Stratford
Community Campus Plan

Final Plan
April 2022

UPLAND RHAD ARCHITECTS CBCL

Final Plan
April 2022

This Report was completed by
UPLAND Planning + Design Studio in collaboration with CBCL Limited and RHAD Architecture + Design for the Town of Stratford.

UPLAND

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01 Introduction

Stratford is a town of dynamic growth and the fifth fastest-growing municipality with more than 5,000 inhabitants in Atlantic Canada.[1] Between 2016 and 2021 the Town's population grew by more than 12 percent to 10,927. Recent projections anticipate continued population growth over the next two decades to over 15,000 by 2031, and over 19,000 by 2041.[2] In addition, these projections suggest that Stratford will increase its proportion of Queens County's population by at least a percentage point in each future five-year census period, growing from a 2016 share of 11.8% to 17.0% in 2041.

Stratford has become a popular place for new arrivals to put down roots. The town attracts net in-migration in nearly every age group and is a favoured destination for family-aged, youth, and young adult groups. As the Town continues its rapid growth, especially among expanding families, Council is eager to offer residents public facilities and open spaces that are reflective of Stratford's size and population makeup.

Schools and recreation facilities are key elements in the life of a community, with which residents identify, where families meet, competitions are won and lost, life-long friendships are made and where the mental and physical health of community members of all ages are shaped. Stratford's current recreation facilities are nearing capacity and the town currently only has K-6 school infrastructure. Grade 7-12 students are currently bussed to Charlottetown.

Council has been laying the groundwork for improvements by advocating to the Province for new school infrastructure while also adding capacity to its current recreational facilities. It has started the planning process to provide the amenities that the growing town needs: schools, sports facilities and gathering places—all nestled together in a Community Campus on 170 acres of land purchased by the Town.

In 2018, the long-term vision for the Campus was unveiled to over 150 residents at a public meeting. In 2019, the Community Campus Planning Committee further engaged the community about desired elements and amenities for the Campus. A list of "need to have" and "nice to have" elements as well as a number of key themes and principles emerged during the consultation and provide useful guidance for this Community Campus Plan project.

The purpose of this Community Campus Plan is to develop a site plan with all elements and amenities laid out in accordance with their relationship to one another. Rather than just being a utilitarian space, to which students, residents and families drive to pursue singular activities, the Campus should become heart of civic life in Stratford. Its form and function will be able to evolve to continuously be a relevant public space for the use of the people. The Campus should be able to grow over time and to adapt to changes in philosophies of work, education, and recreation as they emerge over times.

When Stratford residents, students and families take ownership of the new Community Campus, they will spend time convening with community, connecting with their neighbours and acquaintances, discussing issues of the day and matters of life and livelihood. While many will pursue active recreation activities, others may want to spend time for quite reflection and solitude after a busy day of work. The size and layout of the new Campus should therefore enable a multitude of experiences for all citizens of Stratford. First and foremost, the Campus will play a key role in bringing people together and providing a retreat. As a special and "forever" public space, it will serve these social and personal purposes.

1 https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021001/98-200-x2021001-eng.cfm

2 Stantec, *Charlottetown Region Growth Study,* 2021, p. 3.8


Charlottetown
Hillsborough River
Stratford

02 Site Opportunities

The Town of Stratford acquired approximately 170 acres of land for the community Campus by signing a purchase and lease agreement with two landowners. Currently, the property is primarily used for agricultural purposes. The lands also include a portion that is zoned Industrial (M-1), which will be used for an extension of the Stratford Business Park, and access point to the Campus.

Situated east of the Trans Canada Highway, the Campus lands are bound by Bunbury Road, Mason Road and Hollis Avenue. East of the new Campus, the Town plans to acquire and protect the Bunbury Forest and Wetland. It is working with the Stratford Area Watershed Improvement Group and the Island Nature Trust to acquire the environmentally sensitive lands for added greenspace and will work towards a connection to Fullertons Park. The land to be acquired is primarily untouched mixed forest and wetland habitat that would otherwise come under development pressure in the very near future.

There are several factors that need to be considered in order to unlock the full potential of the Campus lands. The planning process requires attention to layers of other strategic policies and directives of the Town, to the plans of major stakeholder such as the Public Schools Branch, to the opportunities and constraints presented by the natural landscape of the site, to the anticipated needs for recreation facilities, proven practices, inspiring or emerging innovations and to the opinions of the public.

Overall, the Campus site needs to be developed under the lens of maximizing the following benefits which the Town has defined at the outset of this planning process.

Enhancing Our Quality of Life
Behind the drive to create the Community Campus is a steadfast commitment by Stratford Town Council and community leaders to enhance the quality of life for all Stratford residents. This first-of-its-kind Prince Edward Island Campus greatly increases year-round access to sports programs for a growing community, contributing to a positive life-long impact in everyone's lives. In addition to youth sports, the campus will also offer an active transportation network of trails, green spaces, cultural spaces and many other amenities.

Addressing a Need
As youth and adult programs continue to grow in our community, our existing fields and facilities are simply unable to keep up with demand. The Community Campus and its various amenities will make the arena and fields immediately self-sufficient and sustainable. The possibilities are endless!

Delivering Economic Benefits
Whether it's for regional tournaments or an industry trade show, this venue will have the ability to draw visitors from all across the Maritimes. It will spur economic benefits to almost every local business category, from overnight accommodations to retail sales and restaurants. More importantly, the Community Campus will enhance business opportunities for current and prospective new businesses looking to open in Stratford.

Momentum for Our Community
The growth and population trends for Stratford indicate a need for initiatives like this, especially when the momentum and enthusiasm are so high from the outset. The Town of Stratford, community leaders and private citizens have formed a Community Campus Implementation Committee that is dedicated to making the Stratford Community Campus a reality. A clear plan of action combined with a long list of engaged partners mean this first-of-its-kind venue is destined to be a jewel in our community. Stratford will truly be a desirable place to raise an active, healthy family.

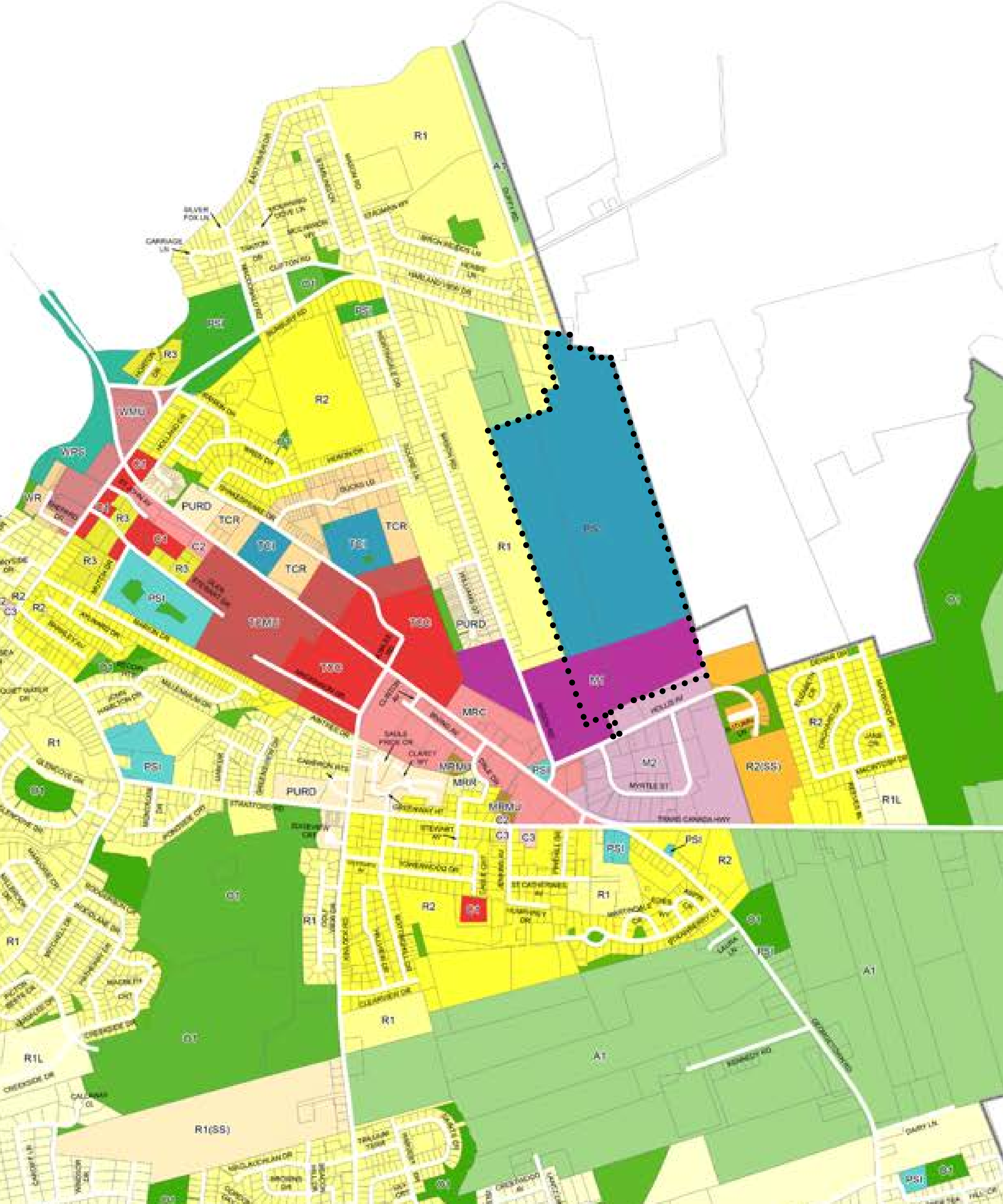
(Benefits of Community Campus, Town of Stratford)


Southport
Town Boundary
Bunbury Road
Mason Road
Town Boundary
Trans Canada Highway
Hollis Ave
Crossroads

Development Context

Development Pattern

Located at the eastern boundary of Stratford, the Campus lands are flanked by single dwelling neighbourhoods situated along Bunbury Road and Mason Road and light industrial uses in the Stratford Business Park to the south. Further west, towards the Trans-Canada Highway (TCH), residential densities and land uses intensify with duplexes, town houses and apartment buildings as well as institutional and commercial uses along the TCH. The majority of Stratfordians currently resides in the single dwelling neighbourhoods on the other side of the TCH. However, several new developments have started in close proximity to the Campus site, and more are anticipated in the near future.



R1
A1
R2
PURD
TCR
TCI
TCMU
TCC
R3
C2
C4
WMU
WPS
WR
PSI
MRC
M1
M2
R2(SS)
R1L
O1
MRMU
MRR
C3
R1(SS)
SILVER FOX LN
CARRIAGE LN
MYRTLE ST
TRANS CANADA HWY
KENNEDY RD
DAIRY LN

Connectivity

Street Network

All roadways within the Town of Stratford are owned and operated by the provincial Department of Transportation and Infrastructure (PEI TIE), while the sidewalks and trails are built and maintained by the Town. The planned Community Campus will be situated on a large parcel of land (approx. 170 acres) within the approximate red boundaries in the map on page 5. It has some road frontage on Bunbury Road and Hollis Avenue to the north and south, respectively, but most of the parcel is bordered by vacant and undeveloped land. The westerly Campus boundary is about 220 metres from, and roughly parallel to, Mason Road.

Bunbury Road is a two-way, two-lane collector that connects the Trans-Canada Highway (TCH) and the Hillsborough Bridge to Charlottetown with the roundabout at Fort Augustus Road. The posted speed limit is 50 km/h in the vicinity of the Campus frontage. Most developed land along Bunbury Road near the Campus is single family residential. Hollis Avenue is a two-way, two-lane, local roadway that connects the TCH with the Stratford Business Park and the Reeves Estates residential area. The posted speed limit is 40 km/h at the Campus frontage. Mason Road is a two-way, two-lane, minor collector that connects Hollis Avenue and Bunbury Road. The posted speed limit is 50 km/h adjacent to the Campus.

Concrete sidewalk has been extended along the south side of Bunbury Road to provide pedestrian access from the Hopeton Road intersection to within about 50 metres of the Campus site. Most of Mason Road adjacent to the proposed Campus also has a concrete sidewalk. To the south, the north side of Hollis Avenue has a multi-use trail which passes through the Campus frontage.

In addition, the existing adjacent active transportation (AT) facilities are well positioned to be extended into the Campus and provide mobility for pedestrians, cyclists, and other AT modes. The new AT corridor across the Hillsborough Bridge will connect the Town with Charlottetown, and the Campus could be connected to that corridor through extensions of existing trails and new AT facilities.

Commuter Shed - Cycling

Assuming new road and trail connections into the Campus site from north, south and west, the Campus can be reached within a comfortable 15 minute bike ride from neighbourhoods on both sides of the Trans-Canada Highway. Kinlock, Tea Hill and Rosebank are within a 20 minute bike ride. From parts of Stonington and Keppoch, a bike ride to the new Community Campus will take about 25 minutes.

Commuter Shed - Walking

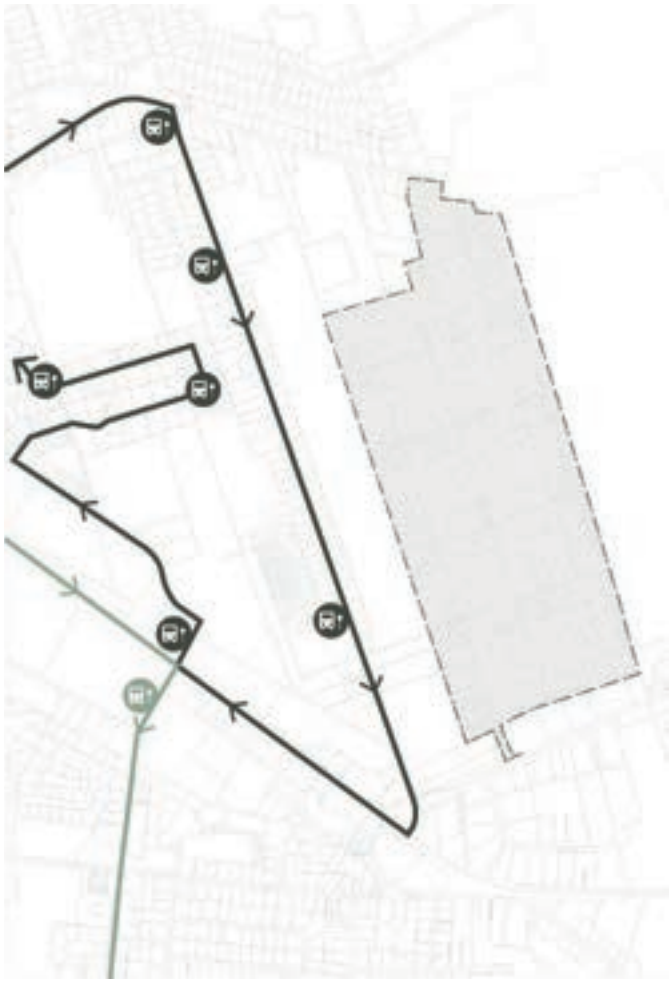
Assuming similar active transportation connections into the Campus lands, a 15 minute walk will connect the abutting neighbourhoods to the new Campus facilities, while the majority of neighbourhoods across the Trans-Canada Highway and to the north are between 30 and 45 minutes away by foot.

Trails

Public Trails (Town)

Public Trails (Great Trail)

The Great Trail (formerly known as Trans Canada Trail) straddles the Campus lands along Hollis Avenue and Mason Road and has potential to connect the Community Campus to Stratford's new waterfront park to the east and Fullerton's Creek Conservation Park to the west. In addition, the Town's trail network facilitates connections into established neighbourhoods and to existing recreation assets.



Public Transit

The Charlottetown region is served by T3 Transit. The Town of Stratford is served by Route 7. The Bunbury Road branch of Route 7 provides transit service to residents along the Bunbury Road and Mason Road corridors and provides a connection to the Stratford Town Centre. Buses travel along Mason Road adjacent to the Campus, and then to the TCH via Hollis Avenue. The Bunbury Road branch of Route 7 could easily be altered to pass through the Campus once demand warrants such a change. The Kinlock Road branch of Route 7 services the southern parts of the Stratford.

Servicing

Water and Sewer

- Water supply lines
- Water main valves
- Fire Hydrants
- Sewer pressure mains
- Sewer lift stations

Existing Sanitary System

A cursory review of the existing sanitary sewage collection system around the proposed Stratford Community Campus has been completed using the Waste Water Mater Plan developed for the Town of Stratford in March of 2012. Results pertaining to the design capacities and theoretical design flows were reviewed to determine any potential sanitary servicing constraints.

The topography of the proposed site will require the use of a sanitary lift station to discharge the sanitary flow from the development to the existing sanitary collection system. Two potential locations exist from which to discharge the sanitary flow from the site, Hollis Avenue or the Bunbury Road.

- The Hollis Avenue sanitary sewershed is a gravity driven system which flows directly to the new sanitary lift station that discharges across the Hillsborough River to the Charlottetown Pollution Control Plant.
- The Bunbury Road sanitary sewershed consists of gravity mains flowing into the Bunbury sanitary lift station, which directs the flow to the end of the Stratford gravity network and subsequently to the Charlottetown Pollution Control Plant.

Through the existing sanitary servicing review, it was determined that both the Hollis Avenue and Bunbury Road gravity system have additional capacity to accommodate an increase in flows from the proposed Community Campus development. However, the Bunbury lift station capacity may be exceeded if an increase in flow is directed into the system. Therefore, it is assumed that the proposed forcemain from the development will discharge into the Hollis Avenue sanitary network.

Existing Water System

A cursory review of the existing water system in the area of the proposed Community Campus development found two direct connection locations to the water system. These connection points are located on the adjacent roadways to the North (Bunbury Road) and South (Hollis Avenue). This results in the ability for the Community Campus water services to be connected through the property and mitigate dead end sections of watermain.

Additionally, there are three access easements present off Mason Road. It is understood that there is no plan to connect the potential development to the Campus; however, at least one watermain connection to the Mason Road should be considered as it would increase the functionality of the water system.

The existing watermains around the proposed Community Campus consist of the following:

- A 300 mm diameter PVC main on Hollis Avenue.
- A 250 mm diameter PVC main on Bunbury Road.
- A section of 300 mm diameter PVC main & a section of 250 mm diameter PVC watermain on Mason Road

A brief overview of the Town of Stratford water system combined with the topography of the development site reveals a potential constraint with water pressure. The Campus development is located on a hill which contains a high point to the northwest of the property. This high point may require the use of a water booster station in order to obtain the minimum pressure for domestic and fire flows. The location of the school and other buildings with water services will need to be examined in conjunction with the existing water system to mitigate the potential for booster stations.

Existing Storm System

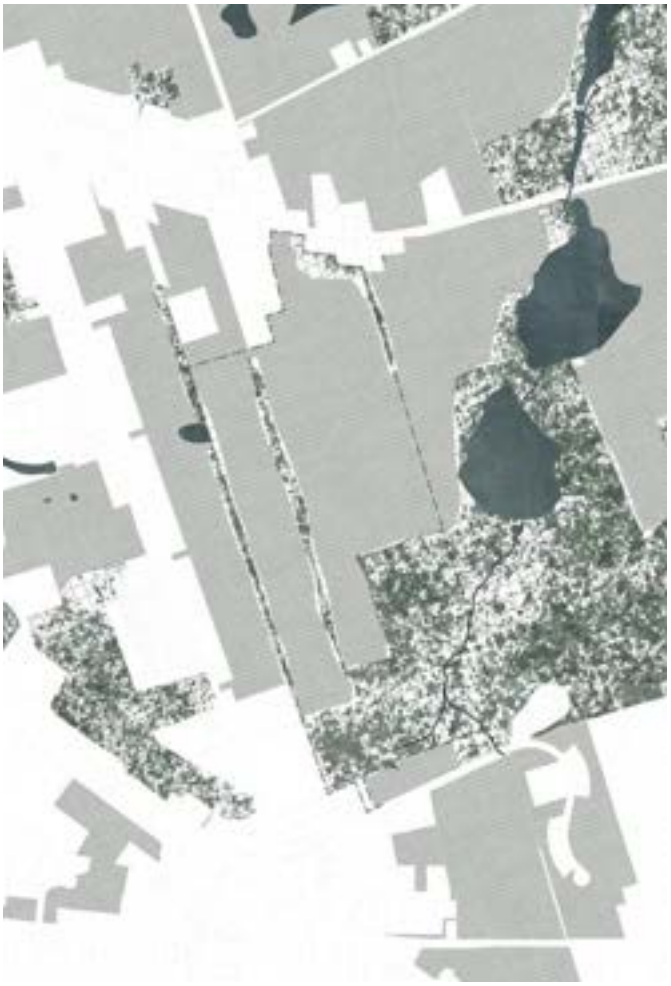
The existing stormwater management system surrounding the proposed Community Campus consists primarily of an open ditch system with a small section of storm sewer on the Bunbury Road. The existing site, however, provides positive drainage to the east of the property which discharges directly into the wetland of the Boyer Creek watershed where the creek crosses the southeast corner of the site. The runoff from the developed Campus is likely to be detained on site through detention ponds and released into the existing wetland/ watercourse. This eliminates the potential for exceeding the existing open ditch storm network on Hollis Avenue and the storm system on the Bunbury Road.

Existing Electrical System

Electrical distribution around the proposed Community Campus contains three phase electrical lines to the North (Bunbury Road) and three phase electrical lines to the South (Hollis Avenue). The business park is serviced from the Hollis Avenue electrical distribution system and should have sufficient capacity to service the Campus. In addition, three phase electrical and a transmission line run parallel to the Trans Canada Highway with proximity to the site to provide power distribution.

Campus Lands Looking Towards Hillsborough River

Natural Environment



Land Types and Forest Species

The majority of the Campus site is cleared land, 112 acres of which are agricultural fields and another 34 acres are cleared land not under cultivation. The woods at the south western corner are dominated by the primary succession species poplar and red maple, which are typically some of the first to establish on disturbed sites that were cleared at one time. The woods at the south eastern corner of the site and to the east of the site are mixed, including white spruce (also known as old-field spruce) at the edges of the cleared lands and more moisture-tolerant tree species such as red maple and black spruce where the land slopes down toward the wetlands. Surrounding the wetlands to the east of the Campus stands of alders, a common indicator of wet soil, are present.

- UR - Urban Areas
- AG - Agricultural land including farm buildings
- CL - Cleared land (not in agricultural use)
- WS - White Spruce
- BF - Balsam Fir
- SM - Sugar Maple
- EP - Excavation Pit
- RM - Red Maple
- BS - Balsam Fir
- PO - Poplar
- RS - Red Spruce
- AL - Alders
- SO - Open Swamp
- WW - Open water bodies
- RR - Railway right of way from 1985/88 mapping
- Site Boundary


UR
RR
RM
AG
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PO
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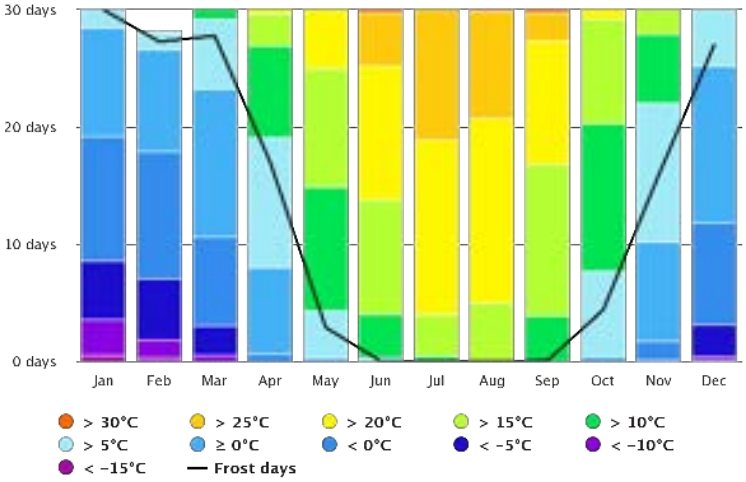
prevailing winter winds
prevailing summer winds
sun direction
200
400
600
800
1000

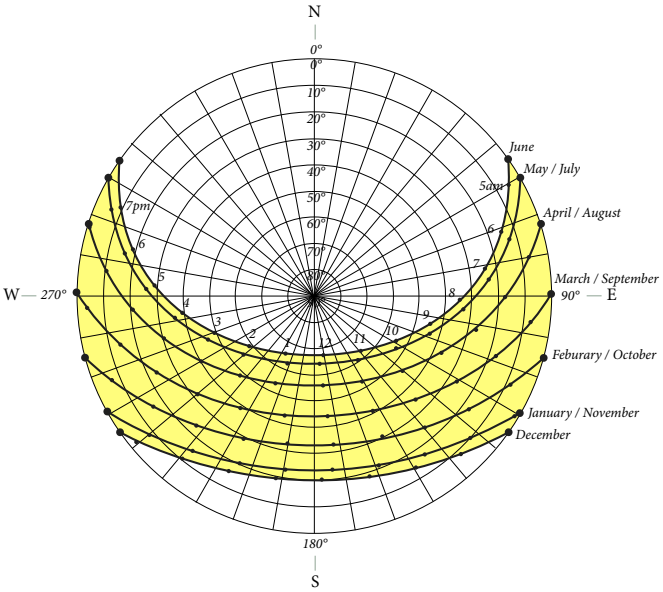
Microclimate

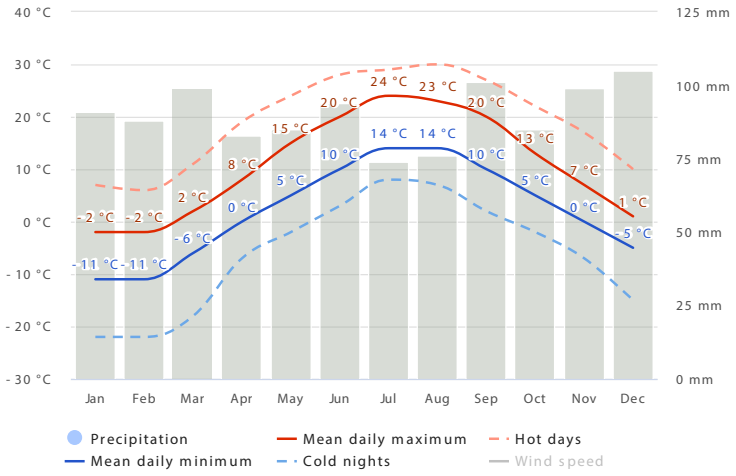
Microclimatic conditions are an important consideration when making decisions about the location and orientation of outdoor sports fields. They also impact the design of indoor facilities with respect to passive solar gains or desired shading.

During the winter months, the Campus site is subjected to northern, north-western, and western winds coming off the Hillsborough River. Prevailing summer winds occur from south and southwest. The existing windbreaks on the agricultural fields and the woodlands to the south likely have mitigating effects on immediate wind impacts on the site.

Between May and October, the majority of days are warmer then 10 degrees which also coincides with the time of highest precipitation. Summer temperatures rarely exceed 30 degrees, although these patterns are likely fluctuate in the future due to anticipated climate change impacts.







Woodland

Farmland

Between May and October, the sun rises at 5:58 am and sets at 8:22 pm (May 1) and 7:11 am and 6:50 pm respectively (October 31).

Hydrography + Topography

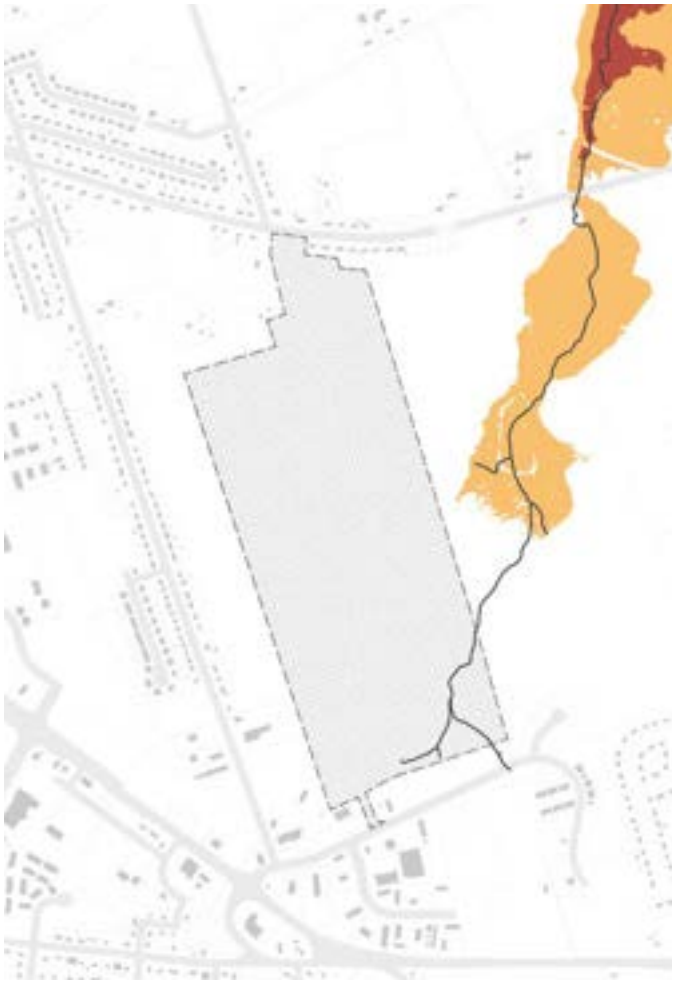
Surface Hydrology

The Campus site is primarily east-facing, as the land gently slopes eastward toward the Bunbury Forest and Wetland. Mason Road aligns with a north-south ridge, west of which, the lands slope westward. The same ridge acts as the divider between the Fullertons Creeks and Rosebank watersheds.

The highest elevation (40 m) is located at the north-western corner of the site, and the lowest point (5 m) at the edge of the Bunbury Wetland. Prevailing slopes on the site are gentle to moderate and range from 1% to 10%.

Watersheds

There are no significant waterways on the Campus site. The wetlands east of the site are a hydrological sink where water from the surrounding area accumulates to form a wetland before flowing north, across Bunbury Road and into the mouth of Fullertons Creek.



Coastal Flood Risk

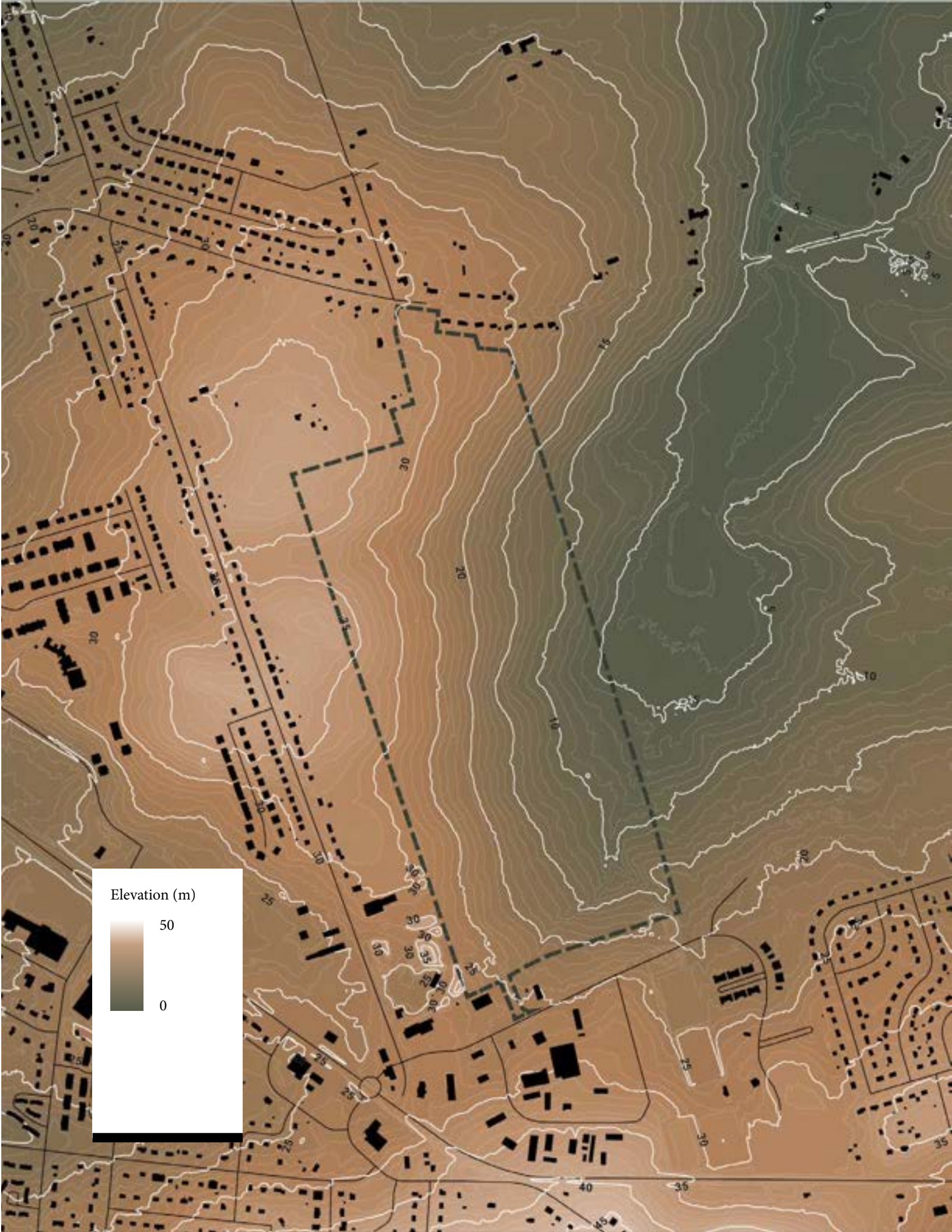
- High (0-2m)
- Moderate (2-4m)

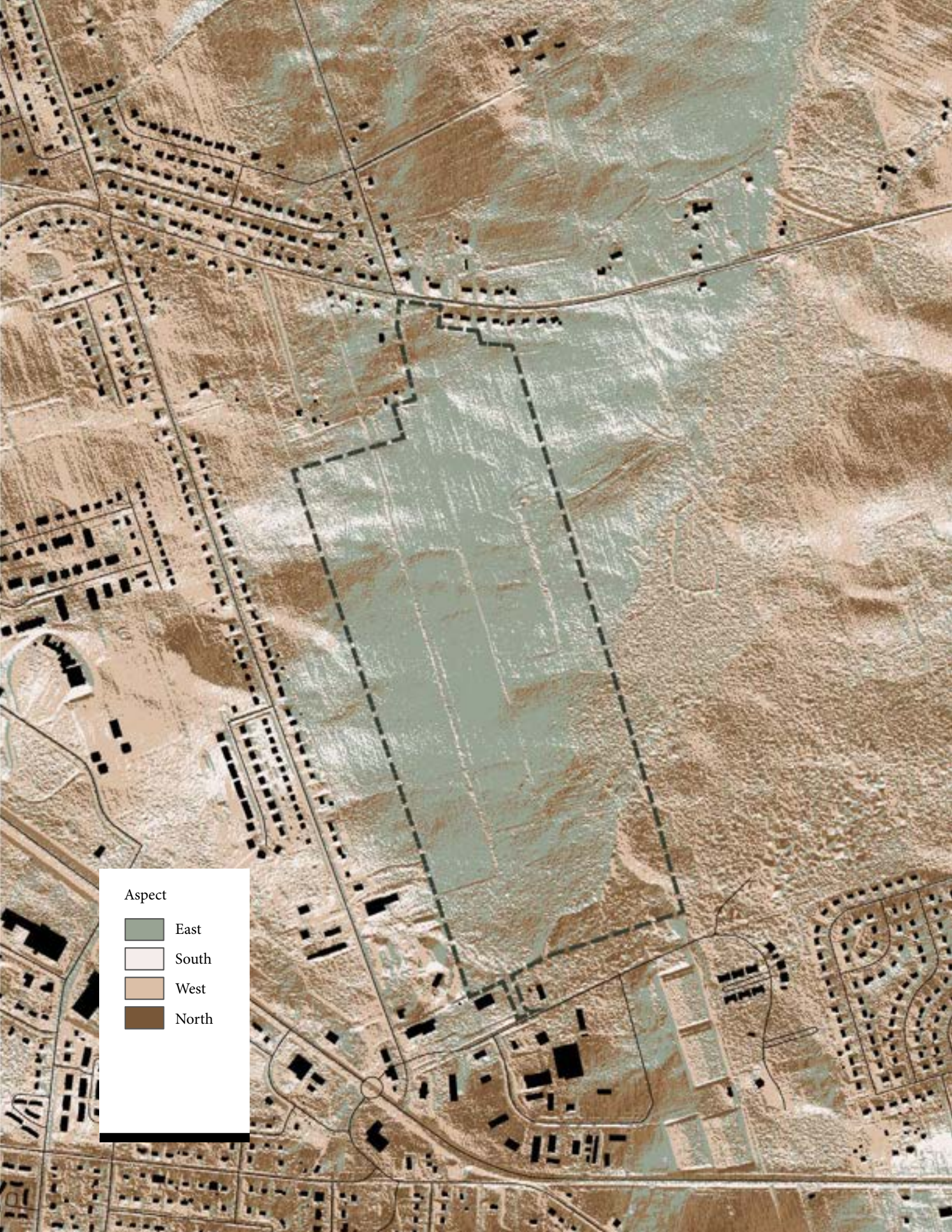
As an island province with a significant amount of coastal shoreline, Prince Edward Island provides guidelines for property owners regarding coastal flood risk in the face of the rising sea levels associated with climate change.[1] Properties with an elevation of under 2m are considered at high risk to be impacted by sea level rise. Properties with an elevation from 2m to 4m are at moderate risk of being affected by coastal flooding, particularly during large storm events, which are expected to become more common.

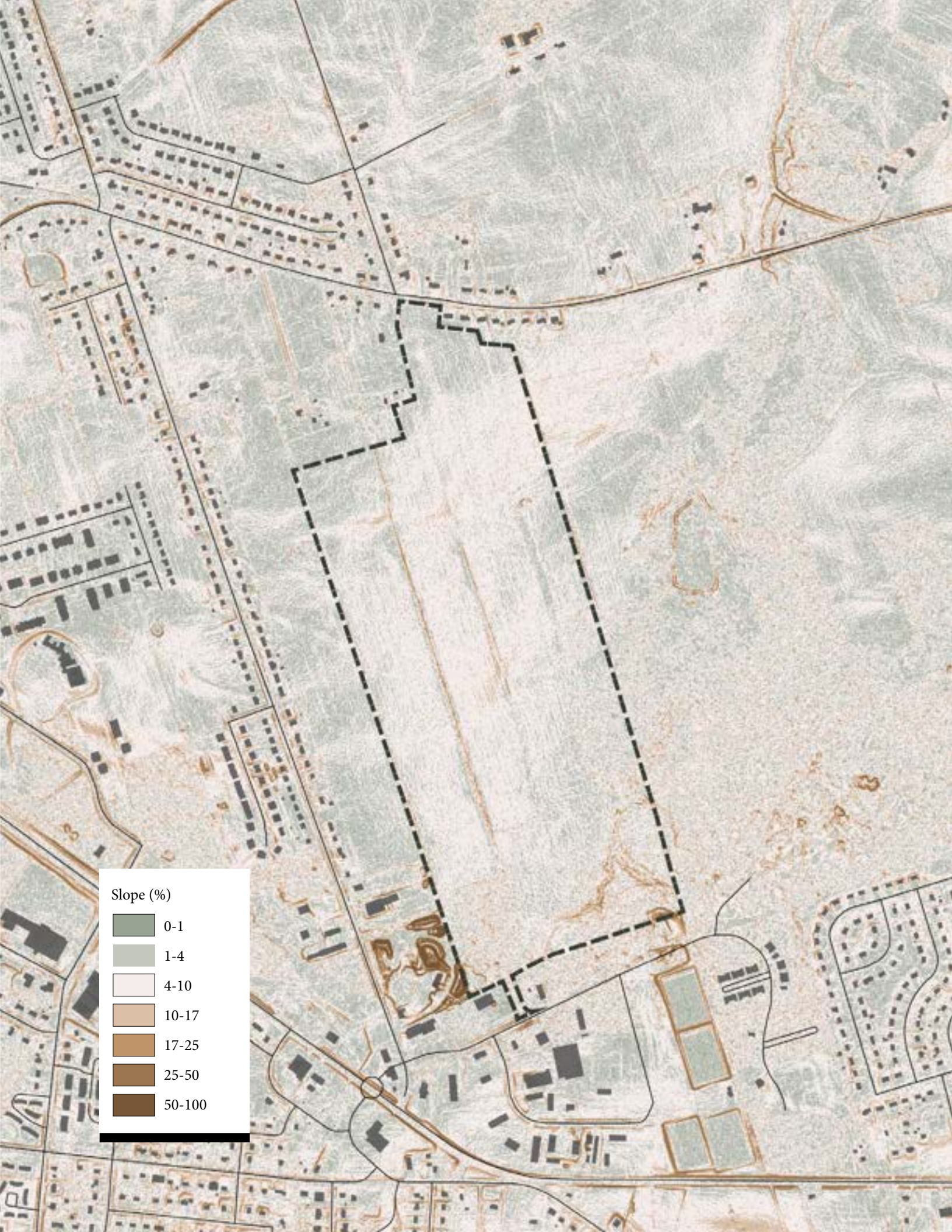
The Campus is above 4m elevation and is at low risk of being affected by coastal flooding, particularly since the section of coastline near the site is inland and protected. Plans for the parkland adjacent to the Campus, however, should account for potential flooding.

It should be noted that this analysis of coastal flood risk does not account for the combination of coastal flood waters and surface or ground water accumulation during large storm events. The area affected by coastal flooding shown on the map corresponds to the location of existing wetlands, and flooding there could be compounded by water runoff from new development.

1 PEI Department of Communities, Land and Environment Government of Prince Edward Island, *Prince Edward Island Coastal Property Guide,* 2016.


Elevation (m)
50
0


Aspect
East
South
West
North


Slope (%)
0-1
1-4
4-10
10-17
17-25
25-50
50-100

Archaeological Potential

Archaeological Potential

High

Moderate

The Stratford Community Campus falls within the L'nuey territory. Currently the site is actively used as farmland, which has likely been its primary use since the arrival of European settlers who came to the Stratford area as early as the 1750s. Prior to that, the site was also likely heavily used by the Mi'kmaq people who spent the summer months close to the coast. The Campus's location near several known significant Mi'kmaq sites, significant waterways – Elsitkuk (the Hillsborough River) and Apsoqonikatejk (Fullertons Creek) – and one of the Island's largest coastal harbours all contribute to the likelihood of the area having consistently be used by Mi'kmaq pre-settlement.

The PEI provincial archaeological model for archaeological potential uses proximity to waterways, proximity to known sites, and data from oral histories and known traditional use to determine the likelihood of significant artefacts being found at any given location. Considering the presence of several archaeological sites within 1km of the Community Campus, areas of the campus that are within a 50m buffer of Fullertons Creek in the south-eastern corner of the site have high archaeological potential, and areas within 80m of the creek have moderate potential.[1] An archaeological impact assessment should be commissioned if substantial excavation is going to take place within the high-potential areas.

1 Erin Montgomery, Archaeologist, Indigenous Relations Secretariat, Executive Council Office Government of Prince Edward Island. Phone conversation. April 23, 2021.

03

Current Facilities & Future Needs

The Town of Stratford offers a wide array of recreation facilities and programs to its residents. The Town owns and manages over 375 acres of green space which includes trails, beaches, sport fields, courts, a skatepark, a splashpad, gardens, and natural areas. The Stratford Town Centre provides community meeting/ function rooms, a walking track and fitness area, gymnasium, stage, and municipal offices. Stratford also has a number of other recreation buildings and facilities including a library, an art centre, a youth centre, and a seniors' centre. A comprehensive list of existing indoor and outdoor recreation facilities can be found on page 29.

In 2019, the Community Campus Planning Committee engaged the community about desired new recreation facilities that could be housed by the future Community Campus. The list of "need to have" and "nice to have" elements as well as a number of key themes and principles that emerged during the consultation can be found on page 30.

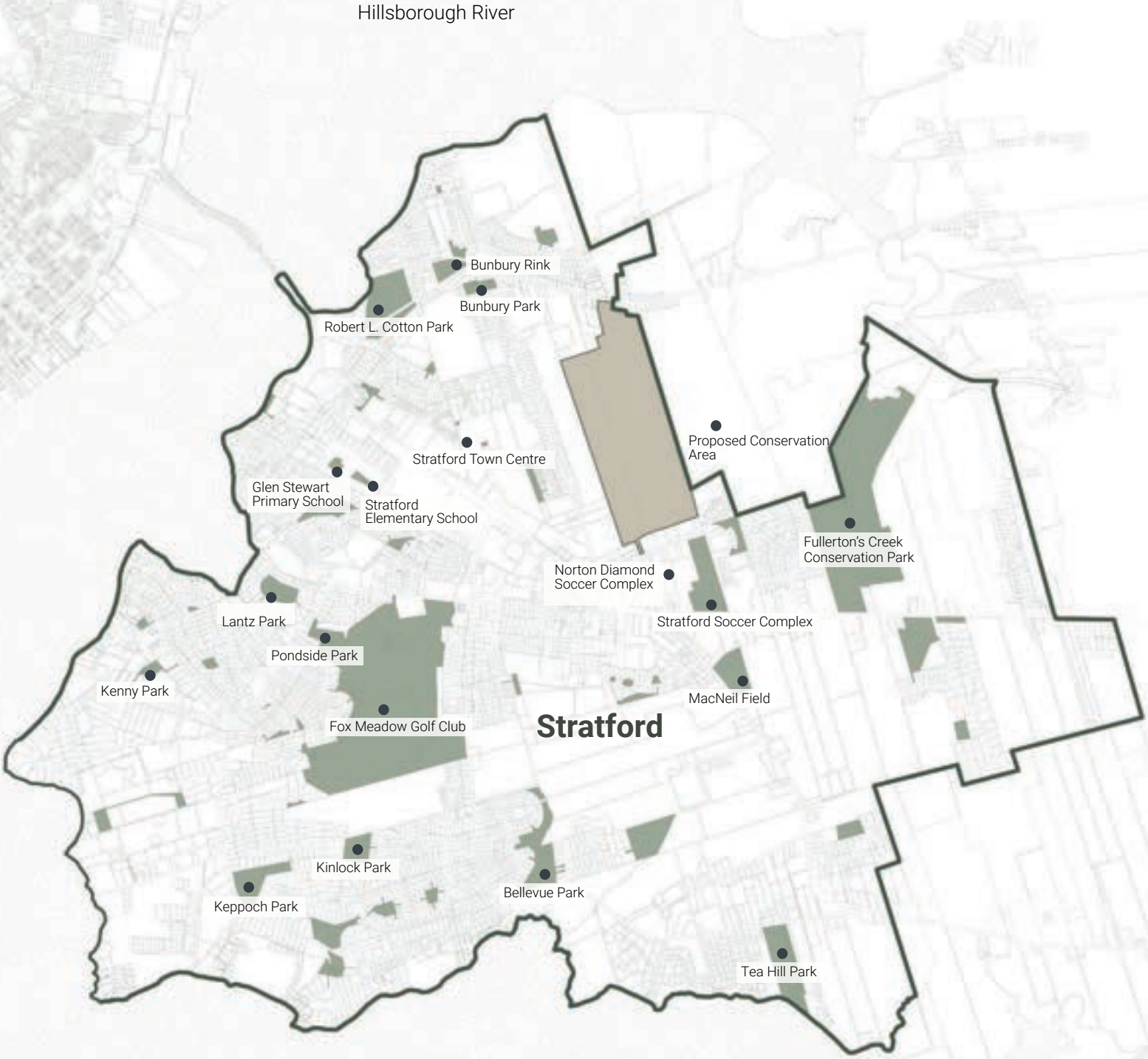
As the Town embarks on the Campus planning process, a preliminary benchmarking of Stratford's existing recreation facilities against national recreation standards will allow Council to determine the number of facilities that are required to serve today's population and what provisions should be made to accommodate further more facilities.

In the absence of a comprehensive recreation plan, the initial benchmarking process can help mitigate the risk of overbuilding the Campus and allow the Campus design team to allocate future field expansion spaces on the Campus lands so that phasing can happen in a coordinated way as the population of Stratford grows or funds become available.

The benchmarking uses population projections included in the *Charlottetown Region Growth Study* (Draft, 2021). The table on page 29 provides benchmarks for a range of recreation amenities that indicate how many of each facility should be provided for a population of a given size. The benchmarks were created by the Ontario Ministry of Culture and Recreation, Sports and Fitness Division[1] and are commonly used for recreation planning processes across Canada to gain a broad sense of the adequacy of the recreation facilities compared to a target population.

1 Ontario Ministry of Culture and Recreation, Sports and Fitness Division, *Guidelines for Developing Public Recreation Facility Standards,* 2004.

Charlottetown



Facility Benchmarking 2021-2041

It is important to note that the benchmarking numbers and stipulated facility needs on the next page are solely based on population numbers and always have to be put in the context of local sports trends, participation numbers, population cohort makeup and the regional role of recreational facilities.

The following recreation trends observed in Stratford in recent years need to be considered when phasing in new facilities:

Cricket
Cricket is the fastest growing sport program in Stratford. Growth in cricket participants has grown from 40 to 300 athletes in last four years. The local club is anticipating having a membership of 300 athletes in 2021 and to grow annually with more immigration but also with local residents joining their membership. The group approached the Town with a desire to do a two-tiered fundraising campaign to build an indoor complex and outdoor field on the Community Campus.

Skate Park
Demand for the current skate park has exceeded the Town's expectation.

Baseball and Softball
The Town does not have enough baseball/softball fields to service minor baseball and softball and there is no field time available for recreational slo-pitch. There is an identified need for two new fields for 2021.

Outdoor Skating
The Town will be adding at least one outdoor skating surface in 2021.

Lacrosse
Lacrosse projects have had an increasing membership in 2022. The program now boasts indoor box lacrosse and outdoor field lacrosse. The entire field lacrosse program for the greater Charlottetown area will be hosted in Stratford in 2022.

Football
Flag football operates a program using the multi-use field at Fullerton's Creek. There is also a short term Touch Football program, which may not operate beyond 2021.

Pickleball
Pickleball growth can be captured in the Town's existing facilities, and will be somewhat aided by some potential hours in the High School. There is a group that is interested in developing a racquet sport facility on the Community Campus and would like to have 4 courts within the facility.

Ice Arena Sports
Stratford residents who are part of Pownal Minor Hockey Association (PMHA) are using roughly 25-30 hours of ice time in Belfast, Georgetown, Montague and Murray River each week. These are practice times generally. If there was another ice surface available locally within the community, it would be realistic to expect even more of PMHA 50+ teams to use additional ice times. Several teams choose to not travel for practice times.

There are 950 kids registered in the PMHA with over 750 of those from the Stratford area.

Ringette currently uses 4 hours per week in PMHA. They have requested additional ice time, but Pownal Sports Centre is unable to accommodate their ice time request. They would be interested in 6-10 additional hours per week.

The Pownal Rec Hockey League has capped its league size due to the only time being available being 10 pm or later. It operates with 8 teams.

There are no Learn to Skate programs in the Pownal Sports Centre. No groups have come forward with interest to operate such a program.

Speed Skating
Speed Skating PEI has expressed interest in relocating to a new facility in Stratford should one ever be built. They would about 20 hours of ice time per week.

Table 3-1: Facility Needs Based on Population

Type	Facility	Number Existing 2021	Number Needed 2021 pop 10,927	2031 pop 15,713	2041 pop 19,427
Existing Facilities *Indoor*	Badminton court	15	5	6	8
	Gymnasium	4	2	3	4
	Climbing wall*	1	-	-	-
	Fitness Centre*	2	-	-	-
	Senior Drop-in centre	1	1	1	1
	Pre-school or after school program	3	1	1	1
	Youth Drop-in centre	2	1	1	1
	Library	1	1	1	1
	Walking Track*	1	-	-	-
Existing Facilities *Outdoor*	Skate Park (sq ft)	6500	5027	6547	8095
	Baseball field	2	2	3	4
	Paved multi-use area	2	2	3	4
	Outdoor skating rink	2	2	3	4
	Soccer field - practice or recreation	10	2	3	4
	Softball	2	2	3	4
	Tennis court	5	2	3	4
	Pickleball court*	8	-	-	-
	Athletic Field - competition	3	2	3	4
	Adventure Playground	1	2	3	4
	Cricket Pitch	1	1	1	1
	Community Garden*	1	-	-	-
Desired Facilities *Indoor*	Neighbourhood centre	0	2	3	4
	Community Kitchen*	0	-	-	-
	Community centre	0	2	3	4
	Auditorium / Performance Space	0	2	3	4
	Indoor ice arena	0	2	3	4
	Curling Sheet	0	6	8	9
	Indoor pool	0	0	0	0
	Volleyball court	0	2	3	4
Desired Facilities *Outdoor*	Track and Field Facility	0	1	1	1
	Lacrosse	0	1	1	1
	Football field	0	1	1	1
	Band shell	0	2	3	4
	Outdoor Education Space*	0	-	-	-
	Meditation/ Reflection Space*	0	-	-	-

* no standard available

Benchmark met or exceeded

Benchmark not met

Community Campus Elements, Amenities and Design Considerations

Type	Elements	Amenities
Indoor Facilities *Schools*	*Need to Have* Flexible classrooms for 21st century learning and community school after hours Performing Arts Theater/Performance Space Gymnasium Recording Studio Community School *Nice to Have* Community library/learning Centre Teaching Kitchen Space for daycare/afterschool programs Discovery Centre	Flexible design so that rooms can be used for multiple uses Lots of daylight Collaborative work spaces for group learning Designed for easy community access after school hours (keycards, segregated spaces with exterior access) Green/Sustainable Design with integrated opportunities for learning Shared Parking and complimentary location with Town facilities
Indoor Facilities *Multi-use Facility*	*Need to Have* Ice surface Multi-functional spaces for fitness, meetings, etc Gymnasium Youth gathering space Space for daycare/afterschool programs *Nice to Have* Swimming Pool Curling Rink Outdoor covered ice surface	Plenty of seating for spectators Large and plentiful dressing rooms Washrooms accessible from outside for outdoor spaces Lots of parking Green/Sustainable Design Kitchen/canteen Storage space for sport equipment Welcoming, safe and accessible Space for Socializing
Outdoor Facilities *Recreation and Culture*	*Need to Have* Artificial Turf Multi-use fields (soccer, lacrosse, football, etc.) Turf Multi-use fields (soccer, lacrosse, football, etc.) Multi-use courts (tennis, pickleball, basketball, ball hockey etc.) Ball fields (baseball and softball) Outdoor theatre Playground/zipline/ropes course *Nice to Have* Outdoor skating oval Track and field facilities (unless required for the high school) Outdoor pool	Appropriate lighting for facilities and site in general Adequate sun shelters for spectator viewing areas Washrooms Parking Pathways and trails connecting various facilities and venues Field lighting Consider sun and wind in field and court design

Type	Elements	Amenities
Outdoor Facilities *Natural Spaces*	*Need to Have*	Incorporate public art throughout the site
	Environmental and experiential learning space	Safe, accessible to community by walking or biking
	Trail system trails through and around the site	Electric car charging stations
	Outdoor Art space	Safety (proper lighting, security, maintenance
	Community Gardens/Greenhouses	
	Outdoor Amphitheatre/Classroom	
	Meditation/reflection space (tranquil-away from busy areas of site)	
	Nice to Have	
	Discovery Centre	

Table 3-2: Desired Community Campus Elements
Source: Community Campus Planning Committee

04 Design Principles

The 170 acre campus development is a large multi-year undertaking for the Town that will need strategic direction, goals, values and focus upon which project decisions are made over time. The following design principles articulate a series of criteria to which the plans and future actions by both land tenants, the Town and the Province should adhere.

The design principles represent the elements of a whole. Achieving one without the other - particularly at the expense of the others - will be of limited value and could be counterproductive.

01 Create a sense of place and identity fostering a distinct campus experience.

The comprehensive planning process involving both the Town and Province provides a unique opportunity to build a complete recreation and education community integrated into the surrounding and growing fabric of the town. Through the collaborative design development, key campus elements can be arranged on the site in ways that create physical spaces that foster a true campus experience and unique sense of place.

02 Respect, restore and protect natural systems and habitats.

A linked system of natural areas and open spaces along existing streams and new naturalized drainage systems will form the public space armature of the new campus community. From these green campus elements, open spaces will transition into the untouched mixed forest and wetland habitat of the Bunbury Forest and Wetland conservation area.

03 Respect and reference the distinct cultural landscape of centuries-spanning agricultural use.

The patterns of fields and windbreaks on the campus greenfield site are the result of several centuries of a two-way relationship between humans and the environment. The resulting landscape morphology has become a key element of the physical and cultural landscapes of Prince Edward Island. Protecting and referencing elements of the farming history to the extent possible, will safeguard some of the land's character, enable interpretation and draw on the benefits of micro-climatic conditions established by farmers over time.

04 Provide an interconnected and balanced transportation system.

A fine-grain interconnected street network will ensure that all trips to, from and within the campus site are as short as possible, disparage congestion and are compatible with walking, biking and transit. The location of transit stops and active transportation infrastructure will enable convenient non-automotive circulation throughout the campus and encourage active modes of transportation for school students and recreation facility users.

05 Mitigate impacts on established neighbourhoods and enable the integration of future residential areas.

Being close to established single dwelling neighbourhoods, the campus elements will be located in ways that minimize adverse effects to existing residents while also enabling them to enjoy new recreation facilities. Schools and recreation facilities will be located nearby future higher residential densities that enable children and youth to access their schools within a short walk or bike ride within a complete community.

06 Provide diverse recreation experiences.

The campus will balance ***active recreation areas*** designed for recreation activities that require purpose-built facilities as their primary function (playing fields, sport courts and playgrounds) with ***passive recreation areas*** for recreation activities that do not require purpose-built facilities and emphasize the green space aspect of a the campus as their primary function (fitness trails and paths, open lawns, gardens and naturalized areas). Similarly, the plan will balance ***structured activities*** - play activities that are organized and characterized by the booking of space or facilities for the exclusive use of an individual or a group - with ***unstructured activities*** - play activities that are self-directed or loosely organized, such as pick-up games, that do not include the booking of space or facilities.

07 Facilitate efficient use of public spending and land by enabling the sharing of community, recreation and transportation facilities.

The layout of the campus plan will faciltiate the sharing of recreation facilities, parking and transportation infrastructure between the Province and the Town and between the Town and neighbouring municipalities and surrounding areas. Public spending across jurisdictions all has the same source, the taxpayer.

08 Create a 'forever' public place that will serve the needs of generations to come.

The campus plan will enable the adaptation to future recreation needs by providing logical spaces for growth, expansion and multi-use functions. The campus will be able to evolve over time and to adapt to changes in philosophies of work, education, and recreation as they emerge over times. First and foremost, the Campus will play a key role in bringing people together and providing a retreat. As a special and "forever" public space, the campus will serve all citizens of Stratford.

09 Balance economic benefits with the needs for equitable access for all citizens of Stratford.

The campus facilities will have the ability to draw visitors from all across the Maritimes and spur economic benefits for current and prospective new businesses. With equal importance, the campus will enhance the quality of life for all Stratford residents by providing year-round equitable access to programs and facilities regardless of age, ability and financial means.

10 Provide lighter, greener, cheaper and smarter infrastructure.

The campus will play an important role in the coming decades as the Town and region adapts to climate change. As a large scale urban green spaces it will provide an exciting testing ground for low-impact green infrastructure that will be critical to helping the Town meet its sustainability goals and build resilience to an uncertain future.

Campus Lands with North-South Running Windbreaks

05

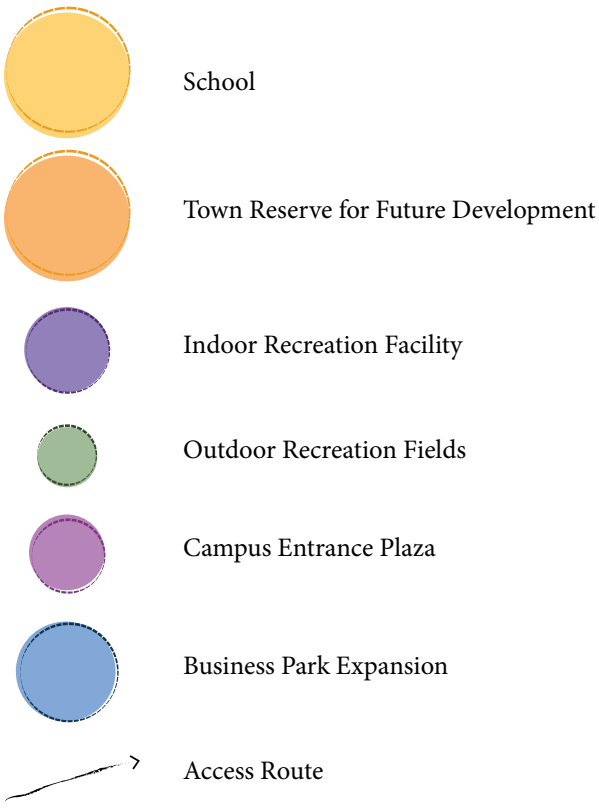
Site Programming and Functions

The site program refines the community campus elements, amenities and design considerations based on the recreation needs assessment, consultations the Province and the Public Schools Branch, engagement with adjacent property owners and Town staff. The six diagrams on the following pages depict a variety of spatial configurations and associated advantages and disadvantages as departure point for the more refined concept options.

The six spatial scenarios were presented to the Community Campus Implementation Committee and scoring by the Committee indicated strong preferences for scenario options 3 and 4.

The Town of Stratford has made a strategic decision to hold a reserve area within the Community Campus Plan for a future intermediate school should the Province identify a need in years to come. The provincial five year capital plan does not include intermediate school, however the Town endeavoured to design this campus as forward looking. Given its population projections complimented by the younger population demographics, the Town believes it is prudent to ensure this space is available for development of an intermediate school should that opportunity arise. The allocated space is referred to as "Town Reserve for Future Development" in this section.

Legend



Advantages

- All building facilities on highest elevations
- Adjacencies of school and town reserve lands
- School walkable from future development
- Indoor recreation facility close to Hollis Ave
- Outdoor recreation facilities connected to new conservation area
- Setback from Bunbury Rd residents

Disadvantages

- Linear development without campus character
- Indoor recreation facility beside business park
- Main entrance through business park

Advantages

- All building facilities on highest elevations
- Adjacencies of school and town reserve lands
- School walkable from future development
- Indoor recreation facility close to Bunbury Rd
- Outdoor recreation facilities connected to new conservation area

Disadvantages

- Linear development without campus character
- No buffer/setback for Bunbury Rd residents
- Entrance through business park

03

Advantages

- All building facilities on higher elevations
- Campus configuration / arrival experience
- Indoor recreation facility is focal point and joint between school and town reserve lands
- School and indoor recreation facility walkable from future development
- Outdoor recreation facilities connected to new conservation area
- Setback from Bunbury Rd residents
- Jubilee Rd as second primary access
- Expansion space for indoor recreation facility

Disadvantages

- School and town reserve lands not directly adjacent
- Main entrance through business park
- Jubilee Rd as second primary access

Advantages

- School on highest elevations
- Campus configuration / arrival experience
- Outdoor fields are focal point and joint between school and town reserve lands
- School walkable from future development
- Outdoor recreation facilities connected to new conservation area
- Setback from Bunbury Rd residents
- Jubilee Rd as second primary access
- Expansion space for indoor recreation facility

Disadvantages

- School and town reserve lands not directly adjacent
- Main entrance through business park
- Jubilee Rd as second primary access
- Potential field lighting impact on Bunbury Rd street

04

05

Advantages

- School on highest elevations
- Campus configuration / arrival experience
- Outdoor fields are focal point and joint between school and town reserve lands
- School walkable from future development
- Outdoor recreation facilities connected to new conservation area

Disadvantages

- School and town reserve lands not directly adjacent
- Main entrance through business park
- Indoor recreation facility close to Bunbury Rd. residents

Advantages

- Building facilities on highest elevations
- One school and indoor recreation facility walkable from future development
- Outdoor recreation facilities connected to new conservation area
- Expansion space for indoor recreation facility
- Large consolidated field area

Disadvantages

- One school close to Bunbury Rd residents
- Main entrance through business park

06

06

Indoor Facility Elements

The location, massing and architectural expression of new structures to be housed on the campus site will play a key role in defining cohesive spaces, in creating a welcoming and unique atmosphere and in evoking a true campus experience.

Through consultations with the Province and the Town, a set of spatial requirements have emerged for the campus buildings. While the Province will draw on recent experience and best practice in school design, the configuration of the Town's new indoor recreation facility has many more variables. In that context, it is paramount, that the facility is situated in a way where it can grow over time and where it can act as anchor building to the entire campus over the lifespan of its evolution.

Six to-scale floor plan diagrams presented on the following pages depict a series of options with regards to access, circulation and expansion of the facility. The floor plans are divided into three development phases based on the three facility priorities identified by the Town.

Indoor Recreation and Culture Facility – Potential Amenities

YOUTH GATHERING SPACES	6,000 SQFT
GYM	110 FT X 60 FT
INDOOR MULTI-USE FIELD	240 FT X 165 FT
ARENA	200 FT X 100 FT
RECREATION/CULTURAL SPACE	17,000 SQFT
DAYCARE	5000 SQFT
SWIMMING POOL	165 FT X 82 FT
CURLING CLUB	162 FT X 82 FT

ADDITIONAL CIRCULATION SPACES
= APPROX. 40% GROSS UP

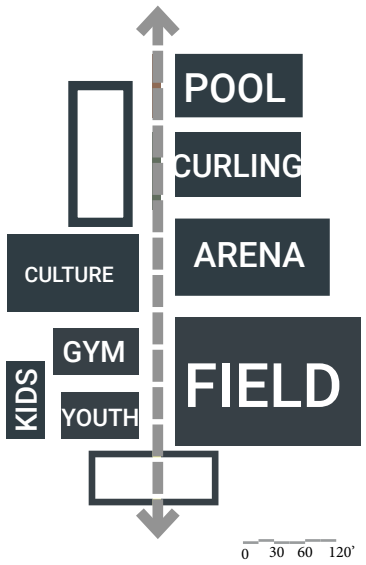
NOTE:
VOLLEYBALL COURTS CAN BE INCLUDED WITHIN GYMNASIUM. COMMUNITY SPACES CAN BE INCLUDED WITHIN YOUTH SPACES.

Indoor Recreation Facility

Scheme 1: Linear

Advantages
- ability to add to building through multiple phases
- ability to have multiple entrances
- ability to create adjacencies to other facilities and share services
- ability to have large main entry from street

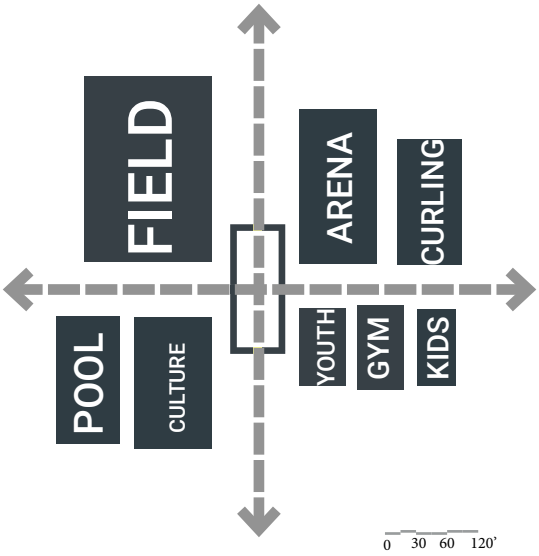
Disadvantages
- circulation is very long, access to different facilities are dependent on the timing of what is built in each phase
- ability to share services is not maximized as they must be distributed throughout the corridor



Scheme 2: Quadrants

Advantages
- ability to add sections to building through multiple phases
- ability to have multiple entrances and corridors which divide the spaces
- ability to create adjacencies to other facilities and share services

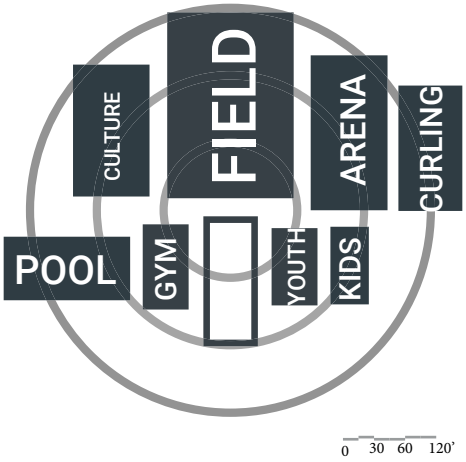
Disadvantages
- the layout requires additional circulation spaces which will add to the overall footprint of the building
- the building plan relies on each of the quadrants being added, and functions better as a whole than partially completed



Scheme 2: Radial

Advantages
- ability to add sections to building through multiple phases
- ability to have multiple entrances and corridors which divide the spaces
- ability to create adjacencies to other facilities and share services

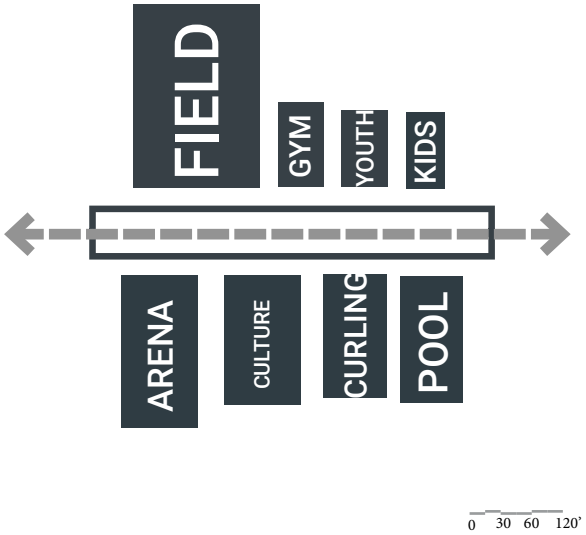
Disadvantages
- the layout requires additional circulation spaces which will add to the overall footprint of the building
- the building plan relies on each of the quadrants being added, and functions better as a whole than partially completed



Scheme 4: Mirrored

Advantages
- ability to add facilities to the building in 2 or 3 different phases
- ability to create adjacencies to other facilities and share services down the central corridor; corridor can act as viewing platform before building expansions.
- ability to have large main entry from street

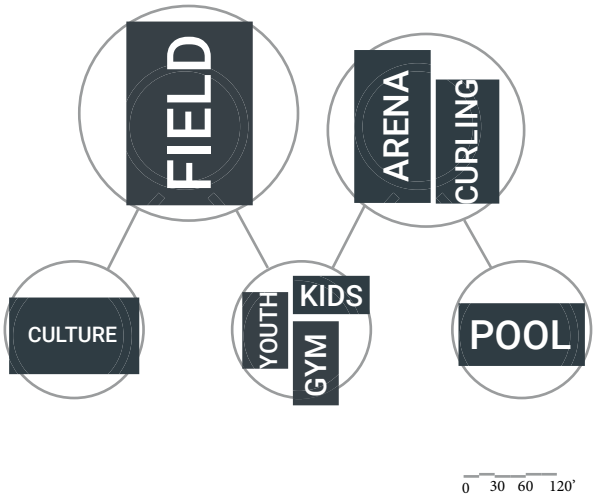
Disadvantages
- the building plan relies on the corridor being double loaded, and would need to be reprogrammed while the building is partially completed
- circulation is very long



Scheme 5: Individualized

Advantages
- ability to add facilities 1 building at a time
- facilities are accessed separately which reduces the size of the buildings as circulation is now on the exterior
- all new buildings would eliminate the need for renovations and/or additions through time

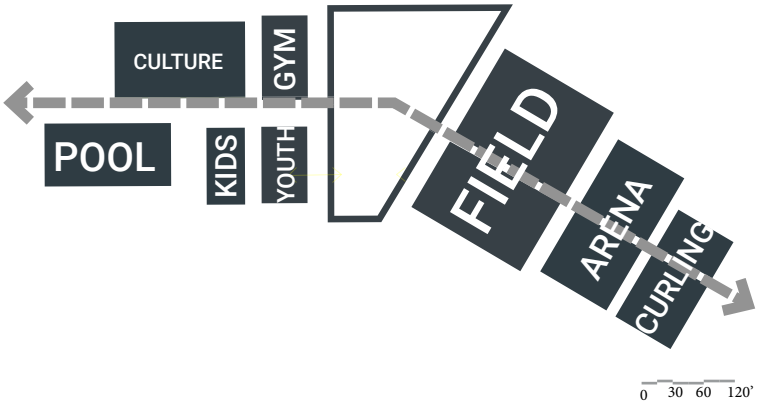
Disadvantages
- multiple buildings could increase construction costs and overall footprint on the site
- services cannot be shared and must be provided in each building



Scheme 6: Hinged

Advantages
- ability to add facilities to the building through different phases
- ability to have large main entry and/or atrium from street
- ability to create adjacencies to other facilities and share services
- ability to position the building so it relates to site context
- building functions fully as is, as well as with future expansions

Disadvantages
- locating the services in the central space distances them from some faculties



High School

Building Size:
Overall school size: 140,000 sqft

Land:
Overall parcel size: ~ 30 acres

Specialized Space:
- Exterior Trades Yard
- Cafe-Torium (Cafeteria + Auditorium)
- Gymnasium
- Administration
- Main Entry
- Bus Loop + Parking Lot

Adjacencies:
- Administration Overlooking Parking Lot + Located Near Entry

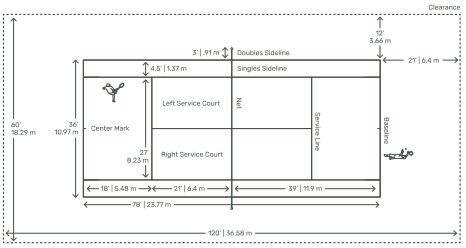
Outdoor Fields:
- 2 rugby/soccer fields
- 1 field hockey field
- Small asphalt pad for ball hockey/basketball
- Located on school property or close to school

07

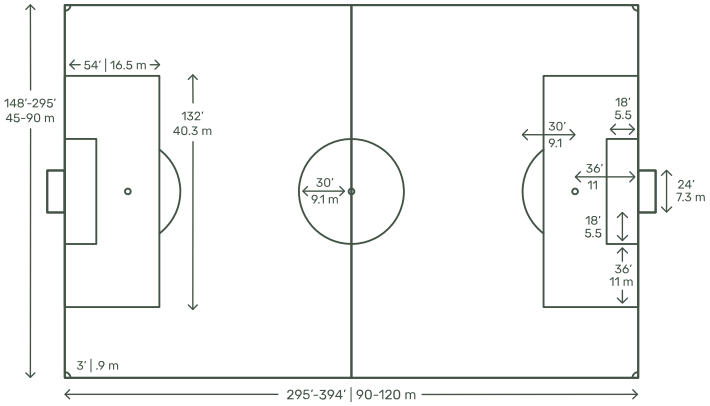
Outdoor Recreation Facility Elements

Through consultations with the Town the initial list of required outdoor fields was refined and can be found in the table on the next page. Similar to the planning of indoor facilities, the campus needs to enable the addition of fields over time in an organized and logical manner. The preliminary site design options in Chapter 8 assume a maximum build-out to present a complete picture of the land requirements for all future facilities.

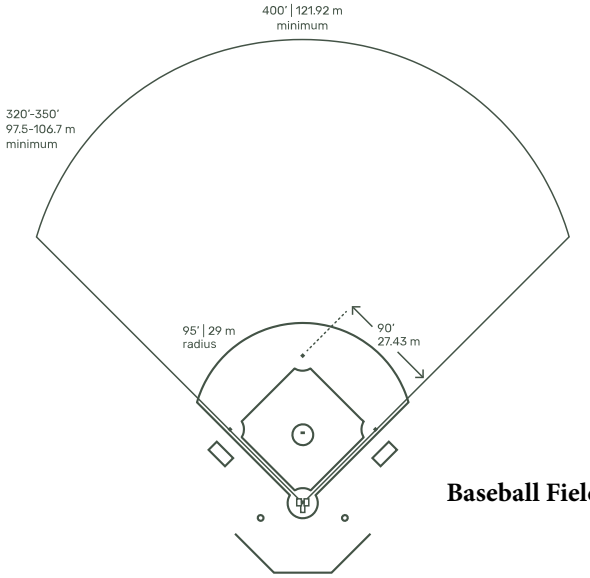
Appendix A of this report contains an in-depth summary of field dimensions, orientation and conditions.



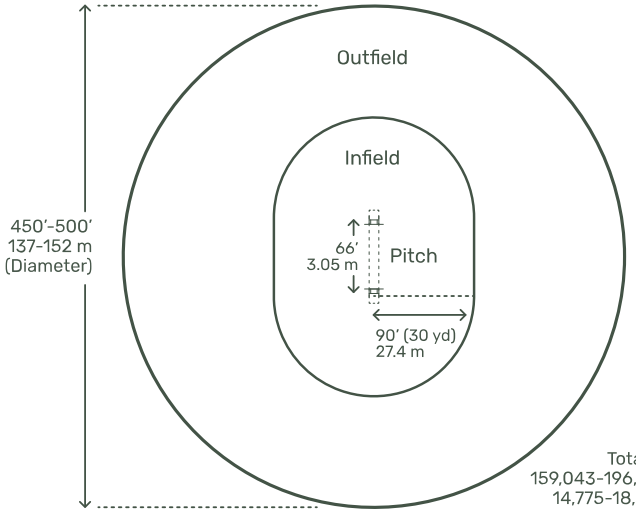
Tennis Court *



Soccer Field *



Baseball Field *



Cricket Field *

* not to scale relative to each other

Type	Specifications
Outdoor Facilities - Recreation and culture	
Multi-Use Field	100 x 120m -Turf (1)
Multi-Use Courts	Equivalent to 4-5 Pickleball Courts (1)
Baseball Fields	300 ft. to Centre Field (2)
Cricket Field	137m to 152m diameter (1)
Soccer Fields	90 x 120m (2) 60 x 75m (3) 35 x 55m (3) 30 x 36m (2)
Tennis Courts	19 x 36m (2)
Expansion Areas (allow space for later addition)	Outdoor Theatre Playground/Zipline/Ropes Course Outdoor Skating Oval Track and Field Facilities Outdoor Pool
Outdoor Facilities - Natural Spaces	
Environmental and Experiential Learning Space	
Trail System Through and Around the Site	
Outdoor Art Space	
Community Gardens	
Outdoor Amphitheatre	
Meditation/Reflection Space	
Discovery Centre	

Table 7-1: Refined Outdoor Recreation Facility List

08

Preliminary Site Design Options

The site design options presented on the following pages are based on the design team's work to date, including community consultation, site analysis, site visits, best practice research, and case study review. Although both options are very distinct, they are both guided by the overarching guiding principles set out in Chapter 04. Each option is also a development of one of the two preferred spatial concepts (concepts 03 and 04) presented to the Steering Committee and summarized in Chapter 05. Access points and the overall arrangement of site features are based on these spatial concepts. Note that the following options rely on using all of the access points shown in the spatial concepts. If one or more of the access points are not feasible, these site options will need to be revised.

Both site design options share some common features that are the outcome of our background research and site analysis. For example, both options distribute parking around the site - typically arranged in longer lots parallel with streets and driveways to minimize visual impact and pedestrian disruption. Streets are tree-lined to minimize heat island effect and provide comfortable environments for pedestrians. Windbreaks have been preserved where possible as a reference to the agricultural heritage of the site and to preserve their function to improve biodiversity, create habitat, and mitigate climate effects. Likewise, the forested area surrounding the watercourse adjacent to the Stratford Business Park has been preserved and the business park expansion has been buffered from the rest of the campus with additional trees and open space. A final commonality between both options is the location of a future

electric school bus hub (bus charging and maintenance) adjacent to the high school at the north-west corner of the campus. This location allows this utilitarian feature to be separated from the more public areas of the campus.

Community Campus Lands Looking East

01 Common Concept

The "Common" concept is based on Spatial Concept 04. The concept is inspired by the agricultural past and physical context of the site - in particular the linear geometry of the property lines and existing windbreaks. Accordingly, the central feature of the concept is a common (or shared) area of open land. Historically, commons were areas of land preserved for shared use by all community members for agriculture, forestry, or other uses. In this situation, the common features two sports fields and sufficient space for other public amenities as desired (such as nature playgrounds, spectator seating, community gardens, public art, performance spaces, etc.)

Organizing Structure - Streets and buildings are oriented parallel with the longest property lines (parallel with Mason Road). This reinforces the existing street orientation in this area and references the historic pattern of land use on the site.

Central Feature - This concept is organized around a common open space with two sports fields and generous peripheral space for supporting amenities. As shown on the facing page, one field is currently proposed as a rugby field while the other is a multi-purpose field surrounding by a running track. This would be the centre-piece sporting venue and located in close proximity to the indoor recreation facility. This allows it to share indoor amenities such as change rooms. The recreation centre is given visual prominence at the end of the common. The high school and Town Reserve for Future Development school flank the common, providing "walls" to the space.

Circulation Route - Surrounding the common is a pedestrian-oriented street. There is potential for this to be an extremely innovative feature for the community and could be a shared street (pedestrian and car traffic), or use various traffic calming measures to control vehicle speed and create safe pedestrian environments. These could include raised cross walks, speed humps, curb bump-outs, chicanes, median islands, etc. These measures will create pedestrian priority and an environment where drivers expect frequent crossing to and from the common. Main entrances to the campus will terminate at T intersections at the common, reinforcing its importance as the central feature of the campus.

Notes - Although not shown in this draft version, this concept provides ample opportunity for trail networks to connect with the adjacent wetland area. Area has also been reserved around the indoor recreation centre and schools for associated amenities as required (i.e. play equipment, utility space, outdoor classrooms). A green space buffer separates the business park expansion from the rest of the campus.


Buildings
1. High School
2. Recreation Facility
3. Town Reserve for Future Development
4. Business Park Expansion
Sports Fields
Baseball | Softball
Cricket
Rugby
Soccer
Running Track
Field Hockey
Pickleball | Multi-Courts
Other Features
Parking
School Bus Drop-Off
Electric School Bus Hub
Existing Windbreak
Existing Wetland
Duffy Rd.
Bunbury Rd.
Street Connection
Mason Rd.
Street Connection
Mason Rd.
Street Connection
Jubilee Rd.
Trans-Canada Highway
Mason Rd.
Hollis Ave.
1.
2.
3.
4.

02 Park Street Concept

The "Park Street" concept is based on Spatial Concept 03. The concept is inspired by the topography of the site sloping from the north-west to southwest and aligns the main access street with the contours of the site. As shown in Spatial Concept 03, this concept features a prominent entry park at the edge of the site closest to Mason Road. The result is a more natural and organic structure than the "common" concept, with campus features arranged along the site's natural slope and a welcoming park defining the entry experience.

Organizing Structure - In this concept, the campus features are organized along the contour lines of the site, minimizing grading and the human perception of slope. The concept also features a welcoming entrance park, which is an opportunity to create an additional destination for people who may not be play organized sports or associate with the athletic orientation of the rest of the campus open spaces.

Central Feature - The entry park may include features such as public art, community gardens, outdoor performance space, nature playgrounds, etc. The high school and Town Reserve for Future Development are located adjacent to provide a sense of enclosure for the park, as is the indoor recreation centre. As drawn in this concept, the recreation centre is configured as a "hinge" that relates to the central street and partially encloses a multi-use field with perimeter track. This relationship creates an ideal venue for track and field tournaments or other competitions to play on this field as amenities in the recreation centre can be shared by players and spectators. This concept also reserves space that can be used for secondary entrance parks at the entrances from Bunbury Road and the southernmost entrance from Mason Road. If all three spaces are developed as parks, it could further reinforce the "Park Street" concept in which the community campus is defined by public parks.

Circulation Route - This concept features a central access street that connects Hollis Avenue in the business park with Bunbury Road. This street is imagined as a tree-lined parkway that extends the park experience throughout the campus. Various traffic calming measures may be employed to control vehicle speed and create safe pedestrian environments. The concept features secondary access streets for each of the schools, creating a welcoming visitor entrance environment for each - and a clear distinction between visitor access, staff/parent entrance, and bus drop-off.

Notes - Although not as formally arranged as in the "common" option, the schools and recreation centre are carefully placed to flank public spaces and provide views of the main entrances from the central street. Similar to the previous concept, this option provides ample opportunity for trail networks to connect with the adjacent wetland area. Area has also been reserved around the indoor recreation centre and schools for associated amenities as required (i.e. play equipment, utility space, outdoor classrooms). A green space buffer separates the business park expansion from the rest of the campus.


Buildings
1. High School
2. Recreation Facility
3. Town Reserve for Future Development
4. Business Park Expansion
Sports Fields
Baseball | Softball
Cricket
Rugby
Soccer
Running Track
Field Hockey
Pickleball | Multi-Courts
Other Features
Parking
School Bus Drop-Off
Electric School Bus Hub
Existing Windbreak
Existing Wetland
Duffy Rd.
Bunbury Rd.
Street Connection
Mason Rd.
Street Connection
Mason Rd.
Street Connection
Jubilee Rd.
Trans-Canada Highway
Mason Rd.
Hollis Ave.
1.
2.
3.
4.

09

Final Site Layout

After presenting the two concepts to the Town, the Park Street Concept emerged as the preferred option. A few changes were suggested by Council, the Campus Implementation Committee, and Provincial stakeholders, which are summarized below. The concept has been refined to show much greater detail with regard to pedestrian circulation routes, parking areas, proposed vegetation, and the design of public spaces.

Island Gymnastics Academy - A new addition to the campus is a proposed indoor gymnastics facility. A 2.5 acre parcel of land has been reserved along with a preliminary site layout to respond to the proposed building design. It is understood that development of this piece of the master plan may proceed in advance of the others. If this is the case, the preliminary site layout is of key importance to ensure the site works with the rest of the master plan layout. Specifically, the site features a north-south trail connection that connects the soccer fields to the indoor recreation facility, a generous parking layout that can serve the soccer fields during overflow events, and a building location and orientation that aligns with the main street and continues the setback of the indoor recreation facility from the street.

Street Connectors - The Park Street Concept featured three future connectors to Mason Road that aligned with existing spaces between properties. Although the campus master plan still provides logical connection points if the three future connectors are ever built, it now only relies on the central connector that aligns with the main entrance to the indoor recreation facility. This connector will serve as an important active transportation and vehicle access from the rest of the Town. The other two street connectors remain in the master plan as active transportation connection points.

Athletic Field Adjustments - A track and field facility was deemed to be unnecessary based on the lack of regional programming. The cricket pitch was suggested as the logical replacement in the same location due to its predicted popularity and the ability to share amenities located in the indoor recreation facility. An additional baseball field was requested, and the rest of the baseball fields were moved south of the indoor recreation centre to make efficient use of space. Soccer fields were relocated accordingly, and the overall number of fields was reduced with the understanding that smaller field layouts could be accommodated on larger soccer fields. This will allow more efficient use of the infrastructure and ensure maximum value for money.

Business Park Expansion - To maximize the size of developable lots and reduce the amount of servicing infrastructure required, the business park expansion has been revised to eliminate the cul-de-sac.

Public Spaces - Greater detail has been added with regard to desired outdoor amenities, including a conceptual layout for the entry park that features an outdoor amphitheatre, welcoming plaza areas at building entrances, community garden plots behind the indoor recreation facility, and an outdoor skating loop around the tennis/pickleball courts.

1. High School
2. Recreation and Culture Facility
3. Town Reserve for Future Development
4. Business Park Expansion
5. Island Gymnastics Academy

The Town of Stratford has made a strategic decision to hold a reserve area within the Community Campus Plan for a future intermediate school should the Province identify a need in years to come. The provincial five-year capital plan does not include one however the Town has endeavoured to design this campus as forward looking and given its population projections complimented by its younger population demographics, it would be prudent for the Town to ensure this space is available for development of an intermediate school should that opportunity arise.


1.
2.
3.
4.
5.
0
50
150
250m

10 Indoor Facility Concepts

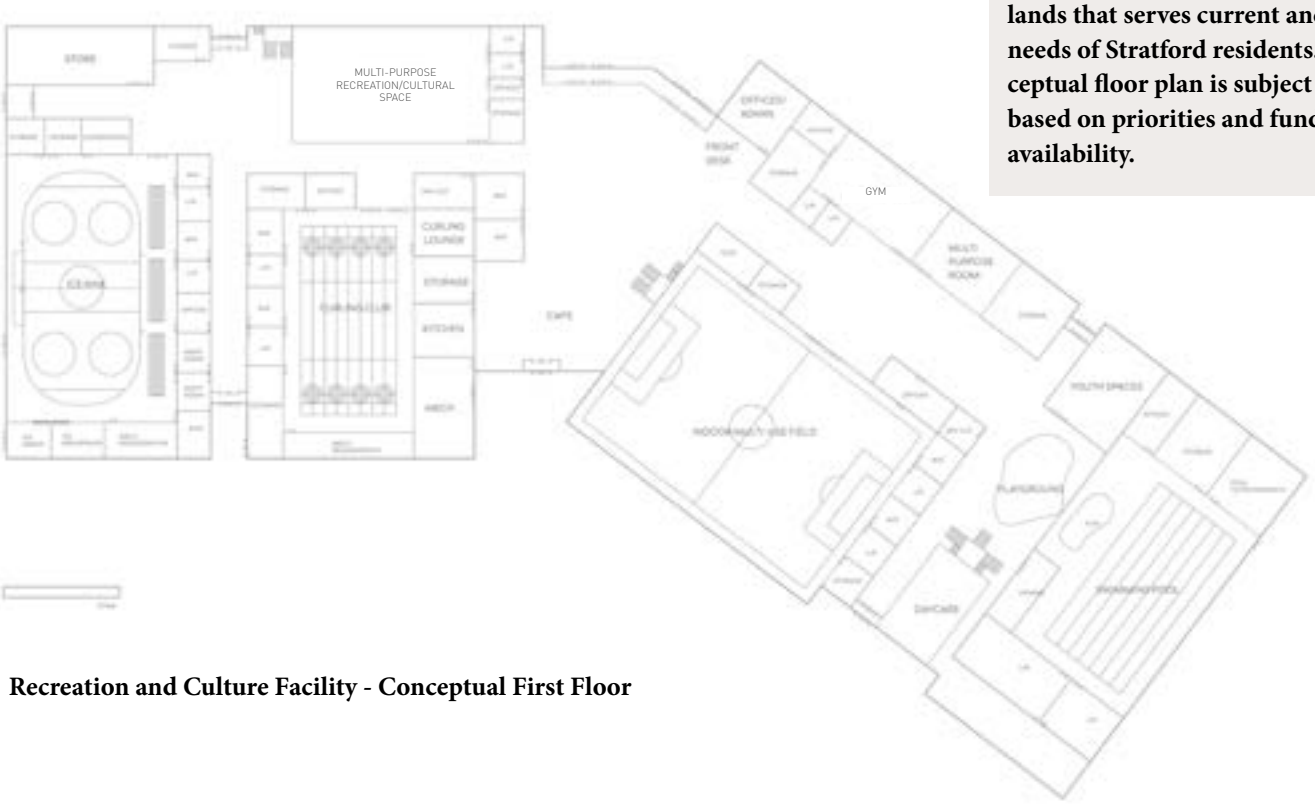
Recreation and Culture Facility

The Community Campus plan reserves space to accommodate the long-term indoor facility needs of the rapidly growing community. The building footprint shown in this plan assumes the full built-out that houses all 'must-have' and 'nice-to-have' indoor elements that were identified by the Community Campus Planning Committee - a footprint that will grow and evolve over time The site allocated for the Recreation and Culture Facility in this plan allows for these expansions to happen in logical phases without compromising the outdoor recreation facilities which are likely to be implemented before the full extent of the Recreation and Culture Facility is realized.

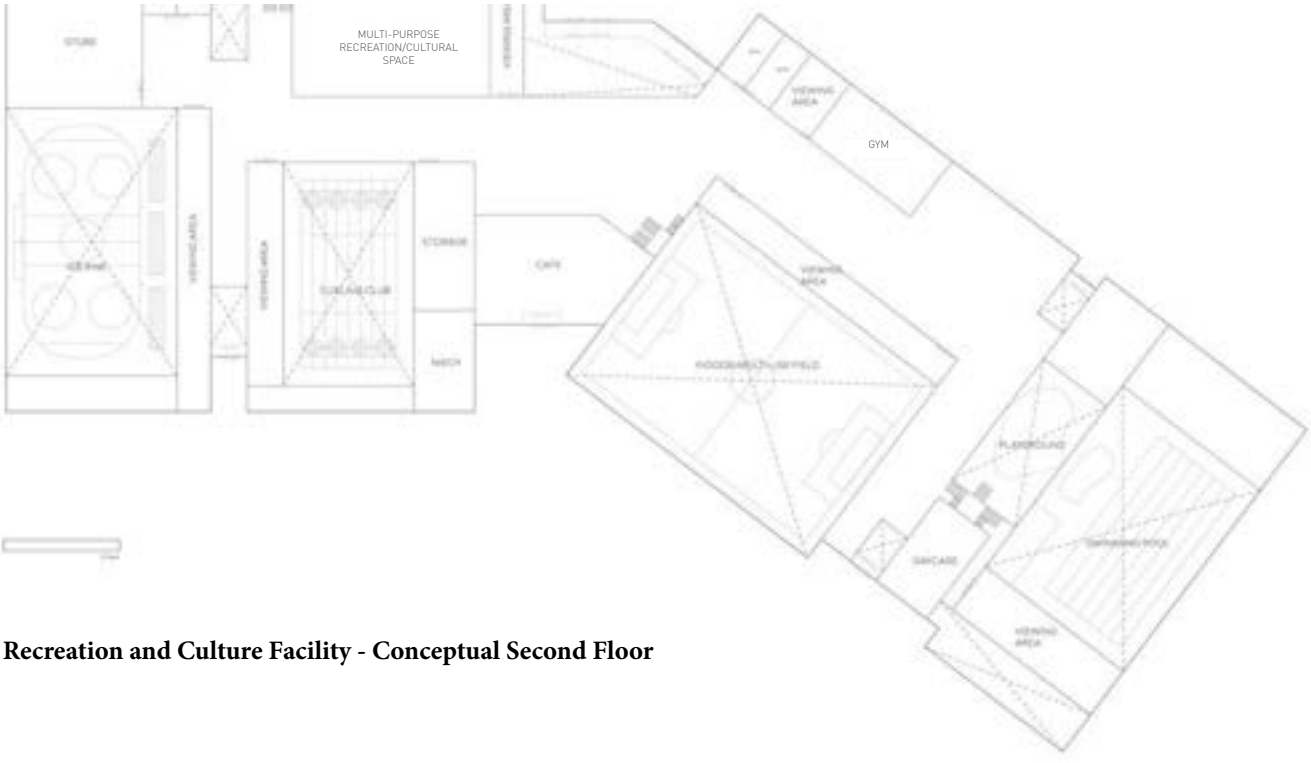
Floor Plan

The proposed floor plan of the Recreation and Culture Facility follows a hinged scheme allowing for it to be aligned with the main roads. This results in the building and surrounding transportation infrastructure working together creating a facility that is strategically oriented and placed to meet site constraints. The main entrance is situated where the Jubilee St. extension terminates, affording views of the entrance gateway from the distance as visitors approach the building, and allowing for a moment for the public to gather and flow into the building once they arrive. The large entrance plaza is structured as a straight, uninterrupted passage to the facility. The grand entrance starts at fifty-five feet tall sloping down to twenty-four feet which contains the café overlooking the cricket field through generously sized curtain walls. This area is meant to feel spacious accepting the passage of light and welcoming guests to the facility. With the entrance being placed in the middle of the facility, there are two main corridors with all the amenities spanning north and south, which align with the two adjoining roads. Proceeding south, one can approach the multi-purpose recreation and cultural space, the arena and curling rinks and a facilities store. Here, there are two secondary entrances facing west and south towards the parking lot. The north wing includes the gymnasium, multi-purpose space, indoor multi-use field, daycare, youth space and the swimming pool. The swimming pool is placed facing north to avoid the harsh morning and evening sun. Each facility can be accessed from the facility within, but can also be closed from the main building and has the potential to incorporate a private entrance. Stairs and elevators exist at each end of the building, as well as the center. These circulation features allow occupants to go upstairs and engage with the multiple viewing areas. Taking advantage of the generous height of the building, the upstairs consists of both enclosed rooms and windows along the hallways to look down towards the facility's amenities. From the viewing area, guests can enjoy observing rooms such as the swimming pool and gymnasium, as well as the outdoor cricket field. This design for the Recreation and Culture Facility aims to create a smooth circulation around these large amenities while supporting community areas throughout its space.

The conceptual Indoor Facility floor plans depict a potential full build-out of recreation and culture facilities pending actual facility needs, priorities and available funding. The floor plan was developed to estimate the spatial needs of a fully developed facility on the Community Campus lands that serves current and future needs of Stratford residents. The conceptual floor plan is subject to change based on priorities and funding availability.

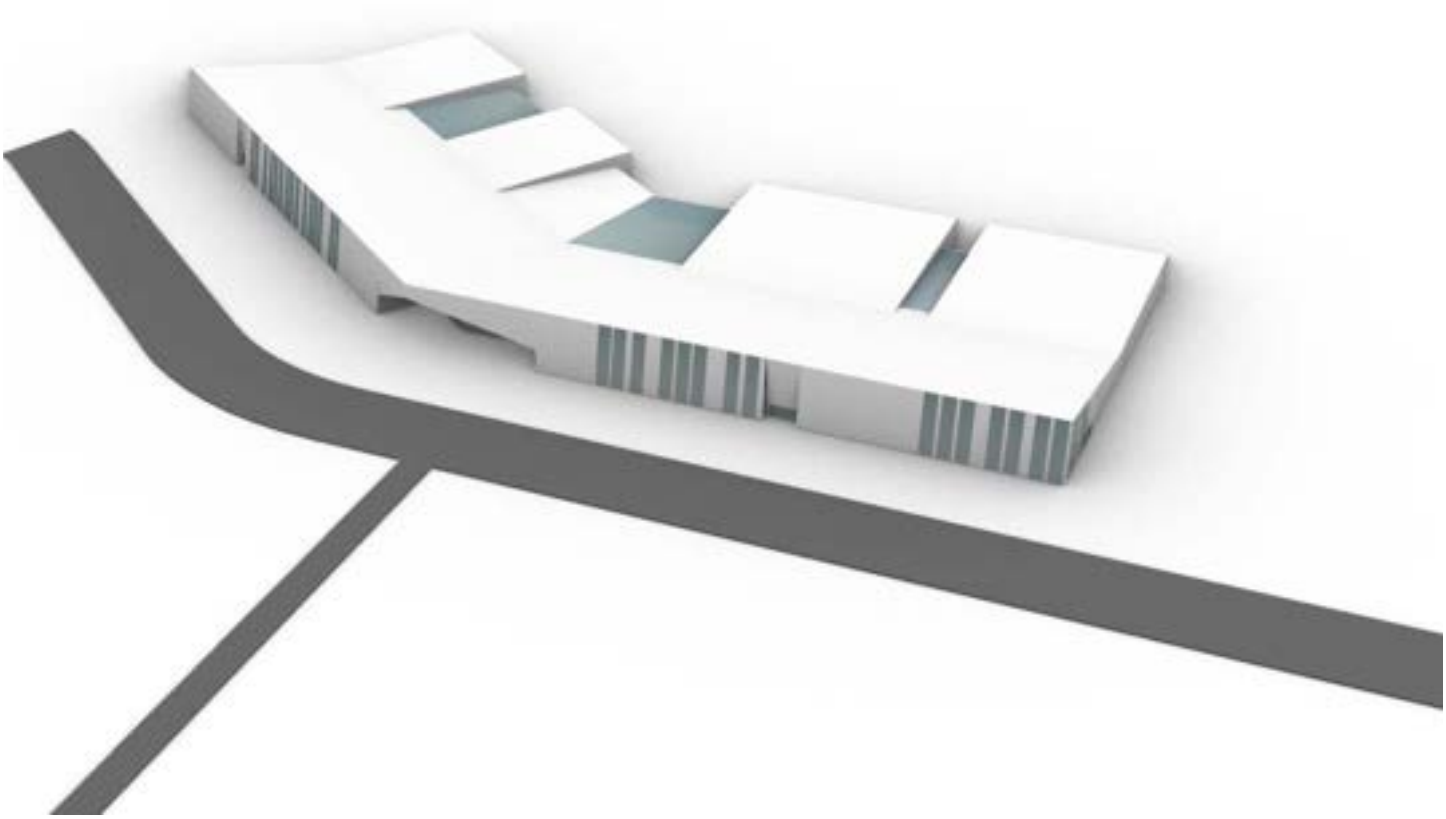


Recreation and Culture Facility - Conceptual First Floor



Recreation and Culture Facility - Conceptual Second Floor

Massing and Design Considerations
The conceptual massing of the Recreation and Culture Facility works around the large-scale amenities to create a sloped façade. Four blocks protrude from its total massing: the arena, multi-use field, curling club and pool occupy these four thirty-six feet tall blocks, from which the rest of the building slopes around. Facing the parking lot, the wall slopes inward at fifty-five feet. This results in a generous entrance space which then slopes down to twenty-four feet to meet the cricket field. The actual building massing is subject detailed design.



Recreation and Culture Facility - Conceptual Building Massing

High School

Location
The high school is proposed for the highest point of the site, with expansive views over the rest of the campus and beyond. An area of approximately 14 hectares (35 acres) has been reserved for the school to accommodate Provincial programming requirements.

Floor Plan
As the school and its site will be designed at a later date by a design team engaged by the Province, the building footprint currently shown is a place holder. The campus design makes a few general assumptions about the school floor plan, including that the main entrance will be located on the side of the school facing the indoor recreation facility, area should be reserved adjacent to the school for potential future expansion, and that one wing of the building will feature a trades education area that will require vehicle access and an outdoor work area.

Parking
The design of the school site currently accommodates 241 spaces for staff, students, and guests. The main parking lot has been arranged to provide ample green space within and around the lot to minimize visual and stormwater impacts of the paved surface. To accommodate the possibility of large sporting events held at the school fields, an additional overflow parking lot for 49 cars is located north of the fields. The school site also features an additional 28 parking spaces for school bus drivers at the electric school bus hub located behind the school.

Electric School Bus Hub
Located behind the school is a conceptual layout for an electric school bus hub servicing 25 buses. This layout assumes student drop-off will occur at the front side of the school to minimize potential conflict with traffic and ensure clear views from administration offices. During off-hours, school buses will be parked at the hub for charging. The hub also includes a dedicated parking lot for drivers as well as area for a service garage.

Drop-off
Student drop-off will occur at the main entrance within clear view of administration offices. Separate lay-bys are provided for parent drop-off and school bus drop-off on either side of a central welcome plaza. Drop-off areas are carefully designed to eliminate crossover of students and vehicular traffic. Students can exit the vehicle and have a direct path through the welcome plaza to the school entrance without crossing any driveways or parking areas. Located adjacent to the welcome plaza are a paved pad for basketball and ball hockey (12m x 22m) as well as an outdoor learning structure (7m x 5.25m). Locating these features in close proximity to the main entrance encourages use during lunch hours as clear supervision from administration offices.

Athletic Fields
The school site layout includes area for two multi-use fields for rugby and soccer (120m x 90m), as well as a smaller field suitable for field hockey (100m x 64m).

Views
The school site has been selected to maximize potential views over the rest of the campus as well as the borrowed view of the adjacent wetland and proposed conservation area to the east. Care should be taken, however, to coordinate the finished floor elevations of the school and indoor recreation facility to ensure that at least the upper level of the school has views over the recreation facility.

Connectivity
One advantage to locating a school within a master planned campus is the potential for path connections to encourage active transportation and increase the number of amenities available to students. The master plan includes a multi-use path that circles the entire campus including the school site. This trail network creates potential for connecting to the nearby Fullerton's Marsh trails via the proposed conservation area adjacent to the campus.

11 Outdoor Facility Concept

As the Park Street concept emerged as the preferred option and the layout was refined in greater detail, the outdoor facility concept emerged with two distinct areas: the North Fields and South Fields. Both of these areas are connected by the campus-wide network of multi-use paths, providing convenient routes between destinations as well as connections with the rest of Stratford.

North Fields
Located adjacent to the residential area along Bunbury Road, the North Fields provide a soccer venue consisting of one large field (100m x 65m), three medium fields (75 x 60), and three small fields (55m x 36m) which can be configured with smaller field layouts marked across them for maximum utility. The North Fields provide parking for 141 cars with additional overflow parking available at the Island Gymnastics Academy and across the street at the high school overflow parking lot.

South Fields
Located behind and adjacent to the indoor recreation facility, the South Fields consist of venues for bat-and-ball sports such as cricket and baseball, as well as net sports such as tennis and pickleball. The South Fields consist of one cricket pitch (68.6m radius), three baseball fields (MLB dimensions), three pickleball courts, three tennis courts, and an outdoor skating loop encircling the entire court surface. This arrangement allows the skating loop to take advantage of the level area around the fields, as well as proximity to the ice chillers installed for the indoor recreation facility. The South Fields provide parking for 109 cars, but visitors may also use the parking for the indoor recreation facility located immediately adjacent. The South Fields also share a generous drop-off area with the indoor recreation facility suitable for cars or team buses.

Rendering of Ball Field Plaza

12 Trails and Open Spaces

Trails

One very real benefit to a master planned campus is the ability to incorporate a cohesive trail network. This promotes active transportation within a community and also maximizes the recreation value of new development by providing interesting and enjoyable walking routes for people who may not associate with organized sport or fitness. The Stratford Community Campus features a carefully organized hierarchy of trails providing circulation around the site as well as convenient routes to and from specific destinations.

Access Points

The campus incorporates trail access points from all four sides. It features three access points from Mason Road (two multi-use paths and one sidewalk along the Jubilee Road Extension), one access point from Bunbury Road (along the central Park Street), and one from Hollis Drive (also along the Park Street). In future phases the trail network should be expanded eastward into the proposed conservation area (suggested access points are indicated in the plan image to the right), ultimately connecting with the existing Fullerton Marsh Trails approximately 900m away. These additional access points will provide maximum value to the community in terms of active transportation, recreation, and nature education opportunities.

Multi-use Trails

These are the widest routes within the trails network - intended to act as an active transportation route to and from specific destinations. These trails are 3m wide asphalt multi-use routes that loop around the perimeter of the entire campus and provide a central north-south connection along the east side of the Park Street.

Sidewalks and Paths

The trail network also features a secondary network of sidewalks and paths that are typically 1.5m wide, although wider at drop-off areas by building entrances. These routes are typically paved with concrete, although they may be surfaced with aggregate in some cases where a more natural look and feel are appropriate.

Open Spaces

As its name suggests, a defining feature of the Park Street concept is its abundance of park spaces. The Park Street concept features four distinct park typologies, described below.

Park Street

The character-defining park typology is the Park Street itself. This typology provides a generous grass buffer on either side of the street right-of-way (2.2m - 3m). This provides ample room to support large street trees that will ultimately provide shade and a park-like feel. The street is flanked by a 3m multi-use path on the east side. The street winds through the campus, providing a gracefully curving route following the topography of the site. Taken as a whole, the Park Street experience will be that of a generous tree-lined route winding through the landscape.

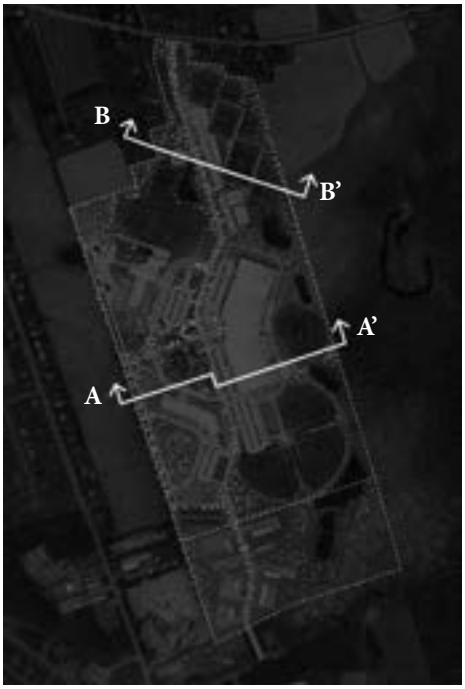
Entrance Parks

The campus also features welcoming entrance parks at the north and south street entrances (from Bunbury Road and Hollis Drive respectively). These green spaces are intended to control the entrance experience and provide a clear transition from the adjacent neighbourhood to the community campus. The southern entrance park is of particular importance as it transitions from the busy commercial and industrial lands uses in the adjacent business park to the recreational and institutional land uses of the rest of the campus.

Central Park

Another exciting feature of the community campus is the central park space that provides a site for uses such as an outdoor amphitheature, nature playground, and sculpture garden. Its proximity to the surrounding buildings lends itself well to outdoor programming such as plein air art classes, yoga, tai chi, etc.

13 Landform

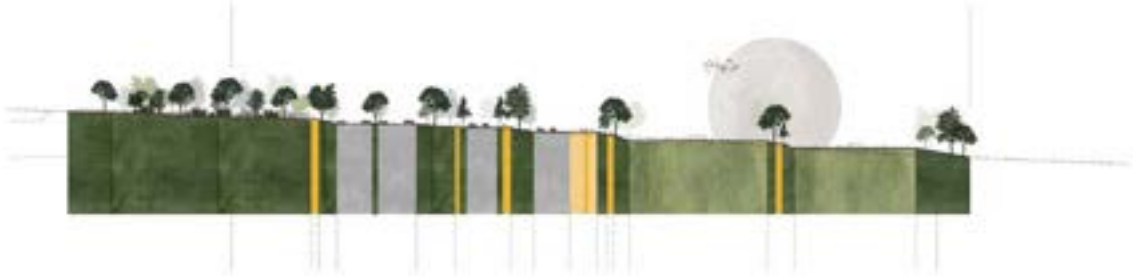


Even though the Community Campus lands appear fairly flat, they feature an overall elevation difference of 43 metres between its highest and lowest point. The large flat surfaces needed for sports fields, parking areas and building pads have to navigate the topography through orientation along the contours and by utilizing grade changes.

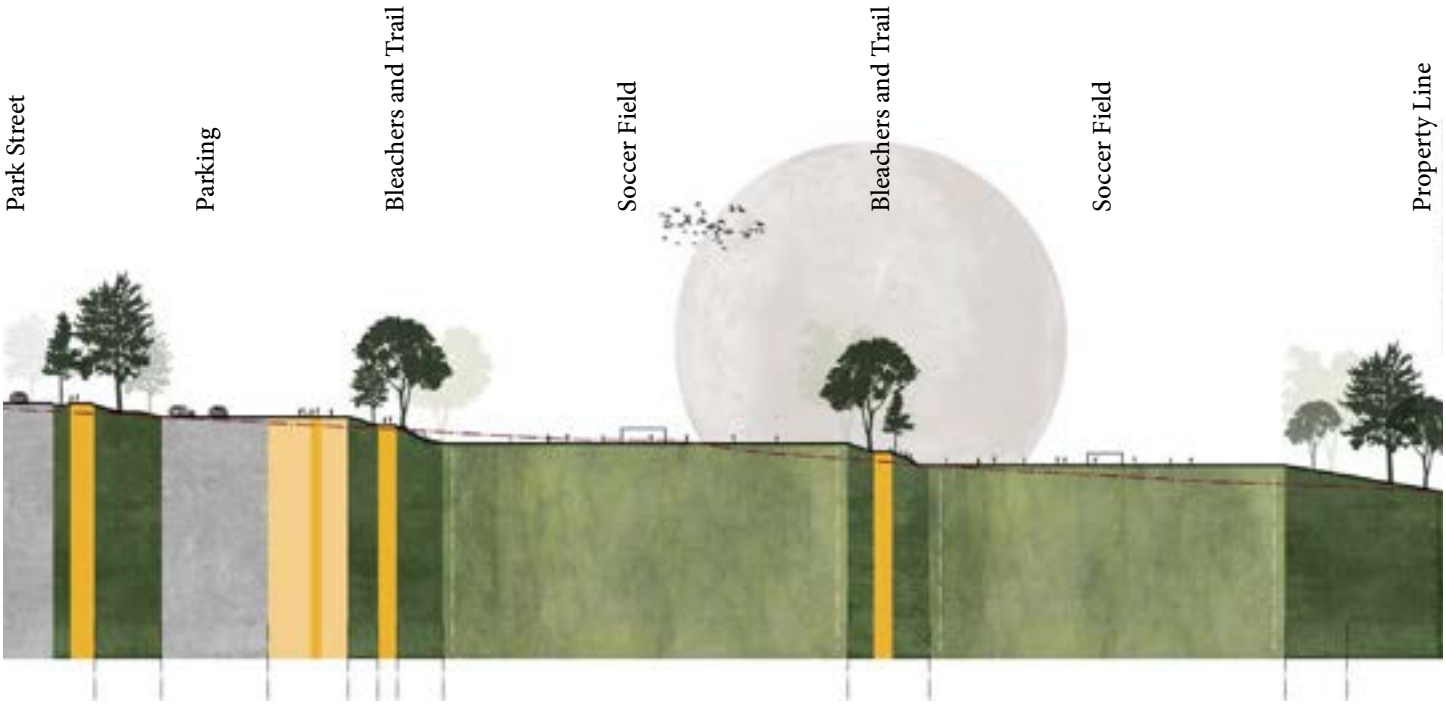
The large floor plan of the Recreation and Culture Facility, for example, can be used to navigate the grade change between Park Street and the Cricket Pitch by locating program functions with higher ceilings on the eastern side of the facility.

The soccer and multi-purpose fields should be oriented to align with the existing contour lines. The grade changes between the fields can be used for bleachers or grassed slopes that allow spectators to watch games.

Section A-A'



Section B-B'



Section A-A' (Zoomed-In)

Section B-B' (Zoomed-In)

14 Traffic, Transit and Parking

When complete, the various Campus land uses will attract many people, both residents from within the Town and visitors from outside the Town. Some of the land uses will simply reroute existing traffic that is already on the roads (i.e. the high school), while other Campus amenities will generate new traffic. The Campus transportation concept describes how the new and rerouted traffic can be managed to minimize the impacts on nearby residents and existing users of Stratford's transportation system.

Overall Vehicular Circulation Concept

The Community Campus has three vehicular access points. The southern access of Hollis St. connected through the north-south running "Park Street" to the northern access off Bunbury Rd. A third access road connects the site to Mason Rd. to the west of the site.

Estimated Campus Trip Generation

Trip generation rates are the estimated number of trips for a given land use parameter. Depending on the type of development, parameters such as land area, number of employees, gross leasable area (GLA), or number of dwelling units might be used to estimate site trips. Rates can vary greatly for different land uses, i.e. a 10-acre retail site generates significantly more trips than a 10-acre park.

Trip generation rates from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, were utilized to estimate the total number of auto trips that the Campus site would be expected to generate. Rates published in this manual are widely accepted by the engineering community, as they are based on actual observed site traffic volumes, sampled from sites all over North America.

Appropriate land use codes were selected from ITE's Trip Generation Manual to closely align with the various land uses envisioned for the Community Campus once complete. Trips were estimated for each use based on the sizes and capacities that are currently being planned. The following land uses were considered:

Schools
- High School (approved)
- Junior High School (not approved)

Business Park Expansion

Indoor Multi-Use Recreation Facility
- Arena
- Multi-use indoor field
- Swimming pool
- Daycare
- Gymnasium
- Curling rink
- Gymnastics facility (separate building)

Outdoor Facilities – Sports & Recreation
- Soccer fields
- Rugby fields
- Baseball/softball fields
- Cricket pitch
- Tennis/pickleball/multi-use courts

Outdoor Facilities – Natural Spaces

Table 13-1 illustrates the estimated trip generation breakdown between the various campus elements for the 7-9 AM and 4-6 PM peak periods. The estimated trips for the schools account for students getting picked up and dropped off. As shown, the schools and the Business Park expansion are expected to account for the majority of AM and PM peak hour trips, and that the other land uses would generate less traffic during these times. Also, the AM peak is noticeably higher than the PM peak because the afternoon peak for school traffic generally occurs before 4 PM.

Note that these numbers in **Table 13-1** would be generally representative of trip generation for the various land uses in isolation; the following sections will discuss several other factors that should be considered for the Community Campus site, some of which where trip reductions are justified.


141
49
95
28
143
241
50
54
74
109
103

Other Trip Generation Considerations

There are several other factors to keep in mind when forecasting trips to and from the Campus site during peak times of day as well as other times. These are discussed below.

Time of Day

Typical peak traffic times are associated with commuters driving to work on weekdays between 7:00 and 9:00 AM and returning home sometime between 4:00 and 6:00 PM. This generally holds true for Stratford which is adjacent to Charlottetown where a large portion of Town residents are employed. Correspondingly, peak traffic times for the major Town roadways would typically occur during these times. Outside of these hours, during off-peak times, the roads usually have lower traffic demands, less congestion, lower travel times, and more reserve capacity.

Table 14-1: Breakdown of Estimated Campus Trip Generation

SCHOOLS				
ITE Land Use Code 530 (High School)				
750 Students	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	0.52	261	129	390
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	0.14	50	55	105
ITE Land Use Code 522 (Middle School/Junior High School)				
750 Students	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	0.58	235	200	435
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	0.17	62	65	127
BUSINESS PARK EXPANSION				
ITE Land Use Code 770 (Business Park)				
870 Gross Floor Area (1,000 SF)	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	0.40	212	136	348
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	0.42	168	197	365
INDOOR MULTI-USE RECREATION FACILITY				
ITE Land Use Code 495 (Recreational Community Facility) - Includes Ice Rink, Swimming Pool, Gynastics Facilitiy (separate building), Indoor Multi-use Field, Curling Rink, Daycare, Café, etc.				
139 Gross Floor Area (1,000 SF)	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	1.76	161	83	244
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	2.31	170	186	357
OUTDOOR FACILITIES - RECREATION				
ITE Land Use Code 488 (Soccer Complex) - Soccer, Rugby, Cricket, Baseball/Softball fields, etc.				
10 Number of Fields	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	0.99	6	4	10
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	16.43	108	56	164
ITE Land Use Code 490 (Tennis Court) - Tennis, Pickleball, etc.				
6 Number of Courts	Rate	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	N/A	0	0	0
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	4.21	15	10	25

CAMPUS TOTAL (without reductions)	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	880	550	1430
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	570	570	1140

An important point to keep in mind regarding the Campus is that trip generation characteristics and peak traffic periods for each element of the Campus will vary. For example:

Schools

- morning peak – roughly 7:30 – 9:00 AM
- afternoon peak – roughly 2:30 – 4:00 PM

Recreation and Culture Facility

Sports/recreation facilities

- peak traffic times would generally follow scheduling for activities and programming
- traffic would generally tend to be highest on weekday evenings (~4pm – 9pm) and on weekends
- a traffic surge will generally occur during switchover times for a particular activity (i.e. the ~15-20 minute period when one swimming lesson session ends and the next one begins) followed by a lull until the next switchover time
- would be beneficial if start times for regularly scheduled activities within the building are offset so that the traffic surges at switchover times are staggered instead of coinciding

Daycare

- morning peak – roughly 7:30 – 8:30 AM
- afternoon peak – roughly 4:00 – 6:00 PM

Outdoor sports/recreation facilities

- peak traffic would generally follow schedules for the activities on these facilities,
- traffic would generally tend to be highest on weekday evenings (~4pm – 9pm) and on
- weekends
- similar to the recreation building, it would be beneficial if start times for scheduled
- activities on multiple sports fields are offset so that the traffic surges at switchover times are staggered

Outdoor natural/cultural spaces

- outside of scheduled events, traffic associated with these amenities would tend to be low/negligible and somewhat random, without well defined peaks

Business Park expansion

- Some existing Business Park businesses would have traditional hours of operation (i.e. weekdays 8-9 AM to 4-5 PM) and peak traffic periods that would generally coincide with that of the surrounding roadways, but others might generate most of their traffic at off- peak times. We would expect similar trip generation characteristics if the Park expansion includes a mix of land uses similar to the existing Business Park.

Generally speaking, only the Business Park and daycare peaks and the morning peak for the schools would be expected to coincide with the peak of adjacent street traffic. There may also be some peak traffic associated with the sports fields and recreation building that coincides with the weekday afternoon peak. Overall, we expect that much of the traffic generated by the Campus will be during off-peak times for the surrounding road network. This is beneficial to the Town because the road network has more available capacity at these times and therefore is more able to absorb added traffic generated by the Campus.

Day of Week
As mentioned above, many of the Campus recreational and cultural facilities may attract more traffic on Saturdays and/or Sundays than they would on weekdays.

Time of Year/Facility Utilization
The Campus will feature facilities and activities geared for year-round use as well as facilities that will be more seasonal. For example, baseball and soccer fields would typically be dormant during the winter months and wouldn't attract any traffic. On the other hand, the curling and hockey rinks would be busiest during the winter and may have very little use during summer months. Even when seasons overlap, we wouldn't expect all facilities to be fully utilized at any given time. Therefore, the trip generation estimate will be reduced to reflect this.

On-Site Synergy
While each specific site within the community Campus will generate a certain number of trips, some visits to the Campus will be shared between multiple facilities, i.e. someone could visit a school, an event at the amphitheatre, and a sports field during a single trip to the Campus. Another example would be a student or employee driving to the high school in the morning, and then walking to one of the outdoor facilities after dismissal, without driving; while this would represent a trip to each of the two sites, it would only be a single trip relative to the overall Campus.

Overall, due to the wide variety of land uses and amenities planned for the Campus, we would expect to see significant synergy. This anticipated trip-making behaviour justifies a reasonable reduction to the total trip generation estimate for the Campus.

Active Transportation & Transit
At this stage of Campus planning, there is a prime opportunity to incorporate active transportation (multi-use trails, sidewalks, bike lanes, etc.) routes within the Campus and strategic connections to the surrounding neighbourhoods. The better the quality and integration of the AT facilities within the Town and the Campus, the more people of all ages and abilities that are likely to use them for trips that would otherwise be made by motorized vehicles. In this way, the future AT network will help to reduce the impact of Campus traffic on the surrounding roads.

Also, T3 Transit's Route 7 currently serves the Town north of the TCH along the Mason Road corridor, so we expect it could easily be altered to pass through the Campus. Offering transit service within the community Campus would also help to alleviate traffic demands.

The trip generation estimates will be reduced to reflect that AT and transit will be used for some Campus trips.

Future Factors
Some other possible factors that may impact Campus trip generation in the coming years are more difficult to predict. For example, if game changers like autonomous vehicles and car-sharing someday become prevalent on PEI, these could have implications on the number of vehicles entering and exiting the Campus; depending on how they are used they could increase or reduce trips. Also, the arrival and uptake of alternative mobility options like sharing services for bikes and e-scooters could provide transportation to/from the Campus for many people who would otherwise drive. These types of changes in many urban areas seem to be convincing many young people that they don't need to own a car or even have a driver's licence, another factor that could reduce Campus trips in the decades to come.

Trip Generation Reductions

Trip generation estimates in **Table 13-1** were conservatively reduced to account for site synergy, facility utilization, and use of AT/transit modes. A total reduction of 15% was applied to the estimated AM trips and 25% to the PM trips. A large portion of the AM trips are for the schools and the business park and would be influenced by those factors to a lesser degree than the PM trips would be.

Table 13.2 summarizes the total weekday peak hour trip generation estimate, including reductions, for the Campus site once it is fully built out.

Note that much of the Campus traffic will not be entirely new Stratford traffic. The two new schools (assuming both the high school and junior high are built) will allow Stratford students to stay in Stratford instead of going to existing schools in Charlottetown as they do now. Therefore, the trips associated with the schools is traffic that is already on the roads during the AM and PM peak periods; it will simply be redirected to the Community Campus instead of crossing the Hillsborough Bridge. Similarly, some of the traffic to/from the Campus sports fields may be redirected from existing sports facilities in Stratford. Traffic associated with the Business Park expansion, however, would be mostly new traffic.

Campus Access Points & Layout Options

The Campus has frontage on both Bunbury Road and Hollis Avenue, and there are potential access points from Mason Road as well.

The Campus is anchored by a north-south spine road that extends from Bunbury Road to Hollis Avenue. Driveways and parking for most Campus facilities will be off this roadway. A third access point is provided to the west through an extension of Jubilee Road across Mason Road and into the Campus. There are two other potential connections to Mason Road (one to the north and one to the south), but the Town wishes not want to include these at this time.

The concept also shows several active transportation (AT) trails within the campus and connections to the Town's existing trail network. The Campus is intended to be well connected to the new AT corridor across the Hillsborough Bridge using both existing trails and new AT facilities.

Natural Routes to/from Campus

Assuming the Campus is developed with access points from Bunbury Road, Mason Road, and Hollis Avenue, it is anticipated that these access points will tend to accommodate traffic as follows:

Hollis Avenue Entrance

- This access will be only ~350m from the TCH roundabout so it will be the natural entry point for trips to/from the east along the TCH and from along the Georgetown Road/Pownal Road corridor
- It will also serve local trips from Reeves Estates and the existing Business Park

Bunbury Road Entrance

- This will be the natural access point for most trips to/from the Fort Augustus Road and Bethel Road corridors
- It will also serve local trips by residents along Bunbury Road and the adjacent subdivisions

Jubilee Road / Mason Road Entrance

- This access point will serve local traffic from along the Mason Road corridor
- If the Shakespeare Drive and Jubilee Road extension is built as shown in Figure 3, it would be the natural route for most traffic to/from the Hillsborough Bridge and for Town residents along the Stratford Road, Keppoch Road, and Kinlock Road corridors

The eventual arrangement of land uses within the Campus will also impact some route decisions. For example, a driver with roughly the same travel time to multiple campus entry points will usually pick the one that puts them closest to the on-site destination.

Table 14-2: Overall Campus Trip Generation Estimate

CAMPUS TOTAL (with Reductions)	Trips In	Trips Out	Total Trips
AM Peak Hr of Adj. Street Traffic (7 - 9 AM)	750	470	1220
PM Peak Hr of Adj. Street Traffic (4 - 6 PM)	430	430	860

Traffic Concerns & Potential Mitigation Strategies

Some concerns have been expressed related to development of the Community Campus and the traffic that it will generate. These concerns and potential mitigation strategies follow below.

The proposed Campus access on Bunbury Road will increase traffic in the area.

- The Bunbury Road entrance would be ~2 kilometres from the TCH. Since the speed limit is lower and it is a more residential area, most drivers from the Hillsborough Bridge and Stratford areas south of the TCH will likely find travel times to the Jubilee/ Mason or Hollis access points to be shorter so they would tend not to use Bunbury Road.
- Much of the school traffic that currently uses Bunbury Road (i.e. from Fort Augustus and Mt. Herbert areas) enroute to Charlottetown should be removed from the section of Bunbury Road between the Campus and the TCH
- Most school traffic from other parts of Stratford and east along the TCH/ Pownal Road corridors will use the Mason Road or Hollis Avenue entrances
- Most Business Park traffic will use the Hollis Avenue entrance
- Having multiple Campus access points will help to disburse traffic and enhance overall circulation
- The Bunbury Road entrance could be designed as a secondary access point to help discourage non-local use by keeping the roadway as narrow as practical , not building intersection turning lanes, not installing prominent Campus signage, etc. However, this configuration may cause some congestion, particularly for traffic turning left into the site during the morning peak period. Therefore, it would be prudent to consider implementing a left turn lane on Bunbury Road in conjunction with construction of the High School.

Bunbury Road traffic speeds and sight distance

- CBCL collected a small sample of operating speeds on Bunbury Road near the proposed Campus driveway around noon on a weekday with favourable weather and road conditions. Roughly 90% of the vehicles surveyed were travelling in the range of 55-70 km/h, a few were below 55 km/h, and the rest were in the 70-80 km/h range. Therefore, it appears that most traffic is moving at less than 80 km/h. Note that this was not a formal speed study.
- We estimate there is 200+ metres of available sight distance in both directions from the proposed driveway location. This compares favourably with the TAC requirements for stopping sight distance (SSD) for the following operating speeds:
- 50 km/h – 65m
- 60 km/h – 85m
- 80 km/h – 130m

Traffic speeds on the main campus road

- The alignment of the main campus road will include several horizontal curves as well as some vertical curves, and these will help to control traffic speeds. PEI DTI has indicated that a design speed of 50 km/h would be appropriate for this roadway, and it should therefore be posted for 40 km/h (10 km/h below design speed). This allows for minimum curve radii of 100m.
- The overall road width should be minimized. Lane widths of 3.0m would be appropriate.
- The presence of on-street parking would help to control speeds, but if provided, it might only be used infrequently for overflow purposes after off-street parking lots filled up. Empty on-street spaces wouldn't induce lower speeds, and the effectively wider roadway may encourage higher speeds. Therefore, on-street parking is not recommended.
- It is anticipated that traffic flow along the main road would not have any stop signs and would generally be uninterrupted. Therefore, a roundabout is proposed for the main internal intersection between the schools. This would serve to slow through traffic and enhance access to/ from Jubilee Road and Mason Road.

Students walking/biking to school

- The Campus should include AT facilities and network connections that provide safe and comfortable access for students to walk or bike between the schools and the Town's nearby residential and commercial areas.
- New pedestrian crosswalks should be implemented as needed to provide safe routes to school for students. New crosswalks on Bunbury Road Mason Road should be equipped with pedestrian-activated warning lights, such as Rapid Rectangular Flashing Beacons (RRFB's). A new crossing at Duffy Road would serve students from the neighbourhood north of Bunbury Road.
- Additional off-campus AT facilities will be needed to complete these routes.
- Paved multi-use paths (~3.0m wide) that are buffered from roadway traffic would serve this purpose well.
- These measures would also serve students that head for off-campus food outlets and amenities during lunch breaks.

Drivers shortcutting through the Campus between Hollis Avenue and Bunbury Road

- This route may be attractive for a few trips between Bunbury Road and the Business Park but will not likely be in high demand as a general shortcut route.
- Implementation of a roundabout at the main internal Campus intersection should help to discourage this behaviour.

School traffic access and circulation

- We understand that the Public Schools Branch (PSB) will design both school sites, including access, circulation, bus areas, drop-off lanes, and parking lots. Care will be required so that the school sites are well integrated into the campus roadway and AT networks.

Campus Parking Demand

The school sites, including parking facilities, will be planned by the Public Schools Branch (PSB) so this section corresponds only to the non-school portions of the Campus. It also doesn't include the Business Park expansion; parking demand for this area will vary depending on the particular land uses and the individual sites will be planned accordingly as they are developed.

Therefore, this discussion pertains to the sports fields, the gymnastics building, and the multi-use recreation facility.
The Institute of Transportation Engineers (ITE) publishes Parking Generation Rates to estimate parking demand for various land uses. These rates are based on empirical data collected throughout the United States and Canada. Data are presented for various times of day, as well the week, including average and 85th percentile parking rates for weekdays and weekends.

In addition to ITE's Parking Generation Rates, parking utilization rates for different times of day need to be considered. For example, a daycare facility would expect to require parking for staff during the morning (AM) and afternoon (PM) peak periods, but not during evening hours. To estimate parking demand throughout the day, utilization rates were used from the City of Toronto's Parking Bylaw, which presents utilization factors for various land uses for AM, PM, and evening time periods.

Based on the variety of proposed Community Campus land uses aside from the schools and business park, it is expected that the greatest overall parking demand will be during a weekday late afternoon / early evening when up to roughly **500 spaces** may be needed. Land uses from ITE's Parking Generation were applied to the land uses proposed for the Campus to develop a bottom-up parking demand for the entire campus, and this ultimately identifies when the greatest parking demand is likely to occur **(see Appendix C)**.

Furthermore, considering the variety of land uses and amenities planned, we expect there will be a certain level of synergy between the various facilities (e.g., people attending more than one venue during the same Campus visit). Conservatively, this could translate to a reduction of roughly 10% for a total of about **450 spaces**.

This parking demand can be accommodated through a combination of dedicated off-street parking lots adjacent to the various indoor and outdoor recreational facilities and shared use of the school parking lots during non-school hours.

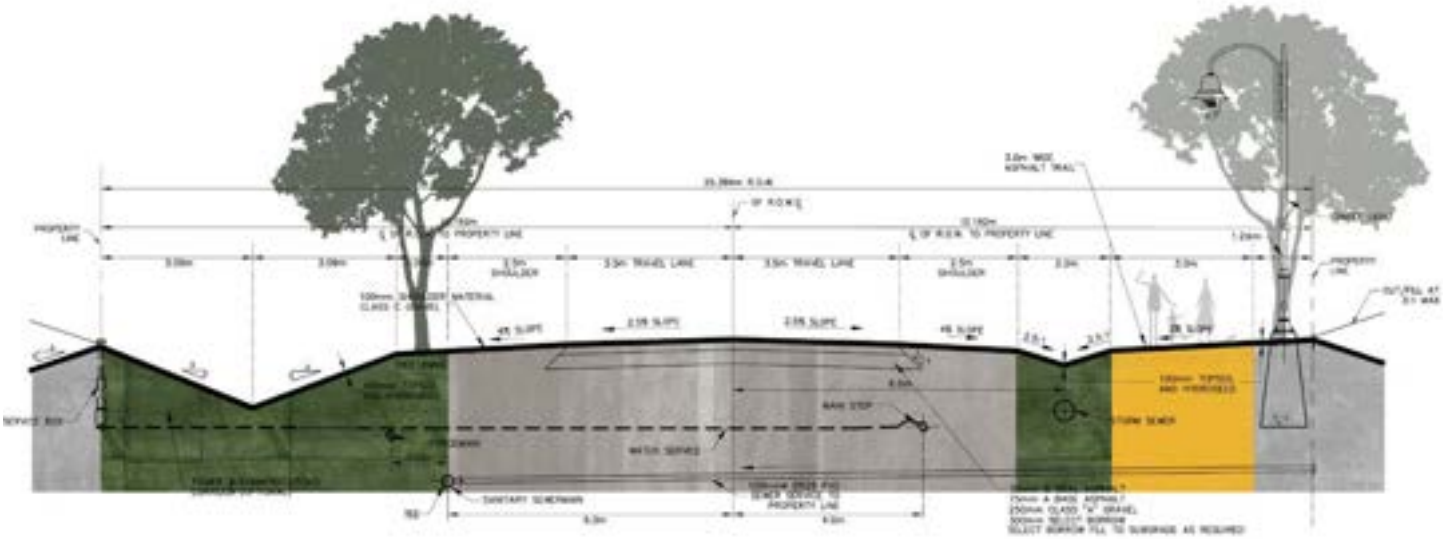
Conclusions

This main traffic implications associated with the proposed Stratford Community Campus are:

- The campus site will attract significant traffic, but much of it will be redirected existing traffic, not 'new' traffic.
- The peak traffic times for some campus facilities and amenities will not coincide with the weekday AM and PM peak traffic times.
- Several factors will influence campus trip generation.
- Enhanced active transportation options and connectivity will encourage more people to use non-motorized modes for trips to and from the campus.
- The provision of main access points from Hollis Avenue and Mason Road (Jubilee Road extension) will help to alleviate traffic demands at the Bunbury Road entrance.

Street Cross Section

Park Street, which will connect Bunbury Road with Hollis Street is envisioned as a tree-lined street with a multi-use path on one the east side of the roadway. While street trees between open ditches and the roadway are not a common Department of Transportation design detail, it is hoped that the low posted 40km/h speed and the special character of the Campus street will have the Department consider this type of street cross-section.



Park Street - Proposed Cross Section

15 Servicing

This section includes an analysis of the anticipated water and wastewater collection demand for the Community Campus Plan.

Sanitary System

The existing undeveloped lands generally flow from west to east throughout the site with two potential connection points to the existing sanitary system, Hollis Avenue and Bunbury Road. Each connection point is at a higher elevation than the proposed campus site, and will therefore require the use of a sanitary lift station to convey the flow from the campus to the existing sanitary system.

The Hollis Avenue sanitary sewershed is located at a lower elevation and contains additional capacity than the Bunbury Road sewershed and is the preferred discharge location for the proposed campus forcemain.

High-level sanitary flows were developed using the Atlantic Canada Wastewater Guidelines Manual for the Park Street Concept. Average daily flows were estimated for the proposed high school, recreation facility, Town Reserve for Future Development and business park expansion and adjusted for a peaking factor of 4 to determine estimated pipe sizes. The results of the sanitary flow analysis are summarized in **Table 14-1**.

The community campus sanitary system will flow by gravity to a new lift station located to the east of the property, between the proposed business park expansion and recreational facility. It is estimated that the required sanitary pumping station will be a three phase duplex lift station, with two 20Hp pumps, and 2400mm diameter wet well. A 150mm diameter sanitary forcemain will leave the pumping station and discharge into the existing system on Hollis Avenue.

There are two potential discharge locations for the sanitary forcemain on Hollis Avenue, east of Myrtle Street and west of Myrtle Street. The eastern discharge point is located at the entrance to the business park expansion area, flows to the existing Forrest Trails Lift Station, subsequently discharges to the west of Myrtle Street and flows by gravity to the Hillsborough Bridge Lift Station. The western discharge location is approximately 150m to the west of the entrance to the business park expansion area, and flows by gravity to the Hillsborough Bridge Lift Station. It is recommended that the campus forcemain discharge at the western location to avoid potential capacity issues at the existing Forrest Trails Lift Station.

Potential upgrades may be required on the existing gravity main from Hollis Avenue to the Trans-Canada Highway to convey the additional flows from the proposed campus. It is recommended that this section of sanitary main be assessed as the design of the campus progresses through detailed design.

Water System

A high-level desktop review of the water system was completed in reference to the Park Street concept. The proposed water system was developed using an assumed fire flow demand of 2900USGPM and a maximum day demand of 118USGPM. A 350mm diameter watermain is required to achieve a residual pressure above 22psi at the high point on the campus under fire flow conditions.

There are three potential connection points for the watermain which are located on the Bunbury Road, Hollis Avenue, and Mason Road. It is recommended that the campus water system be connected to all three existing water systems for increased functionality and redundancy in the system.

Additionally, a domestic booster pump is recommended for the proposed high school to ensure adequate pressures across all floors. A booster pump should only be required at the high school as its proposed location is near the highest elevations within the site.

Pipe Description	Pipe Size
Sanitary Main Diameter	200mm
High School Sanitary Service Diameter	150mm
Intermediate School Sanitary Service Diameter	150mm
Recreational Facility Sanitary Service Diameter	150mm
Business Park Expansion Sanitary Service Diameter	100mm

Table 15-1: Estimated Campus Sanitary Pipe Sizes


Sewer Line (Existing)
Sewer Line (Proposed)
Forcemain (Proposed)
Water Main (Existing)
Gate Valve (Existing)
Fire Hydrants
Water Line (Proposed)
Gate Valve (Proposed)

16 Stormwater Management

This chapter includes a conceptual high-level surface water management plan for the Stratford Community Campus. This high-level analysis of the pre-development flows compared to the post-development flows has been completed to determine preliminary detention pond sizing. The conveyance of surface water from upstream areas and on the developed campus site was considered for the development of a preliminary storm system network and detention pond locations.

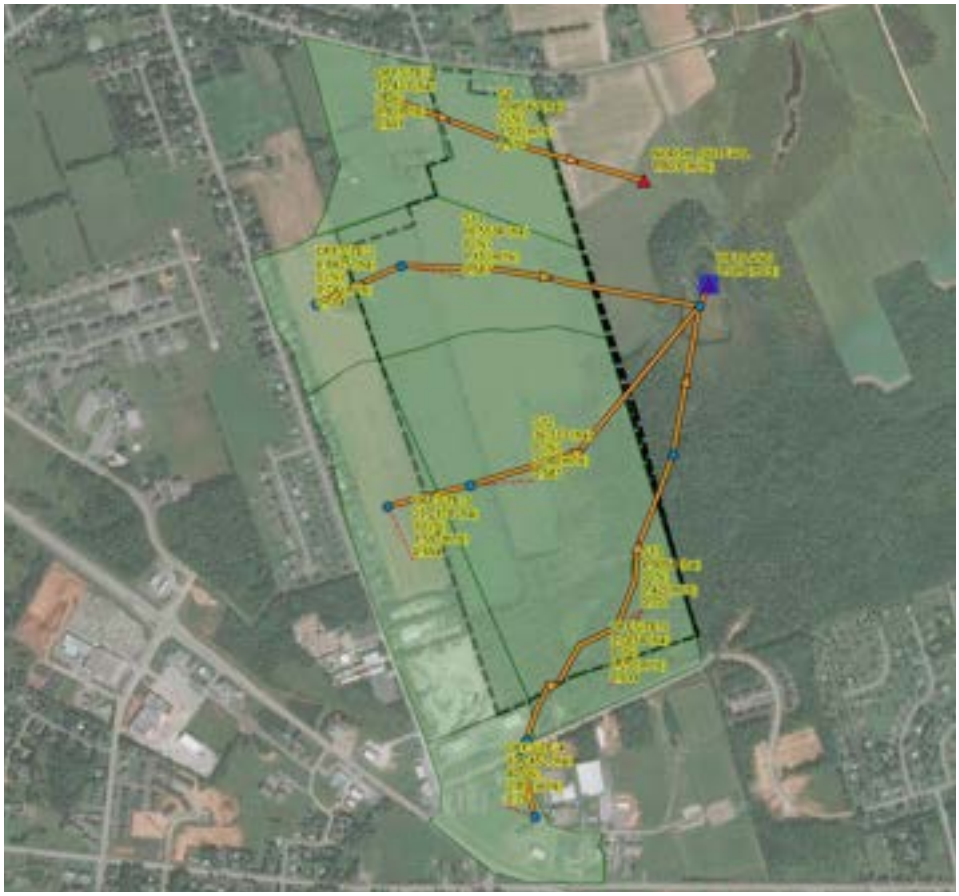
Pre-Development Conditions

The Stratford Community Campus site currently consists of wooded and cleared, undeveloped lands with gently to moderately sloped terrain. There are four existing drainage paths generally flowing from west to east through the campus site that discharge to two locations along Bouyer Creek. The community campus site can be generally divided into four existing subcatchments and must convey an additional five subcatchments through the property that also discharge into Bouyer Creek.

An existing conditions model was developed based on Environment Canada rainfall data for the Charlottetown Airport. A hydraulic and hydrodynamic model was created in PCSWMM to generate storm runoff events for the 1 in 100-year return period. The rainfall data was adjusted for climate change using a comparison of two Climate Change adjustment methods:

- Clausius-Clapeyron Equation
- Western University Intensity Duration Frequency Climate Change tool (IDF-CC tool)

From the comparison of the two methods, a 30% increase in precipitation intensity for the 2070 horizon was considered a reasonable assumption. This percentage increase was applied to the historical hyetograph to approximate the effects of climate change on future flows. The results of the pre-development surface water flows are summarized in Figure below.



Pre-Development Conditions

Post Development Conditions

As noted above, storm flows have been calculated using PCSWMM through Environment Canada rainfall data from the Charlottetown Airport and adjusted for climate change. The Park Street Campus concept was utilized for the post development conditions.

The high level design intent of the stormwater management system is to limit the post development peak runoff rate to the existing conditions peak flow rate for a 1 in 100-year design storm taking into account the effects of climate change. It is assumed that the proposed finished development will consists of roadway ditches, piped storm systems, vegetated swales and detention ponds that will all discharge to the Bouyers Creek watershed.

The conceptual surface water management plan assumes that all storm water will be discharging to common wetland location along Bouyers Creek and therefore the post development flow must be limited to 7.6m3/s. This will require an approximate storage volume of 29,200m3. The design parameters for the detention ponds are as per PEI Department of Transportation and Infrastructure guidelines as follows:

- Max Water Level during a 100-year storm event = 1.5m
- Freeboard = 300mm
- Side slopes = 4:1 interior, 3:1 exterior
- Ponds/Swales are designed to fully drain and not have any standing water following
- a storm event.

Using the above design parameters, a total area of approximately 19,500m2 at a maximum water depth of 1.5m will be required as detention storage. The results of the post development analysis are summarized in the figure below.

It is recommended that the site's detention storage be divided into a minimum of three separate pond areas as shown the figure. Each pond would be bound by a berm with an approximate width of 15m.

- Pond-1 will be for the proposed business park expansion and contain an approximate water surface area of 2100m2.
- Pond-2 will be for the main part of the campus and contain an approximate water surface area of 9750m2.
- Pond-3 will be for the northern part of the campus and contain an approximate water surface area of 7650m2.

Post Development Conditions

All detention areas should be designed to fully drain after each rainfall event within 48 hours of the peak storm intensity. This will limit the time the detention areas contain water, allow for area maintenance, and reduce the potential for insect breeding.

Alternative Solutions

As a result of the volume of detention storage required to limit the post development flow to pre-development conditions, alternative solutions in addition to detention ponds were assessed to reduce the land use area for detention storage. The use of low impact development (LID) technologies, underground storage and existing wetland storage was analyzed with respect to the proposed site conditions.

The use of three common LIDs were examined:

- A green roof for a portion of the recreation facility
- Permeable paver parking lots for all parking areas
- Rain gardens installed along all parking area medians

A reduction in required detention storage of **3640m3 or 12.5%** was found to be possible with the full use of all three LIDs.

It should be noted that underground storage is another alternative to above ground detention ponds if land area is limited. Detention storage could be located below sports fields for example, and the moderately sloping land profile allows for daylighting of underground storage facilities to vegetated swales.

Finally, with the proposed development site discharging to an existing wetland and watercourse, the option of utilizing the existing wetland as detention storage should be explored. If the existing wetland is used for detention storage, then sediment ponds would need to be constructed for surface water quality and the existing downstream infrastructure crossing the Bunbury Road may require upgrades. Additionally, this would require acceptance from the applicable regulating authorities and adjacent property owners. It is recommended that a combination of surface water management practices be reviewed as the campus design develops and a feasible, and sustainable approach be adopted.


Storm Water System
(Proposed)

17 Renewable Energy Concept

One of the objectives included in Stratford's vision for the Community Campus is the net zero operation of the development that reflects the Town's sustainability values. This chapter explores the solar renewable energy potential of the site for the operation of all municipal services (buildings, sports fields, and street lighting) with the assumption that the Province will pursue their own renewable energy goals for the high school site.

Sports Fields

The plan is to light three baseball fields, one full size soccer field , and one cricket pitch. Assuming typical lighting intensity levels for sports fields and applying a factor based on modern efficient LED fixtures, the lighting will require 1 kw per 11,250 ft2 of field. Based on operating hours of the light fixtures of an average of 4 hours per evening for 100 days per year, this equates to **18,800 kwh/yr** for lighting these fields.

Recreation and Culture Facility

The Recreation and Culture Facility's main uses will be a gymnasium, arena, curling club, indoor sports field, daycare, and swimming pool. The total potential area for all these uses is 52,009 m2 (for m2 breakdowns, see **Table 15-1**). In terms of the priorities which might match a phased construction approach, this equates to:

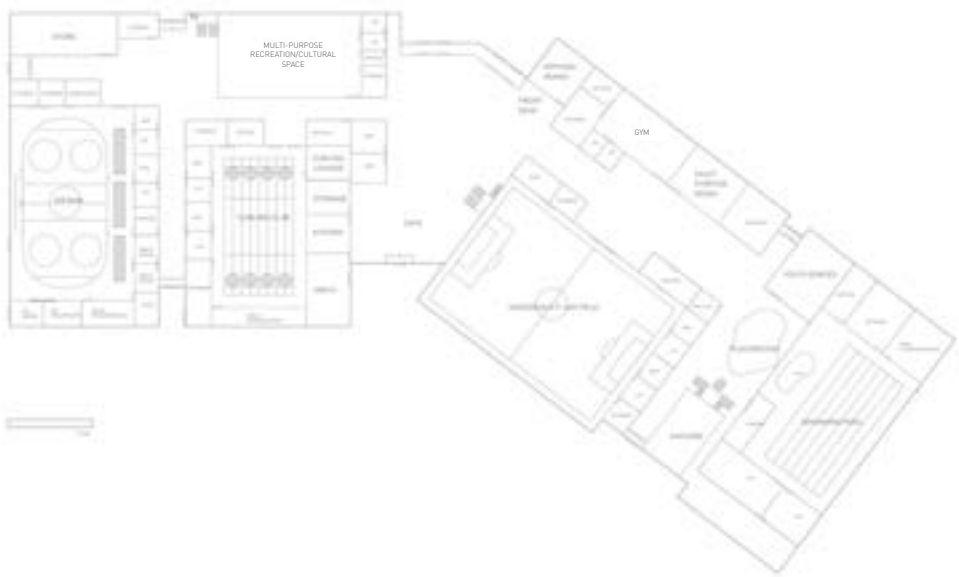
1. Gyms , field , curling plus common areas – 34,251 m2
2. Arena – 8489 m2
3. Daycare– 2273 m2
4. Pool – 6996 m2

All areas are gross including common areas and utility spaces on all occupied levels.

Using energy use factors for these different recreational building types from the survey of commercial and institutional energy use (SCIEU 2014) from Stats Canada , the following annual energy consumption was estimated:

1. Area 1: 41,281 GJ (gigajoule) per year (**11,467,860 kwh/yr**)
2. Area 2: 11,290 GJ per year (**3,136,360 kwh/yr**)
3. Area 3: 2,955 GJ per year (**820,900 kwh/yr**)
4. Area 4: 13,220 GJ per year (**3,672,520 kwh/yr**)

Assuming an average productivity for solar PV in PEI of 1100 kwh/kw of peak capacity, the Recreation and Culture Facility would need an array of **17.4 MW** to produce enough power for the building. The net metering limit of Maritime Electric is 100 kw, therefore anything larger can't receive credit for any surplus put back on the grid. The total area of the Recreation and Culture Facility, if built with a flat roof and no rooftop equipment, could accommodate an array of about **2.1 MW** assuming the roof was built specifically to handle solar panels mounted at an optimal angle of 40 degrees. If the building was to be built in phases according to the priorities, the rooftop array could be phased the same way, 1.3 MW , 300 kw, 100 kw, and 400 kw. An array of this size would produce much less energy on an annual basis than the total expected consumption of the building but could produce surplus energy at times since peak solar output usually occurs between 11 AM and 1 PM between June and August while peak consumption would likely be in the evenings. Storage batteries or another means of energy storage (hot water , chilled water , ice) might be needed to ensure any surplus is not given away for free. If a sloped roof is selected, building orientation will be more important to optimize array efficiency.



Recreation and Culture Facility - Conceptual Floor Plan

Table 17-1: Space Needs - Recreation and Culture Facility

FACILITIES	Square Meters (m2)
Multi-Use Field	*4,468.60*
Lockers/washrooms	*381.59*
Storage	*192.13*
offices	*191.22*
Mech/Elec	*146.45*
SUB-TOTAL	**5,379.99**
Gymnasium	*613.16*
Lockers/washrooms	*122.76*
Storage	*232.65*
offices	*114.21*
SUB-TOTAL	**1,082.78**
Multi-Purpose Room	*423.19*
SUB-TOTAL	**423.19**
Multi-Purpose Recreation/Cultural Spc	*1,579.35*
Lockers/washrooms	*110.45*
Storage	*101.62*
offices	*49.15*
SUB-TOTAL	**1,840.57**
Curling Club	*1,997.78*
Lockers/washrooms	*389.49*
Storage	*139.66*
Curling lounge	*199.28*
offices	*122.38*
Mech/Elec	*884.91*
SUB-TOTAL	**3,733.50**
Offices- front desk	*458.25*
kitchen	*233.77*
Café	*1,161.10*
Washrooms	*296.05*
Storage/mech/elec	*1,022.67*
Viewing- Upstairs	*1,759.37*
Washrooms- UPSTAIRS	*312.44*
Storage/mech/elec- UPSTAIRS	*1,041.28*
Hallway	*7,419.29*
Hallway- UPSTAIRS	*8,087.10*
SUB-TOTAL	**21,791.32**
Arena	*3,141.15*
Lockers/washrooms	*319.55*
Storage/ concessions	*308.12*
offices/ party rooms	*271.87*
Mech/Elec	*531.13*
SUB-TOTAL	**4,571.82**
Storage	*134.62*
Store	*594.35*
Bar- UPSTAIRS	*1,195.40*
Washrooms- UPSTAIRS	*162.38*
Viewing-UPSTAIRS	*700.03*
Hallway	*694.29*
Hallway- UPSTAIRS	*436.48*
SUB-TOTAL	**3,917.55**
Youth Spaces	*556.88*
SUB-TOTAL	**556.88**
Daycare	*459.87*
SUB-TOTAL	**459.87**
Hallway	*1,052.21*
Hallway- UPSTAIRS	*204.07*
SUB-TOTAL	**1,256.28**
Pool	*4,248.82*
Lockers/washrooms	*647.43*
Storage	*345.39*
offices	*200.11*
Mech/Elec	*361.16*
SUB-TOTAL	**5,802.91**
Viewing- UPSTAIRS	*647.43*
Hallway	*545.29*
Hallway- UPSTAIRS	-
SUB-TOTAL	**1,192.72**
TOTAL	**52,009.38**

TOTALS	
Complete Building GFA	*52,009.38*
First floor GFA	*35,795.36*

The long axis of the building should run E – W so half the sloped roof faces close to due south. The total array area under this scenario will be less since it is less desirable or recommended to put solar panels on the north facing slope of a roof. Using a moderate roof slope of 15 degrees would permit a maximum array size of approximately 1.2 MW on the roof. If built in phases like suggested above, the array could be built to match in phases of 700, 200, 60, and 240 kw.

Site Servicing

The site servicing load will grow as the site gets developed . The pumping station will increase operating hours and consumption as the sewage flows increase due to increased site development . The pumping station capacity of 2 x 20 hp pumps would draw a maximum electrical demand of 30 kw. A 100 kw array would therefore be able to produce enough energy to offset all the consumption from the pumping station up until the station reaches a capacity factor of just over 40%. A second 100 kw array would double this capacity but should only be needed once the majority of the site buildings are constructed . The 100 kw ground mounted array is therefore recommended as the preferred approach initially in a rectangular lot of approximately 1,700 m2 of land facing due south for best orientation. The most efficient shape would be a rectangle roughly 100m by 17m wide. An equivalent amount of land adjacent to the first should be set aside for increasing the array size in the future as the load on the pumping station increases.

Achieving Net Zero

The energy consumption figures used in this assessment are national averages for all building types which includes a broad range of efficiencies. It is expected that a new building today will be built to a much higher efficiency than the average which would reduce the overall building energy consumption from this estimate. The building itself is very large based on the current functional program. Reducing its size will have a corresponding reduction in energy consumption. The site appears to be well suited to the use of horizontal ground loops for a ground source heat pump system for heating and cooling if the horizontal loops could be installed under the sports fields as they are constructed. Heat recovery from the curling and hockey ice plants as well as the pool dehumidifier could reduce building heating load. All attempts should be made to optimize the building size and incorporate as many energy saving features as possible into the building design in order to achieve a net zero building. Remaining emissions could be offset by on-site renewable energy, off-site renewable energy, or the purchase of carbon offset credits. Building integrated PV on the south, east, and west facing façades may be cost effective for new construction since they take the place of a standard façade. Micro wind turbines however, are rarely cost effective in urban settings. Purchasing renewable energy from an off-site wind farm elsewhere in PEI would be the preferred way of utilizing wind energy.

Green Roof Considerations

The solar spacing used in this assessment assumed the building roof will be designed to handle the added wind and snow load associated with having the array structure connected directly to the building structure and sloped at an optimal 40 degrees for maximum production. At this slope, the spacing between the solar racks on the roof would be about 7 m. If the slope was reduced to 20 degrees, row spacing could be tightened to 5 m. All areas under the panels would be perpetually shaded and could not support plant life. The space between the rows will see direct sun morning and evening all year as well as extra hours during the growing season. If the rows needed to be further spaced for the green roof, the array capacity would be reduced. If a green roof was applied only to a portion of the roof, the reduction could be compensated for by using high performance bifacial panels on a high albedo roof surface (white) for the remaining areas to increase the array productivity from these areas.

Solar Field Location

A solar array of 3,650 m2 to supply power for sports field lighting, site servicing and road and path lighting could be accommodated north of the business park to the west of the new spine road.

Potential Solar Array Location for Site Servicing, Sport Field Lighting, and Road and Path Lighting

Facility	Consumption (kwh/yr)	Solar Array Needed (kw)	Solar Array Needed (MW)	Solar Array Needed (m2)
Sports Fields	18,800	17	0.02	170
Recreation Centre	19,097,640	17,400	17.4	295,800
Site Servicing	210,000	200	0.2	3,400
Road and Path Lighting	8,800	8	0.01	80
TOTAL	**19,335,240**	**17,608**	**17.6**	**299,280**

Table 17-2: Renewable Energy Consumption and Solar Array Estimate

18 Lighting

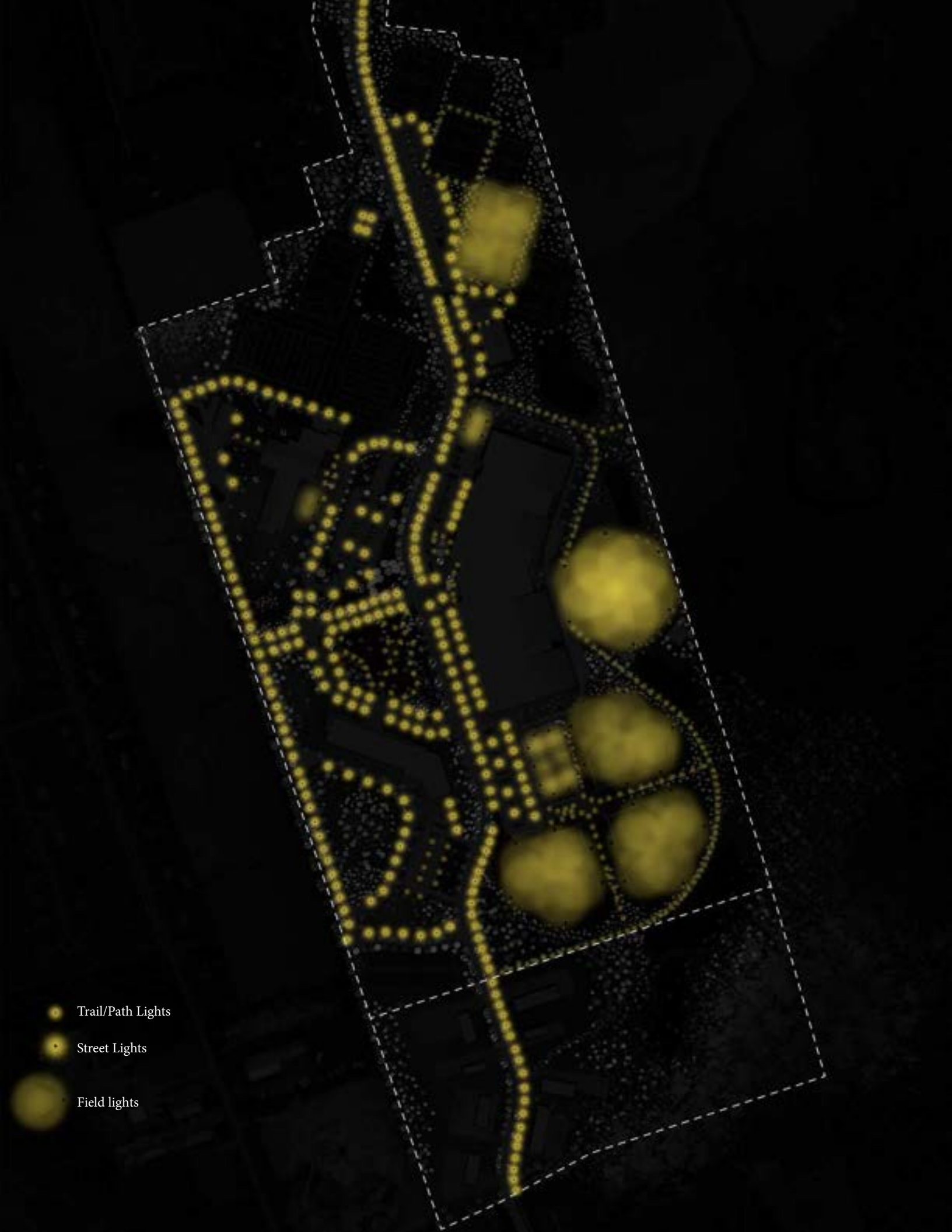
One of the most significant impacts on residents living adjacent to the Community Campus could be the impact of light pollution. The street and trail lighting, the lighting for the parking lots and sidewalks, the building lighting, lighting of the signage and sports field lighting can all impact the properties adjacent to the Community Campus. Lighting on the Campus should minimize disturbing homes to the north and west of the complex with intrusive spill light and glare.

Generally, the Campus should be equipped with dark-sky compliant lighting fixtures. Not only do dark-sky compliant lights make the night sky more visible, but they also help cut down on the amount of energy being used and reduce the impact unnatural light has on the environment.

Lighting of the sports fields should be kept as far as possible from residents. The plan envisions field lighting for three ball fields, one cricket field and one multi-use turf field. Sports field lighting should also be turned off when the fields are not in use to limit impact on the community and to encourage the culture of environmental protection through saving energy.

Trees can also help shield some amount of light during peak field use seasons, however any trees planted during construction will take 25-50 years to reach mature heights.

Nighttime Rendering of Recreation and Culture Facility with Low Post Path Lighting


Trail/Path Lights
Street Lights
Field lights

19 Phasing and Capital Cost

The Community Campus development will be a multi-year undertaking. While some elements of the plan have been confirmed and are currently in the next design phases, other investments will depend on actual facility needs, priorities and available funding. The goal of this master plan is to anticipate the spatial needs of a fully developed Community Campus that serves current and future needs of Stratford residents. The phases presented in this chapter allow for both the implementation of current projects and the logical addition of future infrastructure.

Phasing

The Stratford Community Campus can be developed in the following phases:

Phase 1
This phase includes the entire spine road from Bunbury to Hollis, the connector road through to the Mason road and all associated infrastructure. This results in all the water, sanitary and majority of the storm being installed in this phase. Phase 1 provides immediate access and services to the proposed Island Gymnastics Academy on a 2.5 acre parcel of land.

Phase 2
During this phase, the Province will construct the new high school and associated site infrastructure.

Phase 3
Phase 3 includes the construction of all Town-owned soccer fields and the multi-use turf field and associated parking and pathways.

Phase 4
Phase 4 allows for the creation of the Town of Stratford Business Park expansion at the Hollis Street entrance to the Campus. The new business park parcels will create a revenue stream for the Town that can contribute to the capital cost for constructing the remaining public infrastructure in the Campus. Other than the spine road (included in phase 1 cost) there will be no other development costs for the Town in phase 4

Phase 5
Phase 5 includes the ball fields, tennis courts, associated parking and some pathways and lighting.

Phase 6
Phase 6 includes the construction of the Recreation and Culture Facility as well as the cricket field and associated parking.

Phase 7
Phase 7 includes reserve lands for future expansions, which could potentially include a new Intermediate School.

Capital Cost

The Class D Pre-Design cost estimate for each phase is included on page 90.


PHASE 1
PHASE 2
PHASE 3
PHASE 4
PHASE 5
PHASE 6
PHASE 7

ITEM / No.	DESCRIPTION			TOTAL
	Phase 1			
1.0	Access Roads, Parking & Walkways			$ 2,765,000.00
2.0	Site Servicing			$ 4,787,000.00
3.0	Outdoor Facilities			$ -
4.0	Surface Water System			$ 387,000.00
	Subtotal			**$ 7,939,000.00**
	Phase 2			
1.0	Access Roads, Parking & Walkways			$ -
2.0	Site Servicing			$ -
3.0	Outdoor Facilities			$ -
4.0	Surface Water System			$ -
	Subtotal			**$ -**
	Phase 3			
1.0	Access Roads, Parking & Walkways			$ 872,000.00
2.0	Site Servicing			$ 458,000.00
3.0	Outdoor Facilities			$ 5,709,000.00
4.0	Surface Water System			$ 64,000.00
	Subtotal			**$ 7,103,000.00**
	Phase 4			
1.0	Access Roads, Parking & Walkways			$ 118,000.00
2.0	Site Servicing			$ 111,000.00
3.0	Outdoor Facilities			$ -
4.0	Surface Water System			$ 109,000.00
	Subtotal			**$ 338,000.00**
	Phase 5			
1.0	Access Roads, Parking & Walkways			$ 1,135,000.00
2.0	Site Servicing			$ 529,000.00
3.0	Outdoor Facilities			$ 6,900,000.00
4.0	Surface Water System			$ 64,000.00
	Subtotal			**$ 8,628,000.00**
	Phase 6			
1.0	Access Roads, Parking & Walkways			$ 1,181,000.00
2.0	Site Servicing			$ 568,000.00
3.0	Outdoor Facilities			$ 2,270,000.00
4.0	Surface Water System			$ 64,000.00
	Subtotal			**$ 4,083,000.00**
	Phase 7			
1.0	Access Roads, Parking & Walkways			$ -
2.0	Site Servicing			$ -
3.0	Outdoor Facilities			$ -
4.0	Surface Water System			$ -
	Subtotal			**$ -**
Exclusions	- Buildings and associated infrastructure	- Removal and disposal of contaminated /unsuitable material off site		
	- Concrete curb and gutter	- Accomodating sewer flow during construction		
	- Landscaping features (i.e. trees, topsoil and seed outside street ROW)	- Utility relocations		
	- Retaining walls, extra cuts and fills (no topographical survey provided)	- No allowance made for industrial area servicing or infrastructure		
	- On site servicing, sidewalks, access roads/parking, buildings, lighting, trails and any associated costs for the proposed provincial properties			
	TOTAL CONSTRUCTION COST (Excluding Contingencies and Allowances)			**$ 28,091,000.00**
	CONTINGENCIES and ALLOWANCES			
	Design Development Contingency		25%	$ 7,023,000
	Construction Contingency		10%	$ 3,512,000
	Escalation / Inflation		5%	$ 1,932,000
	Engineering		10%	$ 4,056,000
	TOTAL CONSTRUCTION COST			**$ 44,614,000.00**
	Taxes (HST)		15%	$ 6,692,100.00
	TOTAL			**$ 51,306,100.00**

THIS OPINION OF PROBABLE COSTS IS PRESENTED ON THE BASIS OF EXPERIENCE, QUALIFICATIONS, AND BEST JUDGEMENT. IT HAS BEEN PREPARED IN ACCORDANCE WITH ACCEPTABLE PRINCIPLES AND PRACTICES. MARKET TRENDS, NON-COMPETITIVE BIDDING SITUATIONS, UNFORESEEN LABOUR AND MATERIAL ADJUSTMENTS AND THE LIKE ARE BEYOND THE CONTROL OF CBCL LIMITED. AS SUCH WE CANNOT WARRANT OR GUARANTEE THAT ACTUAL COSTS WILL NOT VARY FROM THE OPINION PROVIDED.

Table 19-1: Class-D (Pre-Design) Cost Estimate by Phase

Rendering of Soccer Complex

Approach to Recreation and Culture Facility from Mason Road Connector Road

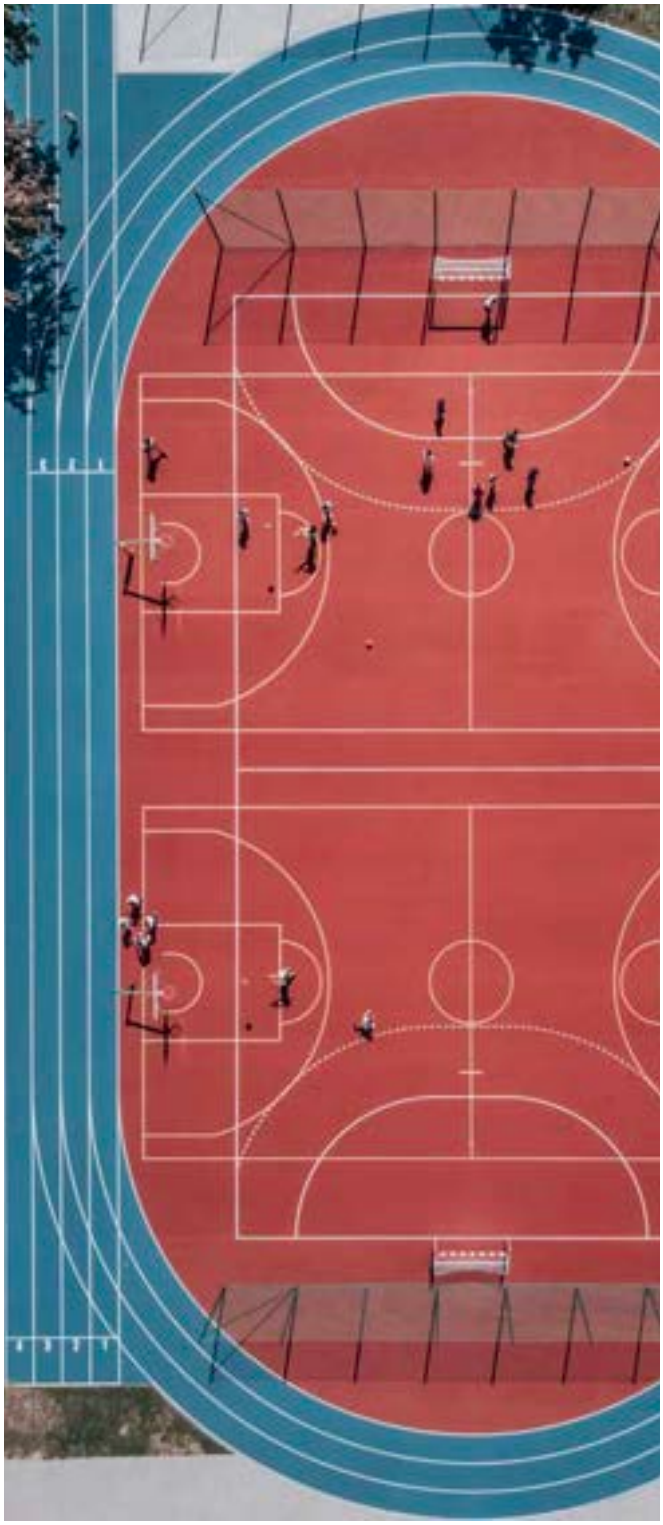

STOP

A Appendix A - Field Design Guidelines

This chapter presents an overview of best practices for the design of outdoor sports and recreation facilities. This understanding of standard field dimensions, functional relationships between fields, material specifications, weather and climate mitigation, and other requirements for each sport will inform design guidelines to be applied to the siting, orientation, and construction of these important features of the Community Campus.

Part of Stratford's vision for the Community Campus is that the sports and recreation facilities will meet "the needs of residents while also attracting sport tournaments for economic purposes to the community." (Community Campus Design Principles, 2021). This has two key impacts: 1. Sports facilities must be sized and marked to support play at a range of competition levels - from casual recreation to adult tournaments, and 2. Facilities must be supported by infrastructure, amenities, and services that will allow the Community Campus to generate future revenue to offset operational costs.

In keeping with Stratford's vision that facilities will support players with a range of abilities, dimensions presented in this section are based on competition standards by the relevant governing body as well as specific high school competition standards if applicable (PEI School Athletic Association and the NS DC350 Design Requirements Manual). Some sports, such as lacrosse and football, are not approved high school varsity sports in PEI or NS. For these sports, adult competition standards are included instead.



Soccer fields

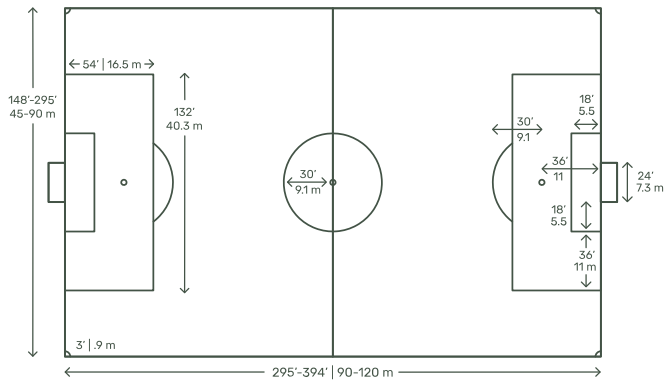
Adult Field size (IFAB Laws of the Game):
Length: 90-120 m / 295-394 ft
Width: 45-90 m / 148-295 ft

Field size for International Matches (IFAB Laws of the Game):
Length: 100-110 m / 328-361 ft
Width: 64-75 m / 210-246 ft

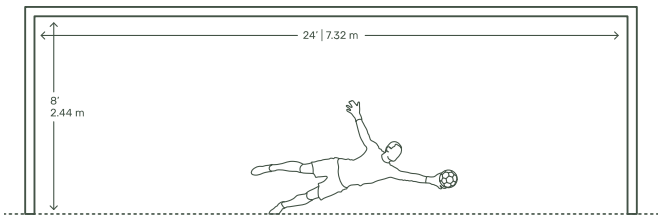
Width of the goals: 7.32 m
Radius of the centre circle: 9.15 m
Goal area: 5.5 m from the goal posts, and extending 5.5 m into the field
Penalty Area (D box) : 16.5 m from the posts and 16.5m out
Penalty Mark: 11m from the goal
Circular penalty arc radius: 9.15 m from penalty mark
Corner radii: 1 m

PEISAA Field Size:
N/A

NS DC-350 Field size:
Length: 101 m / 331 ft (plus 3 m / 10 ft runout on all sides)
Width: 61 m / 200 ft (plus 3 m /10 ft runout on all sides)



Sample Field Markings. Dimensions may differ.

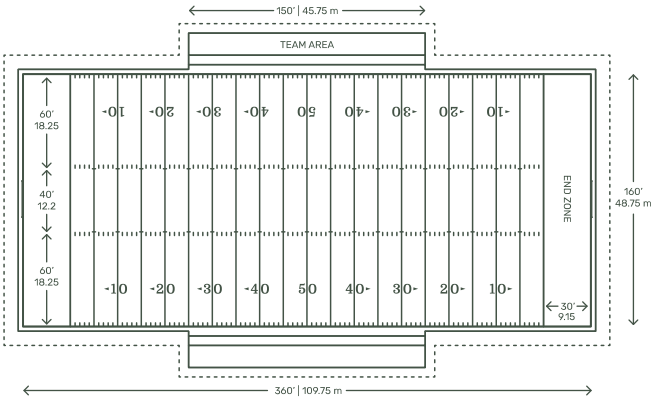


Sample Field Markings. Dimensions may differ.

Football fields

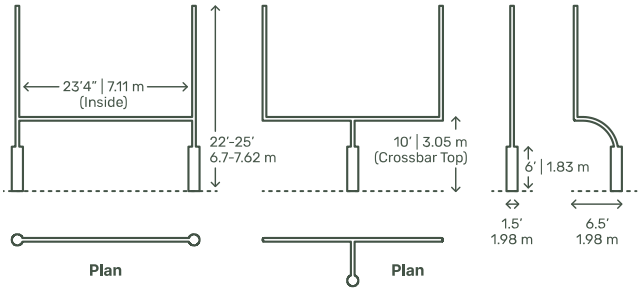
Adult Field size (CFL Playing Rules):
Length: 100.58 m / 330 ft (110 yards)
Width: 59.44 m / 195 ft (65 yards)
End zone: 18.29 m / 60 ft (20 yards) deep

Notes:
Field dimensions differ in Canada from the USA. Goal posts are located on the goal line instead of the dead line. Based on yards, the field of play in a game of football refers to the 110 yards between the two opposing end zones on either side of the field.



Sample Field Markings. Dimensions may differ.

Horizontal crossbars are centrally placed in the plane of each goal line. Vertical posts are 12.19 m / 40 ft tall and the distance between the posts is 5.64 m / 18 feet - 6 inches. A horizontal crossbar connecting the posts is 3.05 m / 10 ft feet above the ground.



Sample Football Goal Post (US High School)

PEISAA Field Size (Flag Football):
Length: 55m / 180 ft (60 yards)
Width: 22m / 72 ft (24 yards)

NS DC-350 Field size:
N/A

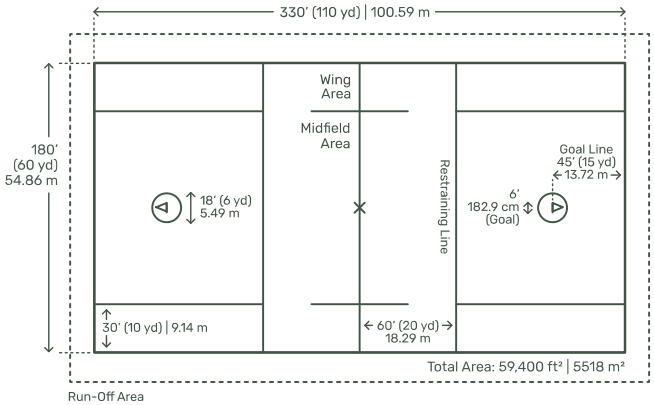
Lacrosse fields

Field size (Canadian Lacrosse Association):
Length: 110 m (120.30 yards)
Width: 60 m (65.62 yards)

Team / Coach / Score Table Area:
Length: 50m (54.68 yards)
Width: 9m (9.84 yards)

Notes:
A Lacrosse field has three main areas of play. Depending on the team that is playing, the opposite side is called the attack area, the home side is the defensive area, and the center is the midfield. Wing areas are located along the sides of the midfield areas. Lacrosse goals are located in the center of the attack and defensive areas and are located in the centre of a circular area called the crease

Crease radius: 3 m (3.28 yards)
Distance between goal lines and end lines: 30 m (32.81 yards)
Distance between wing lines and side lines: 12 m (13.12)
Distance between restraining lines and midfield line: 25 m (27.34 yards)



Sample Field Markings. Dimensions may differ.

PEISAA Field Size:
N/A

NS DC-350 Field size:
N/A

Field Hockey Pitch

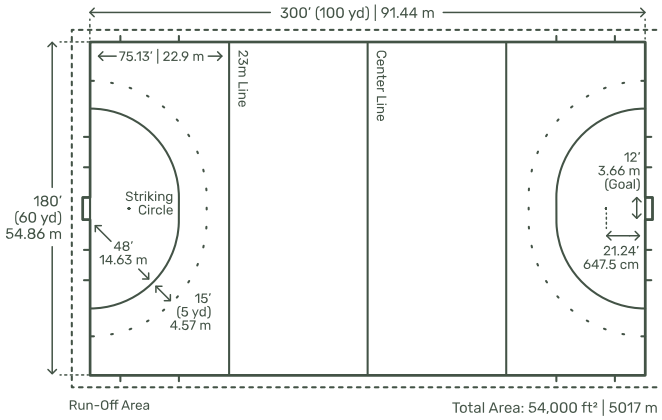
Field size (Field Hockey Canada):
Length: 91.40 m (100 yards)
Width: 55 m (60 yards)

Minimum Side Line Runout: 2 m (2.19 yards)
Recommended Side Line Runout: 3 m (3.28 yards)

Minimum Back Line Runout: 3 m (3.28 yards)
Recommended Back Line Runout: 5 m (5.47 yards)

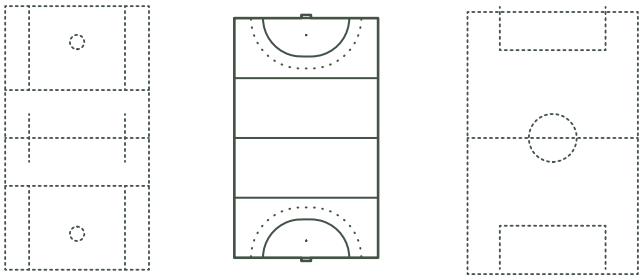
PEISAA Field Size:
N/A

NS DC-350 Field size:
N/A



Sample Field Markings. Dimensions may differ.

Notes:
A field hockey pitch is similar in size and appearance to a lacrosse field with some differences in the markings. The two 23 metres lines and the centre line indicate the important marks across the field for players.



Lacrosse Field | Field Hockey Pitch | Football (Soccer) Pitch

Field conditions

Field Of Play:

Artificial Turf - This is an artificial surface of synthetic (polyethylene) fibres infilled with particles of rubber or other material to provide shock absorption and to keep the fibres standing upright. Artificial turf requires no watering, replanting or mowing, but does require grooming and replenishment of infill. Artificial turf will eventually require replacement as the fibres wear out. The turf is available in different pile heights and weights depending on the intended use. In summer conditions, artificial turf fields may become hotter than comparable natural turf fields, but can shed water and support play faster after rainfall - extending playing time and reducing risk of field damage due to wet conditions.

Natural Turf - Some athletes prefer playing on natural turf over artificial turf due to play characteristics, lower chance of injury, and reduced temperature in summer months. There are also stormwater infiltration and carbon dioxide conversion benefits to natural turf when compared to artificial turf. Drawbacks to natural turf include the need for regular maintenance as well as the time required to dry out after rainfall. Perennial ryegrass, Kentucky bluegrass, and tall fescue cultivars are considered optimal grass species for sports fields in northern climates. A mix of species, such as 80% Kentucky bluegrass and 20% perennial ryegrass is preferred for performance and turf health over time.

Crowns and Slopes - A key consideration with field construction is drainage. Fields can be sloped from the centre to the outside (crowned), or sloped from one side to the other (sloped). Crowns can run the entire length of the field and drain to the sides (this configuration is ideal for soccer) or can have a high point in the centre of the field and drain to sides and ends (ideal for football and rugby). In most cases, the slope ranges from 0.5-1.5% and will be imperceptible to most users. Fields with high crowns may cause the ball to temporarily go out of vision to a player near the sideline if the ball is on the other sideline. Ultimately, the drainage design for a field will depend on the sports to be played as well as surrounding topography.

Perimeter factors:

Dasher boards and fences may be placed near the field to stop the balls from going too far away from play. This may be important in urban situations where adjacent facilities are

Drainage - Stormwater may be managed by means of surface drainage, underground drainage, or a combination of both. Swales may be constructed to drain rainwater away from the fields. Although a flat playing surface is considered ideal for play, the greater the slope the field has, the faster it will drain after rainfall.

Running Tracks - Schools and university campuses often pair running tracks and sporting fields together for efficient usage of space. This typically requires more complex drainage solutions as the track must be completely level, while the field must drain. The other issue with this configuration is that football fields are slightly larger than the track perimeter,

Orientation and Lighting:

Sunlight - A north-south orientation is considered ideal for most sports to keep the sun out of the (goalkeeper) players' eyes (as most games are played in the afternoon and evening). A more sophisticated analysis has led stadium designers to choose an angle equal to the average direction of the sun at half-time in an afternoon game. Many examples exist of fields that deviate from the north-south orientation depending on site constraints.

Lighting - Floodlights can be installed to extend the time that fields may be used. Sometimes, glare can be experienced by players from both direct sunlight and floodlights when the airborne ball comes directly from the path of light. A common concern with field lighting is light pollution on surrounding properties, but modern lighting technology makes it possible to direct light on the playing surface with very little spread.

Field Markings:

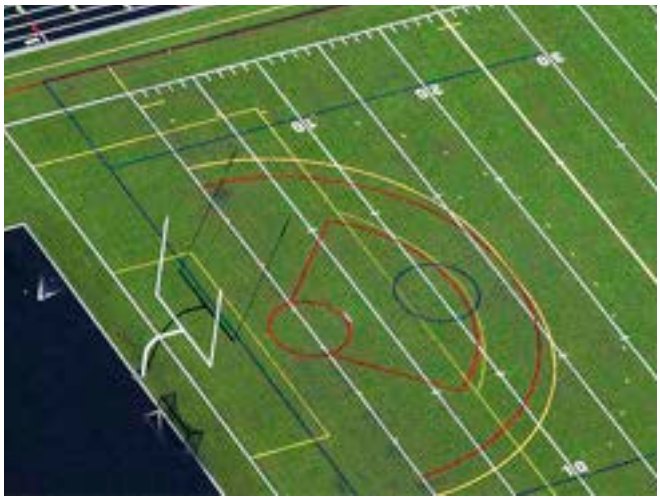
Missing lines - Inadequate markings or a total lack of lines can make it difficult to hold practice sessions and games. At times, cones may be placed to delineate touchlines, corners and goal posts, but this can be difficult for players to judge and may cause conflicts in the game.

Multiple lines - Nowadays, most artificial turf fields and natural grass fields in school and university campuses are marked with multiple lines in different colors so that the same field can be used for a variety of sports. This helps ensure that the fields will be used regularly by different user groups and maximize return on capital investment.

Equipments:

Combination goals - Field equipment can be designed as both soccer and football goal posts or can be separate posts catering to different sports.

Portable goals - Portable goalposts of various sizes suited for different sports (lacrosse, soccer) and games for different age groups can be used if the same field is used for practice or multiple simultaneous games.



Baseball fields

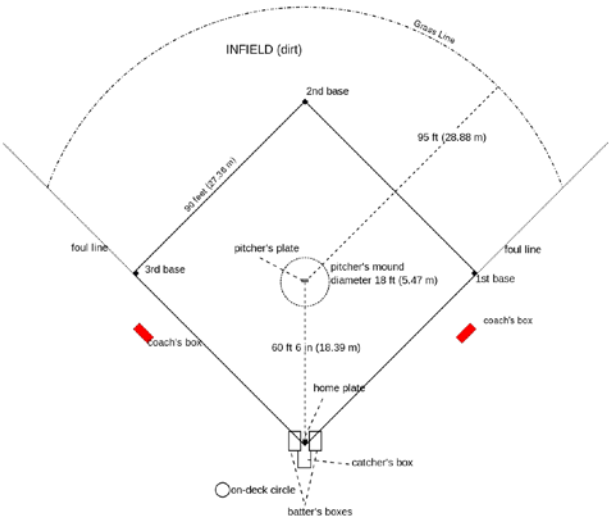
Field size (Baseball Canada / Major League Baseball):
Minimum dimensions for play:
Infield: 27.43 m (90 ft) square
Min. distance from home base to any fence: 76.2 m (250 ft)
Max. distance from base lines to required players' benches: 7.62 m (25 ft)
Distance from pitcher's mound to batter's box: 18.44 m (60 ft - 6 in)
Radius from pitcher's mound defining edge of skinned infield (beginning of grass outfield): 28.96 m (95 ft)

Minimum dimensions for professional clubs:
Infield: 27.43 m (90 ft) square
Min. distance from home base to any fence measured along foul lines: 99.06 m (325 ft)
Min. distance from home base to any fence measured through centre field: 121.92 m (400 ft)

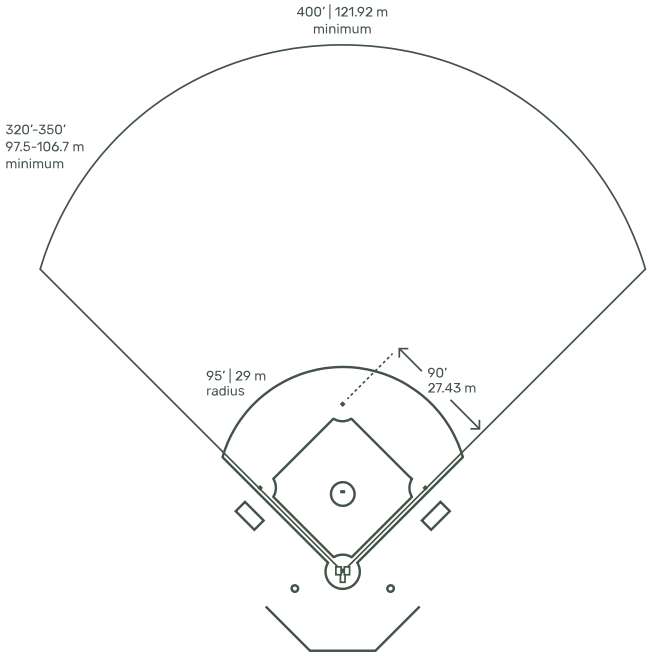
Notes:
Recommended field orientation: A line drawn from home base through the pitcher's plate will run East-Northeast.
Recommended distance from home base and base lines to backstop or any fence (behind field of play): 18.3 m (60 ft)

PEISAA Field Size:
N/A. Note that field must be lit to qualify to host Provincial Tournaments. Working PA system recommended.

NS DC-350 Field size:
N/A



Sample Infield Markings. Dimensions may differ.



Sample Field Markings. Dimensions may differ.

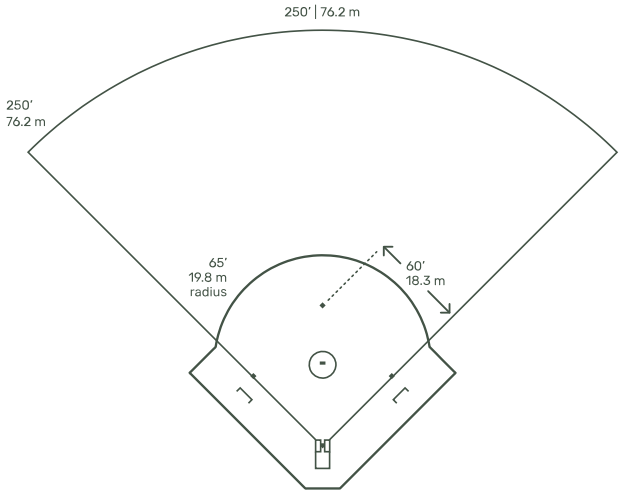
Softball fields

Field size (Softball Canada - Adult Fast Pitch):
Minimum dimensions for play:
Infield: 18.3 m (60 ft) square
Min. distance from home base to any fence: 68.6 m (225 ft)
Max. distance from home base to any fence: 81 m (265 ft)
Distance from pitcher's mound to batter's box: 15.2 m (50 ft)
Radius from pitcher's mound defining edge of skinned infield (beginning of grass outfield): Varies. May be 16.8 m (55 ft), or 18.3 m (60 ft)

Notes:
Recommended min. distance from home base and base lines to backstop or any fence (behind field of play): 7.6 m (25 ft)
Recommended max. distance from home base and base lines to backstop or any fence (behind field of play): 9.1 m (30 ft)

PEISAA Field Size:
N/A

NS DC-350 Field size:
N/A



Sample Field Markings. Dimensions may differ.

Field conditions

Field Surface:

Infield - Infield mixes are made from various combinations of sand, silt and clay. The proportion and balance of the materials and water is integral in the construction and maintenance of the infield. The materials used on the infield and the baselines are the same and should be at least 127mm (5") deep. The mix is generally considered optimal when premixed based on the general standard percentages of 60% sand, 30% clay, and 10% silt. Infields vary by regional conditions, commercially available mixes and the preferences of the sports facility and teams.

Pitcher's Mound - This is where the pitcher stands while throwing the pitch. On top of the mound is a white rubber slab, called the pitcher's plate. The pitcher's mound is the highest point of the ballfield and water should drain away from the mound. Infields are generally sloped about 0.5%, with outfields being sloped in the range of 1-1.5%. This allows for adequate and efficient drainage after rain events.

Home plate Area - This area includes the home plate, the batter's box and the catcher's box. The pitcher's mound, the batting area, and the running lane are areas of maximum use as players dig in with their cleats. Hence, these areas require a stronger mixture with a high clay fraction.

Outfield - The area outside the infield is made of natural grass or artificial turf. Factors such as annual maintenance cost, weather conditions, usage of the field play an important role in determining whether synthetic turf or natural grass is suitable for the field.

Orientation:

As a rule of thumb, the field needs to be oriented in a way that the sun is kept out of the batter's line of sight. Since most games are played in the afternoon or evening, the rule fields are usually oriented so that a line running from home plate through the pitcher's mound to second base runs East-Northeast. There are many variations to this orientation depending on individual site constraints.

Cricket Ground

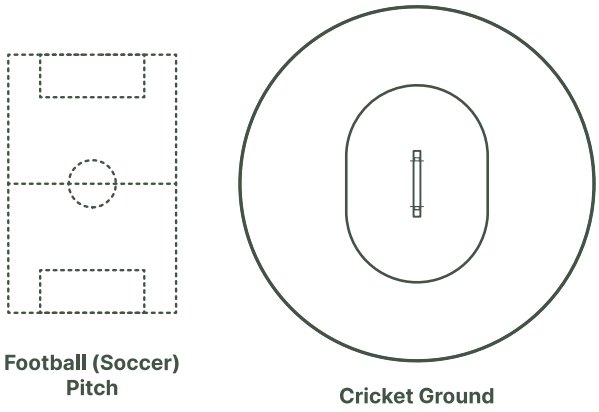
Field size (ICC Standard Playing Conditions):
Radius: 59.4-82.3 m (65-90 yds)
Shape: Round or oval

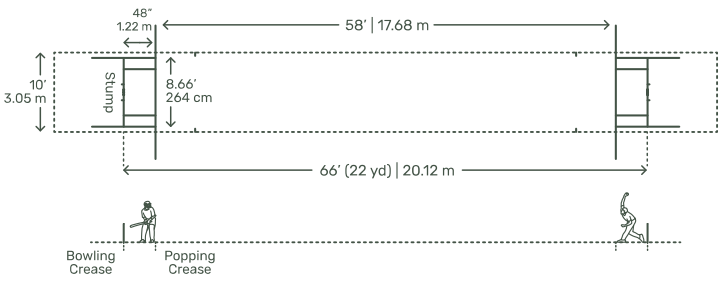
Pitch size:
Length: 20.12 m (66 ft)
Width: 3.05 m (10 ft)

Notes:
The pitch is located at the center of the field surrounded by an infield with a radius of 27.4 m (90 ft) from the center of each wicket. The wickets (stumps) are placed on both ends of the pitch, the batting side and the bowling side.

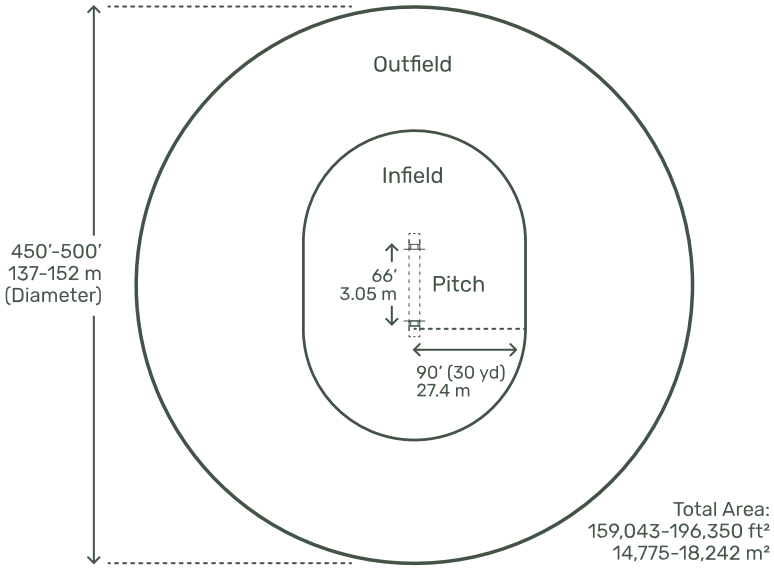
PEISAA Field Size:
N/A

NS DC-350 Field size:
N/A





Sample Pitch Layout. Dimensions may differ.



Sample Field Markings. Dimensions may differ.

Field conditions

Field Surface:

Natural and synthetic turf: Cricket pitches can be made of natural grass or synthetic turf depending on the annual maintenance, weather conditions, and usage of the field. Synthetic cricket pitches typically consist of concrete pavement with a short pile height synthetic grass pitch installed on top. Natural turf pitches may remain open in winter while synthetic cricket pitches may need to be covered during the winter season to both protect the surface and for the safety of winter sport participants. The infield and outfield area surrounding the pitch is generally natural grass.

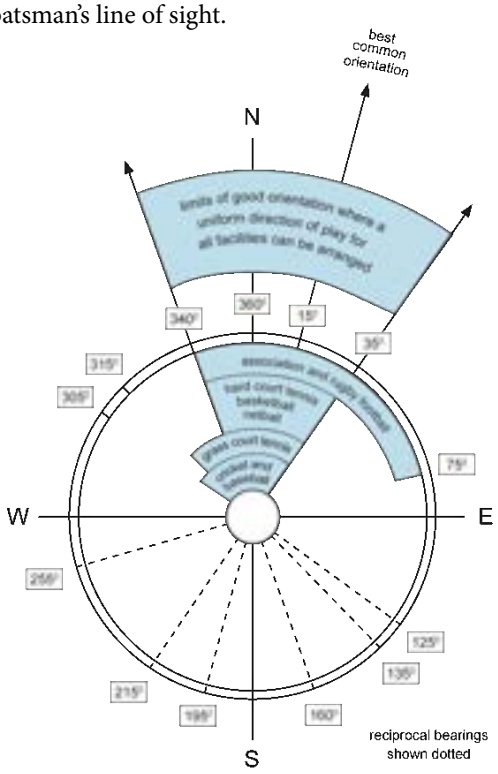
Drainage: Ideally, cricket playing fields should fall in all directions from the centre pitch, but failing this, they should have a single phase slope of 1% in any convenient direction. The pitch should be about 75mm above the level of outfield to allow for surface drainage off the pitch.

Perimeter factors:

When designing and developing cricket fields, it is important to maintain atleast 20-40 m of buffer space from surrounding infrastructure such as parking lots, streets and roadways, neighbouring properties, etc. Natural design elements such as tree planting and mounding and structural elements such as seating, fencing and barricading or a combination of these may be used to alleviate potential risk to visitors, bystanders, and users of the adjacent facilities.

Orientation:

It is recommended that cricket grounds and pitches are orientated in a north-south direction to minimise the effect of a setting sun on batsmen, with a suggested optimum orientation of 10-15 degrees east of north. As a rule of thumb, the field needs to be oriented in a way that the sun is kept out of the batsman's line of sight.



Basketball Court

Court size (FIBA):
Length: 28 m (91.86 ft)
Width: 15 m (49.21 ft)
Centre circle radius: 1.8 m (5.9 ft)
Free-throw line distance from endline: 5.8 m (19.03 ft)
Length of free-throw line: 3.6 m (11.8 ft)
Free-throw semi-circle radii: 1.8 m (5.9 ft)
Three-point line radii from hoop: 6.75 m (22.15 ft)

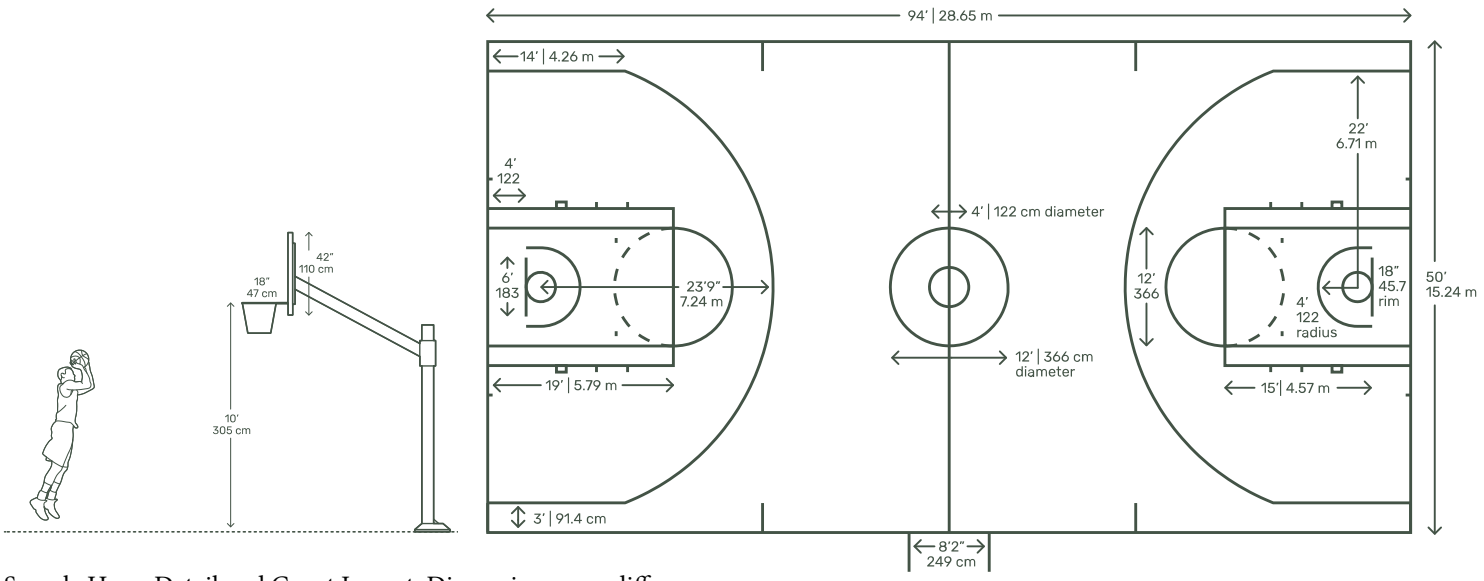
The courts consist of several foundational components: the baskets with backboards, the three-point arcs, free-throw (foul) lines, and the half court line. Spectators and any obstruction must be a minimum of 2 m from the perimeter boundary line of the court.

PEISAA Outdoor Court Size:
N/A

Notes:
PEISAA basketball games are played on indoor courts.

NS DC-350 Outdoor Court size (High School):
Length: 18.3 (60 ft)
Width: 12.2 m (40 ft)

Notes:
In Nova Scotia, based on the DC-350, outdoor basketball courts for high schools are to be provided at the following rate. Each court is to have four hoops. Courts (or half courts) may be provided inside the perimeter of bus loop if necessary due to space constraints:
1-500 students: 1 court
500-1000 students: 2 courts
1000+ students: 3 courts



Sample Hoop Detail and Court Layout. Dimensions may differ.

Tennis Court

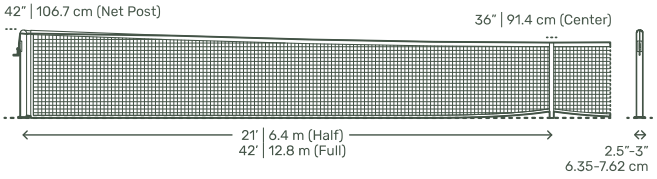
Court size (Tennis Canada):
Length: 23.77 m (78 ft)
Width: 11 m (36 ft)
Clearance space: 5.49 m (18 ft) from the baselines
3.05 m (10 ft) from the sidelines.

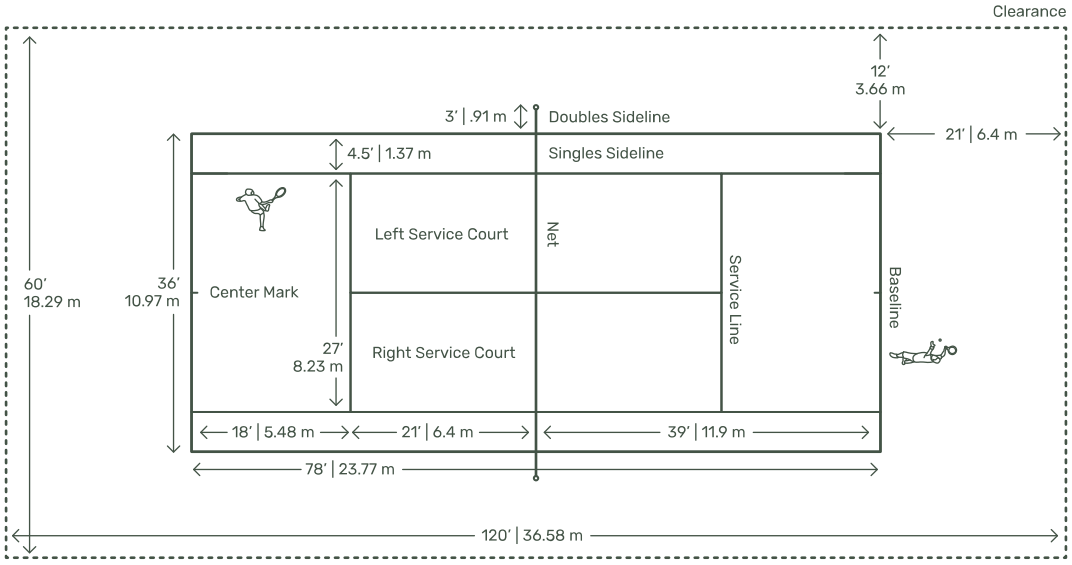
PEISAA Size:
N/A

NS DC-350 Size:
N/A

Tennis courts consist of several markings such as the centre marks, service lines, sidelines for singles and doubles games, and a net (length: 12.8 m, height: 1.06 m). Courts may also be configured with markings for mini-courts arrange perpendicular to the main court. In this configuration, four mini-courts can fit on a single full sized court.

Notes:
For optimal play, tennis courts often feature perimeter fencing to keep balls in the vicinity. These fences may be configured with mesh or fabric windscreens to mitigate wind effects. Spectator seating and lighting also improve the quality of the facility. Fencing can be stepped down along the sides of courts to allow better sightlines for spectators.





Sample Court Layout and Net Detail. Dimensions may differ.

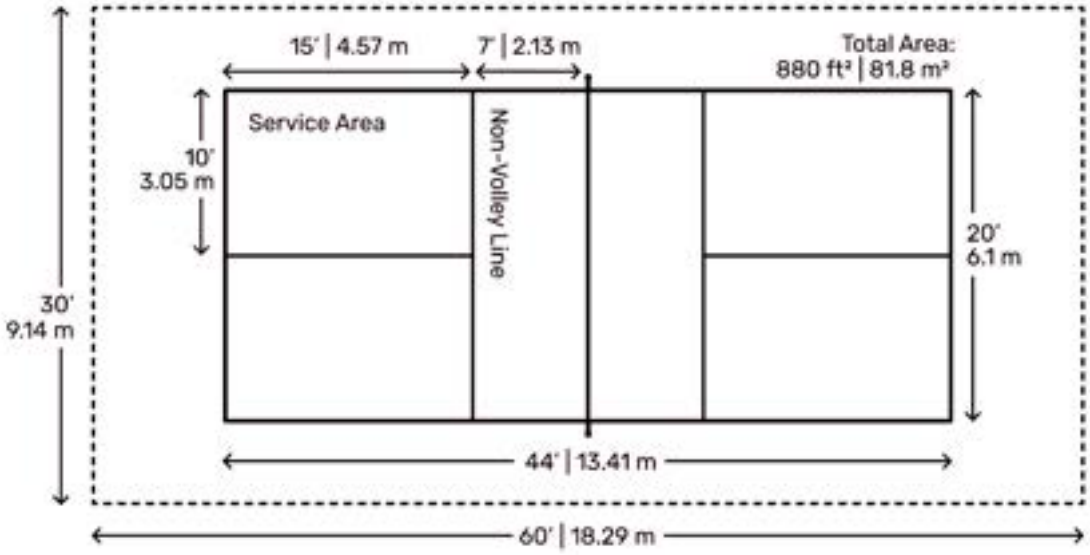
Pickleball Court

Court size (Pickleball Canada / IFP):
Length: 13.41 m (44 ft)
Width: 6.1 m (20 ft)
Minimum baseline safety margin: 2.44 m (8 ft)
Recommended baseline safety margin: 3.05 m (10 ft)
Minimum sideline safety margin: 1.52 m (5 ft)
Recommended sideline safety margin: 3.05 m (20 ft)
Non-volley zone: 2.1 m (7 ft) from net

Notes:
Due to the lightness of the ball, shelter from wind is even more important than for tennis. For this reason, indoor venues for pickleball may be preferred by many players over outdoor venues.

PEISAA Size:
N/A

NS DC-350 Size:
N/A



Sample Court Layout. Dimensions may differ.

Court Conditions

Field Surface:

Materials: A range of materials can be used for basketball, tennis, and pickleball courts. The choice of materials may depend on a number of factors such as the operational cost and budget, area regulations, weather conditions, and the usage of courts. These factors affect the efficiency and the longevity of the materials and the court. Some of the materials used for basketball and tennis courts include:

Asphalt: Can be used instead of concrete in some cases. Although durable, it may require more maintenance and repairs than concrete as it is prone to settling and cracking. It is more durable when constructed in climates with minimal freeze and thaw.

Concrete: For firm and durable surfaces. Concrete allows for any thickness required for the court. Use of rebar will be required to minimize cracking over time.

Hard (Acrylic): provide consistent speed of play, texture, and vibrant color to the courts. These surfaces require minimal maintenance and can withstand a variety of weather conditions from ice and snow to intense heat and ultra-violet rays. These systems can be applied on asphalt, concrete, or existing acrylic court surfaces.

Har-Tru (Clay): is an natural green stone called Pre-Cambrian metabasalt. This layer of finely crushed green stone particles is installed over a porous base of crushed stone aggregate, producing a finished surface. These surfaces need to be brushed, watered and rolled periodically for maintaining traction, court stability, and longevity.

Grass: Generally, sodding and seeding are the two options to establish lawn tennis courts. Regular maintenance is required to keep the courts functional.

Perimeter factors:

Fencing up to a minimum of 3-4 m may be desired around basketball and tennis courts to contain the ball within the court. Unfortunately, unless carefully designed, fences may give a cold, institutional impression to public facilities.

Orientation:

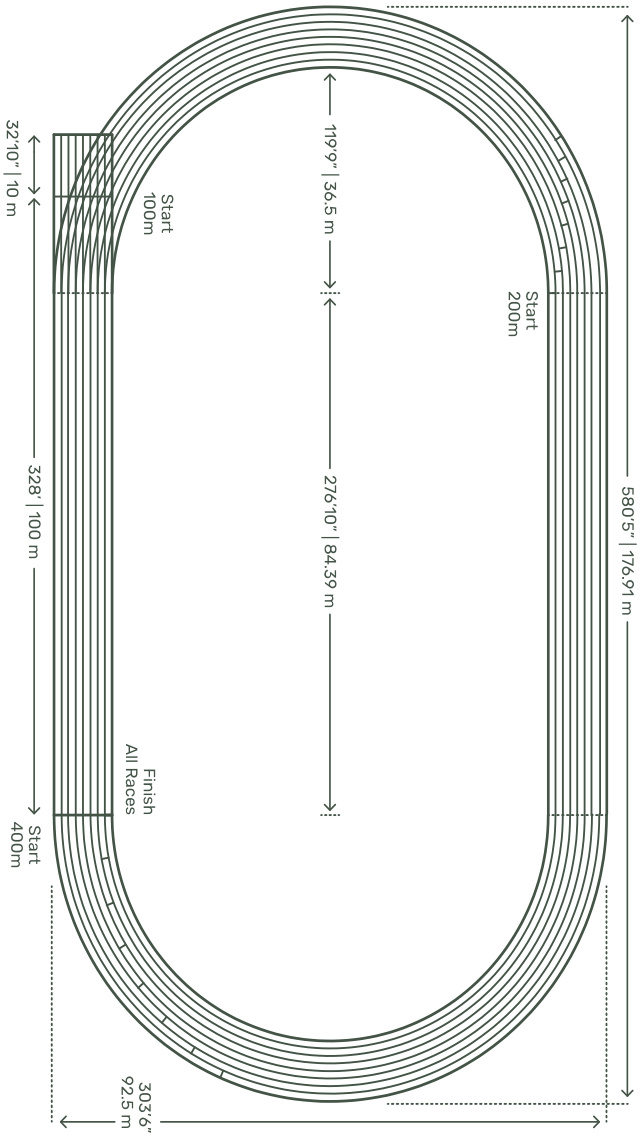
As the bright sun behind the backboard or the receiving tennis player can be blinding or at least distracting, outdoor sport courts function best when oriented in a north-south direction, with an optimum orientation of 10-20 degrees from due north-south.

400m Running Track

400m track size (World Athletics - previously IAAF)):
Overall length: 176.91 m (580 ft 5 in)
Width: 92.52 m (303 ft 6 in)
Lane width of each track: 1.22 m (4 ft)

PEISAA Size:
N/A

NS DC-350 Size:
As per IAAF (now World Athletics)



Sample Track Layout. Dimensions may differ.

Track conditions

Field Surface:
Materials: Different track and field surfaces affect the runners' speed, technique, and pysical health differently. A softer surface can help improve the running experience whereas a hard surface can be hard on the joints. Some of the surfaces that are used for track & field are:

Synthetic: These are rubberized all-weather surfaces with a spongy texture. Not only do these allow for good shock absorption and a stable tread, but are also durable, and weather-resistant. As synthetic tracks are independently installed on a concrete or asphalt base, they require minimal maintenance. They are also well suited for indoor fields.

Grass and Turf: As turf provides a soft and cushioned surface, running on it is easy on the joints. However, turf fields require periodic inspection maintenance as it is hard to maintain a long stretch of grass without bumps and holes. Grass fields can also get slippery on rainy days and are prone to damage under heavy use.

Asphalt: Asphalt is a less sought-after material for running as it has a harder surface than synthetic, grass or dirt fields. As it radiates ambient heat onto the runner, it is generally not preferred in areas with warmer climatic conditions.

Crusher Dust: Although not typically used for competition tracks, in some cases tracks may be constructed with crusher dust (aggregate) srufaces for cost savings.

Co-location With Other Sports: Running tracks are generally designed around the perimeter of a football or soccer field for efficient management of space and to maintain the standard length requirements of the tracks. Other track and field facilities (such as jumping runways, throwing ranges, etc.) may also be arranged within the track perimeter or in close proximity.

B

Appendix B - Case Studies

This chapter presents an analysis of masterplans at a range of scales from high school campuses, university campuses, and community recreation complexes. The study takes into account the location, size, and the function of the project along with a desktop review summarizing the design principles guiding each masterplan.

Each study provides baseline description of the project along with key "takeaways" (lessons to be learned regarding desirable or undesirable features). A synthesis of these projects will provide a helpful body of knowledge and useful precedents to consider when making decisions regarding the Stratford Community Campus.

01 University of Kentucky Master Plan

Client: University of Kentucky
Location: Lexington, Kentucky
Size: 785 Acres
Year: 2013

Description
The open space framework defines a hierarchical system of open space typologies that together make up the campus. The framework establishes an identity for each typology and strengthens the connections between them. The open space typologies include:

- Civic Spaces
- Quadrangles and Courtyards
- Streetscapes
- Pedestrian Corridors
- Sports Landscapes

Facilities and features accommodated within the the masterplan include: commonwealth stadium renovation, new soccer and softball facilities, new baseball facilities, Alumni gym renovation, recreation fields, marching band field, tennis centre expansion, campus landscape enhancements, and pedestrian improvements.

Takeaways

+ Typologies are a useful way to build an organizing structure that can be applied to future campus expansion or development
+ Recreation spaces are distinct from learning and teaching environments to create distinct "zones"
+ Separate parking spaces are provided for each facility to minimize
+ Rows of trees are used to define spaces and buffer uses from adjacent properties

02 Providence Academy Site Design

Client: Providence Academy,
Location: Plymouth, Minnesota
Size: 38 acres
Year: 2015

Description:
The concept design for the Providence academy includes a Performing Arts Center and reconstruction of athletic facilities including a synthetic turf multi-use football field, 100-seat bleacher, a seasonal sports dome, 7-court tennis facility, 400-meter track, hardscape plazas, trails and walkways, and master planning for future baseball and soccer fields.

This plan exhibits a model of a flexible athletic facility that can accommodate a variety of sports on the same ground. This multi-purpose field model is not only a more cost-effective way to get more games on the field and but also reduces capital and maintenance costs.

Takeaways

+ The plan emphasizes the school building by setting up view and access corridors to the main entrance and organizing recreation facilities around the periphery
+ The plan uses rows of trees to minimize the visual impact of the large central parking area
+ Multi-use fields accommodate a variety of sports while minimizing capital & maintenance costs
– Paved vehicular spaces (parking and access) outbalance landscaped pedestrian and athletic spaces

03 Virginia Episcopal School

Client: Virginia Episcopal School
Location: Lynchburg, Virginia
Size: 165 acres
Year: 2015

Description
The masterplan prioritizes a student-focused campus with a great emphasis on safety and a pedestrian-friendly environment, with minimal vehicular and pedestrian overlap. Campus sustainability was a focal point of the master plan vision and was integrated into a significant reduction of mown lawn areas, establishment of new native meadows, and integration of natural stormwater management practices such as bioswales and bioretention basins, which have been made into amenities for teaching and recreation.

Takeaways
+ Green open spaces outbalance impervious cover (buildings, paved roads, parking lots, sidewalks)
+ Landscaped squares used as a centrepieces framed by school buildings
+ Emphasis placed on continuity of green spaces and walking paths. Very few conflict areas exist between the vehicular and peestrian traffic
+ Seamless transition of the campus into its natural surroundings
+ Athletic facilities evenly distributed across the site, relatively equidistant from the central plaza
+ Parking areas are distributed as smaller lots spread across the site

04 Qplex

Client: Town of Quispamsis
Location: Quispamsis, New Brunswick
Size: 79 Acres
Year: 2011

Description:
The Qplex is a multi-purpose recreation and conference centre owned and operated by the town of Quispamsis. The facility boasts an NHL sized ice surface, conference centre, indoor walking track, junior olympic swimming pool, leisoure pool and splashpad, playground, two soccer fields (one with running track), four tennis courts, baseball diamond, and nature trail.

Takeaways

+ The indoor facility is positioned as the centrepiece of the facility surrounded by outdoor recreational facilities
+ The facility is surrounded by natural landscape on three sides, creating opportunities for trail connections
+ The site can be accessed from three out of four roads that border the site. Multiple access points allow for efficient flow of vehicle and pedestrians
– Due to the size of the site, the main building feels disconnected from the surrounding community.
– A large proportion of the site is devoted to parking. Instead of being spread around the site, four large parking lots cater to specific activities. The parking lots have little or no landscaping to reduce their visual impact

05 Irving Oil Field House

Client: Saint John Field House Inc.,
YMCA of Greater Saint John
Location: Saint John, New Brunswick
Size: 23 acres
Year: 2019

Description:
The Irving Oil Field House is a 110,000 sq. ft. indoor track, turf, and fitness facility. It is located next to an existing Exhibition Park Raceway and features two indoor turf fields, badminton courts, a 200 metre track, venues for jumping and throwing sports, fitness centre, kitchen, and multi-purpose rooms. The facility is operated by the YMCA and offers child care services. A key part of the site development was the approach taken to stormwater management. A new wetland area was constructed adjacent to the building to improve resiliency in flood events. The wetland area has been designed as a site amenity, with 1.9 kilometres of walking paths, boardwalk areas, and interpretive elements.

Takeaways
+ Stormwater management is not just treated as a utility, but is an amenity with environmental and human value
+ The site can be accessed from two out of three roads that border the site. Multiple access points allow for efficient flow of vehicle and pedestrians
+ Operation by the YMCA allows efficient booking and management of facilities
– Parking dominates the entrance experience to the site
– Due to the location and configuration of the site, the facility seems disconnected from the surrounding community

06 RBC Centre

Client: Halifax Regional Municipality
Location: Dartmouth, Nova Scotia
Size: 23 acres
Year: 2017

Description:
The RBC Centre in Dartmouth includes three NHL sized ice pads and an olympic sized ice pad. The facility also includes other supporting facilities such as a multi-purpose room, sports retail store, food and beverage service, and central public artwork. The adjacent Harbour East All Weather Field includes an artificial turf mutli-use field, a, artificial turf soccer field, and a dozen beach volleyball courts.

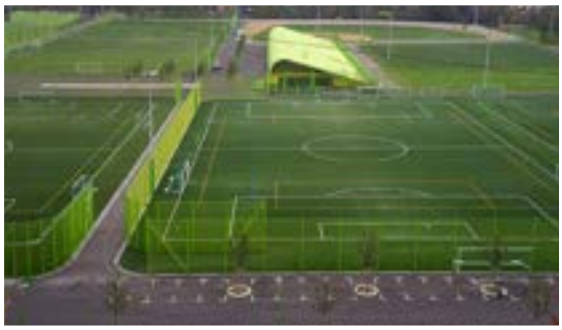
Takeaways
+ Public art creates a welcoming entrance environment
+ The facility is adjacent to multi-use fields that can be divided into smaller fields for use by younger players or used as full-sized playing fields
+ The parking lot is organized to provide efficient drop-off to the fields as well as the main building. A raised drop-off area at the main entrance slows traffic
– Although there is a primary pedestrian connection to the street, the facility is not well integrated with its surroundings. The building is set back on the site and the parking lot acts as a barrier between it and the street

07 Heerenschurli Sport Complex

Client: GrünStadt Zürich (Office of Parks and Open Spaces)
Location: Zurich, Switzerland
Size: 43 acres
Year: 2010

Description:
The Heerenschurli Sport Complex serves as a combination park and sports venue. It features thirteen sports fields (including one baseball field) as well as a skate park, biking tracks, and path connections with adjacent developments. Inspired by the transitional nature of the site (surrounded by residential uses, industrial uses, highways, and naturalized green space), the masterplan blurs boundaries between natural and artificial. Linear street grids unite the site with the nearby artificial urban structure, while the green of artificial turf has been carried into fencing, seating, and building materials. The result is a striking space that is unified with and distinct from its surroundings.

Takeaways
+ Use of colour as a unifying feature
+ Integrating public transit and active transportation routes into the the facility unites it with the community
+ Alternative means of transporation and careful arrangement of parking along linear streets means parking does not dominate the facility
+ Green space and other recreational uses (i.e. skatepark, pedestrian paths) are integrated between sports fields
+ The interstitial space between fields has been used extremely efficiently by sharing among pedestrians, cyclists, bike parking, car parking, green space, etc.)
+ The facility is innovative. This is not just "another sports complex," but has a distinct identity based on its context






C Parking Demand Calculations

212614 Stratford Community Campus Plan
Parking Demands
Friday, November 19, 2021

General Notes

1 Where PEI has more rural geography than location of parking studies (larger urban cer
2 Utilization rates during peak periods originally obtained from Toronto Parking By Law w
3 Land Uses that are not expected to draw trips during this time were disregarded with th
4 Data available for PM and evening peaks having similar to ovelapping time periods (i.e.

Recreation Facility (indoor)

	Item	Quantity	Units	Description	Square footage	Expected Units GFA (ksf)	ITE LU Code	
	Youth Gathering Spaces	1	ea	6000 sf	6,000			
Priority 1	Gymnasium	1	ea	110 ft X 60ft	6,600	52.2	495 Suburban	R
	Indoor Multi Use Field	1	ea	240ft X 165ft	39,600			
	Olympic Size ice rink	1	ea	200ft X 100ft	20,000	20.0	493	A
Priority 2	Curling Club	1	ea	162ft X 82ft	13,284	13.3	NA	
	Gymnastics Facility	1	ea	17,000 ft^2	17,000	17.0	495 Suburban	R
Priority 3	Daycare	1	ea	5,000 ft^2	5,000	5.0	565	D
	Swimming Pool	1	ea	165ft X 82ft	13,530	13.5	493	A

Outdoor Facilities

Item	Quantity	Units	Description	Square footage	Expected Units (per acre or each)	ITE LU Code	
Multi-Use Field	1	ea	100 X 120 m turf Artificial Turf?	129,101	-	488	S
Multi-Use Courts	5		Equivalent to **5** pickleball courts	424,115	5.00	490	T
Baseball fields	**2**	ea	2 each @ (300 ft to centre field)	169,646	**2.00**	488	S
Cricket Field	1		137m to 152 diameter	195,220	1	488	S
Soccer Fields	4	ea	4 equiv full size fields		2	488	S
Tennis Courts	2	ea	2 each @ 19 X 36m		2	490	T
Expansion Areas (later additions)							
School (1) Fields	1	ea	2 rugby and ~0.5 soccer		1	488	S

nters) it is assume more people will need to drive than walk/bike to site (higher than average value selected, but less than 85th percentile)
with some refinement
he total parking demand calculation
, 4-6PM and 6-8PM); therefore, PM and evening parking demands were assumed to be equal, with reduction applied base on land use

	Available Peak Data			Reference				*Insufficient	PEAK	
ITE LU Description	Average Weekday (AM)	Average Weekday (PM)	Average Weekday (Evening = PM)	85th Percentile Weekday (Upper Limit)	Utilization % AM Peak	Utilization % PM Peak	Utilization % Evening	**AM Peak Demand***	**PM Peak Demand**	**Evening Demand**
Recreational Community Center		167	167	263	25%	50%	50%	**0**	**84**	**84**
Athletic Club		71	98	N/A	25%	75%	100%	**0**	**53**	**98**
NA		30	30	N/A	25%	75%	100%	**0**	**23**	**30**
Recreational Community Center		55	55	86	25%	75%	100%	**0**	**41**	**55**
Daycare	16	16	-	19	100%	100%	50%	**16**	**16**	**0**
Athletic Club		48	48	67	25%	75%	100%	**0**	**36**	**48**
						TOTAL for Recreation Facility (indoor)		**16**	**253**	**315**

ITE LU Description	Average Weekday (AM)	Average Weekday (PM)	Average Weekday (Evening = PM)	85th Percentile Weekday	Utilization % AM Peak	Utilization % PM Peak	Utilization % Evening	**AM Peak Demand**	**PM Peak Demand**	**Evening Demand**
Soccer Complex		-	-	61	25%	100%	75%	**0**	**0**	**0**
Tennis Courts	16	16	16		25%	100%	25%	**4**	**16**	**4**
Soccer Complex		77	77	121	25%	100%	75%	**19**	**77**	**58**
Soccer Complex	39	39	39		25%	100%	75%	**10**	**39**	**29**
Soccer Complex		77	77	121	25%	100%	75%	**19**	**77**	**58**
Tennis Courts	7	7	7		25%	100%	25%	**2**	**7**	**2**
Soccer Complex		39	39	61	25%	100%	75%	**10**	**39**	**29**
							TOTAL for Outdoor Facilities	**64**	**255**	**180**
							TOTAL SITE PARKING DEMAND	**80**	**508**	**494**

UPLAND