
Park Planner
(604-233-3310)

Att. 1: Minoru Lakes District Context Plan
2: Minoru Lakes Renewal Detailed Design Plan
3: Minoru Lakes Renewal: Proposed Lakes System
4: Minoru Lakes Renewal: Phasing Diagram
5: Minoru Lakes Renewal: Circulation Diagram

Attachment 1: Minoru Lakes District Context Plan

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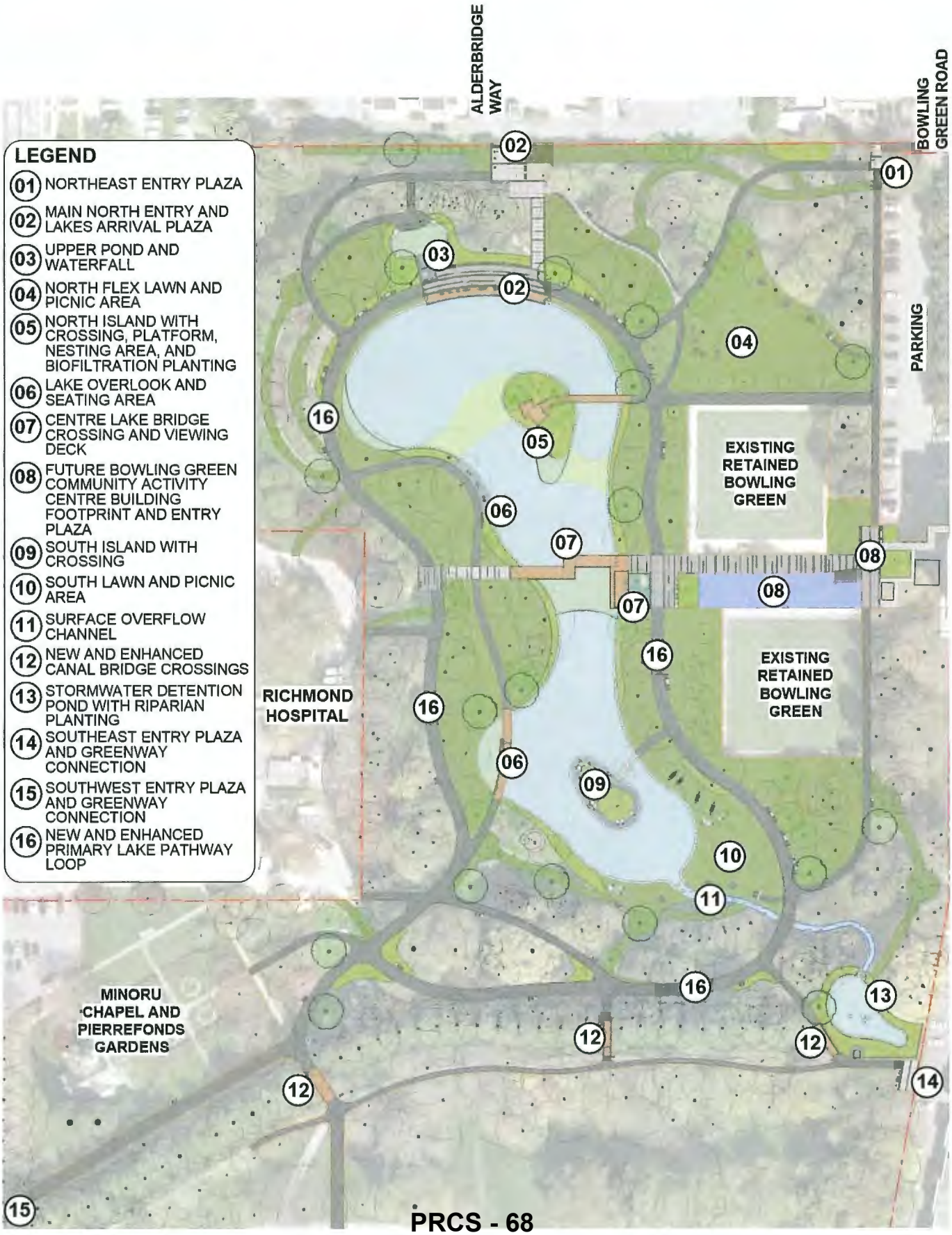
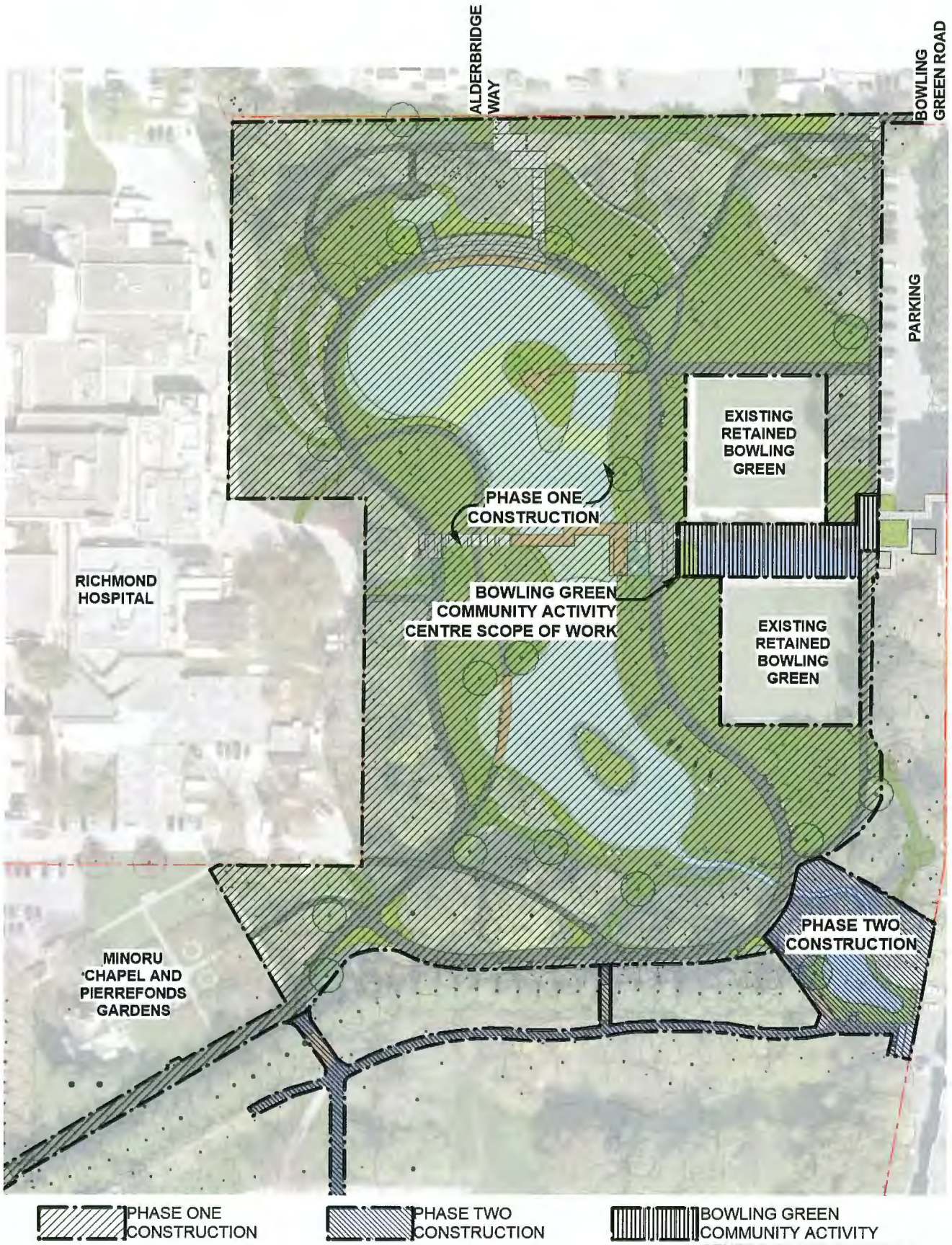
Attachment 2: Minoru Lakes Renewal Detailed Design Plan



Attachment 3: Minoru Lakes Renewal: Proposed Lakes System

Attachment 4: Minoru Lakes Renewal: Phasing Diagram



Attachment 5: Minoru Lakes Renewal: Circulation Diagram