



# Joint-use Campus Feasibility Study

City of Cambridge  
Idea Exchange  
Waterloo Region District School Board  
Waterloo Catholic District School Board

February 9, 2021

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# Introduction



## INTRODUCTION

The purpose of this feasibility study is to examine and evaluate the opportunities for a joint-use campus shared by the City of Cambridge, Idea Exchange (Cambridge Public Library), Waterloo Region District School Board (the WRDSB), and Waterloo Catholic District School Board (the WCDSB). The study explores conceptual design approaches to the facilities and site, integrating the facilities to maximize community benefits. Results and recommendations from this study will assist City Council, and the Library Board and School Boards in decision making regarding this proposed community hub.

The potential for a joint-use community hub was envisioned by the partners in the late-1990s. The 1997 Southeast Galt Community Plan noted a general location for a joint campus, including two schools, a child care facility, public library, and community recreation facilities on a shared site. For this purpose, in 2007, the City acquired a 32.5-acre parcel in the southeast of the City of Cambridge and the programming for the joint campus was expanded to include the community park for this neighbourhood.

## PARTNERS AND PROGRAM COMPONENTS

### City of Cambridge Recreation Complex

- Gross floor area: 104,020 square feet
- Aquatics
- Gymnasiums, multi-purpose rooms
- Walking track
- Storage, office and administrative space

### Idea Exchange (City of Cambridge Public Library)

- Gross floor area: 13,600 square feet
- Spaces to provide access to library materials and services and to a variety of programs and events
- Reading, lounge, making and study spaces
- Internet and computer access

### WRDSB Elementary School

- Gross floor area: School – 53,240 square feet, Child Care – 8,500 square feet
- 519 students in Junior Kindergarten to Grade 8
- 5 room Child Care

### WCDSB Elementary School

- Gross floor area: 42,645 square feet
- 354 students in Junior Kindergarten to Grade 8



# Executive Summary

## EXECUTIVE SUMMARY

This Feasibility Study was conducted through a collaborative and interactive process, engaging the partners' Steering Committee in a variety of interactive explorations to co-imagine a joint-use campus that not only meets the current and future needs of this Cambridge community, but most importantly creates a vibrant, inviting and multi-generational community hub. These preliminary visioning sessions and meetings became the foundation for the agreed vision and guiding principles, which informed all decisions going forward. The development of a decision matrix for assessment of the site concepts referred back to this agreed unified vision.

Separate visioning and programming meetings were held with each of the four key partner/stakeholder groups. Each partner contributed their own vision and priorities which included specific program requirements, budgetary constraints, past experience with similar projects, and their excitement and possibly their trepidation going into a collaborative and negotiated joint project.

A detailed site analysis was undertaken to explore existing site conditions, zoning requirements, Grand River Conservation Authority (GRCA) wetland impacts, transportation issues, local development plans, and community connections.

The preliminary draft space needs assessment was explored and developed in detail to find synergies and joint-use opportunities between all users' space programs.

The conceptual site options were built on the learnings and feedback from the research and analysis phase, including an examination of the opportunities and constraints of the site and program, and the benefits and challenges of a joint building or separate building approach to the campus. Five concepts were explored – three approaches to a single consolidated shared building: One Campus, One Facility, and two approaches to separate buildings sharing the site: One Campus, Separate Facilities. Functional and operational impacts were fully considered. An order of magnitude cost estimate was completed for each concept.

The pros/cons/opportunities/challenges of each concept were assessed using defined criteria and with reference to the vision and principles established by the Steering Committee.

The findings of this study conclude that the site is appropriate in size, location and characteristics to accommodate the proposed joint-use campus. Many joint-use sharing opportunities are available, e.g., parking and service areas; outdoor amenity and play areas; gymnasiums; multi-purpose rooms; specialty classrooms; and reading, lounge and study spaces. More than one approach to the campus can be successfully developed.

The consulting team guided the committee through an iterative process where two preferred concepts were selected – one for a consolidated building and site; and one for two separate buildings sharing a campus.

A detailed analysis was completed for the two preferred approaches, these are referred to in the report as – Consolidated Building Concept 2: One Campus, One Facility, L-shaped Plan and Separate Buildings Concept 4: One Campus, Two Separate Facilities.

The recommended approach for a successful joint-use campus is to locate two separate building on the joint site: Concept 4: One Campus, Two Separate Facilities. The two schools share one facility. The Recreation Complex and Idea Exchange share the second facility. The two facilities frame a generous and welcoming community park facing Wesley Boulevard. The facilities can operate independently, but are designed and programmed to promote shared use of selected spaces both indoors and outdoors. When located in a separate building, on a more clearly defined site, the safety and security of the elementary school students, within the larger context of the campus, is better achieved. Separating the schools from the Recreation Complex and the Idea Exchange allows the partners to proceed with the design and construction at their own pace. The timeline for the design and construction of the Recreation Complex will be longer than for the schools. This is an important consideration for the schools as the Ministry benchmark for capital costs for the schools’ construction does not allow for construction cost escalation. The longer the project is deferred the more difficult it will be to build the schools on budget.

The order of magnitude estimate, detailed for all concepts, is based on the initial functional program and preliminary conceptual plans. The level of certainty, or potential cost variation, of this level of estimate is generally +/-15% to 20%. The estimated total project costs for Concept 4 are as follows:

WRDSB Elementary School	\$ 13,892,000
Child Care	\$ 2,651,000
WCDSB Elementary School	\$ 11,857,000
Recreation Complex	\$ 58,490,000
Idea Exchange	\$ 6,245,000
Total Joint-use Complex	\$ 93,135,000

A framework for the development of shared-use and operational models (refer to Section 8) was developed in tandem with the concept designs. This is a creative exercise working with the specific design concepts looking for efficiencies and opportunities that allow for a variety of multiple use strategies - independent use and control by each partner; structured or scheduled use by various groups, or common use at all times.

This proposed joint-use campus will create a community hub offering educational, recreational and cultural activities for all ages in this rapidly developing Cambridge community. A shared approach provides better value for money for the community, and best utilization of all program spaces.

The conclusion of this Feasibility Study is that the proposed joint-use campus is achievable and provides tremendous benefits to each partner and to the community.





# **Vision & Guiding Principles**



## VISION & GUIDING PRINCIPLES

### VISION

The vision for this partnership is to provide a multi-generational community hub for the residents of Cambridge, with one-stop access to education, recreation and cultural amenities. This project is a unique opportunity for all partners to enjoy more amenities and uses over what each partner would have if it was a stand-alone facility.

This commitment to shared use maximizes the benefits to the community and provides better value for each partner's investment.

### GUIDING PRINCIPLES

*Create a vibrant, inviting and multi-generational community hub*

*Leverage sharing opportunities to maximize program synergies, to encourage the best utilization of space, and to reduce capital and operating costs for all parties*

*Showcase the main building activities, animating the streetscape and creating a distinct identity for each partner*

*Provide a safe and secure design, both indoors and out, that allows for both separation and sharing*

*Allow for flexibility of use and potential to grow and change over time*

*Maximize the use and amenity of open and green space on the site*

*Encourage active transportation by creating safe and inviting green connections to the neighbourhood*

*Incorporate sustainable initiatives that foster environmental responsibility; improve building performance and energy efficiency; and contribute to the health and well-being of the users*

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## Site Evaluation

## SITE EVALUATION

### SITE EVALUATION SUMMARY

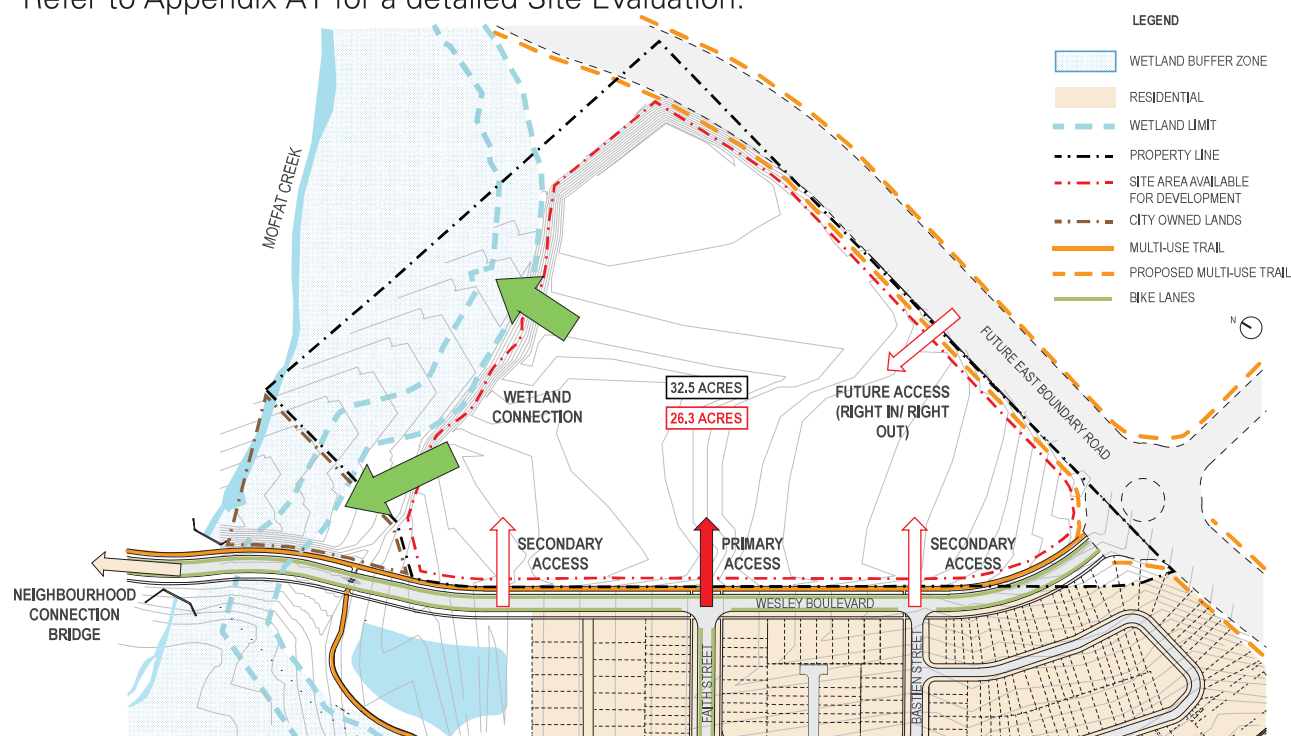
The 32.5 acre site of the future joint-use complex is located in the south-east end of Cambridge in the area known as Littles Corners, north of the intersection of Dundas Street South and Branchton Road.

The site is bordered by Moffat Creek and a vegetated wetland buffer along its north-western edge. At the east boundary of the site, there are plans for a future Regional Road (East Boundary Road). The primary access to the site is from the extension of Wesley Boulevard. Consisting of former hilly, agricultural lands, the site slopes north-west towards Moffat Creek, with a difference in height of 14m from east to west. The developable site area is reduced by the wetland to the west and the road allowance to the east. The remaining site area available for development is approximately 26.3 acres.

Significant growth is anticipated for the region – with future residential low to mid-rise subdivisions planned throughout the vicinity – the most notable of which are the South Point lands. It is estimated that once the area is fully developed, over 26,500 residents will be within a 15-minute walking distance from the proposed campus.

New Multi-Use Trails and Bike Paths are planned to promote active transportation to, from and through the site, and an extension to the current nearby bus route is planned, running along Wesley Boulevard, with a new bus stop to serve the complex directly.

Refer to Appendix A1 for a detailed Site Evaluation.



Site Location and Features (source: CS&P)



# **Program & Needs Analysis**

## **PROGRAM & NEEDS ANALYSIS**

### **PROGRAM COMPONENTS**

#### **CITY OF CAMBRIDGE RECREATION COMPLEX**

The original Recreation Complex space program was developed in 2015 - prior to the decision to locate the facility at the joint-use campus.

The Net Functional Area of the Recreation Complex program totals 90,450 square feet. Net Functional Area describes the room-specific space program and refers to the usable or assignable square footage within a room or area (inside wall-to-wall dimensions).

Gross Floor Area (GFA) represents the overall footprint of a floor or building, respectively, and includes support spaces, washrooms, circulation, elevators, stairs, the space occupied by the building's exterior walls, and major mechanical spaces.

The Recreation Complex program allocates a 15% gross up bringing the prescribed GFA to 104,020 square feet.

The major components of the program include:

- Aquatics
  - 25-metre pool
  - Leisure/learning/therapy pool
  - Pool change room facilities
  - Pool office, storage and administrative space
  - Spectator viewing
- Dry Land
  - 3 FIBA (Fédération Internationale de Basketball) size gymnasias
  - Indoor walking/running track
  - Multi-use program rooms/meeting space
  - Fitness studio
  - Gymnasium/fitness Change rooms
- Storage, office and administrative space

#### **IDEA EXCHANGE (CITY OF CAMBRIDGE PUBLIC LIBRARY)**

The Idea Exchange Net Functional Area totals 11,370 square feet. The program allocates a 16% gross up bringing the prescribed GFA to 13,600 square feet.

The major components of the program include:

- Spaces to provide access to library materials and services and to a variety of programs and events
- Reading, lounge, making and study spaces
- Internet and computer access

## WRDSB AND WCDSB ELEMENTARY SCHOOL SPACE PROGRAMS

The Ontario Ministry of Education determines the space program and benchmark capital funding for new and replacement schools. The Ministry Space Template is used to determine the number and type of instructional areas and the required operational and circulation areas to be included in each school based on the expected student enrollment. The Space Template also allocates space for Community Use Rooms such as Child Care facilities.

### WRDSB Elementary School

The WRDSB Elementary School Net Instructional and Operational Areas total 38,920 square feet. The space program allocates a 37% gross up bringing the prescribed GFA to 53,240 square feet. An additional GFA of 8,500 square feet is allocated for the Child Care Facility.

The major components of the program include:

- 519 students in Junior Kindergarten to Grade 8
- 5 Kindergartens, 14 Classrooms, Art, Science, Special Education
- Gymnasium, Library/Learning Commons
- General Office, Staff, Custodial and support spaces
- 5 room Child Care centre
- Outdoor amenities, such as asphalt play area, soccer field, multi-use playing field, creative play structure, outdoor classroom
- Space for up to 12 portables

### WCDSB Elementary School

The WCDSB Elementary School Net Instructional and Operational Areas total 30,905 square feet. The space program allocates a 38% gross up bringing the prescribed GFA to 42,645 square feet.

The major components of the program include:

- 354 students in Junior Kindergarten to Grade 8
- 3 Kindergartens, 11 Classrooms, Art, Science, Special Education
- Gymnasium, Library/Learning Commons
- General Office, Staff, Custodial and support spaces
- Outdoor amenities, such as asphalt play area
- Space for up to 6 portables



## **SITE PROGRAM COMPONENTS**

### **PARKING AND DROP-OFF**

The preliminary space program, developed by the City and joint-use partners, noted a requirement for 552 parking spaces (80 WRDSB and Child Care, 75 WCDSB, 375 Rec Centre, 22 Idea Exchange). The peak parking demand is projected to be between 8:00 to 9:00 am on weekdays.

The City of Cambridge encourages active transportation and has provided for bike lanes and a safe off-street multi-use trail servicing this site. Grand River Transit plans to extend its local bus route to this site. The Wesley Boulevard road profile includes parking on the north side of the road - estimated at about 40 spaces (this number will be reduced slightly by the proposed bus stop). These initiatives will reduce the overall parking demand on the site. Based on the above, 500 parking spaces are included in the site fit assessment and conceptual plans. In the separated buildings concepts the full number of school related spaces are located adjacent to the schools. The parking spot savings are realized in the parking lot adjacent to the Recreation Complex and Idea Exchange building.

Parking requirements should be confirmed with a parking demand study as the project moves into detailed design.

Limited parent drop-off for the schools will be provided on site. Kindergarten, child care and barrier-free drop-off require park and drop provisions close to the facility entrances. All other parent drop-off will be accommodated on Wesley Boulevard, with safe access provided to the school play yard. Convenient drop-off and additional barrier-free parking spaces will be provided for the Recreation Complex and Idea Exchange users, requiring enhanced accessibility.

### **BUS DROP-OFF**

Based on enrollment projections and potential catchment areas for the schools, both School Boards anticipate the requirement for four full size school buses each. Bell times for the schools may be staggered to reduce the need to provide a bus drop-off zone with a capacity for all eight buses. In addition, WCDSB and WRDSB may explore shared busing. This practice already occurs in other jurisdictions, and could be done here. However, to future-proof the school site and allow flexibility for scheduling, a bus drop-off for eight buses, shared by the two schools, is shown on the concept plans.

Special education vehicles will have a different loading and unloading location, close to the school entrance, for safety and accessibility.

## OUTDOOR PLAY AND LEARNING ENVIRONMENTS

The schools each require both hard surface and soft (sodded) play areas. Hard surface play and play fields are exclusive and shared use for the schools only during the school day. School playgrounds are generally fenced for security and the safety of the students. Outdoor classroom spaces and provision of space for play structures are required by both Boards. The wetland area, running along Moffatt Creek, on the west side of the site, provide an opportunity for exploration and naturalized play. Care is needed to avoid supervision issues related to multiple school populations in the playground.

Each school will have its own Kindergarten play area, which will be fenced and connected directly to the Kindergarten classrooms. The Child Care outdoor play is fenced and connected directly to the Child Care playrooms. The required area of outdoor play for the Child Care is regulated by the Child Care and Early Years Act.

Outdoor amenities for the Recreation Complex and Idea Exchange include shared outdoor basketball nets, small games areas, play structures, passive outdoor play, outdoor classrooms/reading gardens, interactive public art, and provisions for future tennis courts where possible. These City outdoor amenities will be funded through a separate City project.

Additional program elements to create a welcoming community hub include a community park located on Wesley Boulevard, and a multi-use trail, connected to the City bike path and trail system and circumnavigating the site.

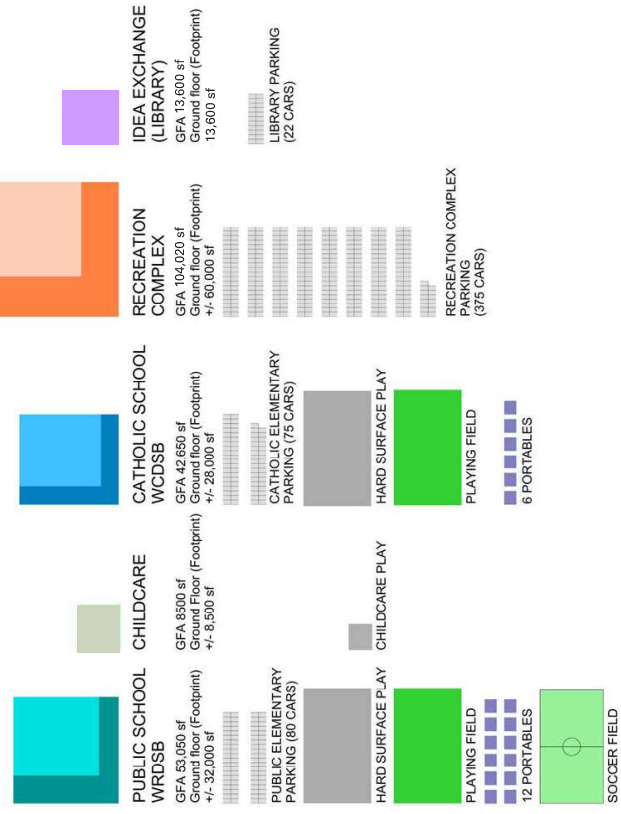
## PORTABLES AND FUTURE ADDITIONS

Both School Boards require provisions for future portables (WRDSB - 12 portables, WCDSB - 6 portables) and space for future permanent additions to each school. Portables will be located on the hard surface play area in proximity to school exit doors.

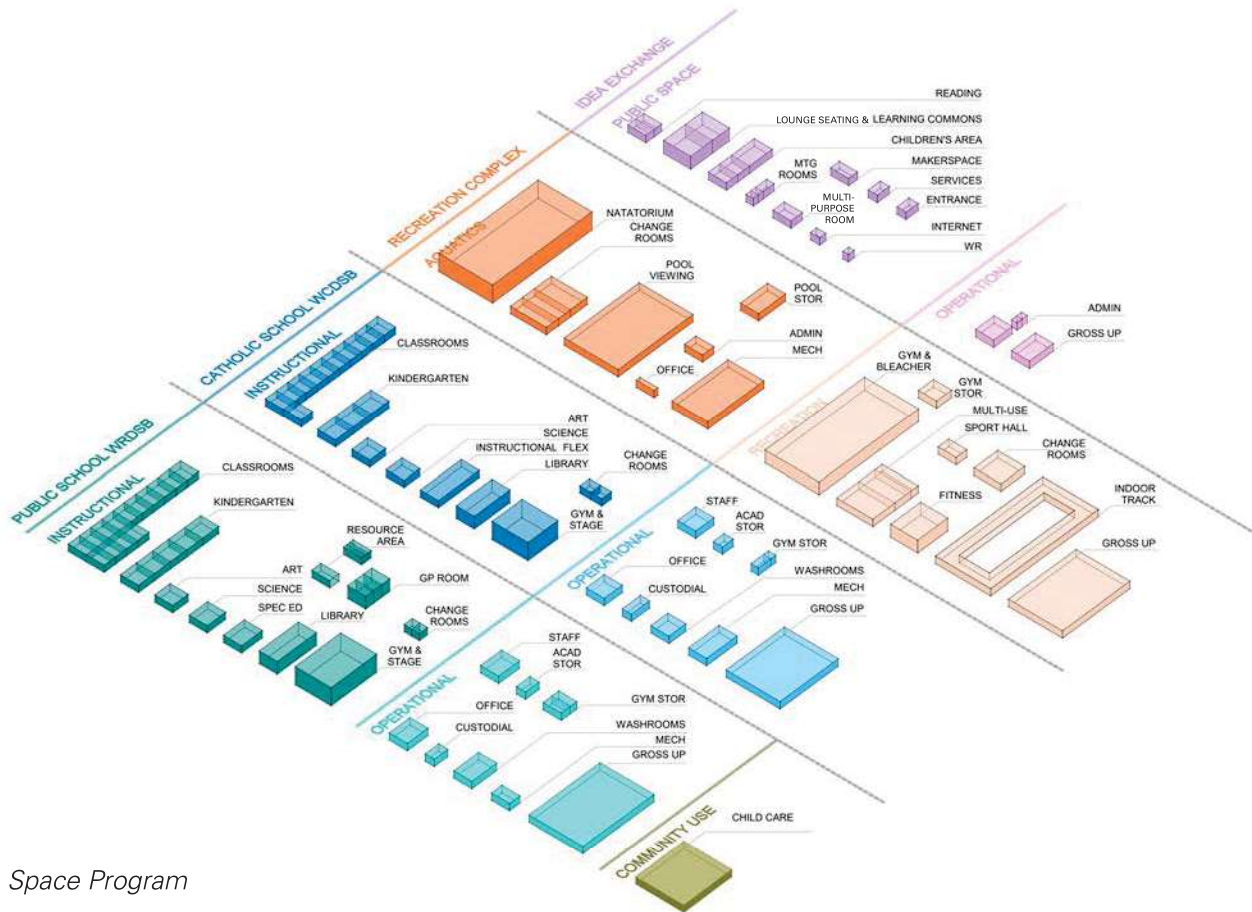
## GARBAGE AND RECEIVING

Garbage, service and receiving areas are required for all users. Day-to-day deliveries to the site will not require a loading dock accommodating full size transport trucks. Daily book delivery and pick-up must be accommodated for the Idea Exchange. Garbage and recycling will be picked-up on a regular schedule. Garbage storage rooms can be minimized if inground/underground garbage storage containers are used. The swimming pool requires conveniently located and regular service deliveries for pool chemicals.

The site and building components are illustrated in the following diagrams.



## PROGRAM &amp; NEEDS ANALYSIS | Joint-use Campus Feasibility Study | 19



Space Program

## JOINT-USE OPPORTUNITIES

The overall planning and programming for this joint-use campus must have inherent adaptability so that the buildings and site will be able to make adjustments to changing program needs over time. The concept designs include creating environments that can grow into more fluid sharing as the partners learn to use their new facilities and become more comfortable with the possibilities. The designs look for efficiencies and strategies that allow for multiple use opportunities - independent use and control by each partner; structured or scheduled use by various groups; or common use at all times. If sharing opportunities create learning opportunities and add value there is a strong rationale for proceeding with a joint-use campus.

The concept designs should reflect safety/security and identity needs of each partner, while allowing flexibility to 'grow into' or expand sharing opportunities over time.

Programming and sharing decisions will lead to the development of Joint-use and Operational Agreements. This is both a legal and a creative exercise - developed in tandem with the facility design.



Spaces to support before and after school programming should be carefully considered as all partners offer school-age programs. In addition, there is a potential challenge regarding duplication of services offered by Recreation and Culture through the Recreation Complex and the Idea Exchange. Program spaces should have inherent flexibility to support both arts/cultural and recreational programming. This will provide the opportunity for the partners to differentiate their offerings to the community. The Joint-use Agreement should address these issues.

The development of a consolidated space program finds opportunities for maximizing utilization of space, finding synergies between program components, and reducing overall floor areas (and therefore cost) through sharing and placement strategies. The following spaces were considered for potential joint-use by the partners:

### GYMNASIUM/FITNESS

- Two Recreation Complex gyms are fully utilized all day
- School gyms are exclusive use during school hours
- School gyms are available to Recreation Complex community for gym and fitness programming after hours

Proposed Program Changes:

- Reduce number of full-size gyms programmed for the combined joint-use campus (3 City, 1 WRDSB, 1 WCDSB) from five to four
- Recreation Complex contributes floor area to increase WRDSB gym to larger sized FIBA size gym
- Provide one shared stage between the two school gyms using portion of WRDSB gym area and portion of WCDSB flex area

### LIBRARY LEARNING SPACES

- Idea Exchange program includes a 1,800 square feet Lounge Seating and Learning Commons area which is accessible to students during the school day

Proposed program changes:

- Reduce both schools' Library floor area designated to general study

### ART/SCIENCE/MAKER/TECH

- Idea Exchange has designated two spaces for exclusive use by the schools during school hours – a large Multi-purpose room at 750 square feet and a Makerspace at 580 square feet
- Both school programs include an art room and a science room
- Four art and science rooms are required for the joint-use campus to meet the pupil loading/capacity requirement of each school

Proposed program changes:

- Increase the floor area of the Idea Exchange Maker space and Multi-purpose room to meet the area requirements for art and science rooms (with floor area contributions from both Boards)
- WRDSB to build one science room (including tech space), which will be shared with WCDSB, and delete one art room from its program
- WCDSB to contribute one art room, which will be shared with WRDSB, and delete one science room from its program
- Both Boards will have access to the Idea Exchange rooms for art and science programming to replace the two deleted rooms

## MEETING ROOMS

- Combining and co-locating meeting rooms will result in synergies and potential floor area reductions

## MECHANICAL

- A typical indoor central mechanical plant for a building of this scale is approximately 4% of the GFA (not including pool mechanical)
- Sharing of central plant requires the School Boards' agreement on operational issues
- Assuming a shared central mechanical plant, the total area required floor area for mechanical space is 10,235 square feet

## PARKING/DROP-OFF/SERVICE AREAS

- Number of parking spaces to be right-sized for time-of-day use
- Sharing of main school bus drop area was considered, relies on staggered bell-times
- Active transportation is encouraged by all users
- On site drop-off required for:
  - Accessibility requirements
  - Park and drop for child care and kindergartens
  - Limited convenience drop-off for other users
- Sharing of garbage, loading and receiving will be determined by site plan configuration, as well as ease of access for users.
- If shared, location of garbage needs to be in a central and convenient location for all users

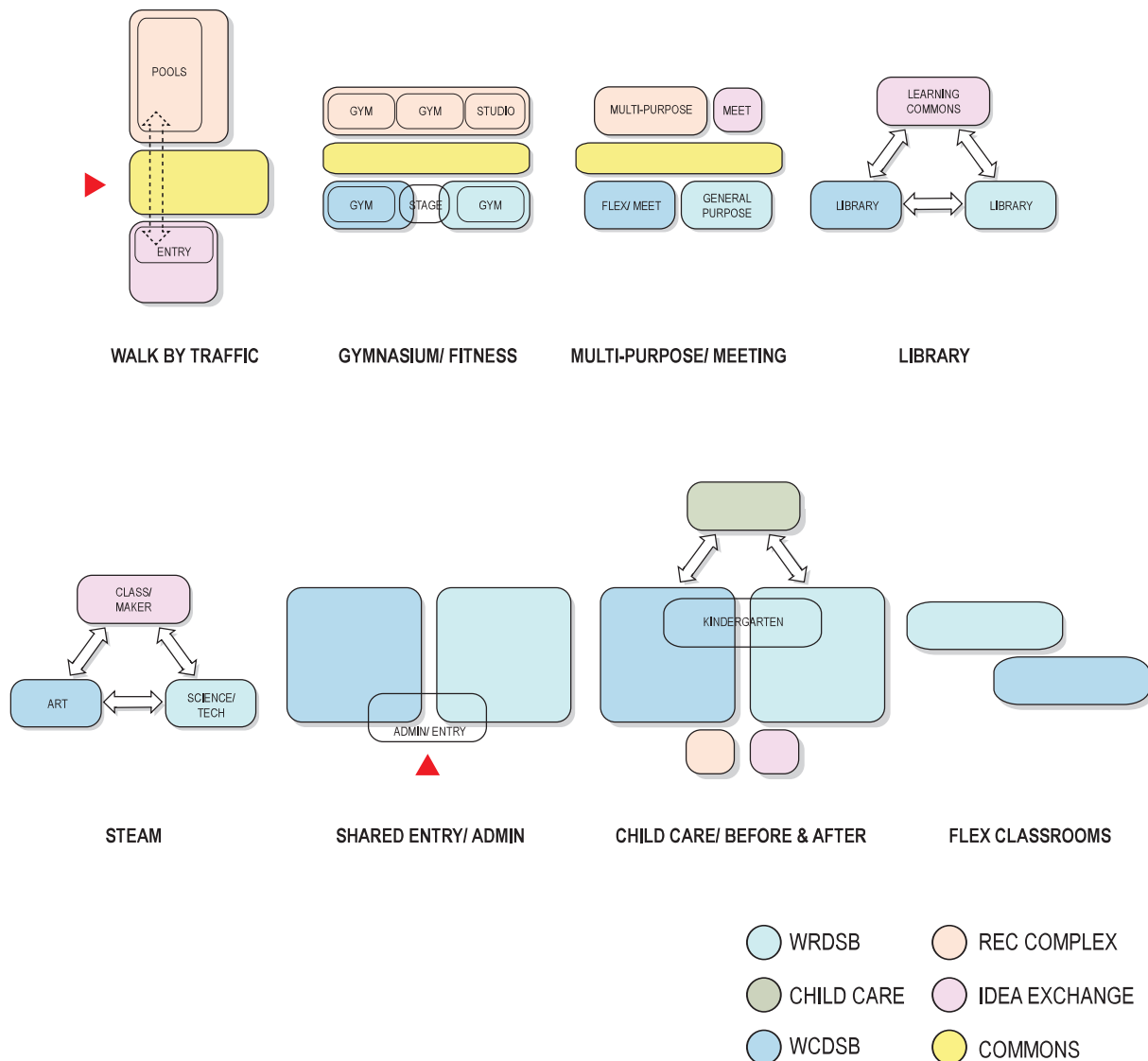
## OUTDOOR PLAY

- Kindergarten and Child Care play areas are exclusive use
- All other outdoor play areas are available for community use after-hours and should be located for passive surveillance
- School sharing of hard surface play and play fields relies on scheduling of bell-times and nutrition/recess/lunch breaks



## KEY RELATIONSHIPS

Key relationships required to accommodate the agreed joint-use opportunities create the framework for the development of the concept plans. The following diagrams illustrate desired adjacencies and synergies that will promote sharing.



## SPACE PROGRAM FOR CONSOLIDATED AND SEPARATE BUILDINGS

Three Space Programs were developed using the City's original Recreation Complex and Idea Exchange programs, and Ministry of Education's Space Template for the schools as a framework. Each program shows the original program and area allocations, the proposed program, and resulting changes to each partner's floor area. Sharing of outdoor amenity spaces remains achievable in all approaches to the building space program.

The **Consolidated Building Space Template: One Campus, One Facility** incorporated all of the potential opportunities for joint-use and sharing. This space program results in the most significant potential floor area reductions for all users. The target area reductions, for the total joint-use campus, are approximately 7,300 square feet over the original space program. The development of site concepts based on the proposed program modifications will confirm whether these area reductions are actually achievable.

The **Separate Buildings Space Template: One Campus, Two Separate Facilities** outlines a space program for a campus plan for two separate buildings on the site. The City components (Recreation Complex and Idea Exchange) share one building. The two schools share the second building. The floor area reductions resulting from joint-use and sharing of program spaces are more limited. The third gym is required to be built in the Recreation Complex, as access to the school gym presents security and convenience challenges. Additional science and art rooms are required in the schools, as the Idea Exchange multi-purpose room and makerspace are similarly challenging for regular school day use. Sharing of services spaces and a central mechanical plant are also unachievable. This program results in modest floor area reductions for the shared schools. The target area reductions, for the combined schools, is approximately 1,000 square feet over the original space program.

The second **Separate Buildings Space Template: One Campus, Three Separate Facilities**, outlines a space program for a campus plan for three separate buildings on the site. The City components share one building. The two schools each occupy their own building. There are no floor area reductions resulting from joint-use and sharing of program spaces. In addition to the program changes noted above, the schools also lose the opportunities for day-to-day sharing of spaces. The shared stage between the gyms is no longer available; and each school must build its own general office, library, science and art rooms, and mechanical and service spaces.

Refer to the Appendix A3 for detailed Space Programs for Consolidated and Separate Buildings.

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**Sustainability**

## SUSTAINABILITY

### SUSTAINABLE APPROACH SUMMARY

The sustainability response should be evaluated against the balancing of complex parameters including environmental responsibility, energy efficiency, and creating a healthy environment that contributes to user well-being. Evaluating associated construction cost premiums, as well as the ability to optimize cost of ownership over the life cycle, will be a fundamental metric. As energy use has the greatest impact on operating costs, the assistance of rating system criteria that can help reduce energy use and associated greenhouse gas (GHG) emissions may be prioritized.

To support the creation of a healthy and sustainable communities, the City of Cambridge has mandated all new municipal buildings meet LEED Gold Standards. This is achievable in the Separated Building Concepts. In the Consolidated Building Concepts achieving LEED would be more complex for the City components of the facility. Although Ministry funding benchmarks limit pursuing LEED certification for the schools, new schools are designed and built to a high level of sustainability. The Ontario Building Code requirements result in building envelope (cladding) design and mechanical systems that are highly energy efficient; and Site Plan Approval requirements include many storm water management and other site provisions that align with many of the LEED requirements that the City components will be pursuing.

A practical approach which prioritizes Passive House high performance envelope principles and air quality, together with targeted renewables such as geothermal and photovoltaic (solar panels), may have the greatest impact in both reducing energy, significantly lowering GHG emissions, and promoting a healthy and energy efficient facility. This approach would be suitable for both consolidated and separated design options.

In the next stage of detailed design, it is recommended that energy modeling and an associated financial analysis that can demonstrate a reasonable business case can be prepared. This business case can include premium capital costs associated with the energy saving measures, as well as payback and savings over time. A detailed geothermal feasibility study, together with site testing, should be included in this scope. This work should optimally be done as a formalized Sustainability Study in the Schematic Design period of the next phase of design.

Refer to Appendix A2 for detailed commentary on sustainability strategies.



# Conceptual Plans

## CONCEPTUAL PLANS

The development of all conceptual plans for the two approaches to the joint-use campus, consolidated and separate, were based on the Guiding Principles, the agreed key relationships, and the following building and site design criteria:

- A Ground Floor location is preferred for the following program components:
  - School - general office, kindergartens, special education classrooms, gymnasiums
  - Child Care – all program areas
  - Recreation Complex - lobby/reception, swimming pool and associated change rooms, gymnasiums and associated change rooms
  - Idea Exchange – all program areas
  - Garbage and receiving for all parties
- A generous welcoming entrance and a central internal circulation system, that acts as a “main street”, highlights the major building components, creating excitement and synergies between uses
- The swimming pool and Idea Exchange are the key identifiers of the City facility, with a prominent face to the community, visible from Wesley Boulevard
- The schools have distinct identity and entrances to the exterior that provide safe and secure access for walkers, cyclists and people arriving by car, school bus or transit
- Schools are located adjacent to the wetland area, the more naturalized and quiet part of the site
- Recreation Complex and its larger parking component are located on the east side of the site, with the bulk of the parking adjacent to the busier future East Boundary Road and associated roundabout.



## CONSOLIDATED BUILDING CONCEPT PLANS: ONE CAMPUS, ONE FACILITY

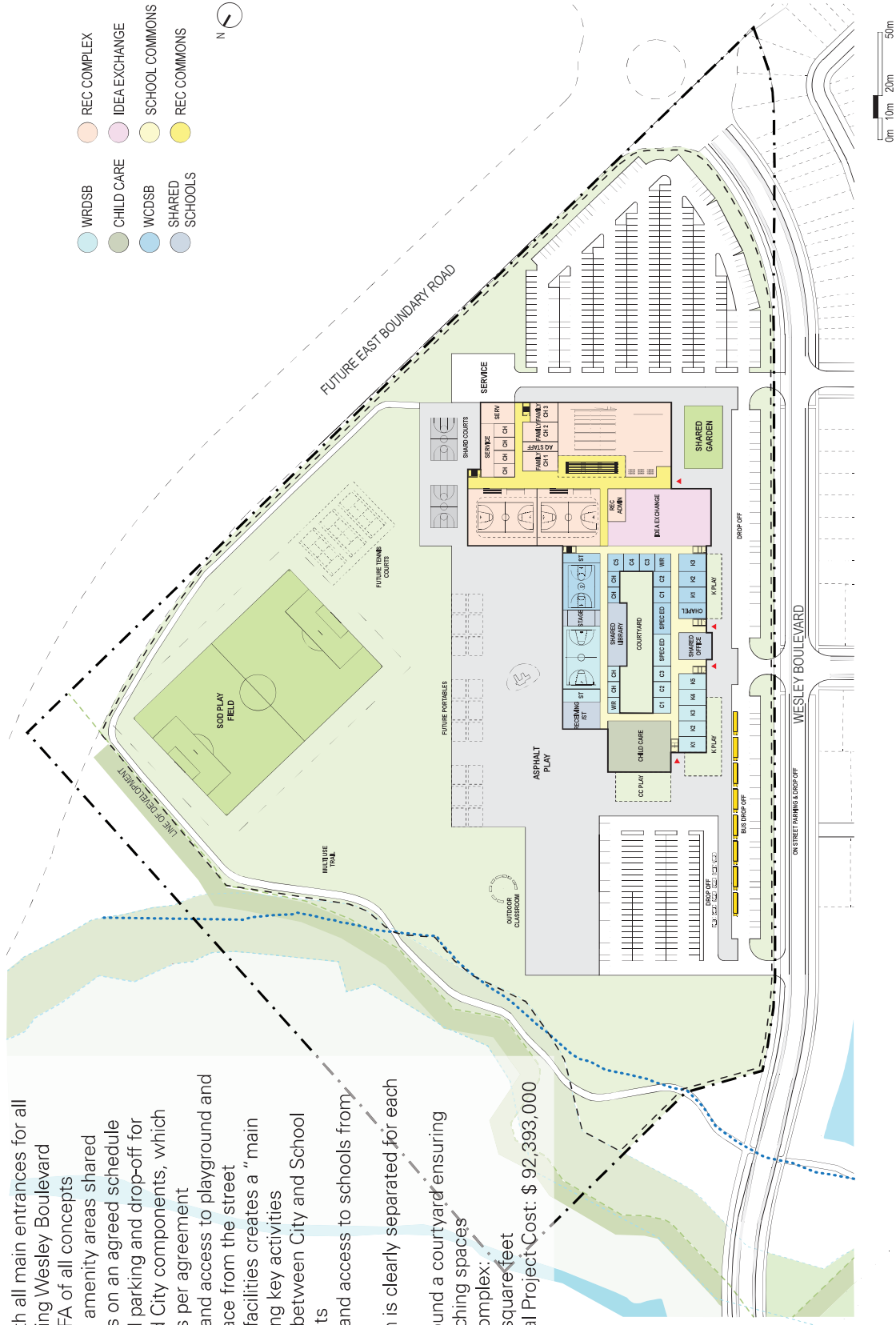
The consolidated conceptual designs result in a compact footprint for the building, maximizing the open and greenspace accessible to the surrounding community. In each of the three consolidated concepts, there is a main building entrance that provides access to all facilities. In addition, the schools have a main entrance or “front door” to the street. In all consolidated concepts the school internal circulation is designed to operate independently of the Recreation Complex/Idea Exchange to ensure the safety and security of the school population. Physical and visual connections are provided between all uses to allow sharing when and where desired. Where possible each school’s circulation is separated from the other.

The consolidated concepts maximize the opportunity for planned and serendipitous sharing of facilities. Building operations and maintenance are more efficient than stand-alone buildings. *Although potential area reductions were targeted in the space program, these were not achievable due to additional required circulation, low gross-up and plan configurations required to bring daylight into the facility.*

Construction phasing opportunities to accelerate the occupancy of any of the partners’ facilities are limited.

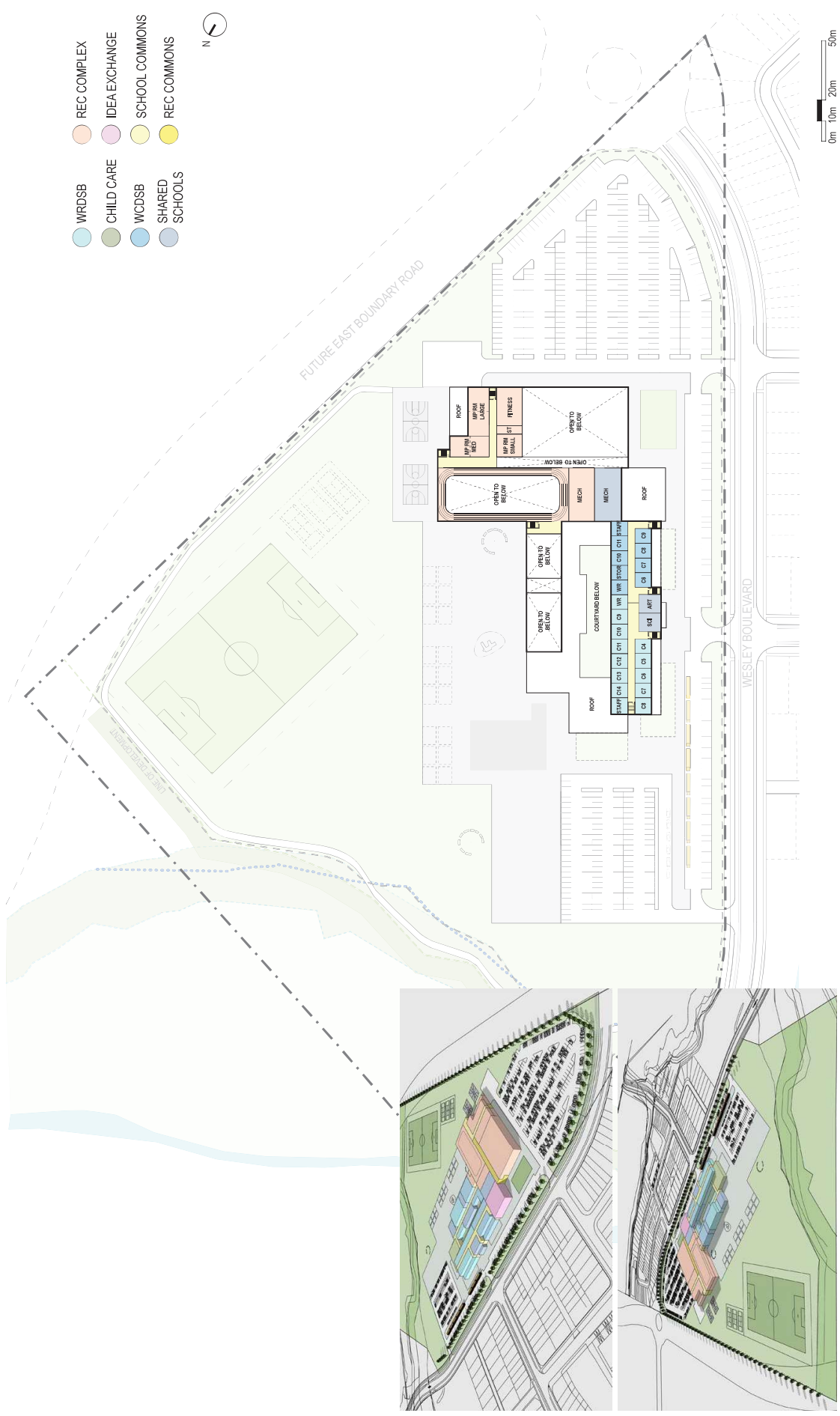
## CONCEPT 1

- L-shaped plan with all main entrances for all partners addressing Wesley Boulevard
- Lowest overall GFA of all concepts
- Outdoor play and amenity areas shared between all users on an agreed schedule
- Clearly separated parking and drop-off for School Board and City components, which may be shared as per agreement
- Limited visibility and access to playground and outdoor open space from the street
- Entrance to City facilities creates a "main street" highlighting key activities
- Clear separation between City and School Board components
- Limited visibility and access to schools from "main street"
- School circulation is clearly separated for each Board
- School wraps around a courtyard ensuring daylight in all teaching spaces
- Total Joint-use Complex:
  - GFA: 217,880 square feet
  - Estimated Total Project Cost: \$92,393,000



## CONSOLIDATED BUILDING CONCEPT PLANS

CONCEPT 1: One Campus, One Facility, L-shaped Plan  
Site Plan I Ground Floor Plan



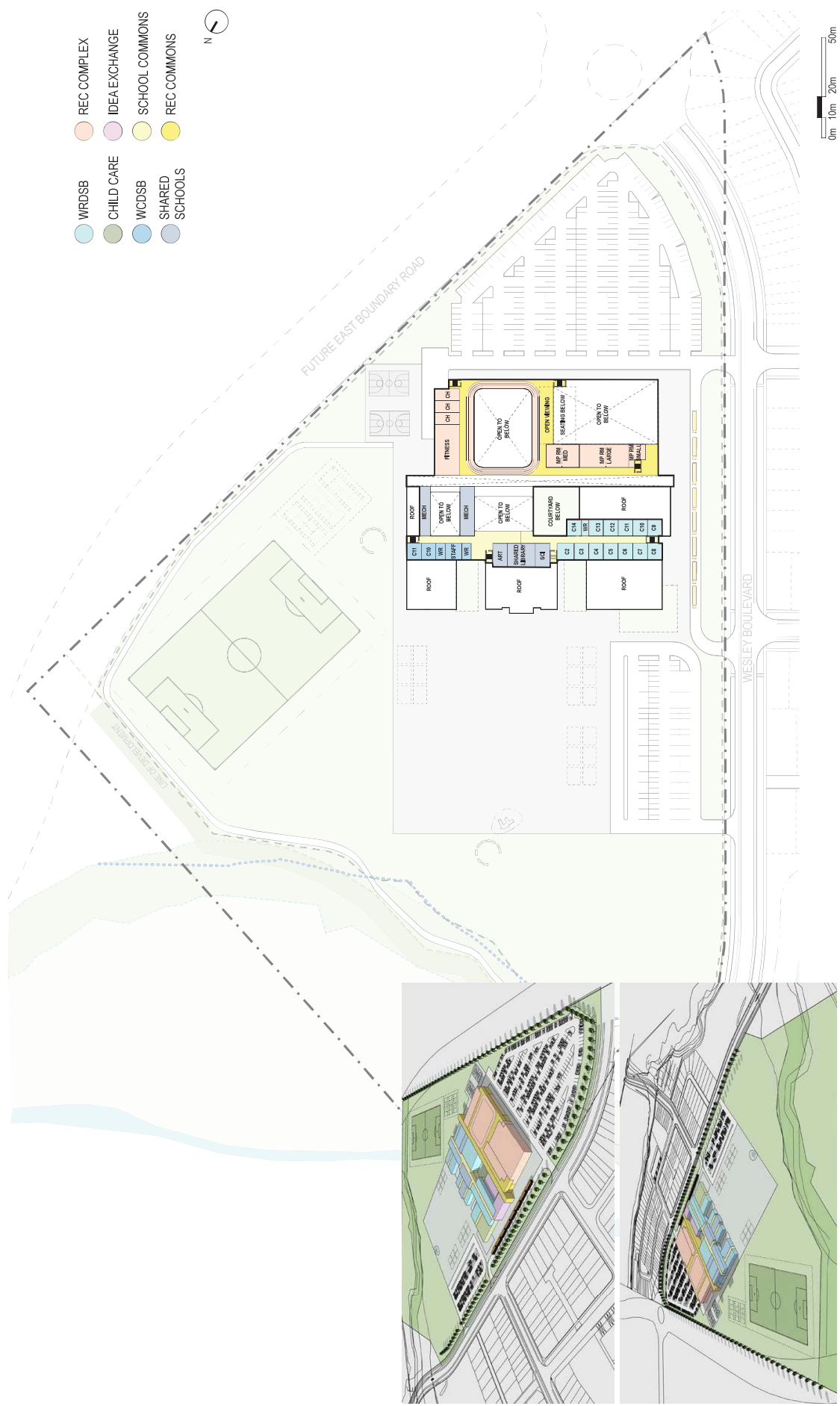
**CONSOLIDATED BUILDING CONCEPT PLANS**  
**CONCEPT 1: One Campus, One Facility, L-shaped Plan**  
 Second Floor Plan

## CONCEPT 2

- Block shaped plan with main entrance for City components addressing Wesley Boulevard and main shared School Board entry facing west to the school playground
- Most compact ground-floor footprint of all concepts
- Outdoor play and amenity areas shared between all users on an agreed schedule
- Clearly separated parking and drop-off for School Board and City components, which may be shared as per agreement
- Maximizes visibility and access to playground and outdoor open space from the street
- Entrance to City facilities creates a "main street" highlighting all partners' key activities
- Central courtyard brings daylight into the centre of a dense plan
- Clear separation between City and School Board components
- School circulation is clearly separated for each Board
- C-shaped school wings frame kindergarten play areas and ensure daylight in all teaching spaces
- Total Joint-use Complex:
  - GFA: 229,144 square feet
  - Estimated Total Project Cost: \$ 96,076,000



CONSOLIDATED BUILDING CONCEPT PLANS  
CONCEPT 2: One Campus, One Facility, Block Plan  
Site Plan I Ground Floor Plan





■ Linear plan located on east portion of the site running parallel to the future East Boundary Road with all main entrances addressing East Boundary Road

■ Outdoor play and amenity areas shared between all users on an agreed schedule

■ Combined parking and drop-off for School Board and City components

■ Separate bus loop for schools

■ Conceptualized as a building pavilion in a park, maximizing visibility and access to playground and outdoor open space from the street

■ A linear “main street” highlights all partners’ key activities

■ Clear separation between City and School Board components, except school gymnasiums are located within the City section of the facility

■ School circulation is clearly separated for each Board

■ C-shaped school wings ensure daylight in all teaching spaces

■ Recreation Complex gymnasiums are located on the second floor, over the Idea Exchange

■ Total Joint-use Complex:

- GFA: 224,213 square feet
- Estimated Total Project Cost: \$ 94,077,000

**CONSOLIDATED BUILDING CONCEPT PLANS**  
CONCEPT 3: One Campus, One Facility, Linear Plan  
Site Plan | Ground Floor Plan





## **SEPARATE BUILDINGS CONCEPT PLANS: ONE CAMPUS, SEPARATE FACILITIES**

The separate buildings conceptual designs allow for the two or three separate facilities to share the campus.

The facilities can operate independently, but are still designed and programmed to promote shared use of selected spaces both indoors and outdoors. The gross floor area reductions achieved in the consolidated building concepts cannot be achieved. The Recreation Complex will require its own third gymnasium in lieu of convenient time-of-day access to the WRDSB gymnasium. The schools will be required to build additional art and science classrooms in lieu of the dedicated classroom and maker space shared with the Idea Exchange in the consolidated concepts. Opportunities for joint-use and sharing with the Recreation Complex and Idea Exchange are maximized with the multi-purpose room and the makerspace. Sharing of building services and support spaces, and the associated savings in operations and maintenance costs, are also reduced.

Urban design benefits of separated buildings include distinct identity and addresses for each partner, and smaller building volumes more in keeping with the scale of the surrounding neighbourhood. When located in a separate building, on a more clearly defined site, the safety and security of the elementary school students, within the larger context of the campus, is better achieved. Separating the schools from the Recreation Complex and the Idea Exchange allows the partners to proceed with the design and construction at their own pace.

If the lands are severed between the City Components and the School Boards, each site would be required to meet zoning and municipal approvals requirements independently. If the campus remains as one property, then these approvals will be required for the entire site as a whole. However, the school design and construction could be fast-tracked for earlier occupancy.

**\*Preferred Concept**

**\*Preferred Concept**

- Total Joint-use Complex:

- Estimated Total Project Cost: \$ 93,135,000



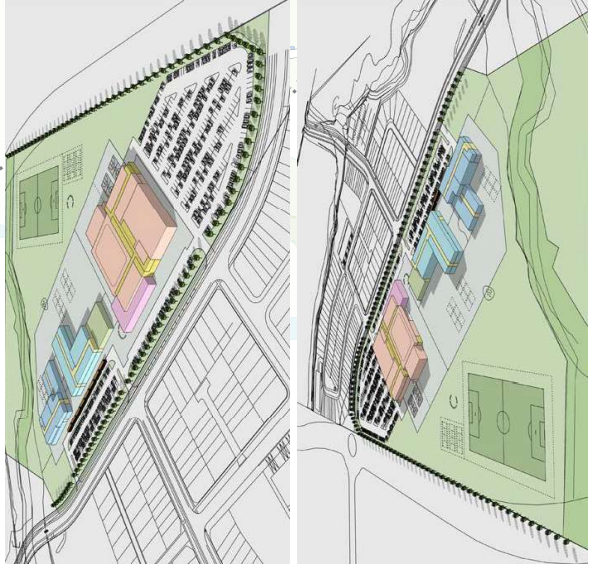
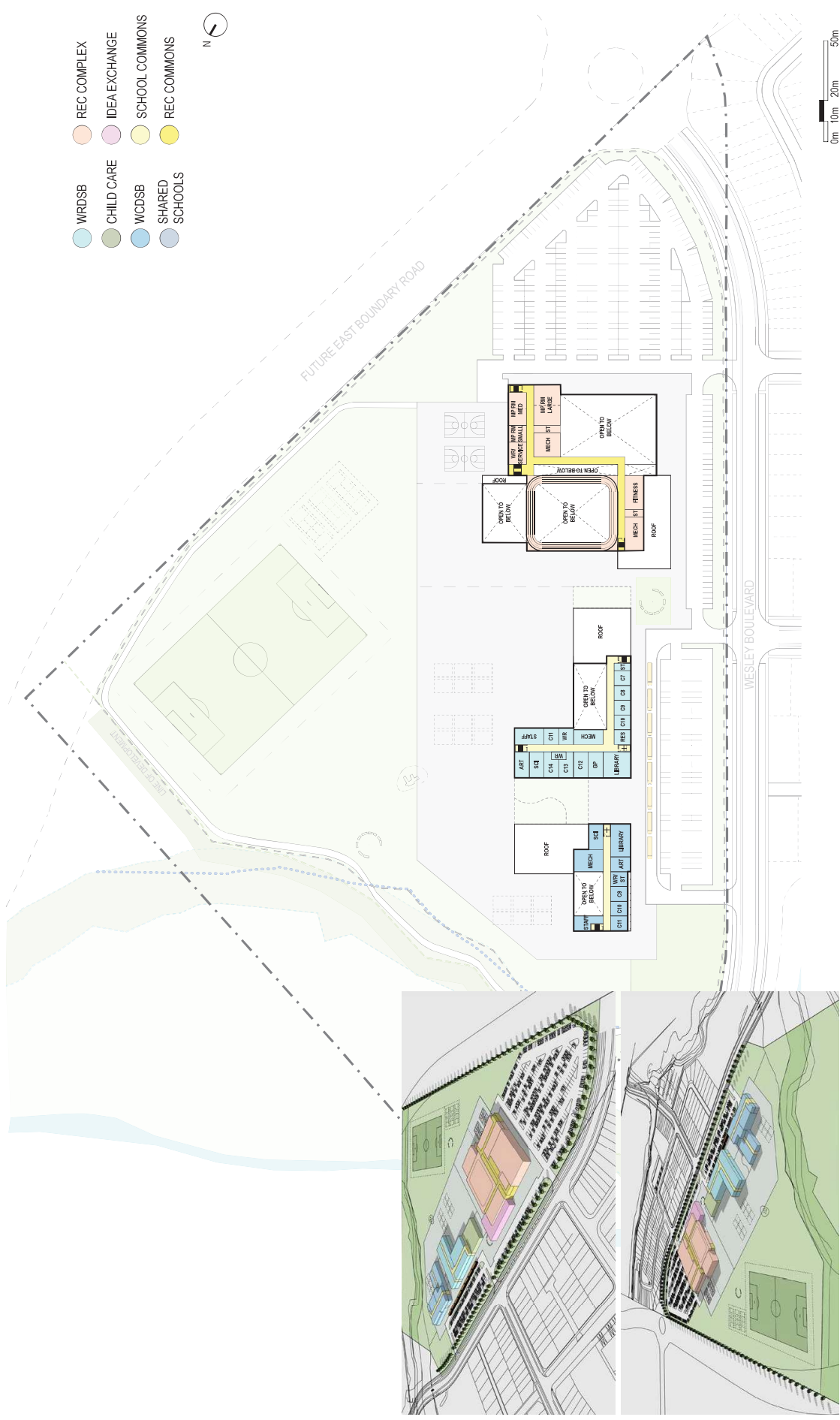
### CONCEPT 4: One Campus, Two Separate Facilities

CONCEPTUAL PLANS | Joint-use Campus Feasibility Study | 37



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**SEPARATE BUILDINGS CONCEPT PLANS**  
CONCEPT 5: One Campus, Three Separate Facilities  
Site Plan I Ground Floor Plan



**SEPARATE BUILDINGS CONCEPT PLANS**  
**CONCEPT 5: One Campus, Three Separate Facilities**  
 Second Floor Plan

## ENGINEERING DESIGN BRIEFS

Civil, structural, mechanical and electrical design briefs were prepared to describe the site and building engineering design requirements for the concepts. Refer to Appendix A4 for Civil, Structural, Mechanical and Electrical Design Briefs

## ANALYSIS

### PRELIMINARY ASSESSMENT MATRIX

A detailed matrix was used to assess each concept during the preliminary concept development phase of this feasibility study. All partners participated in assessing the concepts. The advantages/disadvantages, risks and opportunities for each concept were assessed, evaluating the following:

- Site
- Building Program
- Building Operations
- Sustainability
- Capital and Operating Costs
- Construction Implications

Concept designs were finalized and a detailed analysis and ranking was completed for each, the results of which are presented below.

***All partners agreed on the overall ranking of the five preliminary concept plans. Concepts 2 and 4 emerged as the preferred approaches to the joint-use campus.***



## CONCEPT 1: One Campus, One Facility, L-shaped Plan

### Site

- Opportunities for sharing outdoor play and amenity spaces are maximized
- Separated and convenient parking and drop-off for each user
- Conflict between school buses and access to school parking lot
- Conflict between main building service area and City parking lot access (this will be mitigated by future access from East Boundary Road)
- Limited open space and play areas are available to community during the school day
- Wesley Boulevard frontage dominated by building and asphalt; does not present a “park face” to the community
- Very good identity for each user, with addresses on Wesley Boulevard

### Building Program

- Opportunities for joint-use and sharing are maximized
- Each component’s footprint is clearly delineated
- No potential for future additions to the schools

### Building Operations

- Each component can be independently secured
- Very good access for sharing between the schools and the Idea Exchange
- Access to the WRDSB’s shared gymnasium requires Recreation Complex users to use school corridors
- Distance to a single shared service and garbage is challenging for the schools
- Very efficient centrally located shared mechanical plant
- Shared central plant will require the School Boards to follow the City’s operational timelines

### Sustainability

- Achieving LEED Gold for the City facilities is challenging due to the complexities of separating the building systems
- Building envelope (cladding ratio of exterior wall to gross floor area) is high for the school reducing efficiency

### Capital and Operating Costs

- All building components have achieved gross floor area reductions over the original benchmarks space program
- Area reductions have not been achieved over the reductions targeted through sharing program spaces due to additional circulation/connections to Recreation Complex
- Exterior cladding ratios for the schools are higher than benchmark due to courtyards designed to bring daylight into a dense building form
- The estimated total Construction Cost for Concept 1 is a blended \$340 per square foot for all components totaling \$74,122,000
- The total construction cost is lowest for this concept because it has the lowest gross floor area of all concepts
- The estimated Total Project Cost (including soft costs) is \$92,393,000
- The shared centralized heating, cooling, and air distribution systems can provide significant operational cost savings
- Energy savings can be realized by more efficient equipment, energy recovery, and control strategies
- Maintenance costs can be reduced by using fewer pieces of equipment in fewer locations

### Construction Implications

- Limited opportunities to phase the construction as the building systems are interconnected
- Potential to open the schools prior the completion of the Recreation Complex with careful planning and scheduling of construction activities
- Safety is a major concern when partially occupying a school site while under construction
- Construction timelines for the schools are longer than a stand-alone facility affecting occupancy date and construction costs



## CONCEPT 2: One Campus, One Facility, Block Plan

### Site

- Opportunities for sharing outdoor play and amenity spaces maximized
- Separated and convenient parking and drop-off for each user
- School bus drop-off and access to school parking lot are completely separated
- Conflict between main building service area and City parking lot access (this could be mitigated by future access from East Boundary Road)
- Most open site area available for school playgrounds of all concepts
- More open space and play areas are available to community, during the school day
- Location of building and parking along Wesley Boulevard frontage opens up views and access providing a better “park face” to the community
- Good identity for each user, with main complex addresses on Wesley Boulevard, and school entrances, visible from street, located off the playground

### Building Program

- Opportunities for joint-use and sharing are maximized
- Each component’s footprint is clearly delineated
- Good potential for future additions to the schools by expanding the classroom wings to the west

### Building Operations

- Each component can be independently secured
- Very good access for sharing between the schools and the Idea Exchange
- Recreation Complex users can access WRDSB’s shared gymnasium without entering school corridors
- Access to the single shared service and garbage is good for all users
- Very efficient centrally located shared mechanical plant
- Shared central plant will require the School Boards to follow the City’s operational timelines

### Sustainability

- Achieving LEED Gold for the City facilities is challenging due to the complexities of separating the building systems
- Building envelope (cladding ratio of exterior wall to gross floor area) is fair for the schools and good for the City components

### Capital and Operating Costs

- All building components have achieved gross floor area reductions over the original benchmarks space program
- Area reductions have not been achieved over the reductions targeted through sharing program spaces due to additional circulation/connections to Recreation Complex
- Exterior cladding ratios are higher than benchmark funding for the schools due to plan configuration to bring daylight into a dense building form
- The estimated total Construction Cost for Concept 2 is a blended \$335 per square foot for all components totaling \$76,843,000
- The construction cost is higher than Concept 1 due to the larger GFA of the Recreation Complex. The overall cost per square foot is lower. The GFA can be reduced during the design development phase to reduce construction costs
- The estimated Total Project Cost (including soft costs) is \$96,076,000
- The shared centralized heating, cooling, and air distribution systems can provide significant operational cost savings
- Energy savings can be realized by more efficient equipment, energy recovery, and control strategies
- Maintenance costs can be reduced by using fewer pieces of equipment in fewer locations

### Construction Implications

- Limited opportunities to phase the construction as the building systems are interconnected
- Potential to open the schools prior the completion of the Recreation Complex with careful planning and scheduling of construction activities
- Safety is a major concern when partially occupying a school site while under construction. Construction timelines for the schools are longer than a stand-alone facility affecting occupancy date and construction costs

## CONCEPT 3: One Campus, One Facility, Linear Plan

### Site

- Opportunities for sharing outdoor play and amenity spaces maximized
- Single driveway access creates major conflict and congestion issues
- No clear separation of parking for each user group
- Linear parking layout creates safety issues
- Drop-off for schools and child care are not conveniently located
- Conflict between school buses and access to main parking lot
- Conflict between main building service area and City parking lot access (this could be mitigated by future access from East Boundary Road)
- Maximizes open site area available for school playgrounds of all concepts
- Some open space and play areas are available to community, during the school day
- Location of building and parking along the future East Boundary Road frontage opens up views and access creating a “building in a park”
- Poor identity for each user from Wesley Boulevard; each user has an identity and access off the parking and greenspace along East Boundary Road

### Building Program

- Opportunities for joint-use and sharing are maximized
- The schools’ footprint is not clearly delineated; school gymnasiums are accessed from the Recreation Complex circulation
- Recreation Complex gymnasiums are located above the Idea Exchange resulting in access and supervision issues, and complex construction to mitigate sound and vibration issues
- Good potential for future additions to the schools by expanding the classroom wings to the south west

### Building Operations

- More challenging to independently secure each component
- Distance to the Idea Exchange makes access for sharing with the schools challenging
- Conflict between for Recreation Complex users and the schools in accessing school gymnasiums

- Distance to a single shared service and garbage is challenging for the City
- Components, requiring access through the schools
- Linear plan reduces efficiency of shared mechanical plant
- Shared central plant will require the School Boards to follow the City’s operational timelines

### Sustainability

- Achieving LEED Gold for the City facilities is challenging due to the complexities of separating the building systems
- Building envelope (cladding ratio of exterior wall to gross floor area) is high for all components (except the Idea Exchange) reducing efficiency

### Capital and Operating Costs

- Gross floor area reductions over the original benchmarks space program have not been achieved by all building components
- Area reductions have not been achieved over the reductions targeted through sharing program spaces due to inefficient building plan and additional circulation/connections to Recreation Complex
- Exterior cladding ratios are highest of all concepts due to linear building configuration
- The estimated total Construction Cost for Concept 3 is a blended \$337 per square foot for all components totaling \$75,537,000
- The estimated Total Project Cost (including soft costs) is \$94,077,000
- The shared centralized heating, cooling, and air distribution systems can provide operational cost savings
- Energy savings can be realized by more efficient equipment, energy recovery, and control strategies
- Maintenance costs can be reduced by using fewer pieces of equipment in fewer locations

### Construction Implications

- Limited opportunities to phase the construction as the building systems are interconnected and building program elements not clearly separated
- No potential to open the schools prior the completion of the Recreation Complex
- Construction timelines for the schools are longer than a stand-alone facility affecting occupancy date and construction costs

## CONCEPT 4: One Campus, Two Separate Facilities

### \*Preferred Concept

#### Site

- Opportunities for sharing outdoor play and amenity spaces maximized
- Community Park is highly visible and inviting to the neighbourhood
- Separated and convenient parking and drop-off for each user, can be shared as needed
- School bus drop-off and access to school parking lot are completely separated
- Conflict between City building service area and City parking lot access (this could be mitigated by future access from East Boundary Road)
- Generous open site area available for school playgrounds
- Very good identity for each user, with addresses on Wesley Boulevard

#### Building Program

- Opportunities for joint-use and sharing are maximized in the schools
- Opportunities for joint-use and sharing between the schools and City components are available, but not readily accessible
- Opportunities for sharing between the Recreation Complex and Idea Exchange are maximized with the multi-purpose rooms and makerspace
- Recreation Complex requires a third gym as sharing with the schools is not convenient
- Schools require additional science and art classrooms as the classroom and maker space located in the Idea Exchange are not convenient
- Each component's footprint is clearly delineated
- Some potential for future additions to the schools by expanding to the north

#### Building Operations

- Each component can be independently secured
- Two building can operate completely independently
- Balances opportunities for sharing with need for identity, security & funding limitations
- Separate garbage and service areas are required for each building
- Separate mechanical plants are required for each building

#### Sustainability

- LEED Gold for the City facilities is achievable
- Building envelope (cladding ratio of exterior wall to gross floor area) meets acceptable standards for all components

#### Capital and Operating Costs

- The schools have achieved gross floor area reductions over the original benchmarks space program
- The Recreation Complex has achieved the targeted gross floor area
- Exterior cladding ratios are efficient for each of the buildings
- The estimated total Construction Cost for Concept 4 is a blended \$335 per square foot for all components totaling \$74,491,000
- The construction cost per square foot is the lower for this concept based on simple efficient building forms
- The estimated Total Project Cost (including soft costs) is \$93,135,000
- The decentralized approach can lead to higher operational costs due to less efficient equipment, more equipment to be maintained, and lower load diversity
- The capital cost of the decentralized equipment can be considerably lower

#### Construction Implications

- The site can be severed and the schools can be built on their own schedule, in advance of the City portion of the site if desired

## CONCEPT 5: One Campus, Three Separate Facilities

### Site

- Opportunities for sharing outdoor play and amenity spaces maximized
- Separated and convenient parking and drop-off for each user
- Conflict between school buses and access to school parking lot and Recreation Complex drop-off
- Conflict between City building service area and City parking lot access (this could be mitigated by future access from East Boundary Road)
- Generous open site area available for school playgrounds
- Limited open space and play areas are available to community during the school day
- Wesley Boulevard frontage dominated by building and asphalt; does not present a “park face” to the community
- Very good identity for each user, with addresses on Wesley Boulevard

### Building Program

- Opportunities for joint-use and sharing between all partners are available, but not readily accessible
- Recreation Complex requires a third gym as sharing with the schools is not convenient
- Each school requires its own science and art classrooms as they cannot easily share with each other and the classroom and maker space located in the Idea Exchange are not convenient
- Each school requires its own provisions for a stage as they cannot share as in the other concepts
- Each component’s footprint is clearly delineated
- Some potential for future additions to the schools by expanding to the north

### Building Operations

- Each component can be independently secured
- Three building can operate completely independently
- Separate garbage and service areas are required for each building
- Separate mechanical plants are required for each building

### Sustainability

- LEED Gold for the City facilities is achievable
- Building envelope (cladding ratio of exterior wall to gross floor area) is higher for the schools, because they are separate buildings, reducing efficiency

### Capital and Operating Costs

- The schools meet the gross floor area of the original benchmarks space program
- The Recreation Complex has not achieved gross floor area reductions due the low gross-up percentage allocated on the space program and the inherent inefficiencies locating the majority of the program elements on the ground floor resulting in a small second floor plate
- Cladding ratios are efficient for each of the buildings
- The estimated total Construction Cost for Concept 5 is a blended \$336 per square foot for all components totaling \$75,571,000
- The estimated Total Project Cost (including soft costs) is \$94,339,000
- In Concept 5, the HVAC systems are further decentralized resulting in the highest operational costs of all concepts due to the amount of equipment provided and the lowest load diversity
- The capital cost is unlikely to be less than that of Concept 4 because a larger number of smaller pieces of equipment are required

### Construction Implications

- The site can be severed and the schools can be built on their own schedule, in advance of the City portion of the site if desired

## ORDER OF MAGNITUDE COST ESTIMATE METHODOLOGY

An Order of Magnitude Cost Estimate is an estimate based on an initial functional program and preliminary conceptual plans. It is comprised of an elemental summary, and based on a rough cost per square foot for each element. The level of certainty, or potential cost variation, of this estimate is generally +/-15% to 20% depending on the complexity of the project. The costing includes a design and pricing allowances of 10% for items not yet known at this early stage of design. Allowances for construction price escalation and potential impact of Covid-19 on construction costs are not included in this estimate and should be evaluated as the project proceeds.

Order of Magnitude Construction Cost Estimates were completed for all concepts. Building and site costs were allocated to each component.

### Total Project Budget

Total Project Budget is defined as all costs to complete a building project, excluding land acquisition, and in the case of this site, site servicing and rough grading being completed by the subdivision developer. The total project budget is comprised of Hard Costs (construction costs for the site and building) and Soft Costs (other non-construction related costs).

Hard Costs would typically include:

- All labour and material costs directly related to the physical construction of the building, fixed equipment and site
  - Site development, on-site servicing, paving and landscaping
  - Structure
  - Exterior enclosures (cladding and roofing)
  - Interiors (partitions and doors, finishes, fixed fittings and equipment)
  - Services (mechanical, electrical, IT, security, etc.)
  - General Contractors overhead costs and profit

Soft Costs would typically include:

- Furniture and loose equipment
- Consulting fees
- Permit and municipal approvals fees
- Studies such as geotechnical investigations, surveys
- Legal fees
- Internal administration costs
- Owner's construction contingency
- HST



Development charges are not included in soft costs, and should be treated as a specific exclusion as these can be waived for certain owners. Development charges are not paid by City or School Boards when developing lands for their own purposes.

For school construction soft costs are calculated at 15% of the construction budget. This ratio is stipulated in the Ministry benchmarks for construction. Soft costs for the Recreation Complex and Idea Exchange would be in the range of 25% to 30% of construction budget. School Board soft costs are generally lower than those for public recreational facilities. The largest difference is in FFE (furniture, fittings and equipment). The outfitting of a Recreation Complex and Library is more extensive and expensive. Design and consulting fees are lower for a school project. Project management costs are generally higher for municipal clients.

### Construction Cost Methodology for Consolidated Building Concepts (Concepts 1, 2 and 3)

#### Building Development Costs

- Building costs were allocated to each partner based on their measured GFA, exterior wall area, roofing area, etc. Where spaces are shared, for instance some circulation or mechanical spaces, the costs were allocated pro-rata to each partner
- School estimated costs are based on standard specifications for a stand-alone school built to Ministry of Education benchmarks, e.g., quality of cladding, roofing, finishes, etc.
- City facility costs are based on specifications for a high-performance building designed to LEED Gold standards
- Operating costs for the school portion may be higher as the building envelope does not meet the high-performance standards required for the City portions to achieve the desired LEED rating
- Building envelope (cladding) ratios are higher in the consolidated concepts where courtyards are used to bring daylight into internal spaces of a dense compact plan
- It is anticipated that a higher tier general contractor would construct the larger, more complex consolidated concepts, because of the Recreation Complex aquatics component, therefore the General Conditions and Fees would be at a higher rate than a stand-alone school or joint schools
- Shared components, where not specifically designated to one partner's space program, are allocated to each partner using their respective gross floor area ratio

#### Site Development Costs

- Site areas designated for school play were allocated to each Board using the ownership ratios agreed to in the Memorandum of Understanding between all parties (55.2% WRDSB, 44.8% WCDSB)

- Site areas designated for City play, e.g., community park, outdoor courts, future tennis, were allocated to the Recreation Complex
- Parking and paved areas were allocated to each partner using a ratio of the number of parking spaces designated for each
- The remainder of the site development area was allocated to each partner using their agreed ownership ratios (55.4% City, 24.6% WRDSB, 20% WCDSB)

### Construction Cost Methodology for Separate Buildings Concepts (Concepts 4 and 5)

#### Building Development Costs

- Costs were calculated assuming the site is severed using the agreed ownership ratios (55.4% City, 44.6% schools), and facilities are built by two separate contractors
- School estimated costs are based on standard specifications for a stand-alone school built to Ministry of Education benchmarks, e.g., quality of cladding, roofing, finishes, etc.
- City facility costs are based on specifications for a high-performance building designed to LEED Gold standards
- It is anticipated that a higher tier general contractor would construct the larger, more complex City facility therefore the General Conditions and Fees would be at a higher rate than for the stand-alone schools

#### Site Development Costs

- Site costs were allocated as per the agreed ownership ratios (55.4% City, 44.6% schools)
- Site areas designated for school play were allocated to each Board using their agreed ownership ratios (55.2% WRDSB, 44.8% WCDSB)
- Site areas designated for City play, e.g., community park, outdoor courts, future tennis, were allocated to the Recreation Complex
- Parking and paved areas were allocated to each School Board and between the Recreation Complex and the Idea Exchange, using a ratio of the number of parking spaces designated for each
- Parking and paved areas were allocated to the Recreation Complex and the Idea Exchange using a ratio of the number of parking spaces designated for each

The agreed ownership ratios may be revisited based on detailed design and anticipated needs for building footprint and outdoor amenities, such as play areas, future portable space, drop off areas, etc.



## School Costing Notes

The order of magnitude cost estimates for both schools in all concepts exceed the Ministry benchmarks for funding. The WRDSB funding was approved by the Ministry in 2016. The total benchmark project funding for this school is \$10,932,002. The WCDSB funding was approved in 2020, at a higher per square foot cost, with total project benchmark funding for this school at \$8,652,378. Total project costs includes both hard costs and soft costs. The portion of this funding allocated to construction costs is 85%. School Boards receive funding in addition to the benchmarks noted above, through Education Development Charges (EDC). This funding is available for site preparation costs and extraordinary site costs, e.g., poor soils conditions, engineered fill, storm water management and site services, retaining walls, structural premiums due to site conditions, etc. EDC costs for the schools may be in the order of up to \$1,000,000 for each school.

It is typical at the concept design phase for estimated construction costs for school projects to exceed the funding available. Costs are refined through value-engineering as the design progresses.

## Value Engineering

Value engineering is a creative and systematic effort, which analyzes the requirements of a project for the purpose of achieving the essential functions at the lowest total costs (capital, staffing, energy, maintenance) over the life of the project. Through a collaborative effort, by all team members, value and economy are improved through the study of alternate design concepts, materials, and methods without compromising the agreed functional and value objectives. Value engineering can be applied at any point in a project, even in construction. However, typically the earlier it is applied the higher the return on the time and effort invested.

The next step in establishing project budgets, as the partners move into the design development phases of the project, would include a value engineering exercise. Value engineering workshops can be where the design team and building stakeholders first create an extensive list of opportunities for savings. In the workshop, “pros and cons” would be established for each item and a corresponding capital value established for each. At the end of the workshop the client group would be asked to agree which items would be accepted to achieve the required cost savings.

## General Costing Notes

Achieving the gross floor area targeted reductions for the Recreation Complex is a challenge due to the low gross-up allocated on the space program, and the requirement for generous circulation spaces to operate the facility. Further development of the space program and design, as the project moves forward, will result in efficiencies that will mitigate this issue. This process is typical and is similar to the value engineering process.

There may be opportunities to fund specific items e.g., school playground equipment, outdoor classrooms, Recreation Complex equipment, etc., through community fundraising or corporate sponsorships.

***As the difference in total construction costs for the various concepts is not substantial, a 5% variance between the lowest and highest, capital cost should not be used as the key factor in selecting the preferred concept.*** Over a 40-year building lifespan design and construction costs are approximately 15% to 20% of the total building cost, capital asset management is 10% to 20%, and operations and maintenance are by far the biggest cost of ownership at 60% to 80%.

Cost of Building Ownership over 40 years



The following chart summarizes the estimate total project cost for each partner in relation to their benchmark areas, targeted area reductions for joint-use of space in the consolidated concepts, and benchmark funding for the schools.

Refer to the Appendix A5 for the Elemental Cost Summary for each Concept.

## CAMBRIDGE JOINT-USE CAMPUS - TOTAL PROJECT BUDGET SUMMARY

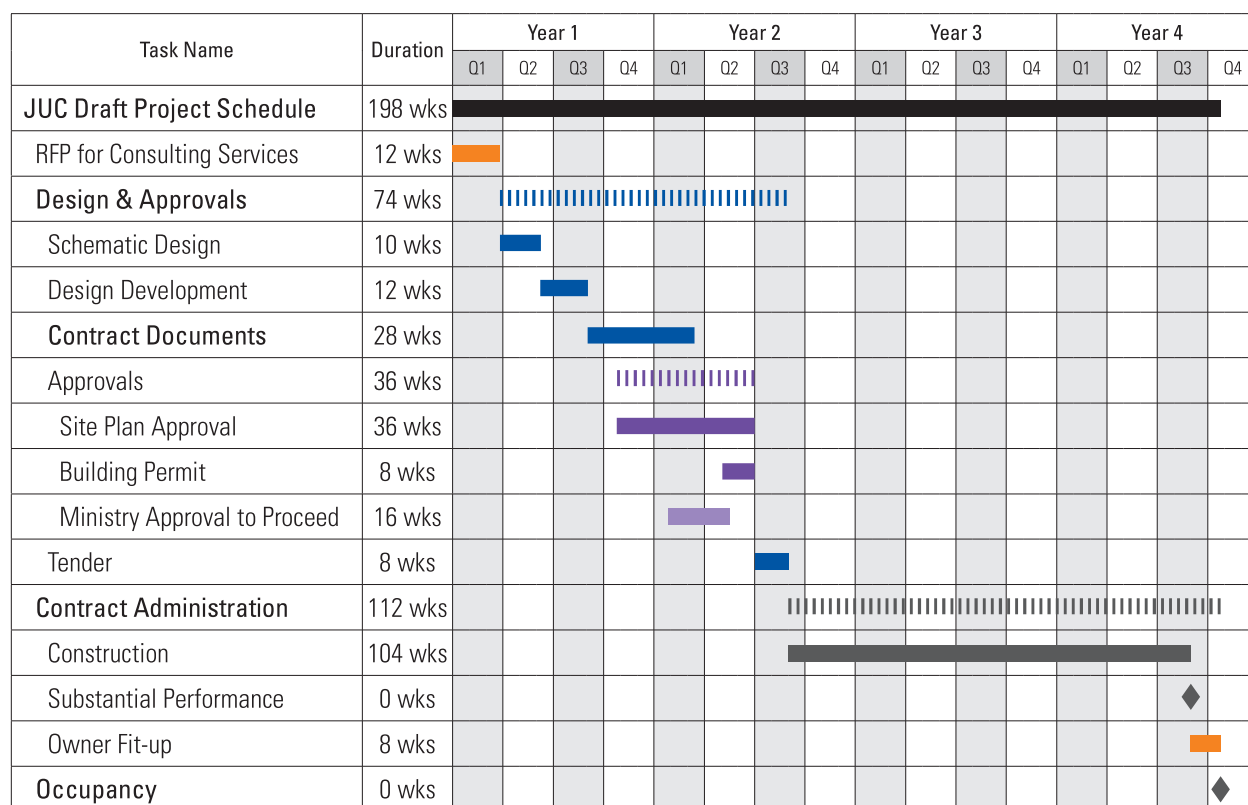
CONSOLIDATED CONCEPTS: One Campus, One Facility																SEPARATED BUILDINGS CONCEPTS: One Campus, Separate Facilities														
DESCRIPTION	CONCEPT 1						CONCEPT 2						CONCEPT 3						CONCEPT 4						CONCEPT 5					
	GFA		\$/sf		Amount		GFA		\$/sf		Amount		GFA		\$/sf		Amount		GFA		\$/sf		Amount		GFA		\$/sf		Amount	
WRDSB																														
Current	50,741	\$	295	\$	14,959,000	51,990	\$	279	\$	14,493,000	53,206	\$	291	\$	15,503,000	52,773	\$	263	\$	13,892,000	52,773	\$	263	\$	13,892,000	54,896	\$	271	\$	14,852,000
Benchmark (based on 2016 Ministry Funding)	53,240	\$	205	\$	10,932,002	53,240	\$	205	\$	10,932,002	53,240	\$	205	\$	10,932,002	53,240	\$	205	\$	10,932,002	53,240	\$	205	\$	10,932,002	53,240	\$	205	\$	10,932,002
Target GFA for construction (including larger gym in Consolidated)	53,745					53,745					53,745					53,705					53,705					53,240				
Target GFA (to be funded by WRDSB, only applies to Consolidated)	52,535					52,535					52,535																			
WRDSB Child Care																														
Current	8,934	\$	317	\$	2,836,000	8,611	\$	317	\$	2,729,000	8,503	\$	318	\$	2,704,000	8,503	\$	312	\$	2,651,000						8,665	\$	318	\$	2,758,000
Benchmark (based on 2016 Ministry Funding)	8,500	\$	303	\$	2,571,267	8,500	\$	303	\$	2,571,267	8,500	\$	303	\$	2,571,267	8,500	\$	303	\$	2,571,267						8,500	\$	303	\$	2,571,267
WCDSB																														
Current	40,935	\$	308	\$	12,607,000	39,267	\$	307	\$	12,064,000	42,528	\$	315	\$	13,395,000	41,335	\$	287	\$	11,857,000						42,001	\$	293	\$	12,317,000
Benchmark (based on 2020 Ministry Funding)	42,645	\$	203	\$	8,652,378	42,645	\$	203	\$	8,652,378	42,645	\$	203	\$	8,652,378	42,645	\$	203	\$	8,652,738						42,645	\$	203	\$	8,652,738
Target GFA for construction (including shared stage in Consolidated)	39,655					39,655					39,655					41,215					42,645									
Target GFA (to be funded by WCDSB, only applies to Consolidated)	39,065					39,065					39,065																			
Recreation Complex																														
Current	103,670	\$	541	\$	56,115,000	115,676	\$	527	\$	60,936,000	106,375	\$	534	\$	56,843,000	105,842	\$	553	\$	58,490,000						105,842	\$	550	\$	58,180,000
Benchmark GFA	104,020					104,020					104,020					104,020					104,020									
Target GFA for construction (Consolidated Concepts only)	99,260					99,260					99,260					106,160					106,160									
Target GFA (to be funded by City, only applies to Consolidated)	100,960					100,960					100,960					106,160					106,160									
Idea Exchange																														
Current	13,600	\$	432	\$	5,876,000	13,600	\$	430	\$	5,854,000	13,600	\$	414	\$	5,632,000	13,600	\$	459	\$	6,245,000						13,600	\$	458	\$	6,232,000
Maximum Approved GFA	13,600					13,600					13,600					13,600					13,600									
Target GFA for construction (Consolidated Concepts only)	13,790					13,790					13,790					13,600					13,600									
Target GFA (to be funded by Idea Exchange)	13,600					13,600					13,600					13,600					13,600									
Joint-use Complex Total Estimated Project Cost	217,880	\$	424	\$	92,393,000	229,144	\$	419	\$	96,076,000	224,213	\$	420	\$	94,077,000	222,053	\$	419	\$	93,135,000						225,003	\$	419	\$	94,339,000

## CONSTRUCTION TIMELINES

### Typical Project Schedule

#### Consolidated Concepts

After completion of the Feasibility Study, and agreement by all parties to proceed, the design and construction phase of the project will begin. Design and approvals for a project of this scope and complexity will take 18 to 24 months. The bidding and procurement (tender) phase would take 2 to 3 months, and construction would span a minimum 2 years. A typical project schedule, for a project of this scope and complexity, from the beginning of the design and construction phase to occupancy is 4 to 5 years.



#### Separated Buildings Concepts

For the recommended approach, Concept 4, if the site is severed each partner can proceed at its own pace. The City facility schedule will be the same as the schedule for the Consolidated Concepts. For the combined school facility, the design and approvals phase will take 12 to 18 months. The bidding and procurement (tender) phase would take 2 months, and construction would span a minimum 14 months. A typical project schedule, for the combined schools, from the beginning of the design and construction phase to occupancy is approximately 3 years.

## POTENTIAL RISKS

When the project moves forward into the design and construction phase there are risks that should be monitored. These are noted throughout the report and summarized below:

### Schedule

Issue	Impact	Mitigation
Negotiation of Development and Joint-use Agreements	Delay to project start and occupancy for all parties	Memorandum of Understanding allows work to continue while agreements are resolved  Select a separate buildings option and sever land to allow owners to proceed at own pace
Complex approvals process including Rezoning, Site Plan Approval, GRCA	Delay to project start and occupancy for all parties  Further reduction of usable site area due to wetland restrictions	Allow for lengthy approvals process in project schedule
Timing of construction of East Boundary Road	Limits access to site from one street only - Wesley Boulevard	Ensure on-site traffic can operate effectively without the future EBR access

### Project Cost

Issue	Impact	Mitigation
Challenges in meeting Ministry benchmarks for school construction	Delayed Ministry Approval to Proceed with Construction	Continuous value engineering and assessment of all decisions throughout the design process
Escalation costs due to lengthy project schedule are not funded by Ministry	Extensive cost savings measures required to meet benchmark, affecting project scope or quality	Maximize sharing opportunities and minimize gross-up to reduce GFA
Benchmark square foot costs do not align with current construction market		
Meeting the gross floor area cap for the Recreation Complex when the allocated percentage gross-up area is insufficient	Gross floor area exceeds City benchmark, increasing construction cost	Careful review of space program to find efficiencies  Continuous value engineering and assessment of all decisions throughout the design process to reduce GFA while maintaining required functional program

### LEED

Issue	Impact	Mitigation
Challenge in achieving LEED Gold for City components in consolidated building concepts	City does not meet its sustainability targets, affecting operating costs	Maximize sustainable initiatives within LEED framework

## FUTURE CONSIDERATIONS

When the project moves forward into the design and construction phase there are a number of items that should be addressed. These are noted throughout the report and summarized below:

### Site

- Undertake a topographical survey of the property upon completion of the developer's grading (currently underway at time of this report) to assess new site conditions and full scope of grading challenges and opportunities
- Update geotechnical investigations to provide general soils information for detailed engineering design, and to assess the feasibility of geothermal, ground source heat pump systems, on site
- Complete a detailed review of Zoning requirements and how they might be different once the property is severed
- Maintain ongoing conversation with the Region to keep updated on the design and construction timing of future East Boundary Road, as well as explore right-in-right-out access from this road onto the site
- Maintain ongoing conversations with the Grand River Conservation Authority (GRCA): conduct a thorough review of the Environmental Impact Study to confirm detailed bounds of development related to the wetlands, as well as details of required GRCA development permit
- Determine ownership conveyance of the protected wetlands on the north-western site boundary
- Maintain ongoing conversations with Grand River Transit to assess appropriate location of new bus stop on Wesley Boulevard or potentially on the joint-use campus site
- Undertake a transportation impact and parking demand study to confirm parking requirements

### Space Program and Project Costs


- Continue detailed development of space program requirements for Recreation Complex including:
  - Consideration of 8-lane pool, which is typical for many other municipalities and will reduce project cost
  - Review of allocation of gross-up area, which at 15% is very low for a facility of this scope and complexity
- Engage in on-going value engineering for all components to align gross floor area and project costs with benchmarks, while achieving the essential functions over the life of the project

- Undertake energy modeling and an associated financial analysis, comparing premium capital costs associated with energy saving measures against payback and savings over time, to determine sustainability targets for the project
- Allowances for construction price escalation and potential impact of Covid-19 on construction costs are not included in this estimate and should be evaluated as the project proceeds
- Pursue additional funding for school design and construction of the schools through a detailed analysis of funding available from Education Development Charges, which are available for site preparation costs and extraordinary site costs
- Consider opportunities to fund specific items through community fundraising or corporate sponsorships

#### Partner Agreements

- Engage in continuing collaboration between all partners to establish development, joint-use and operational agreements
- Revisit ownership ratios based on detailed design and anticipated needs





# **Joint Use Agreements**

## JOINT USE AGREEMENTS

In addition to Development and Capital Cost Sharing Agreements, the partners must work together to establish a Joint-use Agreement for the campus. This is a formal agreement between all parties setting out the terms and conditions for shared use of the site and facilities.

The agreement will reflect the unique requirements of the specific design of the facility, e.g., the agreement for a fully consolidated building will look very different from the agreement for one or two, or three separate buildings sharing a site; and it will be different again if the site is severed.

The negotiation of a joint-use agreement is a lengthy legal process and requires cooperation from all parties. The partnership between the City, Idea Exchange and School Boards has been strengthened by their cooperative effort throughout the feasibility study process. The collaborative development of multiple design concepts has advanced all of the partners' understanding and appreciation of the benefits and complexities of sharing.

The following topics will form the basis of the Joint-use Agreement:

### General Terms of the Agreement

- Establish effective date, number of years, and protocol for renewal

### Governance

- Establish a Joint Campus Operations Steering Committee
- Investigate any union/contract issues between parties to the agreement

### Communication Protocol

- Identify who will be responsible for communicating with partners about the agreement
- Identify who will be responsible for making decisions regarding the agreement
- Establish a process for resolving disagreements regarding any aspect of the agreement

### Priority of Uses/Scheduling

- Rank the priority of use of specific shared facilities between each partner, to allocate facility use accordingly, e.g., use of gymnasiums; meeting rooms; outdoor play areas; before and after school programs and space use; etc.
- Determine which entity will be responsible for scheduling use
- Determine how to accommodate schedule changes
- Establish staggered bell-times for two schools to accommodate drop-off and use of outdoor play areas

### Third-Party Use

- Establish the priority of uses for third-party programs
- Agree on the protocol for scheduling
- Coordinate third-party permitting or lease procedures

## Access and Security

- Determine security needs
- Identify employees who will need access to each partner's property or facilities
- Develop security protocol
- Establish one security platform that can be customized for each party, e.g., School Boards' lock-down and safe welcome requirements
- Consider one full time central contact and security office for all parties

## IT and Communications

- Coordinate IT and communications systems for shared networks with individual controls for each user
- Establish IT network security protocols

## Custodial Services

- Determine any shared custodial services/equipment needed
- Allocate responsibility for waste management

## Operations and Maintenance

- Establish a single Building Operations lead (likely the City) to manage shared facilities and building systems
- Determine which components of costs to measure, the methodology to use to determine costs, and how to allocate costs and fees
- Ensure separate metering of any shared services for each partner
- Allocate responsibility for regular property maintenance
- Determine whether additional maintenance is needed, and which party will provide service

## Inspection and Notification of Damage

- Coordinate the manner/frequency of property inspection
- Determine protocol for notifying partners of damage

## Restitution and Repair

- Determine the method and responsibility for property repair and replacement
- Determine the methods of calculating and allocating repair costs

## Improvements Protocols

- Establish conditions governing how partners will be permitted to make improvements (renovations/additions)

## Risk Management and Legal Issues

- Determine the types and amounts of insurance to require, consistent with each partners' risk management requirements
- Allocate liability risk and determine whether or what type of indemnification is required

## Dispute Resolution

- Establish a procedure for resolving disputes

# 9

## Conclusions

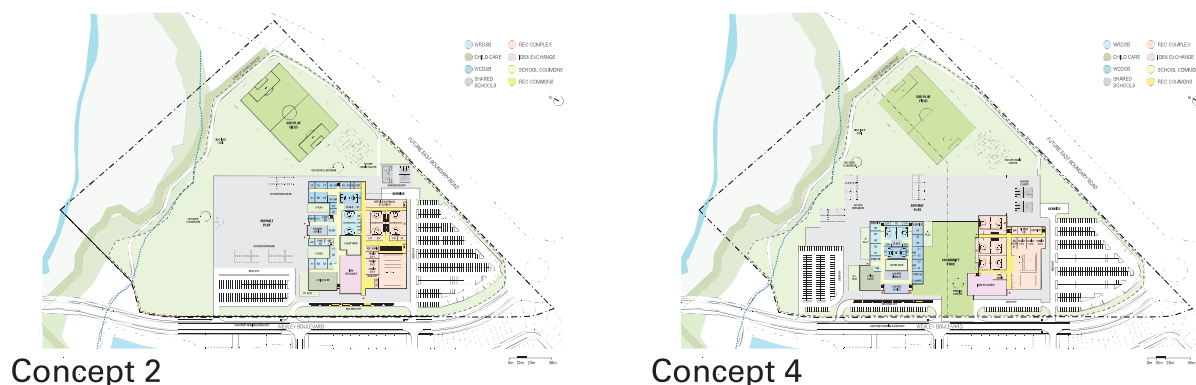
***The proposed joint-use campus will create a community hub offering educational, recreational and cultural activities for all ages for this Cambridge community. A shared approach provides better value for money for the community, and best utilization of all program spaces.***

A number of approaches (consolidated and separate) have been explored. All conceptual approaches demonstrate that a joint-use campus is achievable and will provide much greater benefits to the community than stand-alone buildings on stand-alone sites.

The site is well located for access by the current and future residents of this developing neighbourhood. Planned active transportation networks and transit infrastructure will provide healthy and sustainable alternatives to vehicular access to the campus. The wetland to the west creates learning opportunities for the students and a naturalized buffer to the site. The site is appropriately sized to accommodate the building program and required parking and drop-off facilities, while providing generous open greenspace for active and passive play.

The proposed partnership between the City, Idea Exchange and two School Boards creates an exemplary community hub providing a seamless integrated day from child care, school day, before and after, and after hours and weekends for all age groups. A detailed analysis of each partner's program offerings explored sharing opportunities and synergies that benefit all users. Students and users of the joint-use campus benefit from sharing and exposure to new activities at the Recreation Complex and Idea Exchange. Families can participate in multiple different activities on the same site. Multi-generational community connections are enhanced and encouraged.

Many factors were considered when making a final decision on whether to proceed with a fully consolidated building (Concept 2: One Campus, One Facility) or a separated buildings approach (Concept 4: One Campus, Two Separate Facilities).



The **Consolidated Building Concepts**, of which Concept 2: One Campus, One Facility is preferred, exploit the many joint-use and sharing opportunities most effectively through proximity, convenience, and both physical and visual access to these activities which are all available within a single complex. Within a consolidated facility both planned and serendipitous joint-use are possible. Open greenspace and playground areas are maximized. The facility and its central plant can be managed by a single operator (the City), reducing operations and maintenance costs.

The decision to proceed with a **Separated Buildings Concept**, of which **Concept 4: One Campus, Two Separate Facilities** is preferred, is based on three major factors.

The first important factor is capital cost. The separated concepts allow the City and the School Boards to proceed at their own pace. The design and construction of the City facility will take longer than the shared school building. In this concept the school construction can be accelerated. This is important as the funds for school construction are fixed; the Ministry benchmark does not allow for additional funding for construction cost escalation. Meeting the required gross floor areas is also more achievable for all partners in separated buildings. The additional circulation required to maintain safe and secure access to each component while sharing, and the complex plan configurations required to bring daylight into the dense building footprint are eliminated. Reducing gross floor area, while maintaining the required functional program, is an essential consideration in reducing both capital and operating costs.

The second issue is the necessary separation of elementary-aged school children, for safety and security reasons, from the general population using the rest of the facility. Although this challenge is addressed in the concept designs of the consolidated building by ensuring separate and secure entrances and circulation for the schools, all partners agree that the campus will operate most successfully in two separate buildings. Outdoor play space for the schools is also more clearly defined and secured during the school day. The two separate buildings frame a community park, accessible at all times to local residents directly off Wesley Boulevard.

The third factor is the challenge and complexity of the development a Joint-use Agreement, which may take a number of years to complete, and the impact that may have on opening date of these much needed elementary schools. A memorandum of understanding, regarding the joint-use terms and conditions could mitigate this issue. As the schools' scheduled opening is paramount, Concept 4 allows the site to be severed and the school construction to proceed at an accelerated pace.



Effective deployment of capital investment and operational efficiencies will be realized to varying degrees depending on the approach selected when moving forward with the project. It is important to note that the concept designs are only the beginning of a process. When a decision is made to proceed, the selected space program and design will continue to be developed in detail, meeting each users' specific program requirements, while finding more synergies, and value-engineering to achieving the essential functions at the lowest total costs over the life of the project.

The purpose this study, and of testing a variety of conceptual designs, is to facilitate a decision on whether the proposed joint-use campus is feasible. Is it a good investment of public funds? Does it enhance each partner's vision? Does the community benefit?

This study concludes that the answer is "yes" to all of those questions.

***The final recommendation is to proceed with Concept 4: One Campus, Two Separate Facilities***

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