



British Columbia Lottery Corporation  
Kamloops Head Office Needs Assessment

January 17, 2019

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## PURPOSE

The purpose of this document is to summarize the findings of a needs assessment of British Columbia Lottery Corporation's head office, located in Kamloops.

The scope of the report includes an assessment of staffing demand and facility condition, including identification of hazardous materials in the facility, as well as programmatic reviews of BCLC's warehouse and data centre space needs.

This report has been prepared by Partnerships British Columbia Inc. (Partnerships BC) in collaboration with the British Columbia Lottery Corporation (BCLC), in particular Human Resources, Business Technology, Gaming Facilities and Corporate Services and Facilities.



## EXECUTIVE SUMMARY

BCLC has been managing gambling in a socially responsible manner for the benefit of British Columbians for more than 30 years. Overseen by a government appointed board reporting to the Attorney General of British Columbia, BCLC's role is to manage and operate the province's gambling industry while working collaboratively with their partners in the Gaming Policy and Enforcement Branch (GPEB) to maintain the overall integrity of gambling in the province. Through their monthly net income distribution, BCLC has consistently delivered more than \$1.3 billion annually in net income to the Province since 2016, and \$1.4 billion in 2018.

This document contains the findings of a needs assessment of BCLC's head office, located in Kamloops. The assessment focused on staffing demand, facility condition, identification of hazardous materials and program requirements including the warehousing and data centre needs of BCLC.

Meetings were held with BCLC representatives to develop an understanding of BCLC's corporate staffing strategy, and to identify future areas of growth based on business need. At this time, staffing projections could not be provided to justify a need for additional office space in Kamloops.

The Kamloops office building and parkade are in very good condition, as evidenced by their minimal deferred facility maintenance and life cycle work resulting in an impressively low FCI of 0.17. While there are some utilization inefficiencies with the testing labs and Winner's Lounge, overall, the facility has been very well cared for and has useful life remaining. The hazardous materials assessment presently underway confirmed that, while some hazardous materials remain in the building, there is no risk to building occupants as long as they remain undisturbed.

The Multi-Criteria Assessment (MCA) of service delivery options for the warehousing function in Kamloops indicates the development of a new warehouse on the BCLC site would best meet BCLC's objectives, and allow for repurposing of the existing warehouse space to create additional office or meeting space for Kamloops staff. Renovation of the current warehouse space and modernization of the warehouse management system could also address a number of the warehousing business objectives with a lesser financial impact on BCLC, while potentially freeing up internal spaces through consolidation of storage needs and strategically locating inventory for efficient order picking in a modern racking system. Further quantitative analysis should be undertaken to assess the costs and benefits of building a new warehouse on site relative to renovating the existing space to optimize its use.

The MCA assessment of the data centre confirms that retaining the existing data centre configuration in its current location best meets BCLC's business objectives today and into the future, however, should a new facility be developed, a strategy has been established that would move the primary data centre to Q9 with any future BCLC facility accommodating the secondary data centre and disaster recovery requirements.



As a result of these findings, this needs assessment recommends BCLC continue in its existing Kamloops head office, implementing the current facility maintenance and life cycle replacement strategies.



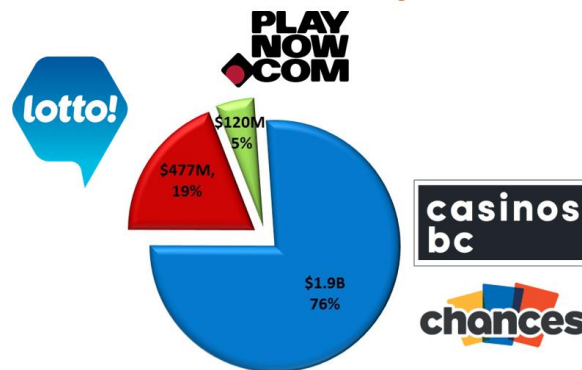
## 1 STRATEGIC CONTEXT

### 1.1 BRITISH COLUMBIA LOTTERY CORPORATION

BCLC is a Crown corporation formed in 1985 to allow the Province to balance the need for revenue generation through gaming with a commitment to social responsibility and integrity.<sup>1</sup> BCLC's mission is to conduct and manage gambling in a socially responsible manner for the benefit of British Columbians, and under the Gaming Control Act (2002) it has a mandate to "conduct, manage, and operate commercial gaming on behalf of the Government of BC<sup>2</sup>". The organization generates revenue through lottery, casino and community gaming, and e-gaming business units and since 2016 it has consistently delivered more than \$1.3 billion in net income to the Province (\$1.4 billion in 2018).

A breakdown of BCLC's revenues is provided in Figure 1 below.

**Figure 1: Revenue Breakdown by Business Unit (FY18 Actuals)**



Note: Revenue presented is net of prizes (adopting IFRS 15, *Revenue from Contracts with Customers*)

To meet its mandate to manage gaming in a socially responsible manner, BCLC invests in: training for employees on the gambling floor, support resources like GameSense Information Centres, and research on responsible gambling and program effectiveness. Financial investments in support of responsible gaming amounted to \$3.2 million in fiscal 2017/18 and is projected at \$7.8 million for fiscal 2018/19.

BCLC is overseen by a government appointed board reporting to the Attorney General of British Columbia.

<sup>1</sup> BC Government. (2018, November 9). *Attorney General*. Retrieved from British Columbia: <https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/justice-attorney-general>

<sup>2</sup> BCLC. (2018, November 8). *Our Role*. Retrieved from BCLC: <https://corporate.bclc.com/what-we-do/casinos/our-role.html>

## 1.2 MINISTRY OF ATTORNEY GENERAL

The Attorney General is the minister responsible for BCLC. The Minister's February 2018 Mandate Letter to BCLC directed the Crown corporation to execute its *Plan for Public Health and Gambling* (February 2015) commitments, implement government's response to recommendations on the Peter German review of money laundering in BC casinos report, and, proactively share information with the Gaming Policy Enforcement Branch.

BCLC distributes its net income monthly into the consolidated revenue fund of the Government of British Columbia.



## 2 BACKGROUND

### 2.1 BC'S GAMING INDUSTRY

In 1969, Canada's criminal code was amended to authorize provincial and federal governments to operate lotteries. BCLC maintains a monopoly over the gaming industry in British Columbia which continues to be highly regulated. Provincial gaming is regulated by the GPEB. BCLC works collaboratively to share information with the GPEB to maintain the overall integrity of gambling in the province. Financial Transactions and Reports Analysis Centre of Canada (FINTRAC) receives and monitors gaming transaction reports from BCLC in order to facilitate the detection, prevention, and deterrence of money laundering in BC gaming facilities.

When BCLC's responsibilities were increased to include all casino gaming in BC in 1998, few modern casinos existed and customer demand was under-supplied. As a result, every new casino resulted in increased revenues for BCLC. The industry has since transitioned to become demand-driven, where customer preference must be understood for new gambling options to result in increased revenues. BCLC has recently approved a new casino in Delta BC, though there are limited opportunities in the province for the expansion of further casino gaming due to market maturity and saturation. Further, because gaming transactions tend to be anonymous marketers struggle to gather the data necessary to directly target offerings.

While BCLC's customer base has been relatively flat over the last three years, the industry has potential for growth through technology shifts that may allow easier access to customers or greater appeal to younger demographics. For example, BCLC has begun leveraging new channels for customers to make more convenient lottery purchases at grocery store cashiers. This addresses a consumer trend by saving customers time through the combined line up and purchase process<sup>3</sup>. Previously customers had to wait in line for groceries and then do so again to purchase a lottery ticket. Younger customers are also being attracted through the PlayNow.com e-gaming platform, though there is increased competition in this space. Online gaming sites like BoDog and PokerStars, while technically illegal in BC given BCLC's monopoly, remain accessible to BC residents via the internet.

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<sup>3</sup> Korstrom, G. (2015, September 15). *Jim Lightbody raises the stakes*. Retrieved from Business in Vancouver: <https://biv.com/article/2015/09/profile-jim-lightbody-ceo-british-columbia-lottery>

## 2.2 BCLC'S STAFFING MODEL

BCLC staffs its organization based on the functional requirements of the business. Casino gaming and lottery gaming are mature markets and the largest contributors to BCLC's bottom line, requiring adequate staffing to maintain service levels. E-gaming may represent the best opportunity for future growth and is staffed accordingly.

BCLC staff can be divided into three groups based on geographical location. Staff are located in the Vancouver or Kamloops offices, or in the field stationed in specific gaming facilities or travelling between gaming centres in a region. Functional departments and staffing count at each location are identified in Table 1 below.

**Table 1: Facility Location and Staffing<sup>4</sup>**

Location	Business Functions	Current Staff <sup>5</sup>	Growth since 2014
Kamloops	<u>Primary Functions:</u> Finance, Corporate Audit, Business Technology, Customer Support, Data Centre, Warehousing (Casino Support) <u>Split Functions:</u> Executive, Human Resources, Procurement, Communications, Business Centre, Compliance Investigations, Player Services	443	3%
Vancouver	<u>Primary Functions:</u> Warehousing (Lottery Support), Marketing, Sales, Compliance Security, E-Gaming <u>Split Functions:</u> Executive, Human Resources, Procurement, Communications, Business Centre, Compliance Investigations, Player Services	338	4%
Field Staff	<u>Primary Functions:</u> GameSense Advisors, Casino Technicians and Lottery staff	191	16%
Total Staff		972	6%

<sup>4</sup> As of September 2018.

<sup>5</sup> Excludes contractor workforce.

### 3 NEEDS ASSESSMENT

#### 3.1 DEMAND

In the course of undertaking this needs assessment, meetings were held with numerous department representatives, including the Directors of Talent Acquisition and Talent Management from human resources. The purpose of these meetings was to develop an understanding of BCLC's corporate staffing strategy, and to identify future areas of growth based on business need. Meeting discussion topics included historic and current staff counts, the use of contracted versus full time employment positions, recruiting practices, and the previous five years of staff growth (refer to Table 1: Facility Location and Staffing). Discussions of upcoming major projects were included in consideration of their potential impact on staffing needs.

The meetings identified some areas of potential employment growth including the Customer Support Operations group, which supports BCLC products and prize claim requests, as well as head office departments such as finance and corporate services. While these areas represent potential for future employment growth, no significant hiring is planned over the short-term. Furthermore, new positions created in these groups require the completion of an internal business case to justify additional resource costs.

There is currently no data available to support an increase in Kamloops office space due to unmet demand for employees. If and when future employee growth is required, it is likely that the growth will need to be accommodated in the Kamloops office location as the Vancouver office is operating at or near capacity.

#### 3.2 PROGRAM NEEDS

Historically the Kamloops head office has generally met BCLC business needs, however, specific functionality concerns have been identified and key components of the facility programme were evaluated.

Key components of the Kamloops office programme include a warehouse and data centre. As they are each core to BCLC's business, these program areas were assessed individually to identify alternate service delivery options and establish relevant assessment criteria to then evaluate each option and determine how BCLC's business needs could best be met.

### 3.2.1 Warehousing

BCLC has warehouse functions at both its Vancouver and Kamloops offices. The Kamloops warehouse provides the following key functions:

- Shipping and receiving services for the head office site;
- Storage and handling of all casino operations materials including gaming machines, machine large parts, display screens, small spare parts and components, casino facilities work equipment and materials, as well as promotional displays, brochures, and other printed materials;
- Quality assurance and testing of oversized gaming machines
- Storage in pallet racking for the business technology and facilities groups;
- Storage and handling of office paper and printed forms for the BCLC Business Centre;
- Assembly, packing and palletizing (Kitting operation) for BCLC-owned component kits for casino gaming machine vendors to build into BCLC gaming machines at point of manufacturing; and,
- Secure storage of regulated items, including gaming machine backup software, spare machine keys, and lock keyway cores.

Currently, 53 foot trailer access is necessary to receive long haul deliveries from Nevada and can be accommodated; however, this may be prohibited when the City of Kamloops completes its beautification project along Lansdowne Street (the project is presently in the planning phase).

The Vancouver facility is responsible for performing quality assurance on slot machine deliveries destined for renewal of already operating casinos or community gaming facilities. Slot machines for new casinos are typically delivered and commissioned directly at the new facilities. The Vancouver warehouse can also accommodate 53 foot trailer deliveries, and handles distribution of lottery, Scratch & Win, and GameSense program materials, as well as general promotional material.

### 3.2.2 Data Centre

BCLC's corporate data centre is a critical component of the business, essential to all three revenue generating business lines: casino and community gaming, lottery, and e-gaming. BCLC's technology hardware architecture differs based on the line of business. Generally, BCLC's primary data centre is in the Kamloops office and its disaster recovery facility is located at Q9. Q9 is a co-location data centre where all BC Provincial Government Data Centre Services are located. BCLC has a co-location agreement with the Q9 facility. Co-location is a data center facility in which a business can rent or lease space for servers and other computing hardware. Typically, the landlord provides the building, cooling, power, bandwidth and physical security while the tenant provides servers and storage systems.<sup>6</sup> An

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<sup>6</sup> Whatis.com. (2018, December 11). *co-location*. Retrieved from WhatIs.com:  
<https://whatis.techtarget.com/search/query?q=co-location>

alternative to co-location is managed services where a business rents space, servers, and other computing hardware capability as well as ongoing maintenance and management to a specified service level.

For casino and community gaming, BCLC's data centre is linked via the Kamloops Community Network, a municipal fibre network, to the Kamloops Q9 facility. This allows both data centres to act as one and ensures full redundancy between the two locations. Every transaction in the Province of BC originating in a casino or community gaming facility is registered via the data centre to the Bally gaming management system. This includes all slot machine transactions as well as gaming table activities. This functionality is critical for BCLC to track revenues and provide monthly remittances to the Province.

Lottery data is fed to the primary data centre and transaction information is saved to the Q9 environment. The lottery technology architecture leverages the Q9 data centre only as a disaster recovery function and not as a fully redundant operating environment.

The data centre also provides hosting services to BCLC's PlayNow.com online presence. No disaster recovery is in place for the PlayNow.com website.

BCLC's data centre has traditionally supported non-revenue generating functions like financial and customer service systems. BCLC has a strategy of moving its data needs to cloud or managed services over time and many non-revenue generating functions have already completed this transition. The transition to cloud combined with more efficient systems and equipment, has allowed the data centre to reduce its footprint in the Kamloops head office. This has, in turn, reduced the electricity consumption needed to cool the space and thereby extended the life span of cooling equipment.

### 3.2.3 Functionality

Specific functional concerns were identified during the site visit and include the layout of testing and lab space, as well as the layout and appearance of the Winner's Lounge. Testing and lab space supports BCLC's Casino and Community Gaming division by providing space for functionality, quality, and development checks on new and malfunctioning gaming machines. The space is spread across multiple disconnected rooms with layouts that are not conducive to supporting coordination and collaboration of employees performing testing.

The Winner's Lounge is fundamental to the BCLC player experience since winners of lottery prizes greater than \$10,000 can only redeem their prizes at either the Vancouver or Kamloops offices. The Vancouver Winner's Lounge makes players feel rewarded through its aesthetics. This supports BCLC business by meeting customer expectations of how winning players should be treated. The lounge also offers adequate space for winner photos to aide BCLC marketing. The Kamloops facility consists of two small rooms that appear dated and offer limited perks for winners. It is unlikely they would meet customer expectations, and therefore do not support BCLC business objectives.

### 3.3 FACILITY CONDITION

Since 2010, three facility condition assessments have been undertaken for BCLC's Kamloops office. These condition reports have been undertaken by: Musson Cattell Mackey Partnership (2010) and Omicron (2016, 2018/19). The 2010 report focused on identifying issues in the existing building and provided an analysis of costs for renovation of the existing office versus replacement with a new purpose-built building. The 2016 Omicron report was undertaken to provide information on the state of the building for prospective purchasers, as the model for a new building being considered at that time was a lease-to-own option. The 2018/19 Omicron report currently being drafted has taken an asset management approach to assessing the facility, and includes a Facility-Condition Index (FCI).

#### 3.3.1 Facility Condition Assessment

Omicron's 2018/19 report is based on a site visit to the BCLC Kamloops head office in November 2018. The report was undertaken in conformance with ASTM E2018-15, a standard for property condition assessments. The report covered five key areas: architectural, structural, mechanical, electrical, as well as elevators to develop a Facility Condition Index (FCI). The FCI is a ratio of repair needs that indicates the current condition of a building asset by measuring the economic life, functionality and safety conditions. The ratio typically includes deferred maintenance as well as replacement costs. The higher the FCI ratio, the greater the need for asset renewal or replacement (land value is not considered when evaluating FCIs).

$$\text{FCI} = \frac{\text{Total Cost of Building Repair/Upgrade/Renewal Needs (\$)}}{\text{Current Replacement Value of Building (\$)}}$$

FCI ratios are interpreted as follows:

Rating	Description
FCI less than .05	Excellent
FCI between .10 and .15	Very good
FCI between .16 and .35	Good
FCI between .36 and .60	Fair
FCI between .60 and .69	Poor
FCI 0.70 or greater	Beyond economical repair

Omicron's preliminary findings indicate the Facility Condition Index of the BCLC Kamloops head office is 0.17. (At the time of writing this Needs Assessment, their report is yet to be finalized.)

The Kamloops head office requires limited investment within the next year, and while some items such as the parkade wall require immediate attention, Omicron reports that large expenditures are not immediately required. In the mid-term, one to five year timeframe, the building's two original gas-fired boilers and their control systems are scheduled to be replaced and upgraded. In the longer term, five to ten years, additional work will be required to maintain the Kamloops head office including replacement of the roof, parkade membrane, glazing system frames, and wall cladding.

The combined replacement value for the Kamloops head office and parkade is estimated at \$60.9 million<sup>7</sup> and the total cost of building repair or renewal is estimated at \$10.45 million, with one third directed at the parkade. Further detail can be found in Appendix A: Facility Condition Index.

As indicated in the table above, an FCI of 0.16 to 0.35 is considered "good" and suggests the current facility has useful life remaining. The result is also a testament to the quality of work done in the planning and execution of regular maintenance by BCLC facilities staff.

### 3.4 HAZARDOUS MATERIALS SURVEY

In 2012, BCLC contracted ACM Environmental Corporation to complete an asbestos materials survey and risk assessment for the Kamloops office. This report considered previous sampling information and the building asbestos management program, and concluded that while asbestos containing materials exist in some of the building construction materials they are not hazardous to building occupants unless activities occur to disturb them. As a result of the numerous renovations over the years, the majority of the asbestos abatement required throughout the facility is complete.

A follow up hazardous materials survey commenced in 2018 and is currently underway with the purpose of identifying materials that would require specific controls in the event that the existing facility was to be demolished. The investigation has identified the presence of lead paint in multiple areas throughout the building, though successive coats of additional paint now encapsulate the hazardous substance. If the lead paint remains undisturbed no action is required. The review has not identified any additional sources of asbestos containing materials from those listed in the 2012 report. There is no imminent risk to building occupants from either of these materials.

Final results of the follow up survey and the completed report are expected in mid-December 2018.

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<sup>7</sup> Replacement value provided by Omicron estimating group as part of FCI development.

## 4 SERVICE DELIVERY ASSESSMENTS

This section reviews the service delivery options considered to address BCLC's warehousing and data centre needs, and presents the preferred delivery option for each program area, evaluated on the basis of multiple criteria analysis (MCA) approach.

The MCA process provides a framework for evaluating both quantitative and qualitative factors, and presents the advantages and disadvantages of each option in a form that can be easily assimilated by decision-makers.

The assessment framework of the qualitative criteria requires judgment to be made on the magnitude of the relative benefits or impacts of each option for a particular criterion. In order to discuss criteria and judge their values on a consistent basis, the assessment framework shown in Table 2 was used to assess how well each option achieves the stated objectives.

**Table 2: MCA Assessment Framework**

X	✓	✓✓	✓✓✓
Ineffective in satisfying the BCLC's business objectives	Partially effective in satisfying the BCLC's business objectives	Substantially satisfies the BCLC's business objectives.	Fully effective in satisfying the BCLC's business objectives.

### 4.1 WAREHOUSE ASSESSMENT

#### 4.1.1 Objectives

The following business objectives and assessment criteria were established to evaluate BCLC's warehousing needs, as outlined in Table 3: Warehouse Objectives and Assessment Criteria.

**Table 3: Warehouse Objectives and Assessment Criteria**

Business Objectives	Assessment Criteria
1. Provides adequate space for warehouse operations	<ul style="list-style-type: none"> <li>Gross area requirement is 1670 m<sup>2</sup>, including 325 m<sup>2</sup> for future growth and space consolidation <ul style="list-style-type: none"> <li>Minimum 5.5 m / 18 foot height requirement</li> </ul> </li> </ul>
2. Appropriately located to realize business efficiencies	<ul style="list-style-type: none"> <li>Ease of staff access to maintain an engaged workforce (BCLC Service Plan Goal 2)</li> <li>Minimize change impacts on staff</li> <li>Optimize warehouse workflows</li> </ul>



3. Cost effective solution	<ul style="list-style-type: none"> <li>▪ Minimize capital investment (BCLC Service Plan Performance Measure 10)</li> <li>▪ Minimize impacts on operating costs (BCLC Service Plan Performance Measure 10)</li> </ul>
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#### 4.1.2 Service Delivery Options

Five service delivery options were considered for warehousing:

1. **Status Quo** – Business as usual with no immediate capital investment
2. **Renovation of existing warehouse** – renovations to existing space to address building deficiencies and optimize space utilization (shell does not change)
3. **New warehouse on current site** – construct a new warehouse facility on BCLC owned property adjacent to Head Office
4. **Alternative warehouse off site, in Kamloops** – assuming sufficient space can be leased, this would provide 1670 m<sup>2</sup> of space at an alternate location in Kamloops, allowing for 1500 m<sup>2</sup> of space at head office for repurposing
5. **Alternative warehouse off site, in Lower Mainland** – assuming sufficient space can be leased, this would provide 1670 m<sup>2</sup> of space in the Lower Mainland, allowing for 1500 m<sup>2</sup> of space at head office for repurposing

Options 4 and 5 would entail relocating warehouse functions offsite, to a leased facility yet to be identified.

#### 4.1.3 Service Delivery MCA

The results of the MCA assessment of the five service delivery options are summarized in Table 4. For the detailed qualitative assessment of each of the options, see Appendix B: Warehouse Multiple Criteria Analysis.

**Table 4: Warehouse MCA Results**

Objectives and Considerations	Option 1: Status Quo	Option 2: Renovation of Existing Warehouse Facility	Option 3: New Warehouse on Current Site	Option 4: Alternative Warehouse off site - Kamloops Area	Option 5: Alternative Warehouse off site - Lower Mainland
<b>1. Provides adequate space for warehouse operations</b>					
Gross area requirement is 1670 m <sup>2</sup> , including 325 m <sup>2</sup> for future growth	✓	✓✓	✓✓	✓✓✓	✓✓✓
<b>2. Appropriately located to realize business efficiencies</b>					
Ease of staff access to maintain an engaged workforce (BCLC Service Plan Goal 2)	✓✓	✓✓✓	✓✓✓	✓	✓
Minimizing change impacts on BCLC staff	✓✓✓	✓✓	✓✓	✓	X
Optimized warehouse workflows	X	✓	✓✓✓	✓✓✓	✓✓✓
<b>3. Cost effective solution</b>					
Minimize capital investment (BCLC Service Plan Performance Measure 10)	✓✓✓	✓✓	✓	✓✓	✓✓
Minimize impacts on operating costs (BCLC Service Plan Performance Measure 10)	✓✓	✓✓	✓✓	✓	✓
<b>Ranking</b>	<b>3rd</b>	<b>2nd</b>	<b>1st</b>	<b>3rd</b>	<b>4th</b>

The results of the MCA support development of Option 3, a new warehouse on the current site, as the preferred service delivery option for warehouse services, with Option 2, renovation of the existing warehouse, as the next best alternative. Options 1, 4 and 5 each fail to satisfy at least one of the assessment criteria. Further quantitative analysis would be required to fully assess the costs and benefits of building a new warehouse on site relative to renovating the existing space to optimize its use.

## 4.2 DATA CENTRE ASSESSMENT

### 4.2.1 Objectives

The following business objectives and assessment criteria were established to evaluate BCLC's data centre needs, as outlined in Table 5: Data Centre Objectives and Assessment Criteria.

**Table 5: Data Centre Objectives and Assessment Criteria**

Business Objectives	Assessment Criteria
1. Future Flexibility	<ul style="list-style-type: none"> <li>Scalability with the ability to scale down and repurpose space over time as BCLC data management strategies evolve</li> </ul>
2. Meets business requirements for resiliency	<ul style="list-style-type: none"> <li>Physical security of the data centre meets BCLC's requirements</li> <li>Data centre critical systems and network resiliency meets requirements of 99.99% of availability of critical systems for production computing</li> <li>Operational continuity while transitioning data centre locations and management of legacy technology operations risk</li> </ul>
3. Cost effective solution	<ul style="list-style-type: none"> <li>Minimize capital investment (BCLC Service Plan Performance Measure 10)</li> <li>Reduce operating costs (BCLC Service Plan Performance Measure 10)</li> </ul>

### 4.2.2 Service Delivery Options

Four service delivery options were considered for the data centre:

- Status quo** – Operate current data centre with no immediate capital investment or need to upgrade to address building deficiencies, significant evergreen requirements, or optimize performance. The secondary data centre is at Q9 through co-location agreement.
- New primary data centre on current site, Q9 continues as secondary** – A new primary data centre on BCLC owned property adjacent to Head Office is constructed, the secondary data centre is Q9 through co-location agreement.
- Q9 as primary data centre, new data centre on current site as secondary** – The primary data center is Q9 through co-location agreement and a new secondary data centre is constructed to meet requirements on BCLC owned property adjacent to Head Office.
- Alternative co-location provider as primary data centre, new data centre on current site as secondary** – The primary data center is an alternative co-location provider and a new secondary data centre is constructed to meet requirements on BCLC owned property adjacent to Head Office.

Each of the options entails a primary and secondary data centre to ensure redundancy requirements are met.

#### 4.2.3 Service Delivery MCA

The results of the MCA assessment of the four service delivery options for the data centre are summarized in Table 6: Data Centre Multiple Criteria Analysis Results. For the detailed qualitative assessment of each of the options, see Appendix C: Data Centre Multiple Criteria Analysis.

**Table 6: Data Centre Multiple Criteria Analysis Results**

Objective and Considerations	Option 1: Status Quo	Option 2: New primary data centre on site, Q9 as secondary	Option 3: Q9 as primary data centre, new data centre on site as secondary	Option 4: Alternative co-location provider as primary data centre, new data centre on site as secondary
<b>1. Future Flexibility</b>				
Scalability with the ability to scale down and repurpose space over time as BCLC data management strategies evolve	✓✓	✓✓	✓✓	X
<b>2. Meets Business Requirements for Resiliency</b>				
Physical security of the data centre meets BCLC's requirements	✓✓✓	✓✓✓	✓✓✓	X
Data centre critical systems and network resiliency meets requirements of: 99.99% of availability of critical systems for production computing	✓✓	✓✓	✓✓✓	X
Operational continuity while transitioning data centre locations and management of legacy technology operations risk	✓✓✓	✓	✓	✓
<b>3. Cost Effective Solution</b>				

Objective and Considerations	Option 1: Status Quo	Option 2: New primary data centre on site, Q9 as secondary	Option 3: Q9 as primary data centre, new data centre on site as secondary	Option 4: Alternative co-location provider as primary data centre, new data centre on site as secondary
Minimize capital investment (BCLC Service Plan Performance Measure 10)	✓✓✓	✓	✓✓	X
Reduce operating costs (BCLC Service Plan Performance Measure 10)	✓✓✓	✓✓	✓	✓
<b>Ranking</b>	<b>1<sup>st</sup></b>	<b>3<sup>rd</sup></b>	<b>2<sup>nd</sup></b>	<b>4<sup>th</sup></b>

The results of the MCA support development of Option 1, Status Quo, as the preferred service delivery option for data centre services. Status quo either “substantially satisfies” or “is fully effective” in satisfying all assessment criteria of the data centre business objectives. Furthermore, it comes at no capital or operating cost impact to BCLC’s approved budget.

## 5 SUMMARY OF FINDINGS

Through the research and analysis undertaken for this needs assessment, a number of findings were identified specific to BCLC's demand for staff, facility conditions including presence of hazardous materials, and key program components of warehousing and data centre.

At this time, staffing projections have not been developed to an extent that would justify the need for additional office space.

The Kamloops office building and parkade are in good condition, as evidenced by their combined FCI of 0.17. While there are some utilization inefficiencies with the testing labs and Winner's Lounge, overall, the facility has been very well cared for and has useful life remaining. The hazardous materials assessment presently underway confirmed that, while some hazardous materials remain in the building, there is no risk to building occupants as long as they remain undisturbed.

The MCA assessment of service delivery options for the warehousing function in Kamloops indicates the construction of a new warehouse on the BCLC site would best meet BCLC's objectives, and allow for repurposing of the existing warehouse space to create additional office or meeting space for Kamloops staff. Renovation of the current warehouse space could also address a number of the warehousing business objectives with a lesser financial impact on BCLC, and may free up some internal spaces through consolidation of storage needs for all departments in the warehouse. Further quantitative analysis should be undertaken to assess the costs and benefits of building a new warehouse on site relative to the renovating the existing space to optimize its use.

The MCA assessment of the data centre confirms that retaining the existing data centre configuration in its current location best meets BCLC's business objectives today and into the future.

As a result of these findings, this needs assessment recommends BCLC continue in its existing Kamloops head office, implementing the current facility maintenance and life cycle replacement strategies.

## APPENDIX A: FACILITY CONDITION INDEX

Campus: BCLC Kamloops Head Office, 74 Seymour Street

Source: Omicron 2018 Facility Condition Assessment Report

Asset	Head Office Building	Parkade	Combined Value
Age	54	54	-
Year Constructed	1964	1964	-
Use	Office	Parkade	-
Replacement Value	\$ 43,687,500	\$ 17,293,500	<b>\$ 60,981,000<sup>8</sup></b>
FCI Cost	\$ 6,888,450	\$ 3,562,500	<b>\$ 10,450,950</b>
<b>FCI</b>	<b>0.16</b>	<b>0.21</b>	<b>0.17</b>

<sup>8</sup> Replacement value provided by Omicron estimating group.

APPENDIX B: WAREHOUSE MULTIPLE CRITERIA ANALYSIS

Warehouse Options:

- 1. **Status Quo** – Business as usual with no immediate capital investment
- 2. **Renovation of existing warehouse** – renovations to existing space to address building deficiencies and optimize space utilization (shell does not change)
- 3. **New warehouse on current site** – construct a new warehouse facility on BCLC owned property adjacent to Head Office
- 4. **Alternative warehouse off site, in Kamloops** – assuming sufficient space can be leased, this would provide 1670 m<sup>2</sup> of space at an alternate location in Kamloops, allowing for 1500 m<sup>2</sup> of space at head office for repurposing
- 5. **Alternative warehouse off site, in Lower Mainland** – assuming sufficient space can be leased, this would provide 1670 m<sup>2</sup> of space in the Lower Mainland, allowing for 1500 m<sup>2</sup> of space at head office for repurposing

Assessment Framework

X	✓	✓✓	✓✓✓
Ineffective in satisfying the BCLC Project Objectives	Partially effective in satisfying the BCLC Project Objectives	Substantially satisfies the BCLC Project Objectives.	Fully effective in satisfying the BCLC Project Objectives.

Objective and Considerations	Option 1: Status Quo	Option 2: Renovation of Existing Warehouse Facility	Option 3: New Warehouse on Current Site	Option 4: Alternative Warehouse off site - Kamloops Area	Option 5: Alternative Warehouse off site - Lower Mainland
1. Provides adequate space for warehouse operations					
<ul style="list-style-type: none"><li>Gross area requirement is 1670 m<sup>2</sup>, including 325 m<sup>2</sup> for future growth</li></ul>	<ul style="list-style-type: none"><li>Limited warehouse area (1350m<sup>2</sup>) prevents consolidation of storage areas throughout the building to a central location<ul style="list-style-type: none"><li>Ceiling height is limited</li><li>Existing racking system does not optimize use of space</li></ul></li><li>Roadway limitations (post-City of Kamloops' roadway beautification project) may restrict 53 ft. trailer access via Lansdowne Street requiring a cross-docking location for some deliveries</li></ul>	<ul style="list-style-type: none"><li>Reconfiguration of space for a new racking system (with mezzanine) will improve efficiency and increase warehouse storage volume</li><li>Limited warehouse area (1350m<sup>2</sup>) prevents consolidation of storage areas throughout the building to a central location<ul style="list-style-type: none"><li>Ceiling height is limited</li></ul></li><li>Roadway limitations (post-City of Kamloops' roadway beautification project) may restrict 53 ft. trailer access via Lansdowne Street requiring a cross-docking location for some deliveries</li><li>Limited opportunities to expand warehouse footprint</li></ul>	<ul style="list-style-type: none"><li>Meets current and future space requirements (1670m<sup>2</sup> floor area and 5.5m clear height) through custom construction</li><li>Enables consolidation of storage areas throughout the existing building</li><li>Would meet business needs through specific design</li><li>Site limitations restrict 53 ft. trailer access via Lansdowne Street requiring a cross-docking location for some deliveries</li></ul>	<ul style="list-style-type: none"><li>Meets current and future space requirements (1670m<sup>2</sup> floor area and 5.5m clear height) through custom construction or lease agreement</li><li>Allows current space at existing BCLC headquarters to be repurposed</li><li>A shipping and receiving function continues to be required to manage supplies and shipments for head office</li></ul>	<ul style="list-style-type: none"><li>Meets current and future space requirements (1670m<sup>2</sup> floor area and 5.5m clear height) through custom construction or lease agreement</li><li>Allows current space at existing BCLC headquarters to be repurposed</li><li>A shipping and receiving function continues to be required to manage supplies and shipments from the head office</li></ul>
	✓	✓✓	✓✓	✓✓✓	✓✓✓
2. Appropriately located to realize business efficiencies					





Objective and Considerations	Option 1: Status Quo	Option 2: Renovation of Existing Warehouse Facility	Option 3: New Warehouse on Current Site	Option 4: Alternative Warehouse off site - Kamloops Area	Option 5: Alternative Warehouse off site - Lower Mainland
<ul style="list-style-type: none"> <li>Ease of staff access to maintain an engaged workforce <ul style="list-style-type: none"> <li>2017/18 – 19/20 Service Plan Performance Measure 2</li> <li>2018/19 – 20/21 Service Plan Performance Measure 2.1a</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Maintaining current access on site will not impact BCLC's high level of staff engagement <ul style="list-style-type: none"> <li>Centralized downtown location</li> <li>Free staff parking</li> </ul> </li> <li>HVAC issues result in seasonal discomfort for warehouse-based employees, which may impact efficiency levels of warehouse staff</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining current access on site will not impact BCLC's high level of staff engagement</li> <li>Enables increased staff productivity through more efficient racking design and equipment storage needs</li> <li>HVAC issues may not be completely addressed and continue to result in seasonal discomfort for warehouse-based employees, which may impact efficiency levels of warehouse staff over the long term</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining current access on site will not impact BCLC's high level of staff engagement</li> <li>Enables increased staff productivity through more efficient warehouse design achieved by custom construction</li> <li>HVAC issues addressed achieving a superior work environment for warehouse-based staff</li> <li>Increased travel distance for staff interfacing with the warehouse, though access would be through interior connections on site</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse HVAC issues addressed achieving a superior work environment for warehouse-based staff</li> <li>Increased travel for staff interfacing with the warehouse</li> <li>Warehouse staff will be divided between the offsite warehouse and the head office shipping and receiving area</li> <li>Potential increase in staffing resources to accommodate offsite warehouse</li> <li>Additional planning and coordination is required to access items stored offsite</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse HVAC issues addressed achieving a superior work environment for warehouse-based staff</li> <li>Increased travel for staff interfacing with the warehouse</li> <li>Warehouse staff will be divided between the offsite warehouse and the head office shipping and receiving area</li> <li>Potential increase in staffing resources to accommodate offsite warehouse</li> <li>Additional planning and coordination is required to access items stored offsite.</li> </ul>
	✓✓	✓✓✓	✓✓✓	✓	✓
<ul style="list-style-type: none"> <li>Minimizing change impacts on BCLC staff</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining status quo means no change management impacts for staff</li> </ul>	<ul style="list-style-type: none"> <li>Renovations may permit for the warehouse team to be seated in the same area</li> <li>Short term negative impact on staff during renovations but overall, a minimal, positive change impact</li> </ul>	<ul style="list-style-type: none"> <li>New warehouse may permit for the warehouse team to be seated in the same area</li> <li>Short term negative impact on staff during construction, but overall positive change impact</li> </ul>	<ul style="list-style-type: none"> <li>New location has opportunity to create modern warehouse efficiencies for day to day operations</li> <li>Negative impact on staff being moved away from head office <ul style="list-style-type: none"> <li>Warehouse staff would be required to travel between the two facilities creating inefficiencies</li> <li>Warehouse staff separated from the rest of the organization</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>New location as opportunity to create modern warehouse efficiencies for day to day operations</li> <li>Significant (negative) impact on staff being moved from head office to another community <ul style="list-style-type: none"> <li>Relocation of Kamloops staff to Vancouver to support</li> <li>Staff that choose not to relocate would require severance packages, impacting morale and productivity</li> <li>Warehouse staff separated from the rest of the organization</li> </ul> </li> <li>Warehouse staff would be required to travel between the two facilities creating inefficiencies</li> </ul>
	✓✓✓	✓✓	✓✓	✓	X
<ul style="list-style-type: none"> <li>Optimized warehouse workflows</li> </ul>	<ul style="list-style-type: none"> <li>Status quo has no impact on warehouse workflows</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse workflows improved from new warehouse layout</li> <li>Workflow improvements limited by existing ceiling heights</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse workflows improved from optimized, new warehouse layout</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse workflows improved from optimized, new warehouse layout</li> </ul>	<ul style="list-style-type: none"> <li>Warehouse workflows improved from optimized, new warehouse layout</li> </ul>

Objective and Considerations	Option 1: Status Quo	Option 2: Renovation of Existing Warehouse Facility	Option 3: New Warehouse on Current Site	Option 4: Alternative Warehouse off site - Kamloops Area	Option 5: Alternative Warehouse off site - Lower Mainland
		<ul style="list-style-type: none"><li>○ Not able to utilize full mezzanine area to maximize volume of warehouse space</li><li>○ Lack of opportunity to go vertical does not allow for optimal horizontal placement of components</li></ul>			
	X	✓	✓✓✓	✓✓✓	✓✓✓
<b>3. Cost effective solution</b>					
<ul style="list-style-type: none"><li>▪ Minimize capital investment<ul style="list-style-type: none"><li>○ 2017/18 – 19/20 Service Plan Performance Measure 10</li><li>○ 2018/19 – 20/21 Service Plan Performance Measure 4.1a</li></ul></li></ul>	<ul style="list-style-type: none"><li>- No capital investment is required</li></ul>	<ul style="list-style-type: none"><li>- Minimal capital investment required</li></ul>	<ul style="list-style-type: none"><li>- Significant capital investment required</li></ul>	<ul style="list-style-type: none"><li>- Capital investment required for cost of tenant improvements.</li></ul>	<ul style="list-style-type: none"><li>- Capital investment required for cost of tenant improvements.</li></ul>
	✓✓✓	✓✓	✓	✓✓	✓✓
<ul style="list-style-type: none"><li>▪ Minimize impacts on operating costs<ul style="list-style-type: none"><li>○ 2017/18 – 19/20 Service Plan Performance Measure 10</li><li>○ 2018/19 – 20/21 Service Plan Performance Measure 4.1a</li></ul></li></ul>	<ul style="list-style-type: none"><li>- No impact on operating expenditures</li></ul>	<ul style="list-style-type: none"><li>- No impact on operating expenditures</li></ul>	<ul style="list-style-type: none"><li>- Limited potential savings in operating expenditures due to more efficient warehouse layout (e.g. will not impact staffing)</li></ul>	<ul style="list-style-type: none"><li>- Increase in operating expenditures due to lease (assumes lease term justifies accounting treatment as an operating lease)</li><li>- Potential increase in staffing costs to support duplication of some functions (e.g. resource for shipping and receiving)</li><li>- Increase in security operating expenditures due to critical software and hardware requirements of two facilities rather than one</li></ul>	<ul style="list-style-type: none"><li>- Majority of large gaming properties are in the Lower Mainland and coastal region. There is a potential for logistics savings in transporting components and spare parts between Kamloops and the Lower Mainland</li><li>- Increase in operating expenditures due to lease (assumes lease term justifies accounting treatment as an operating lease)</li><li>- Potential increase in staffing costs to support duplication of some functions (e.g. resource for shipping and receiving)</li><li>- Increase in security operating expenditures due to critical software and hardware requirements of two facilities rather than one</li></ul>
	✓✓	✓✓	✓✓	✓	✓
Ranking	3rd	2nd	1st	3rd	4th

## APPENDIX C: DATA CENTRE MULTIPLE CRITERIA ANALYSIS

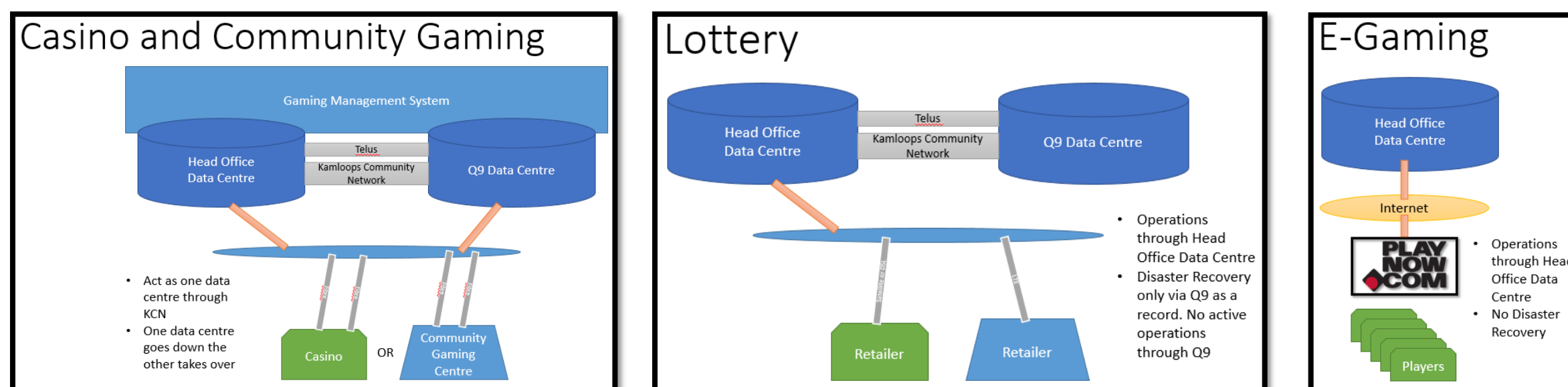
### Background and Definitions:

BCLC's technology hardware architecture is best described in terms of how it supports each of the three main revenue-generating lines of business that include:

- Casino and Community Gaming,
- Lottery, and
- E-Gaming.

A fourth line of technology supports a variety of corporate functions such as financials, HR, analytics and various customer facing services.

The below diagrams describe BCLC's revenue generating technology hardware architecture:



Definitions:

Primary Data Centre	A data centre is a highly fault-tolerant facility where an organization houses all its servers, networking components, and infrastructure <sup>9</sup> to store and manage critical organizational data. The primary facility is the first in an order of series.
Secondary Data Centre	The second data centre in a series with the purpose of providing a backup store of organizational data when an event occurs that makes the primary data centre unavailable.
Disaster Recovery	The intent for maintaining a secondary data centre is to be able to provide disaster recovery through a second location containing all organizational data
Co-location	A data center facility in which a business can rent or lease space for servers and other computing hardware. Typically, this provides the building, cooling, power, bandwidth and physical security while the tenant provides servers and storage systems. <sup>10</sup>
Managed Services	A data center facility in which a business can rent space, servers, and other computing hardware capability. The data centre capability to a specified service level.
Gaming Management System (GMS)	Records all slot and casino gaming transactions from across the province in real time. Software provided by Bally.
Q9	Refers to the installation where all Provincial Government Data Centre Services are located in Kamloops BC. BCLC has a co-location agreement with the Q9 facility with a capacity of 70 Kilovolt-amp (KVA).

<sup>9</sup> Ingram, D. (2018, November 29). *Design – Build – Run: Applied Practices and Principles for Production-Ready Software Development*. Retrieved from O’Reilly [https://www.oreilly.com/library/view/design-build/9780470257630/9780470257630\\_the\\_primary\\_and\\_secondary\\_data\\_centers.html](https://www.oreilly.com/library/view/design-build/9780470257630/9780470257630_the_primary_and_secondary_data_centers.html)

<sup>10</sup> Whatis.com. (2018, December 11). *co-location*. Retrieved from Whatis.com: <https://whatis.techtarget.com/search/query?q=co-location>



Data centre Options:

1. **Status quo** – Operate current data centre with no immediate capital investment or need to upgrade to address building deficiencies, significant evergreen requirements, or optimize performance. The secondary data centre is at Q9 through co-location agreement.
2. **New primary data centre on current site, Q9 continues as secondary** – A new primary data centre on BCLC owned property adjacent to Head Office is constructed, the secondary data centre is Q9 through co-location agreement.
3. **Q9 as primary data centre, new data centre on current site as secondary** – The primary data center is Q9 through co-location agreement and a new secondary data centre is constructed to meet requirements on BCLC owned property adjacent to Head Office.
4. **Alternative co-location provider as primary data centre, new data centre on current site as secondary** – The primary data center is an alternative co-location provider and a new secondary data centre is constructed to meet requirements on BCLC owned property adjacent to Head Office.

Assessment Criteria

Objectives	Assessment Criteria
1. Future Flexibility	<ul style="list-style-type: none"><li>▪ Scalability with the ability to scale down and repurpose space over time as BCLC data management strategies evolve</li></ul>
2. Meets business requirements for resiliency	<ul style="list-style-type: none"><li>▪ Physical security of the data centre meets BCLC's requirements</li><li>▪ Data centre critical systems and network resiliency meets requirements of 99.99% of availability of critical systems for production computing</li><li>▪ Operational continuity while transitioning data centre locations and management of legacy technology operations risk</li></ul>
3. Cost effective solution	<ul style="list-style-type: none"><li>▪ Minimize capital investment (BCLC Service Plan Performance Measure 10)</li><li>▪ Reduce operating costs (BCLC Service Plan Performance Measure 10)</li></ul>

Assessment Framework

X	✓	✓✓	✓✓✓
Ineffective in satisfying BCLC business objectives.	Partially effective in satisfying BCLC business objectives.	Substantially satisfies BCLC business objectives.	Fully effective in satisfying BCLC business objectives.



Objective and Considerations	Option 1: Status Quo	Option 2: New primary data centre on current site, Q9 as secondary data centre	Option 3: Q9 as primary data centre, new data centre on current site as secondary	Option 4: Alternative co-location provider as primary data centre, new data centre on current site as secondary
<b>1. Future Flexibility</b>				
<ul style="list-style-type: none"><li>Scalability with the ability to scale down and repurpose space over time as BCLC data management strategies evolve</li></ul>	<ul style="list-style-type: none"><li>Current data centre is larger than required so offers flexibility and scalability within the existing space.</li><li>Current data centre requirements are being met</li><li>Current data centre space cannot be easily repurposed</li></ul>	<ul style="list-style-type: none"><li>New data centre would be constructed to meet requirements and with the intention to facilitate scaling down, as technology gets more efficient and BCLC moves workloads to cloud computing.</li><li>Unused space in primary data centre is not easily repurposed</li></ul>	<ul style="list-style-type: none"><li>Q9 would be configured to meet requirements of a primary data centre</li><li>New data centre on current site would be constructed to meet secondary data centre and disaster recovery requirements and provide optimum flexibility</li><li>Contract with Q9 may limit scalability, if it remains power commitment based as is currently the case</li><li>Unused space in the new secondary data centre, while minimal, is not easily repurposed</li></ul>	<ul style="list-style-type: none"><li>Alternative data centre would be configured to meet requirements of primary data centre</li><li>New data centre on current site would be constructed to meet secondary data centre requirements and provide optimum flexibility</li><li>Contract with alternative co-location provider may limit scalability</li><li>Current alternative providers in Kamloops (CanShield, Telus) do not provide co-location (only managed services, which at this time are cost prohibitive) or their facilities are not suitable. (e.g. Tier 3 data centre standards)</li></ul>
	✓✓	✓✓	✓✓	X
<b>2. Meets Business Requirements for Resiliency</b>				
<ul style="list-style-type: none"><li>Physical security of the data centre meets BCLC's requirements</li></ul>	<ul style="list-style-type: none"><li>Current physical security measures are regularly audited and meet BCLC requirements</li></ul>	<ul style="list-style-type: none"><li>Physical security of new primary data centre will meet Tier 3 requirements</li><li>Secondary data centre physical security exceeds primary data centre security</li></ul>	<ul style="list-style-type: none"><li>Q9 meets Tier 3 security requirements as follows:<ul style="list-style-type: none"><li>24x7 on-site uniformed security staff</li><li>Fully fenced and monitored perimeter with security controlled gate</li><li>Centralized Security Coordination Centre</li><li>Extensive network of video surveillances</li><li>Multiple security zones with 2-factor biometric authentication</li><li>Full customer control for the security access of their employees or other agents</li><li>24x7 unannounced access privileges for authorized individuals</li></ul></li><li>Q9 security requires reservations to access the facility</li><li>Disaster recovery security</li></ul>	<ul style="list-style-type: none"><li>CanShield facility does not meet BCLC Tier 3 requirements</li><li>Telus provides only managed services and does not provide co-location</li></ul>
	✓✓✓	✓✓✓	✓✓✓	X
<ul style="list-style-type: none"><li>Data centre critical systems and network resiliency</li></ul>	<ul style="list-style-type: none"><li>Current data centre critical systems and network resiliency meet requirements</li></ul>	<ul style="list-style-type: none"><li>New data centre would be constructed to meet resiliency requirements</li></ul>	<ul style="list-style-type: none"><li>Q9 already meets the primary data centre resiliency requirements</li></ul>	<ul style="list-style-type: none"><li>CanShield not connected to Kamloops Community Network (KCN), network cannot accommodate required network performance</li></ul>

Objective and Considerations	Option 1: Status Quo	Option 2: New primary data centre on current site, Q9 as secondary data centre	Option 3: Q9 as primary data centre, new data centre on current site as secondary	Option 4: Alternative co-location provider as primary data centre, new data centre on current site as secondary
meets requirements of: 99.99% of availability of critical systems for production computing	<ul style="list-style-type: none"><li>- Some disaster risk to primary data centre is inherent due to proximity to river and railway</li><li>- Secondary data centre is located in the same municipality, though distance from railway and elevation mitigate risks</li></ul>	<ul style="list-style-type: none"><li>- Q9 as secondary data centre already meets requirements</li><li>- Some disaster risk to primary data centre is inherent due to proximity to river and railway</li><li>- Secondary data centre is located in the same municipality, though distance from railway and elevation mitigate risks</li></ul>	<ul style="list-style-type: none"><li>- New secondary data centre would be designed and constructed to meet resiliency requirements</li><li>- Some disaster risk to secondary data centre is inherent due to proximity to river and railway</li><li>- Primary data centre is located in the same municipality, though distance from railway and elevation mitigates risks</li></ul>	<ul style="list-style-type: none"><li>- Telus' managed services are cost prohibitive to achieve the required network resiliency for the volume of equipment and data</li><li>- Disaster risk to overall data centre operations would increase as both facilities would be in proximity to the river and railway</li></ul>
	✓✓	✓✓	✓✓✓	X
<ul style="list-style-type: none"><li>▪ Operational continuity while transitioning data centre locations and management of legacy technology operations risk</li></ul>	<ul style="list-style-type: none"><li>- No transition eliminates risks to operational continuity</li></ul>	<ul style="list-style-type: none"><li>- Requires making Q9 primary and secondary data centre during transition before returning primary status to new data centre</li><li>- Business Technology team would require additional resources or face constraints if required to manage new build while supporting ongoing operations</li></ul>	<ul style="list-style-type: none"><li>- Requires making Q9 primary and secondary data centre during transition before returning secondary status to new data centre</li><li>- Business Technology team would require additional resources or face constraints if required to manage new build while supporting ongoing operations</li></ul>	<ul style="list-style-type: none"><li>- Requires making alternative co-location primary and secondary data centre during transition before returning secondary status to new data centre</li><li>- CanShield not connected to KCN puts operational continuity at risk during this timeframe.</li><li>- Telus' managed services are cost prohibitive for a primary data centre</li><li>- Business Technology team would require additional resources or face constraints if required to manage new build while supporting ongoing operations</li></ul>
	✓✓✓	✓	✓	✓
<b>3. Cost Effective Solution</b>				
<ul style="list-style-type: none"><li>▪ Minimize capital investment</li></ul>	<ul style="list-style-type: none"><li>- Minimal capital investment</li></ul>	<ul style="list-style-type: none"><li>- Substantial capital investment required including resource costs</li></ul>	<ul style="list-style-type: none"><li>- Substantial capital investment required including resource costs</li></ul>	<ul style="list-style-type: none"><li>- Substantial capital investment required including resource costs</li></ul>



Objective and Considerations	Option 1: Status Quo	Option 2: New primary data centre on current site, Q9 as secondary data centre	Option 3: Q9 as primary data centre, new data centre on current site as secondary	Option 4: Alternative co-location provider as primary data centre, new data centre on current site as secondary
<ul style="list-style-type: none"><li>○ 2017/18 – 19/20 Service Plan Performance Measure 10</li><li>○ 2018/19 – 20/21 Service Plan Performance Measure 4.1a</li></ul>		<ul style="list-style-type: none"><li>- Value of unamortized servers will be lost as the new facility will feature all new equipment to manage cutover risks if the duration of the cutover does not coincide with evergreen replacement</li></ul>	<ul style="list-style-type: none"><li>- Secondary data centre function may allow for reduced capital investment through less need for resilient systems, as compared to constructing a new primary data centre</li><li>- Some value of unamortized servers will be lost as the new facility will feature some new equipment to manage cutover risks, however evergreen replacement would be leveraged over time to more effectively transition systems.</li></ul>	<ul style="list-style-type: none"><li>- Secondary data centre function may allow for reduced capital investment through less need for resilient systems, as compared to constructing a new primary data centre</li><li>- Value of unamortized servers will be lost as the new facility will feature all new equipment to manage cutover risks</li><li>- Capital investment required to bring Canshield facility up to BCLC requirements</li></ul>
	✓✓✓	✓	✓✓	X
<ul style="list-style-type: none"><li>▪ Reduce operating costs<ul style="list-style-type: none"><li>○ 2017/18 – 19/20 Service Plan Performance Measure 10</li><li>○ 2018/19 – 20/21 Service Plan Performance Measure 4.1a</li></ul></li></ul>	<ul style="list-style-type: none"><li>- All current critical systems fully amortized</li><li>- Lowest annual operating cost option at \$715k/year for head office and \$630k/year for Q9</li></ul> Total estimated annual cost of \$1.345M	<ul style="list-style-type: none"><li>- May have more optimal costs than current with new data centre</li><li>- Need to amortize all capital investment.</li><li>- \$780k/year for head office and \$630k/year for Q9</li></ul> Total estimated annual cost of \$1.4M	<ul style="list-style-type: none"><li>- Q9 facility costs based on current KVA commitment model and rates</li><li>- \$450k/year for head office and \$1.5M for Q9</li></ul> Total estimated annual cost of \$1.95M	<ul style="list-style-type: none"><li>- Budgetary data not available from Canshield, and would need to factor in potential BCLC capital investment amortization and extra costs associated with managed services. This may offset assumed lower rates as compared to Q9.</li></ul>
	✓✓✓	✓✓	✓	✓
Ranking	1st	3rd	2 <sup>nd</sup>	4th