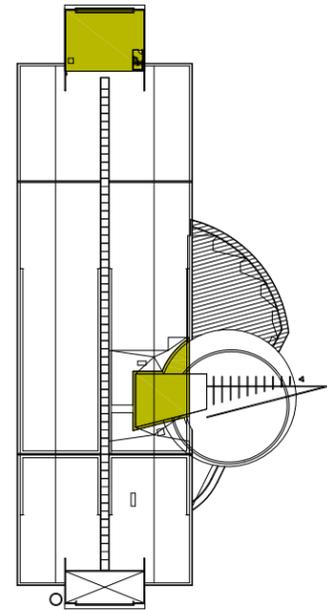
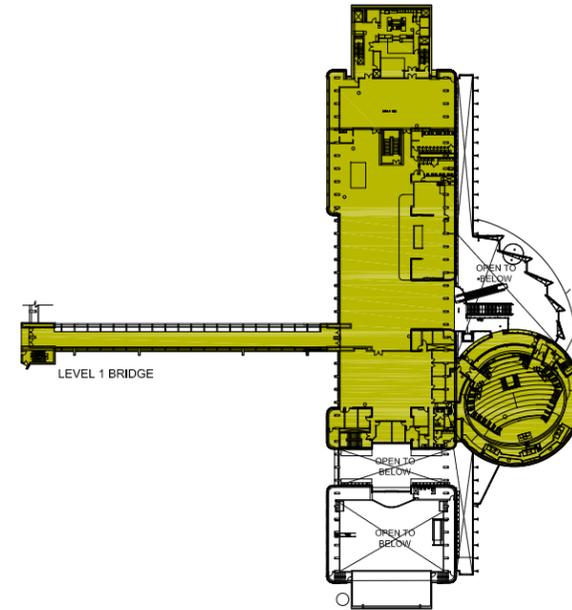


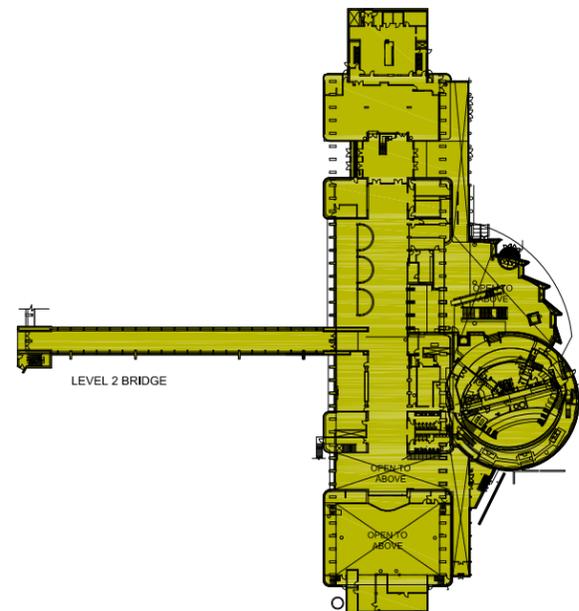
Appendix A
Existing Ontario Science Centre Spatial Analysis



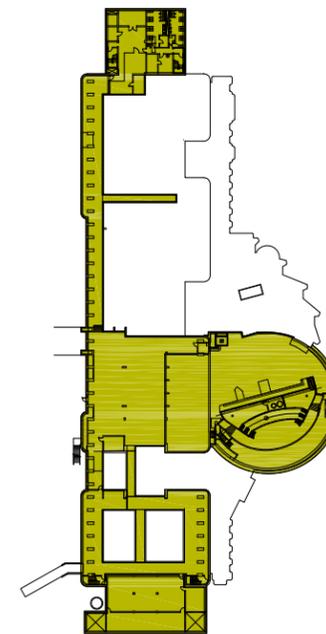
ROOF MECHANICAL ROOMS
5,035.8 SQFT



LEVEL 1
43,576.7 SQFT



LEVEL 2
64,297.5 SQFT



BASEMENT LEVEL
33,871.5 SQFT

BUILDING A
146,780.45 TOTAL SQFT

No.	Revision	Date

Orientation	Sheet

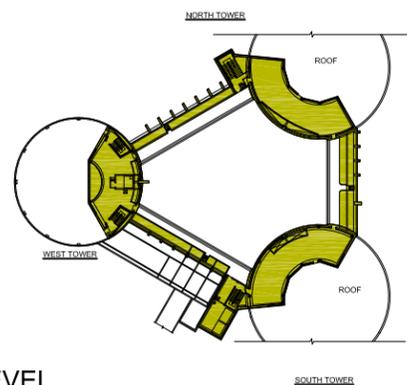
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A	Detail No.
B	Sheet No. where detailed

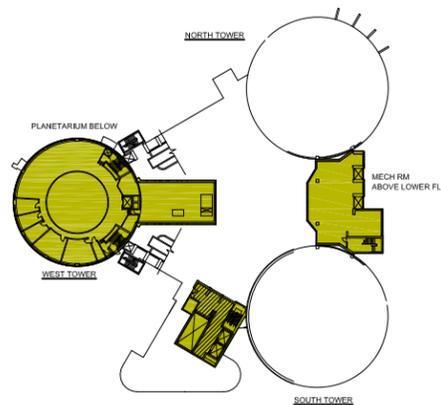


AMIS N B
ONTARIO SCIENCE CENTRE
 SQUARE FOOT CALCULATION
 770 DON MILLS ROAD
 TORONTO, ON, M3C 1T3
 Project No. B22377
 For
 CB RICHARD ELLIS
 Building A

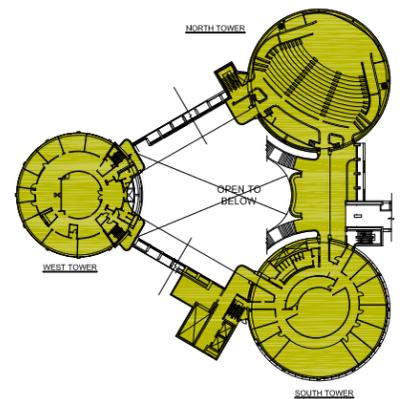
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Drawn by TK	Drawing No.
Designed by	1
Approved by	of 3



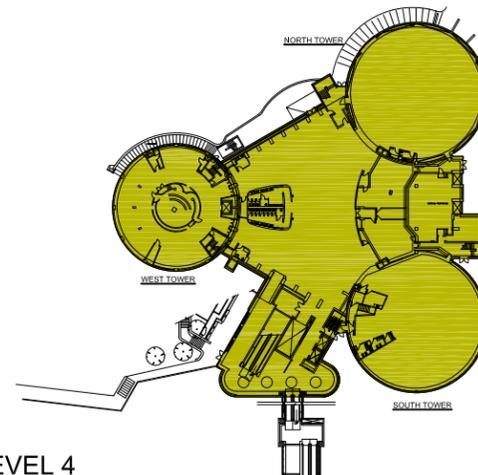
PENTHOUSE LEVEL
10,147.1 SQFT



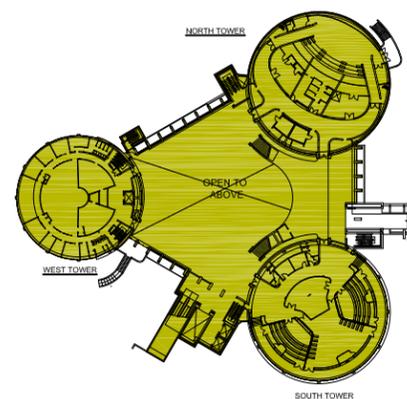
LEVEL 3
12,546.9 SQFT



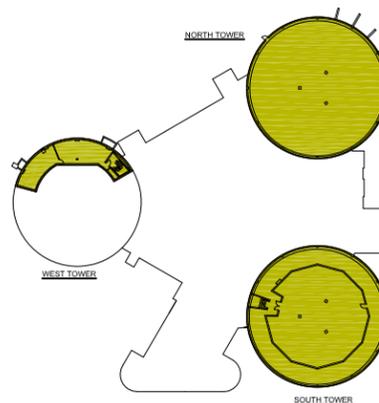
LEVEL 1
27,045.1 SQFT



LEVEL 4
43,204.4 SQFT



LEVEL 2
38,299.4 SQFT



BASEMENT
16,935.4 SQFT

BUILDING B
148,181.65 TOTAL SQFT

No	Revision	Date

Orientation: _____
Scale: _____

The Contractor shall check and verify all dimensions and report all errors and omissions to the ORC-Owner's/MES Designer (as applicable) for his/her written direction before proceeding with the Work.

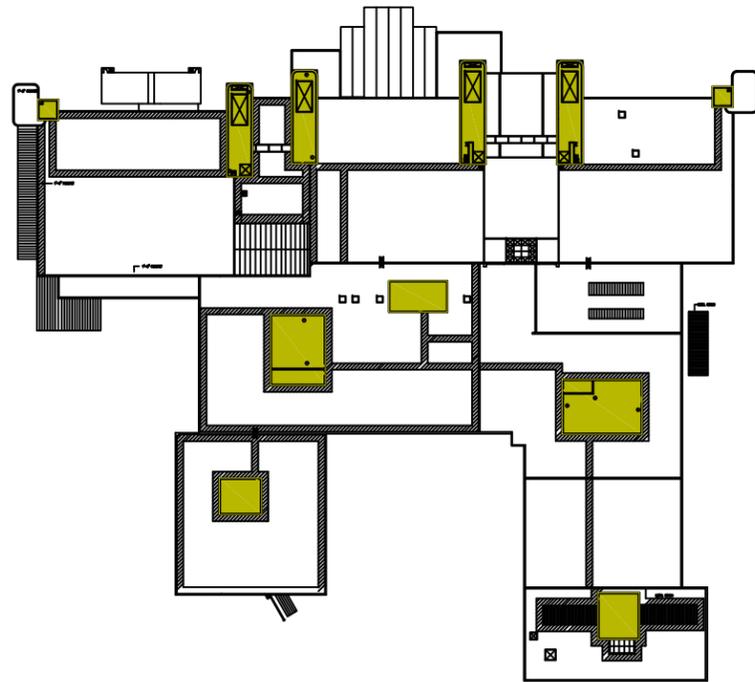
- A Detail No
- B Sheet No where detailed



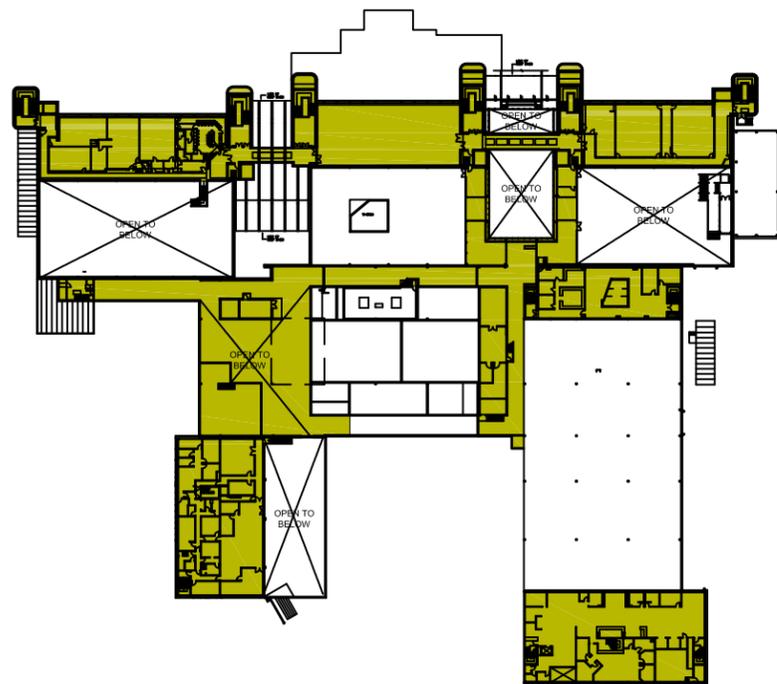
AMIS N B
Project: ONTARIO SCIENCE CENTRE
SQUARE FOOT CALCULATION
770 DON MILLS ROAD
TORONTO, ON, M3C 1T3
Project No: B22377

For: CB RICHARD ELLIS
Building: BUILDING B

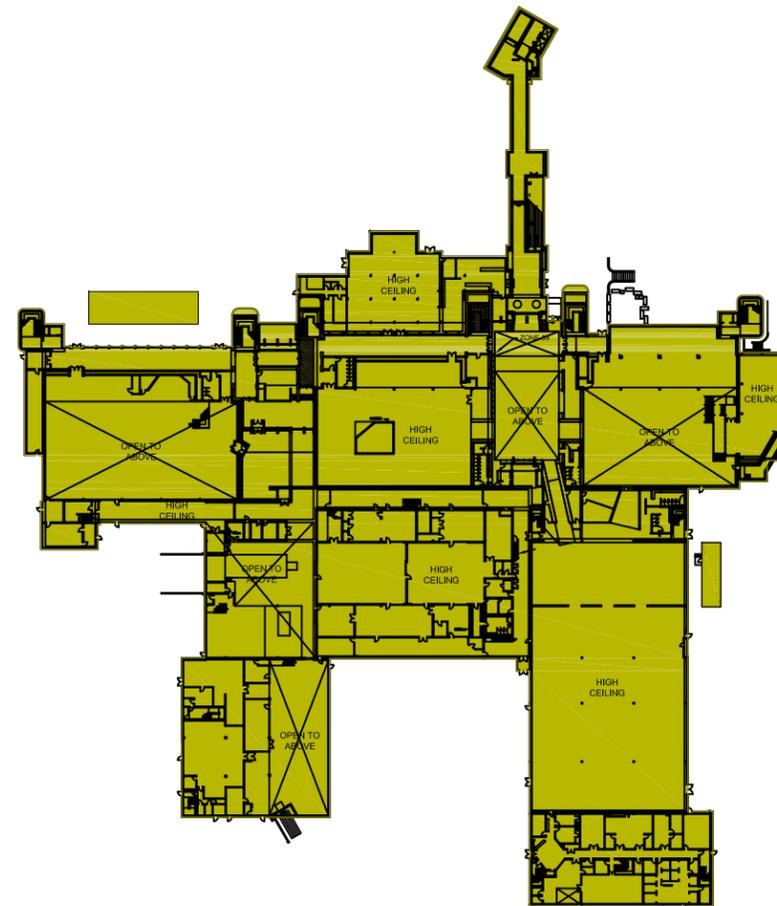
Scale: 1:550	Date: AUGUST 23 2016
Drawn by: TK	Checked by: _____
Designed by: _____	Approved by: _____
	2 of 3



PENTHOUSE LEVEL
14,625.4 SQFT



LEVEL 5
76,277.2 SQFT



LEVEL 6
182,562.00 SQFT

BUILDING C
273,464.6 TOTAL SQFT



No.	Revision	Date

Orientation

The Contractor shall check and verify all dimensions and report all errors and omissions to the ORC-Owner's/MES Designer (as applicable) for his/her written direction before proceeding with the Work.

A Detail No
B Sheet No where detailed



AMIS N B

ONTARIO SCIENCE CENTRE
SQUARE FOOT CALCULATION

770 DON MILLS ROAD
TORONTO, ON, M3C 1T3
Project No. B22377

For
CB RICHARD ELLIS

Building
BUILDING C

Scale 1:550	Date AUGUST 23 2016
Drawn by TK	Drawing No.
Designed by	3
Approved by	of 3

OSC Gross Floor Area Calculation Summary

(source: CBRE, 2016)

	CBRE Calculation				Includes Additions after 1996	Totals	
Building A	146,780						
					n/a	0	0 Included in total
Building B	148,182				Concourse	907	Included in total
						907	907 Included in total
Building C	273,465				Hot Zone	6,034	
					Portables (2 @ 963)	1,966	
					VMR	10,721	
					Challenge Zone	2,973	
					Union Trailer	846	
					Rainforest	2,680	
						25,220	25,220 Included in total
Total GFA	568,427						

Appendix B & C
Land Use Planning Review Memo

Confidential and Privileged Advice to Government

Appendix B
Planning and Policy Analysis

Confidential and Privileged Advice to Government

Redevelopment Feasibility Analysis **ONTARIO SCIENCE CENTRE**

June 2022

FOTENN

2.0 Planning and Policy Analysis

Provincial Policy Statement, 2020

The Provincial Policy Statement (“PPS”) provides policy direction on matters of provincial interest related to land use planning and development to enhance the quality of life for all Ontarians. The PPS provides clear direction on the protection of resources that have been identified as “significant”. Development or site alteration is not permitted in or adjacent to significant features unless no negative impacts are demonstrated on the feature or its ecological function.

The Natural Heritage Reference Manual, 2010, is a guide to the application of the PPS’s Natural Heritage Policies. The Manual sets out the Province’s technical criteria and approaches for being consistent with the PPS in protecting natural heritage features and areas.

Greenbelt Plan, 2017

The Greenbelt Plan contains policies that provide direction to areas within the Greenbelt which occupies river valleys in an urban context. Policies of the Urban River Valley designation apply to the westerly portion of the Subject Lands that feature the main corridor of the west Don River Valley. These river valleys are important connectors that bring together the wider Greenbelt region to the Great Lakes and inland lakes.

The Greenbelt Plan outlines that policies of the Urban River Valley designation are only applicable to publicly owned lands and are governed under applicable official plan policies that have regard to provincial objectives (Policy 6.2.1, 6.2.2). The Subject Lands are presently jointly-owned by the Toronto and Region Conservation Authority and the City of Toronto, and leased to the province for institutional uses.

Further, Greenbelt policies state that existing, expanded or new infrastructure that has been approved under the Environmental Assessment Act is permitted within Greenbelt lands, provided it supports the needs of adjacent settlement areas or serves significant growth expected in southern Ontario.

The Province is currently in the process of amending the Greenbelt Plan, which includes the consideration of an expansion of Greenbelt lands. Proposed changes to the Plan could add 13 new urban river valley areas to the Greenbelt, including expansion of the Don River Urban River Valley designation with the addition of Wilket Creek, Burke Brook and Taylor Massey Creek. These areas are located north west and south east of the subject lands, outside of the subject lands.

At the time of writing of this report, the consultation process for the policy proposal has closed and the Province is undertaking its review of public feedback. The Plan’s amendment process is still in the early phases and a draft of the amended plan has not yet been released. At this current stage it is too premature to comment on impacts of the amended legislation on the proposed redevelopment of the subject lands.

City of Toronto Official Plan

The City of Toronto Official Plan (OP) designates the Subject Property as *Institutional Areas*, *Parks and Natural Areas*.

Institutional Areas are areas made up of major educational, health and governmental uses with their ancillary uses, cultural, parks and recreational, religious, commercial and institutional residence facilities, including the full range of housing associated with a health institution, as well as utility uses. These major health and educational institutions are important employers and service providers that will continue to grow to serve the needs of the city and region (Policy 4.8.1).

When Institutional Areas, including sites of major educational institutions, are declared to be surplus, the OP directs the owner to investigate the possible use of the site for an alternative suitable public institutional purpose, affordable housing or public open space, before applying to re-designate the lands for other purposes. Institutional owners of well-located parcels of surplus lands are encouraged to lease rather than sell such properties wherever possible (Policy 4.8.6).



FIGURE 10: City of Toronto Official Plan Map 20 Land Use Designations. The map shows the boundaries of the subject lands outlined in red.

Parks and Open Spaces are areas which include parks and open spaces, valleys, watercourses, ravines, golf courses and cemeteries which comprise Toronto's Green Space System. Development is generally prohibited within Parks and Open Space areas, except for recreational and cultural facilities, conservation projects, cemetery facilities, public transit and essential public works and utilities where supported by appropriate assessment (Policy 4.3.2).

Areas designated as Natural Areas will be maintained primarily in a natural state, while allowing for compatible recreational, cultural and recreational uses and facilities. Natural areas will also allow for conservation projects, public transit, public works and utilities for which no reasonable alternatives are available, that are designed to have only minimal adverse impacts on natural features and functions (Policy 4.3.3). Areas designated as Parks will be used primarily to provide public parks and recreational opportunities (Policy 4.3.4).

Any development in areas designated under Parks and Open Space shall be to the benefit of the existing natural features, including but not limited to the protection, enhancement or restoration of its natural heritage features, improving connectivity between natural heritage features, create linkages with other open spaces, and maintaining or expanding existing parks and open space areas for recreational and cultural purposes (Policy 4.3.6).

The OP discourages the sale or disposal of publicly owned lands in Parks and Open Space Areas, and states that no City owned lands in Parks and Open Space Areas will be sold or disposed of. However, City owned land in Parks and Open Space Areas may be exchanged for other nearby land of equivalent or larger area and comparable or superior green space utility (4.3.7).

A portion of the site is located within the *Green Space System* within the Urban Structure Plan. The Green Space System are areas within the city which have significant natural heritage or recreational value. As these areas provide many benefits for the City, including providing habitats for flora and fauna, and providing hydrological connections between waterbodies and the larger biophysical region, the OP directs these areas to be protected, improved and added to whenever feasible.

The OP outlines policies to expand the Green Space System to improve and increase public access to these lands, and discourages the sale or disposal of any publicly-owned lands within this system. However, City owned land in the Green Space System may be exchanged for other nearby land of equivalent or larger area and comparable or superior green space utility (Policy 2.3.2.4).

Don Mills Crossing Secondary Plan

In 2019, City Council adopted the Don Mills Crossing Secondary Plan for the lands in the vicinity of the intersection of Don Mills Road and Eglinton Avenue East. The northern portion of the subject Lands are located within the Don Mills Crossing Secondary Plan (DMCSP) Area (see Figure 11). The DMCSP is a land use planning framework which envisions a complete community that capitalizes on significant transit infrastructure.

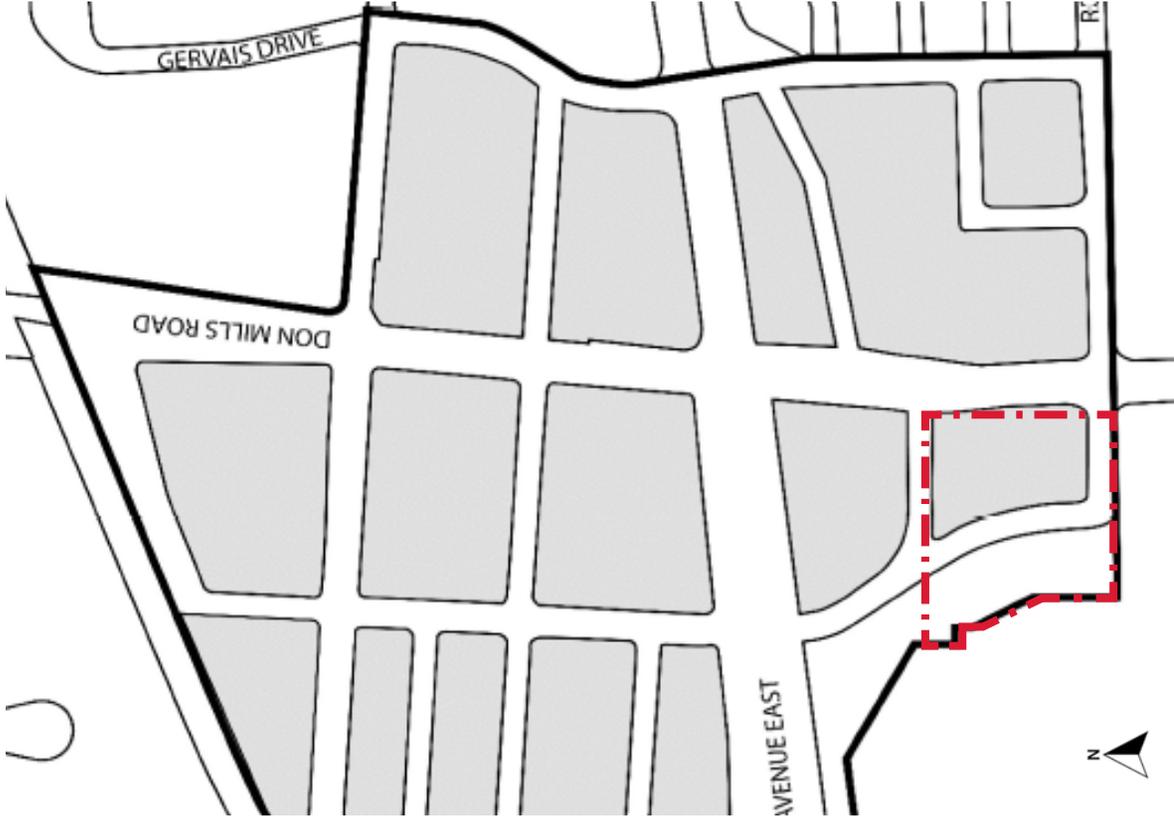


FIGURE 11: Don Mills Crossing Secondary Plan Map 40-1 Secondary Plan Area. The northern portion of the subject lands falls within the boundaries of the DMCSP, outlined in red.

BUILT FORM

Within the DMCSF, the Subject Lands are identified as *Core Area* and *Ravine Edge Character Areas*. Core Areas are the primary areas of intensification where the greatest heights and densities are to be directed, with development transitioning in scale to lower-scaled built form. The Ravine Edge is the area which traces the boundaries of the Don River Ravine at the west portion of the Subject Lands. These are areas where pedestrian and cycling connections are to be incorporated and where development is to be set back and arranged to respect the natural ravine setting.

LAND USE DESIGNATION

The portion of the Subject Lands located within the DMCSF is designated *Institutional Areas*, and *Natural Areas*. Institutional Areas are intended to provide an opportunity for the future expansion or development of other educational institutions such as educational, medical or government uses. The DMCSF states that any new development on lands associated with the existing Ontario Science Centre is required to convey public street connections as illustrated in the Plan's street network (Policy 10.10).

Natural Areas will be restored and maintained in its natural state. The DMCSF identifies these as areas which may include pedestrian and cycling trail connections from development areas into the ravine where feasible, while minimizing impacts on existing natural features and functions, in consultation with the Toronto and Region Conservation Authority.

DENSITY

Within the portion of the Subject Lands located within the DMCSF, a maximum FSI of 1 is identified, transitioning down from the higher density allocated to the parcel immediately north.

PUBLIC REALM

The Plan outlines a comprehensive vision for the public realm in the area surrounding the Don Mills Road and Eglinton Avenue East intersection to enhance mobility within the SP lands. The Plan's Public Realm Network and Structure Plan identifies a *Ravine Portal* and *Core Connector* within the Subject Lands.

The *Ravine Portal* which runs north-south from Eglinton Avenue West is a connected system of parks and trails which is situated along the top-of-bank. The Ravine Portal represents one of the strategies of the DMCSF to strengthen connections to the area's natural heritage, through focusing on views into the valley, sensitive trail access, and other ways to engage with existing natural features. As part of the Ravine Portal, the Subject Lands will feature a new multi-use trail along the ravine edge to facilitate connectivity to the Ontario Science Centre and other parks within the DMCSF area.

The *Core Connector* is a loop of public streets that form the boundary of the Core Area. Streets identified as a Core Connector will be designed to improve mobility while providing opportunities to cross Don Mills Road. Streets within the Core Connector will have consistent streetscape treatment and be set back 2-3m dependent on residential or non-residential uses.

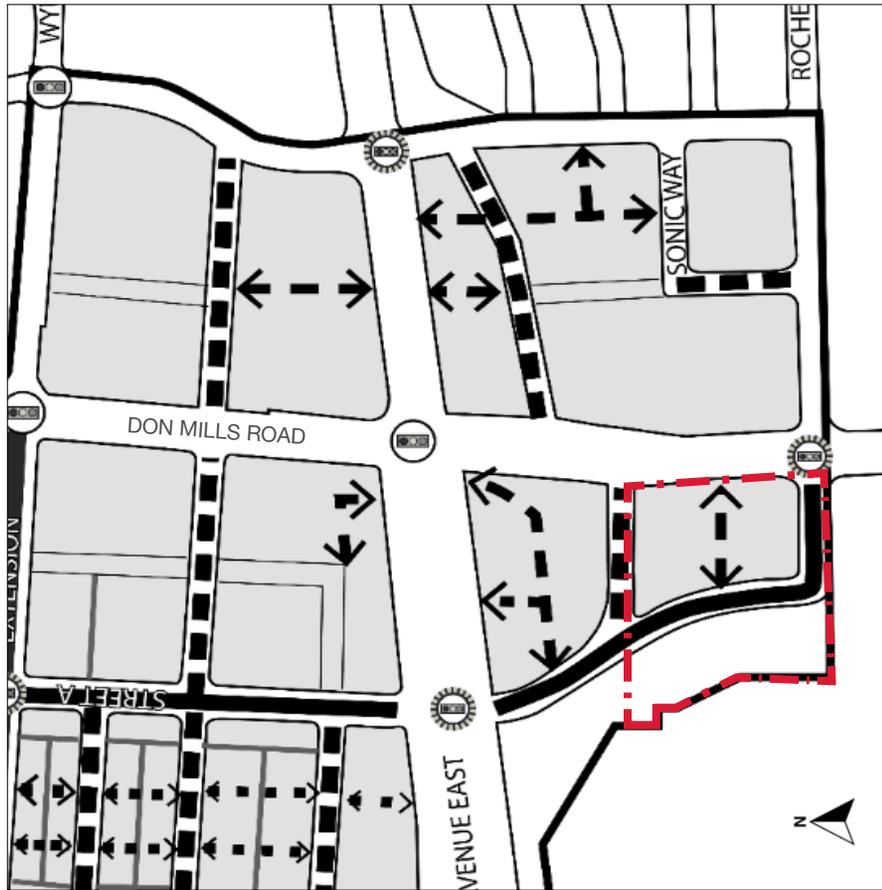


FIGURE 12. Don Mills Crossing Secondary Plan Map 40-4 Street Network

- | | |
|---|-----------------------------------|
| Secondary Plan Boundary | Potential Private Streets |
| New Public Streets: Arterial/Collector | Ramp Reconfiguration |
| New Public Streets: Local Streets | Existing Signalized Intersections |
| Potential Midblock Pedestrian Connections | New Signalized Intersections |
| Laneways | |

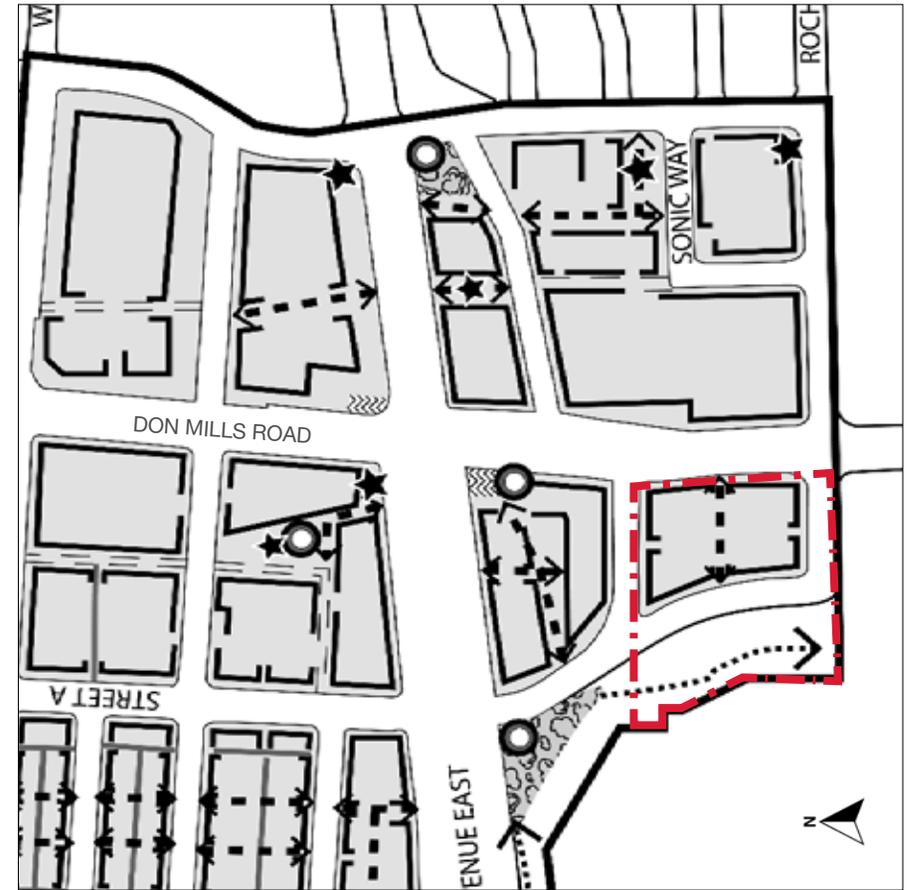


FIGURE 13: Don Mills Crossing Secondary Plan Map 40-3b Public Realm Structure

- | | | |
|--------------------------|--------------------------|--|
| Secondary Plan Boundary | Potential Public Streets | Future Parks |
| Possible Building Edge | Private Streets | Conceptual location for POPS |
| Ravine Portal | Laneways | Potential Midblock Pedestrian Connection |
| Future Active Connection | Don Mills Arena Park | Potential Public Art Locations |

With regards to the street configuration, a new street network with several opportunities for midblock pedestrian connections are identified in the south west quadrant of the DMCSPP where the Subject Lands are located. As it applies to the Subject Lands, a new arterial/collector road is anticipated to run north-south from Eglinton Avenue East and connect with Rochefort Drive at the south where a new signalized intersection will be installed at Don Mills Road. Further, a new east-west local street at the northern boundary of the Subject Lands will connect the new arterial street to Don Mills Road. Additional opportunities for permeability through east-west pedestrian mid-block connections has also been identified within the Subject Lands (See Figure 12 and 13).

The DMCSPP also identifies views and vistas that connect the public realm to significant cultural heritage resources and landmarks that are to be conserved and accentuated through the design of new development. The Subject Lands contain a View Corridor looking south east to the Foresters Headquarters building at 777 Don Mills Road. The Plan directs that views of the tower portion of the upper floors of this building from Eglinton Avenue East near the CP Rail Corridor bridge be enhanced.

STREETSCAPE

The DMCSPP's Public Realm Network describes *Don Mills Crossing* as a series of landscape treatments and public realm enhancements along Don Mills Road from the CP Rail Corridor to Gateway Boulevard. The street-facing portion of the Subject Lands falls within this area planned for enhanced treatment. The DMCSPP directs that the Don Mills Crossing area will contain consistent streetscape treatment to create a safe and attractive pedestrian environment. New buildings on the west side of Don Mills Road, south of Eglinton Avenue East, is directed to be set back a minimum 5m to accommodate wider pedestrian walkways, weather protection, trees with under-story planting, patios and seating to support non-residential uses at the ground floor. A widened pedestrian clearway on Don Mills Road will facilitate a strong pedestrian link from the LRT station entrance at the south west corner of the Don Mills/Eglinton intersection to the Ontario Science Centre lands.

To support an animated public realm, the DMCSPP also envisions multiple building edges along Don Mills Road as well as along the proposed interior street network. Along Don Mills Road, active retail, commercial services and residential lobby for residential uses are envisioned at-grade. A ground floor height of at least 4.5m is required for these uses on public streets with weather protection for pedestrian comfort.

With regards to cycling integration, on-street bike lanes are proposed alongside the new north-south street proposed from Eglinton Avenue East. Further, a new multi-use trail will also run alongside the ravine edge which connects to other parks in the DMCSPP area.

To accommodate the enhanced mobility network anticipated in the DMCSPP area, the Plan identifies conceptual locations for multi-modal transit hubs, one of which is located at the north west boundaries of the Subject Lands where the new arterial street connects with Rochefort Drive. These multi-modal hubs will incorporate a mix of elements such as bike-share stations, car-share spaces, high-occupancy vehicle parking and ride-share hailing points.

TRCA

The westerly portion of the Subject Lands contain the west Don River Valley which is designated by the City as part of the Natural Heritage System and designated an Urban River Valley by the province. Accordingly, these portions of the Subject Lands fall within the Toronto and Region Conservation Authority (TRCA) Regulation Area and are also subject to the City's Ravine and Natural Feature Protection By-law.

CONSTRAINTS ASSESSMENT (DOUGAN)

A desktop Constraints Assessment has been conducted by Dougan & Associates to understand environmental constraints, feature boundaries and development limits.

The Constraints Assessment produced a Natural Heritage Constraints Map indicating opportunities and constraints for the potential developable area, outlining areas as high and medium constraints based on an evaluation of identified natural heritage features. The 'developable area' for subsequent options was based on the delineations identified in the Constraints Assessment (in addition to other assumptions noted in the sections following). Please see the Appendix B: Constraints Assessment for the Dougan & Associates preliminary constraints assessment mapping.

Appendix C
Land Use Planning Memo

Confidential and Privileged Advice to Government

Planning Memo

To: John Taglieri

From: Alison Quigg, Planner

Date: January 20, 2023

Re: N00382 - Ontario Science Centre (OSC)

Summary

This report provides a brief review of the planning and regulatory context as it relates to the above noted lands, including current designations and permitted uses. The current planning framework designates the site for institutional uses, public uses and the natural environment. Any development of the site would be subject to environmental and cultural heritage review in addition to amendments to the land use permissions.

Site and Context

Location: The subject site is located in the City of Toronto, in the Flemingdon Park neighborhood. The site is bounded Don Mills Road to the east, ravine lands and a public park to the west and a hydro corridor to the south. Abutting the lands to the north is a former parking lot at the southwest corner of Eglinton Avenue East and Don Mills Road that is being redeveloped with high-density mixed use development.

Area: The Ontario Science Centre (OSC) is approximately 50.0 acres (20.2 hectares) in size with approximately 710 metres of frontage along Don Mills Road.

Access: The property has two vehicular accesses from Don Mills Road.

Uses: The OSC, associated surface parking and a public park.

Surrounding Uses: **North:** Future Science Centre Eglinton Crosstown LRT station at the intersection of Don Mills Road and Eglinton Avenue and high-density mixed-use redevelopment sites managed by CreateTO. On the north side of Eglinton Avenue is an approved mixed-use community on the former Celestica Inc. lands.

East: On the east side of Don Mills Road are a range residential apartment buildings and office uses.

South: Hydro corridor.

West: E.T. Seaton Park and the Don River.

Ownership: The lands are owned by the City of Toronto and subject to a 99-year ground lease to the province for the Science Centre



Figure 1: OSC lands.

Planning Framework

Greenbelt Plan

The Greenbelt Plan contains policies that provide direction to areas within the Greenbelt which occupy river valleys in an urban context, known as the Urban River Valleys. The Urban River Valley designation applies to publicly owned lands within river valleys of an urban context that connect the Greenbelt's Protected Countryside to the Great Lakes and other inland lakes. The southwesterly portion of the site that features the main corridor of the west Don River Valley is subject to the Urban River Valley designation.

The Greenbelt Plan contains policies intended to protect the natural heritage and hydrologic features and functions along Urban River Valleys. Urban River Valleys may be the setting for a network of uses and facilities, including recreational, cultural and tourist amenities and infrastructure, which are needed to support urban areas.

City of Toronto Official Plan

Land Use Designations

Land Use Map 20 of the City of Toronto Official Plan designates the majority of the subject site as *Institutional Areas*. The western edge and south of the site are designated as *Natural Areas* and a small western portion is designated as *Parks* (see Figure 2). The designations do not align with the property boundaries or the lands subject to the 99-year lease, but rather generally align with the physical features of the developed and undeveloped areas of the site.

Institutional Areas are intended to contain major education, health, government, cultural, parks, recreational, religious, commercial, and institutional facilities including the full range of housing associated with a health institution, as well as utility uses (Policy 4.8.1). The Official Plan further states that when lands in *Institutional Areas* are declared to be surplus, “the owner is encouraged to investigate the possible use of the site for an alternative suitable public institutional purpose, affordable housing or public open space, before applying to redesignate the lands for other purposes. Institutional owners of well-located parcels of surplus lands are encouraged to lease rather than sell such properties wherever possible” (Policy 4.8.6).

The Official Plan also contains policies regarding the redevelopment of lands. For sites greater than 5 hectares where an increase in height and/or density is sought for residential uses, the Official Plan requires that the first priority community benefit will be the provision of 20 per cent of the additional residential units as affordable housing. (Section 3.2.1, Policy 9)

The Official Plan states that *Natural Areas* are to be maintained primarily in a natural state, while allowing compatible recreational, cultural, and educational uses. Conservation projects, public transit and utilities are permitted when there is no reasonable alternative. *Parks* are intended to provide public parks and recreational opportunities.



Figure 2: City of Toronto Official Plan – Land Use Map 20

Official Plan Amendment 404 (OPA 404) - Don Mills Crossing Secondary Plan was adopted by the City of Toronto in April 2019 and applies to a portion of the OSC site. OPA 404 continues to designate these lands as *Institutional Areas* and *Natural Areas* and shows a new road bisecting the northern portion of the site connecting Eglinton Avenue East and Rochefort Drive.

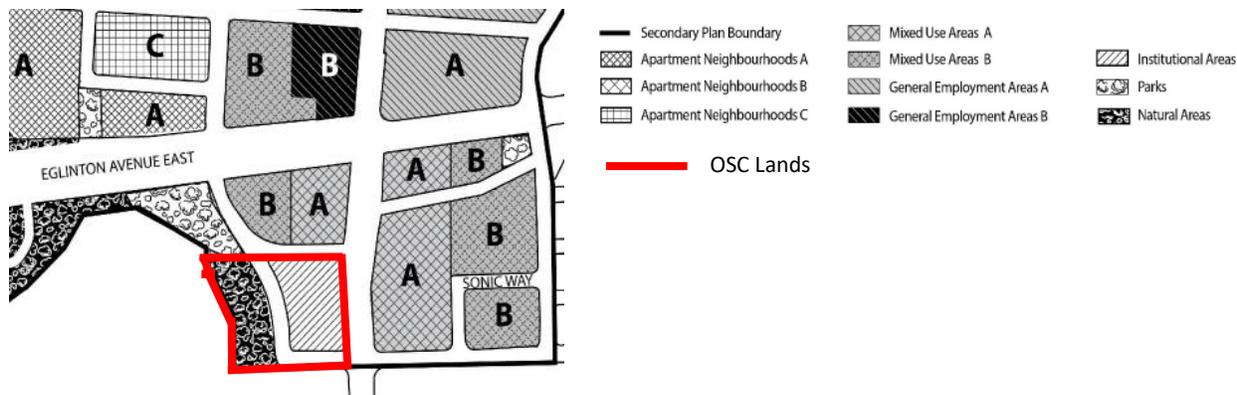


Figure 3: Don Mills Crossing Secondary Plan –Map 40-5 Land Use Designations

Natural Heritage System

A large portion of the site is also identified to be part of the *Natural Heritage System* in Map 9 of the City's Official Plan (see Figure 4). Development is generally not permitted in the *Natural Heritage System*, when the underlying land use designation provides for development, development will: recognize natural heritage values and potential impacts on the ecosystem as much as is reasonable in the context of other objectives for the area; and minimize adverse impact, restore and enhance the natural system (Policy 3.4.11).

Policy 3.4.8 of the Official Plan states that development is to be set back by at least 10 metres or more from: the top-of-bank and the toe-of-slope of valleys, ravines and bluffs; other locations where slope instability, erosion, flooding, or other physical conditions present a significant risk to life or property; and other locations near the shoreline which may be hazardous if developed because of flooding, erosion or dynamic beach processes. Physical field staking of the site will be required to determine the extent of natural features noted above and the limit of the required setback.

All proposed development in or near the natural heritage system will be evaluated to assess the development's impacts on the natural heritage system and identify measures to mitigate negative impact on and/or improve the natural heritage system (Policy 3.4.13). A Natural Heritage Impact Study would be required.

In addition, further restrictions on development exist on the site as an Environmentally Significant Area (ESA) is located within the property (see Figure 5). Policy 3.4.14 states that development or site alteration is not permitted on lands within the natural heritage system and exhibits environmentally significant qualities. Activities will be limited to those that are compatible with the preservation of the natural features and ecological functions attributed to the areas. An impact study, as referred to in Policy 12, will be required for any proposed undertaking in those areas not already the subject of an Environmental Assessment under the Environmental Assessment Act and for development adjacent to environmentally significant areas.

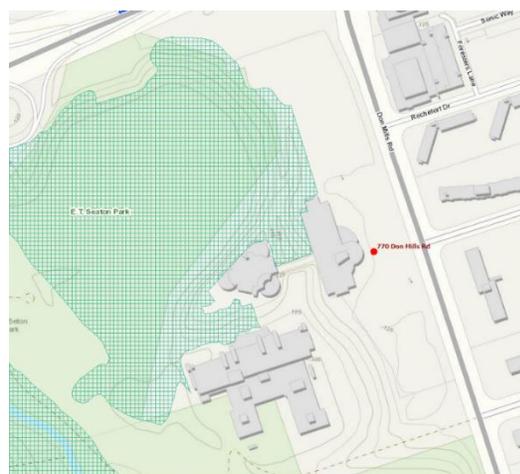
Although the land use designation and natural heritage system mapping conflict, the *Institutional Areas* designation is the underlying land use designation. The *Natural Heritage System* should be viewed as an additional layer that results in environmental protection and analysis. The *Natural Heritage System* policies do not necessarily preclude development, but the policies require significant natural heritage assessments and review to determine the impact of development. Development within Environmentally Significant Areas are not permitted, and development would require a 10 metre setback from the features identified in Policy 3.4.8. A detailed environmental study is required to determine a precise developable area.

A detailed natural heritage study is recommended, in consultation with the Toronto Region Conservation Authority, to define in greater detail the natural area boundaries and limits of the ESAs.



 Natural Heritage System

Figure 4: City of Toronto Official Plan – Natural Heritage Map 9



 Natural Heritage
 Environmentally Significant Area

Figure 5: Environmentally Significant Areas.
Source: *City of Toronto website*

Official Plan Amendment 404 - Don Mills Crossing Secondary Plan

The City of Toronto adopted Official Plan Amendment 404 (Don Mills Crossing Secondary Plan) in April 2019 and approved by the Local Planning Appeal Tribunal (LPAT) on December 4, 2020. The plan's objective is to advance a vision of a complete community that capitalizes on new transit infrastructure. The plan generally applies to the lands within the vicinity of the intersection of Don Mills Road and Eglinton Avenue East. A portion of the OSC lands are located within the Secondary Plan, north of Rochefort Drive (see Figure 6).

It should be noted that in the City of Toronto Don Mills Crossing Final Report, dated March 14, 2019, City Staff documented that the OSC Board of Directors were consulted on the Secondary Plan. The report states that the meeting focussed on the physical presence of the OSC and the current role of the north parking lot. City Staff noted in the report that, "*The Institutional Areas designation preserves the*

opportunity for potential expansion or partnerships with other institutions that may be interested in locating within the study area”.

The DMCSPP is structured by three character areas, which are to have their own built form and public realm identities. The portions of the site within the boundary of the DMCSPP are identified as being within the *Core Area* and *Ravine Valley Edge* character areas. The *Core Area* is the primary area of intensification where the greatest heights and densities are to be directed. The *Ravine Edge* is the area which traces boundaries of the Don River Ravine at the west of the site. This is an area development is to be set back and arranged to respect the natural setting.

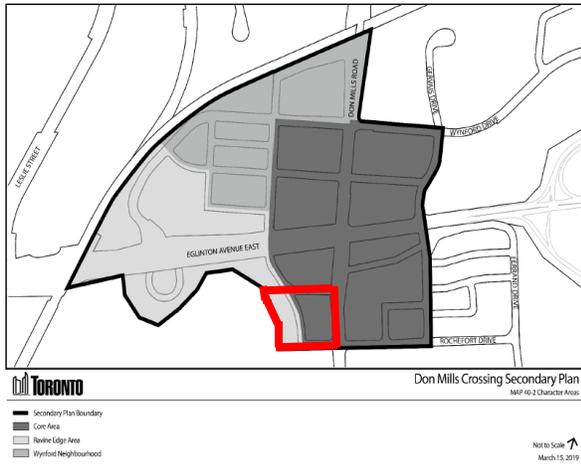


Figure 6: Don Mills Crossing Secondary Plan – Map 40-2 – Character Areas (Approximate boundary)

Land Use Designation

The Secondary Plan continues to designate the portions of the OSC site contained within the Secondary Plan as *Institutional Areas* and *Natural Areas* (see Figure 7). *Institutional Areas* and *Natural Areas* continue to permit the uses outlined in the Official Plan.

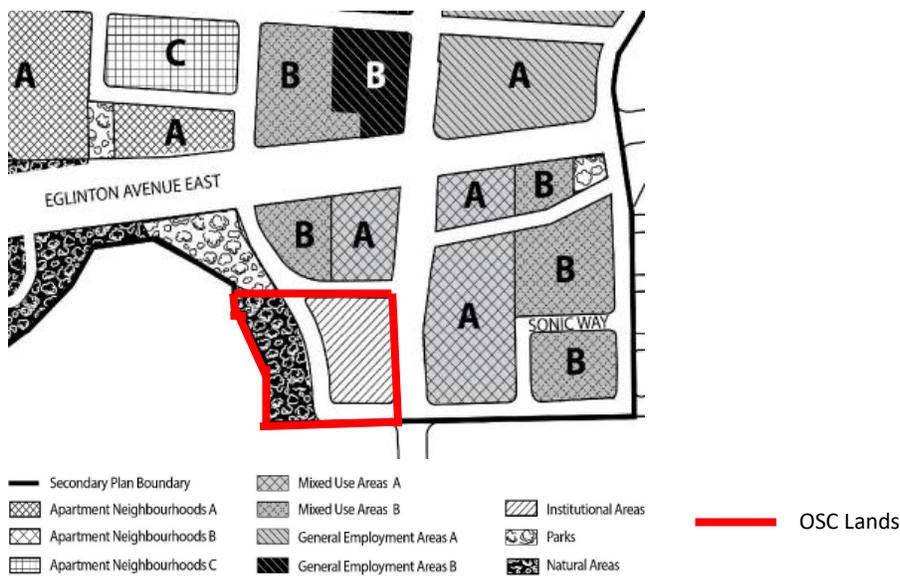


Figure 7: Don Mills Crossing Secondary Plan –Map 40-5 Land Use Designations (Approximate boundary)

Street Network

Map 40-40 of the Secondary Plan identifies two new public streets on OSC lands (see Figure 8). A new north-south Arterial/Collector Street is proposed to connect the intersection of Don Mills Road and Rochefort Drive to Eglinton Avenue. The Arterial/Collector Street would be located along the western boundary of the *Intuitional Areas*, separating the built boundary from areas designated *Natural Areas*.

A new east-west Local Street just north of the OSC lands would connect Don Mills Road from the east to the new north-south Arterial/Collector Street to the west. The Local Street is proposed to intersect the existing OSC north parking lot and will act as a separation to the CreateTO lands to the north.

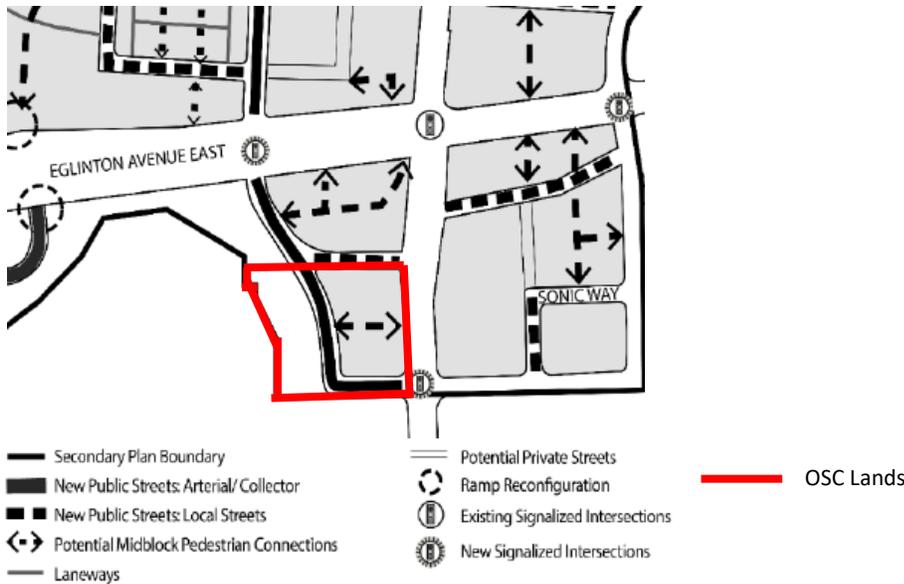


Figure 8: Don Mills Crossing Secondary Plan –Map 40-4 Street Network (Approximate boundary)

Policy 8.11 of the Secondary Plan states that the Science Centre LRT Station and bus terminal will provide higher order public transit service to the area. Private development and public realm improvements in the vicinity of the transit station will be designed to:

- provide direct accessible connections to the LRT station and bus terminal above and below-grade as appropriate;
- ensure direct pedestrian and cycling connections at street level and below-grade; and
- provide opportunities to enhance the Science Centre LRT Station and bus terminal to include access to car share and bike share stations, enhanced bicycle parking and/or passenger pick-up/drop-off areas, as appropriate.

Density and Heights

The Secondary Plan sets out a maximum overall density for the OSC lands on Map 40-6. The OSC lands designated as *Institutional Areas* are permitted to have a maximum density of 1.0 FSI.

No maximum height is provided for the lands designated as *Institutional Areas* on MAP 40-7 of the Secondary Plan.

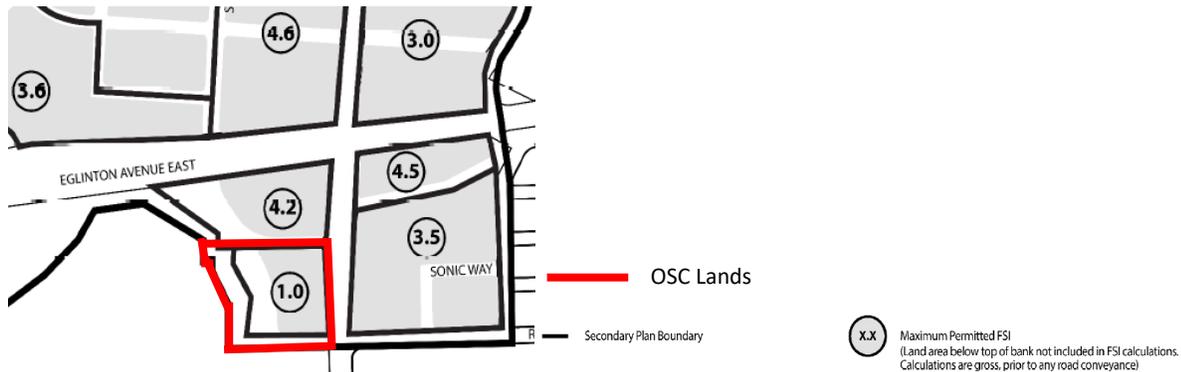


Figure 9: Don Mills Crossing Secondary Plan –Map 40-6 Development Density (Approximate boundary)

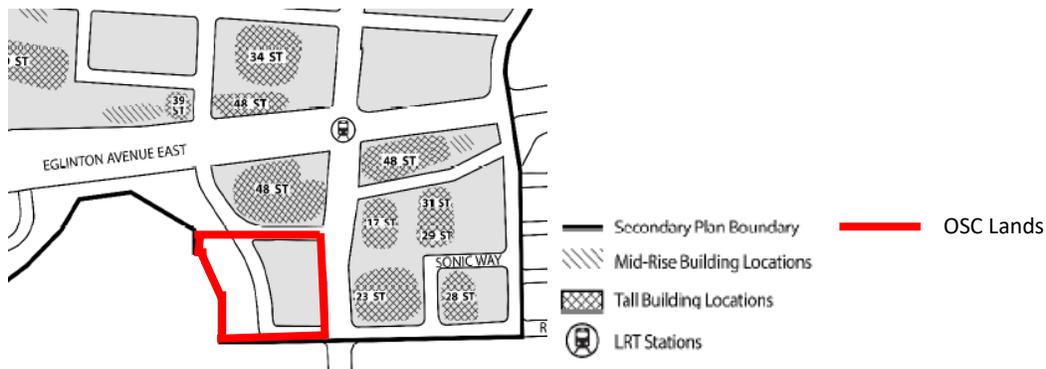


Figure 10: Don Mills Crossing Secondary Plan –Map 40-7 Potential Tall Building Locations and Heights Map in Mixed Use Areas and Apartment Neighbourhoods (Approximate boundary)

Cultural Heritage

The Secondary Plan provides for cultural heritage policies that enhance the importance of the OSC. Map 40-9 of the Secondary Plan labels the OSC as an existing visual point of interest and places emphasis on the view corridor of the OSC building from St. Dennis Drive (see Figure 11). Any development application for identified properties on Map 40-9 of the Secondary Plan will require a Heritage Impact Assessment as part of the application.

Policy 6.5.3 of the Secondary Plan states that the view to the OSC from Don Mills Road will be enhanced by:

- a. providing direct views from the intersection of Don Mills Road and St. Dennis Drive to the main entrance of the OSC;
- b. encouraging clear routes to the OSC and/or visual cues to promote wayfinding between the main entrance of the OSC and the primary entrance to the Science Centre LRT Station of the Eglinton Crosstown; and
- c. encouraging clear routes to the OSC and/or visual cues to promote wayfinding along the route from the Ravine Lookout South Park at Eglinton Avenue East to the main entrance to the OSC.

The Secondary Plan also places an emphasis on the natural environment and the branches of the Don River Valley. Policy 6.6 states that, “the lands between the branches of the Don River Valleys will be identified by the City and evaluated as a potential cultural heritage landscape”. Further, Map 40-9 of the Secondary Plan demonstrates a visual point of interest north of the site into the Don River Valley.



Figure 11: Don Mills Crossing Secondary Plan –Map 40-9 Views and Vistas (Approximate boundary)

Housing

The Secondary Plan also states that a full range of housing in terms of tenure and affordability will be provided. Any development containing residential units is to include:

- a. minimum of 15 percent of the total number of units as 2-bedroom units of at least 87 square metres of gross floor area; and
- b. minimum of 10 percent of the total number of units as 3-bedroom, or units with more than 3-bedrooms, of at least 100 square metres of gross floor area.

Furthermore, Policy 9.3 states that developments containing residential units will generally provide at least an additional 15 percent of the total number of residential units as 2-bedroom, 3-bedroom and units with more than 3-bedrooms to achieve a balanced mix of unit types and sizes.

Community Services and Facilities

It should be noted that the Secondary Plan has outlined priority community services and facilities for the area and include:

- a. relocation of the Don Mills Civitan Arena into a new facility within the Secondary Plan Area, co-located with the Signature Park, with the potential to expand this facility with additional recreational and/or community services and facilities;
- b. a minimum of four new non-profit child care facilities with one located in each quadrant of the Core Area, a minimum of one of which is to be delivered in the North West Quadrant during the initial phase of development;
- c. flexible, multi-purpose non-profit community agency space to provide a range of programs for people of all ages and abilities; and

City of North York Library Board, the Metropolitan Separate School Board, Seneca College, Sunnybrook Hospital, the University of Toronto, York University, the Toronto Transit Commission, the Bell Telephone Company of Canada, the Metropolitan Toronto and Region Conservation Authority, or any public railway company” (s. 39.1). Setbacks are generally stated as: no building or structure shall be located closer to any lot line than a distance equal to the height of the building or structure (s 39.2). The by-law section does not provide for height or density restrictions.

City of Toronto Zoning By-law 569-2013 zones the lands adjacent to the Don River of the OSC lands as *Open Space - Natural Zone (ON)* and *Open Space - Recreation Zone (OR)* as shown in green in Figure 13 below. The OR zone permits the following uses:

Open Space - Natural Zone (ON):

- Emergency Services; Agricultural Use; Park; Public Utility; and Transportation Use.
- Uses permitted subject to conditions: Club; Cogeneration Energy; Education Use; Entertainment Place of Assembly; Place of Assembly; Recreation Use; Renewable Energy; Retail Store; and Stable.

Open Space - Recreation Zone (OR):

- Emergency Services; Art Gallery; Community Centre; Day Nursery; Library; Municipal Shelter; Museum; Park; Place of Assembly; Public Utility; Recreation Use; and Transportation Use.
- Uses permitted subject to conditions: Amusement Arcade; Club; Cogeneration Energy; Eating Establishment; Education Use; Outdoor Patio; Personal Service Shop; Public Works Yard; Renewable Energy; Retail Store; Service Shop; Stable; and Take-out Eating Establishment

A zoning by-law amendment would be required to permit any uses beyond the permitted uses in City of Toronto Zoning By-law 569-2013 and the former City of North York Zoning By-law 7625.

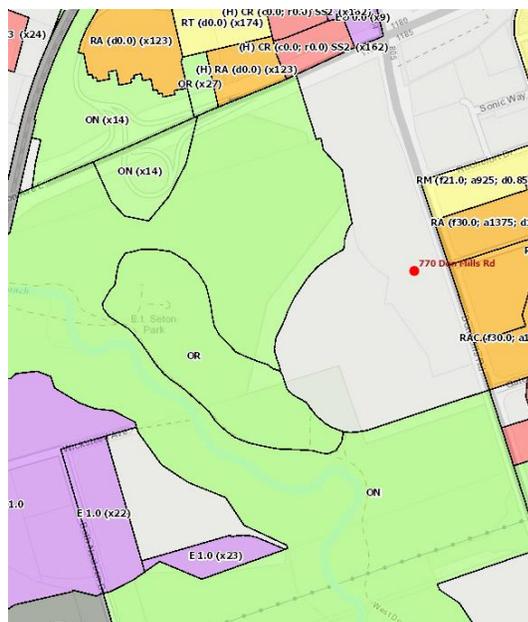


Figure 13: City of Toronto Zoning Bylaw 569-2013

Toronto and Region Conservation Authority (TRCA)

The majority of the OSC lands are located within the TRCA Regulated Area (see Figure 14) and contain floodplains (see Figure 15) within the natural heritage system. A TRCA Permit will most likely be required prior to any municipal approvals and development taking place on the site.

The TRCA's The Living City Policies is a conservation authority policy document that guides the implementation of TRCA process in the planning and development approvals of properties. It is the policy of TRCA where there exists a natural feature that warrants protection but is not captured by the municipal official plan or technical reports in support of a development application, a 10 metre buffer is to be applied for valley and stream corridors (including flood plains), wetlands, woodlands and the Lake Ontario Shoreline (Policy 7.3.1.4). As part of any recommendation for approval for a development application, the TRCA may request that all lands that are identified as part of the natural system be conveyed into public ownership (Policy 7.3.2). It is the policy of the TRCA that development and site alteration not be permitted within the floodplain (Policy 7.4.3.2.2 and 7.4.3.2.3), subject to a provincially approved site specific area policy that address floodproofing, access, land uses, and emergency management plans.

The TRCA's The Living City Policies do not permit additions to existing building or structures within the erosion hazard. Policy 8.5.1.3 permits additions within the flood hazard, provided the addition complies with the following:

- a) in the event that there is no feasible alternative site, the addition is located in an area of least (and acceptable) risk;
- b) the addition is not located within the hydraulic floodway;
- c) no new hazards are created, flooding on adjacent or other properties is not aggravated and there are no negative upstream and downstream hydraulic impacts;
- d) the addition does not include a basement, regardless if the existing building or structure has a basement;
- e) the addition is floodproofed to the Regulatory flood elevation, plus a freeboard determined by TRCA. If Regulatory flood protection is not technically feasible, TRCA may permit a lower level of flood protection but not less than the 350-year flood level (a 25 percent risk of flooding over an assumed life of 100 years). All effort must be made to achieve the highest level of flood protection;
- f) the addition is structurally designed to withstand the depths and velocities of the Regulatory flood;
- g) the addition does not increase the number of dwelling units in the existing building or structure;
- h) the proposed development will not prevent access for emergency works, maintenance, and evacuation;
- i) the potential for surficial erosion has been addressed through the submission of proper drainage, stormwater management, erosion and sediment control and site stabilization/restoration plans;
- j) natural features, areas and systems contributing to the conservation of land, including areas providing hydrologic functions and ecological functions are avoided or mitigated, pollution is prevented and erosion hazards have been adequately addressed;



 TRCA Conceptual Regulated Area
 Parcel Boundary

Figure 14: TRCA Regulated Area Mapping



 Floodplain
 Spill or Undefined - see FAQ

Figure 15: TRCA Floodplain Mapping

Heritage Designation

The *Ontario Heritage Act* (the “*Heritage Act*”) requires that municipalities keep a register of properties that are of cultural heritage value or interest. The register includes properties that are “listed”, as well as properties that have been formally “designated” under the *Heritage Act*. Once “listed”, the *Heritage Act* requires that an owner provide the City with at least 60 days notice prior to the demolishing or removing any building or structure on the property. By requiring this notice, the municipality is allowed time to take steps to designate the property, if appropriate. The OSC is “listed” on the City of Toronto’s Heritage Registry (see Figure 16). With the introduction of Bill 23, the City of Toronto has a two-year limit to designate the listed property. If the process to designate the property has not begun after the two-year period, the property would be de-listed.

As part of the work for the Eglinton Crosstown LRT, a Cultural Heritage Resource Evaluation Report was completed in 2013 by Unterman McPhail Associates for Metrolinx. The report states that, “*City of Toronto Heritage Preservation Services staff indicates the entire property is considered listed; however, the heritage attributes identified in the ‘Reasons for Identification’ focus on the built form, not the associated cultural heritage landscape. Therefore, this heritage evaluation considers the culture value of the entire property as a cultural heritage landscape.*” Although the reason for listing in the City of Toronto’s Heritage Registry focuses on built form, both City Staff and Unterman McPhail Associates consider the entire property as a cultural heritage landscape. Through their evaluation, Unterman McPhail Associates determined that the OSC lands are of cultural heritage value under the criteria of O.Reg. 9/06 of the *Ontario Heritage Act*.

The cultural heritage evaluation undertaken by Unterman McPhail Associates did not assess the OSC against the criteria contained in Ontario Reg. 10/06 to determine if the property is of provincial significance.

A heritage specialist should be consulted to conduct cultural heritage evaluation to determine the if the property is of provincial significance and to further define the cultural heritage landscape as it relates to the development potential of the site.

TORONTO Heritage Property Detail		TORONTO Heritage Property Detail	
Print Page		Print Page	
Address:	770 DON MILLS RD	Address:	766 DON MILLS RD
Ward:	16	Ward:	16
Status:	Listed	Status:	Listed
List Date:	Apr 27, 2006	List Date:	Apr 27, 2006
Intention Date:		Intention Date:	
By-Law:	N/A	By-Law:	N/A
Part IV Date:		Part IV Date:	
Part V Date:		Part V Date:	
Heritage District:	N/A	Heritage District:	N/A
District Status:	N/A	District Status:	N/A
Heritage Easement Ag:		Heritage Easement Ag:	
Registration Date:		Registration Date:	
Building Type:	Commercial	Building Type:	Commercial
Architect/Builder:		Architect/Builder:	
Construction Yr.:		Construction Yr.:	
Details:	Ontario Science Centre, 1967; Raymond Moriyama Architect, adopted by City Council on April 25-27, 2006	Details:	Ontario Science Centre, 1967; Raymond Moriyama Architect, adopted by City Council on April 25-27, 2006
Demolition Date:		Demolition Date:	
Primary Address:	770 DON MILLS RD	Primary Address:	770 DON MILLS RD

Figure 16: Heritage Status. Source: *City of Toronto website*

Surrounding Development Applications

770 Don Mills Road and 805 Don Mills Road

In 2018, CreateTO (an agency of the City of Toronto) submitted an Official Plan and Zoning By-law Amendment application to redevelop both southeast and southwest corners of Eglinton Avenue and Don Mills Road. 770 Don Mills Road is located at the southwest corner of Don Mills Road and Eglinton Avenue East which is currently the north surface parking lot for OSC. 805 Don Mills Road is located at the southeast corner of Don Mills Road and Eglinton Avenue East. City Council adopted the Zoning By-law Amendments and approved the Draft Plan of Subdivisions, subject to conditions, for both 770 and 805 Don Mills Road on June 15 and 16, 2022.

770 Don Mills Road is a mixed-use development proposal consisting of three residential towers of 37, 39, 48 storeys atop two six-storey mixed-use podiums. A conceptual site plan of the proposal is illustrated in Figure 17. The proposal includes a new 1,065 m² public park and new public streets. A maximum of 944,308 ft² (87,730 m²) of GFA is proposed for the site, of which a minimum of 66,639 ft² (6,191 m²) is required to be non-residential GFA. The non-residential GFA will include retail, non-profit child-care, and a Toronto District School Board elementary school. A total of 1,254 dwelling units are proposed, of which 418 units (33%) will be affordable rental units. An overall gross density of 4.17 FSI is proposed for this site.

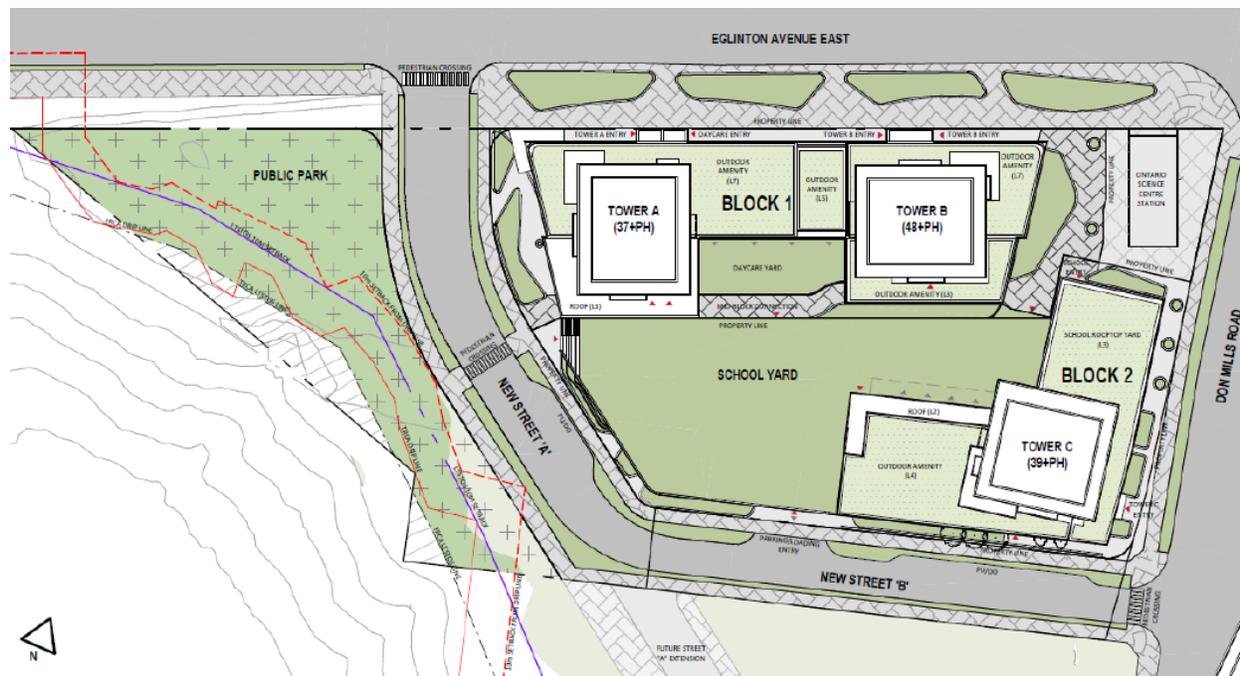


Figure 17: Simplified site plan of CreateTO’s development proposal for 770 Don Mills Road. Source: *City of Toronto Staff Report* dated May 16, 2022

805 Don Mills Road is a mixed-use development proposal consisting of two residential towers of 27 and 48 storeys, parkland, a new public street and the realignment of Ferrand Drive. A conceptual site plan of the proposal is shown in Figure 18. A maximum of 694,886 ft² (64,557 m²) of GFA is proposed for the site, of which a minimum of 31,248 ft² (2,903 m²) is required to be non-residential GFA. The non-residential GFA will include retail and other non-residential uses, and a new non-profit child-care. A total of 840 dwelling units are proposed of which 277 units (33%) are proposed to be affordable rental units. The maximum permitted density for the site is 4.5 FSI.



Figure 18: Simplified site plan of CreateTO’s development proposal for 805 Don Mills Road. Source: *City of Toronto Staff Report* dated May 16, 2022

Former Celestica Campus - 844 Don Mills Road and 1150 Eglinton Avenue East

The former Celestica campus site is located at the northwest corner of Eglinton Avenue East and Don Mills Road, and also includes a small parcel of land on the south side of Eglinton. The entire site totals 60.5 acres. The property is currently undergoing various states of Site Plan Approval and early construction, with the first phases estimated to be completed in 2023.

In January 2019, the Local Planning Appeal Tribunal (“LPAT”) made the decision to allow the Official Plan Amendment 434 to the City of Toronto Official Plan, and allow the Zoning By-law Amendment to the former City of North York Zoning By-law No. 7625 and the City of Toronto Zoning By-law No. 569-2013.

The Official Plan Amendment re-designated the lands from *Regeneration Areas* to *Mixed Use Areas, Apartment Neighborhoods, Parks and Open Space Areas – Parks, and Parks and Open Space Areas – Natural Areas*. Secondly, the OP was amended to show the portion of Don Mills Road extending from Eglinton Avenue East north to the Canadian Pacific Railway as a 36-metre right-of-way. Lastly, the SASP were amended by deleting SASP 511 and replacing it with a new SASP “511. 844 Don Mills Road and 1150 Eglinton Avenue East”.

The SASP envisions that the redevelopment of the lands will create a complete and sustainable transit-supportive community with employment uses, residential uses, retail and service facilities, community services and facilities, and parks and open space. The dedication of land for two new public parks is required, one of which will include a replacement ice arena/community centre. The SASP also outlines a net network of public streets.

Approximately 462,000 m² of GFA has been approved through the overall Master Plan for the area, consisting of approximately 5,000 units, 60,000 m² of office, 11,119 m² of retail, and 14,460 m² of

community uses. The development is proposed to introduce a range of building types, including townhouses, mid-rise buildings, and tall buildings of up to 48-storeys.

Additional Information

The property is also subject to the City of Toronto’s Ravine and Natural Feature Protection By-law (Chapter 658 of the Toronto Municipal Code). The by-law aims to protect important natural features that are vulnerable to degradation due to removal of trees, changes in grade or lack of management. Removal of trees and alteration of grades is prohibited subject to a permit. The by-law area aligns with the Official Plan’s *Natural Heritage System* boundary. The subject site also contains archeological potential and will require Archeological Assessments as part of any development application or site alteration.

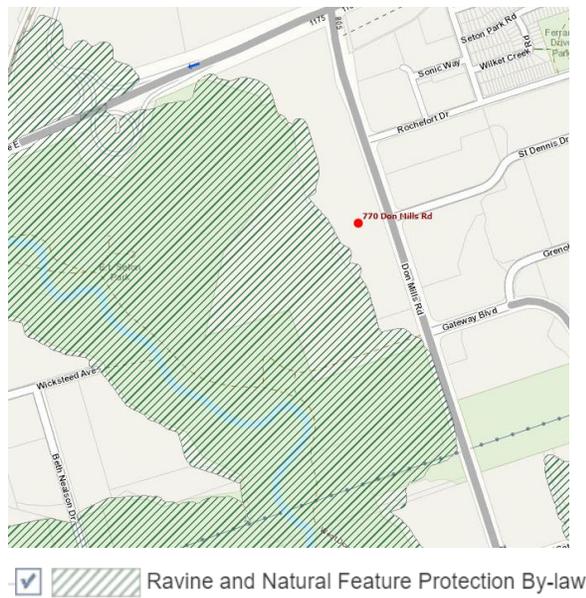


Figure 19: City of Toronto Ravine and Natural Feature Protection By-law Mapping. *Source: City of Toronto Website*

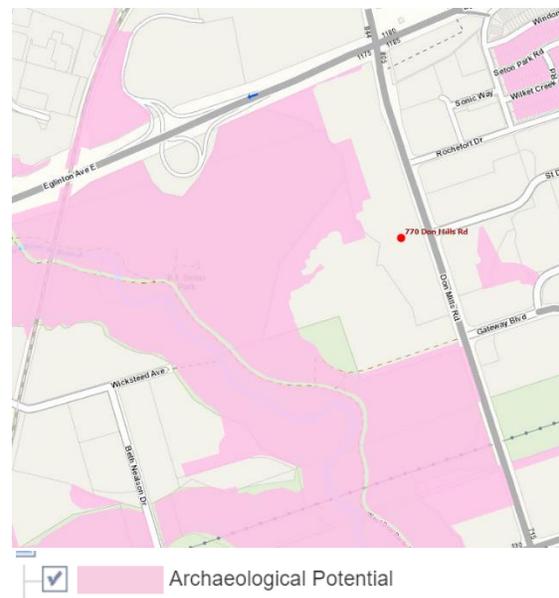


Figure 20: City of Toronto Archeological Potential Mapping. *Source: City of Toronto Website*

Conclusion

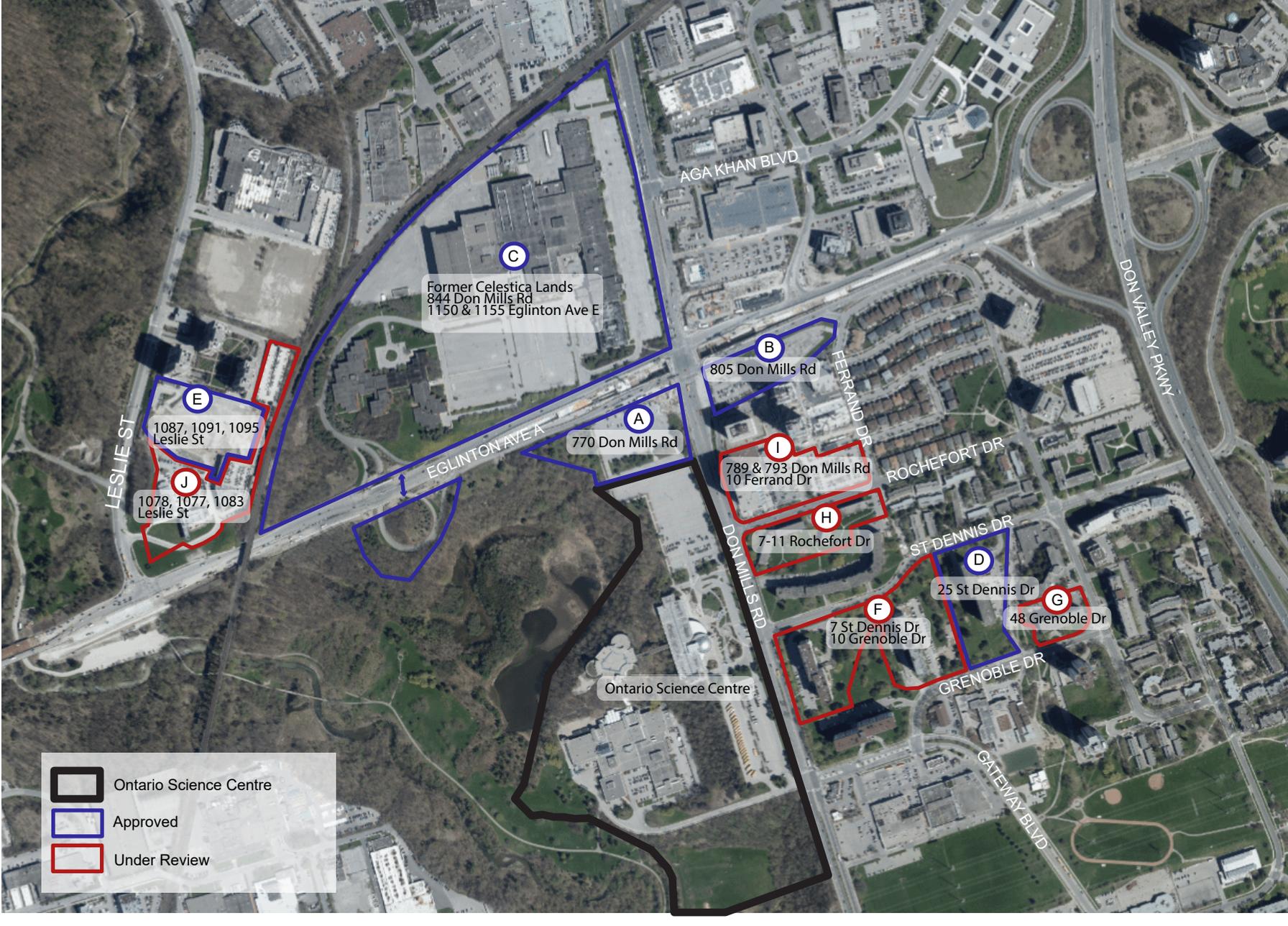
The majority of the OSC lands are designated as *Institutional Areas* and where *Institutional Areas* are considered surplus, the Official plan encourages the investigation of other possible uses of the site for an alternative suitable public institutional purpose, affordable housing or public open space. The Don Mills Crossing Secondary Plan identifies priority community services and facilities that are required for the community. Although the entirety of the OSC lands are not within the Secondary Plan boundary, the site presents opportunity for redevelopment and reuse of the OSC lands and buildings for new institutional uses, provided the appropriate zoning could be approved.

The site's location in proximity to the future Eglinton LRT and Ontario Line represents an opportunity for an intensification of the site. This opportunity is tempered by strong environmental and cultural heritage protections. The site is located within the *Natural Heritage System*, contains Environmentally Significant Areas and much of the property is within the TRCA regulated area. A detailed natural heritage study is recommended, in consultation with the Toronto Region Conservation Authority, to define in greater detail the natural area boundaries including top of bank, required setbacks and the limits of the ESA. The OSC lands are "listed" on the City of Toronto's Heritage Registry. A cultural heritage assessment is required to further define the cultural heritage landscape of the property's and to determine if the lands and building are provincially significant. Any redevelopment of the property should consider the retention and/or reuse of the existing buildings.

Prepared by Alison Quigg, Planner

Surrounding Development Applications

Confidential and Privileged Advice to Government



C
Former Celestica Lands
844 Don Mills Rd
1150 & 1155 Eglinton Ave E

B
805 Don Mills Rd

E
1087, 1091, 1095
Leslie St

A
770 Don Mills Rd

I
789 & 793 Don Mills Rd
10 Ferrand Dr

J
1078, 1077, 1083
Leslie St

H
7-11 Rochefort Dr

D
25 St Dennis Dr

F
7 St Dennis Dr
10 Grenoble Dr

G
48 Grenoble Dr

Ontario Science Centre

Ontario Science Centre

Approved

Under Review

LESLIE ST

EGLINTON AVE A

AGA KHAN BLVD

805 Don Mills Rd

FERRAND DR

DON VALLEY PKWY

ROCHEFORT DR

DON MILLS RD

ST DENNIS DR

GRENOBLE DR

GATEWAY BLVD

ID	Status	Address	Applicant	Application Type	File Nos.	Status	Height (Storeys)	Residential GFA (m ²)	# Residential Units	Density	Other
A	Approved	770 Don Mills Rd	CreateTO	ZBA, SUB	21 190984 NNY 16 OZ 21 191003 NNY 16 SB	Approved through Housing Now	37, 39, 48	87,730	1254	4.2	6,191 m ² Non-Residential GFA 1,065 m ² Parkland
B	Approved	805 Don Mills Rd	CreateTO	ZBA, SUB	21 190993 NNY 16 OZ 21 191009 NNY 16 SB	Approved through Housing Now	27, 48	64,557	840	4.5	4,130 m ² Non-Residential GFA 992 m ² Parkland
C	Approved/Individual Blocks Under Review	844 Don Mills Rd/1150 & 1155 Eglinton Ave E	Aspen Ridge Homes	OPA, ZBA, SPA, SUB	16 236387 NNY 26 OZ	OMB Approved. SPA for Blocks Underway.	8, 9, 10, 18, 20, 28, 30, 30, 35, 38, 42, 48, 52	376,408	4921	2.31	11,119 m ² Retail 59,966 m ² Office 14,460 m ² Institutional/Other ~6.0 ares Parkland
D	Approved	25 St Dennis Dr	25 St. Dennis Inc. c/o Preston Group	ZBA, SUB, SPA	15 261823 NNY 26 OZ 19 105324 NNY 16 SB 15 261828 NNY 26 SA	SPA - NOAC Issued & First Stage of Approval (Notice of Approval Conditions - Apr 12, 2022) ZBA Approved (LPAT) SUB Approved	12, 37 & Townhouses	45,723	552 + 297 existing (total of 849)	3.83	676 m ² Parkland
E	Approved	1087/91/95 Leslie St	Park Residences Inc.	ZBA, SUB, SPA, CDM		Approved	29, 39, 45	97,256	1180	4.56	2,580 m ² Parkland
F	Under Review	7 St Dennis Dr & 10 Grenoble Dr	Osmington Gerofsky Development Corporation	OPA, ZBA, SUB	22 187482 NNY 16 OZ 22 188139 NNY 16 SB 22 127125 NNY 16 OZ 22 127124 NNY 16 SA	Under Review (Submitted on 08/08/2022)	34, 42, 46, 52	126,912	2197	4.77	2,797 m ² Parkland
G	Under Review	48 Grenoble	Tenblock	ZBA, SPA	21 239141 NNY 15 OZ 21 239143 NNY 15 SB	Under Review	41, 43	67,941	993	10.1	676 m ² Parkland
H	Under Review	7-11 Rochefort Dr	1294511 Ontario Inc. (Damis Properties Inc.)	ZBA, SUB	21 239141 NNY 15 OZ 21 239143 NNY 15 SB	Under Review	30, 41, 46	97,485	1322	6.67	199 m ² Retail 2130 m ² Parkland
I	Under Review	789 & 793 Don Mills Rd, 10 Ferrand Dr	Menkes Developments Ltd.	OPA, ZBA, SPA	22 184087 NNY 16 OZ 22 184086 NNY 16 SA	Under Review (Submitted on July 29, 2022)	22, 45, 49, 56	139,068	2263	8.97	Existing 23 Storey Office Building Retained (Foresters Financial)
J	Under Review	1078, 1077 & 1083 Leslie St	Rowbry Holdings Limited	ZBA, SUB, SPA	22 200231 NNY 16 OZ 22 201010 NNY 16 SB 22 200230 NNY 16 SA	Under Review	13, 18, 45, 49, 49	133,331	1846	4.99	565 m ² Non-Residential GFA 2,734.2 m ² Parkland

Appendix D
Ontario Science Centre – Lease Review Memo

Confidential and Privileged Advice to Government

PRIVILEGED AND CONFIDENTIAL**MEMORANDUM**

To Daniel Horowitz, IO

From Jillian Shortt

Date February 3, 2014, updated February 11, 2014 and July 25, 2016

Subject **IO – Ontario Place – Ontario Science Centre – Lease Overview relating to Termination Rights**

PART I – LEASE OVERVIEW RELATING TO TERMINATION RIGHTS

1. **Lease Details:** Science Centre lease dated May 22, 1969 between the City and the Toronto Region Conservation Authority, as landlord, and The Centennial Centre of Science and Technology, as tenant (the “**Lease**”)
2. **Term:** The Lease gives the Tenant the right to use:
 - (a) **Parking Lands** - Parcel A (these are the parking lands described in Schedule D of Lease) for:
 - (i) 5 years starting July 1968 and ending on June 1973
 - (ii) with 1 renewal option (at the Tenant’s option) of 5 years (with no further renewal right)

NOTE: It has not been determined if there have been any extensions to the term of amendments to the lease arrangements relating to the Parking Lands. While the Lease is silent on the ability of the Tenant to remain on the Parking Lands after the expiry of the term relating to those lands, if the Tenant is still using the parking area, then the Tenant may continue to have rights relating to the Parking Lands. The current use of the Parking Lands should be determined.
 - (b) **Main Site Lands** - Parcel B (these are the site lands described in Schedule C of Lease) for:
 - (i) 99 years starting July 1965 and ending on June 2064
 - (ii) with 1 renewal option (at the Tenant’s options) for 99 years (with an on-going renewal option)
 - (c) **Plan of the Lands** – The site plan below (refer to page 5) shows how the Parcel A and Parcel B lands and certain other lands. Dentons has not been requested to complete any title work relating to the lands referred to in the Lease including to verify the location of the lands.

3. Termination Rights in the Lease:

(a) Parcel A/Parking Lands

- (i) The Landlord can terminate the lease for Parcel A/Parking Lands on 6 months' notice if the lands are required for municipal purposes.
- (ii) There is no termination payment provision in the Lease. The Landlord would not be obligated to make any payment to the Tenant if the Lease for these lands is terminated.
- (iii) The Tenant does not have a right to terminate the Lease on the Parcel A/Parking Lands.

(b) Parcel B/Main Site

- (i) There is no termination right for either the Landlord or the Tenant for Parcel B/Main Site.
- (ii) There is no termination payment provision.

(c) Negotiated Termination of the Lease

- (i) As the Crown cannot breach its covenants, any termination of the Lease would need to be negotiated and agreed to by the Landlord and the Tenant.
- (ii) In connection with any negotiated termination of the Lease, the Landlord may (or may not) consider seeking compensation for losses associated with the early termination of the Lease. While the nominal base rent may suggest that the losses (and thus any termination payment) would be small, the Landlord may look to the Tenant to make a termination payment sufficient to cover the Landlord's predevelopment costs if the Landlord in turn sells all or part of the land to private developers. As any such termination would be completed on negotiated terms, it would be open for the Landlord to request whatever compensation on whatever basis as it may wish although the reasonableness of the requests will likely influence the ability of the Landlord to get the Tenant to agree to such payments.

4. Termination Obligations of Tenant to the Landlord:

(a) Parcel A/Parking Lands

- (i) On termination or expiry of the Lease, the Tenant must remove the Ontario Science Centre sign in the parking lot and restore the land to the original condition

(b) Parcel B/Main Site

- (i) The Lease does not contain any express requirement for the Tenant to remove any buildings from the site on the termination or expiry of the Lease.
- (ii) While the Lease is silent on the condition of the Main Site on termination, the Tenant would be required to maintain the Main Site and the buildings as required by the terms of the Lease including the following provisions:

- A. Section 6 – good management and care of the Main Site and the buildings and structures
- B. Section 9 – maintenance of drainage
- C. Section 10 – restrictions and requirements relating to fences, hedges and other barriers
- D. Section 17 – construction of vehicular entrances and exits
- E. Section 18 – levels and elevations of the Main Site and the Parking Lands
- F. Schedule G – separate agreement between the Landlord and the Tenant relating to specific maintenance obligations

5. **City Development of Schedule F Lands**

- (a) If the City and the Toronto and Region Conservation Authority (together or separately) want to develop the lands in Schedule F of Lease, the party proposing the development has to notify the Tenant and provide the Tenant with details and plans. There cannot be any redevelopment until the Tenant has had a reasonable opportunity of expressing its views on the details and the plans to the party proposing the development.
- (b) The Schedule F Lands are shown on the site plan below (refer to page 5) and referred to as Additional City of Toronto Lands. The location of these lands has not been confirmed by Dentons and no title work has been completed on these lands.

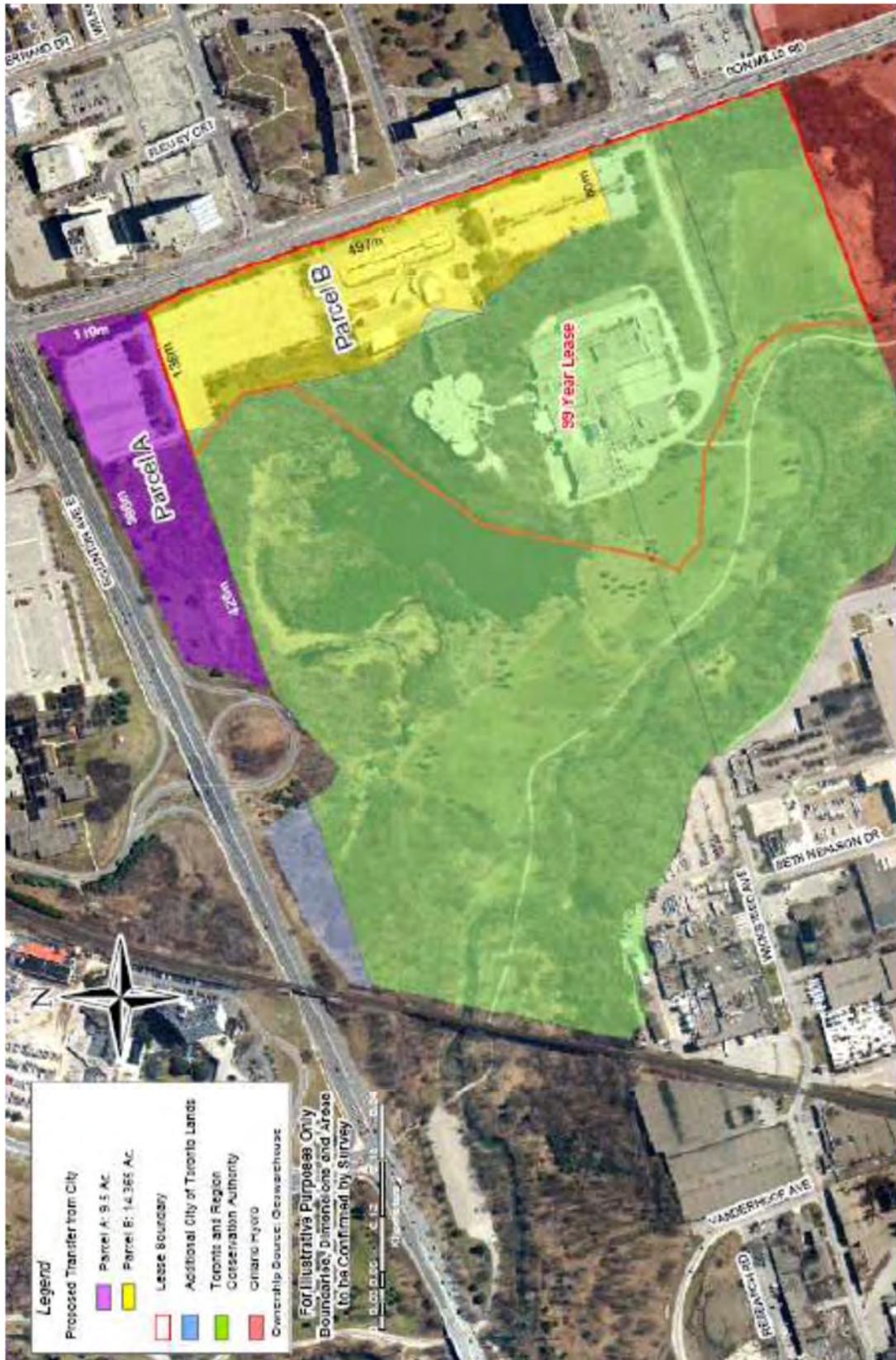
PART II: Key Lease Terms Overview prepared by Infrastructure Ontario

NOTE: The following overview is based on the Property Details section of the Real Estate Advice Report dated July 19, 2013. The factual information in the following summary of the Lease is accurate and Part I of this memorandum contains additional information relating to the Lease.

Leased Premises:	Parcel A – Parking lot lands in Schedule D Parcel B – Main site lands in Schedule C
Landlord:	City of Toronto / Toronto Region Conservation Authority
Tenant:	The Centennial Centre of Science and Technology
Use:	Operation of a museum and related facilities
Base Rent:	\$1

Initial Lease Term, Parcel B (Main Site):	99 Years (July 1965 to June 2064)
Renewal Options, Parcel B (Main Site):	99 Years, includes on-going renewal option.
Initial Lease Term, Parcel A (Parking Lot):	5 Years (July 1968 to June 1973, subject to multiple renewals since initial expiry). Lease originally provided for only one (1) renewal options without any further option.
Termination Option:	If required for municipal purposes, Landlord may terminate Parcel A (Parking Lot) on 6 months' notice to Tenant. No termination option on Parcel B (Main Site).
Development:	The Landlord, jointly or severally, may propose development of certain lands (shown in Schedule F – these lands are not in the lease) but shall not proceed without the Tenant having had the opportunity to express its views on the proposed undertaking.

SITE PLAN



Appendix E
Building Condition Assessment Executive Summary and
20 Year Deferred Maintenance Summary

Confidential and Privileged Advice to Government



FINAL
Building Condition
Assessment and 20 Year
Capital Plan

770 Don Mills Road, North York,
Ontario

Prepared for:

Infrastructure Ontario
2000 – 1 Dundas Street West
Toronto, ON M5G 1Z3

April 26, 2022

Pinchin File: 292140.000



1.0 EXECUTIVE SUMMARY

Pinchin Ltd. (Pinchin) was retained by Infrastructure Ontario to conduct a Building Condition Assessment (“BCA”) and develop a capital plan reserve fund forecast, subject to the limitations outlined in Section 7.0 of this report. The scope of work is to review the existing documents and facilities of the building, assess the need for repair and rehabilitation of building systems and components, and recommend a 20-year capital plan that incorporates capital replacement/repairs and cost estimates.

The municipal address for the property is 770 Don Mills Road, North York, Ontario, referred to as Ontario Science Centre (the Site). Pinchin personnel conducted a visual assessment of the Site from August 3rd to August 5th and August 10th to August 13th, as well as on September 16th, 2021, and interviewed and was accompanied by CBRE Facility Manager (hereafter referred to as the Site Representative).

1.1 General Facility Description

Ontario Science Centre is located on the west side of 770 Don Mills Road, North York, Ontario. For the purpose of this report, Don Mills Road is considered to be oriented in a north-south direction. The Ontario Science Centre complex was originally designed by Architect Raymond Moriyama in 1964. The complex underwent several additions such as Storage Areas, Workshops and the South Wing in 1990, Omnimax Theatre with 320 seats in 1995 and the Valley Building Restaurant in 1997.

Ontario Science Centre is a complex of three buildings (Buildings A, B and C). Building A is referred to as the Entrance Building, Building B is referred to as the Core Building and Building C is referred to as the Valley Building. These buildings are linked on different levels by a bridge and a sloped escalator shaft.

The original portion of Building A was constructed in 1969 (i.e., 52 years ago) with an addition constructed in 1995 (i.e., 26 years ago) and possesses a basement and two storeys above grade. The 1995 addition provides space for Omnimax Theatre with 320 seats and a new main entrance lobby. Building A includes a theatre, ticket counters, a two-level kitchen (the main and small kitchens), banquet halls, meeting rooms, locker areas for group visitors, a shop, offices, the main mechanical plant, electrical and sub mechanical rooms. Building A is linked by a two-level bridge over a ravine to Building B. The bridge over the ravine between Building A and Building B consists of two levels in a uniquely designed concrete structure that also provides bulkhead channels for services.

Similarly, Building B was constructed in 1969 (i.e., 52 years ago) and consists of a three-storey building and two storage basements that includes an auditorium, exhibition spaces, lecture rooms and offices. Building B is configured with three circular towers surrounding an irregular triangular space, and generally possesses three high storeys above grade except for the administration office tower which possesses four floors within the same three-storey height. The lowest level of Building B is partially below grade. Building B is linked by a sloping escalator shaft to Building C.



Building C was also constructed in 1969 (i.e., 52 years ago) with various additions; storage and security building additions constructed in 1990 (i.e., 31 years ago) and a kitchen addition constructed in 1997 (i.e., 24 years ago). Building C incorporates a high roof level for exhibition hall spaces which is consistent throughout the building. Some portions of this building include office areas on a second-floor level while there is a mezzanine level for exhibits and lecture rooms overlooking the exhibition halls within the one storey height. Building C does not possess a basement (unlike Building A and Building B which both possess basement areas providing space for the distribution of infrastructure services and for general storage). Grade levels vary around all buildings accounting for contour variations.

The exterior wall systems of Buildings A and B primarily consist of a combination of deeply ribbed, precast concrete panels with a rough hammered finish on the face of each rib, and vertical board finished cast-in-place concrete. In addition, large areas of glass set into dark brown anodized aluminum frames are located on several elevations of each building as well as on the bridge that overlooks the natural environment of the setting. The exterior wall systems of the 1995 addition of Building A includes a continuous curtain wall, with a light structural steel frame and bow-string mullions, stretched in front of the entire original east ribbed concrete panel facade set to the front edge of the overhanging concrete fascia soffit of the original building. According to the Site Representative, some of the original ribbed pre-cast concrete panels of the façade of Building A were removed during the construction of this addition.

The exterior wall systems of Building C consist of vertical ribbed steel panelling where future expansion had been anticipated. The 1990 storage building addition has continued this use of similar ribbed metal cladding. The exterior wall systems of the restaurant addition of Building C consist of buff brick masonry. All exterior walls are glazed from sill height to form a high greenhouse-like space with neatly exposed services and lighting. The walls of the attached receiving and food storage facility are masonry clad on the exterior with buff bricks similar to the base of the restaurant area.

A continuous glass wall, with a light structural steel frame and bow-string mullions was inserted in front of the entire original east ribbed pre-cast concrete panel facade set to the front edge of the overhanging concrete fascia soffit of the original building. Some of the original ribbed pre-cast concrete panels of the façade of Building A were removed, reclad or glazed at number of areas.

The bi-level bridge links both the upper and the lower floor levels of the Entrance Building (i.e., Building A) to the equivalent floor levels of the Core Building (i.e., Building B). This structurally significant bridge, on both levels, features a solid south wall for displays and window openings fully extending through the length and height of the north wall to direct the visitors' undivided attention to the natural environment of the Site.



The window systems, extending through the entire length of both elevations of each section of the escalator structure, visually link the visitors with the natural landscape, birds and wildlife in this 'adjustment' area on the way to the exhibition halls of the Valley Building (i.e., Building C).

The vertical transportation equipment provided for Ontario Science Centre consists of 2 hydraulic passenger elevators, 5 traction passenger elevators, 2 traction freight elevators, 1 other type stair platform lift elevator, 1 hydraulic vertical platform elevator and 7 escalators (Refer to Appendix V – Elevator and Escalator Specialist Report).

Domestic Hot Water (DHW) for the complex is provided by six natural gas-fired and one electric self-contained water heaters. Three natural gas-fired DHW heaters serve Building A, one natural gas-fired DHW heater and one electric DHW heater serve Building B and 2 natural gas-fired DHW heaters serve Building C.

Heating is generated primarily by a boiler plant in the Building A powerplant mechanical room. This boiler plant consists of 2 flexible tube type, hot water heating boilers, and a natural gas-fired, forced air type, hot water heating boiler, each associated with an in-line boiler circulation pump located in the Building A main power plant mechanical room with heating pumps located in each building.

Cooling is provided by 2 centrifugal chillers located in the Building A main powerplant mechanical room while heat rejection is achieved by 2 cooling towers located on the roof of Building A. Each cooling tower has 2 cells. There are 2 primary loop chilled water circulation pumps, 3 secondary loop chilled water pumps, and 2 condenser water loop pumps each located in the Building A main power plant mechanical room.

The complex is conditioned by approximately 30 Air Handling Units (AHUs) located in various mechanical rooms throughout. These AHUs are installed with a supply fan, hot water heating coils and circulator pump, chilled water coils, steam humidification units, and a filter section. Most systems have a separate return fan. The AHUs are controlled by a Building Automation System (BAS) and possess carbon dioxide (CO₂) sensors to vary ventilation rates based on demand. The complex is equipped with over 100 exhaust fans including indoor cabinet type, wall mounted propeller type, inline axial, and roof mounted mushroom type (Refer to Appendix VI – Mechanical and Electrical Specialist Report).

Electricity is supplied to the main electrical room in the basement of Building A. The main electrical service is fed by two Toronto Hydro feeders that terminate in the 27.6 kV high voltage switchgear located in the basement main electrical room. This 27.7 kV switchgear feeds 2 main transformers located in the adjacent transformer room. These transformers feed switchgear rated at 13.8 kV and consist of 11 bays complete with a tie breaker. In a second transformer room there is a "chiller" transformer. There are 12 substations fed from the 13.8 kV switchgear that serve the complex. These substations contain



switchgear panels and transformers that step down 13.8 kV to 120/208 V. These transformers supply distribution panels, lighting panels, or motor control centres.

The Complex is equipped with a microprocessor based distributed addressable fire alarm and detection system. The fire alarm system is equipped with emergency voice communication capability. The emergency power for the fire alarm system is provided by integral battery units and the emergency generator (Refer to Appendix VI – Mechanical and Electrical Specialist Report).

The existing fire alarm system is a 2-stage system. The main Fire Alarm Control Panel (FACP), Central Alarm Control Facility (CACF), voice amplifiers, tone generators etc. are located in the Building A main security room in Level 2. The CACF is equipped with emergency voice paging microphone, firefighter's master handset, LCD display, zone LEDs and necessary user interface. There is a 2nd CACF in the Building C security office, which is manned 24/7.

A VESDA smoke detection system protecting Building B is monitored by the fire alarm system. In addition, the kitchen hood suppression systems in Buildings A and C, and FM200 clean agent extinguishing system in Building C are monitored by the fire alarm system.

Emergency power to the complex is provided by 2 diesel powered emergency generators both located in the ground floor generator room of Building A. Each generator is attached to a Power Distribution Board and/or is connected to an Automatic Transfer Switch (ATS).

There is an Uninterrupted Power Supply (UPS) system located in the basement of Building A. This system serves a local battery cabinet and is connected to a local emergency panel. This panel serves lighting panels. In the Building B's 3rd floor mechanical electrical room there are 2 UPS systems. Each unit is connected to a battery pack and a disconnect. One UPS serves a panel that serves fire alarm equipment (Refer to Appendix VI – Mechanical and Electrical Specialist Report).

1.2 Building Systems Requiring Significant Remediation

Repair and replacement requirements (under replacement reserves) over the term of the analysis (i.e., 20 years) of \$228,604,000 have been identified. As noted during the Site visits, deficiencies relating to the roof systems, wall systems, elevator systems, interior finishes, Site features, fire & life safety equipment and mechanical/electrical systems were noted. In addition, risk and probability in relation to health and safety of the occupants and failure to key components affecting the program usage and operation of the facility has been assessed and identified. For more information, please refer to Section 1.4 and Appendix III of the report.

Please note that the split in funding between OSC and IO (Charge For Accommodation – CFA) mentioned below are based on the information provided to Pinchin by the Facility Manager of the CBRE.



1.2.1 *Immediate Health and Safety Needs*

An amount of \$16,356,366 (i.e., \$1,588,100 by OSC and \$14,768,266 by CFA) is required to be invested immediately (i.e., mid- fiscal year 2021 and fiscal year 2022) to address all existing health and safety hazards identified that have risen due to the deferred maintenance and age of the facility components. Please note that this amount includes \$11,570,608 which may be required to reinforce the bridge link between Building A and Building B. The immediate health and safety items are identified as follows:

- Slab on grade within Building C (warehouse portion): An investment of \$601,907 to complete the required repairs and seal the cracks to remove tripping hazards;
- Suspended access equipment: An investment of \$39,682 for replacement of the select adhesive roof anchors and five-year load test for worker fall protection;
- Floor finishes within the main kitchen of Building A: An investment of \$647,845 for replacement of the ceramic floor tiles to remove the tripping hazards;
- Elevator systems: An investment of \$37,000 for installation of top railings for worker fall protection;
- Escalator systems: An investment of \$310,800 in total to install handrail UV-C antibacterial protection to prevent spreading of illnesses (recommended project);
- Exhaust ventilation systems: An investment of \$20,350 for replacement of the floor polisher exhaust fan;
- Sprinkler and fire protection systems: An investment of \$650,243 in total for repairs and replacement of the sprinkler and fire protection systems;
- Emergency generator fuel tanks: An investment of \$101,750 for replacement of the emergency generator fuel tanks;
- Metal platforms and catwalks: An investment of \$51,692 for the cooling tower roof of Building A and \$137,914 for all buildings to address the safety concerns;
- Main transformer air shafts: An investment of \$100,344 for concrete repairs and replacement of the grate covers to address the safety concerns;
- Side walks and exterior stairs: An investment of \$2,366,091 in total to address the tripping hazards and safety concerns;
- Exterior railings and barriers: An investment of \$103,020 to replace the deteriorated wooden fencing to address the safety concerns; and
- Exterior signage: An investment of \$86,233 to repair the base of the signage and address the safety concerns;



An additional \$45,039,246 investment (i.e., \$11,738,347 by OSC and \$33,300,899 by CFA) is projected to be required, to address the anticipated future health and safety hazards which will arise due to the age of the Facility's components within the remaining years (i.e., from 2023 to 2042) of the term of this analysis.

In total, an amount of \$61,395,612 is projected to be required to be invested by OSC and CFA to remove the current and anticipated health and safety hazards identified within the term of the analysis (i.e., next 20 years). For more information, please refer to Appendix III.

1.2.2 Immediate Program Needs

An amount of \$14,295,530 (i.e., \$1,238,534 by OSC and \$13,056,996 by CFA) need to be invested immediately to mitigate and remove program risk hazards (i.e., non health and safety related) affecting the program usage and operation of the facility.

Recommended repairs and replacements for the following High (H) risk and Very High (VH) risk items are listed below. Please note that the identified High (H) risk items require prioritized action, while the Very High (VH) risk items require immediate corrective action within the projected year. The identified H and VH risk items are as follows:

- The building envelope, comprised of the exterior walls, windows, exterior doors and roof systems: An investment of \$1,375,214 in total is required for the immediate repairs and replacement of the older building envelope systems;
- The interior finishes: An investment of \$570,700 in total is required for repairs and replacement of the overhead doors and roll up doors within the workshop areas of Building C;
- Elevator and escalator systems: An investment of \$296,000 in total is required for the modernization of elevator No. 8 and installation of new door controllers;
- Sanitary and storm drainage system: An investment of \$5,800,000 is required for the restoration of the drainage system to prevent back-ups and leaks within the interior spaces;
- Water services: An investment of \$4,477,000 is required to for replacement of the domestic water piping. A major part of the domestic water piping system has reached the end of its service life;
- Air distribution system: An investment of \$956,450 for replacement of the older Variable Frequency Drives (VFDs) serving the Air handling Units (AHUs) and Building C's Make Up Air (MUA) units; and



- Loading dock equipment: An investment of \$87,801 will be required to replace the loading dock equipment to prevent interruption to the facility operations.

For a complete list of all building components please refer to Appendix III within the report.

1.2.3 Key Building Components Requiring Investments within the First Five Years (Excluding the Immediate Repairs)

Although the following key building components with high risk of failure were not included in the immediate needs, a significant investment is required to be made in these key building components within the next five years to prevent operation interruption of the facility:

- Electrical systems: It should be noted that due to the age of the electrical systems, an investment of \$12,668,000 in total would be required to replace the main switch gear, electrical service and distribution equipment, branch wiring and devices within the first three years of the term of this analysis;
- Conveying systems: An amount of \$4,995,000 in total is required to be invested to modernize the escalator systems of the facility within the first four years of the term of this analysis. These escalators connect Buildings B and C and are the main means of traffic between the two buildings;
- Gas distribution system: An amount of \$3,052,500 would be required to be invested to replace the old gas pipes of the facility within the first five years of the term of this analysis. The natural gas piping and valves should be replaced when they reach the end of their life expectancy. Gas piping has an estimated life expectancy of approximately 50 years assuming good maintenance practices. The natural gas equipment is nearing the end of its useful life and is anticipated to fail due to age;
- Hot and chilled water distribution systems: An amount of \$5,920,000 is required to be invested to restore and replace the hot and chilled water distribution system. The hot and chilled water is pumped from the main mechanical room power plant of Building A to each building via steel pipes through piping tunnels and bridge tunnels. A significant proportion of the hot and chilled water distribution valves were found to be non-operational and corrosion was reportedly found within the pipes. Replacement of the valves and piping is recommended to prevent leaks and potential service interruption.



FIVE (5) YEAR EXPENDITURE SUMMARY TABLE:

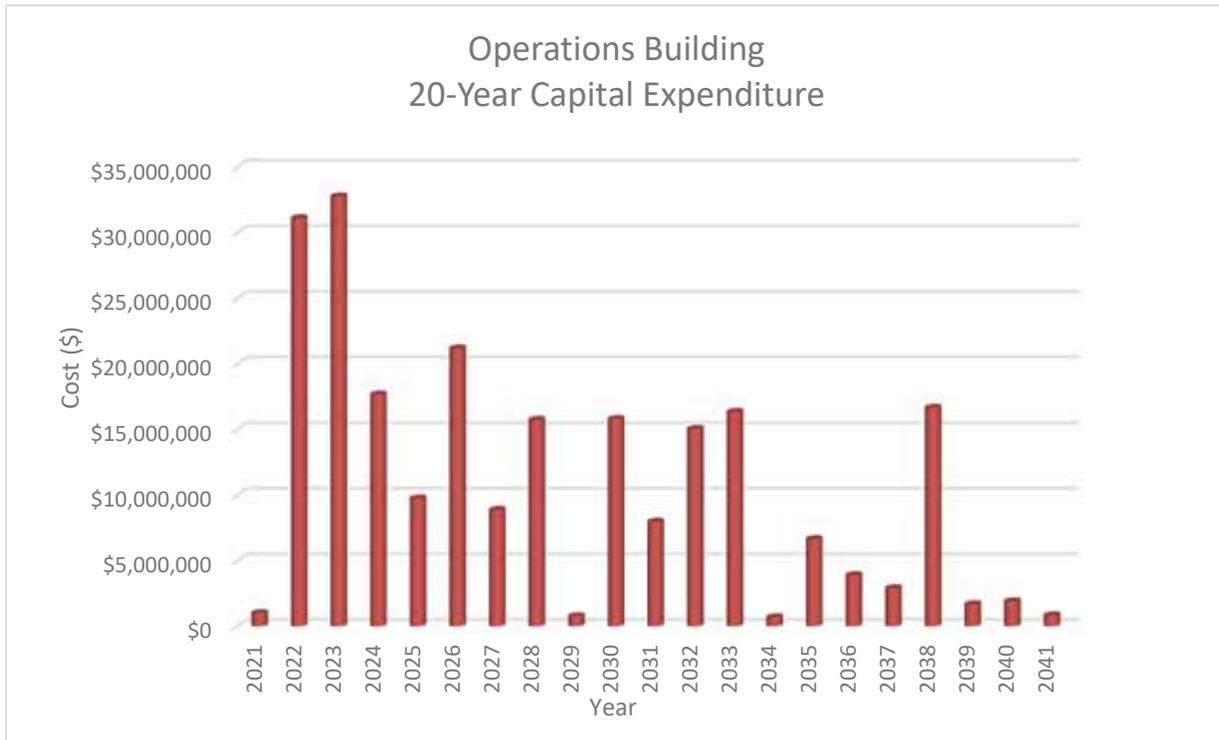
A total investment of \$113,578,135 within the first five years of the term of this analysis would be required to address all required repairs and replacement of the building components. This amount includes the immediate needs, key and other building components.

Based on the Clint request, Pinchin has provided the following Expenditure table with a five-year outlook:

Building Systems and Components	2021 (Current Year)		2022		2023		2024		2025		2026		Total	
	Responsibility		Responsibility		Responsibility		Responsibility		Responsibility		Responsibility			
	Infrastructure Ontario	Ontario Science Centre												
A. SUBSTRUCTURE	\$ -	\$ -	\$ 11,942,695	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 131,074	\$ -	\$ 12,073,770
B. SHELL	\$ 499,891	\$ -	\$ 1,151,669	\$ 432,106	\$ 1,356,336	\$ -	\$ 2,889,599	\$ 1,132,703	\$ 3,681,489	\$ 223,087	\$ 13,443,833	\$ 536,078	\$ -	\$ 25,346,791
C. INTERIORS	\$ 10,583	\$ -	\$ 1,155,648	\$ 647,845	\$ 17,246	\$ 433,263	\$ 9,463,818	\$ 715,195	\$ -	\$ -	\$ 1,716,334	\$ 1,141,012	\$ -	\$ 15,300,945
D10. CONVEYING	\$ 37,000	\$ -	\$ 606,800	\$ -	\$ 5,281,750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,925,550
D20. PLUMBING	\$ -	\$ -	\$ 10,276,750	\$ -	\$ 83,250	\$ -	\$ 3,052,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,412,500
D30. HVAC	\$ -	\$ -	\$ 976,800	\$ -	\$ 9,573,750	\$ -	\$ 351,500	\$ -	\$ 447,700	\$ -	\$ 2,035,000	\$ -	\$ -	\$ 13,384,750
D40. FIRE	\$ -	\$ -	\$ 650,243	\$ -	\$ 224,390	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,034,409	\$ -	\$ -	\$ 1,909,042
D50. ELECTRICAL	\$ 83,250	\$ -	\$ 342,250	\$ -	\$ 15,630,280	\$ -	\$ 83,250	\$ -	\$ 83,250	\$ -	\$ 1,161,800	\$ -	\$ -	\$ 17,384,080
E.10 Equipment	\$ -	\$ -	\$ 87,801	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
F10. SPECIAL CONSTRUCTION	\$ 189,606	\$ -	\$ 39,682	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
G. SITE WORK	\$ 203,364	\$ -	\$ 1,684,535	\$ 1,132,256	\$ -	\$ 178,529	\$ -	\$ -	\$ -	\$ 5,324,935	\$ -	\$ -	\$ -	\$ 8,523,619
Total	\$ 1,023,694	\$ -	\$ 28,914,873	\$ 2,212,207	\$ 32,167,002	\$ 611,792	\$ 15,840,667	\$ 1,847,898	\$ 4,212,439	\$ 5,548,022	\$ 19,522,451	\$ 1,677,090	\$ -	\$113,578,135

Twenty (20) YEAR EXPENDITURE SUMMARY CHART:

The chart below provides a summary of yearly anticipated expenditures over the study period of twenty years for the facility:



1.3 Facility Condition Index and Condition Rating

A Facility Condition Index (FCI) is a measurement of the condition and renewal needs of a building, as of the date of review. Refer to the following calculation methodology:

$$\text{Facility Condition (FCI) 1} = \frac{\text{Current Need} + (\text{Planning Years 1 and 2 Need})}{\text{Total Replacement Cost of Facility}} \times 100$$

$$\text{Facility Condition Index (FCI) 2} = \frac{\text{Deferred Maintenance}}{\text{Total Replacement Cost of Facility}} \times 100$$

As of September 29, 2021, the overall FCI 1 system average was 17%, which means that, overall, the buildings in Ontario Science Centre are in C condition (i.e., the facility and its components are functioning as intended; for most infrastructure assets, this would infer that no repairs anticipated within the next five years.). While previous various investments and budgets provided by the provincial government have



helped and supported the Ontario Science Centre to address the required costs for the building and infrastructure repairs, maintenance and renewal, major sustained investments are required to improve the condition of buildings and infrastructure.

Total Current Replacement Value:	\$369,318,841
Total of Current needs:	\$1,023,694
Total of Deferred Maintenance:	\$63,905,874
Total of Proposed Maintenance:	\$163,674,471
Facility Condition Index (FCI) 1	17%
Facility Condition Index (FCI) 2	18%

It should be noted that due to the fact that Ontario Science Centre is a facility complex with unique characteristics, an adjustment factor of 1.85 was applied to all repair and replacement costs and an adjustment factor of 1.30 was applied to all CRVs per Client's request to account for the hidden internal and external fees. It should also be noted that all costs may be subject to change due to volatile market value caused by COVID 19 pandemic.

Table 1: Facility Condition Index and Condition Rating

Calculated FCI	Description	Overall Building condition
0% - 5%	The Facility and its components are functioning as intended; limited (if any) deterioration observed on major systems.	A
6% - 10%	The Facility and its components are functioning as intended; for most infrastructure assets, this would infer that no repairs anticipated within the next five years.	B
11% - 30%	The Facility and its components are functioning as intended; normal deterioration and minor distress observed; repairs will be required within the next five years to maintain functionality.	C
31% - 60%	The Facility and its components are not functioning as intended; significant deterioration and distress observed; repairs and some minor rehabilitation required within the next year to restore functionality	D
>60%	The Facility and its components are not functioning as intended;	E



Table 1: Facility Condition Index and Condition Rating

Calculated FCI	Description	Overall Building condition
	significant deterioration and major distress observed; possible damage to support structure; may present a risk to people or materials; must be dealt with without delay.	

1.4 Overall Remaining Useful Life/ Facility Condition Summary

Average expected lifetimes of major building systems such as the building envelope (i.e., exterior walls, windows, exterior doors and roof systems), conveying systems, HVAC, fire and life safety systems are typically between 30 and 50 years, and the majority of the assets are 52 years old (circa 1969). The average theoretical facility’s lifespan is estimated to be approximately 80 years. Based on Pinchin’s assessment, it appears that while capital investments have been made to the building envelope systems, HVAC systems, interior finishes, plumbing systems, and electrical systems, are in large part original and have simply exceeded their expected service lives. Building systems that have reached or exceeded their useful service life, while often remaining operational, generally require higher levels of maintenance, higher annual repair costs, and carry an elevated risk of sudden failures that could limit or prevent the use of a facility for extended periods. These unexpected failures often result in higher costs for needed work that must be then performed on an emergency basis.

Based on the structural review of the bridge link between Building A and Building B completed by Jerol Technologies Inc., further review and investigation by Brent B. Roberts (Structural Engineer), repairs are required to address the safety of the bridge. Please refer to Structural Specialist Review (Appendix III) for the letter of opinion provided by the Structural Engineer dated January 31, 2022.

It is our opinion that the remaining useful life of the property can continue for its intended purpose for at least an additional 20 years if the repairs in this report are made, the physical improvements receive continuing preventative maintenance, if the various components or systems are replaced or repaired on a timely basis as needed, and Property Condition Assessments, in accordance with the most recent ASTM E2018 Standard, are conducted at least every 36 months. However, it is anticipated that a significant amount of investment in key building components is required within the first five years of the term of this analysis. Without further investment to address the immediate needs, required repairs and replacement of the key components of the facility, it is estimated that the lifespan would be significantly reduced and the probable risk of failure in many key building components is significantly increased within the next five years. The estimated remaining useful life of the facility without conducting Pinchin’s recommended repairs and replacement is 5 years.



Assuming that Pinchin’s recommended repairs, replacement, overhaul and retrofits for all systems are completed and regular maintenance are performed, Building A, Building B and Building C are anticipated to perform as intended and in a safe manner for occupancy. However, the following table summarizes the Facility’s condition:

Table 1.1 Ontario Science Centre (Buildings A, B, and C)

Age of the Buildings	52 years old
Average Theoretical Building Lifespan	80 years
Estimated Remaining Life <u>with</u> Pinchin’s Recommended Repairs and Replacement	20 years
Estimated Remaining <u>without</u> Pinchin’s Recommended Repairs and Replacement	0-5 years

1.5 Risk Identification (Risk and Probability of failure to key components)

Pinchin performed a risk evaluation for the proposed replacement / repair works for the components identified in the component inventory. The intent of the risk evaluation is to prioritize the replacement / repair works based on the likelihood and consequence of the asset / component failure.

Component failure or non-performance risk was evaluated by assessing the likelihood of the failure / non-performance and the consequences of such failure / non-performance. The risk measure for likelihood and consequence is based on 5 categories, yielding a 5 x 5 risk score as summarized in the following tables.

<u>Likelihood</u>	Description	Frequency of occurrence	Score
Rare	May occur in exception circumstances	> 20 years	1
Unlikely	Could possibly occur	6 - 20 years	2
Possible	Might occur	3 - 5 years	3
Likely	Will probably occur	< 2 years	4
Almost Certain	Expected to occur in most circumstances	< 1 year	5

<u>Consequence</u>	Injury	Service Interruption	Environment	Finance	Reputation	Score
Insignificant	Nil	< 4 hrs.	Nil	< \$10k	Nil	1
Minor	First Aid	< 1 day	Minor short term	< \$100k	Minor media	2
Moderate	Medical Treatment	< 1 week	Wide short term	< \$500k	Moderate media	3
Major	Disability	< 1 month	Wide long term	< \$1 M	High media	4
Catastrophic	Fatality	> 1 month	Irreversible	> \$1 M	Censure / inquiry	5



The risk evaluation performed by Pinchin for the purposes of this work is qualitative and no risk or probabilistic modelling has been performed. Further, risk evaluations have not been performance for all component failure / non-performances, only those where the PUL of the component is less than the analysis period of 20 years (e.g., components that have a PUL of greater than the analysis period have not been assessed as they are expected to remain in service beyond the assessment period).

The assessment of component failure / non-performance only considers direct consequences. For example, the failure of a HVAC system may result in the building being closed for a period of time, which may in turn cause delays in other operations. The flow on consequences is not considered as part of this analysis as a more detailed understanding of the municipal operations is required.

Risk Score		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood	Rare	1	2	3	4	5
	Unlikely	2	4	6	8	10
	Possible	3	6	9	12	15
	Likely	4	8	12	16	20
	Almost Certain	5	10	15	20	25

Score (>=)	Level	Timing of Action Required
20	VH	Immediate corrective actions
10	H	Prioritized action required
4	M	Planned action required
1	L	Manage by routine procedures

The results of the risk assessment are included in Appendix III.

APPENDIX I

Repair and Replacement Cost Summary

Uniform Code	Item Name	Location and/or Area Served	Normal Life Expectancy	Actual or Estimated Year of Acquisition	Present Age	Adjustment To Life Expectancy	Replacement Responsibility	Level of Operation Interruption	2021 Current Year	2022 1 yr. Cost	2023 2 yr. Cost	2024 3 yr. Cost	2025 4 yr. Cost	2026 5 yr. Cost	2027 6 yr. Cost	2028 7 yr. Cost	2029 8 yr. Cost	2030 9 yr. Cost	2031 10 yr. Cost	2032 11 yr. Cost	2033 12 yr. Cost	2034 13 yr. Cost	2035 14 yr. Cost	2036 15 yr. Cost	2037 16 yr. Cost	2038 17 yr. Cost	2039 18 yr. Cost	2040 19 yr. Cost	2041 20 yr. Cost	1-20 Year Total*		
C001	Floor Finishes-Ceramic Tiles	Building C - Ceramic Tiles in the Public Restrooms	35	2009	13	0.0	Medium																							\$61,200		
C001	Floor Finishes-Ceramic Tiles	Building C - Ceramic Tiles Within the Staff Washroom of Security and Storage	35	1999	31	2.0	Low				\$161,598																			\$161,598		
C001	Floor Finishes-Carpets Tiles	Building A-Carpets Tiles Within Mezzanine Level Office	15	2013	8	0.0	Low										\$399,015													\$399,015		
C001	Floor Finishes-Carpets Tiles	Building B-Carpets Tiles Within Offices and Auditorium	15	2013	8	0.0	Low										\$1,706,775													\$1,706,775		
C001	Floor Finishes-Carpets Tiles	Building C-Carpets Tiles Within Offices and Auditorium	15	2013	8	0.0	Low										\$1,095,474													\$1,095,474		
C001	Floor Finishes-Carpets Tiles	Building A-Short Carpet Tiles Within the Main Lobby	15	2013	8	0.0	Low																	\$196,297						\$196,297		
C001	Floor Finishes-Carpets Tiles	Building C-Short Carpet Tiles Within the Main Lobby	15	1999	31	0.0	Low				\$41,380																			\$41,380		
C001	Interior Finishes-Vinyl Floor Tiles	Building A-Vinyl Floor Tiles in the kitchen banquet hall	20	1999	25	3.0	Low				\$28,688																			\$28,688		
C001	Interior Finishes	Building C-Vinyl Floor Tiles in the exhibition hall and office	20	1999	31	5.0	Low							\$1,716,534																\$1,716,534		
C001	Interior Finishes-Luxury Type Vinyl Floor Tiles - Below Threshold	Building A-Luxury vinyl tiles in the main entrance					Low																									
C001	Interior Finishes-Luxury Type Vinyl Floor Tiles - Below Threshold	Building C-Luxury vinyl tiles on the mezzanine					Low																									
C001	Interior Finishes-Vinyl Floor Tiles	Building C-Vinyl sheet on the mezzanine and storage building booths					Low										\$1,654,058														\$1,654,058	
C001	Interior Finishes-Terrazzo Flooring - Below Threshold	Building A-Terrazzo Flooring					Low																									
C001	Interior Finishes-Terrazzo Flooring - Below Threshold	Building B-Terrazzo Flooring					Low																									
C001	Interior Finishes-Terrazzo Flooring - Below Threshold	Building C-Terrazzo Flooring					Low																									
C001	Interior Finishes-Laminated Floor Tiles - Below Threshold	Building A-Laminated flooring in the banquet halls					Low																									
C002	Hardware and Seals-Weatherstrips	Building A-Power Plant	25	2002	0	0.0	Medium				\$529,628																				\$529,628	
C002	Hardware and Seals-Weatherstrips	Building B-South Tower Mechanical Penthouse	25	2002	0	0.0	Medium				\$28,271																				\$28,271	
C003	Ceiling Finishes	Building A-Throughout the Building	25	1999	25	3.0	Low										\$38,775														\$38,775	
C003	Ceiling Finishes-Suspended Ceiling Assemblies	Building B-Storage and Security Building additions Offices and Education rooms on the Mezzanine level	25	1999	25	3.0	Low							\$1,141,012																\$1,141,012		
C003	Ceiling Finishes-Suspended Ceiling Assemblies	Building C-Whitson Exhibition Hall- No Capital Cost	25	2017	4	0.0	Medium																								\$0	
C003	Ceiling Finishes-Painted Gypsum Ceilings-Mantain through operations level	Building A-Throughout the Building	30	1999	25	25.0	Medium																									
C003	Ceiling Finishes-Painted Gypsum Ceilings-Mantain through operations level	Building B-Throughout the Building	30	1999	25	25.0	Medium																									
C003	Ceiling Finishes-Painted Gypsum Ceilings-Mantain through operations level	Building C-Throughout the Building	30	1999	31	20.0	Medium																									
C003	Ceiling Finishes-AMC Ceiling Finishes-Offshoot	Building A-Throughout the Building	40	1999	50	2.0	Medium										\$2,922,919														\$2,922,919	
C003	Ceiling Finishes-AMC Ceiling Finishes-Offshoot	Building B-Throughout the Building	40	1999	50	2.0	Medium										\$1,694,785														\$1,694,785	
C003	Ceiling Finishes-AMC Ceiling Finishes-Offshoot	Building C-Throughout the Building	40	1999	50	2.0	Medium										\$3,462,118														\$3,462,118	
C004	Plumbing	Building A-Kitchen Millwork	25	1999	50	1.0	Medium										\$27,692														\$27,692	
C004	Kitchen Millwork - Below Threshold	Building B-Kitchen Millwork within the mezzanine level	25	2008	13	0.0	Low																									
C004	Kitchen Millwork	Building C-Kitchen Millwork within the office	25	2008	13	0.0	Low																									\$60,200
C004	Kitchen Millwork	Building C-Kitchen Millwork within the office	25	1999	31	2.0	Low																									\$100,843
C004	Washroom Millwork	Building A-Washroom Millwork	25	2008	13	0.0	Low																									\$171,588
C004	Washroom Millwork	Building B-Washroom Millwork	25	2008	13	0.0	Low																									\$37,629
C004	Washroom Millwork	Building C-Washroom Millwork - Public Washroom	25	2008	13	0.0	Low																									\$108,371
C004	Washroom Millwork	Building C-Staff Washroom Millwork	25	1999	31	2.0	Low																									\$63,274
C00																																
C00																																
C00																																
C009	Conveying	Building A-Building					Low																									
C010	Elevators	Building A-Apex Lobby	20	1991	24	1.0	Low																									\$27,750
C010	Apex Elevator - Major Rehabilitation	Building A-Apex Lobby	25	1991	24	2.0	Medium																									\$28,750
C010	Elevator No. 6 - Door Operator Rehabilitation	Building C-East	20	2008	13	7.0	Low										\$27,750															\$27,750
C010	Elevator No. 6 - Major Rehabilitation	Building C-East	25	2008	13	9.0	High																									\$68,750
C010	Elevator # 6 - Rooftop Railings Rehabilitation	Building C-East	30	N/A	N/A	N/A	Low																									\$18,500
C010	Elevator No 1 and 2 - Door Operator Rehabilitation	Building B-Main Elevators	20	2008	13	7.0	Low																									\$55,500
C010	Elevator No 1 and 2 - Major Rehabilitation	Building B-Main Elevators	25	2008	13	9.0	Medium																									\$1,017,500
C010	Elevator No. 8 - Major Rehabilitation	Building C-South Building	30	1991	30	1.0	Low																									\$28,250
C010	Elevator No 7 - Door Operator Rehabilitation	Building C-West Rain Forest	20	2008	13	7.0	Low																									\$27,750
C010	Elevator No 7 - Major Rehabilitation	Building C-West Rain Forest	25	2008	13	9.0	Medium																									\$68,750
C010	Elevator No 7 - Rooftop Railings Rehabilitation	Building C-West Rain Forest	30	N/A	N/A	N/A	Low																									\$18,500
C010	Elevator No 4 - Door Operator Rehabilitation	Building B-West Tower	20	2013	8	14.0	Low																									\$27,750
C010	Elevator No 4 - Major Rehabilitation	Building B-West Tower	25	2013	8	16.0	Medium																									\$68,750
C010	Freight Elevators	Building A-Kitchen modernization	25	2008	13	10.0	High																									\$89,375
C010	Freight Elevator No. 3 - Major Rehabilitation	Building A-Main Lobby	25	2008	13	10.0	High																									\$1,168,250
C010	Freight Elevators	Building C	30	2012	9	20.0	Low																									\$84,750
C010	Vertical Platform - Major modernization	Building C	30	2002	18	14.0	Medium																									\$74,000
C010	Escalators & Moving Walks	Escalator Shaft	30	1999	50	2.0	High																									\$4,565,000
C010	Main Escalators No 1,4 - Major Rehabilitation	Escalator Shaft	30	N/A	N/A	N/A	Low																									\$266,400
C010	Main Escalators No 1,4 - Major Rehabilitation	Escalator Shaft	30	N/A	N/A																											

Appendix F
Environmental Scan

Confidential and Privileged Advice to Government

ONTARIO SCIENCE CENTRE RELOCATION

Environmental Scan - Revised

January 16, 2023

Lord Cultural Resources is a global professional practice dedicated to creating cultural capital worldwide.

We assist people, communities and organizations to realize and enhance cultural meaning and expression.

We distinguish ourselves through a comprehensive and integrated full-service offering built on a foundation of key competencies: visioning, planning and implementation.

We value and believe in cultural expression as essential for all people. We conduct ourselves with respect for collaboration, local adaptation and cultural diversity, embodying the highest standards of integrity, ethics and professional practice.

We help clients clarify their goals; we provide them with the tools to achieve those goals; and we leave a legacy as a result of training and collaboration.

Our Toronto office is located within the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples. Toronto is home to many diverse First Nations, Inuit, and Métis peoples. Our New York office is located on the traditional lands of the Lenape peoples. We encourage you to acknowledge the presence of the people who came before, wherever you are.

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BACKGROUND

Lord Cultural Resources has been commissioned by Infrastructure Ontario to explore a reimagined Ontario Science Centre, including potential relocation, as an opportunity to achieve both the OSC's modernization and sustainability objectives, and the government's vision for Ontario Place as an exciting, year-round destination for local and international visitors alike.

CONTENTS OF REPORT

The following Interim Report includes:

1. Findings from Environmental Scan – North American and international examples

1. ENVIRONMENTAL SCAN - KEY FINDINGS

This section focuses on the key findings from the review of available published data regarding other selected science centres in North America, Europe and Asia. This environmental scan is provided to inform the consideration of the potential relocation of the Ontario Science Centre (OSC) to a new site at Ontario Place.

The science centres examined in this scan were selected on the basis of context – market size and location - with respect to a relocated science centre at Ontario Place. Therefore, criteria for selection is as follows:

1. Science centres located in large regional population markets – in Canada – 1,000,000 and above in population; in the US – 2,000,000 and above in population; in Europe and Asia – 1,000,000 and above in population.
2. Science centres located in the downtown and/or waterfront locations.
3. Other science centres located in densely populated areas just outside the downtown - Parc de la Villette and Pudong respectively – as precincts widely visited by both residents and tourists.

The scan was organized as follows:

1. North America
 - Canadian cities (Montreal, Vancouver, Edmonton and Calgary)
 - Waterfront science centre sites in U.S. cities (Pittsburgh, Columbus, San Francisco, Cleveland, Chicago, Boston, Portland, Miami)
 - Other larger city downtown science centres in the United States (Phoenix, Los Angeles, Charlotte, Seattle, Dallas, Philadelphia)
2. International
 - Europe (Glasgow, Paris, Copenhagen, Amsterdam, Wolfsburg, Bremen, Valencia, Lisbon, Munich)
 - Asia (Shanghai, Singapore)

Detailed tables for all of the selected science centres are set out in Appendix A, each in comparison to data for the Ontario Science Centre.

KEY TAKEAWAYS

The analysis of the environmental scan revealed the following areas of consideration for modernising and relocating the OSC at Ontario Place:

1. Size of building and exhibition spaces – the shift from large to small
2. Large format/dome theatres and planetariums
3. Outdoor programming
4. Revenue Generation
5. Expanded Audiences
6. Broadened Reach
7. Virtual Experiences
8. Partnerships
9. Physical Experience
10. Waterfront Location

1. SIZE OF BUILDING AND EXHIBITION SPACES-THE SHIFT FROM LARGE TO SMALL

Most of the science centres examined both within North America and Europe are considerably smaller than the current Ontario Science Centre, with median sizes in the 237,000 to 287,000 sq.ft. range and a ratio of permanent and temporary exhibition space to overall building size between 39% to 45% compared to 25% for the existing Ontario Science Centre. This indicates a maximization of exhibition space and efficiency of ancillary spaces. The shift from large to small, particularly in the last 20 years, reflects a changing philosophy as science centres want to be more nimble, flexible, innovative and risk taking.

- The existing Ontario Science Centre is in a very large building at 568,000 sq.ft., ranking it second largest among science centres compared in North America.
- The median size of US waterfront science centres is 287,000 sq.ft., and 237,000 sq.ft. for US downtown science centres, about half and more than half of the current OSC respectively.
- The current OSC is approximately four times the median size of science centres (131,000 sq.ft) in Canada.
- The Ontario Science Centre currently offers 153,000 sq. ft. of exhibition space (139,000 sq.ft. of which is permanent exhibition space), which is substantially larger than the other Canadian science centres and only somewhat larger than the median exhibition space sizes for the US waterfront, other downtown science centres and international science centres.
- The inefficiency of the OSC building size is seen in the ratio of exhibition space to building size at 27% (total exhibition space) compared to 39% for Canadian and U.S. waterfront science centres

and 45% for other larger downtown science centres. The higher percentage (exhibition space to overall size of building) indicates a greater efficiency of building.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

The data confirmed that a relocated Ontario Science Centre at Ontario Place may be substantially smaller than the current facility. The reduction should focus on increasing the ratio of exhibition space to building area, similar to other downtown and waterfront science centres in the US as exhibition spaces influence admission charge levels, length of stay, repeat visitation attendance and membership levels and associated revenues.

2. LARGE FORMAT/DOME THEATRES AND PLANETARIUMS

All of the science centres in North America have large format or dome theatres, particularly older centres. Only one of the European centres examined have large format theatres – Glasgow Science Centre - and many of those centres that present astronomy or outer space do so without dome theatres - except for the Copernicus Science Centre in Warsaw.

- Although large format (IMAX/other) and dome theatres are not as popular as in the past, all but the Frost Museum of Science features a large format theatre of the North American examples. Instead of a large format theatre, the Frost decided to focus on a planetarium as well as a large aquarium.
- Of all the international science centres examined, only the Shanghai Science and Technology Museum has a large format theatre. In fact, the museum has multiple theatres including two dome theatres, a 3D theatre and a 4D theatre catering to a local market that is 4 times that of the Toronto CMA.
- None of the European science centres have large format theatres, and only the Copernicus Science Centre in Warsaw has a domed-ceiling planetarium which also serves double duty as a cinematic theatre and a venue for live music. A phenomenon pioneered by the Franklin Institute in Philadelphia is to have a flat floor planetarium with moveable seats allowing the maximum flexibility for events and 3rd party rentals.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

The current OSC has both a very small planetarium with a capacity of 50 and a 324 seat IMAX OMNIMAX Dome. With the potential relocation to Ontario Place, the OSC will inherit the 614 seat Cinesphere. Larger than its current OMNIMAX Dome, the OSC may want to investigate how it can make the Cinesphere a multi-functional space that can present mission-driven and non-mission driven programs (i.e. films) as well as a space for third party functions and events.

3. OUTDOOR PROGRAMMING

An increasing number of science centres and children’s museums are seeking to incorporate outdoor exhibitions and play spaces as part of the visitor experience, but they are often constrained by site limitations - particularly for the downtown locations. Outdoor programs offer unique programming experiences (regardless of climate) that the indoors cannot match. Also, the recent global pandemic has prompted more cultural institutions, including science centres, to place more emphasis on outdoor spaces where the virus is less likely to spread and greater physical distancing can occur.

- The OSC currently offers the Cohon Family Nature Escape while Telus Spark in Calgary features the very popular outdoor Brainasium, which is accessible only through the Centre.
- Outdoor spaces are increasingly being used by science centres for programming, learning and demonstration. *Energetics* at the NEMO Science Museum in Amsterdam consists of interactive sculptures and installations related to the environment and sustainable energy. Gallery 5 at Exploratorium in San Francisco is an outdoor gallery space that uses both land and water (Exploratorium is located at the waterfront) for changing exhibitions.
- Some science centres use outdoor spaces specifically for younger children for play-based learning. Columbus’s Center of Science and Industry (COSI) has the Big Science Park, an outdoor laboratory featuring activities that enable children to learn about simple machines.
- Science centres with limited outdoor space are seeking to use terraces and rooftops for programming. Experimentarium in Copenhagen, for example, has fitted its rooftop with interactive play equipment that combines exercise with technology, math and music. The Copernicus Science Center in Warsaw has a rooftop garden that not only features a beautiful array of plants, it also serves as a green roof contributing to the energy efficiency of the building.
- Bremen’s Universum has a large outdoor area, over 50,000 sq.ft. focused on wind and water. It includes climbing walls, crawl tunnels and many other exhibits for children. The 90 foot “Tower of Air” not only provides amazing views of the city but is also used for experiments.
- Science centres also use outdoor spaces and rooftops for revenue generation opportunities for third party rentals. The Franklin Institute in Philadelphia, the Perot in Dallas and the Frost in Miami all have very successful outdoor rooftop/terrace facilities for events and functions.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

An opportunity for the OSC to consider is to use the outdoor (potentially land and water) area surrounding the pods and new building as exhibition, programming and play space. The rooftop of the pods and potentially on the new building could also serve as programming space with green roof features in addition to venue rental opportunities given the unparalleled views of the waterfront and cityscape available from Ontario Place.

4. REVENUE GENERATION

The education-focused mission of science centres mean that none operate on the basis of earned income alone. All require financial support from private and government sources. In the United States it is primarily private support – 30%-35%, with approximately 8%-10% from public sources. In Canada and internationally, most operating funds come from public sources except for Science World in Vancouver, which receives less than 4% of its income from government.

- All of the science centres charge admission for exhibitions with the exception of the California Science Center in Los Angeles, which receives substantial support from state government (very rare among U.S. science centres). All charge for large format or IMAX theatres. Planetarium shows are usually included with the price of admission, with the exception of those offering periodic laser rock shows.
- All of the science centres examined receive income through third party rentals - an essential component of earned revenue. Rentals include specific spaces dedicated to outside functions and events as well shared spaces such as auditoriums and gallery spaces. Many science centres also rent out spaces for outside conferences and corporate meetings.
- Memberships are a significant source of income for most of the science centres examined and important attendance drivers. Science centres offer many types of membership levels mostly tailored to families. Columbus's Center of Science and Industry goes beyond the family-related membership as do many others to include single adults in an effort to broaden its visitor base.
- Revenue from private sources – donations and sponsorships – average approximately 5% of total revenue for the Canadian science centres examined. Science centres in the US receive substantially more in private donations, averaging 32%-35% of total revenue. The Ontario Science Centre is well above the Canadian average with 13% of total income through donations and sponsorships.
- Many science centres in Canada and the US have established foundations that support specific initiatives including exhibitions and education, but also for ongoing operations. The Montreal Science Centre's foundation for example has contributed to the development of three new permanent exhibitions and its annual science festival Eurêka! in just the last 6 years.
- Retail and food service is offered at all of the science centres examined in North America and in Europe and Asia. Most of the science centres offer at least two types of eating experiences: one is a dining experience - in some instances upscale - and the other is a casual, fast food, cafeteria style or "grab and go", catering to kids and families. Some of the larger science centres, including Chicago, Boston and Paris, have several eating options. All of the waterfront science centres have restaurants that overlook the water and are often rented out for private functions.

Every science centre has a gift shop offering books and science-related merchandise. Each retail outlet has a physical presence within the museum in addition to online offerings.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

Available data for the Ontario Science Centre indicates earned income at 33% of operating revenues. This percentage is well below the average and median figures for Canadian, US waterfront and downtown museums and suggests that a relocation has an opportunity not only for a more attractive site but is also an opportunity to renew the exhibitions and visitor experience. As well, an Ontario Place location would be more attractive for venue rentals than

its current location for corporate and private functions and events, creating opportunities for increased earned income. With a new building, new vision and new waterfront location at Ontario Place, OSC should be able to maintain and potentially increase its current level of donations and sponsorship.

While retail and food service are not typically significant net revenue generators, they are an important guest amenity and contribute to the overall visitor experience. The OSC will need to evaluate what other food service will be offered at the reimagined Ontario Place to determine its food offerings. Similarly, the OSC will also have to determine the type of retail experience it wishes to have at the new location and align it with the overall new vision of the Centre.

5. EXPANDED AUDIENCES

Most science centres, including the ones examined as part of this scan, cater mostly to families with children largely between the ages of 5 to 12. Some science centres, including the OSC, include children’s museum elements for younger learners under the age of 5. Many science centres are recognizing the need to broaden the market and engage “lost audiences” – teenagers and young adults who may not visit a science centre again until they have children.

- Many science centres offer specific programs and access for adults. The Center of Science and Industry in Columbus has COSI After Dark and COSI Discovery Nights, providing adults with their own designated time at COSI. “It’s COSI without the kids.”
- The Boston Museum of Science has created *SubSpace*, a program that offers adult-centric experiences through the collision of art, science and technology. Programs include live performances, art installations, and immersive and multimedia experiences.
- Exploratorium in San Francisco offers targeted memberships for young adults. Exploratorium After Dark brings together a like-minded community of the “engaged, inquisitive, and adventurous” to participate in immersive exhibits and unique programs.
- The Frost Museum in Miami provides opportunities for teenagers to explore, experiment and actively engage in activities with citizen science through its MUVE (Museum Volunteers for the Environment) program. Arizona Science Center’s Teen Advisory Board works closely with the Center’s leadership team to develop, test, and implement content, programs, and special events targeted to teens ages 12-18.
- Pacific Science Center in Seattle operates the Mercer Slough Environmental Education Center dedicated to inspiring future stewards of the environment through hand- on programs for teens. The program focuses on being outside and thinking critically about issues that affect the human and natural communities.
- COSI also offers *little kidspace*, designed and staffed by early education experts for children from birth through first grade. Little kidspace promotes learning in a colorful and engaging atmosphere for little hands and growing minds. The Perot Museum of Nature and Science also includes a specific area of the museum for children under 5.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

The analysis suggests opportunities for a new site at Ontario Place to have a positive impact on attendance by widening the market to include more adults not accompanying children, teens, younger learners (as Toronto does not have a children’s museum) and more tourists. Increasing attendance should lead to more visitor-generated income and earned income, especially venue rentals at Ontario Place.

6. BROADENED REACH

Some science centres recognize that not all visitors are able to come to their centre or may not want to come – either because of distance, economics, social factors and interest – that is, science is “not for me.” Some science centres in the US and UK have sought to reach out to marginalized groups and communities and engage with potential visitors who may not otherwise be interested in science.

- The Glasgow Science Centre has developed an outreach program that physically brings workshops, live science shows and interactive exhibits to classrooms across Scotland. The Arizona Science Center in Phoenix delivers hands-on, grade-specific programs to audiences large and small throughout the community that supports Arizona College and Career Readiness Standards.
- Exploratorium in San Francisco has developed Community Educational Engagement programs that offer family science nights at schools, work with individual patients at the city’s children’s hospital and participate in neighborhood events. These programs bring interactive, hands-on science activities to multigenerational audiences in settings primarily within their own communities.
- Community Youth Programs through the California Science Center in Los Angeles aim to stimulate curiosity and inspire science learning among underserved local youth in the greater LA area through hands-on educational opportunities and personal development experiences during the academic year and summer.
- Carnegie Science Center’s STEM Excellence Pathway is a free strategic planning process developed by the Center that helps school systems, individual schools, departments and teachers improve their STEM education practices and adopt best practices in STEM learning.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE

As the “Ontario” Science Centre, the OSC will strive to reach beyond its physical boundaries to not only serve neighbouring communities within Toronto and the Greater Toronto Area but also the communities across the province. Broadened reach also refers to engaging with audiences who may feel the OSC is not for them. Greater reach can be achieved virtually and physically through interdisciplinary programs, community partnerships and collaborations, and training.

7. DIGITAL EXPERIENCES

Digital engagement, programming and outreach is critical to the operation and 21st Century learning for all museums and for science centres in particular. Digital engagement is not a nice-to-

have add-on to what science centres are doing physically, but instead should be considered an indispensable component of the overall omnichannel visitor experience. The current global pandemic has, in fact, revealed where science centres in North America and internationally have excelled in the digital realm and where others have fallen short.

- Center of Science and Industry has developed COSI Connects, a “digital doorway” for fun at-home science discovery and learning. Everyday, COSI posts “fresh, exciting and engaging science” through videos and hands-on science that can be done with the family. Similarly, the Museum of Science and Industry in Chicago has developed online programs and experiments for kids using everyday objects found at home.
- Lisbon’s Pavilhão do Conhecimento has developed a website where families will find hands-on science activities to try at home, short talks by scientists, one-minute podcasts for children and book suggestions available on-line.
- The Museum of Science in Boston has developed a suite of activities that produces engineering and computer science in-school curricula, and is currently developing a virtual learning series that will adapt hands-on learning into remote spaces. Frost Science in Miami has created virtual field trips bringing the physical experience of the museum into classrooms across the county.
- Perot Museum of Science and Nature provides an online teacher guide developed by the Museum to aligns with the state-wide science curriculum - Texas Essential Knowledge and Skills (TEKS).

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

As the OSC develops its new vision, it should continue to build the digital realm as an integral part of this reimagining. This would include not only digital engagement within the building but online resources (as it has been doing) and virtual applications as well to extend reach and experience.

8. PARTNERSHIPS

Nearly all of the science centres in this scan actively collaborate with outside partners as a way to build support for the institution, develop content and engage with audiences. Science centres seek partners for funding, programming, research, learning and many other opportunities.

- Exploratorium works with science agencies as major partners for research and content. These agencies include NASA and National Oceanic and Atmospheric Administration.
- Exploratorium also seeks partners beyond its home. It reaches out across cultures and continents with global partners to broaden its influence on formal and informal learning.
- Columbus’s science centre – COSI - has developed a major research partnership with Ohio State University (OSU), one of the US’s largest public research universities. COSI and OSU have created a “center of science” at COSI where research, science, and university outreach are embedded into the fabric of everyday public, student, and family experiences.
- COSI also partners with the local education system through the Educator Advisory Board (EAB) established as a non-governing board comprised of local, regional, and state educators representing public, private, and charter schools, after-school programs, libraries, and other educational organizations and institutions. EAB members are committed to advocating for the complementary role of formal and informal education and for COSI as an educational resource.

- Many science centres, primarily in the US, work closely with **foundation partners**. The Museum of Science and Industry in Chicago provides foundations with the opportunity to partner with an established community advocate and leader in science education.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

It will be important for the OSC to continue to develop partnerships within the city, province and globally. These partnerships will be essential to support the OSC's programming, education and learning, research and other initiatives as it reimagines its future at Ontario Place.

9. PHYSICAL EXPERIENCES

All of the science centres studied present a similar type of visitor experience – hands-on interactive exhibits that communicate scientific principles – a model created by Exploratorium and the Ontario Science Centre in the late 1960's. Citing a number of sources including the *International Strategy 2018-2022 Extending Reach, Growing Reputation and Building Resource* by the UK's Science Museum Group and Michael John Gorman's *Idea Colliders: The Future of Science Museums*, there is a movement underway to reimagine the science centre experience to become more participatory in approach where the visitor of various backgrounds and disciplines contribute to the content and co-creation – a collision of ideas and experiences that “connect the unexpected”. It should be noted that the science centres examined in the scan have not adopted this approach, however, this movement is important to include in this scan.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

The current OSC experience is similar to the one described above – one that it had pioneered over 50 years ago. As the OSC reimagines its future it will assess what has been successful in the past balanced with what it believes to be the future of science engagement for the next generation of lifelong visitors.

10. WATERFRONT LOCATION

The redevelopment of waterfronts over the last several decades have been key to urban revitalization efforts (for those cities with waterfronts) across the globe. In recent years the strategy plans that are shaping today's cities have reflected a clear growth in interest in the waterfront, that border between city and water – be it river, lake, sea or ocean. Commercial, leisure, recreational and cultural activities activate and animate waterfronts around the world attracting residents and tourists alike.

For that reason many science centres are located at waterfronts and they are often part of a cultural or mixed-used precinct. Of all the waterfront science centres studied in this scan, it is interesting to note that only one, Exploratorium in San Francisco, integrates water into its programming. All others use the waterfront as site appeal to attract residents and tourists to the area and also as a backdrop for restaurants and premium venue rentals.

IMPLICATIONS TO A RELOCATED ONTARIO SCIENCE CENTRE AT ONTARIO PLACE

Ontario Place is one of the premiere waterfront locations in the world. As the site is revitalized with leisure, recreational and cultural uses (including the relocation of the OSC), Ontario Place will be one of the great destinations for residents of Ontario and for tourists. While the OSC will certainly be able to take advantage of its new site in terms of visitation, restaurant or café use and venue rental opportunities, it may also consider how Lake Ontario can be incorporated into its programming and exhibitions.

Environmental Scan – Canada and USA

Confidential and Privileged Advice to Government

Name	Larger City Canadian Science Centres						US Waterfront Science Centres										US Downtown Science Centres									
	Ontario Science Centre	Montreal Science Centre	Science World	TELUS Spark	Telus World of Science	Average	Median	Carnegie Science Center	COSE - Center of Science and Industry	Exploratorium	Great Lakes Science Center	Museum of Science and Industry, Chicago	Museum of Science	Oregon Museum of Science and Industry	Phillip/Patricia Frost Museum of Science	Average	Median	Arizona Science Center	California Science Center	Discovery Place Science	Pacific Science Center	Perot Museum of Nature and Science	The Franklin Institute	Average	Median	
Events/Activities	<ul style="list-style-type: none"> Science Day Camps March Break Camps Summer Camps Sleepovers Team Building Challenger Learning Centre (Group Size: 16-22 participants, Duration: 3 hours, Cost: \$2,500) The Challenge Zone (Group Size: 5-50 participants, Duration: 90 minutes, Cost: \$2,000 plus \$25 per person) Scavenger Hunts (Cost: \$18 per person, plus room rental, Optional Cost: \$200 for Host-Facilitator) 	<ul style="list-style-type: none"> Women and Girls of Science 2020 (showcase of different organizations and professional opportunities in science for women) Contests (Family based online submissions) Wirewolf invasion at the Science Centre (unique game experience) Celebration of science 2021 (annual benefit) The Level 2 Night : Women & Gaming Night Science World Extravaganza Evenings for Teens Science of Cocktails Uncorked 	<ul style="list-style-type: none"> Seasonally-based activities On the Road (Outreach science events) Community Science Celebration (Community showcase) Green Games (eco-storytelling contest) Big Science for Little Hands (activities and workshops) Extravaganza Evenings for Teens Science of Cocktails Uncorked 	<ul style="list-style-type: none"> Camps Sleepovers Drive-In Movies Spark Science Road Trips (Self-directed, curated maps provided by centre) Fever Fridays (18+) Science Communications (workshops) The Level 2 Night : Women & Gaming Night Science After Hours Cafe Sci Two Scientists Science on the Road Workshops Requin Tech Tours Carnegie Science Award 	<ul style="list-style-type: none"> Build Your New Science Centre LIMEN Kitchen Party (fundraising event) Science at Home MakerMonday (at home activities) The Level 2 Night : Women & Gaming Night Science After Hours Cafe Sci Two Scientists Science on the Road Workshops Requin Tech Tours Carnegie Science Award 			<ul style="list-style-type: none"> Live Shows: Science Stage Body Stage Planetarium shows Built Planetarium Laser Shows For Children: Summer Camps Preschool Programs Sleepovers For Adults: Science After Hours Cafe Sci Two Scientists Science on the Road Workshops Requin Tech Tours Carnegie Science Award 	<ul style="list-style-type: none"> COSE camps Live experiments and demonstrations Planetarium shows Giant Screen Theatre Shows COSE Lab Spaces (hands-on learning) After Dark Online (18+): discussions on relevant topics such as Wildfires, Mediated Messaging Full Spectrum Shorts Storytime Science for Kids Learning Toolbox 	<ul style="list-style-type: none"> Events and activities have moved online as planetarium is closed to the public. Online events and activities include: <ul style="list-style-type: none"> After Dark Online (18+): discussions on relevant topics such as Wildfires, Mediated Messaging Full Spectrum Shorts Storytime Science for Kids Learning Toolbox 	<ul style="list-style-type: none"> Cleveland Clinic DOME Theatre shows Spring Break Camps Summer Day Camps Winter Break Camps Design & Build (Design challenges) Daily Science Demos Curiously Open (Robotics Challenge) Great Science Gala Liftoff! (Gala afterparty) 	<ul style="list-style-type: none"> Giant Dome Theatre shows Live Science Experiences VR Transporter (transports visitors into outer space) Flight and Motion Simulators 	<ul style="list-style-type: none"> Omni Theatre shows Planetarium Shows 4-D Films Live Presentations Book Club for the Curious Women and Girls in STEM Month Nanodays with a Quantum Leap 2020 	<ul style="list-style-type: none"> Empirical Theater Shows Daytime Documentaries Hollywood Blockbusters Sci-Fi Film Fest Theater Events Kendall Concerts Reel Science (movie nights) Maker Workshops Star Parties Reel Eats Science Pub Meet a Scientist 	<ul style="list-style-type: none"> Team Building Activities Animal Encounters Guest Speakers Laser Shows Stargazing Camps Overnight Adventures 			<ul style="list-style-type: none"> CREATE at Arizona Science Center - events that take place in the Center's 6,600 sq. ft. Free Weekend Lasers and Liquor (adults) Science with a Twist (adults) Snow Week Weird Science Halloween 	<ul style="list-style-type: none"> Live Shows & Demonstrations Kidcut Days Science Saturdays California Science and Engineering Fair Annual Discovery Ball Benefit 	<ul style="list-style-type: none"> Labs Live Shows 	<ul style="list-style-type: none"> Curiosity Expo Meet A Scientist Science in the City (lectures) Game Jam Railroad Show AMAX Movies PasSci at Night (21+) Play Lab Parents' Night Out Family Science Night Girls' Night Out Camps 	<ul style="list-style-type: none"> Architecture tours of the museum building Art Lab Discovery Camp Sleepovers Scouting Adventures Social Science (21+) National Geographic Live (speaker series) 	<ul style="list-style-type: none"> Daily Live Science Demonstrations Bale Flight Simulator Discovery Camp Sleepovers Scouting Adventures Social Science (21+) National Geographic Live (speaker series) Science After Hours Kitchen Science Science After Hours 	<ul style="list-style-type: none"> Franklin Instameets (Instagram) SparkofScience (short instructional videos) 		
Digital/Virtual	<ul style="list-style-type: none"> Facebook Live Events 	<ul style="list-style-type: none"> Links to Online Games/Activities: Interactive File on Criminalistics Concoventures Morbus Delirium 	<ul style="list-style-type: none"> Code Along Online Classes Educator and Parent resources are offered online 	<ul style="list-style-type: none"> DIY Science Centre (Online paid programming for students) Live from Spark (on YouTube): Guided live talks from remarkable creators, scientists, artists, educators and builders. Direct from the Operating Room (students can watch surgeries live in-person or online) 	<ul style="list-style-type: none"> Online Zoider Dome Shows Online Nature Exchange - online gallery and program COVID-19 Science (Interviews with experts) Science at A's House (Demonstration done by the President & CEO) Virtual School Programs (pre-recorded demonstrations) 			<ul style="list-style-type: none"> Online Educator Resources 	<ul style="list-style-type: none"> COSE Connects: Virtual Exhibits 360 tour online activities COSE's Interactive Videoconference programs (two way online workshops for schools with science professionals) 	<ul style="list-style-type: none"> After Dark Online (18+): discussions on relevant topics such as Wildfires, Mediated Messaging Full Spectrum Shorts Storytime Science for Kids Learning Toolbox Created/garmented on several mobile apps including: <ul style="list-style-type: none"> Total Solar Eclipse Sound Uncovered Color Uncovered Sound Rebound How Many Saturdays? Science Journal 	<ul style="list-style-type: none"> NASA Glenn Visitor Center App 	<ul style="list-style-type: none"> Tuesday Tales Online Films 	<ul style="list-style-type: none"> IMOSatHome: Digital Live Stream STEM Beyond School Overnights at the Museum Ask a virtual expert 	<ul style="list-style-type: none"> Virtual OMSI After Dark Brewfest 	<ul style="list-style-type: none"> Virtual Birthday Parties Virtual Homeschool Virtual Field Trips Virtual Outreach Virtual Mini-Camps 			<ul style="list-style-type: none"> Online platform "Connect" offers virtual learning including lesson plans, interactive videos, activities, and articles for parents, students, and educators. Each day at 12:30pm, the center hosts Facebook Live activities and demonstrations. Virtual Learning Support is offered by the center's learning team through the Science Hall during the virtual school day. 	<ul style="list-style-type: none"> Stuck at Home Science for Youth Virtual Hands-On Science Camp 	<ul style="list-style-type: none"> Virtual Classes: All that Matters Animal Ecology Animal Lifestyles Animals in their Environment Body Systems Earth Explorers Forces and Motion 	<ul style="list-style-type: none"> Virtual Field Trips Curiosity Course Curiosity at Home PasSci Streaming Videos 	<ul style="list-style-type: none"> Science Spotlight: COVID-19 online speaker series 	<ul style="list-style-type: none"> Franklin Instameets (Instagram) SparkofScience (short instructional videos) 			
Perm Exhibitions	<ul style="list-style-type: none"> KidSpark (Human Biology, Natural Environment, Physics + Engineering, Weather + Climate, Psychology + Perceptions) Space Hall (Physics + Engineering, Space + Exploration) Question of Truth (Psychology + Perceptions) The Atkinzenca Human Edge (Human Biology) Cohon Family Nature Escape (Natural Environment) The HotZone (All categories) The Living Earth (Natural Environment) Science Arcade (Physics + Engineering) Weston Family Innovation Centre (Physics + Engineering, Psychology + Perceptions) Forest Lane (Natural Environment) 	<ul style="list-style-type: none"> Fabrik - Creativity Factory (Technology, Engineering) Explore - Life-Sized Science (Engineering, Energy) Human (Biology) Click! The Zone for Curious Young Minds (Engineering) Water in the Universe (Space, Natural Environment) The Windmills of the Imagination (Natural Environment, Energy) Tinkering Space: The WorkSafeBC Gallery (Makerspace) TD Environmental Trail (transportation, food, water, and waste) Wonder Gallery (play, tactile experience) 	<ul style="list-style-type: none"> Art Displays (Features local artists) Brillly (Flight) BodyWorks (Biology) Open Studio Gen Spencer Science Park (Natural Environment) Search: Sara Stern Gallery (Natural Environment) Tinkering Space: The WorkSafeBC Gallery (Makerspace) TD Environmental Trail (transportation, food, water, and waste) Wonder Gallery (play, tactile experience) 	<ul style="list-style-type: none"> Creative Kids Museum Brainasium (Outdoors) Energy & Innovation Earth and Sky Open Studio Makerspace Being Human 	<ul style="list-style-type: none"> The Future of TELUS World of Science - Edmonton The Nature Exchange (Natural Environment) P.A.C.E. Gallery CuriousCTV (dedicated gallery for children under 8, various scientific topics) The Science Garage (Engineering) 			<ul style="list-style-type: none"> Brickburgh (Engineering, Art, Architecture) Ropes Challenge (Gravity, Physics) BodyWorks (Biology) Water, Natural Resources USS Reguin Submarine (Underwater Tech) Highmark SportsWorks (Physics, Biology) Life Roboworld (robotics) Miniature Railroad & Engineering NETL Energy Zone (Energy, electricity) Little Learner Clubhouse (various topics, interactives) SpacePlace (Space) 	<ul style="list-style-type: none"> Big Science Park (Natural Environment, Biology) American Museum of Natural History Dinosaur Gallery Little kidspac (various topics; medical, biology, biology) Space Ocean Life Energy Explorers Holloway Exhibitions (photography) Process (change, inventions, technology) NETL Energy Zone (Energy, electricity) Little Learner Clubhouse (various topics, interactives) SpacePlace (Space) 	<ul style="list-style-type: none"> Exploratorium has dozen of exhibits that cover the following subjects: <ul style="list-style-type: none"> Astronomy & Space Sciences Biology Chemistry Data Earth Science Engineering & Technology Environmental Science History Mathematics Nature of Science Perception Physics Social Science 	<ul style="list-style-type: none"> NASA Glenn Visitor Center Cleveland Creates Zone (Makerspace) William G. Mather Steamship NANO Mini Exhibit Solarworks Windturbine Highmark SportsWorks (Physics, Biology) Life Roboworld (robotics) Miniature Railroad & Engineering NETL Energy Zone (Energy, electricity) Little Learner Clubhouse (various topics, interactives) SpacePlace (Space) 	<ul style="list-style-type: none"> U-SSS Submarine Wonder is All Natural (Nature) ODU The Experience (biology, personality, environment) Colleen Moore's Fairy Tale (Pop culture) Extreme Ice (Climate change) The Idea Factory (construction, simple machines, light, magnetism) Coal Mine Yesterday's Main Street (history) Whispering Gallery (acoustic design) ToyMaker 3000: An Adventure in Automation Swiss Jolly Ball (Mechanics) Earth Revealed (engineering and tech) Henry Crown Space Center (Space) Fast Forward... Inventing the Future Hiarm Tech Transportation Gallery 	<ul style="list-style-type: none"> Hall of Human Life Permanent Exhibit Wicked Smart: Invented in the Hub Colossal Fossil: Triceratops Cliff 	<ul style="list-style-type: none"> Space Science Hall Science Playground (Discovery Lab) Empirical Hall Natural Sciences Hall Submarine - USS Blueback 	<ul style="list-style-type: none"> Power of Science (oceans, biology, universe, technology) Feathers to the Stars (animal flights, human flight, space exploration) MetLab (mind and body) River of Gass (ecosystems, natural environment) 			<ul style="list-style-type: none"> All About Me (Biology) Flight Zone Making Sense of Your Dollars and Cents (Financial Literacy) The W.O.N.D.E.R. Center (Neurological Education) Evans Family SkyCycle Page (Physics) Get Charged Up (Electricity) Forces of Nature (Earth) My Digital World (Current and Past Technology) Solarville (Renewable Energy) 	<ul style="list-style-type: none"> Ecosystems (Structures, Transportation) World of Life (Biology, Energy, Supply/Demand) Air & Space Roy A. Anderson Blackbird Exhibit & Garden (Outdoor Environments) 	<ul style="list-style-type: none"> World Alive (biodiversity, ecosystems) Science (early education exhibition) Cool Stuff (technology, electricity) Project Build (engineering, architecture) Think It Up (hands-on, electricity, music) Being Me (biology) 	<ul style="list-style-type: none"> We Are Data Tropical Butterfly House Wellbody Academy (health, wellbeing) Living Exhibits Body Works Just for Tots (Engineering, Architecture) History of People and Plants Pugot Sound Model Dinosaurs: A Journey Through Time 	<ul style="list-style-type: none"> Moody Family Children's Museum Lamar Hunt Family Sports Hall Being Human Hall (Biology) Fixat Instruments Engineering and Innovation Hall (Engineering) Discovering Life Hall (Animals) Tom Hunt Energy Hall Lyda Hill Gems and Minerals Hall The Rees-Jones Foundation Dynamic Earth Hall (weather) Dr. Boone Pickens Life Then and Now Hall (Dinosaurs) Expanding Universe Hall (Space) Rose Hall Of Birds 	<ul style="list-style-type: none"> The Giant Heart Your Brain The Train Factory Dr. Isaac's Loft (physics) Space Command Being Human Hall (Biology) Fixat Instruments Engineering and Innovation Hall (Engineering) Discovering Life Hall (Animals) Tom Hunt Energy Hall Lyda Hill Gems and Minerals Hall The Rees-Jones Foundation Dynamic Earth Hall (weather) Dr. Boone Pickens Life Then and Now Hall (Dinosaurs) Expanding Universe Hall (Space) Rose Hall Of Birds 			

Name	Larger City Canadian Science Centres							US Waterfront Science Centres							US Downtown Science Centres											
	Ontario Science Centre	Montreal Science Centre	Science World	TELUS Spark	Telus World of Science	Average	Median	Carnegie Science Center	COSI - Center of Science and Industry	Exploratorium	Great Lakes Science Center	Museum of Science and Industry, Chicago	Museum of Science	Oregon Museum of Science and Industry	Phillip/Patricia Frost Museum of Science	Average	Median	Arizona Science Center	California Science Center	Discovery Place Science	Pacific Science Center	Perot Museum of Nature and Science	The Franklin Institute	Average	Median	
Temporary/Feature Exhibitions	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes			
Special Features	<ul style="list-style-type: none"> •IMAX Dome Films •The Planetarium •Outdoor Programming - Cohon Family Nature Escape 	<ul style="list-style-type: none"> •MAX TELUS Theatre •Heavy focus on gaming 	<ul style="list-style-type: none"> •OMNIMAX Theatre •Outdoor Programming: Ken Spencer Science Park TD Environmental Trail 	<ul style="list-style-type: none"> •Dome Theatre •Outdoor Programming Space: Brainium (outdoor park and playground) 	<ul style="list-style-type: none"> •IMAX Theatre •Zedler Dome •Gallery dedicated to future expansion project •Located inside Coronation Park 			<ul style="list-style-type: none"> •Buhl Planetarium •Duquesne Light Co. STEM Center •Fab Lab (digital fabrication laboratory) •The Rangos Giant Cinema •USS Requin Submarine 	<ul style="list-style-type: none"> •The Planetarium •Giant Screen Theatre 	<ul style="list-style-type: none"> •Artworks on View •Throughout the center •Black Box multimedia art installation room •Created/partnered on several mobile apps including: <ul style="list-style-type: none"> -Total Solar Eclipse -Sound Uncovered -Color Uncovered -Sound Rebound -How Many Saturdays? -Science Journal -Digital Teaching Boxes 	<ul style="list-style-type: none"> •MC2 STEM High School (located on site, Cleveland Metropolitan School District (CMSD) and the Science Center. Focusing on STEM education) •Cleveland Clinic DOME Theater •NASA Glenn Visitor Center 	<ul style="list-style-type: none"> •Temp Exhibit focusing on 20 Years •Giant Dome Theatre 	<ul style="list-style-type: none"> •Omni Theatre •Planetarium •4-D Films Theatre •Butterfly Garden - Garden Walk & Insect Zoo •Thrill Ride 360° •SubSpace After Dark Live! (adult program) 	<ul style="list-style-type: none"> •USS Blueback •Empirical Theater •Kendall Planetarium 	<ul style="list-style-type: none"> •Frost Planetarium •Aquarium 			<ul style="list-style-type: none"> •Irene P. Flinn Giant Screen Theater •Dorrance Planetarium 	<ul style="list-style-type: none"> •IMAX Theater with Laser •188,000 gallon Aquarium 	<ul style="list-style-type: none"> •Discovery Theater •MAX Dome Theatre 	<ul style="list-style-type: none"> •Laser Dome •IMAX Movies 	<ul style="list-style-type: none"> •The Hoglund Foundation Theater 	<ul style="list-style-type: none"> •Tuttleman IMAX Theater •Fels Planetarium •Benjamin Franklin National Memorial 			
Rental Program	<ul style="list-style-type: none"> •Birthday Parties •Private Events: Meeting •Trade show •Product launch •Awards ceremony •Performance •Networking event •Gala dinner •Wedding •Bar/bat mitzvah •Fam shoot 	<ul style="list-style-type: none"> •Children's Birthday Parties •Three packages: Two-hour exhibition package (total duration of 3 ½ hours on site at the Science Centre) •IMAX film package (total of 2 ½ hours on site) •Exhibition & IMAX combo package (total of 4 ½ hours on site) 	<ul style="list-style-type: none"> Rentals available for 20 to 1,800 people •Nano Nuptials •Birthday Parties •Camp In •Spaces are available for rent from \$1,800 to \$6,500 Rental Package: https://www.scienceworld.ca/wp-content/uploads/rental-package_20200610.pdf 	<ul style="list-style-type: none"> Available for a variety of events with full catering. •Atrium •Dome Lobby •Dome Theatre •Perm/Feature Gallery •Insignation Stage •Social Eatery •Brainasium •Outdoor Park •Learning Centre 	<ul style="list-style-type: none"> Following areas are available: •IMAX Theatre •Zedler Dome •Science Stage •Boardroom •Winspear Learning Centre •Park View Room •Synchrude Environment Gallery •The Body Fantastic in the Allard Family Gallery •The Science Garage in the Hole Family Gallery •S.P.A.C.E. Gallery •Purple Pear restaurant 		<ul style="list-style-type: none"> •The following spaces are available for private event rentals: •Point View Hall •Science Stage •Covestro Gallery - H2OH! •Why Our Rivers Matter Exhibit Area •Buhl Planetarium and 2nd Floor Exhibit Areas •BodyWorks 3rd Floor Exhibit Areas and BodyStage •Works Theater and 4th Floor Exhibits •Wean Family Overlook Room •Highmark SportsWorks •Full Building 	<ul style="list-style-type: none"> •Private event rentals are available in the following spaces: •Full Facility & Gallery Bundles •Fisher Bay Observatory Gallery & Terrace •East Gallery •Bechtel Central Gallery •Osher West Gallery •Xanbar Forum 	<ul style="list-style-type: none"> •Day and evening rentals are available for groups of 10 to 1,000. 	<ul style="list-style-type: none"> •Private event rentals are available in the following spaces: •Entire Museum •Rotunda •Covestro Gallery - H2OH! •U-505 Submarine •South Portico •Entry Hall •North Portico •Smart Home •West Pavilion •Rosenwald Room •Auditorium •Henry Crown Space Center •Giant Dome Theater •Little Theater 	<ul style="list-style-type: none"> •Yes, rentable for weddings, birthdays, and work events 	<ul style="list-style-type: none"> •Private event rentals are available in the following spaces: •Waterfront restaurant •Four exhibit halls •Empirical Theater •Kendall Planetarium •Featured packages include: <ul style="list-style-type: none"> -Company Picnic Package -Evening Event Package -Meeting Planner Package 	<ul style="list-style-type: none"> •Private event rentals are available in the following spaces: •Aquarium •Ocean Gallery •Planetarium •Knight Learning Center •Rooftop Terrace & Observation Deck •Science Plaza 		<ul style="list-style-type: none"> •Yes - Rentals are available including in exhibition halls and planetarium. 	<ul style="list-style-type: none"> Can host events from 40 to 4,000 people. Rental spaces include: <ul style="list-style-type: none"> •Samuel Oschin Space Shuttle Endeavour Pavilion •Wallis Annenberg Building •The Walt Disney Big Lab •J. Howard Edgerton Court •Ecosystems •Robert H. Lorsch Family Pavilion •IMAX with Laser Theater •Donald P. Loker Conference Center •Wreszsek Family Foundation MUSES Room •Howard F. Ahmanson Building North Patios 	<ul style="list-style-type: none"> •Private events are available in the following locations: <ul style="list-style-type: none"> •Ackerley Family Exhibit Gallery •Board Room & Small Conference Room •IMAX Theaters •Laser Dome Theater •Building 1 •Building 2 •Building 3 •Building 4 	<ul style="list-style-type: none"> •Private events are available in the following locations: <ul style="list-style-type: none"> •Ackerley Family Exhibit Gallery •Board Room & Small Conference Room •IMAX Theaters •Laser Dome Theater •Building 1 •Building 2 •Building 3 •Building 4 	<ul style="list-style-type: none"> •Private events are available in the following locations: <ul style="list-style-type: none"> •Lamar Hunt Family Jordan Lobby •Sports Hall •Moody Family •Children's Museum Learning Labs •Musical staircase •Outdoor Plaza •Main entrance •Glass-encased Main Lobby •The Hoglund Foundation Theater •David's Deck: an outdoor observation space •Discovering Life Hall •Being Human Hall •Texas Instruments Engineering and Innovation Hall •The Rees-Jones Foundation Dynamic Earth Hall •Lyda Hill Gems and 	<ul style="list-style-type: none"> •Private events are available in the following locations: <ul style="list-style-type: none"> •Benjamin Franklin Memorial Hall •Jordan Lobby •Conference centre •Fels Planetarium •Space Command & NOW/NEXT •The Train Factory •Frepper Hall and Patent Library •Giant Heart •Changing Earth Electricity •Wisdom Hall & Your Brain •Rooftop Deck •Theaters and Presentation Spaces 						

Environmental Scan – International

Confidential and Privileged Advice to Government

International Science Centres											
Name	Europe										
	Glasgow Science Centre	City of Science and Industry	Experientarium	NEMO Science Museum	Phaeno Science Center	Universum-Bremen	Ciudad de las Artes y las Ciencias	Copernicus Science Center	Pavilhão do Conhecimento	Deutsches Museum (Munich Science Centre)	ArtScience Museum
Location	Glasgow SCT,UK	Paris, FR	Copenhagen, DK	Amsterdam, NL	Wolfsburg, DE	Bremen, DE	Valencia, ES	Warsaw, PL	Lisbon, PT	Munich, DE	Singapore
Region Served	Glasgow City Region	Île-de-France	Region Hovedstaden	Western Netherlands	Hannover-Braunschweig-Göttingen-Wolfsburg Metropolitan Region	Bremen City	Valencian Community	Warsaw Greater Metro Area	Lisbon Metro Area	Munich Metro Area	Central Region
Regional Population	1,800,000	12,210,000	1,836,000	8,252,000	3,900,000	547,976	4,975,000	3,100,000	2,827,514	6,000,000	922,980
Location within City	Waterfront	Suburban; surrounded by man-made water feature	Waterfront - Suburban	Waterfront	Downtown	Downtown	Downtown Adjacent	Waterfront	Suburban	Downtown	Downtown Waterfront
General Institution Info											
Founded	2001	1986	1991	1923	2005	2000	1998 (full complex) 2000 (Science Museum)	2005	1998	1903	2011
Mission	We want to inspire everyone to explore and understand the world around them and to discover and enjoy science.	A place for sharing and meeting, the City of Science and Industry strives to make accessible to everyone, whatever their background, the discovery of sciences, techniques, industrial know-how and its challenges.	To stimulate people's interest in science and technology and to increase their awareness of methods and results within science and technology.	To bring science and technology closer to the public in an interactive and accessible way, in the museum, at schools, at nationwide events and online.	Philosophy: Let your curiosity run free and go on an adventure journey through the world of phenomena in an environment that has been specially created for this.	Awaken curiosity, seduce astonishment, arouse enthusiasm and provoke questions	The City of Arts and Sciences in Valencia is a unique complex devoted to scientific and cultural dissemination.	We inspire to experience, understand the world and act responsibly.	To promote active citizenship based on scientific knowledge.	For over 100 years, Deutsches Museum has presented exhibitions on scientific and technological advancements while also reflecting on social change. Exhibitions cover topics including of materials, energy, communication, transportation, natural science, musical instruments, and new technology.	To explore where art, science, culture and technology come together
General Description	Glasgow Science Centre is a registered charity with the goal to encourage, motivate, and inspire people of all ages, abilities, and social backgrounds to engage in science. The centre aims to help individuals develop skills and confidence to participate in a society where technology and science are prevalent.	City of Science and Industry is located in the centre of the multicultural park La Villette in Paris, France. The science centre is a place of Univescience, bridging science, technology, and society.	Experientarium is a science centre with high quality hands-on exhibitions and stresses play to help visitors experience science in innovative ways. The centre has programs for families, schools, and science lovers of all ages	At NEMO Science Museum visitors connect with science and technology through a hands-on, informal learning environment. NEMO presents technology and scientific phenomena that plan an important role in the daily life of visitors. The museum also houses a significant historical collection.	Phaeno Science Centre explores the connections between art and science to incite questions that lead to new discoveries and thoughts. The centre stresses the experience of the individual; individuals have the ability to generate their own unique questions and answers.	The Universum Bremen emphasizes scientific phenomena discovery and research through interactive and hands-on exhibits, visitor inquiry, and play. The centre aims to encourage visitors of all ages to engage in science through enthusiasm, amazement, and understanding.	The main objective of the Science Museum is to stimulate critical thinking and curiosity in the realms of science, technology, and the environment. The museum prioritizes interactivity leading with the motto "Forbidden not to touch, not to feel, not to think".	Copernicus Science Centre is home to over 450 interactive exhibits. The centre focuses on hands-on experiences to help visitors engage in self directed learning. The centre carries the reputation as one of the most advanced science centres in Europe.	The Pavilhão do Conhecimento is a science museum that aims to provide access of the science and technology to everyone. The museum houses hundreds of exhibits in the subjects of mathematics, physics, biology, chemistry, and social sciences.	We present science and technology as something to be seen and experienced and illustrate its cultural significance by exhibiting unique masterpieces. We inspire people to play an active role in shaping the future.	ArtScience Museum in Singapore presented the intersection of arts and science through large-scale exhibits. The museum has only one permanent exhibition and mostly features digital and multimedia exhibits curated by other institutions.
History	Glasgow Science Centre opened to the public in June 2001. The centre was part of the Pacific Quay redevelopment project which converted the old cargo port into a cultural destination commencing with the Glasgow Garden Festival in 1988. In 2007, the headquarters for BBC Scotland and Scottish Television opened at the Quay. Glasgow Science Centre was designed by the Building Design Partnership and cost around £75 million with £37 million in public funds from the Millennium Commission. To commemorate the Clydesdale Bank Tower which was dismantled and relocated off-site, the new science centre incorporated a £10 million for the Glasgow Tower which provides visitors with panoramic views of the city and beyond.	City of Science and Industry is part of the revitalization project of the La Villette site, a former slaughterhouse site that ceased operations in 1974 and was converted into a multicultural park in the 1980s. The centre opened in 1986 and was designed by architect Adrien Fainsilber in collaboration with engineer Gérard Chamayou. In 1992, the centre opened a dedicated children's gallery the Cité des enfants. In 2007, the "New Generation" Children's City for children aged 2-7 opened, and in 2009 a Cité des enfants was upgraded for children aged 5-12. City of Science is a location of discovery, education, and innovation built for a diverse audience.	Located in Hellerup, north of Copenhagen, Experientarium is a science centre that opened in 1991. The facility is a former bottle plant that was operated by the Tuborg beer company. From 2014 to 2016, Experientarium moved temporarily to a downtown location while a renovation and expansion project was completed. In 2017, the centre opened after a renovation and expansion project by CEBRA. Today, the centre focuses on exploration of science and technology with the goal of "bringing out the scientist in us all" and encourages visitors to ask questions and question answers to those questions.	Throughout its 100-year history, NEMO Science Centre has been at the forefront of scientific and technological progress including industrialization, sustainability, and innovation. The museum was founded as the Labour Museum by industrial painter Herman Heijnenbroek who wanted a location to display his collections of paintings and objects. Between 1945-1970, the museum was rebranded as the Netherlands Institute for Industry and Technology (NIKIT) with exhibitions aimed at getting youth excited about careers in technology and innovation. In the 1970's and 1980's the museum adopted the American approach of "play" and began covering topics aligned with school curriculum such as physics, chemistry, engineering, and computers. In 1997, the museum was relocated to its current location in Amsterdam's eastern docklands and in 2000, was renamed NEMO Science Centre.	Phaeno Science Centre was conceptualized by City of Wolfsburg staff in 1998 with the desire to build a cultural attraction near Wolfsburg's rail station to compliment the existing Kunst Museum (art museum). After four years of construction, the centre opened in November 2005. The building was designed by star architect Zaha Hadid and incorporated innovative architectural elements such as self compacting concrete and specially developed glass facades. Phaeno Science Centre has won several awards for its unique architectural design.	Universum* Bremen opened on September 9, 2000 after a year and a half of construction. In 2007, the centre was expanded to include a new temporary exhibition building and an outdoor interactive area. In 2015, the centre reopened after an extensive renovation project with a completely updated visitor experience and new interactive and multimedia exhibitions that focus on three subject areas; technology, people, and nature. The centre is recognizable for its 'whale' shaped exterior.	The City of Arts and Sciences first opened in 1998 with the construction of the complex's first building the Hemisfèric (theatre building). Two years later, the Science Museum and Umbracle (indoor garden) opened followed by the Oceanogràfic (Aquarium) in 2003. The Palau de les Arts Reina Sofia was constructed in 2005 and in 2009, the site's final addition, the Agora (events building) was completed. The Science Museum was designed by star architect Santiago Calatrava is known for its 21st-century interactives that provide visitors with entertaining ways to explore life, science, and technology. Today, the City of Arts and Sciences is a unique complex with the aim of scientific and cultural dissemination and welcomes approximately 4 million visitors annually.	Located on the bank of the Vistula River in Warsaw, Poland, Copernicus Science Centre was established in 2005 and opened to the public in 2010. Since 2011, the centre has undergone building upgrades including the addition of a Robotic Theatre, chemistry lab, biology lab, and physics lab. The centre encourages visitors to experiment, experience, and explore natural phenomena, and to use critical thinking skills to see multiple perspectives and analogies. Copernicus is the largest science institution in Poland and remains one of the country's top attractions.	The Pavilhão do Conhecimento began as the Knowledge of the Seas Pavilion in EXPO 98', which during its 132 days, was visited by 2,543,914 visitors. In July 1999, the museum reopened in the pavilion building with the goal to promote scientific and technological education. Today the museum encourages the public to share and discuss new ideas while bringing the values of social progress based on curiosity, creativity, and critical thinking of all citizens to the forefront of all exhibitions, programs, and activities.	Deutsches Museum was founded in 1903 by engineer Oskar von Miller. Since 1925, the museum has been located at its current location on an island on the river Isar. Throughout the nearly 100 years at its current location, the museum has undergone several renovations and expansion projects with the most notable related to repairs after extensive damages during World War II. The museum's exhibitions galleries contain interactive and multimedia exhibits with explanatory panels, images, and videos. Deutsches Museum has three satellite locations; Deutsches Museum Verkehrszentrum (locomotive and automotive museum), Flugwerft Schleissheim (aviation museum), and Deutsches Museum Bonn (small science and technology museum). The museum is currently refurbishing 260,100 square feet of exhibition space. Phase 1 of the refurbishment is expected to open in 2021 and the second phase is expected to be completed in 2028. Deutsches Museum is the world's largest science and technology museum attracting 1.4 million annual visitors.	ArtScience Museum in Singapore opened to the public in 2011. The museum houses 21 gallery spaces and only one permanent exhibition: Future World: Where Art Meets Science. ArtScience Museum mostly shows temporary exhibitions curated by other institutions and has previously shown works by some of the world's most renowned artists including Leonardo Da Vinci, Salvador Dali, Andy Warhol, Vincent Van Gogh, and M.C. Escher. Scientific exhibitions have explored subjects such as paleontology, space exploration, big data, particle physics, cosmology, and marine biology.

Name	Glasgow Science Centre	City of Science and Industry	Experimentarium	NEMO Science Museum	Phaeno Science Center	Universum-Bremen	Ciudad de las Artes y las Ciencias	Copernicus Science Center	Pavilhão do Conhecimento	Deutsches Museum (Munich Science Centre)	ArtScience Museum
Recently Relocated/Revised	In 2013, the third floor was renovated to house a new interactive exhibition, BodyWorks.	N/A	In 2017, the centre opened after a renovation and expansion project by CEBRA that doubled the exhibition space and included a central copper staircase, a rooftop terrace, glazing expansion on the main facade of the building, and a stacked configuration, elements that are reflective of centre's science and technology focus.	In 2019, opened The Studio; an adjacent space used for public programming. The Studio houses interactive exhibitions and temporary exhibitions.	N/A	In 2007, new temporary exhibit building was built adjacent to the main building. In 2015, the centre was completed renovated with new exhibits focusing on three areas; technology, people, and nature.	N/A	N/A	In 2019, the museum's main corridor was redesigned as an optical illusion.	The museum is currently refurbishing 269,100 square feet of exhibition space and the refurbished exhibits are expected to open in 2021. The museum also has three satellite locations.	N/A
Building Size of Centre/Museum (sq. ft.)	120,000	1,600,000	289,010	N/A	129,167	N/A	452,084 (Science Museum Only)	190,090	N/A	N/A	50,000
Exhibition Space (sq. ft.)	N/A	N/A	123,785	53,820 (main building)	96,875	43,055	279,862 (Science Museum Only)	67,382	30,655	785,765	N/A
Outdoor Programming Space	Yes - Pacific Quay outside the centre will be transformed to create learning spaces with hands-on exhibits, seating and sculptures along the Clyde side	Yes - located in a park, Argonaute (submarine museum) is also located outside the main museum	Yes - The Wave exhibition and The Interactive Roof are located on the centre's rooftop terrace	Yes - Rooftop: available for private events -restaurant -outdoor interactive gallery "Energetica" -also known as the "highest city square" in the country	Yes - Covered outdoor plaza	Yes - 53,820 sq. ft. outdoor park with water feature	Yes: -Open-air concert stage -Outdoor exhibit: In the Face of Change, Let's Change (human intervention, climate change) -Outdoor terrace with tables and seating	N/A	Yes - outdoor balcony and outer space courtyard are used for events and private functions	Yes - the museum courtyard is used to hold museum events and programs. Science Summer: An open-air program with demonstrations, science shows, lectures and hands-on activities takes place outside daily from 12 noon	N/A
Attendance											
On-Site Attendance	316,000 (estimated)	5,000,000	456,621	655,505	N/A	450,000	4,000,000 (full complex)	1,078,028	N/A	1,400,000	N/A
Off-Site Attendance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	159,583	N/A	N/A	N/A
Visitor Breakdown	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Students Served On-Site	72,000 (estimated)	N/A	N/A	170,430 (estimated)	N/A	N/A	N/A	255,568	N/A	N/A	N/A
Students Served Off-Site	N/A	N/A	N/A	N/A	N/A	N/A	N/A	138,176	N/A	N/A	N/A
General Admission 2023											
Adult	€36.00	€ 12.00	DKK 215	€ 17.50	€ 15.00	€ 14.40	€ 8.00	37 #	€ 11.00	€ 8.00	€550
Senior	€30.00	€ 12.00	DKK 25	€ 17.50	€ 12.00	€ 14.40	€ 6.20	37 #	€ 8.00	€ 8.00	€538
Student	€36.00	€ 12.00	DKK 135	€ 17.50	€ 10.00	€ 14.40	€ 6.20	37 #	€ 9.00	€ 8.00	€550
Child	€30.00	€ 9.00	DKK 135	€ 17.50	€ 5.00	€ 14.40	€ 6.20	37 #	€ 8.00	€ 8.00	€538
Program, Exhibits, & Events											
Public Programs/Education	<ul style="list-style-type: none"> Autism Friendly Hours Workshops School Field Trips GSC On Tour (outreach program) Community Learning and Development (short courses and discovery visits) Home Educators (discounted visits to the centre) Online teaching resources available GSC has several educational partners that support/partner on programs 	<ul style="list-style-type: none"> Hidden Readings (for children aged 3-6 in youth library) Conversation in French (program for French learners) Review and Strengthen Your Academic Knowledge Science Clubs (ages 9 to 14, 9 to 13, or 7 to 12; covers robotics, astronomy, and various science topics) City of Health: offers resources to visitors both online and in person who struggle with health concerns and require support. Digital Crossroads: collaborative space with the following: <ul style="list-style-type: none"> Fab Lab Tutorials (ex. #D modelling) Events/Collaborative Projects (ex. Light the Night, Imaginary Journeys, Digital Book Hackathon, Towards a more responsible digital) 	<ul style="list-style-type: none"> School field trips (for students under the age of 18) 	<ul style="list-style-type: none"> School field trips - available for students in primary and secondary - includes a "Science all around you" live demonstration, followed by self-guided tour Outreach education programs are available 	<ul style="list-style-type: none"> "Learning at home and in the classroom" - registered program for schools (grades 5-10) offered on YouTube live stream School Trips: tours, workshops, experiments, and live stream available based on selected educational programs. In house teacher training/professional development course ** Lots of programs available online 	<ul style="list-style-type: none"> School field trips; customizable based on educational flyer Company visits/team building for groups of 15 or more 	<ul style="list-style-type: none"> Specific to Science Museum: <ul style="list-style-type: none"> School field trips with Workshops: Scientist for a day Vacuum horror Chemistry magic Cold, cold Multimedia gallery demos TV Studio Robotics Red Hot Drones Natural Music Professional development courses and training for teachers The Children's Council - gives children the opportunity to comment on the Museum's workshops, exhibits, and programs 	<ul style="list-style-type: none"> Young Explorer's Club (supervised experiments) ESERO (European Space Agency program aimed at students and teachers) Dream Builders (educational program that supports STEM learning) Science for You (Joint program with the centre and Ministry of Science and Higher Education aimed at providing greater access to science) Outreach Programs: <ul style="list-style-type: none"> Mobile Exhibits Mobile Nature Labs Science Shows 	<ul style="list-style-type: none"> Living Science School; educational program that offers: <ul style="list-style-type: none"> Meeting Scientists Exhibit Tours Lab Activities Classroom Activities Reading booth; a mini library where visitors can borrow books Doing: A workshop space divided into two spaces: <ul style="list-style-type: none"> Tinkering (activities that make us think with our hands) Maker (visitors develop their own projects) Living Science Clubs (at schools) School field trips (aligns with curriculum) Science Minutes: program presented throughout exhibitions that focus on STEM Discover the World Outside (resources for educators and families for local learning) Experiences Outside of Doors (registered program for those 60+; permits on onsite access to locations usually closed to the public) 	<ul style="list-style-type: none"> School field trips: customizable to cover any of the subject areas in the museum' exhibitions Kerschenteiner Kolleg - training seminars and multi-day events related to the museum's exhibitions Guided Tours Science Summer: An open-air program with demonstrations, science shows, lectures and hands-on activities takes place daily from 12 noon 	<ul style="list-style-type: none"> Guided Tours (now virtual) School trips are available in the following options: <ul style="list-style-type: none"> Self-Guided Visit to Exhibition(s) Visit to Exhibition(s) with Guided Tour or Workshop Guided Tours Science Summer: An open-air program with demonstrations, science shows, lectures and hands-on activities All programs and activities have been moved online
Events/Activities	<ul style="list-style-type: none"> Planetarium Shows (including late showings) The Fullmoon Experience: Inspired by Pink Floyd Science Show Theatre Glasgow Tower (panoramic views) MAX Cinema Screenings (includes popular movies from time to time) Sci-Fi Sunday Films Space Zone Little Explorer Days (aged 3-5) Curiosity Live (STEM) Halloween Spooktacular From Deep Time to Deep Space (films and corresponding lectures) World Space Week Science Lates (after hours for adults) The Universe for Beginners (Astronomy night classes for adults) David Elder Lectures (older teens and adults) The Science of Whisky (Adults only) Co-Design to Connect: Shaping Cultural Science Events at GSC 	<ul style="list-style-type: none"> Planetarium Shows Cinema Shows Workshops (ex. "City of the Future" and lego robotics) MAX Cinema Screenings (for adults, children, and families) Science Festival European Sustainable Development Week City of Adventures Festival Pitcher Your CV: Make a Story out of it (CV workshop) 	<ul style="list-style-type: none"> Interactive Film Theater Science shows The Invention show The Experimentarium Bubble Show Live demonstrations: <ul style="list-style-type: none"> From magnetism to offshore wind farms Oil on fire An eye for detail CO2 and the greenhouse effect Dissection of the digestive system 	<ul style="list-style-type: none"> Science all around you (live demonstrations) Laboratory (visitors can participate in hands-on chemistry experiments) Maker Space (Workshops for children 8+) Chain Reaction (live demonstrations) 	<ul style="list-style-type: none"> Autumn Holiday Program: <ul style="list-style-type: none"> laser shows laser maze live demonstrations Phaenomenale (Biennial festival for digital, art and culture in Wolfsburg) "Pale Blue Dot" - Collective community art project Hands-on laboratories: <ul style="list-style-type: none"> Robot workshops Woodturning workshops 	<ul style="list-style-type: none"> Science shows Lectures Dinner in the dark Cafe in the dark 	<ul style="list-style-type: none"> Specific to Science Museum: <ul style="list-style-type: none"> Free conferences Topics include astronomy, health, biology, natural disasters, climate change, the brain Live demonstrations and science shows General Workshops: <ul style="list-style-type: none"> Science to Scene and TV Studio Passport to Space (astronomy related activities) Robot concerts Guided Tours 	<ul style="list-style-type: none"> Robotics Theatre (shows starring robots) Thinkatorium (Makerspace) "Lates" 18+ (after hours events for adults only, includes themed interactive activities and displays) Planetarium: <ul style="list-style-type: none"> live shows, films, popular tv shows, and concerts FabLab (visitors can design and build various objects) Learning Adventures (Informal learning conference, held after hours for adults) 	<ul style="list-style-type: none"> Wind Pipes Marbles machines Scribble machines Electrical circuits Robotics station Film Screening Live Science Circuits: pre-set self-guided tours around various organizations created to help visitors discover culture and science Interactive Modules: <ul style="list-style-type: none"> Flying Bike Spiral Illusion Giant Table The Shrinking Chair Slow Bubbles Balancing the Rods Hands in the sand Help yourself to the Head Laser Harp Activities for those 60+: <ul style="list-style-type: none"> Table Detectives Lizards and Butterflies Machines and Engineers Vegetables at the Window Tea with Science 	<ul style="list-style-type: none"> Live demonstrations Inventors' Trails" trail available online and in person: <ul style="list-style-type: none"> The Trail of Discovery The Trail of Communication The Trail of Drivetrains The Trail of Energy The Trail of Mobility Lecture series: Science is for Everyone Vintage model airplane events Sightseeing 	<ul style="list-style-type: none"> Family Fridays (reduced ticket entry for families) Talks at ArtScience Museum ArtScience Late: local artist performances ArtScience on Screen Special Event: Let's Talk About (for youth aged 6-12) Workshops: <ul style="list-style-type: none"> Make Your Own: Lantern Make Your Own: Peace Sign Make Your Own: Shrink Art with Recycled Plastics

Name	Glasgow Science Centre	City of Science and Industry	Experientarium	NEMO Science Museum	Phaeno Science Center	Universum-Bremen	Ciudad de las Artes y las Ciencias	Copernicus Science Center	Pavilhão do Conhecimento	Deutsches Museum (Munich Science Centre)	ArtScience Museum
Digital/Virtual	<ul style="list-style-type: none"> GSC AT HOME Daily videos available at 10am. Videos are uploaded to YouTube, Facebook, Instagram, Twitter. 	<ul style="list-style-type: none"> Digital Crossroads: collaborative space with the following: <ul style="list-style-type: none"> Fab Lab Tutorials (ex. #D modelling) Events/Collaborative Projects (ex. Light the Night, Imaginary Journeys, Digital Book Hackathon, Towards a more responsible digital) Fab Lab Tutorials are available online City of Health: offers resources to visitors both online and in person who struggle with health concerns and require support. 	<ul style="list-style-type: none"> A pre-recorded Invention Show is available online for view 	<ul style="list-style-type: none"> Step-by-step activities are available online, divided into three categories: <ul style="list-style-type: none"> Did you know? Do it yourself Test yourself 	<ul style="list-style-type: none"> Phaeno Science Slam - science experiments on YouTube live stream <ul style="list-style-type: none"> "Learning at home and in the classroom" - registered program for schools (grades 5-10) offered on YouTube live stream 350 Virtual Exhibition Tour Experiments to Imitate (pre-recorded experiment videos) Phaeno Exhibits Explained (pre-recorded series) Phaeno Puzzle with the Physicists (pre-recorded series) Downloadable colouring pages 	<ul style="list-style-type: none"> Virtual tours available for each perm gallery Universum* for the home - instructional video experiments 	<ul style="list-style-type: none"> Virtual tours available 	<ul style="list-style-type: none"> In person yearly conference, Pass 2020, has been moved online 	<ul style="list-style-type: none"> Virtual Interactive Tour of the Museum Explora Interactive Virtual Tour, covers topics of: <ul style="list-style-type: none"> Light Eyesight Perception Waves Complex systems Several pre-recorded videos about the centre, events, science lab, and interviews Educational resources available online including exhibitions work guides and live science resources 	<ul style="list-style-type: none"> Museum App; has interactive maps, museum highlights, and exhibition information Inventors' Trails" trail available online and in person: <ul style="list-style-type: none"> The Trail of Discovery The Trail of Communication The Trail of Drietrains The Trail of Energy The Trail of Mobility 	<ul style="list-style-type: none"> ArtScience at Home. The following activities and programs have been moved online and are free: <ul style="list-style-type: none"> Talks at ArtScience Museum ArtScience Live: local artist performances ArtScience on Screen Special Event: Let's Talk About (for youth aged 6-12) Workshops: <ul style="list-style-type: none"> Make Your Own: Lantern Make Your Own: Peace Sign Make Your Own: Shrink Art with Recycled Plastics
Perm Exhibitions	<ul style="list-style-type: none"> IDEA NOS9 (Natural resources, industry technology, health) Man And Genes Transport and Mankind Energy Bodyworks (biology) Powering the Future (Energy, natural resources) The Big Explorer (Kid's gallery, various activities/topics) Quantum Technologies Project Lab (Gives visitors the chance to offer opinions on changes happening at GSC) 	<ul style="list-style-type: none"> Brain Man And Genes Transport and Mankind Energy The Great Story of the Universe Earthwatch: the satellite revolution Mathematics Sounds Pinhole, representation of space Argonaute (submarine museum) The "reverse" sundial Cité des enfants (children's gallery for children aged 2-7 years) 	<ul style="list-style-type: none"> The Port (global trade) Bubblearium (bubbles, light) Tunnel of Senses The Wave (maritime) Construction Site (architecture, engineering) Under your Skin (biology) Energy Zone The Idea Company (inventions) Be Seen Be Safe (traffic, pedestrians, cycling) The Test Center (rapidity, reactivity, mental strength, precision) The Miniverse (Children's gallery for 1-5 year olds) Labyrinth of Light (Light, colour) The Puzzler (logic, riddles) Yeast Cell (micro-organisms) The Interactive Roof (Play area) Circus Physics PULSE Plaza (Physical Activity) The Beach (Water) 	<ul style="list-style-type: none"> Humana (biology, race, sociology, psychology) Sensational Science (light, sound, static electricity) World of Shapes (geometry, perspective) The Machine (process, motion, transportation) Energetica (Energy, hands-on play) Life in the Universe (space) Energeize (renewable resources, motion) Water Power Amazing Constructions (construction, shapes, forces, equilibrium) Science throughout the Ages Innovation Gallery (technological development over time) 	<ul style="list-style-type: none"> The World of Phenomena: contains 350 exhibits covering topics such as: <ul style="list-style-type: none"> colour and pattern water and waves static electricity construction and building food mechanics chaos and order 	<ul style="list-style-type: none"> Technology (daily electronics, daily tech) Human (biology) Nature Milky Way children's area 	<ul style="list-style-type: none"> Communication Arcs (Sounds) On Wheels (transport) The Ant's Nest (nature, habitats) The Kiddie's Corner (dedicated gallery for children 3-8 years old) DNA Foucault's Pendulum (Space, earth's travel pattern) The Legacy of Science Zero Gravity Space Simulator Chromosome Forest (Biology, DNA, genetics) To Fly (flight) Outdoor exhibit: In the Face of Change, Let's Change (human intervention, climate change) 	<ul style="list-style-type: none"> The Experimental Zone (the centre's perm exhibition hall, contains over 400 exhibits including the following) <ul style="list-style-type: none"> On the move, Humans and the environment Roots of civilization #lightzone RE: generation started (dedicated teen space) Buzz! (dedicated children's exhibit for those 5 years and younger) 	<ul style="list-style-type: none"> Step into Space Tcharan! Circus of experiences (Circus experiences for 3-12 year olds) 	<ul style="list-style-type: none"> 35 different exhibitions including: <ul style="list-style-type: none"> Astronomy Centre for New Technologies Ceramics Chronometry Computers Electric Power Energy Technology Environment Glass Technology Hall of Fame Historic Aviation History of the Museum Kids' Kingdom Marine Navigation Metals Microelectronics Oceanography Pharmaceutics Technical Toys 	<ul style="list-style-type: none"> Future World: Where Art Meets Science The Museum has one perm exhibition and tends to host travelling exhibitions with emphasis on digital and multimedia. Currently on show: <ul style="list-style-type: none"> Planet or Plastic?
Temporary (Y/N)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Special Features	<ul style="list-style-type: none"> IMAX Cinema Science Show Theatre Planetarium Glasgow Tower (only structure on earth capable of rotating 360° into the prevailing wind and holds the Guinness World Record for the tallest fully rotating freestanding structure in the world 127m high) Project Lab (Gives visitors the chance to offer opinions on changes happening at GSC) Whitelee Windfarm Visitor Centre 	<ul style="list-style-type: none"> At 1.6million sq. ft. it is the largest science centre in Europe. Argonaute (submarine museum) Cinema Planetarium Aquarium Science and Industry Library City of trades 	<ul style="list-style-type: none"> Interactive Film Theater Outdoor programming space - The Wave exhibition and The Interactive Roof are located on the centre's rooftop terrace 	<ul style="list-style-type: none"> The museum is built on top of a tunnel Roof Terrace: <ul style="list-style-type: none"> available for private events restaurant outdoor interactive gallery "Energetica" also known as the "highest city square" in the country Second, smaller building "The Studio" located adjacent to the main museum. 	<ul style="list-style-type: none"> Science Theatre Architectural Tours Outdoor public plaza 	<ul style="list-style-type: none"> Outdoor Programming space: 53,820 sq. ft. outdoor park with water feature 	<ul style="list-style-type: none"> The site contains 5 different buildings: <ul style="list-style-type: none"> Hemispheric (theatre building) Oceanographic (Aquarium) Science Museum Umbracle (Indoor garden) Palau de les Arts Agora (event space) On-Site Catering Three Restaurants including a Submarine restaurant with underwater views (in the aquarium building) Hemispheric Building: <ul style="list-style-type: none"> contains an IMAX theatre, 3D digital cinemas, and digital projects used for screens and planetarium shows Science Museum: <ul style="list-style-type: none"> Science Theatre Outdoor exhibit: In the Face of Change, Let's Change (human intervention, climate change) 	<ul style="list-style-type: none"> Planetarium: <ul style="list-style-type: none"> live shows, films, popular tv shows, and concerts The centre co-hosts "Science Picnic" with Polish Radio, the largest outdoor science event in Europe (held offsite) 	<ul style="list-style-type: none"> Several activities/programs for people 60+ Emphasis on science educational programming 	<ul style="list-style-type: none"> World's largest science and technology museum Leader in research. Home to: <ul style="list-style-type: none"> The Research Institute for the History of Science and Technology Scholar-in-Residence Program Publication Prize of the Deutsches Museum Numerous exhibitions various science and technology subjects 	<ul style="list-style-type: none"> Programs and activities have moved online and are free to access The Museum has one perm exhibition, Future World: Where Art Meets Science. Tends to host travelling exhibitions with emphasis on digital and multimedia. Currently on show: <ul style="list-style-type: none"> Planet or Plastic?
Rental Program	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Atrium Boardroom Clyde Suite Floor One Floor Two Floor Three Science Show Theatre Science Street Space Zone Taste Café Planetarium Tower Base North Tower Base South The Hive 	<ul style="list-style-type: none"> Yes - could not confirm details 	<ul style="list-style-type: none"> Rentals are available for corporate meetings and conferences 	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Museum Exhibitions Panorama Room Restaurant and Conservatory Auditorium Café Boardroom Theatre Entrance Hall Event Hall Rooftop Square Studio 	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Museum Exhibitions Boardrooms Science Theatre Dedicated Banquet area Ideas Forum * The centre also offers entertainment programs/performers along with facility rental 	<ul style="list-style-type: none"> Yes - specific space details not available 	<ul style="list-style-type: none"> Yes - on site catering in available, specifics for the science museum are unknown 	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Auditorium Atrium Library The Kitchen is a Laboratory Clock Room Exhibition Area Outdoor Balcony Outer space Garage 	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Historic maintenance hangar Lilienthal hall Exhibition hall Wright gallery Montgolfier room 	<ul style="list-style-type: none"> Private events are available in the following spaces: <ul style="list-style-type: none"> Level 1 Lobby Level 4 Galleries Basement 2 Circulation & Oculus Future World: Where Art Meets Science Exhibition 	

Appendix G
The Government's Announced Vision for Ontario Place

Confidential and Privileged Advice to Government

NEWS RELEASE

Province Announces Ontario Place Redevelopment

New partnerships will help make vision of a world-class, year-round destination a reality

July 30, 2021

[Office of the Premier](#)

TORONTO — The Ontario government has announced details of its plan to revitalize Ontario Place into a world-class destination. Three successful participants from the 2019 Call for Development process Therme Group, Live Nation and Écorécréo Group will help deliver an exciting, inclusive and family friendly experience that will play a key role in the province's post-pandemic recovery, both as a tourism destination and as a display of Ontario's strong cultural identity. The government also outlined the next phase of consultations with stakeholders and community members.

Details were provided today by Premier Doug Ford; Lisa MacLeod, Minister of Heritage, Sport, Tourism and Culture Industries; John Tory, Mayor of Toronto; Chief R. Stacey Laforme of the Mississaugas of the Credit First Nation; Robert Hanea, CEO of Therme Group; Wayne Zronik, President of Business Operations at Live Nation Canada; and Jean-Philippe Duchesneau, Co-Owner of Écorécréo Group.

"As we mark the 50th anniversary of Ontario Place this year, there is no better time to bring this iconic destination back to life," said Premier Ford. "By taking this first step with our world-class development partners, as well as the City of Toronto and Indigenous communities, we will deliver a renewed Ontario Place that provides year-round entertainment for all ages and interests. As we continue to engage and consult with the community, Ontario Place will realize its full potential as a long-term economic generator for the people of Ontario."

The transformation of Ontario Place will include three new major attractions:

- [Therme Group](#) is building Therme Canada | Ontario Place, a family-friendly, all-season destination offering something for all ages, including pools, waterslides, botanical spaces to relax, as well as sports performance and recovery services. Outside, people will enjoy more than eight acres of free, publicly accessible gathering spaces, parkland, gardens and beaches.

- [Live Nation](#) is redeveloping the existing amphitheatre into a modern, year-round indoor-outdoor live music and performance venue that will attract world-class artists and events. Protecting the iconic amphitheatre lawns, the new venue will have an expanded capacity of 20,000 in the summer and close to 9,000 in the winter, offering a unique indoor-outdoor experience with operable exterior walls to accommodate events, rain or shine.
- [Écorécréó Group](#) is building an affordable, all-season adventure park for all ages. This new, environmentally friendly attraction will include aerial obstacle courses, net-based aerial adventures, ziplines, climbing walls, escape rooms and many other activities. Écorécréó Group will also operate Segway, quad-cycle, canoe and kayak rentals at the site.

The province actively searched for the best partners from around the world to work with on the redevelopment of Ontario Place. Potential development partners on this unique opportunity were assessed against four primary areas of consideration: alignment with the government's vision of a world-class, year-round destination; concept viability; delivery certainty; and costs and benefits to the province, as well as public feedback and input provided through consultations conducted by previous governments. This fair, transparent and open process was designed and facilitated by Infrastructure Ontario and its advisors (KPMG and Colliers) to provide flexibility for interested parties to propose unique, yet financially viable and sustainable, development concepts.

"When Ontario Place opened in 1971 under the leadership of Premier Bill Davis, it was designed to reflect all that we, as Ontarians, embodied: our heritage, our diversity, our creativity and our future potential. Ontario Place holds a special place in our hearts and minds thanks to the countless family friendly events and activities that have been enjoyed there over the past 50 years," said Minister MacLeod. "Our government remains committed to redeveloping Ontario Place in a sustainable way – respecting our historical and natural features while at the same time showcasing Ontario as the world in one province – a true reflection of our diversity and multiculturalism, while also showing respect for the rich traditions, cultures and heritage of First Nation, Inuit, and Métis peoples. A modern, new Ontario Place will attract local, provincial and international visitors, and create unforgettable memories for a new generation."

As the redevelopment moves forward, public input will be critical to support the planning and development of the site. Mark Saunders, Special Advisor for Ontario Place, will continue to engage with the City of Toronto, Indigenous communities,

project stakeholders, businesses and community groups that have interest in the Ontario Place site to ensure all perspectives on these important proposals are recognized and considered.

Starting in August, the government will launch the next phase of engagement through [Ontario.ca/OntarioPlace](https://ontario.ca/OntarioPlace), providing an opportunity for all Ontarians to share how they would like to experience a redeveloped Ontario Place. Virtual public information sessions will also be held in the fall with planning and development consultations related to the site-wide environmental assessment, heritage, and site servicing to follow later in the year. The redevelopment website, [Ontario.ca/OntarioPlace](https://ontario.ca/OntarioPlace), will be kept up to date with the latest information about planned public and stakeholder engagement.

Across the site, public spaces will be enhanced and brought up to modern standards with new parks, promenades, trails and beaches. Key heritage and recreational features of the site will be retained and integrated into the redevelopment, including the Cinesphere, the pod complex, the marina, Trillium Park and the William G. Davis Trail. The province will also work with the Ontario Science Centre to explore opportunities to have science-related tourism and educational programming at the Cinesphere and pod complex.

A redeveloped Ontario Place will not include casinos or condos and the land will not be sold. Ontario Place will remain open to the public 365 days a year, with free public access and a waterfront experience that can be enjoyed by all.

“We are committed to working with the City of Toronto, Indigenous communities and organizations, and other key partners to make this vision a reality and to guide collaboration and future development of the Ontario Place and Exhibition Place sites,” said Minister MacLeod. “Our government is committed to engaging and keeping the public and stakeholders informed. As we move forward, public input will be critical to support the planning and development of the site. More information about upcoming consultations related to redevelopment planning will be provided later this summer.”

Quick Facts

- Redevelopment is expected to create over 3,600 construction jobs and staff positions once the attractions open to the public, with approximately five million visitors expected annually.
- The Ontario Place site is a unique waterfront site, made up of approximately 155 acres of land and water, and served as an iconic cultural and tourism

destination for all Ontarians between 1971 and 2012.

- The government launched a Call for Development on May 28, 2019 and received submissions until September 24, 2019.
- Currently, more than one million people visit Ontario Place every year.

Quotes

"I've said publicly many times that I want to see something spectacular here at Ontario Place and I believe this ongoing process will deliver that. I welcome the fact that the proposals being unveiled today respond to many of the things City Council had asked for including that Ontario Place should be a year-round destination. The City of Toronto looks forward to continuing to work with the Province as these proposals are developed and we look forward to a genuine and thorough engagement of the people of Toronto and beyond."

- John Tory
Mayor of Toronto

"Working with our partners and stakeholders, we are excited to be playing a part in the future of Ontario Place, and opening up new opportunities for people to connect with the waterfront. We chose Toronto to be our launching point in North America because of the unique culture and vision of the city and Ontario Place, and we are committed to carrying on its legacy with renewed family entertainment, public parks, and well-being and cultural programming."

- Robert Hanea
CEO of Therme Group

"We couldn't be more excited to be growing the amphitheatre into a year-round venue that will bring even more opportunity for fans to experience world class live music on the lakeshore. We look forward to continue working with the Ontario government around the redevelopment of Budweiser Stage."

- Riley O'Connor
Chairman, Live Nation Canada

"As a Canadian-based organization, our team is honoured to have been chosen to contribute to the redevelopment of one of Ontario's most iconic destinations. We are excited to bring an innovative, themed adventure park to Ontario Place – one that creates a magical atmosphere, while offering immersive, family-friendly outdoor activities for all ages."

**- Jean-Philippe Duchesneau
Co-owner of Écorécréo Group**

"The Mississaugas of the Credit First Nation are pleased to be working with Ontario in the spirit of partnership to bring Ontario Place back to its rightful place as a cherished and celebrated part of our Toronto waterfront. We have been very encouraged by the willingness of both Ontario and development partners to see this project as more than just a tourist destination, but as a celebration of this place and its history and cultural significance. The Mississaugas of the Credit see the redevelopment of Ontario Place as another significant and visible opportunity to provide education and promote reconciliation. And as the Treaty First Nation, we take seriously our responsibilities to ensure that all Indigenous voices are heard, respected and reflected in what will surely become an iconic development not only for Ontario, but for Canada and the world. "

**- Chief R. Stacey Laforme
Mississaugas of the Credit First Nation**

Additional Resources

- [Ontario Place Development Partners](#)
- [Ontario Place development](#)
- [2021 Budget - Ontario's Action Plan: Protecting People's Health and Our Economy](#)

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Media Contacts

Ivana Yelich

Premier's Office

Ivana.Yelich@ontario.ca

Dakota Brasier

Minister MacLeod's Office

Dakota.Brasier@ontario.ca

Denelle Balfour

Communications Branch

Denelle.Balfour@ontario.ca

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Appendix H
Eglinton Crosstown LRT Information Sheet

Confidential and Privileged Advice to Government

Eglinton Crosstown LRT

Backgrounder

The Eglinton Crosstown is a light rail transit line that will run along Eglinton Avenue between Mount Dennis (Weston Road) and Kennedy station. This 19-kilometre corridor will include a 10-kilometre underground portion, between Keele Street and Laird Drive.

The Crosstown will have up to 25 stations and stops. It will link to 54 bus routes, three subway stations and various GO Transit lines.

The Crosstown will provide fast, reliable and convenient transit by carrying passengers in dedicated right-of-way transit lanes separate from regular traffic.

This service will have priority signaling at intersections to ensure certainty in travel times. The vehicles will use the PRESTO proof-of-payment system and will have multiple entrances and low floors to ensure fast and accessible boarding.

Light rail vehicles can travel as fast as 80km/hr. However, actual speed is determined by the spacing of the stops and the speed limits of surrounding traffic. On average, the Crosstown vehicles will travel at 28km/hr.

The projected ridership of the Crosstown is 5,500 passengers per hour in the peak direction by 2031. The capacity of the Crosstown vehicles is 15,000 passengers per hour per direction. Cars can be removed or added easily, thus providing the flexibility to accommodate ridership demands.

Light rail transit is a proven technology that is used around the world, including extremely cold places such as Edmonton, Calgary and Minneapolis.

The Crosstown is a \$5.3 billion (2010\$) investment from the Government of Ontario to expand transit in Toronto. It is the largest transit expansion in the history of Toronto's history.

The Crosstown is currently under construction.

Sample travel times:

	Currently (via bus)	Eglinton Crosstown LRT
Kennedy station to Yonge -Eglinton	40 min.	26 min.
Kennedy station to Eglinton-Keele	73 min.	38 min.
Eglinton-Keele to Eglinton West station	16 min.	6 min.



An artist's rendering of the LRT vehicle



Eglinton Crosstown stations and stops



An artist's rendering of the Laird station



Site at Black Creek Drive where the tunnel boring machines begin tunnelling

Contact us: West Community Office
1848 Eglinton Avenue West (at Dufferin)
416-782-8118 | crosstown@metrolinx.com

www.thecrosstown.ca

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Overview

[Project map](#)

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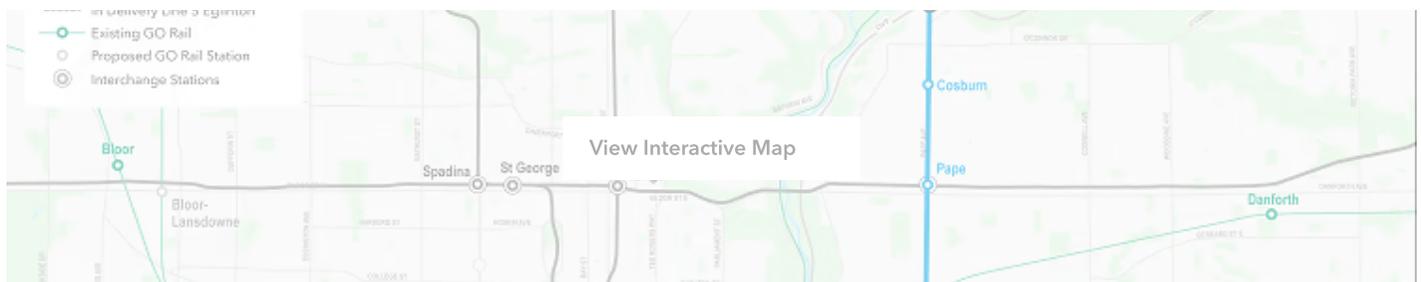
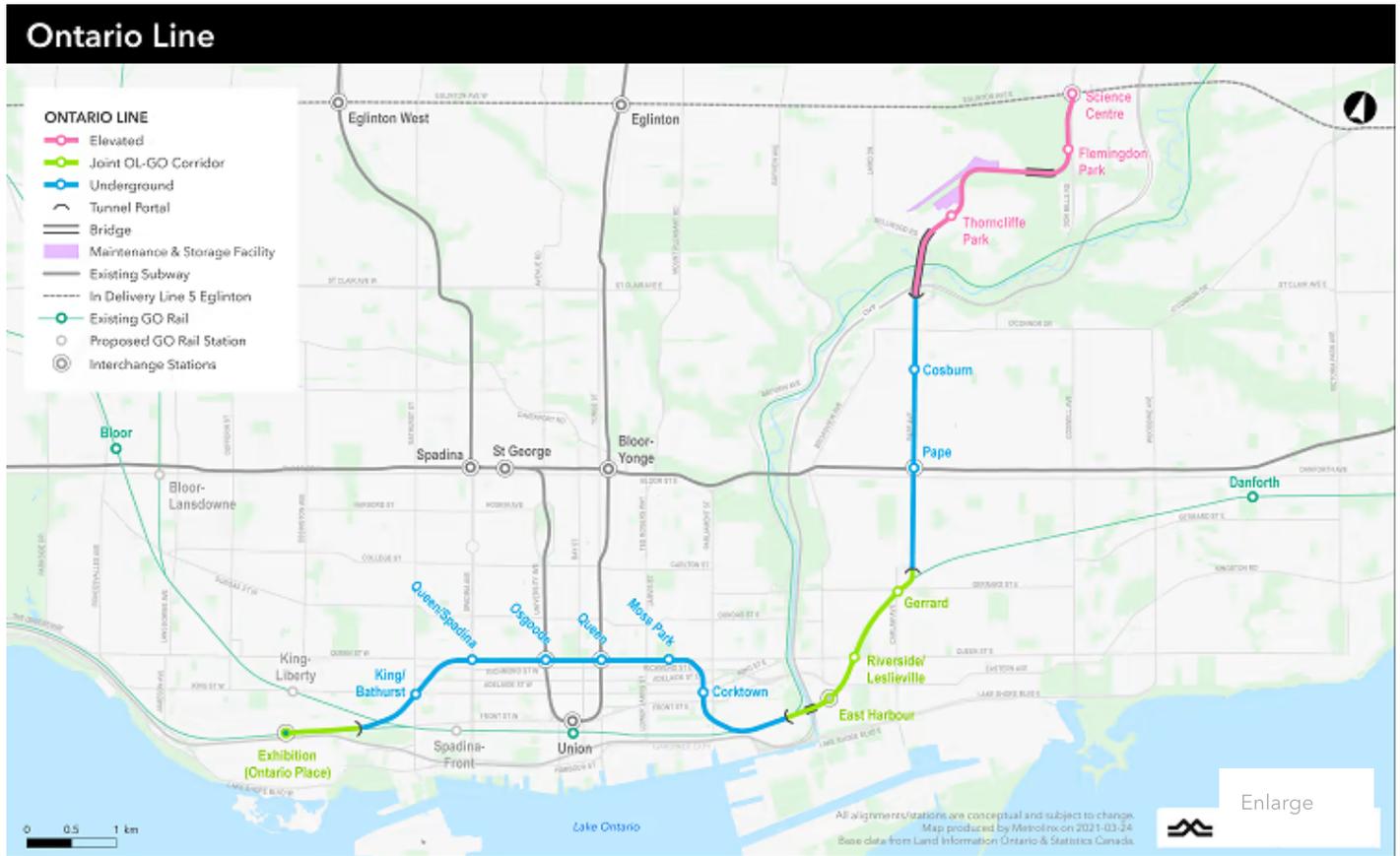
Overview

The Ontario Line will be a 15.6-kilometre subway line that will make it faster and easier to travel within Toronto and beyond.

The line will bring 15 new stations to the city and will run from Exhibition Place, through the heart of downtown, all the way to the Ontario Science Centre. It will give people more time back in their days, with a trip from one end to the other taking less than 30 minutes compared to the 70 minutes it takes on transit today. There will also be significant relief from crowding throughout the existing transit network thanks to connections to more than 40 other travel options along the way, including the TTC's Line 1 and Line 2, three GO Transit rail lines, and the Eglinton Crosstown LRT.

Construction is now underway.

Project map



Key facts

Number of stations	15
End-to-end journey time	30 minutes or less
Connections to other transit options	Over 40, including: <ul style="list-style-type: none"> • Connections to Lakeshore West, Lakeshore East, and Stouffville GO train services • Connections to the TTC's Line 1 and Line 2 subways • Connection to Line 5 (Eglinton Crosstown LRT) • Connections to streetcar lines at 10 Ontario Line stations • Connections to bus services at 12 Ontario Line stations
Route length	15.6 km
Ridership	388,000 daily boardings

Frequency	As frequent as every 90 seconds during rush hour
Improved access to transit	227,500 more people within walking distance to transit
Improved access to jobs	Up to 47,000 more jobs accessible in 45 minutes or less, on average <ul style="list-style-type: none"> For lower-income residents, up to 57,000 more jobs accessible in 45 minutes or less
Reductions in rush hour crowding	<ul style="list-style-type: none"> Up to 22 per cent at Bloor/Yonge Station, or 14,000 fewer people, during the busiest hour Up to 16 per cent at Eglinton Station, or 5,000 fewer people, during the busiest hour Up to 14 per cent at Union Station, or 14,000 fewer people, during the busiest hour
Daily reductions in traffic congestion	28,000 fewer cars on the road
Yearly reductions in fuel consumption	7.2 million litres

In the news

Metrolinx addresses concerns surrounding future Osgoode Station

February 3, 2023

Transit agency lays out need for Ontario Line station location & tree removals. [\[Read more\]](#)

Big milestones reached for major Ontario Line contracts

November 22, 2022

Awarding two contracts & issuing RFQs for two others brings project closer to major construction. [\[Read more\]](#)

Preferred teams selected for two major Ontario Line contracts

September 22, 2022

Identification of delivery partners a big step forward for 15.6-km subway line. [\[Read more\]](#)

Find more updates on [Metrolinx News](#).

Subscribe to e-newsletter

Sign up for Ontario Line updates

Get updates about the project delivered right to your inbox. You can unsubscribe at any time.

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Timeline



Related Projects



Scarborough Subway Extension

Extending Line 2 subway service 7.8 km farther into the heart of Scarborough.

TORONTO REGION SUBWAYS



Finch West LRT

Finch West LRT will transform the community from Humber College to Finch West Station.

TORONTO REGION

RAPID TRANSIT



Eglinton Crosstown LRT

A midtown connection between east and west Toronto with 25 stations along a dedicated route.

TORONTO REGION

RAPID TRANSIT



Union Station

A better experience at the centre of our network

TORONTO REGION

GO EXPANSION

Land Acknowledgement

Metrolinx acknowledges that it operates on the traditional territory of Indigenous Peoples including the Anishnabeg, the Haudenosaunee and the Wendat peoples. In particular these lands are covered by 20 Treaties, and we have a responsibility to recognize and value the rights of Indigenous Nations and Peoples and conduct business in a manner that is built on the foundation of trust, respect and collaboration. Metrolinx is committed

to building meaningful relationships with Indigenous Peoples, and to working towards meaningful reconciliation with the original caretakers of this land.

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Metrolinx, an agency of the **Ontario Government** under the Metrolinx Act, 2006, was created to improve the coordination and integration of transportation in the **Greater Toronto and Hamilton Area** alongside the **Ministry of Transportation**.

Personal information, as defined by the *Freedom of Information and Protection of Privacy Act* (FIPPA), including name, contact information, and opinions/comments, is collected under the authority of the *Metrolinx Act*, 2006, and in accordance with FIPPA. Personal information you provide will be used, as requested, to respond to your enquiries; register you for a live event; book a meeting with a Metrolinx representative; allow you to participate in a survey; add you to an e-mail list that may send promotional messages; or otherwise provide you with a personalized experience. For questions, contact: Manager, Customer Care, Metrolinx, 20 Bay St, Suite 600, Toronto, ON M5J 2W3, (416) 869-3600.

97 Front Street West, Toronto, ON M5J 1E6, Phone: 416-874-5900

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Appendix I
Financial Model and Assumptions

Confidential and Privileged Advice to Government

Model Author:	Client: Ontario Ministry of Tourism, Culture & Sport
IO Project Lead:	Last Modified: 2023-03-06
Last Modified By: Logan Davis	

MODEL GUIDANCE:

This financial model (the "Model") has been prepared by Infrastructure Ontario ("IO") & Ernst & Young ("EY") to assist the Ontario Ministry of Tourism, Culture & Sport in evaluating potential scenarios related to the revitalization of the Ontario Science Centre ("OSC") and Ontario Place ("OP"). In particular, the Model compares the NPV of two options, the Remain on Site option, where both entities continue to exist and operate in their current locations, and under a relocation of OSC to OP. The analysis is restricted to evaluating revenues and costs associated only with the OSC and those OP lands directly impacted by a relocation and does not contemplate ancillary operations. The Model draws from a number of sources, both internal and external, to inform inputs. The accuracy of this information and IO's ability to validate it may be inconsistent and is more fully described in the assumptions register.

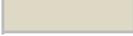
The Model should not be modified or edited in any way without the assistance/involvement of IO and particularly the Model owner (Transaction Structuring). If not received directly from the model owner, IO cannot warrant that downstream edits made by any party will not result in incorrect calculation or assumption handling, potentially causing in misleading results.

MODEL CELL LEGEND:
Please note the following model conventions;

	Input Cell
	Calculation Cell

Please avoid editing any calculation cell when testing model scenarios

TAB CODING:
Tab in the Model are grouped by colour;

	Version Control, Guidance & Assumptions
	Inputs & Calculations
	Output & Sensitivities

ASSUMPTION	DESCRIPTION
General	
General Inflation	Long term project, assume 2% average inflation over the life of the project
Revenue Growth rate	Revenue growth rate assumed lower than general inflation due to ticket price increases historically being less than inflationary increases
Wage Growth	Wage growth based on provided OSC planned yearly salary increases 2022-2024
Discount Rate	Discount rate of 3% to be consistent with IO discount rate assumption used on other projects
Construction Dates	Flag used for construction dates of exhibits and buildings
	Remain: assume major construction of exhibits starts in 2025 during closure year Relocate: Construction begins in 2025
Construction Duration	Remain: Construction duration of exhibits is spread over 3 years equally, beginning in the closure year
	Relocate: Construction duration of new building is provided by IO Cost Estimation Team - file: 230217 Capital Cost revised.xlsx
Operations Closure Duration	Assumed current location will close for 1 year for major construction activities as per advice from IO
	Assumed that sponsorship and international sales revenue continue. All other revenues are 0 due to uncertainty around what operations/visitor experiences would continue during temporary closure
	Assumed that variable costs are zero during this time as these are tied substantially to visitation Assumed that fixed costs continue during closure
Curves	
Number of Visitors	Remain: assumed first two years of operations prior to renovation are FY19/20 values as no renovation has been undertaken during this time. After closure period and renovations complete assume FY18/19 visitation which is an increase over FY19/20 to account for increased visitation for a renovated science center. Estimates provided by OSC and Lord Consulting.
	Relocate: Visitor numbers are maintained at Remain on Site levels (attending the current OSC) until the completion of construction (Note: changes to interim operations include a revenue reduction. This is not specifically modeled but would reflect reduced operations and visitorship. Specific change to visitor numbers not included to avoid double-counting). In FY28/29 there is a reduction to only 33% of steady state visitors (1,000,000) as the relocate site is only operating for 4 months that year. First year in operations the visitation is assumed to increased transiently to 130% of the relocated steady state visitors during the first full year (2029), then decreased to 119% of steady state in 2030, followed by steady visitorship at 1,000,000 annually thereafter. Estimates provided by Lord consulting
Construction Curve - buildings	This Construction Curve describes the timing and magnitude of capital expenditure associated with construction of the new OSC buildings at OP. Construction of a new OSC building is assumed to require 4 year construction period based on preliminary planning using precedent projects per IO Cost Estimation Team - file: 230217
Construction Curve - exhibits	This Construction Curve for exhibits describes the timing of both exhibit refurbishment and minor repairs to be completed at the current OSC site. In the relocate option the curve describes the spend profile for new exhibit construction at the Ontario Place site.
	Remain: assumed equal spread of exhibit costs over 3 years Relocate: assumed exhibit costs are skewed towards the end of buildings construction. Most costs have therefore been assumed in final year of construction
Critical Maintenance Curve	Remain: The current OSC building has approximately \$369M of deferred critical capital maintenance required. The critical maintenance curve describes the timing and magnitude of that expenditure. Curve provided in the BCA report
	Relocate: Under the relocation scenario, critical maintenance is required at the current site to enable operations to continue until the date of the move ("interim operations"). 5 year critical maintenance spend provided by the IO asset renewal team outlining the critical maintenance required at the current site to maintain operations.
FTE Yearly values	Remain: Assume no change in current FTE numbers
	Relocate: Assume FTE reduction based on Ministry cap, which can be accommodate for reasons including difference in square footage of new site and operational changes compared and with current site. Timing of FTE change coincides with move to new facility.
Revenues	
Revenue Items	Average value from FY2010-FY2020. Scaled by visitation and revenue growth rate
Interim Revenue Impact	Relocate only: Per IO from CCT deck - there will be interim revenue impact prior to relocation due to reduced building footprint and offerings during this time
Operating Grant	Assumed flat \$19.4M as the operating grant increases are historically not consistent and currently there are no plans to increase the operating grant. The operating grant is used only in the fiscal impact assessment and is not incorporated into the cash flow calculations
Capital Costs	
Construction Cost of Buildings	Provided by IO Cost Estimation Team based on AW Hooker Class D estimate - assumed \$321M including escalation

Construction Cost for New Exhibits	Based on AW Hooker report indicating exhibit costs of \$66.5M for exhibits in both scenarios (includes both hard and soft costs)
Construction Cost for Cosmetic Upgrades	\$150 per square foot provided by IO Asset Renewal on advice from Pinchin for cosmetic upgrades to current site
Decommissioning and decant costs	\$20.9M estimate provided by IO Asset Renewal based on Pinchin report on decommissioning
Moving Costs	\$4.85M estimate provided by Lord Consulting in 2016 and escalated to 2022 values.
Trailing Obligations - Rent & IO Mgt Fee	\$3.77M estimate provided by IO Real Estate Management - assumed no inflation as rent and management fee historically have not followed inflationary trends
Trailing Obligations - Operations	\$4.6M estimate provided by IO Real Estate Management - scaled by inflation
Buildings Critical Maintenance	Value has been provided by IO Asset Renewal Mgt based on building condition assessment report. Pinchin BCA estimate adjusted by IO Asset Renewal (40%) to reflect escalation due to market conditions and precedent projects. Remain: \$369M for critical maintenance required over 20 years for critical maintenance of the current site. Includes markup of 40% on the inflated Pinchin report estimate for escalation, market conditions, and soft costs. Relocate: \$32M for critical maintenance required to continue operation for 5-year interim operations assumed.
Operating Expenses	
General Operations (Fixed Costs)	Average value from FY2010-FY2020. Assumed fixed costs are primarily composed of labour and have been scaled by wage growth rate and number of FTEs compared to baseline (2022)
Ancillary Operations (Variable Costs)	Average value from FY2010-FY2020. Assumed variable costs are scaled by visitation and inflation
Occupancy Costs	Remain: assumed occupancy cost is average value from FY2010-FY2020 and scaled with inflation Relocate: Occupancy cost assumed to be \$8/sq at new site and assumed 275,000 square feet of property at the new site, the total occupancy cost is assumed to be \$2.2M per year. Cost per square foot provided by Lord consulting based on comparable building costs in the region.
Interim Expense Impact	Relocate only: Per IO from CCT deck - there will be interim expense savings prior to relocation (e.g., due to reduced building footprint and offerings during this time)
Common Areas Maintenance	EY provided estimate based on total anticipated maintenance cost for Ontario place and scaled for OSC based on acreage of land usage. Assumed the OSC site takes 2 acres at Ontario Place.
Lifecycle Costs	Remain: Assumed \$7.5M per year based on replacement value of OSC and an annual spend of 1.25% assuming an 80-year useful life. Estimate based on advice from IO asset renewal team Relocate: Assumed \$5.6M per year based on total construction costs of new OSC and associated structures (bridges, pods, cinesphere), and an annual spend of 1.25% assuming an 80 year useful life. Estimate based on advice from IO asset renewal team

Severance Cost	One time \$7.2M severance cost associated with FTE decline of 35 FTEs. Cost was estimated by IO/OSC in 2016 and has been scaled based on inflation and FTE differences for this
-----------------------	---

OPTIONS AND SCENARIOS REGISTER

OPTIONS AND SCENARIOS	DESCRIPTION
Remain on Site	
Scenario 0	Represents remain scenario
Scenario 1	Represents relocate scenario
Scenario 2	Placeholder for second relocate scenario
Scenario 3	
Scenario 4	
Scenario 5	
Scenario 6	
Scenario 7	
Scenario 8	
Scenario 9	

Fiscal Year

FY2009/2010	FY2010/2011	FY2011/2012	FY2012/2013	FY2013/2014	FY2014/2015	FY2015/2016	FY2016/2017	FY2017/2018	FY2018/2019	FY2019/2020	FY2020/2021	FY2021/2022
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ONTARIO SCIENCE CENTRE		UNIT	Avg.											
Visitors														
Visitors	#	945,745		1,135,496	1,024,337	979,246	983,169	936,439	932,258	914,954	900,225	884,837	766,487	2,149
Visitors Growth														
	%													
REVENUE														
General Admission	\$000	5,146	6,679	6,037	5,082	4,876	5,070	4,615	5,201	5,110	5,556	5,320	4,596	40
Parking Fees	\$000	-	-	-	-	-	-	-	-	-	-	-	-	-
Revenue from Ancillary Operations														
OMNIMAX Theatre	\$000	1,383	2,459	1,682	1,711	1,485	1,462	1,354	1,203	1,278	1,248	1,360	1,044	-
International Sales and Rentals	\$000	1,720	2,405	1,176	1,778	2,021	1,345	1,466	2,605	2,227	1,268	1,744	1,566	964
Educational Programs and Admission	\$000	1,308	1,628	1,244	1,379	1,035	1,222	1,302	1,152	1,281	1,284	1,758	1,421	795
Recreation & Family Learning Experiences	\$000	1,038	764	845	880	897	971	988	1,127	1,201	1,199	1,170	1,103	-
Memberships	\$000	2,127	2,154	2,300	2,199	2,256	2,382	2,217	2,252	2,247	1,919	1,795	1,703	-
Concessions	\$000	460	635	635	593	520	522	519	428	163	360	433	431	-
Adult & Corporate Learning Experiences	\$000	545	647	613	568	524	543	554	716	484	470	562	415	260
Sponsorship/Donations	\$000	2,564	1,502	1,834	1,885	1,949	2,481	1,333	2,657	2,579	3,510	3,393	4,015	1,838
Program Support and Other Revenue	\$000	121	126	64	72	56	161	151	42	67	144	204	253	56
Interest Income	\$000	202	57	117	155	172	151	119	133	161	287	381	344	155
General Admission	\$/Visitor	5.47	5.32	4.96	4.98	5.16	4.93	5.58	5.58	6.17	6.01	6.00	18.61	
Parking Fees	\$/Visitor	-	-	-	-	-	-	-	-	-	-	-	-	-
Revenue from Ancillary Operations														
OMNIMAX Theatre	\$/Visitor	1.46	1.48	1.67	1.52	1.49	1.45	1.29	1.40	1.39	1.54	1.36	-	
International Sales and Rentals	\$/Visitor	1.84	1.04	1.74	2.06	1.37	1.57	2.79	2.43	1.41	1.97	2.04	448.58	
Educational Programs and Admission	\$/Visitor	1.40	1.10	1.35	1.06	1.24	1.39	1.24	1.40	1.43	1.99	1.85	369.94	
Recreation & Family Learning Experiences	\$/Visitor	1.12	0.74	0.86	0.92	0.99	1.06	1.21	1.31	1.33	1.32	1.44	-	
Memberships	\$/Visitor	2.25	2.03	2.15	2.30	2.42	2.37	2.42	2.46	2.13	2.03	2.22	-	
Concessions	\$/Visitor	0.48	0.56	0.58	0.53	0.53	0.55	0.46	0.18	0.40	0.49	0.56	-	
Adult & Corporate Learning Experiences	\$/Visitor	0.58	0.54	0.55	0.54	0.55	0.59	0.77	0.53	0.52	0.64	0.54	120.99	
Sponsorship/Donations	\$/Visitor	2.80	1.62	1.84	1.99	2.52	1.42	2.85	2.82	3.90	3.83	5.24	855.28	
Program Support and Other Revenue	\$/Visitor	0.13	0.06	0.07	0.06	0.16	0.16	0.05	0.07	0.16	0.23	0.33	26.06	
Interest Income	\$/Visitor	0.22	0.10	0.15	0.18	0.15	0.13	0.14	0.18	0.32	0.43	0.45	72.13	
REVENUE GROWTH														
General Admission	%		-10%	-16%	-4%	4%	-9%	13%	-2%	9%	-4%	-14%	-99%	
Parking Fees	%		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Revenue from Ancillary Operations														
OMNIMAX Theatre	%		-32%	2%	-13%	-2%	-7%	-11%	6%	-2%	9%	-23%	-100%	
International Sales and Rentals	%		-51%	51%	14%	-33%	9%	78%	-15%	-43%	38%	-10%	-38%	
Educational Programs and Admission	%		-24%	11%	-25%	18%	7%	-12%	11%	0%	37%	-19%	-44%	
Recreation & Family Learning Experiences	%		11%	4%	2%	8%	2%	14%	7%	0%	-2%	-6%	-100%	
Memberships	%		7%	-4%	3%	6%	-7%	2%	0%	-15%	-6%	-5%	-100%	
Concessions	%		0%	-7%	-12%	0%	-1%	-18%	-62%	121%	20%	0%	-100%	
Adult & Corporate Learning Experiences	%		-5%	-7%	-8%	4%	2%	29%	-32%	-3%	20%	-26%	-37%	
Sponsorship/Donations	%		22%	3%	3%	27%	-46%	99%	-3%	36%	-3%	18%	-54%	

Program Support and Other Revenue	%		-49%	13%	-22%	188%	-6%	-72%	60%	115%	42%	24%	-78%		
Interest Income	%		105%	32%	11%	-12%	-21%	12%	21%	78%	33%	-10%	-55%		
EXPENSES															
			21,956	21,514	19,845	20,924	20,431	20,314	20,243	21,509	21,468	18,290	20,221		
Exhibits and Programs	\$	2,413	3,053	3,037	2,396	2,291	1,625	2,727	2,714	2,706	2,556	2,369	1,704	554	2,140
Marketing and Advertising	\$	2,283	2,318	3,251	2,330	2,399	2,401	2,162	1,804	2,144	1,755	2,232	2,353	1,299	1,569
Visitor Services	\$	3,362	4,426	3,903	3,598	3,563	3,231	3,192	3,116	3,235	3,291	2,924	3,564	2,265	2,474
Facility Operations	\$	5,424	6,291	6,505	5,617	5,521	5,099	5,330	5,219	5,142	5,261	5,364	5,177	4,179	4,616
Program Management	\$	3,653	3,706	4,067	4,128	3,786	3,510	3,503	3,641	3,518	3,464	3,404	3,504	3,914	3,927
Administration	\$	4,189	3,684	4,254	3,887	3,954	3,979	4,010	3,937	3,569	3,916	5,216	5,166	6,079	5,495
Capital Projects	\$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Occupancy Costs	\$	5,176.7	4,820	5,102	4,926	4,828	5,043	5,150	5,256	5,347	5,474	5,223	5,418	5,226	
Ancillary Operations															
OMNIMAX Theatre	\$	1,325	1,650	1,418	1,280	1,383	1,426	1,205	1,291	1,395	1,214	1,370	1,264	584	
International Sales and Rentals	\$	1,630	2,652	1,331	1,663	1,772	1,510	1,640	2,197	1,872	1,203	1,728	1,388	938	
Educational Programs and Admission	\$	1,988	2,189	2,101	2,177	1,827	1,619	1,657	1,606	1,928	2,173	2,412	2,375	3,060	
Recreation & Family Learning Experiences	\$	782	797	702	751	664	797	767	783	854	871	883	744	375	
Memberships	\$	587	754	685	769	728	617	598	504	539	497	498	438	281	
Concessions	\$	101	84	95	126	98	117	95	101	120	100	80	73	33	
Interest Expense	\$	7	6	46	7	7	-	-	-	-	-	-	-	-	
Adult & Corporate Learning Experiences	\$	369	422	403	345	360	325	421	443	269	335	362	425	428	
Sponsorship/Donations	\$	1,349	1,374	1,263	1,306	1,387	1,220	570	1,152	1,274	1,616	1,705	1,996	1,654	
Program Support and Other Expenses	\$	265	271	1,312	206	246	127	156	32	18	136	65	355	8	
Bank and Service Fees	\$	152	-	-	-	-	218	227	214	189	222	226	224	24	

EXPENSES GROWTH													
Exhibits and Programs	%		-1%	-21%	-4%	-29%	68%	0%	0%	-6%	-7%	-28%	-67%
Marketing and Advertising	%		40%	-28%	3%	0%	-10%	-17%	19%	-18%	27%	5%	-45%
Visitor Services	%		-12%	-8%	-1%	-9%	-1%	-2%	4%	2%	-11%	22%	-36%
Facility Operations	%		3%	-14%	-2%	-8%	5%	-2%	-1%	2%	2%	-3%	-19%
Program Management	%		10%	1%	-8%	-7%	0%	4%	-3%	-2%	-2%	3%	12%
Administration	%		15%	-9%	2%	1%	1%	-2%	-9%	10%	33%	-1%	18%
Capital Projects	%		0%	0%	0%	0%	0%	0%	-100%	0%	0%	0%	0%
Occupancy Costs	%		6%	-3%	-2%	4%	2%	0%	0%	2%	-5%	4%	-4%
Ancillary Operations													
OMNIMAX Theatre	%		-14%	-10%	8%	3%	-15%	7%	8%	-13%	13%	-8%	-54%
International Sales and Rentals	%		-50%	25%	7%	-15%	9%	34%	-15%	-36%	44%	-20%	-32%
Educational Programs and Admission	%		-4%	4%	-16%	-11%	2%	-3%	20%	13%	11%	-2%	29%
Recreation & Family Learning Experiences	%		-12%	7%	-12%	20%	-4%	2%	9%	2%	1%	-16%	-50%
Memberships	%		-9%	12%	-5%	-15%	-3%	-16%	7%	-8%	0%	-12%	-36%
Concessions	%		13%	33%	-22%	19%	-19%	6%	19%	-17%	-20%	-9%	-55%
Interest Expense	%		667%	-85%	0%	-100%	0%	0%	0%	0%	0%	0%	0%
Adult & Corporate Learning Experiences	%		-5%	-14%	4%	-10%	30%	5%	-39%	25%	8%	17%	1%
Sponsorship/Donations	%		-8%	3%	6%	-12%	-53%	102%	11%	27%	6%	17%	-17%
Program Support and Other Expenses	%		384%	-84%	19%	-48%	23%	-79%	-44%	656%	-52%	446%	-98%
Bank and Service Fees	%		0%	0%	0%	0%	4%	-6%	-12%	17%	2%	-1%	-89%



Scenario Selector	Scenario		Remain on Site	
	Scenario Selector			
	0			
	Remain on Site	Remain on Site	Relocation	Relocation B
	Scenario	0	1	

GLOBAL OPTIONS	UNITS	VALUE			
General Inflation Rate	%	2.0%	2.0%	2.0%	2.0%
Revenue Growth Rate	%	1.5%	1.5%	1.5%	1.5%
Wage Growth Rate	%	1.0%	1.0%	1.0%	1.0%
Discount Rate	%	3.0%	3.0%	3.0%	3.0%
Model Start Date	Date	2023	2023	2023	2023
Model End Date	Date	2073	2073	2073	2073
Operating Period Length	# of Yrs	50	50	50	50

INPUTS	UNITS	VALUE			
GENERAL					
Number of Visitors - Current Location Steady State	#	885000	885000	885000	885000
Number of Visitors - Ontario Place Steady State	#	0	0	1000000	1000000
Dates					
Construction/Refurbishment Start	Date	2025	2025	2025	2025
Construction/Refurbishment Duration	Years	3	3	4	4
Operations Closure Start	Date	2025	2025	0	0
Operations Closure Duration	Years	1	1	0	0
Operations Relocate Start	Date	0	0	2028	2028

CURVES					
Construction Curve (Buildings)					
Critical Maintenance - Ontario Science Centre					
Exhibition Construction/Minor Repairs					
FTE Increase					
Yearly Visitors Current Site					
Yearly Visitors Ontario Place Site					

REVENUES					
Current Site					
Interest	\$	202,000.00	202,000	202,000	202,000
OSC Operating Grant	\$	19,400,000.00	19,400,000	19,400,000	19,400,000
General Admission (includes Parking Fees)	\$/Visitor	7.00	7.00	7.00	7.00
Parking Fees	\$/Visitor	-	-	-	-
OMNIMAX Theatre	\$	1,382,700	1,382,700	1,382,700	1,382,700
International Sales and Rentals	\$	1,719,600	1,719,600	1,719,600	1,719,600
Educational Programs and Admission	\$/Visitor	1.40	1.40	1.40	1.40
Recreation & Family Learning Experiences	\$/Visitor	1.12	1.12	1.12	1.12
Memberships	\$	2,127,000	2,127,000	2,127,000	2,127,000
Concessions	\$	460,400	460,400	460,400	460,400
Adult & Corporate Learning Experiences	\$	544,900	544,900	544,900	544,900
Sponsorship/Donations	\$	2,563,600	2,563,600	2,563,600	2,563,600
Program Support and Other Revenue	\$	121,400	121,400	121,400	121,400
Revenue from Current Operations	\$	\$ 8,919,602.52	36,745,818.86	36,745,818.86	36,745,818.86
Interim Revenue Impact Year 1	\$	-	-	-	-
Interim Revenue Impact Year 2	\$	-	-	(7,000,000)	(7,000,000)
Interim Revenue Impact Year 3	\$	-	-	(7,000,000)	(7,000,000)
Interim Revenue Impact Year 4	\$	-	-	(7,000,000)	(7,000,000)
Interim Revenue Impact Year 5	\$	-	-	(7,000,000)	(7,000,000)
Interim Revenue Impact Total	\$	\$ 14,736,905.04	- - 28,000,000.00	- 28,000,000.00	- - - - -
Ontario Place Site					
Interest	\$	-	-	202,000	202,000
OSC Operating Grant	\$	-	-	19,400,000	19,400,000
General Admission (includes Parking Fees)	\$/Visitor	-	-	7.00	7.00
Parking Fees	\$/Visitor	-	-	-	-
OMNIMAX Theatre	\$	-	-	1,382,700	1,382,700
International Sales and Rentals	\$	-	-	-	-
Educational Programs and Admission	\$/Visitor	-	-	1.40	1.40
Recreation & Family Learning Experiences	\$/Visitor	-	-	1.12	1.12
Memberships	\$	-	-	2,127,000	2,127,000
Concessions	\$	-	-	460,400	460,400
Adult & Corporate Learning Experiences	\$	-	-	544,900	544,900
Sponsorship/Donations	\$	-	-	2,563,600	2,563,600
Program Support and Other Revenue	\$	-	-	121,400	121,400

Revenue from Relocation Operations	\$	\$ -	-	36,121,151.25	36,121,151.25	-	-	-	-	-	-	-	-
Capital Costs (Nominal)													
Ontario Science Centre													
Construction Cost of Buildings	\$	-	-	321,153,023	321,153,023	-	-	-	-	-	-	-	-
Construction Cost for New Exhibits	\$	66,500,000	66,500,000	66,500,000	66,500,000	-	-	-	-	-	-	-	-
Square Footage of Public Facing Areas	sqft	284,000	284,000	-	-	-	-	-	-	-	-	-	-
Construction Cost/sqft for Cosmetic Upgrades	\$/sqft	150	150	150	150	-	-	-	-	-	-	-	-
Construction Cost of Exhibits	\$	\$109,100,000.00	109,100,000	66,500,000	66,500,000	-	-	-	-	-	-	-	-
Buildings Critical Maintenance (Nominal)	\$	368,651,662.79	368,651,662.79	32,309,026.00	32,309,026.00	-	-	-	-	-	-	-	-
Total Construction Cost	\$	\$477,751,662.79	477,751,663	419,962,049	419,962,049	-	-	-	-	-	-	-	-
Decommissioning and decant costs	\$	-	-	20,915,000	20,915,000	-	-	-	-	-	-	-	-
Moving Costs	\$	-	-	4,850,000	4,850,000	-	-	-	-	-	-	-	-
Trailing Obligations - Rent & IO Mgt Fee	\$	-	-	3,770,000	3,770,000	-	-	-	-	-	-	-	-
Trailing Obligations - Operations	\$	-	-	4,628,650	4,628,650	-	-	-	-	-	-	-	-
Operations Expenses													
Current Site													
Exhibits and Programs	\$	2,412,500.00	2,412,500	2,412,500	2,412,500	-	-	-	-	-	-	-	-
Marketing and Advertising	\$	2,283,100.00	2,283,100	2,283,100	2,283,100	-	-	-	-	-	-	-	-
Visitor Services	\$	3,361,700.00	3,361,700	3,361,700	3,361,700	-	-	-	-	-	-	-	-
Facility Operations	\$	5,423,500.00	5,423,500	5,423,500	5,423,500	-	-	-	-	-	-	-	-
Program Management	\$	3,652,500.00	3,652,500	3,652,500	3,652,500	-	-	-	-	-	-	-	-
Administration	\$	4,188,800.00	4,188,800	4,188,800	4,188,800	-	-	-	-	-	-	-	-
Capital Projects	\$	-	-	-	-	-	-	-	-	-	-	-	-
General Operations	\$	\$ 21,322,100.00	21,322,100.00	21,322,100.00	21,322,100.00	-	-	-	-	-	-	-	-
Occupancy Costs	\$	5,176,700.00	5,176,700.00	5,176,700.00	5,176,700.00	-	-	-	-	-	-	-	-
OMNIMAX Theatre	\$	1,324,600.00	1,324,600.00	1,324,600.00	1,324,600.00	-	-	-	-	-	-	-	-
International Sales and Rentals	\$	1,630,400.00	1,630,400.00	1,630,400.00	1,630,400.00	-	-	-	-	-	-	-	-
Educational Programs and Admission	\$	1,987,500.00	1,987,500.00	1,987,500.00	1,987,500.00	-	-	-	-	-	-	-	-
Recreation & Family Learning Experiences	\$	781,600.00	781,600.00	781,600.00	781,600.00	-	-	-	-	-	-	-	-
Memberships	\$	587,300.00	587,300.00	587,300.00	587,300.00	-	-	-	-	-	-	-	-
Concessions	\$	100,500.00	100,500.00	100,500.00	100,500.00	-	-	-	-	-	-	-	-
Interest	\$	6,666.67	6,666.67	6,666.67	6,666.67	-	-	-	-	-	-	-	-
Adult & Corporate Learning Experiences	\$	368,800.00	368,800.00	368,800.00	368,800.00	-	-	-	-	-	-	-	-
Sponsorship/Donations	\$	1,348,900.00	1,348,900.00	1,348,900.00	1,348,900.00	-	-	-	-	-	-	-	-
Program Support and Other Expenses	\$	265,300.00	265,300.00	265,300.00	265,300.00	-	-	-	-	-	-	-	-
Bank and Service Fees	\$	152,000.00	152,000.00	152,000.00	152,000.00	-	-	-	-	-	-	-	-
Expenses from Ancillary Operations	\$	8,553,566.67	8,553,566.67	8,553,566.67	8,553,566.67	-	-	-	-	-	-	-	-
Interim Expense Impact Year 1	\$	-	-	(3,900,000.00)	(3,900,000.00)	-	-	-	-	-	-	-	-
Interim Expense Impact Year 2	\$	-	-	10,000,000.00	10,000,000.00	-	-	-	-	-	-	-	-
Interim Expense Impact Year 3	\$	-	-	10,000,000.00	10,000,000.00	-	-	-	-	-	-	-	-
Interim Expense Impact Year 4	\$	-	-	10,000,000.00	10,000,000.00	-	-	-	-	-	-	-	-
Interim Expense Impact Year 5	\$	-	-	10,000,000.00	10,000,000.00	-	-	-	-	-	-	-	-
Interim Expense Impact	\$	10,695,233.33	-	36,100,000.00	36,100,000.00	-	-	-	-	-	-	-	-
One-Time Costs	\$	8,553,566.67	8,553,566.67	8,553,566.67	8,553,566.67	-	-	-	-	-	-	-	-
Lifecycle Costs	\$	7,474,036.00	7,474,036.00	7,474,036.00	7,474,036.00	-	-	-	-	-	-	-	-
Critical Maintenance	\$	368,651,662.79	368,651,662.79	32,309,026.00	32,309,026.00	-	-	-	-	-	-	-	-
Ontario Place Site													
Exhibits and Programs	\$	-	-	2,412,500	2,412,500	-	-	-	-	-	-	-	-
Marketing and Advertising	\$	-	-	2,283,100	2,283,100	-	-	-	-	-	-	-	-
Visitor Services	\$	-	-	3,361,700	3,361,700	-	-	-	-	-	-	-	-
Facility Operations	\$	-	-	5,423,500	5,423,500	-	-	-	-	-	-	-	-
Program Management	\$	-	-	3,652,500	3,652,500	-	-	-	-	-	-	-	-
Administration	\$	-	-	4,188,800	4,188,800	-	-	-	-	-	-	-	-
Capital Projects	\$	-	-	-	-	-	-	-	-	-	-	-	-
General Operations	\$	\$ -	-	21,322,100	21,322,100	-	-	-	-	-	-	-	-
Occupancy Costs	\$	-	-	2,205,600	2,205,600	-	-	-	-	-	-	-	-
OMNIMAX Theatre	\$	-	-	1,324,600	1,324,600	-	-	-	-	-	-	-	-
International Sales and Rentals	\$	-	-	-	-	-	-	-	-	-	-	-	-
Educational Programs and Admission	\$	-	-	1,987,500	1,987,500	-	-	-	-	-	-	-	-
Recreation & Family Learning Experiences	\$	-	-	781,600	781,600	-	-	-	-	-	-	-	-
Memberships	\$	-	-	587,300	587,300	-	-	-	-	-	-	-	-
Concessions	\$	-	-	100,500	100,500	-	-	-	-	-	-	-	-
Interest	\$	-	-	6,667	6,667	-	-	-	-	-	-	-	-
Adult & Corporate Learning Experiences	\$	-	-	368,800	368,800	-	-	-	-	-	-	-	-
Sponsorship/Donations	\$	-	-	1,348,900	1,348,900	-	-	-	-	-	-	-	-
Program Support and Other Expenses	\$	-	-	265,300	265,300	-	-	-	-	-	-	-	-
Bank and Service Fees	\$	-	-	152,000	152,000	-	-	-	-	-	-	-	-
Expenses from Ancillary Operations	\$	-	-	6,923,166.67	6,923,166.67	-	-	-	-	-	-	-	-
Severance Costs	\$	-	-	7,212,121	7,212,121	-	-	-	-	-	-	-	-
Severance Costs	\$	-	-	7,212,121.21	7,212,121.21	-	-	-	-	-	-	-	-
Ontario Place Common Areas Maintenance	\$	-	-	313,277.70	313,277.70	-	-	-	-	-	-	-	-

OPTIONS SUMMARY SHEET

IN NPV TERMS					
Key Metrics	Impact of Relocate	Remain on Site	Relocation		
Remain Revenue	(566,446,535)	625,846,911	59,400,376		
Relocate Revenue	543,378,180	-	543,378,180		
Total Revenue	(23,068,355)	625,846,911	602,778,556		
Remain Operating Expense	1,084,228,468	(1,220,830,654)	(136,602,186)		
Relocate Operating Expense	(847,505,970)	-	(847,505,970)		
Total Operating Expense	236,722,497	(1,220,830,654)	(984,108,157)		
Common Areas Maintenance	(10,914,042)	-	(10,914,042)		
Lifecycle Maintenance	65,644,650	(297,031,408)	(231,386,757)		
Total Maintenance	54,730,608	(297,031,408)	(242,300,799)		
Severance Costs	(6,867,638)	-	(6,867,638)		
Severance Costs	(6,867,638)	-	(6,867,638)		
Buildings Critical Maintenance	275,561,136	(306,089,768)	(30,528,632)		
Total Critical Maintenance	275,561,136	(306,089,768)	(30,528,632)		
OSC Construction Cost - Exhibits	41,998,103	(105,947,863)	(63,949,759)		
OSC Construction Cost - Buildings	(290,028,437)	-	(290,028,437)		
OSC Other Capital Expenses	(32,124,675)	-	(32,124,675)		
Total Capital Expenses	(280,155,008)	(105,947,863)	(386,102,871)		
Combined EBITDA	\$ 256,923,241	\$ (1,304,052,782)	\$ (1,047,129,541)		

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IN NOMINAL TERMS					
Key Metrics	Impact of Relocate	Remain on Site	Relocation		
Remain Revenue	(1,258,565,319)	1,321,198,121	62,632,802		
Relocate Revenue	1,216,749,711	-	1,216,749,711		
Total Revenue	(41,815,608)	1,321,198,121	1,279,382,513		
Remain Operating Expense	2,380,458,248	(2,524,575,246)	(144,116,998)		
Relocate Operating Expense	(1,880,544,218)	-	(1,880,544,218)		
Total Operating Expense	499,914,030	(2,524,575,246)	(2,024,661,217)		
Common Areas Maintenance	(24,866,530)	-	(24,866,530)		
Lifecycle Maintenance	149,564,637	(632,149,491)	(482,584,854)		
Total Maintenance	124,698,107	(632,149,491)	(507,451,384)		
Severance Costs	(7,962,765)	-	(7,962,765)		
Severance Costs	(7,962,765)	-	(7,962,765)		
Buildings Critical Maintenance	336,342,637	(368,651,663)	(32,309,026)		
Total Critical Maintenance	336,342,637	(368,651,663)	(32,309,026)		
OSC Construction Cost - Exhibits	43,808,366	(115,792,927)	(71,984,561)		
OSC Construction Cost - Buildings	(321,153,023)	-	(321,153,023)		
OSC Other Capital Expenses	(37,378,150)	-	(37,378,150)		
Total Capital Expenses	(314,722,807)	(115,792,927)	(430,515,734)		
Combined EBITDA	\$ 596,453,594	\$ (2,319,971,207)	\$ (1,723,517,612)		

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Summary of Key Cost Pressure Factors
(OSC - 40% BCA Escalation Justification)

Confidential and Privileged Advice to Government

SUBJECT: Summary of Key Cost Pressure Factors
As of December 31, 2022

FROM: Infrastructure Ontario Project Controls

DATE: March 3, 2023

The following are contributors to the 40% cost escalation to estimates provided by Pinchin in their April 2022 Building Condition Assessment report.

Supply-Chain Pressures

- Internationally, supply chain pressures appear to be softening but remain significantly tighter than pre-covid levels. The Global Supply Chain Pressure Index, which was trending down at the end of last quarter, continued to decline in the third quarter, reaching the lowest level since November 2020. The index is down 74% from the record high last December but it remains well above levels seen before the pandemic. The Index's year-to-date movements suggest that global supply chain pressures are beginning to fall back in line with historic levels.
- Domestically, the supply chain remains constrained but is showing signs of easing in some areas. In August 2022, the risk of greater delays increased for five of the six categories of building products for which there are data. The IVEY Purchasing Managers Index shows that, in Canada, more purchasing managers reported a slowing down of deliveries in the third quarter of 2022 than reported improvements. Truck loads have normalized in line with pre-covid levels through an influx of capacity amid softening freight demand. In September, there were 3.65 trucks for every load, which is approximately 38% higher than the ratio seen in September 2021. Land shipping costs saw the first indication of easing in the third quarter; however, domestic rail costs remain elevated near their highest level since 2018. Trucking costs continued to increase into June (the most recent data). The truck transportation index increased by 11.7% in the second quarter of 2022 compared to the previous quarter (2022- Q1) and 27.8% higher compared to the second quarter of 2021.

Opportunity Pricing:

- Contractor capacity remains very limited and opportunity bidding or passing on bidding continues to be a risk going forward. In the second quarter of 2022 (latest data published), the construction industry was operating at 94% of its production capacity – this figure is slightly below the peak observed last quarter but is in line with levels observed in 2021 and significantly higher than the pre-covid rate. In 2022 (Q2), contractors' prices for non-residential building construction were 14.7% higher in Ottawa-Gatineau and 17.3% higher in Toronto compared to 2021 (Q2).

Interest Rates:

- The increase in both short-term and long-term financing is likely a product of the Bank of Canada's recent steep interest rate hikes. The new rates will significantly raise the interest payments on the science facility's already increased project costs, and risk tolerance among lenders will likely drop for the foreseeable future. Interest rates also impact machinery and equipment leasing rates, further increasing the cost of design & construction.

Construction Costs:

- Due to a combination of the factors detailed above, the overall cost of construction materials has increased significantly. In the third quarter of 2022, the Construction Materials Price Index continued to decline from the peak levels observed in March. Despite the softening of prices observed in Q3, the composite index in September 2022 was 11.5% higher than in September 2021 and remains 43.2% higher than it was in September 2019 (i.e., pre-Covid).
- Ready-mix concrete prices continued to climb in the third quarter. Concrete has experienced significant price inflation over the past year due to a combination of increased demand, labour shortages and issues at major plants.
- The price of rebar steel in the U.S market continued to decline in the third quarter. Spot prices for rebar were 27% lower in September relative to the recent peak in April.
- Quarry and pit prices for sand and gravel continued to rise to record levels in the third quarter, increasing by 2.5% from the second quarter.
- Softwood lumber prices in September were nearly 50% lower than the peak observed in March of 2022. Prices in September were nonetheless higher than those before the onset of the pandemic.
- Steel prices dropped notably in the third quarter which can partially be attributed to slowing demand in China stemming from a softening property market. Prices in the fourth quarter will be dependent on global supply and the ability of manufacturers to access needed scrap metal.
- In the second quarter of 2022, the composite indicator of seven categories of building supplies was 17% higher than in the second quarter of 2021. In June 2022, the composite indicator declined for the first time since January.

Labour supply and costs

- The current state of the construction labour market supply is relatively positive. Labour supply continued to expand in the third quarter and reached a record level in July 2022. On average, labour supply in the third quarter of 2022 was 5.8% higher than in the third quarter of 2019 and 8.4% higher than in the third quarter of 2021. There has been a notable return of workers nearing retirement age (55 and older) to the workforce in 2022, surpassing 2019

Head Office

One Dundas Street West
Suite 2000, Toronto, ON
M5G 1Z3

Siège de direction

1, rue Dundas Ouest
bureau 2000, Toronto, ON
M5G 1Z3



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levels. This recovery will benefit the increased demand for skilled workers over the near-term but poses challenges for the industry over the long-term.

Appendix J
Fiscal and Economic Impact Analysis

Confidential and Privileged Advice to Government

A photograph of a man and a young girl looking at a large globe in a museum setting. The man is on the left, looking towards the globe. The girl is in the center, looking up at the globe. The background is a blurred museum exhibit with colorful lights.

Ontario Science Centre Relocation Business Case

Economic Impact Assessment

Final Report

8 March 2023

The EY logo, consisting of the letters 'EY' in a bold, white, sans-serif font, with a yellow triangle pointing upwards to the right of the 'Y'.

EY

Building a better
working world



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Executive Summary

The Ontario Science Centre (OSC) is one of Ontario’s most significant cultural attractions where people of all ages can enjoy and learn about science, technology, and innovation. Established in 1969 at the Don Valley Parkway in Toronto, the OSC is currently facing operational challenges that may impact its long-term sustainability. Ernst & Young LLP (EY) has been engaged by Infrastructure Ontario (IO) to provide financial and economic advisory services and undertake an economic impact and fiscal impact assessment of the two primary options for a renewed OSC. These options are:

- ▶ **Option 1 (Remain on Site):** address all capital repairs/deferred maintenance issues and undertake refresh of public areas and exhibits at the current 770 Don Mills site. No consolidation or rationalization of space / programming is contemplated under this option.
- ▶ **Option 2 (Relocate):** construct a new, smaller OSC facility as cultural anchor on provincially-owned land with new exhibits and modernized program. The smaller sized facility must be of a scale to allow OSC to successfully deliver its current mandate.

Economic impact assessment results

The total economic impacts of construction, operations, and tourism spending over a 50-year appraisal period are presented in Table 1, including the total incremental differences between the Remain on Site and Relocate options on an inflation adjusted (real) basis. This holistic assessment allows for a comparison of the economic impacts of the two options and showcases the potential economic effects of the project over the appraisal period.

Table 1: Total Economic Impacts

	Remain on Site	Relocate	Incremental Impact
Results for 2023-2073			
GDP impacts (\$m, real 2023)	2,438.6	2,032.1	-406.5
Jobs impacts (Full-time equivalents (FTE), annual)			
Construction	323	888	565
Operations	391	336	-55
Tourism	18	20	2
Tax impacts (\$m, real 2023)	312.2	260.2	-52.0

In total, the Remain on Site option provides an additional **\$407 million** of GDP, **55 FTEs** annually during operations, and **\$52 million** in tax revenue over the 50-year period from 2023 to 2073. The higher economic impacts for the Remain on Site option are driven by higher staffing costs, higher maintenance costs, and higher occupancy costs.



Additional economic impacts of relocating the OSC

The potential relocation of OSC to Ontario Place will generate additional economic impacts beyond the GDP, employment, and tax impacts described above. These additional impacts include:

- ▶ **Land value uplift and tax gain:** The relocation of the OSC to Ontario Place provides the Government of Ontario and the City of Toronto with an opportunity to facilitate residential and commercial development at the Don Mills location. Developing the existing OSC lands will lead to an increase in tax revenue for the City of Toronto through the sale of development lands and recurring property tax revenue. Based on land valuation and property tax revenue estimates, the present value of future tax revenue accruing to the City of Toronto over a 50-year period would range between **\$601 million to \$785 million**.
- ▶ **Synergies with surrounding infrastructure and developments:** The relocation of the OSC to Ontario Place will complement various infrastructure investments and developments in Toronto, including:
 - ▶ *Residential developments:* The Greater Toronto Area (GTA) housing market ranks last of all major Canadian cities in key affordability metrics such as mortgage repayments as a percentage of income, with a median price condominium requiring approximately 54.8% of an individual median income in Toronto.¹ Relocating the OSC to Ontario Place would enable OSC land at Don Mills to be redeveloped into mixed-use residential and commercial space and provide approximately 2,500 to 3,000 new dwellings.
 - ▶ *Transport infrastructure:* The proposed Ontario Line is a 15.6-kilometre rapid transit line connecting the current OSC location with Ontario Place. By relocating the OSC to Ontario Place and increasing housing supply at the Don Mills location, ridership for the Ontario Line may increase as more residents will be located in close proximity to the Ontario Line, and the new OSC location will be more accessible at a central downtown location for residents and tourists. Improved access to the OSC may also drive an increase in visitation and revenue growth, which will improve the financial sustainability of the OSC.
 - ▶ *Ontario Place precinct:* The Ontario Place precinct includes 155 acres of pristine waterfront property near downtown Toronto. The clustering of entertainment and cultural offerings at Ontario Place may facilitate increased visitation to OSC by increasing the appeal and ease for visitors to visit multiple attractions in one location. The new location may also drive increased visitation and tourism due to the close proximity to the heavily populated downtown Toronto area with many restaurants, retail outlets, hotels, and other tourist and recreational offerings.

¹ National Bank of Canada, Housing Affordability Monitor Q3 2022. Accessed at <https://www.nbc.ca/content/dam/bnc/taux-analyses/analyse-eco/logement/housing-affordability.pdf>



- ▶ **Increased tourism:** The relocation of the OSC to Ontario Place may also benefit the City of Toronto and the GTA by driving increased tourism, which would likely result in a series of broader economic impacts. In 2018, Toronto had almost 28 million visitors, with 10 million of those staying overnight.² In total, visitors to the city spent just under \$7 billion during their time there. This expenditure from tourist visitation has large economic impacts for the city and the province, which may be further enhanced by a new OSC at Ontario Place.
- ▶ **Staffing:** Labour costs are the largest cost item for the OSC, comprising of 60% of total operating costs in 2018/19 prior to any operational impacts from the COVID-19 pandemic. A newly designed OSC at Ontario Place may allow to reduce staffing levels from 250 to 215 FTEs due to a smaller, more efficient building layout and operational changes. Additionally, reduced staffing levels for Option 2 will meet the staffing cap set by the Ministry of Tourism, Culture, and Sport (MCTS).

Fiscal impact assessment results

Fiscal impact refers to the net impact on Government resources for a particular project or program. To provide a holistic analysis of each project option, it is important to consider the fiscal impacts and draw on public resources. EY has undertaken a fiscal impact analysis derived from the financial results of each project option, and with consideration to public sector accounting guidance.

Table 2 summarizes the 50-year fiscal impact on a nominal and real basis for each project option.

Table 2: 50-year fiscal impact (\$m)

Real	Remain on Site	Relocate
Operating costs	\$(1,858.2)	\$(1,504.4)
Deferred maintenance	\$(318.3)	\$(30.5)
Capital costs	\$(81.9)	\$(275.4)
Revenues	\$770.4	\$743.7
Fiscal Impact	\$(1,487.9)	\$(1,066.6)
Net fiscal impact compared to option 1	-	\$421.3
Nominal	Remain on Site	Relocate
Operating costs	\$(3,156.7)	\$(2,540.1)
Deferred maintenance	\$(368.7)	\$(32.3)
Capital costs	\$(115.8)	\$(430.5)
Revenues	\$1,321.2	\$1,279.4
Fiscal Impact	\$(2,320.0)	\$(1,723.5)
Net fiscal impact compared to option 1	-	\$596.5

² Destination Toronto, Visitor Economic Study. Accessed at <https://www.destinationtoronto.com/research/business-intelligence/visitor-economy-study/>



The results above show that the Relocate option would provide fiscal savings to the Government of Ontario over the 50-year appraisal period of **\$421 million** in real 2023 dollars, and **\$597 million** in nominal terms relative to the Remain on Site option. The fiscal improvement over the 50-year appraisal period for the Relocate option reflects lower staffing requirements, lower maintenance costs, lower occupancy costs, and increased revenue as a result of higher visitation assumptions and a \$0.50 increase in average admission per visitor.

Assuming the Government of Ontario would reinvest these fiscal savings in other areas such as infrastructure, health, and education, the fiscal savings could generate an additional **\$409 million** in GDP and **\$47.4 million** in tax revenue over the 50-year period.



1. Project Overview and Background

1.1. Ontario Science Centre relocation

The Ontario Science Centre (OSC) is one of Ontario's most significant cultural attractions where people of all ages can enjoy and learn about science, technology, and innovation. Established in 1969 at the Don Valley Parkway in Toronto, the OSC remains one of Ontario's most recognized brands. However, the OSC is currently facing operational challenges that may impact its long-term sustainability. As a result, the Government of Ontario is investigating options to modernize the OSC and solidify its position as a world-class science centre whilst ensuring long-term financial stability (the project).

Ernst & Young LLP (EY) has been engaged by Infrastructure Ontario to provide financial and economic advisory services and undertake an economic impact and fiscal impact assessment of the two primary options for a renewed OSC. These options are:

- ▶ **Option 1 (Remain on Site):** address all capital repairs/deferred maintenance issues and undertake refresh of public areas and exhibits at the current 770 Don Mills site. No consolidation or rationalization of space / programming is contemplated under this option.
- ▶ **Option 2 (Relocate):** construct a new, smaller OSC facility as cultural anchor on provincially-owned land with new exhibits and modernized program. The smaller sized facility must be of a scale to allow OSC to successfully deliver its current mandate.

The economic impact assessment analyzes how the OSC's expected capital expenditures (CAPEX), operating expenditures (OPEX), and tourist spending impacts the provincial economy as it relates to gross domestic product (GDP), job creation, labour income, and tax contribution. The fiscal impact assessment analyzes the budgetary impact of each OSC option by estimating the impact of Government costs offset by OSC revenues.

The remaining sections of this chapter outline CAPEX, OPEX, and tourism visitation assumptions for each project option, and are used as inputs to the economic impact and fiscal impact assessment. These assumptions are based on information provided from IO, OSC, Lord Cultural Resources, and other external advisers.

1.2. Capital costs

Capital costs are expenses that are incurred to develop each option. For the Remain on Site option, capital costs reflect construction costs for new exhibits and cosmetic upgrades, and for the Relocate option capital costs reflect the construction costs associated with building a new OSC at Ontario Place, including investments in new exhibits. Table 3 displays the total capital costs associated with each project option.



Table 3: Capital cost of each project option

Project option	Option components	Construction timeframe	Real CAPEX (\$m)
Option 1: Remain on Site	OSC remains at its current location	2025 - 2028	\$109.1
Option 2: Relocate	OSC relocates to Ontario Place	2025 - 2029	\$400.2

It is noted that the capital costs in Table 3 are preliminary and subject to change as the project options are refined. Capital costs for the Remain on Site option consist of \$66.5 million in construction of new exhibits, and \$42.6 million in minor repairs. Capital costs for the Relocate option consist of \$300 million in building construction, \$66.5 million in construction of new exhibits, \$20.9 million in decommissioning and decant costs, \$4.9 million in moving costs, as well as \$8 million in other trailing obligations.

1.3. Operational costs

Operating costs estimates are the expenses incurred every year the OSC is operational, and include costs related to labour (i.e., salaries and wages), and purchases of goods and services necessary for OSC operations (e.g., utilities, office maintenance, etc.). The following categories of operating expenses were assessed for each option:

- ▶ **Salaries, wages and benefits:** In 2021/22, the OSC employed approximately 250 FTEs, with total salaries, wages and benefits of \$20.5 million. However, labour costs in 2020/21, and 2021/22 were negatively impacted by forced closures during the COVID-19 pandemic. To determine a more realistic estimate of salaries wages and benefits for the economic analysis, labour costs were averaged over a ten-year period from 2010/11 to 2019/20 and extrapolated to 2023/24 to provide a more accurate estimate of labour costs under a business-as-usual scenario.
- ▶ **FTEs:** Although not a direct operating cost item, FTE staffing assumptions for each option has a significant impact on labour costs. For Option 2, given a much smaller footprint, changes to operations and a more efficient building layout, staffing levels may be reduced from 250 to 215 FTEs reducing salaries, wages, and benefits by approximately 14% (or \$2.5 million annually). It is noted that FTE requirements for Option 2 are subject to new functional requirements, operating hours, and other functionality considerations which may impact FTE requirements.
- ▶ **Occupancy costs:** Annual lease and related occupancy costs such as management fees and associated operating and maintenance costs. In 2021/22, OSC occupancy costs were \$4.7 million. Given Option 2 is expected to have a significantly smaller footprint in terms of building square footage, occupancy costs are expected to be reduced by around \$3.0 million per annum.
- ▶ **Other operating expenses:** This item includes all other operating expenses, which consist of general operations expenditures excluding salaries, wages and benefits, along with ancillary operations expenditures, and maintenance expenditures, which include lifecycle maintenance and deferred maintenance costs.



Table 4 displays the real annual and 50-year total OPEX associated with each project option, consisting of salaries, wages and benefits, along with occupancy costs and other operating expenses.

Table 4: Operational cost of each project option

Project option	Option components	Real OPEX (\$m, p.a. ³)	Real OPEX (\$m, 50-year total)
Option 1: Remain on Site	OSC remains at its current location	\$44.4	\$2,219.3
Option 2: Relocate	OSC relocates to Ontario Place	\$31.2	\$1,557.9

It is noted that the capital costs in Table 4 are preliminary and do not represent an OSC budget submission or business planning process. Therefore, operating costs for each project option are subject to change as the project progresses.

1.4. Tourism at OSC

The tourism economic impact of the OSC includes spending from visitors outside of the GTA to inject “new money” to the OSC. The “new money” is incremental to the local economy in that it would not have been spent in Toronto without the presence of OSC. Other spending at the OSC by local residents has therefore been excluded from the economic impact assessment as it is assumed local residents would have spent the money elsewhere in Toronto in the absence of the OSC.

The proportion of OSC visitors that are considered tourists was informed by visitor satisfaction surveys in 2020/21 and 2021/22, which found that approximately 21% of visitors were from outside the GTA. This finding was also consistent with pre-COVID-19 pandemic visitor surveys.

To calculate tourism expenditure at OSC, the tourism proportion of 21% was applied to daily visitation forecasts⁴ for each project option to estimate average annual tourist visitation. These estimates were multiplied by general admission revenue per person assumptions from the financial analysis to calculate the total tourism expenditure for each option. Tourism expenditure for each option is shown in Table 5.

Table 5: Tourism expenditure estimates

Project option	Average annual visitation	Average annual tourism visitation	Total tourism expenditure (\$m, real)
Option 1: Remain on Site	862,559	181,137	\$56.2

³ Represents the annual average across the 50-year appraisal period

⁴ Provided by OSC’s Visitor Satisfaction Survey average for the fiscal years 2016/2017, 2017/2018, and 2018/2019.



Project option	Average annual visitation	Average annual tourism visitation	Total tourism expenditure (\$m, real)
Option 2: Relocate	979,167	205,625	\$63.8



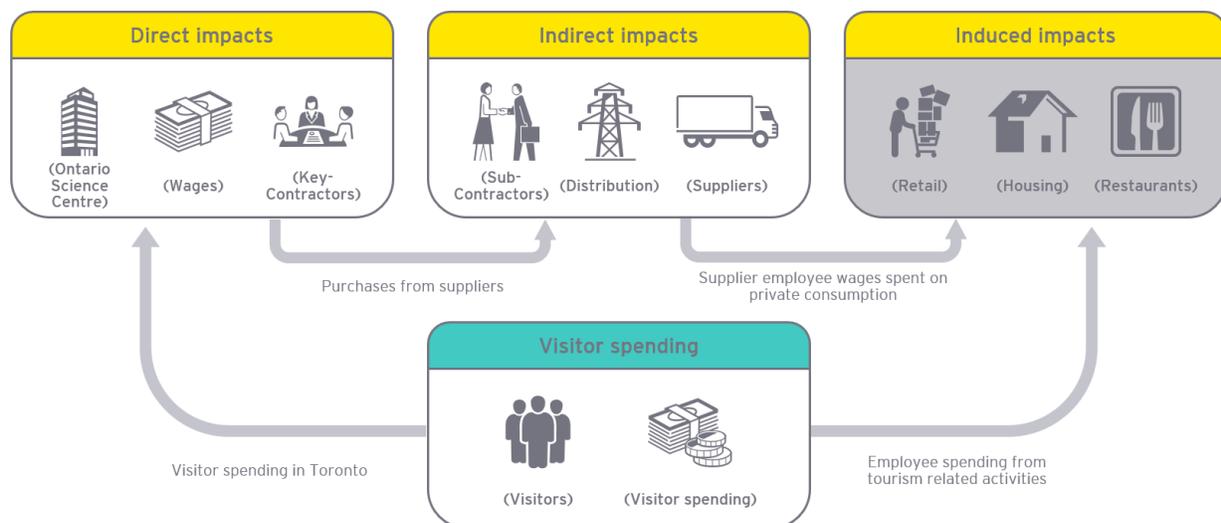
2. Assessing the Economic Impacts

To analyze the economic impact of the capital investment, operating expenditures, and tourism impacts associated with each option for the OSC, EY undertook a comprehensive EIA using detailed data from Statistics Canada, expenditure data described in Section 1, and combined it with EY’s proprietary economic model tools (i.e., economic models founded on the principles of the Input-Output model described in Appendix A.2). As such, EY’s analysis will capture the provincial economic impact of the OSC associated with each Project option.

2.1. Direct, indirect, and induced impacts

Using the framework of Input-Output model, EY captured the OSC’s impacts on the Ontario economy via three distinct impacts as shown in Figure 1: Direct, indirect, and induced impacts of OSC activities. These impacts individually, and collectively, represent how the activities of the OSC ripple throughout the economy.

Figure 1: Direct, indirect, and induced impacts of OSC activities



More specifically, the impacts for each option are defined as follows:

- ▶ The *direct impact* includes the economic impact supported directly by OSC’s capital investment, post-build/revitalization operation costs, and tourism spending at the OSC. These include, for example, spending on construction and renovations, cost directly linked to the day-to-day operations of the OSC, employee wages and benefits, and tourism expenditures at the OSC.



- ▶ The *indirect impact* includes the economic impact from the business activities arising from supporting the capital investment, operations, and tourism impact of the OSC. The indirect effect includes, for example, businesses providing security, catering, and cleaning services, in addition to businesses in the construction and supply industries, as well as a number of upstream suppliers in the Ontario economy.
- ▶ The *induced impact* includes the economic impact that occurs when employees and contractors of the OSC spend their wages in the Ontario economy. The induced activity is primarily service related in industries such as retail trade, transport, accommodation, restaurants, housing, and finance.
- ▶ The *visitor spending* is the primary input for tourism impacts in the analysis. In addition to operational and capital spending by the OSC, direct, indirect, and induced effects from additional expenditure by tourists are considered as part of the economic impact assessment.

2.2. Economic impact assessment methodology

A static interprovincial input-output (I-O) model has been used to assess the provincial economic impact of the OSC. This method was selected due to its flexibility in providing a reliable, cost-efficient way to assess regional impacts. In particular, the I-O model first translates direct impacts into indirect and induced economic impacts, which collectively defines the total economic impact for the Province of Ontario. Economic impacts are expressed in terms of the following metrics:

- ▶ *Gross Domestic Product*: GDP, or local value added, is a measure of the value of all final goods and services produced in a specific region (i.e., the Province of Ontario).
- ▶ *Labour income*: Labour income is a component of the local value-added that measures the total employee compensation (value of wages and benefits) and proprietor income.
- ▶ *Full-time equivalent employment*: The number of FTEs measures the number of employees on full-time schedules and the number of employees on part-time schedules converted to a full-time basis.
- ▶ *Taxes*: This includes personal tax, sales tax, and corporate tax estimation for the province.

The total economic impact of the OSC is estimated using Statistics Canada's most recent within province economic multipliers from 2018. Generally speaking, these multipliers reflect how Statistics Canada tracks the interdependency between all the sectors of the economy. Each of these multipliers is a number that describes the size of the total economic impacts for a given level of spending. For example, a multiplier of 1.2 suggests that the total economic impact for every dollar spent by OSC adds an *additional* 20 cents to the economy. In other words, for every dollar spent, the economic activity from supporting businesses and consumers generate an additional 20 cents in the local economy. Statistics Canada's I-O multipliers are used by both public and private sector organizations and other researchers and are based on widely accepted methodology for estimating these types of economic linkages. Please refer to Appendix A.2 for a detailed description of the I-O model and its underlying assumptions.



3. Economic Impact Assessment Results

This section presents the results from our economic impact assessment based on CAPEX, OPEX, and tourism expenditure estimates of each project option for the OSC. The economic impacts related to GDP, labour income, employment and taxes are presented separately below.

To assess the economic impact of each project option, EY used I-O economic multipliers to estimate GDP creation, job creation, and estimated tax revenues for the Province of Ontario. The calculations are based on a number of assumptions, including:

- ▶ Construction: Based on capital costs required for the relocated development and/or redevelopment of the OSC. These impacts are considered a “one-off” and only take place during the construction period.
- ▶ Operations: Based on ongoing operating costs for the Remain on Site and Relocate options of the OSC. These impacts are considered ongoing and take place each year the OSC is operational.
- ▶ Annual ongoing economic impact is based on annual spending from operations and annual spending from tourism.

An **incremental impact** was also calculated comparing the economic impacts of the Relocate and Remain on Site project options, and shows the difference in terms of GDP impact, job creation, and tax revenues.

All results from the economic impact assessment are presented in real, 2023 Canadian dollars, meaning that they have been expressed in terms of their purchasing power in the year 2023.

3.1. Total economic impacts

The total economic impacts of construction, operations, and tourism spending over the 50-year appraisal period are presented in Table 6, including the total incremental differences between the Remain on Site and Relocate options. This holistic assessment allows for a comparison of the economic impacts of the two options and showcases the potential economic effects of the project over the appraisal period.

Table 6: Total Economic Impacts

	Remain on Site	Relocate	Incremental Impact
Results for 2023-2073			
GDP impacts (\$m, real 2023)	2,438.6	2,032.1	-406.5
Jobs impacts (FTE, annual)			
Construction	323	888	565
Operations	391	336	-55
Tourism	18	20	2
Tax impacts (\$m, real 2023)	312.2	260.2	-52



3.1.1. Total economic impacts

- ▶ The Remain on Site option provides **\$2,439 million** of GDP, while the Relocate option provides **\$2,032 million**. This implies that the Remain on Site option provides an additional **\$407 million** in GDP impacts when compared to the Relocate option.
- ▶ For the economic impacts on employment, the Relocate option provides **888 FTEs** annually across the four-year construction period, while the Remain on Site option provides **323 FTEs** annually across a three-year construction period. During operations (includes tourism impacts), the Remain on Site option provides an additional **53 FTEs** annually compared to the Relocate option. However, this is driven by higher FTE requirements of the OSC at the current Don Mills site.
- ▶ For the economic impacts on taxes, the Remain on Site option provides **\$312 million** in total tax revenue, while the Relocate option provides **\$260 million**. This implies that the Remain on Site option provides an additional **\$52 million** in tax revenue when compared to the Relocate option.

In total, the Remain on Site option provides an additional **\$407 million** of GDP, **53 FTEs** annually during operations, and **\$52 million** in tax revenue from over the 50-year period from 2023 to 2073. However, the higher economic impacts for the Remain on Site option are driven by higher staffing costs, higher maintenance costs, and higher occupancy costs.

3.2. GDP analysis

GDP is defined as a monetary measure of the value of goods and services produced and is a quantitative measure of economic activity. One of the main contributors to GDP is government spending, which EY have relied upon in this analysis. Government spending is reflected as economic production and thereby stimulates a multiplying effect. This multiplying effect assumes that with any new injection of spending, it leads to a multiplying increase to spend - i.e., increased government spending may trigger increased jobs, which may then increase household income and the propensity to spend on consumer goods and other items.

Table 7 shows an overview of the estimated economic impacts for GDP. The GDP impacts are calculated over a 50-year period from 2023 to 2073.



Table 7: GDP Impacts (in \$m, real 2023)

	Remain on Site	Relocate	Incremental Impact
Number of years of construction	3	4	
Results for 2023-2073			
GDP from construction	104.7	384.1	279.4
GDP from operations	2,277.9	1,584.5	-693.5
GDP from tourism	50.6	63.6	7.2
Total	2,438.6	2,032.1	-406.5
Estimated annual results during operations			
GDP from operations	45.6	31.7	-13.9
GDP from tourism	1.1	1.3	0.2
Total	46.7	33.0	-13.7

Table 7 contains two sections. The first represents the GDP generated by OSC over the 50-year period. Both of these options have continued operational and tourism GDP contributions that could potentially go beyond 2073. The second aims to capture annual impacts over the years that the OSC is operational in each option.

In summary, the Remain on Site option will generate a greater GDP impact over the 50-year period compared to the Relocate option. The Relocate option has a lower GDP impact due to operational efficiencies that decrease annual GDP impacts from operations. However, higher CAPEX investment and tourism expenditure results in the Relocate option generating an additional **\$287 million** of GDP from construction and tourism when compared to the Remain on Site option.

The total impact under each category (GDP from construction, GDP from operations, GDP from tourism) is based on the total spend over 50-years. Differences between the individual impacts from construction, operations and tourism are described below.

3.2.1. Capital expenditure impact

- ▶ The GDP impact for construction of the Remain on Site option is about **\$105 million**, and the Relocate option is **\$384 million**. This implies the construction spending from an OSC relocation would generate an additional **\$279 million** in GDP over the respective construction periods.
- ▶ The GDP generation from revitalization or relocation is temporary in nature and will end when construction is complete. Given the construction requirements under the Relocate option, higher GDP impacts are evident throughout the construction period.
- ▶ In accordance with public sector accounting guidance, maintenance costs, including deferred maintenance costs, do not qualify for capitalization and are therefore classified as operating



expenditures.⁵ Therefore, any economic contributions generated from deferred maintenance spending are allocated to the operations benefits.

3.2.2. Operating expenditure and tourism impacts

- ▶ GDP impact for operations is calculated based on operations spending of the OSC. The larger square footage of the existing OSC contributes to higher operating spend (e.g., occupancy costs, FTEs). As a result, the Remain on Site option will have a GDP impact of approximately **\$694 million** more than the Relocate option. This result is driven by the Remain on Site option requiring an additional ~\$1.9 million annually on lifecycle maintenance, ~\$3.0 million on occupancy costs, and requires an additional 35 FTEs compared to the Relocate option. Additionally, the result is influenced by the average annual deferred maintenance expenditures of over \$5 million for the Remain on Site option relative to the Relocate option.
- ▶ The GDP from tourism is based on tourism spending at the OSC, which is driven by the number of tourists visiting the site. The GDP impact from tourism is greater under the Relocate option by **\$7 million** compared to the Remain on Site option. This result is driven by the forecast increase in tourists visiting the OSC under the Relocate option.

Employment analysis Table 8 provides an overview of the estimated economic impacts for employment. The employment impacts of construction are calculated based on a three-year construction period for each option. Operational and tourism employment impacts are calculated over the 50-year period from 2023 to 2073.

Table 8: Employment impacts

	Remain on Site	Relocate	Incremental Impact
Estimated annual results during construction			
Jobs from construction	323	888	565
Jobs from operations	391	336	-55
Jobs from tourism	18	20	2
Total	732	1,245	513

During construction, the Relocate option will generate a greater employment impact when compared to the Remain on Site option. The difference in employment is primarily driven by higher construction spending in the Relocate option which leads to higher labour demand. As such, the relocation option

⁵ Government of Canada, Directive on Account Standards: GC 3150 Tangible Capital Assets. Accessed at <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32518>



generates an additional **565 FTEs** annually during construction. However, during operations employment impacts will be higher under the Remain on Site option due to higher FTE requirements.

Differences between the individual impacts from construction, operations and tourism are described below.

3.2.3. Capital expenditure impact

- ▶ The employment impact for construction in the Remain on Site option is about **323 FTEs** annually during the three-year construction period, while the Relocate option is **888 FTEs** during a four-year construction period. This implies the construction spending from an OSC relocation would generate an additional **565 FTEs** annually during the respective construction periods.
- ▶ The job creation from revitalization or relocation is temporary in nature and will end when construction is complete. Given the construction requirements under the Relocate option, higher employment impacts are evident throughout the construction period.

3.2.4. Operating expenditure and tourism impacts

- ▶ Operational jobs, which could be primarily permanent in nature, represent those necessary to maintain and operate the OSC. The Relocate option may provide an opportunity to reduce staffing levels from 250 to 215 FTEs due to a smaller and more efficient building layout, along with potential operational changes. Therefore, the employment impacts from operations are lower for the Relocate option.
- ▶ Tourism jobs represent those in the food and beverage industry, along with hotels, taxis and other similar jobs. As such, the jobs created from tourism is largely based on the tourism attendance. The Relocate option will create approximately **two more jobs** annually than the Remain on Site option.

3.3. Tax analysis

The CAPEX, OPEX, and tourism expenditure driven by the OSC leads to tax revenues for the Ontario Government. Such expenditures may lead to increased revenues and profits for businesses in the value chain, and these additional profits may be subject to corporate income tax. Increased OPEX, CAPEX, and tourism expenditure may also lead to increased job creation and wages, which may be subject to personal income tax. As employees earn more income, they may also be more likely to spend on taxable goods and services, leading to increased sales tax revenues.

Tax revenues from personal income taxes (personal taxes), corporate income taxes (corporate taxes), sales taxes, and other taxes have been estimated based on the GDP impact of CAPEX, OPEX, and tourism expenditure estimates for each project option. An estimated 13% share of Ontario Government tax



revenue to GDP⁶ has been applied to GDP impacts of each project option to determine total tax revenues, and this share is allocated according to the percentage share of government tax revenue for each account (personal taxes, sales taxes, corporate taxes, other taxes).⁷

Table 9 shows an overview of the estimated economic impacts for tax revenues. The tax impacts are calculated on a 50-year period from 2023 to 2073.

Table 9: Tax Impacts (in \$m, real 2023)

	Remain on Site	Relocate	Incremental Impact
Results for 2023-2073			
Personal taxes	115.9	96.5	-19.3
Sales taxes	83.3	69.4	-13.9
Corporate taxes	60.8	50.7	-10.1
Other taxes	52.3	43.6	-8.7
Total	312.2	260.2	-52.0
Estimated annual results			
Personal taxes	2.3	1.9	-0.4
Sales taxes	1.7	1.4	-0.3
Corporate taxes	1.2	1.0	-0.2
Other taxes	1.0	0.9	-0.2
Total	6.2	5.2	-1.0

3.3.1. Tax impacts

- ▶ The tax impact for the Remain on Site option is about **\$312 million**, compared to the Relocate option which is around **\$260 million** over the 50-year period. The results show the Remain on Site option would generate an additional **\$52 million** in tax revenue over 50-years, however this is due to higher staffing costs, occupancy costs, and maintenance costs.

⁶ Province of Ontario, 2022 Ontario Budget. Accessed at <https://budget.ontario.ca/2022/pdf/2022-ontario-budget-en.pdf>

⁷ Ibid



3.4. Additional Economic Impacts of Relocating the OSC

The potential relocation of OSC to Ontario Place will generate additional economic impacts beyond the direct, indirect, and induced effects described above. These additional impacts are analyzed in this section, and include:

- ▶ Land value uplift and tax gain.
- ▶ Synergies with surrounding infrastructure and developments.
- ▶ Increased tourism.
- ▶ Productivity improvements.

3.4.1. Land value uplift and tax gain

The proposed relocation of the OSC to Ontario Place provides the Government of Ontario and the City of Toronto with an opportunity to facilitate residential and commercial development at the Don Mills location. The purpose of this section is to refresh the *2016 Real Estate Advice Report* findings provided to IO as part of the *2016 OSC Relocation Business Case* and provide an up-to-date estimate of the economic benefits that may accrue to the City of Toronto from allowing the OSC lands at Don Mills to be redeveloped.

The land value uplift and tax gains considered in this section include:

- ▶ One-time proceeds from the sale of developable lands.
- ▶ Recurring property tax revenues accruing to the City of Toronto as a result of redeveloping the lands for residential and commercial purposes.

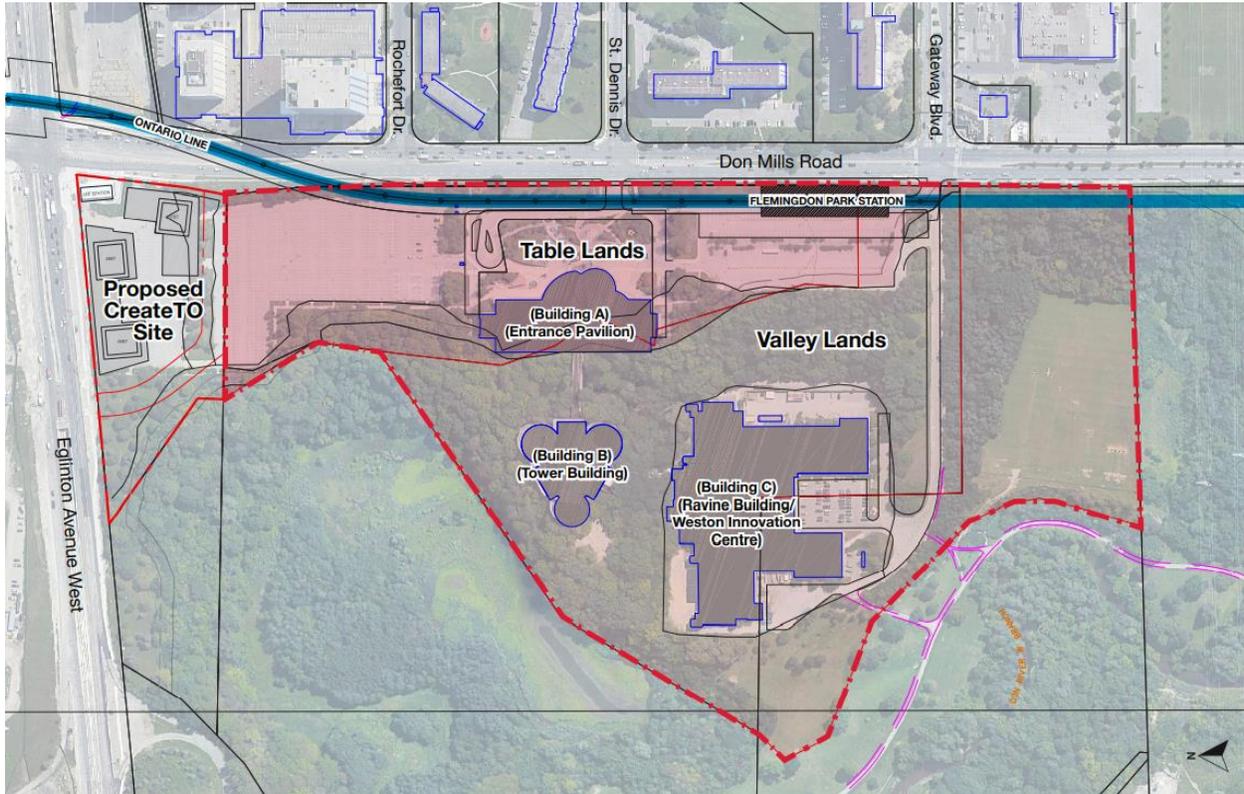
To investigate development opportunities at the Don Mills location, IO commissioned a redevelopment feasibility analysis report (the report) to assess the redevelopment potential of the OSC site, and the land valuation associated with various development options. The report considered development options for the following land areas that are also displayed in Figure 2:⁸

- ▶ **Tablelands:** The tablelands are located along Don Mills Road and are currently occupied by several surface parking lots, the OSC entrance pavilion (Building A), and the entrance plaza.
- ▶ **Valley Lands:** The valley lands slope down into the Don River Valley and are heavily vegetated. These lands are currently occupied by the tower building (Building B) and the valley building (Building C).

⁸ Infrastructure Ontario, "*Ontario Science Centre Redevelopment Feasibility Analysis*"



Figure 2: OSC redevelopment study area⁹



Each tablelands development option incorporates transit-oriented community approaches, which aim to provide opportunities to build vibrant, higher-density, mixed use communities that are connected to transit stations. The valley lands development options propose alterations to Building C to include new cultural, institutional, or non-residential uses such as office space, employment uses, or long-term care. For more detail regarding the various development options, see Appendix A.1.

Table 10 provides an overview of each development option's estimated land value and GFA. The land values provided in the report were calculated based on a hypothetical assumed 'end state' whereby all transit infrastructure is in place and operation. In addition, the land values are net of all retrofitting, demolition, or community space construction costs associated with OSC lands.

⁹ Ibid



Table 10: OSC lands development options specifications¹⁰

Development option	Land value estimate (\$m)	Residential GFA (sf, thousands)	Non-residential GFA (sf, thousands)	Commercial / retail GFA (sf, thousands)
Tablelands - Option 1	\$283.8	2,025.4	159.1	31.7
Tablelands - Option 2A	\$305.7	2,078.1	235.6	31.7
Tablelands - Option 2B	\$345.1	2,344.6	195.7	31.7
Tablelands - Option 3	\$332.4	2,534.0	230.2	37.4
Valley lands - Option 1	\$5.7	-	157.8	-
Valley lands - Option 2	\$16.6	-	187.3	-
Valley lands - Option 3	\$40.1	-	386.7	-

The land values provided above were used to estimate the first stream of land value uplift and tax gain, which includes one-time proceeds from the sale of developable lands.

Table 11 provides an overview of the key parameters and assumptions used to calculate the second stream benefits, which includes ongoing property tax revenues accruing to the City of Toronto as a result of the redeveloping the lands for residential and commercial purposes.

Table 11: Tax gain parameters and assumptions

	Residential GFA	Non-residential GFA	Commercial/retail GFA
Price per sf estimate ¹¹	\$1,200	\$280	\$500
City of Toronto property tax rate ¹²	0.63%	2.12%	2.12%

For the purposes of calculating the ongoing property tax revenue for the City of Toronto, a 50-year appraisal period from 2023/24 was assumed, which is in line with the broader OSC economic and financial analysis. In addition, a 10-year construction timeframe was applied as a conservative assumption for each development option given the amount of preparation works that are required prior to land sales, and the overall size of each development.

¹⁰ Ibid

¹¹ Residential price estimate was informed by recent multi-residential sales in East York, Toronto. This data was sourced from Urbanation.

Non-residential and commercial price estimates were informed by recent retail and office development sales in Toronto. This data was sourced from CoStar Group and licensed to EY.

¹² City of Toronto, 2022 Property Tax Rates. Accessed at <https://www.toronto.ca/services-payments/property-taxes-utilities/property-tax/property-tax-rates-and-fees/>



Table 12 presents the outcomes of the land value uplift and tax gain analysis for each development proposed development options.

Table 12: Tax gain results

Development option	Land value sale (\$m)	Present value of property taxes (\$m)	Total tax gain (\$m)
Tablelands - Option 1	\$283.8	\$294.8	\$578.6
Tablelands - Option 2A	\$305.7	\$309.9	\$615.6
Tablelands - Option 2B	\$345.1	\$341.5	\$686.6
Tablelands - Option 3	\$332.4	\$371.7	\$704.1
Valley lands - Option 1	\$5.7	\$16.6	\$22.3
Valley lands - Option 2	\$16.6	\$19.7	\$36.3
Valley lands - Option 3	\$40.1	\$40.7	\$80.8

Based on the land valuations and property tax revenue estimates, the present value of future tax revenue accruing to the City of Toronto over a 50-year period would range between:

- ▶ **Tablelands:** \$578.6 million to \$704.1 million
- ▶ **Valley Lands:** \$22.3 million to \$80.8 million
- ▶ **Total tax gain:** \$600.9 million to \$784.9 million

3.4.2. Synergies with surrounding infrastructure and developments

Residential developments

The GTA housing market is ranked as one of the least affordable in the world, and the 11th most expensive city for a downtown 700 sf condominium as of June 2023. Domestically, Toronto has the highest median price for a condominium of all major Canadian cities at \$738,569 as of September 2023. In addition, Toronto ranks last of all major Canadian cities in key affordability metrics such as mortgage repayments as a percentage of income, with a median price condominium requiring approximately 54.8% of an individual median income in Toronto.¹³ A lack of affordable housing may cause many social and economic issues, such as an increase in poverty, homelessness, negative health outcomes, educational disparities,

¹³ National Bank of Canada, Housing Affordability Monitor Q3 2022. Accessed at <https://www.nbc.ca/content/dam/bnc/taux-analyses/analyse-eco/logement/housing-affordability.pdf>



and sluggish GDP growth. With demand for Toronto real estate to likely to remain high, increasing the supply of housing is crucial to place downward pressure on prices and improve affordability.

As described in Section 3.4.1, relocating the OSC to Ontario Place would enable OSC land at Don Mills to be redeveloped into mixed-use residential and commercial space. The GFA of tablelands development options in Table 10 shows that the vast majority of development is classified as multi-residential. The average multi-residential area of the options is approximately 2.2 million sf, which represents a significant increase to housing supply in the East York area of Toronto.

According to recent multi-residential development sales in the East York area of Toronto, the average dwelling size is approximately 800 sf.¹⁴ Applying this benchmark to the tablelands development options results in an estimated increase in Toronto's housing supply of approximately 2,500 to 3,000 dwellings.

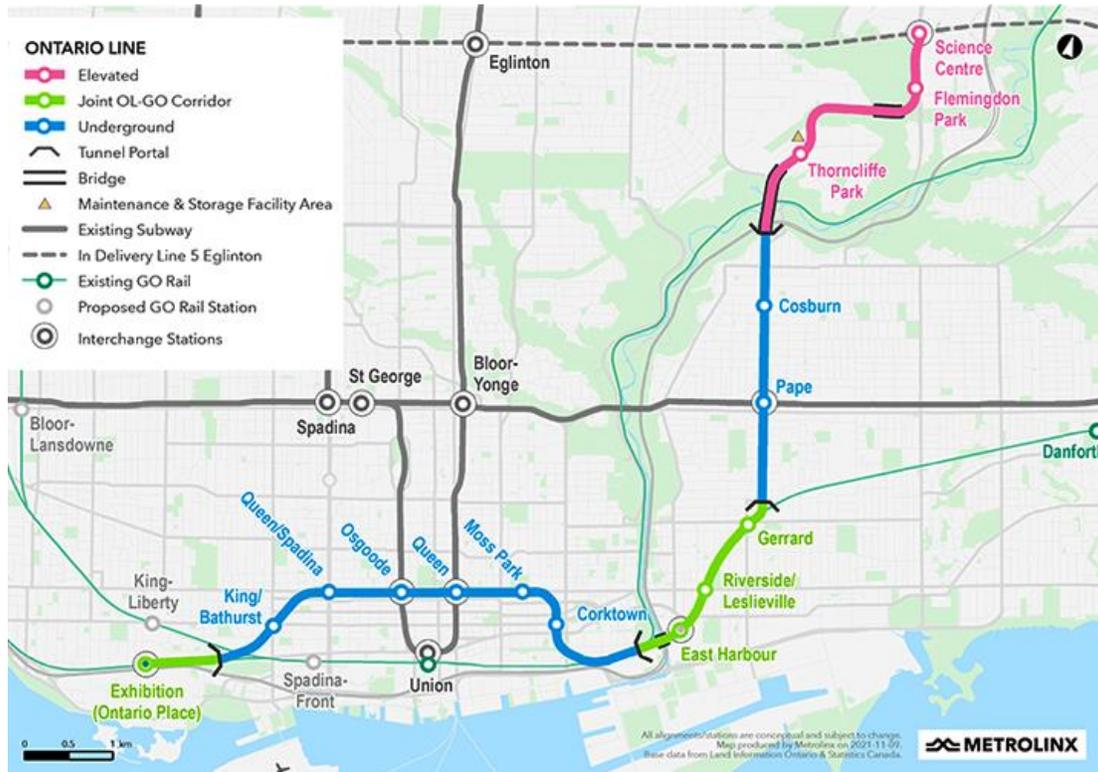
Transport infrastructure

The proposed Ontario Line is one of four priority transit projects announced by the Government of Ontario in 2019 for the Greater Toronto and Hamilton Area. The 15.6-kilometre rapid transit line will connect the current OSC location at Don Mills to its new proposed location at Ontario Place, as shown in Figure 3.

¹⁴ Urbanation, East York multi-residential sales from 2017 to 2022



Figure 3: Ontario Line route map¹⁵



When operational, Ontario Line ridership is estimated to be 388,000 daily boardings. In addition, 227,500 more residents will be within walking distance rapid transit modes, 47,000 more jobs will be accessible in 45 minutes or less, and 28,000 fewer cars will be on the Toronto Road network.¹⁶

By relocating the OSC to Ontario Place and increasing housing supply at the Don Mills location, ridership for the Ontario Line may increase as more residents will be located in close proximity to the Ontario Line, and the new OSC location will be more accessible at a central downtown location. Improved access to the OSC may also drive an increase in visitation and revenue growth, which will improve the financial sustainability of the OSC.

Driving increased ridership on the Ontario Line through residential developments at Don Mills and at Ontario Place will also provide the Government of Ontario with increased fare-box revenue, which will improve the feasibility of the project from a fiscal and value for money perspective.

¹⁵ Infrastructure Ontario, Ontario Line. Accessed at <https://www.infrastructureontario.ca/Ontario-line/>

¹⁶ Metrolinx, Ontario Line. Accessed at <https://www.metrolinx.com/en/projects-and-programs/ontario-line>



Ontario Place precinct

The Ontario Place precinct includes 155 acres of pristine waterfront property near downtown Toronto. In January 2019, the Government of Ontario announced a new vision for Ontario Place to become a world-class year-round destination for the people of Ontario and visitors that may include sport and entertainment landmarks, as well as retail. Recreational facilities, public spaces and parks, and the existing amphitheatre and Cinesphere Theatre could complement these offerings.¹⁷

The clustering of entertainment and cultural offerings at Ontario Place may facilitate increased visitation to OSC by increasing the appeal and ease for visitors to visit multiple attractions at the one location. The new location may also drive increased visitation and tourism due to the close proximity to the heavily populated downtown Toronto area with many restaurants, retail outlets, hotels, and other tourist and recreational offerings.

In addition, the OSC and other entertainment venues and offerings co-locating at Ontario Place may benefit from agglomeration economic benefits. These benefits occur when firms and people locate near one another in cities and industrial clusters. Agglomeration economic benefits that may occur at Ontario Place include:¹⁸

- ▶ More efficient use of infrastructure through co-location. For example, concentrated entertainment offerings at Ontario Place may increase ridership of the Ontario Line and lower transportation costs for visitors. In addition, transportation efficiencies driven by industry concentration are generally less environmentally harmful than spreading urban developments throughout the GTA.
- ▶ Industry concentration results in a larger, deeper, more specialized labour pool which enables workers to better match their skills to the needs of firms.
- ▶ Agglomeration creates knowledge spillovers in which firms and workers learn from each other.

These agglomeration economic benefits can also occur at many different geographic levels, from the microgeographic (within the OSC) to larger regional areas such as Ontario Place, downtown Toronto, and the GTA.

¹⁷ City of Toronto, Ontario Place Redevelopment. Accessed at <https://www.toronto.ca/legdocs/mmis/2021/ex/bgrd/backgroundfile-167105.pdf>

¹⁸ W.E. Upjohn Institute for Employment Research, Agglomeration Economics: A Literature Review. Accessed at <https://research.upjohn.org/cgi/viewcontent.cgi?article=1256&context=reports#:~:text=The%20benefits%20of%20agglomeration%20economies,sharing%2C%20matching%2C%20and%20learning.&text=Sharing%20infrastructure%20is%20more%20efficient,in%20closer%20proximity%20to%20customers.>



3.4.3. Increased tourism

The relocation of the OSC to Ontario Place may also benefit the City of Toronto and the GTA by driving increased tourism. Analysis undertaken throughout Section 3 considers impacts of direct spending at the OSC, and therefore the results exclude any additional direct spending in alternative sectors (e.g., accommodation, retail outlets). It is likely that tourists visiting OSC at Ontario Place will spend and consume other goods and services in nearby establishments.

The Relocate option is forecast to drive increased tourism for the city and the region through higher OSC visitation. The Downtown Toronto area is a major hub for tourism in the city, with many popular attractions and landmarks. By relocating the OSC to this location, areas around Ontario Place may benefit from increased foot traffic, having a broad range of positive impacts for the city.

Increased tourism will likely result in broader expenditure impacts for the city. As tourists visit OSC at Ontario Place and any other surrounding areas, they will likely spend money on a variety of goods and services. This includes purchases at local stores and restaurants, as well as increased spending on accommodation and transportation services. This increased spending provides an additional boost to the local economy and generates revenues for businesses, further creating jobs in the area. Furthermore, visitation at the OSC may support other activities around the area, as tourists are likely to consider engaging in additional attractions and experiences (e.g., concerts, sporting events, fairs) as they are located within close proximity.

Additionally, tourism boosts from relocating OSC to Ontario Place may also include increased labour opportunities for workers in the area as demands for goods and services increases, development of new businesses in the area, additional recreational activities for local residents, and development of additional infrastructure and amenities in the area (such as public transportation and improved pedestrian access), amongst others.

Table 13 shows Toronto's visitation numbers for the 2018 period, while Table 14 shows total visitor spending for the city, by type of trip and origin. Pre-COVID-19 pandemic figures were selected since these are more representative of the visitation estimates that can be expected going forward.



Table 13: Visitors to Toronto, 2018

(in millions) ¹⁹	Number of visitors		Total number of visitors
	Day trip	Overnight	
Domestic	17.3	6.3	23.6
U.S.	0.5	1.9	2.4
Overseas	0.3	1.3	1.6
Total	18.1	9.5	27.6

Table 14: Visitor spending in Toronto, 2018

(in billions of \$, 2023) ¹⁹	Expenses		
	Day trip	Overnight	Total expenses
Domestic	1.7	2.0	3.7
U.S.	0.1	1.4	1.5
Overseas	0.1	1.6	1.7
Total	1.9	5.0	6.9

The City of Toronto benefits greatly from tourism and tourism-related activities. In 2018, Toronto had almost 28 million visitors, with 10 million of those staying overnight. In total, visitors to the city spent just under \$7 billion during their time there. This expenditure from tourist visitation has large economic impacts for the city and the province, which can be further enhanced by a new OSC at Ontario Place.

3.4.4. Staffing

Labour costs are the largest cost for the OSC, comprising of 60.0% of total operating costs in 2018/19 prior to any operational impacts from the COVID-19 pandemic. A newly designed OSC at Ontario Place may provide an opportunity to realize operational efficiencies due to a smaller and more efficient building layout. These efficiency improvements may allow OSC staff to be redeployed to other functions to support new offerings or increased operational hours at Ontario Place.

¹⁹ Destination Toronto, Visitor Economic Study. Accessed at <https://www.destinationtoronto.com/research/business-intelligence/visitor-economy-study/>



4. Fiscal Impact Assessment Results

The fiscal impact analysis is critical to assess the budgetary impact of each project option for the Government of Ontario. The analysis in this section:

- ▶ Evaluates the fiscal impacts of each project option.
- ▶ Evaluates the net cash flow impact of each project option.
- ▶ Estimates the economic impact of reinvesting the operational savings from relocating OSC at Ontario Place.

4.1. Fiscal impact analysis

Fiscal impact refers to the net impact on Government resources for a particular project or program. To provide a holistic analysis of each project option, it is important to consider the fiscal impacts and draw on public resources. Fiscal impact analysis also includes consideration of opportunity cost for the Government, which represents the foregone benefit of increased spending on another program or project. Therefore, any operational efficiencies regarding the OSC project options can provide the Government of Ontario with additional resources to fund other Government projects or programs.

EY has undertaken a fiscal impact analysis derived from the financial results of each project option, and with consideration to public sector accounting guidance. Given the OSC is considered an institutional and cultural development, public sector accounting guidance suggests the capitalization of capital costs for each project option no matter if it is classified as a redevelopment or construction of a new asset. Maintenance costs generally do not qualify for capitalization and are therefore classified as operational expenditure and expensed in the period incurred.²⁰ For OSC, costs incurred for deferred maintenance and repairs to the OSC asset rather than maintaining or extending the life of the asset.

Table 15, Table 16, and Table 17 summarize the 5-year, 10-year, and 50-year fiscal impact on a nominal and real basis for each project option.

²⁰ Government of Canada, Directive on Account Standards: GC 3150 Tangible Capital Assets. Accessed at <https://www.tbs-sct.canada.ca/pol/doc-eng.aspx?id=32518>



Table 15: 5-year fiscal impact (\$m)

Real	Remain on Site	Relocate
Operating costs	\$(195.8)	\$(172.9)
Deferred maintenance	\$(155.5)	\$(30.5)
Capital costs	\$(4.2)	-
Revenues	\$67.9	\$59.3
Fiscal Impact	\$(287.7)	\$(144.2)
Net fiscal impact compared to option 1	-	\$143.5
Nominal	Remain on Site	Relocate
Operating costs	\$(207.9)	\$(183.0)
Deferred maintenance	\$(163.9)	\$(32.3)
Capital costs	\$(4.7)	-
Revenues	\$72.2	\$62.6
Fiscal Impact	\$(304.3)	\$(152.7)
Net fiscal impact compared to option 1	-	\$151.6

Table 16: 10-year fiscal impact (\$m)

Real	Remain on Site	Relocate
Operating costs	\$(397.3)	\$(338.4)
Deferred maintenance	\$(224.6)	\$(30.5)
Capital costs	\$(24.1)	\$(53.6)
Revenues	\$151.7	\$136.0
Fiscal Impact	\$(494.3)	\$(286.6)
Net fiscal impact compared to option 1	-	\$207.7
Nominal	Remain on Site	Relocate
Operating costs	\$(444.0)	\$(376.8)
Deferred maintenance	\$(244.8)	\$(32.3)
Capital costs	\$(28.0)	\$(62.8)
Revenues	\$170.4	\$153.0
Fiscal Impact	\$(546.4)	\$(319.0)
Net fiscal impact compared to option 1	-	\$227.4



Table 17: 50-year fiscal impact (\$m)

Real	Remain on Site	Relocate
Operating costs	\$(1,858.2)	\$(1,504.4)
Deferred maintenance	\$(318.3)	\$(30.5)
Capital costs	\$(81.9)	\$(275.4)
Revenues	\$770.4	\$743.7
Fiscal Impact	\$(1,487.9)	\$(1,066.6)
Net fiscal impact compared to option 1	-	\$421.3
Nominal	Remain on Site	Relocate
Operating costs	\$(3,156.7)	\$(2,540.1)
Deferred maintenance	\$(368.7)	\$(32.3)
Capital costs	\$(115.8)	\$(430.5)
Revenues	\$1,321.2	\$1,279.4
Fiscal Impact	\$(2,320.0)	\$(1,723.5)
Net fiscal impact compared to option 1	-	\$596.5

The results above show that the Relocate option would provide fiscal savings to the Government of Ontario over the 50-year appraisal period of **\$421 million** in real 2023/24 dollars, and **\$597 million** in nominal terms. In addition, the Relocate option has a smaller fiscal impact than Remain on Site over 5-year and 10-year periods due to lower operating costs.

4.2. Cash analysis

Following the results from the fiscal impact analysis in Section 4.1, net cash flows on a nominal basis over the 50-year appraisal period (consistent with the financial analysis) are summarized in Table 18.

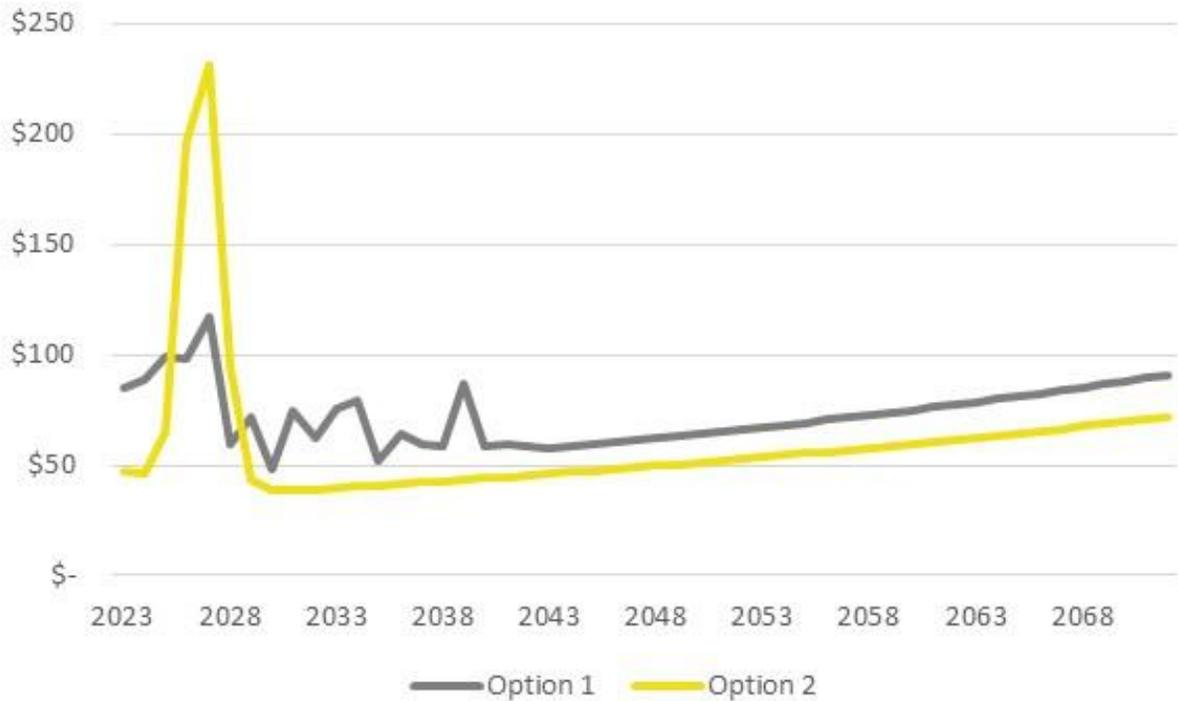
Table 18: Cash analysis results (\$m, nominal)

	Remain on Site	Relocate
Revenue	\$1,321.2	\$1,279.4
Costs to Government	\$(3,641.2)	\$(3,002.9)
Net cash flow	\$(2,320.0)	\$(1,723.5)

Figure 4 shows graphically that the Relocate option provides significant savings to the Government of Ontario over the 50-year appraisal period despite large upfront capital costs. The figure shows the impact of lower operating costs and higher revenues on net cash flow for the Government.



Figure 4: Costs to Government (\$m, nominal)



4.3. Reinvestment of savings

It is noted that the Relocate option will result in approximately \$421 million of real savings as compared to the Remain on Site option. It is assumed the Government of Ontario would apply these fiscal savings to reinvest in other areas, such as infrastructure, transit, etc. Although the economic impact analysis done in Section 3 does not include the reinvestment of the fiscal savings, EY has provided a hypothetical analysis of the reinvestment of the \$421 million real savings based on an estimate of the current government ratio of capital spending and operations spending.

According to the Government of Ontario's 2023-23 estimates, Table 19 displays the potential spend on Economic Development, Job Creation and Trade, as well as Infrastructure.



Table 19: Estimated capital and operations spend by the Ministry of Economic Development, Job Creation and Trade, and the Ministry of Infrastructure, 2023-23

	2022-23 Estimates ^{21,22}	
Operating	972.6	34%
Capital	1,924.7	66%
Total	2,897.3	

EY has applied the allocation to operating and capital spend to the **\$421 million** real savings. It has been assumed that approximately **\$141 million** will be invested into operation spend and **\$280 million** will be invested into construction (capital) spend.

The summary tables (Table 20, Table 21 and Table 21) illustrate the potential GDP impact from the reinvestment spending of **\$421 million** in fiscal savings.

Table 20: GDP impacts (\$m, real 2023)

	Total	Annual
GDP from construction	268.6	5.4
GDP from operations	140.8	2.8
Total	409.4	8.2

Table 21: Employment impacts

	Total	Annual
Jobs from construction	2,484	50
Jobs from operations	1,157	23
Total	3,641	73

Table 22: Tax impacts (\$m, real 2023)

	Total	Annual
Personal taxes	17.6	0.4
Sales taxes	12.6	0.3
Corporate taxes	9.2	0.2
Other taxes	7.9	0.2
Total	47.4	0.9

²¹ Government of Ontario, Capital Expenditure Estimates 2022-23. Accessed at <https://www.ontario.ca/page/summary-table-6-capital-2022-23>

²² Government of Ontario, Operating Expenditure Estimates 2022-23. Accessed at <https://www.ontario.ca/page/summary-table-2-operating-2022-23>



Appendix

A.1 OSC lands development options

Each OSC tablelands and valley lands development option is briefly described in Table 23. The building designations in the descriptions refer to those displayed in Figure 2.

Table 23: OSC lands development options²³

Tablelands options	Description
Option 1	This option proposes a range of 30- to 45-storey mixed-use buildings along Don Mills Road, with the highest buildings located adjacent to the proposed transit stations. This option retains the existing OSC Building A, which may be retrofitted and/or repurposed for cultural, institutional, or other non-residential uses such as commercial, retail, office or employment uses.
Option 2A	This option illustrates a range of 30- to 45-storey mixed-use buildings along Don Mills Road, with the highest buildings located adjacent to the proposed transit stations. In addition, this option proposes to restore the original OSC facade by demolishing the existing IMAX portion and adding an 8-storey addition on top of the retained portions of the building (Building A). The existing building may be retrofitted, repurposed, and added to for cultural, institutional or other non-residential uses, with additional non-residential GFA provided through the new addition. Non-residential uses may include commercial, office, retail or employment uses.
Option 2B	An alternative for Option 2 ('2B') was prepared with additional intensification in the centre block. This alternative Option 2B includes the addition of a 12-storey non-residential and 35-storey residential towers on top of the retained portions of the OSC building (Building A). The existing building may be retrofitted, repurposed, and added onto for cultural, institutional or other non-residential uses, with non-residential and residential GFA provided through the two new additions on top. Non-residential uses may include commercial, office, retail or employment uses.

²³ Infrastructure Ontario, "Ontario Science Centre Redevelopment Feasibility Analysis"



Option 3	<p>This option proposes redevelopment of the entire site, including the demolition of the existing OSC building and the construction of a series of new 25- to 45-storey mixed-use buildings across the site. The new buildings at the site of the existing OSC building is envisioned to include cultural, institutional, or other non-residential uses, in addition to the residential component(s). Non-residential uses may include office, commercial, retail, or employment uses.</p>
Valley lands options	Description
Option 1	<p>This option proposes to retain Building C (Ravine/Weston Innovation Building) and an additional level (of similar footprint) above the retained portions of the building (Building C - Ravine Lands) and a two-level parking structure in place of the existing surface parking lot. The existing building may be retrofitted, repurposed, with new cultural, institutional or non-residential / office / employment uses.</p>
Option 2	<p>This option proposes to retain Building C (Ravine/Weston Innovation Building) and adds three additional levels of non-residential/office/employment uses above the eastern portion and one additional level of non-residential / office / employment above the of western portion of the retained building (Building C - Ravine Lands). A two-level parking structure is located in place of the existing surface parking lot. The existing building may be retrofitted, repurposed, with the new cultural, institutional or non-residential uses.</p>
Option 3	<p>This option proposes the re-adaptation of the existing Building C (Ravine/Weston Innovation Building) into a mixed-use hub with one level of cultural/institutional uses and three additional levels of non-residential/office/employment and three additional levels of long-term care uses. On the southern portion, one level of cultural institutional uses is proposed above a two-level parking structure. The proposed uses do not exceed the existing building footprint of Building C.</p>



A.2 The Input-Output Model: Approach and Restrictions

An I-O model is subject to limitations both in concept and implementation. Like any economic model, the I-O model is conceptually an abstraction that attempts to be complex enough to accurately capture and estimate the most significant impacts to the real-life economy caused by an economic activity, yet simple enough to be analytically and intuitively meaningful.

Generally speaking, an I-O model reflects the observed interdependency between all the sectors of the economy. Specifically for Canada, Statistics Canada reports for 236 industrial sectors in the economy: (1) how each sector relies on the other 235 sectors for inputs to their production; and (2) how each sector supplies its products and services to each of the remaining 235 sectors. While an I-O model provides a consistent and intuitive way of measuring the economic effects of an economic activity, users should be aware of the assumptions and limitations of the I-O model's underlying approach, and in turn regarded its results merely as approximations. Some of these assumptions include:

- ▶ The relationship between industry inputs and outputs is linear and fixed, meaning that a change in demand for the outputs of any industry will result in a proportional change in production. The model cannot account for economies/diseconomies of scale or structural changes in production technologies, an assumption which does not necessarily hold in the actual economy;
- ▶ Prices are fixed in the model;
- ▶ I-O models are static and does not consider the amount of time required for changes to happen. As such, in the context of this study the model implicitly assumes that all the ripple effects in the economy take place within one year. Changing the timeframe would not affect the magnitude of the effects estimated;
- ▶ There are no capacity constraints, and all industries are operating at capacity. This implies that an increase in output results in an increase in demand for labour (rather than simply re-deploying existing labour). It also implies that there is no displacement that may occur in existing industries as new projects are completed;
- ▶ I-O models assume that the technology and resource mix (ratios for inputs and production) is the same for all firms within each industry, i.e., the 236 industry categories reported in Statistics Canada's input-output table. As such, our analysis describes industry average effects; and
- ▶ The model assumes that the structure of the economy remains unchanged, looking as it did in 2018 (the most recent year of Statistics Canada's latest available input-output table). Any structural changes in the economy since 2018 will therefore lead to changes to the multipliers, which could be implemented once Statistics Canada release updated input-output tables. As such, the more removed the year of analysis is from the year of the used input-output tables, the greater the uncertainties.

As per the assumptions above, the structure and limitations of I-O models lend themselves to measuring the impacts of projects that are shorter term in nature; generally, they are used to look at shocks to the



economy. For longer-term, time series analysis and general equilibrium models are likely to be more appropriate.

Lastly, EY has relied upon the completeness, accuracy and fair presentation of all information, data, advice, opinions or representations obtained from public sources, IO, the Ministry of Tourism, Culture, and Sport, and the OSC (collectively the "Information"). The findings of this report are conditional upon such completeness, accuracy and fair presentation of the Information as EY has not independently verified or audited the Information provided to us.

Appendix K
Functional Program

ONTARIO SCIENCE CENTRE RELOCATION

Final Functional Program

January 2023

Lord Cultural Resources is a global professional practice dedicated to creating cultural capital worldwide.

We assist people, communities, and organizations to realize and enhance cultural meaning and expression.

We distinguish ourselves through a comprehensive and integrated full-service offering built on a foundation of key competencies: visioning, planning and implementation.

We value and believe in cultural expression as essential for all people. We conduct ourselves with respect for collaboration, local adaptation and cultural diversity, embodying the highest standards of integrity, ethics and professional practice.

We help clients clarify their goals; we provide them with the tools to achieve those goals; and we leave a legacy as a result of training and collaboration.

Our Toronto office is located within the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples. Toronto is home to many diverse First Nations, Inuit, and Métis peoples. Our New York office is located on the traditional lands of the Lenape peoples. We encourage you to acknowledge the presence of the people who came before, wherever you are.

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1. EXECUTIVE SUMMARY

Lord Cultural Resources has been commissioned by Infrastructure Ontario to explore a reimagined Ontario Science Centre (OSC), including potential relocation, as an opportunity to achieve both the OSC's modernization and sustainability objectives, and the Government's vision for Ontario Place as an exciting, year-round destination for local and international visitors alike.

Part of Lord's work was to develop this functional program – a plan that addresses and identifies the spatial requirements and their functions for a relocated OSC aligning with the Centre's vision for the future. The Program provides the required information needed to determine order of magnitude capital cost estimates and will ultimately serve as a guide for the design of the new Ontario Science Centre.

This Functional Program report includes:

- **Planning and Design Assumptions:** Facility and site assumptions specific to the project that have served to inform the programming process.
- **Functional Narratives:** A brief narrative describing how each major room or space operates, and the activities within.
- **Zoned Space Program:** A comprehensive program that includes a Space Allocation Table identifying the spaces/rooms required and how much space should be allocated to each. The space program is organized according to a system of zones, which identifies the net (useable) area in terms of public and non-public functions.
- **Adjacency Diagrams:** Schematic diagrams which visually communicate the appropriate interactions among those areas identified in the Space Allocation Table.

The functional programming process began in October 2022 and was completed in December 2022. It was intentionally structured to be a highly collaborative process, involving multiple stakeholder teams within the OSC. Through a series of facilitated group workshops and individual discussions with OSC, a comprehensive list of spaces and corresponding sizes (in net sq.ft.) were identified along with their functional requirements.

The total net area (the summation of all individual spaces identified) is **175,580** net sq.ft. and is summarized as follows under the key functional categories:

Functional Category	Net Area (sf)
Engagement Space (Exhibits/Programs)	109,550
Office Space	12,150
Meeting Space	2,650
Building Support	11,125
Storage	10,155
Visitor Care Space	26,050
Visitor Care Space Support	3,900
Total Net Area (New Building and Pods)	175,580

The new OSC will be housed in a combination of new structure/building, and the adaptively reused Ontario Place Pods Complex (Pods), Cinesphere and connecting Bridges. OSC determined which functions will be located in the Pods and which to be assigned in the new building. As a result, of the total 175,580 net sq.ft. OSC requires, 40,500 net sq.ft. be in the Pods, and 135,080 net sq.ft. for the new building. The Cinesphere (not included in the OSC net area) will remain as a 614-seat projection-based venue for both mission-driven and non-mission-driven movies, features, and other OSC programming.

Space programming includes two key measurements, 1) identification of net square footage (the usable programmable space required for functions or activities and 2) determination of a gross square footage multiplier (represented as a percentage of the net area) leading to a total gross building area.

Applying estimated grossing factors to each of the structures – Pods, Bridges, new building and the Cinesphere, the gross floor areas are as below. (By comparison, the current Ontario Science Centre is 568,000 gross sq.ft.)

New OSC at Ontario Place	Gross Floor Area (sq.ft.)
New Mainland Building	198,000
Pods	40,500
Bridges (9 and 10)	17,500
Cinesphere	19,700
Total	275,700

Note: Gross floor areas provided to Lord by Infrastructure Ontario. Pods net and gross area are assumed to be the same amount.

2. INTRODUCTION

REPORT CONTENTS

Lord Cultural Resources has been commissioned by Infrastructure Ontario to explore a reimagined Ontario Science Centre (OSC), including potential relocation, as an opportunity to achieve both the OSC’s modernization and sustainability objectives, and the Government’s vision for Ontario Place as an exciting, year-round destination for local and international visitors alike.

The Functional Program report includes:

- **Planning and Design Assumptions:** Facility and site assumptions specific to the project, that have served to inform the programming process.
- **Functional Narratives:** A brief narrative describing how each major room or space operates, and the activities within.
- **Zoned Space Program:** A comprehensive program that includes a Space Allocation Table identifying the spaces/rooms required and how much space should be allocated to each. The space program is organized according to a system of general zones and individual functional categories, and identifies the net (useable) area in terms of public and non-public functions.
- **Adjacency Diagrams:** Schematic diagrams which visually communicate the appropriate interactions among those areas identified in the zoned space program.

Through the combined content described above, the goal of the functional program is to help ensure the relocated OSC:

- Meets its stated mission and vision objectives;
- Successfully plans for current and future needs in relation to visitor experience, exhibitions, educational programs, administration, and other major functions;
- Provides future design teams with sufficient information for the concept and schematic design, development and execution;
- Helps inform preliminary order of magnitude cost estimates for the IO Business Case to Treasury Board.



PLANNING PROCESS

The functional programming process began in October 2022 and was completed in December 2022. It was intentionally structured to be a highly collaborative process, involving multiple stakeholder teams within the OSC. Through a series of facilitated group workshops and individual discussions, the report has been structured to ensure the project goals and aspirations are defined and efficiently documented. By identifying these aspirations together, the aim of the programming process was to co-create enthusiastic “believe in”, rather than passive “buy in”, and in doing so raised jointly held aspirations for what the OSC can be in the future.

Based on this approach, the programming process sought to achieve the following goals:

- Stimulate thought about the future needs for the OSC;
- Explore the nature of the visitor experience at the Ontario Place location;
- Identify major program elements necessary to complete a detailed costing exercise and subsequent design exercises.

To develop and inform the contents of the Functional Program, the following steps have been completed during this time.

- **Document Review:** A review of background documentation, including site plans, facility floor plans, Ontario Place Pod Complex and Cinesphere drawings and condition assessment reports, heritage reports, and comments from stakeholders, to understand the context and history of decisions made to date.
- **Programming Workshops:** A series of working sessions with the OSC and Infrastructure Ontario to discuss functional needs, assumptions, and progress.
- **Project Costing:** A preliminary order of magnitude costing exercise of likely capital construction and project costs based on various size scenarios of the space program. Completed by others.

The programming study was completed by Dov Goldstein, Vice President (LCR), and Sean Stanwick, Director Facility Planning (LCR). Design Test-Fit diagrams were completed by Quadrangle BDP Architects to communicate the physical realization of the programming work.

PLANNING DEFINITIONS / ACRONYMS

The following definitions and acronyms have been referenced during the planning process.

- **ASHRAE Class B Standard:** Refers to a standard for environmental conditioning including the specification of acceptable humidity and temperature levels and associated fluctuations. The Class B standard is based on the ASHRAE (American Society for Heating, Refrigerating and Air-Conditioning Engineers) Applications Handbook, Chapter 21.
- **Bridges:** A series of partially enclosed steel and glass links connecting the mainland site with the Pods and Cinesphere and other features at Ontario Place.
- **Cinesphere:** The world's first permanent IMAX movie theatre, located on the grounds of Ontario Place in Toronto, Ontario. Part of the subject site of this study.

- **Design Object:** The Design Object is the largest artifact that will be frequently moved on a regular basis and accommodated not only in exhibit galleries and storage rooms, but also in corridors, elevators and loading areas in the collection and exhibit zones – anywhere that exhibit items may be moved, displayed, studied, or treated. It is not necessarily the largest object that will ever be moved.
- **Design Year:** The last year for which the building being planned will provide sufficient space and facilities.
- **Facility Zones:** A system of organizing and classifying spaces or groups of spaces within the space program according to whether a space is public or not, and whether it holds collections or not.
- **Functional Program:** A strategic document that quantifies the physical and spatial needs of the institution and its exhibits. It also works to confirm goals and assumptions for the project.
- **Furniture, Fixtures and Equipment (FF&E):** Includes movable furniture, fixtures, or other equipment that have no permanent connection to the structure of a building or utilities.
- **Gross Area (GFA):** Total of all space allocations in the building program or space list, multiplied by a percentage factor to allow for thickness of walls, mechanical/electrical service areas, and both horizontal and vertical circulation space. The proportion of net to gross area is typically 1.3 to 1.5 depending on design.
- **Infrastructure Ontario (IO):** The procurement and commercial lead for all major public infrastructure projects in the province. Part of the client group for this exercise.
- **Lord Cultural Resources (LCR).** The museum programming consultant for this project.
- **Net Area (NFA):** Total of all assignable areas allocated on the space list in the facility program, excluding thickness of walls, mechanical/electrical service areas, and circulation.
- **New Building:** This refers to a new building that will be constructed on the mainland (at the north end of Ontario Place) to accommodate the spatial needs of the Ontario Science Centre.
- **Ontario Place:** An entertainment venue, event venue, and park in Toronto, Ontario. Part of the subject site of this study.
- **Ontario Science Centre (OSC):** The science centre in Toronto, Ontario. The subject institution for this study.
- **Pods:** The existing "Pods" are five steel and aluminium building pavilions suspended above the water and connected via a series of bridges. Part of the subject site of this study.
- **Project Architect:** The architect who is ultimately responsible for overseeing the process from conceptual design through to detailed design and construction.
- **RH:** Relative Humidity.

PROGRAMMING PRINCIPLES AND ASSUMPTIONS

This section outlines the current principles and assumptions that have informed the programming and planning decisions. These assumptions should be confirmed by the client and architect teams during subsequent design development stages.

PROGRAMMING PRINCIPLES

- Providing functional and spatial requirements of a modern OSC to align with its vision.
- Strengthening of OSC's brand as a leading international science centre and positioning it as an anchor at a major cultural, recreational and tourism precinct in the province.
- Adaptive reuse of existing iconic heritage structures and elements at the Ontario Place (Pods & Cinesphere) and their views.
- An understanding of the relationship of the new OSC to the Waterfront.
- Optimization of spaces at the site and within the OSC.

PROGRAMMING ASSUMPTIONS

FACILITY

- The new OSC will be housed in a combination of a new construction and the existing Ontario Place Pods, Cinesphere and connecting Bridges. The existing OSC location is not included in this study. No off-site locations are considered at this time.
- The new building will be located on the north end of Ontario Place (the mainland) at Lakeshore Boulevard West on a designated site approximately 87,000 sq.ft. in area.
- The OSC will take advantage of the existing bridges (#9 and #10), to connect from the mainland from the pods. It is not yet determined how the new building will connect with these bridges. The connection approach will be confirmed in a subsequent stage of the design development process and will be coordinated with the proposed underground parking structure.
- A separate, independent entrance to the OSC will be required and located within the new building programming.
- The total net area required to meet the OSC programming needs is approximately 175,580 sq.ft.
- The total gross building area (including Pods, Cinesphere and Bridges) is assumed to be approximately 275,700 sq.ft.
- Initial assumptions are for a new building with an approximate footprint area of approximately 50,000 sq.ft. – of which some floors will be 20' and higher to accommodate the exhibit halls, lobby, and others with other floors being standard institutional heights, based on need. Design teams should confirm and test this assumption during the design stage.
- All five pods will be occupied by the OSC. The Pods are assumed to be approximately 8,000 net sq.ft. per pod with a dimension of approximately 89 feet per side and approximately 30' in height. It is assumed that the Pods will require upgrades to meet facility and code compliance requirements. The Pods will meet the OSC's load capacity for exhibitions and other uses. As noted below, the Pods

have a heritage significance and as such all interventions must be compliant with any heritage requirements.

- The Cinesphere is assumed to be approximately 19,700 sq.ft. in total GFA. It is understood the Cinesphere has recently undergone a major interior and exterior renovation.
- The Bridges (specifically Bridges #9 and #10) have been considered as “circulation” space and thus counted in the gross building area calculation. As noted below, it is assumed the existing bridges will be upgraded and enclosed as necessary to enable all-season visitor access.
- After-hours access to select program spaces, activity areas or research spaces should be assumed. See Functional Narratives below for specific access requirements.

SPACE PROGRAM

- The space program makes every effort to ensure that the spaces listed are right-sized and avoids duplication. However, variations to the space program should be anticipated during the design process. Any significant variations from these recommendations should be discussed with the OSC team prior to proceeding with final design.
- The program does not assume any unassigned area.
- The space program does not include FF&E requirements or document specific FF&E layout needs. Only relevant FF&E assumptions that were used to drive space assumptions are noted.
- The OSC is conceived as a single-phase project. No construction phasing was assumed in the space program.
- Projections of attendance are not included in the program.

SITE

- The subject site for the new OSC is at Ontario Place in Toronto, Ontario. The OSC complex will be comprised of a new building, the adaptive re-use of the existing Pods (to be repurposed for OSC use), and the existing connecting bridges (Bridge #9 and #10).
- The OSC new building will occupy a plot of land that fronts onto Lakeshore Boulevard West (north end of Ontario Place).
- The Lakeshore site is approximately 87,000 sq.ft. (2 acres) dedicated for the OSC new building and includes an exterior plaza space which can accommodate outdoor programmable space to be determined.
- Below grade parking, at the eastern end of the site is assumed. Parking is considered a shared amenity and not dedicated for any one specific tenant.

ADAPTIVE REUSE CONSIDERATIONS

Ontario Place was recognized as a cultural heritage landscape of provincial significance by the Province of Ontario in 2014 and was listed on the City of Toronto’s Heritage Register in 2019. As a

provincially significant property, it is subject to the Ontario Heritage Act and the Standards and Guidelines for the Conservation of Provincial Heritage Properties.

Rehabilitation of the Pods and Cinesphere (Megastructures)

The megastructures are modernist structures constructed in a man-made lagoon at the core of Ontario Place. Designed by Ontario Place architect Eb Zeidler in the late 1960s, the megastructures were designed as exemplars of progressive engineering and architecture and are celebrated as modernist architectural icons.

The Pods Complex - A series of five linked modular structures elevated above Lake Ontario. Their heritage value lies in their form and structure, views of the mainland as well as their association with leading edge principles of design and engineering.

The Pods are candidates for adaptive reuse in accordance with the following guiding principles:

1. Refrain from altering their current forms with additions that impact their legibility;
2. In particular, refrain from adding structures above or below the Pods;
3. Rehabilitate the Pods and adapt the interiors, roof decks and pathways for suitable contemporary programming;
4. Adapt cladding/glazing to suit new program needs; and
5. Maintain the views to the Pods from the shore.

Cinesphere - The Cinesphere is a triodetic dome housing the world's first permanent IMAX theater. Its 3D aluminum truss structure forms a unique spherical volume visible from the shore and from the lake.

The Cinesphere is a candidate for adaptive reuse in accordance with the following guiding principles:

1. Refrain from altering the form and massing with additions that impact its legibility;
2. Rehabilitate the structure for uses connected to its original purpose as a center of educational, technological and scientific innovation;
3. Consider maintaining its use as a screening facility for large format projection (e.g. IMAX technology) to conserve its associative value of being the world's first permanent IMAX theatre;
4. If the structure is adapted for another use, ensure that the IMAX theatre components are salvaged and stored in a manner that protects them for future use and, potentially, re-installation in future (i.e. ensure that the alterations required are reversible); and
5. Maintain the views to the Cinesphere from the shore.

CONSIDERATIONS FOR SITE INTENSIFICATION

Should the floor area requirement for future programming exceed the area available in the Pods and Cinesphere, consider utilizing existing structures in Ontario Place or build new compatible structures that embrace Ontario Place's original design principles; namely a pattern of programmed and unprogrammed spaces occupied by imaginative and exploratory architecture.

We recommend that further site intensification be guided by these high-level principles:

1. Prioritize adaptive reuse of existing structures in Ontario Place;
2. Intensify the landscape at established nodes of activity (e.g. the Entrance by the North Marina) with imaginative and compatible new structures;
3. Maintain views to the megastructures from the shore;
4. Allow the design of new structures to be informed by the established palette of forms (e.g. exploratory architecture, bridges and gangways, undulating landforms, lagoons, etc.); and
5. Reinforce the Ontario Place experience (e.g. pedestrian focus, contrast of natural and built environments, connection with Lake Ontario, etc.)

DESIGN YEAR

The Design Year is the last year for which the facility being planned will be sufficient. This is important as critical facility needs, particularly exhibit item storage and administrative, must be designed to accommodate future growth to that time, not opening day. The Design Year is typically 15-20 years from the project planning window, as anything beyond that cannot reasonably anticipate changes in collection development policies, mandate etc.

DESIGN OBJECT

The Design Object is the largest artifact, specimen or work of art that will be frequently moved on a regular basis and accommodated not only in galleries and storage rooms, but also in corridors, elevators and loading areas in the collection and exhibit zones – anywhere that collection items may be moved, displayed, studied or treated. It is not necessarily the largest object that will ever be moved.

- The Design Object (3D) is assumed at 8'-0" (W) x 8'-0" (D) x 8'-0" (H) with an anticipated maximum weight of 10,000 lbs.
- It is assumed that the largest 2D object will be 8'-0" (W) x 8'-0" (L) x 3'-0" (H).

The OSC should confirm this size assumption prior to the design stage. Design teams need to be aware of this dimension and should make the necessary design accommodations.

NET AND GROSS AREA

Space programming includes two key measurements, 1) identification of net square footage (the usable programmable space required for functions or activities) and 2) determination of a gross square footage multiplier (represented as a percentage of the net area) leading to a total building area.

For planning purposes, a grossing factor of 30% (0.3 x net floor area sq.ft) to 50% (0.5 x net floor area sq.ft.) is normally recommended for a new building depending on function. In the case of science centres, where there is a large amount of back of house areas, exhibit support areas and administration spaces, the grossing factor can be reasonably assumed to be in the middle/high end of the spectrum. As such a grossing factor of 45% (0.45 x net floor area sq.ft.) for the new building has been assumed.

It should be noted that this is only an estimate (assumption) for programming purposes and may vary depending on existing conditions and the eventual design.

The following table shows a rough breakdown of what gross square footage represents within the total building envelope in new construction.

Component	% of Net Area
Wall Thickness and Structure	5% - 10%
Horizontal Circulation	10% - 15%
Vertical Circulation	5% - 10%
Engineering and Washroom Spaces	10-15%
Typical Grossing Factor	30% - 50%

3. MISSION AND VISION

Through an internal process, the OSC defined and documented compelling and bold mission and vision statements (Source: The New Ontario Science Centre @ Ontario Place Vision Document, November 2020). Building on the foundation of providing highly engaging and interactive visitor experiences for over 50 years, the OSC has worked to reconsider its purpose, goals, aspirations, and inspirations and reconsider its important place in the province as an agency of the Government.

The following mission, vision and purpose statements communicate the OSC's commitment to leadership in STEM learning (Science Technology Engineering and Math), to continue to serve as a premier Ontario tourism destination, to advance their commitments to anti-racism, inclusion, and diversity, and to advancing indigenous ways of knowing, accessibility, and environmental sustainability. They are provided here for reference to future architects of record as they move into the design process.

MISSION

To inspire passion for the human adventure of discovery.

VISION

A more curious, creative, and resilient world.

PURPOSE STATEMENTS

We believe science, technology, and innovation will help us shape a better future for society and our planet. We provide opportunities to explore, learn, and collaborate. We make a positive and ensuring impact on the lives of individuals and communities.

4. FUNCTIONAL NARRATIVES

INTRODUCTION

This section describes the high-level functional requirements of the programmed spaces required to achieve the operational needs for the OSC at Ontario Place. It is organized according to major Functional Elements - groups of spaces that work together to house and facilitate specific activities or functions, which also follows same in the Space Allocation Table. Some functional areas consist of dedicated spaces mainly used by a single department while others, such as exhibition halls, require the efforts of personnel from several departments to achieve their full functionality.

This section also provides a high-level notation of critical adjacencies and functional relationships with other spaces. While a general location is identified – new building or Pods- It does not specify the floor level, as this is reserved for the design stage. Preferred locations are suggested but are not mandatory and should be confirmed during subsequent design stages.

Technical specifications, such as mechanical or lighting systems, or detailed FF&E requirements are not included in this report as they will be determined with the project architect and engineering teams in the Design stage.

The following functional narratives are organized as per the major functional categories within the zoned space table. Narratives and their key adjacencies are provided for MAJOR spaces and functions. MINOR, or generic spaces that do not have any unique functional requirements are not included. Refer to the space list for additional functional notes.

The functional categories are:

- Engagement Space (Exhibits/Programs)
- Office Space
- Meeting Space
- Building Support
- Storage
- Visitor Care Space
- Visitor Care Space Support

ENGAGEMENT SPACE (EXHIBITS & PROGRAMS)

This section describes a broad category of exhibit, program, lab, and workshop spaces. It includes space where large groups of people can gather to experience science-based exhibits, demonstrations, maker activities and presentations in the Cinesphere. These spaces are highly flexible and are envisioned as being capable of hosting a variety of different activities.

EXHIBIT HALLS

This section details the requirements for the permanent and temporary exhibit halls. **Permanent Exhibit Halls** A large, column free (where feasible) space designed to support a range of interpretive installations, including potentially oversize items or items suspended from the structure above. Exhibit hall design should assume subdivision of space to accommodate different exhibits and interpretive modes. A clear ceiling height of 24 ft to the lighting grid is required. Niche areas of lower ceiling height or mezzanines may also be included to permit smaller items or activities related to the exhibit. Specialty lighting will be required with adjustable track lighting with zoned capability as a base building minimum. Noise/sound isolation is required between exhibit halls and adjacent spaces.

- Preferred Location: Exhibit Hall (#1 / Kidspark) - New Building; Exhibit Hall (#2) - Pods
- Critical Access and Adjacencies: Atrium Lobby; Adult / Accessible Changing Room; Loading and Service Areas
- **Temporary Exhibit Hall:** A large, column free (where feasible) space designed to support a range of changing and temporary interpretive installations, including potentially oversize items or items suspended from the structure above. Temporary exhibit hall design should assume an equal subdivision of space to accommodate rental events when not used for exhibits. A clear ceiling height of 24 ft to the lighting grid is required. Niche area (est. 3,000 sq.ft.) of higher ceiling height at 30 ft is required to permit larger items or activities related to the exhibit. Specialty lighting will be required with adjustable track lighting with zoned capability as a base building minimum. It will also be a requirement for the Temporary Exhibit Hall to be environmental conditioned with isolated humidity and temperature controls to allow for the presentation of exhibitions that require such controls. Access to outdoors and a separate entrance is preferred to enable after-hours events and programming.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Atrium Lobby; Loading and Service Areas]

Note: It is recommended that all exhibit halls meet the ASHRAE standards for a Class B environment. Conditions should be, at a minimum 70° F +/- 9° F (5°C) and 50% RH +/- 10%. Confirmation of these recommendations is the responsibility of the client team and project architect / engineer during the design stage.

WORKSHOPS AND MAKER SPACES

The spaces in this category focus specifically on the needs of the workshops and maker programs. These spaces (with select exceptions) can be co-located together to form a tight cluster of functional elements and have a proximity relationship with one another. They may also be designed to be interconnected to form one larger space. These spaces are typically not accessible to the general public, for unreserved walk-in activities and therefore need to be gated for crowd control. All workshop spaces require access to running water.

- **Workshop Labs (Wet and Dry):** These labs are for visiting students in groups of up to 35 including educators, to complete a variety of scientific experiments, research and science-based activities. Labs should be co-located together and may be conjoined with other labs for larger group activities. Natural light is preferred. Built-in storage is required. Furniture layout (individual desks or group research stations) to be determined during design stage. May require special ventilation including fume hoods or fire suppression systems.
 - Preferred Location: New Building and Pods
 - Critical Access and Adjacencies: Collocated with other Labs
- A standalone space dedicated to the “escape room” experience. Does not need to be connected to other labs and can be located elsewhere. Technical and interpretive details to be determined during the design stage. May require special ventilation.
 - Preferred Location: Main Building
 - Critical Access and Adjacencies: Proximity to other Workshop Labs preferred
- **Maker Space:** This hands-on space supports maker activities, crafts, 2D and 3D objects. Room to support a full class of 30 students, ages 10 and above. Primary access is via main lobby but after-hours or weekend access via a separate entrance is also preferred. Outdoor access is also required via roll up door. A clear ceiling height of at least 18-20 feet is required along with attention to acoustics to minimize overall sound transmission is desirable.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Atrium Lobby (not a necessity); Student, Camp and Group Intake; Change Room / Lockers (Dedicated Camps and Makerspaces); Exterior Access (for after hours use), Prototyping Lab (Maker)
- **Change Room / Lockers:** Dedicated change and locker storage space for maker space users. Makerspace will require approximately 30-40 individual lockers, in a combination of sizes. Lockers will be self serve and not be supervised by security staff.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Makerspace

DEMONSTRATION SPACES

The spaces in this category focus specifically on the needs of the prototyping and demonstration programs. These spaces have specific proximity functional relationships as noted below.

- **Science Demonstration Hall (#1):** A large, open air, column free (preferred), flat-floor hall for live, hourly science demonstrations. For public use with capacity that may vary from for up to 200 visitors at any given time. Flexible/moveable stage is required. May include permanent or retractable tiered seating and standing configuration. A clear ceiling height of at least 18-20 feet is required. Will require special ventilation and fire suppression systems. Also requires infrastructure – electrical and structural - to mount LED screens to show demonstrations to audiences.
 - Preferred Location: Pods
 - Critical Access and Adjacencies: Pods
- **Science Demonstration Hall (#2):** Like SDH (#1) but smaller in size, a large, open air, column free (preferred), flat-floor hall for live, hourly science demonstrations. For public use with capacity of up to 150 visitors at any given time. A flexible/moveable stage is required. May include permanent or retractable tiered seating and standing configuration. A clear ceiling height of at least 18-20 feet is required. May require special ventilation and fire suppression systems. Also requires infrastructure – electrical and structural – to mount LED screens to show demonstrations to audiences.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Permanent Exhibit Hall, Educator Prep Room and Storage Secure Chemical Storage and Prep
- **Prototyping Lab (Maker):** A workshop-based space for the design, testing and fabrication of exhibits and related items. For staff use only; no public access however visitor visibility (virtual field trips or camps) is acceptable. Equipment to include laser cutters, saws, CNC machinery etc.; specific equipment needs to be determined. A clear ceiling height of at least 18-20 feet is required with glazing for full viewing. Will require special ventilation and fire suppression systems.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Permanent Exhibit Hall
- **Prototyping Lab (Research Live):** Space for research partners to provide visitors with the opportunity to participate in real research. Previous projects include “Spit for Science” from Sick Kids, handwriting analysis from the University of Guelph and many others. Requires space where partners can set up components of their study (tables, chairs for filling in questionnaires, a place where people can interface with the public, and sometimes a space that can be made somewhat private if someone is providing a sample or the questionnaire is done verbally.) Specific equipment to be confirmed but may include individual research desks, group meeting areas, refrigeration, water and secure storage millwork. Standard ceiling height requirements. May require special ventilation and fire suppression systems.

- Preferred Location: New Building
- Critical Access and Adjacencies: Permanent Exhibit Hall; Staff Office; Storage
- **Educator Prep Prop Room / Storage (SDH):** A small, dedicated preparation and storage room for educators and staff using the Science Demonstration Space. Standard millwork including counter surface with sink, lockable cabinets, and open shelving. Occasional chairs and worktable also required.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Science Demonstration Hall (#2), other workshop/lab spaces in the new building as well as Pods.
- **Secure Chemical Storage and Prep (SDH):** Safe and secure storage room for related chemicals and solutions required for the Science Demonstration program. Rooms should meet all required finishes and safety / security protocols per all applicable building codes. May require special ventilation or fire suppression systems.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Science Demonstration Hall (#2)
- **Sound Stage / Studio:** Small sound studio to support virtual programming for external broadcast. For staff use only; no public access however visitor visibility (virtual field trips or camps) is acceptable. Will require audio and lighting control; specific equipment and FF&E details to be confirmed by a specialty consultant. Additional support spaces include Production, Sound and Editing Room and dedicated storage.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Administrative Area or workshop

EDUCATION (SCIENCE SCHOOL)

The spaces in this category focus specifically on the needs of the science school education program. These spaces form a tight cluster of functional elements and have a proximity relationship with one another. These spaces are typically not accessible to the public or for unreserved walk-in activities. Specific size of classrooms will adhere to the Ministry of Education guidelines.

- **Science School Classroom #1 (Wet):** A flexible "wet" meeting and teaching space for groups of 25-30 Grade 12 level students for interactive activities including hands-on demonstrations, experiments, research, and group work. Can also be used for summer camps, staff training, smaller workshops, or other events on weekends. Natural light is preferred. Should be paired with Dry classroom for operational efficiency. Built-in storage is required. Furniture layout to be determined during design stage. May require special ventilation including fume hoods.
- **Science School Classroom #2 (Dry):** A flexible "dry" meeting and teaching space for groups of 25-30 Grade 12 level students for interactive activities including teaching demonstrations, research, and group work. May also include digital terminals. Can also be used for summer camps, staff training, smaller workshops, or other events on weekends. Natural light is preferred. Should be paired with

Wet classroom for operational efficiency. Built-in storage is required. Furniture layout to be determined during design stage.

- **Secure Chemical Storage:** Safe and secure storage room for related chemicals and solutions (liquid nitrogen) required to the science school program. A back-of-house location is acceptable although proximity to the science classrooms is preferable. Students may access these rooms with special access passes only. Rooms should meet all required finishes and safety / security protocols per all applicable building codes. May require special ventilation or fire suppression systems.
- **Specimen Storage Cold:** Safe and secure “cool / cold” storage room for fragile and environmentally sensitive materials including biological specimens in jars, required for the science school program. A back-of-house location is acceptable although proximity to the science classrooms is preferable. Students may access these rooms with special access passes only. Rooms should meet all required finishes and safety / security protocols per all applicable building codes. May include a chest freezer.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Paired Wet and Dry Classrooms, Chemical and Cold Storage

MEGASTRUCTURES

- **Cinesphere:** The program assumes that the existing Cinesphere will remain in use as a projection-based venue for both mission-driven and non-mission-driven movies, features, and streaming of alternative/new content such as educational programs (including real time interactions with scientists in space or remote areas of the world). It is understood that the existing infrastructure (seats and screen) have been upgraded and will remain. Technical upgrades should be confirmed by a specialty consultant.
 - Preferred Location: Existing
 - Critical Access and Adjacencies: Atrium Lobby; Pods; ideally separate entrance to allow for ticket sales/shows to happen outside of operating hours
- **Pods:** The program assumes that the existing Pod structures – five linked modular structures - - will be fully refurbished and used all year round. The Pods will be compliant with all required accessibility standards. The Pods will be used for a variety of programs including exhibitions and could also be used for food service

- **Bridges:** The existing bridges that link the Lakeshore lands with the Pods and Cinesphere will be included as circulation for OSC visitors. It is assumed that these bridges will be refurbished to current standards (lighting etc.) for visitor comfort and safety including being fully enclosed (heated and cooled) for all-season use. It is also assumed that the bridges will contribute to the interpretive experience through a variety of techniques, including potentially digital displays, graphics, or sound. Interpretive content to be finalized at a later date.

OFFICE SPACE

This section describes the functional components that are generally categorized as office and administrative functions required for the OSC operations. Sub sections for OSC leadership and staff, and non-OSC staff are also provided. *(Note: Administrative allocations are an assumption and will comply the OPS Enterprise Office Workplace Standard in the design phase).*

ADMINISTRATIVE - OSC

This section details the requirements of the OSC administrative leadership, staff, and related workspaces. Support staff and external staff are detailed in the following section.

- **Reception and Waiting:** Small reception area to receive visitors and guests to the Administration suite. Full time receptionist position to be confirmed. Standard millwork requirements.
- **Traditional Workspaces – CEO and Senior Leadership:** Private offices for 30 people of standard furniture configuration. CEO office to accommodate additional occasional furniture. Requires finishes, lighting, telephone, and data service to higher office standard.
- **Traditional Workspaces - Admin Support:** Open, anchored workstations for 20 people. Systems furniture in flexible configurations based on operational need. Provide drop-in or hoteling capability for staff who spend most of their time working in the exhibit halls or other locations.
- **Open Alternative Workspaces (Frontline Staff):** Informal, open meeting spaces for up to 40 people. Flexible furniture, hotelling workstations, moveable tables, occasional chairs, and sofa. Standard millwork configuration.
- **Secure Hard Copy Records / File Storage:** File storage centralized with offices. Open shelving.
- **Open Alternative Workspaces (Volunteers):** Informal, open meeting spaces for up to 40 people. Flexible furniture, hotelling workstations, moveable tables, occasional chairs, and sofa. Standard millwork configuration.
- **Open Alternative Workspaces (Student Employees):** Informal, open meeting spaces for up to 40 people. Flexible furniture, hotelling workstations, moveable tables, occasional chairs, and sofa. Standard millwork configuration.
 - Preferred Location: All of the Above - New Building
 - Critical Access and Adjacencies: Administrative Suite

ADMINISTRATIVE - SUPPORT

This section details the requirements of the OSC support and external staff.

- **Private Offices:** Private offices of standard configuration are recommended. Requires finishes, lighting, telephone and data service to office standard. Includes offices for Food Services, Site Managers, Electronics Team and IT Teams.
- **IT Testing and Training Room:** Dedicated room for virtual environment testing and training. Specific equipment and millwork requirements to be confirmed.
 - Preferred Location: All of the Above - New Building
 - Critical Access and Adjacencies: Administrative Suite

MEETING SPACE

Meeting spaces are considered rooms or areas where various staff and volunteers can hold formal or informal meeting, work sessions or training. The location of these spaces should be explored during the design phase to ensure optimal functional relationships for staff and volunteers.

- **Open Alternative Workspaces(X3):** Informal, individual meeting spaces for 4-6 people.

Closed Alternative Workspaces: A large 30-seat, high quality meeting space, with state of art network connectivity, video conferencing and high-level presentation facilities for internal use. Millwork to enable meeting amenities such as coffee or lunch service.

- **Closed Alternative Workspaces:** Meeting room to accommodate up to 20 people. Network connectivity with video conference capability. Upper and lower cabinetry, small counter surface.
- **Infrastructure Ontario / Services Staff Meeting Room:** Meeting room to accommodate up to 20 people. Network connectivity with video conference capability. Upper and lower cabinetry, small counter surface.
 - Preferred Location: All of the Above - New Building
 - Critical Access and Adjacencies: Administrative Suite

BUILDING SUPPORT

This section summarizes a range of building and staff support spaces, including engagement spaces, exhibit preparation, shipping and receiving and other service needs.

EXHIBIT HALLS SUPPORT AREAS

This section details the requirements of the support spaces specifically for the Kidspark exhibit hall.

- **Kidspark Supplies Storage:** A dedicated supply storage room for the Kidspark exhibit hall. For staff use only, access should be directly from the exhibit hall to facilitate ease of access for supplies and frequently used materials. Specific storage requirements (counter, millwork, open shelving) should be confirmed during the design stage.
- **Kidspark Dedicated Laundry Room:** The nature of the Kidspark program and the age group of its users requires a dedicated laundry room. For staff use only, access is via back of house routes and should be in proximity to the exhibit hall. Standard laundry machines (not commercial) are required. Type and quantity should be confirmed during the design stage.

- Preferred Location: New Building
- Critical Access and Adjacencies: Kidspark Exhibit Hall
- **Exhibit Maintenance Open Work Area:** Primary function will be light work such as mount making and repairing exhibition furniture, etc. Worktables, counter, storage shelves, racks and cabinets required. For staff use only via back of house routes. Equipment needs to be confirmed. A large overhead door may be required to enable movement of oversize items. May require special ventilation or fire suppression.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Exhibit Halls; Building Support; Shipping / Receiving
- **Enclosed Exhibit Loading Bay:** An enclosed truck loading bay to support 2 x 53-foot semi transport and trailers is required. This is intended to support the receiving of any items on loan. The truck bay should be able to fully enclose the vehicle with secure exterior and interior overhead doors for security and environmental purposes. A dock leveler for smaller deliveries from other vehicles should also be provided.
- **Shipping / Receiving / Crating / Uncrating Area:** An enclosed dedicated area for secure shipping and receiving of exhibit items with level loading dock. Also included is a crating and uncrating area for packing and unpacking of exhibit items. Minimal finishes required. Staff access only.
- **Clean Workshop / Exhibition Prep:** A support space for the final preparation of items that will be exhibited. Activities such as mounting, or framing may take place here. It needs to be a clean space for the safety and preservation of exhibit items handled in this space. Staff access only. May include oversize door and roll-up door type for larger crates. Worktables, counter surface, upper and lower millwork all required.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Shipping Receiving; All of the Above

Note: It is recommended that the above exhibit support areas meet the ASHRAE standards for a Class B environment. Conditions should be, at a minimum 70° F +/- 9° F (5°C) and 50% RH +/- 10%. Confirmation of these recommendations is the responsibility of the client team and project architect / engineer during the design stage.

GENERAL BUILDING SUPPORT

This section details the requirements of the significant, non-typical back-of-house building and facility support areas.

- **Laundry Room (Industrial):** Large laundry space to service the full OSC programs. Staff use only. May require special electrical supply and ventilation to support industrial size equipment. Quantity of equipment to be determined. No special finishes required.
 - Preferred Location: New Building

- Critical Access and Adjacencies: Shipping Receiving
- **Food Services: Commercial Kitchen:** Fully outfitted commercial style kitchen to service the cafeteria and other food service venues at the OSC. Will require special power supply and ventilation. Specific equipment needs to be confirmed by a specialty food service consultant.
 - Preferred Location: Pods
 - Critical Access and Adjacencies: Dry Storage / Consumables; Cold Storage; Equipment Storage; Catering Staging Area
- **Staff Lactation Room:** Private space where a nursing mother can use a breast pump. Occasional chairs. Standard millwork configuration.
- **Staff Lounge / Kitchenette / Lunchroom:** Space for staff to meet, take breaks and eat lunch. Hourly/part-time/floor staff to use before and after their shifts. Bag/purse storage for staff/students without workstations and common closet for coats and boots. Fridge, sink, hook-ups for coffee machine. Accommodation for approximately 30-35 people.

STORAGE

This category outlines spaces dedicated for storage of exhibit related items.

- **Crate Storage:** Secure space for the storage of exhibition crates while on loan. Minimal finishes required. Staff access only. May include oversize door and roll-up door type for larger crates.
- **Temporary Exhibits (Transit) Storage Area:** Required to hold exhibits in crates on loan from other institutions which will be displayed or are awaiting onward shipment. Minimal finishes required. Staff access only. May include oversize door and roll-up door type for larger crates.
- **Isolation / Quarantine:** A dedicated storage room for any items that require disinfestation or separation from other collections while risk factors are mitigated. Climate controlled, this room may include inert nitrogen gas treatment facilities or a chest freezer. FF&E requirements to be determined.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Shipping Receiving; Exhibit Prep

Note: It is recommended that the above exhibit support areas meet the ASHRAE standards for a Class B environment. Conditions should be, at a minimum 70° F +/- 9° F (5°C) and 50% RH +/- 10%. Confirmation of these recommendations is the responsibility of the client team and project architect / engineer during the design stage.

VISITOR CARE SPACE (VISITOR CARE SUPPORT)

The spaces in this category focus on the major front of house visitor services areas including the primary points of building entry for visitors and groups, retail and food service functions and other visitor support functions.

- **Lobby/Atrium “Wow Experience”:** This space should be designed to create a sense of arrival. It should be an awe-inspiring, high ceiling point of entry which will provide a setting for some form of visually stimulating experience to excite and engage visitors. It also adds to the visitor experience by orienting the visitor and leading to the exhibition spaces and other attractions in the complex. For comfort, seating should be planned as part of the lobby design and any other rest areas. Stanchions and temporary signage may also need to be accessed quickly by visitor service staff. A ceiling height of at least 30 feet is required along with attention to acoustics to minimize overall sound transmission is desirable. Visual connection to student and group intake are also required. The lobby could also serve as a space for rentals and third-party events after regular hours of operation.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Student, Camp and Group Intake; Cloakroom; Lockers; Strollers and Wheelchair Storage; Gift Shop; First Aid and Care Rooms; Maker Space
- **Visitor Services / Admissions / Memberships:** The OSC will charge admission to its exhibit halls and program spaces and will require a generous, dedicated point-of-purchase area for these services. Queue management is vital in this area as large groups including families with children and strollers should be anticipated. Visibility within the main lobby is critical, as is an efficient movement path from this area to other amenities (restrooms, coats, and lockers). It is recommended that design teams anticipate the anticipated volume of visitors and map out the path of travel and queuing options to ensure proper functionality without overlaps. Adjacent support areas include a dedicated admission office with cash room and supplies storage.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Student, Camp and Group Intake; Cloakroom; Lockers; Strollers and Wheelchair Storage; Gift Shop; First Aid and Care Rooms; Maker Space
- **Student, Camp and Group Intake / Marshalling:** The OSC will need to receive and accommodate more than 800 and up to 2,500 students at peak arrival and departure times for its public programs, education and summer and March break camps and various other student and group activities. This user group requires a separate and dedicated point of entry directly accessible from dedicated bus or vehicle drop-off areas. Design should be durable and able to withstand heavy traffic from large groups. Stanchions and temporary signage may also need to be accessed quickly by visitor service staff. Digital signage/wayfinding that can be easily updated would greatly enhance the visitor experience. Attention to acoustics to minimize overall sound transmission is desirable. This area can also serve as a rental space (birthday parties etc.). Efficient access to catering and food services is required. Visual connection with main lobby also required.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Atrium Lobby; Cloakroom; Lockers; First Aid and Care Rooms; Maker Space; Workshop Labs

- **Public "Brown Bag" Lunch Area:** Provision for large groups of students, or families to have lunch (non-cafeteria purchases) should be made. This area should be combined with the group intake area and may be designed as one large area. As with the other group-based areas, finishes should be durable and able to withstand high volumes of traffic. Attention to acoustics to minimize overall sound transmission is desirable. This space should be an open area, with good visibility in either fixed or flexible seating (to be confirmed during the design phase).
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Student, Camp and Group Intake; Cloakroom; Lockers; Strollers and Wheelchair Storage; First Aid and Care Rooms
- **Cloakroom / Lockers:** It is important to make provisions for storage of personal items for visitors. The OSC will require approximately 500-600 individual lockers, in a combination of sizes. Lockers will be self serve and not be supervised by security staff. Majority of the lockers should be consolidated near the atrium lobby or group intake area; additional lockers may be distributed to other areas as needed.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Atrium Lobby; Strollers and Wheelchair Storage; Student, Camp and Group Intake; Distributed as needed
- **Retail / Gift Shop:** The OSC plans to develop a highly visible retail / gift shop as a major revenue source. The shop will feature a wide range of science-based items, branded merchandise and related goods – books and toys, posters, reproductions, and items catering to the needs and interests of children who visit. The main shop will be open longer than regular hours so that visitors can stay to visit and make purchases after visiting the OSC. As such, ground floor / street level access and visibility from the atrium lobby is required as well, it should its own entrance to the street to allow non-ticketed visitors access to the shop The retail function will also include small retail kiosks (est. x4) distributed at key locations throughout the complex. Locations to be determined during the design stage. Some retail stock and inventory space may be located elsewhere. Final design and fit out of the shop will be completed during the design stage.
 - Preferred Location: New Building, Pods
 - Critical Access and Adjacencies: Atrium Lobby; Distributed as needed
- **Cafeteria and Seating (Main and Satellite):** Food services in the OSC is also provided via a formal cafeteria. The cafeteria will consist of a primary location in the Pods, and a satellite location in the new building. Food consumed in these locations is for purchase only, with sit down style, moveable seating, envisioned for the main cafeteria and *grab-n-go* in the main building. These areas will not be used for "brown bag" lunch consumption as this is accommodated in the student intake space above. Seating for approximately 500 people should be provided in either fixed or flexible seating (to be confirmed during the design phase). As with the other group-based areas, finishes should be durable and able to withstand high volumes of traffic. Attention to acoustics to minimize overall sound transmission is desirable. Final fit out of the cafeteria should be completed by a specialized food service consultant.
 - Preferred Location: Pods, New Building

- Critical Access and Adjacencies: Atrium Lobby; Restrooms
- **First Aid / Sick Room / Visitor Care Room:** The physical and spiritual health and wellness of OSC visitors and staff is a critical element. A series of two first aid rooms are programmed and should be included in both the new building and the pods. The final fit out of these spaces should be per standard requirements. In addition, the visitor care room is a quiet space designed to accommodate three (3) families for prayer or reflection. Finishes should include comfortable seating and be calming in nature.
 - Preferred Location: New Building, Pods
 - Critical Access and Adjacencies: Atrium Lobby

OUTDOOR SPACES

This section details the requirements of the exterior / outdoor spaces and activities. As the areas listed are not within the building envelope, they are not counted as part of the total net or gross building area. Nevertheless, their functions are important relative to meeting the operational goals of the OSC.

- **Adventure Playground:** A year-round, outdoor, ticketed activity and adventure area for up to 30 children, aged 8-13. Activities include outdoor maker events, climbing equipment, and hands-on activities. Final equipment to be determined by specialty consultant. Some amount of the play area may be free (To be determined). Could also include reuse of existing marina piers/docks if not being used by Marina in the future. Location can vary and may include at-grade or on a rooftop terrace although it should have a direct connection to the maker spaces. All safety protocols and measures should be met.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Outdoor; Dedicated Storage (Adventure Playground); Maker Spaces
- **Rooftop Observation Experience (Observatory):** An outdoor rooftop space for mission-driven programs (Star Parties, Solar Observations) as well as social gatherings and rental events. All safety protocols and measures should be met. May also include telescopes for star gazing activities (To be determined).
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Outdoor
- **Entry Plaza / Outdoor Activity (Non-ticketed):** The experience of the OSC begins on arrival and must include spaces that extend well beyond the physical limits of the building. The entry plaza should have a direct relationship with the new front door, parking and drop-off areas, and any peripheral outdoor event spaces (for up to 250 people), and even visually to the Pods and Cinesphere beyond. It must be open and inviting and provide a range of visitor amenities, such as information and wayfinding, lighting, covered seating, initial interpretive content, and potentially kiosks for ticket purchase. Must also accommodate mobility-challenged visitors and meet all accessibility codes. The plaza may also include large objects on display so design teams should note the potential for point loading at specific areas.

- Preferred Location: New Building
- Critical Access and Adjacencies: Outdoor; Main Entry; Car / Taxi / Valet Drop-off; School Bus Queuing
- **School Bus Queuing:** The OSC site must be able to accommodate a large volume of school bus visits performing drop off and pick up for school groups and camps. The site must be designed to permit right-side disembarking in proximity to the student, camp and group intake area, and should allow for parking for up to 30 busses during operating hours. Bus parking may be provided off-site.
 - Preferred Location: New Building
 - Critical Access and Adjacencies: Outdoor; Student, Camp and Group Intake
- **Exterior Service Loading Area:** A trash disposal and recycling area is required, additional to and separate from the exhibit receiving area. The service yard provides a secure entry area for vehicles of contractors and suppliers, with access to the building via the loading dock. Security access and control, lighting and video / audio communication may be required.
 - Preferred Location: New Building, Pods
 - Critical Access and Adjacencies: Outdoor; Loading Dock

5. SPACE PROGRAM

INTRODUCTION

This section includes the space allocation table outlining the individual spaces and corresponding net areas required for the New Building and the Pods. The list is organized into primary facility zones, as described below, and secondary functional categories. The net areas for each space leads to a facility total net area. Detailed functional notes are outlined in the previous section.

SPACE ALLOCATION SUMMARY

The total net area (the summation of all individual spaces) is **175,580** net sq.ft. and is summarized as follows under the key functional categories:

Functional Category	Net Area (sf)
Engagement Space (Exhibits/Programs)	109,550
Office Space	12,150
Meeting Space	2,650
Building Support	11,125
Storage	10,155
Visitor Care Space	26,050
Visitor Care Space Support	3,900
Total Net Area (New Building and Pods)	175,580

The new OSC will be housed in a combination of new structure/building, and the adaptively reused Ontario Place Pods, Cinesphere and connecting Bridges. OSC determined which functions will be in the Pods and which to be assigned in the new building. As a result, of the total 175,580 net sq.ft. OSC requires, 40,500 net sq.ft. be in the Pods, and 135,080 net sq.ft. for the new building. The Cinesphere will remain as a 614-seat projection-based venue for both mission-driven and non-mission-driven movies, features, and other OSC programming.

Because the Pods are fixed spaces, there will be portion of the OSC activities that will occur in the Pods and others in the new building. The total net area of the Pods is fixed at 40,500 sq.ft. (based on Partisan drawings provided by IO and Altus Building Condition Assessment report 2019). There are five Pods, each one at approximately 8,000 net sq.ft.

To determine the net area for the new building, the total net area of the Pods (40,500 sq.ft.) was subtracted from the total net requirement for OSC (175,580 sq.ft.) resulting in a net area for the new building of **135,080 sq.ft.**

In the section above, we have outlined the range of grossing factors for a new building anywhere from 30%-50%. We have assumed a 45% grossing factor for the OSC new building. Applying the 45% grossing factor to net area of the new building results in a Gross Floor Area of **198,000 sq.ft.** for the new building.

We have assumed the Pods to have no grossing factor as they are essentially single volume, open space. The total Gross Floor Area for the Pods is assumed at **40,500 sq.ft.**

Two existing bridges (Bridges #9 and #10) connect the Pods and Cinesphere to the mainland. Bridge #10 connects the north end of Ontario Place at Lakeshore Boulevard (the site of the OSC new building) to the north end of Pod #2 and the Cinesphere. Bridge #9 connects the east side of Pod #5 to the east island of Ontario Place. Because the bridges are considered circulation, they are included in the overall Gross Floor Area. The Gross Floor Area for bridges #9 and #10 is **17,500 sq.ft.** (based on Partisan drawings provided by IO) and Altus Building Condition Assessment report 2019).

The Gross Floor Area of the Cinesphere is estimated at **19,700 sq.ft.** (based on a partial set of original drawings)

Breakdown of Gross Floor Area for the new OSC complex is as follows. (By comparison, the current Ontario Science Centre is 568,000 gross sq.ft.)

New OSC at Ontario Place	Gross Floor Area (sq.ft.)
New Mainland Building	198,000
Pods	40,500
Bridges (9 and 10)	17,500
Cinesphere	19,700
Total:	275,700

Note: Gross floor areas provided to Lord by Infrastructure Ontario. Pods net and gross area are assumed to be the same amount.

SPACE ALLOCATION TABLE

The following table lists the net area program for OSC including New Building and the Pods.

Item	Functional Category	Space Name	Net Area (sf)	Preferred Location
A		Building Entry and Visitor Amenities	26,650	
A.1	Visitor Care Space	Atrium / Lobby "Wow Experience"	6,000	New Building
A.2	Visitor Care Space	Student, Camp and Group Intake / Marshalling	5,000	New Building
A.3	Visitor Care Space	Cloakroom / Lockers	1,000	New Building
A.4	Visitor Care Space	Public "Brown Bag" Lunch Area	Included in A.2	New Building
A.5	Visitor Care Space	Ticketing Kiosks	Included in A.1	New Building
A.6	Visitor Care Space	Visitor Services / Admissions / Memberships	1,000	New Building
A.7	Visitor Care Space Support	Admissions Office / Cash Room	100	New Building
A.8	Visitor Care Space	Retail / Gift Shop	2,500	New Building
A.9	Visitor Care Space Support	Gift Shop Office / Merchandise Storage	500	New Building
A.10	Visitor Care Space	Retail Kiosks - Distributed (x4)	Distributed	New Building and Pods
A.11	Visitor Care Space	Cafeteria and Seating - Main	8,000	Pods
A.12	Visitor Care Space	Cafeteria and Seating - Satellite	1,000	New Building
A.13	Visitor Care Space Support	Cafeteria Office / Cash Room	100	Pods
A.14	Visitor Care Space Support	Strollers and Wheelchair Storage	400	New Building
A.15	Storage	Miscellaneous Lobby Storage	200	New Building
A.16	Visitor Care Space	First Aid / Sick Room 1	350	New Building
A.17	Visitor Care Space	First Aid / Sick Room 2	100	Pods
A.18	Visitor Care Space	Visitor Care Room	400	New Building
A.19	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	Distributed
A		Education (Science School)	2,600	
A.20	Engagement Space (Exhibits/Programs)	Science School Classroom #1 WET	1,000	New Building
A.21	Engagement Space (Exhibits/Programs)	Science School Classroom #2 DRY	1,000	New Building
A.22	Storage	Secure Chemical Storage	100	New Building
A.23	Storage	Specimen Storage Cold	100	New Building
A.24	Engagement Space (Exhibits/Programs)	Student Lounge/Lockers/Kitchenette	400	New Building
A.25	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	New Building
A		Engagement Spaces (Exhibit/Program TBD)	12,500	
A.26	Engagement Space (Exhibits/Programs)	Workshop (Lab) #1 - Wet Lab	1,250	Pods
A.27	Engagement Space (Exhibits/Programs)	Workshop (Lab) #2 - Wet Lab	1,250	New Building
A.28	Engagement Space (Exhibits/Programs)	Workshop (Lab) #3	1,250	Pods
A.29	Engagement Space (Exhibits/Programs)	Workshop (Lab) #4	1,500	New Building
A.30	Engagement Space (Exhibits/Programs)	Workshop (Lab) #5	1,500	New Building
A.31	Engagement Space (Exhibits/Programs)	Workshop (Lab) #6 - Escape Room	2,000	Pods
A.32	Storage	Workshops: Dedicated Storage	300	New Building
A.33	Engagement Space (Exhibits/Programs)	Maker Space	2,500	New Building
A.34	Engagement Space (Exhibits/Programs)	Change Room / Lockers (Camps and Maker Spaces)	500	New Building
A.35	Storage	Maker Space: Dedicated Storage	450	New Building
A.36	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	Distributed

Item	Functional Category	Space Name	Net Area (sf)	Preferred Location
A		Engagement Spaces (Exhibit/Program TBD)	8,880	
A.37	Engagement Space (Exhibits/Programs)	Prototyping Lab - Maker	2,500	New Building
A.38	Engagement Space (Exhibits/Programs)	Prototyping Lab - "Research Live"	1,000	New Building
A.39	Engagement Space (Exhibits/Programs)	Prototyping Lab - Staff Office	100	New Building
A.40	Storage	Prototyping Lab - Storage	400	New Building
A.41	Engagement Space (Exhibits/Programs)	Science Demonstration Space 1	2,800	Pods
A.42	Engagement Space (Exhibits/Programs)	Science Demonstration Space 2	1,000	New Building
A.43	Storage	Educator Prep Prop Room / Storage (SDH)	300	New Building
A.44	Storage	Secure Chemical Storage and Prep (SDH)	200	New Building
A.45	Building Support	Sound Stage / Studio	400	New Building
A.46	Building Support	Production, Sound and Editing Room	100	New Building
A.47	Storage	Production Studio - Storage Room	80	New Building
A		Engagement Spaces (Exhibit/Program TBD)	0	
A.48	Engagement Space (Exhibits/Programs)	Planetarium	0	TBD. Future "add on"
A.49	Engagement Space (Exhibits/Programs)	Cinesphere (including interior circulation)	0	Cinesphere
A.50	Engagement Space (Exhibits/Programs)	Gender Neutral / Family Restrooms	GFA	Distributed
B		Engagement Space (Exhibition)	88,000	
B.1	Engagement Space (Exhibits/Programs)	Permanent Exhibit Hall 1	51,000	New Building
B.2	Engagement Space (Exhibits/Programs)	Permanent Exhibit Hall 2	22,000	Pods
B.3	Engagement Space (Exhibits/Programs)	Temporary Exhibit Halls	15,000	New Building
B.4	Engagement Space (Exhibits/Programs)	Gender Neutral / Family Restrooms	GFA	Distributed
C		Exhibit Support Spaces	11,400	
C.1	Visitor Care Space	Adult / Accessible Changing Room	700	New Building
C.2	Storage	Kidspark: Supplies Storage	600	New Building
C.3	Building Support	Kidspark: Dedicated Laundry Room	200	New Building
C.4	Visitor Care Space	Kidspark: Dedicated Restrooms	GFA	New Building
C.5	Building Support	Exhibit Maintenance Open Work Area	800	New Building
C.6	Building Support	Enclosed Collection Loading Bay	1,600	New Building
C.7	Building Support	Shipping / Receiving	3,000	New Building
C.8	Building Support	Crating / Uncrating Area	800	New Building
C.9	Office Space	Shipping / Receiving Security Station incl. Offices	500	New Building
C.10	Storage	Isolation / Quarantine	100	New Building
C.11	Storage	Crate Storage	800	New Building
C.12	Storage	Temporary Exhibits (Transit) Storage Area	800	New Building
C.13	Building Support	Clean Workshop / Exhibition Prep.	1,500	New Building

Item	Functional Category	Space Name	Net Area (sf)	Preferred Location
D		Administrative - OSC	14,000	
D.1	Office Space	Reception and Waiting	250	New Building
D.2	Office Space	Coat Closet	50	New Building
D.3	Office Space	Office CEO	250	New Building
D.4	Office Space	Offices: OSC Senior Leadership and Staff	3,600	New Building
D.5	Office Space	Open Workstations: Admin Support	1,300	New Building
D.6	Office Space	Bullpen - Open Work Area (Frontline Staff)	2,000	New Building
D.7	Meeting Space	Flex / Work "Huddle" Room #1	350	New Building
D.8	Meeting Space	Flex / Work "Huddle" Room #2	350	New Building
D.9	Meeting Space	Flex / Work "Huddle" Room #3	350	New Building
D.10	Storage	Printer / Photocopy / Supplies	250	New Building
D.11	Storage	Secure Hard Copy Records / File Storage	100	New Building
D.12	Meeting Space	Board / Committee Meeting Room	800	New Building
D.13	Meeting Space	Internal Management / Staff Meeting Room	450	New Building
D.14	Building Support	Staff Lactation Room	300	New Building
D.15	Building Support	Staff Lounge / Kitchenette / Lunchroom	400	New Building
D.16	Office Space	Bullpen - Open Work Area (Volunteers)	1,200	New Building
D.17	Office Space	Bullpen - Open Work Area (Student Employees)	2,000	New Building
D.18	Office Space	Gender Neutral Restrooms	GFA	Distributed
D		Administrative - Support	1,750	
D.19	Office Space	Offices - Food Services	200	New Building
D.20	Office Space	Offices - Site Managers	200	New Building
D.21	Office Space	Offices - Electronics Team	300	New Building
D.22	Office Space	Offices - IT Team	300	New Building
D.23	Building Support	IT Testing and Training Room	400	New Building
D.24	Meeting Space	Infrastructure Ontario / Services Staff Meeting Room	350	New Building
D.25	Building Support	Staff Lockers and Showers	GFA	New Building

Item	Functional Category	Space Name	Net Area (sf)	Preferred Location
D		Building Support	9,800	
D.26	Building Support	Staff / Maintenance Entry	GFA	New Building
D.27	Building Support	Building Maintenance Work Area	250	New Building
D.28	Building Support	Graphics and Design Studio (incl. Storage)	600	New Building
D.29	Storage	Exhibit Case / Prop Storage	1,200	New Building
D.30	Storage	Exhibit Lighting / Electrical Storage	400	New Building
D.31	Storage	Electronics Workshop and Storage	500	New Building
D.32	Building Support	IT Server Room	125	New Building
D.33	Storage	IT Asset Storage Room	100	New Building
D.34	Building Support	BAS Room	150	New Building
D.35	Storage	AV Storage Room	150	New Building
D.36	Storage	AV Closets (Distributed)	GFA	New Building
D.37	Building Support	Laundry Room - Industrial	250	New Building
D.38	Visitor Care Space Support	Food Services: Commercial Kitchen	2,500	Pods
D.39	Storage	Food Services: Dry Storage / Consumables	250	New Building
D.40	Storage	Food Services: Cold Storage	200	New Building
D.41	Storage	Food Services: Equipment Storage	350	New Building
D.42	Visitor Care Space Support	Food Services: Catering Staging Area	300	New Building
D.43	Storage	General Building / Equipment and Tool Storage	800	New Building
D.44	Storage	Table and Chair Storage (General)	700	New Building
D.45	Building Support	Garbage and Recycling Room / Compactor	250	New Building
D.46	Storage	General Building / Misc Storage	175	New Building
D.47	Storage	Chemical / Hazardous Storage and Disposal	100	New Building
D.48	Storage	Custodial Centre / Storage	450	New Building
D.49	Storage	Custodial Closets	GFA	New Building
D.50	Building Support	Freight / Service Elevator	GFA	New Building
D.51	Building Support	Gender Neutral Restrooms	GFA	Distributed
E		Exterior	Not Counted in Building Net Area	
E.1	Exterior	Adventure Playground (Ticketed)	0	Exterior
E.2	Exterior	Dedicated Storage (Adventure Playground)	0	Exterior
E.3	Exterior	Rootop Observation Experience	0	Exterior
E.4	Exterior	Green Roof	0	Exterior
E.5	Exterior	Exterior Lockers - Covered	0	Exterior
E.6	Exterior	Outdoor Café Seating	0	Exterior
E.7	Exterior	Entry Plaza / Outdoor Activity (Non Ticketed)	0	Exterior
E.8	Exterior	Car / Taxi / Valet Drop-off	0	TBD
E.9	Exterior	School Bus Queuing / Parking	0	TBD
E.10	Exterior	Bicycle Parking	0	TBD
E.11	Exterior	Guest Parking	0	TBD
E.12	Exterior	Service Parking	0	TBD
E.13	Exterior	Exterior Service Loading Area	0	TBD
E.14	Exterior	Exterior Refuse Bins	0	TBD
NET AREA SUB TOTAL (New Building and Pods)			175,580	

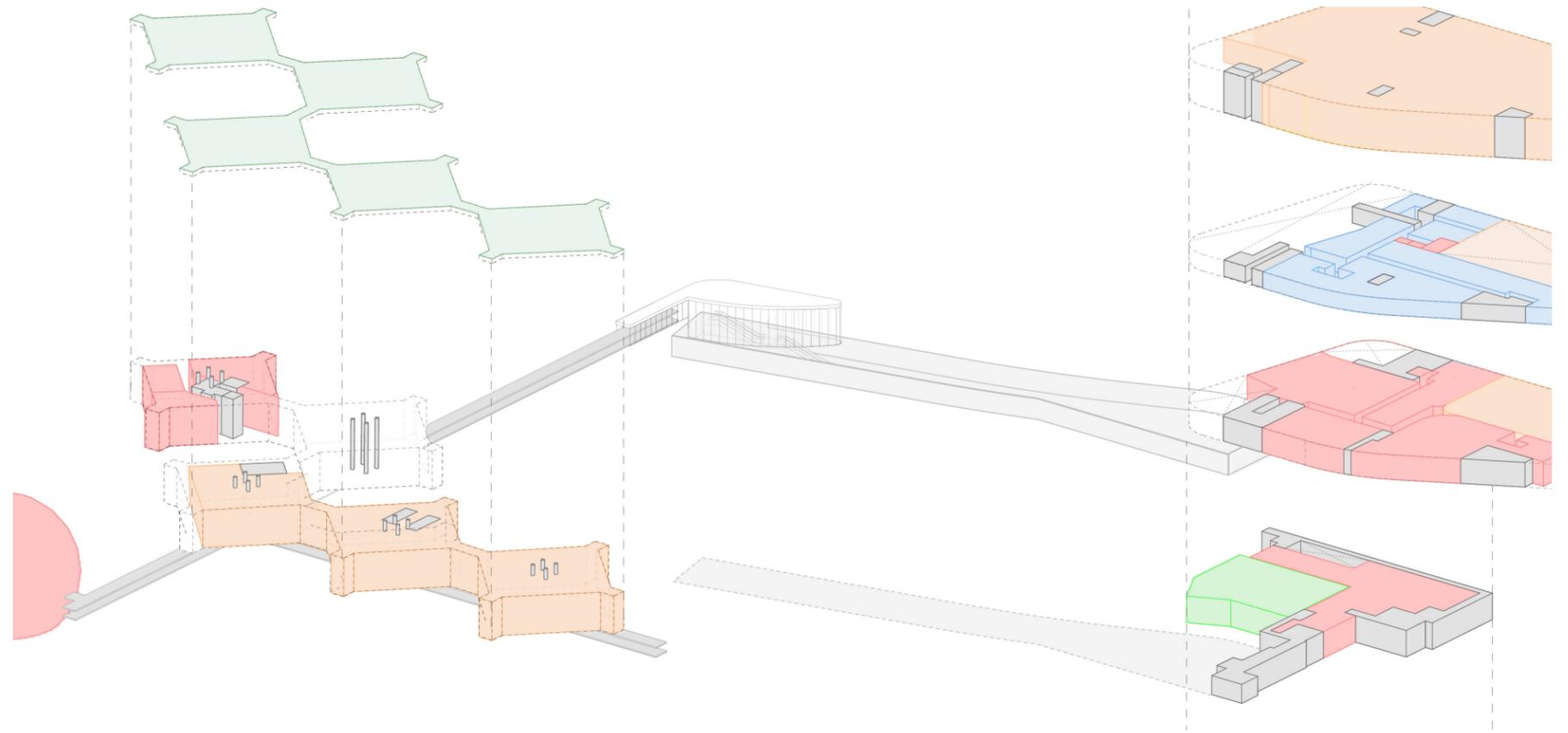
6. ADJACENCY DIAGRAMS

INTRODUCTION

The relationship between spaces is critical to maintaining efficiency and best practice. The following adjacency and circulation diagrams visually communicate the appropriate interactions among those areas identified in the space program. These diagrams illustrate:

- Access: Entrance to and egress for visitors and collections
- Adjacency: The sequence of primary and support spaces within functional areas
- Circulation: The preliminary routes of travel for visitors and staff (front of house), collections, staff and supplies (back of house)

While these diagrams are illustrative, the individual spaces are drawn proportionately to each other based on total net area. They should not be read as an architectural floor plan, but rather as a recommended circulation flow diagram to guide subsequent design and overall layout.



Ontario Science Centre at Ontario Place Program Test Fit

19 January 2023

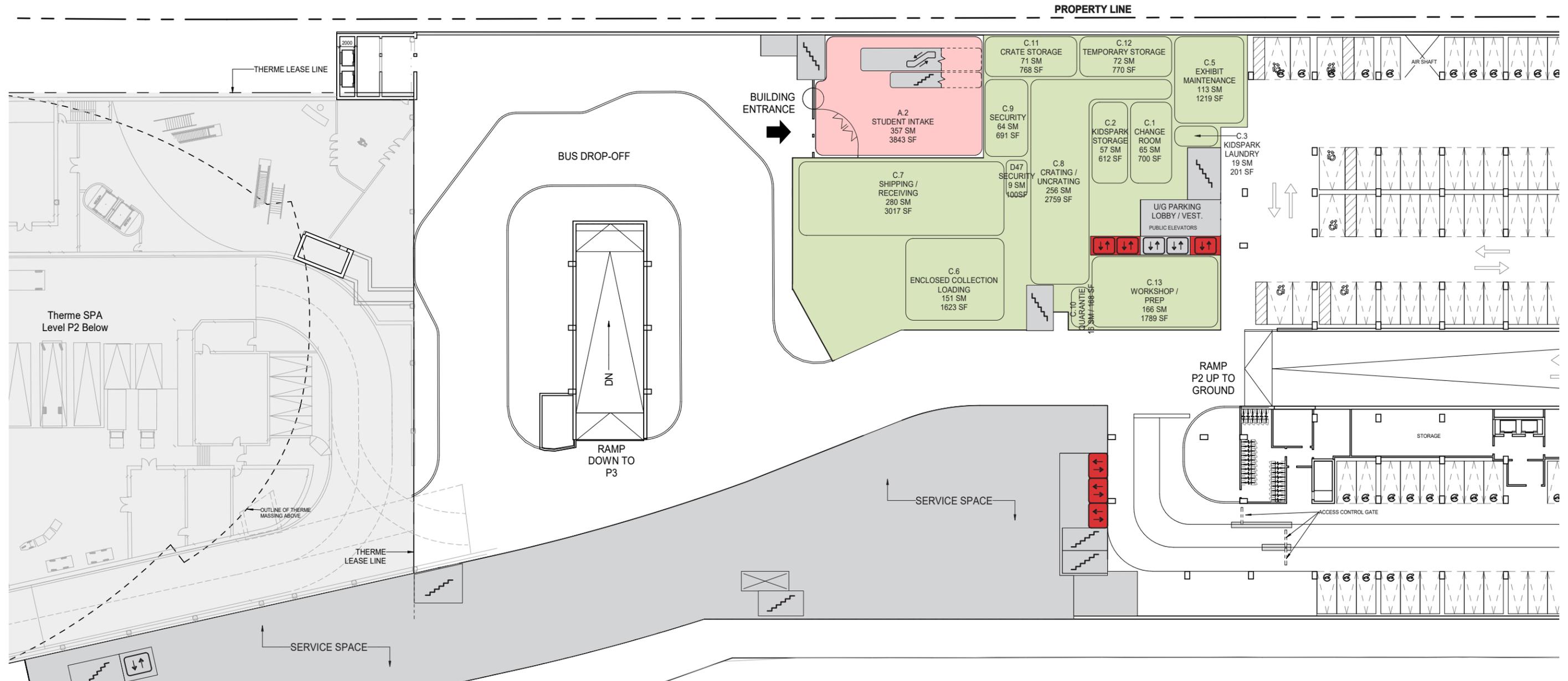
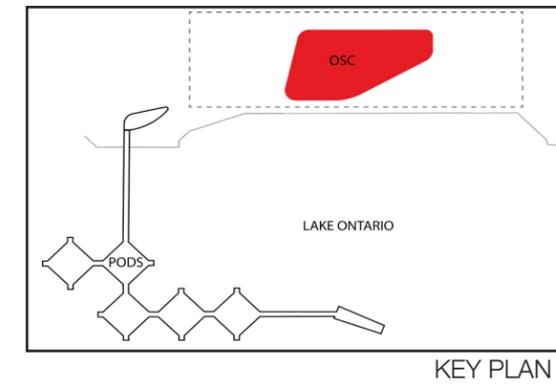
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Quadrangle

t 416 598 1240
www.bdpquadrangle.com

Quadrangle Architects Limited
The Well, 8 Spadina Avenue, Suite 2100
Toronto, ON M5V 0S8

Legend:

- Zone A
- Zone D
- Zone B
- Zone E
- Zone C
- Circulation / Service

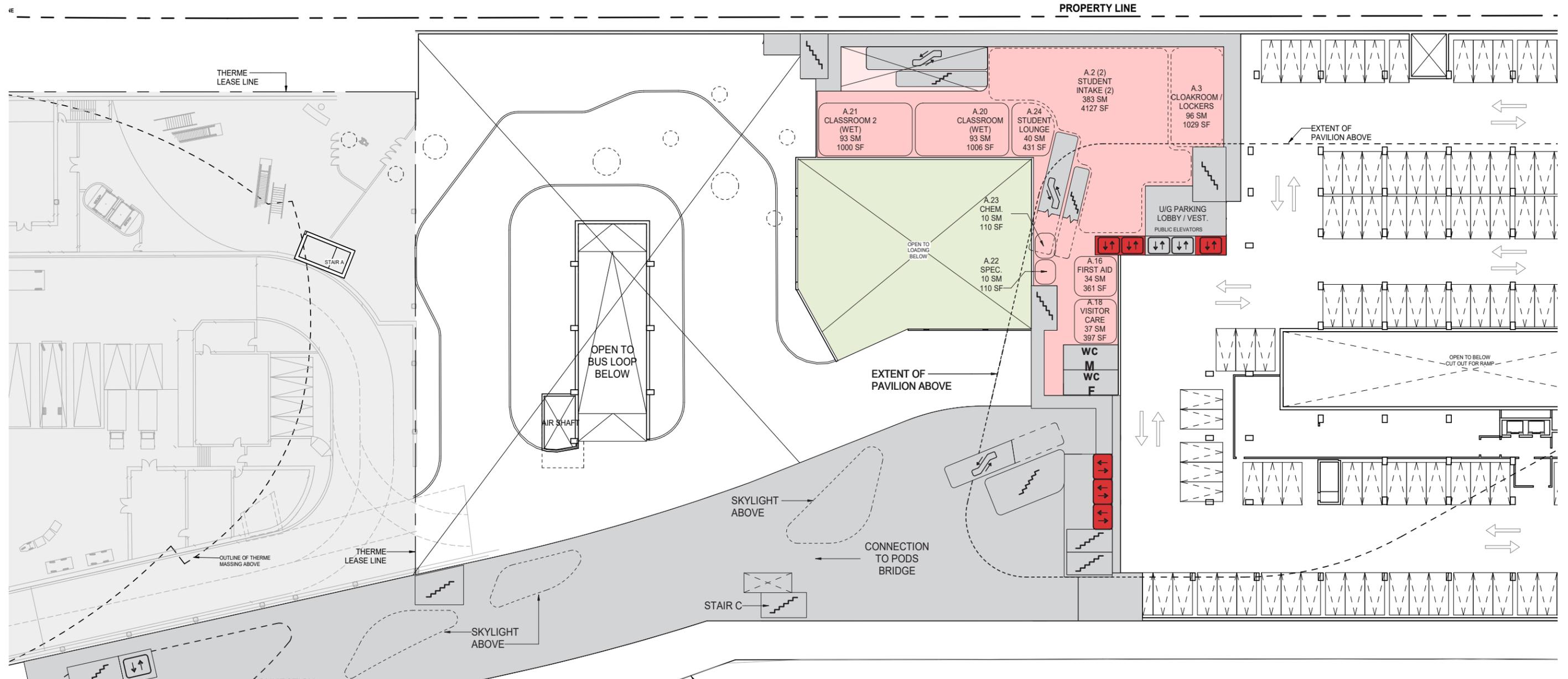
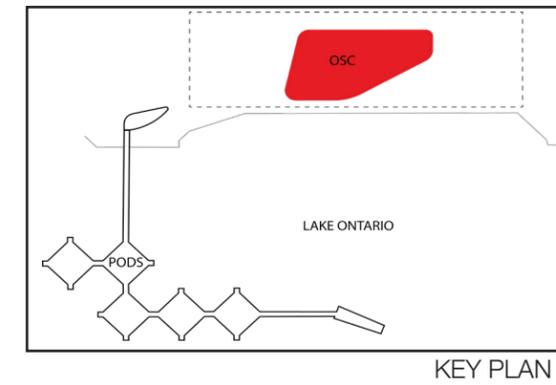


Parking Level P2



Legend:

- Zone A
- Zone D
- Zone B
- Zone E
- Zone C
- Circulation / Service



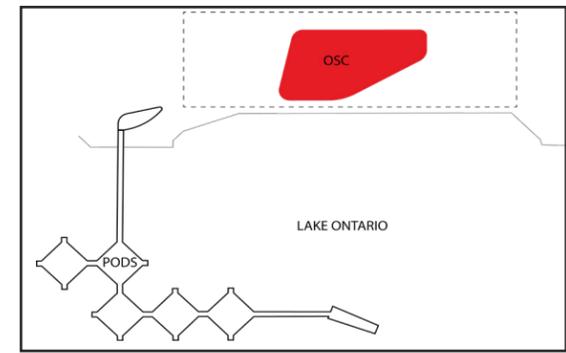
Note: Only stairs that are exclusively used for egress from OSC spaces are included in the GBA and GFA below grade.

Parking Level P1

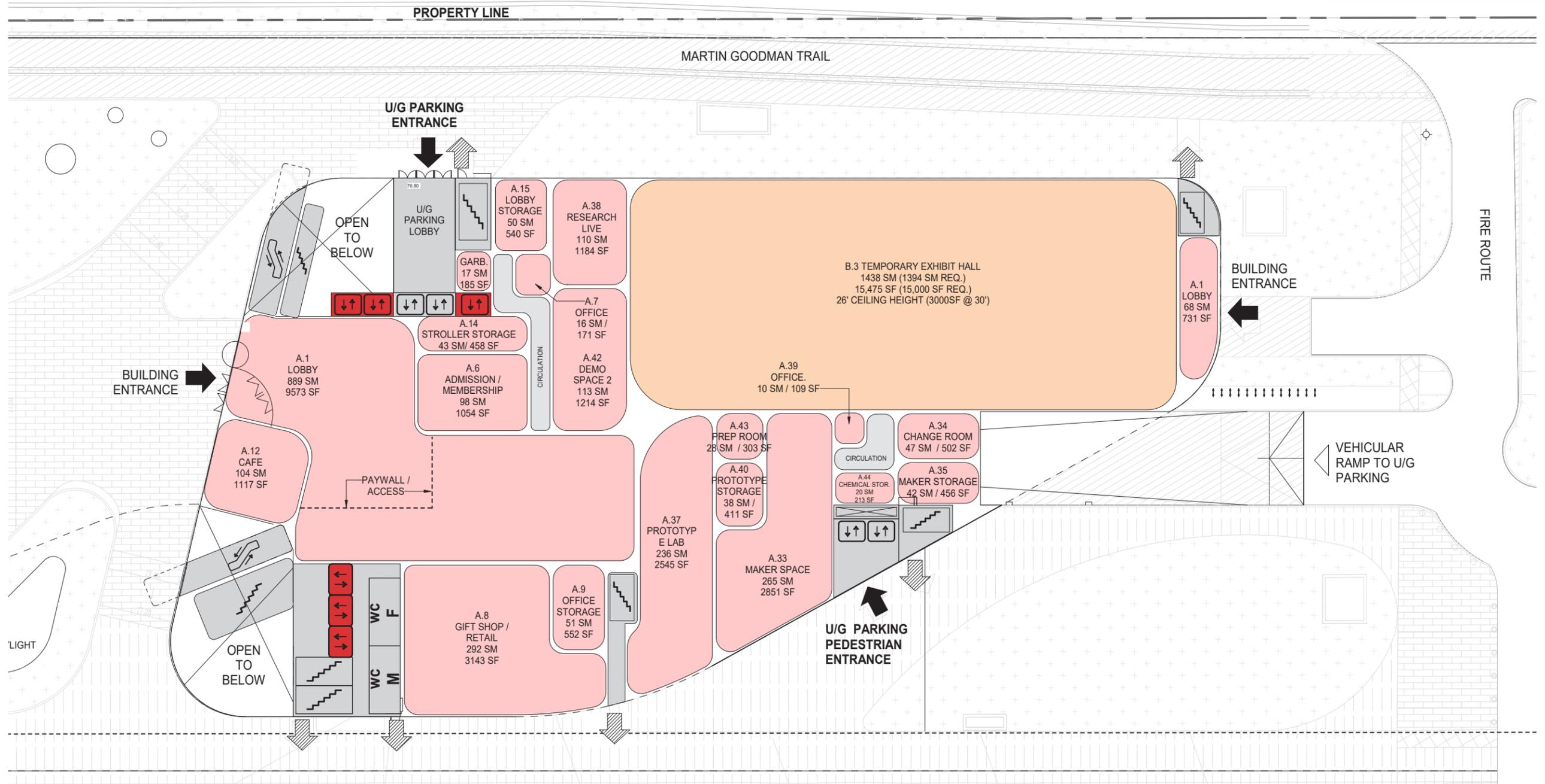


Legend:

- Zone A
- Zone D
- Zone B
- Zone E
- Zone C
- Circulation / Service



LAKE SHORE BOULEVARD WEST

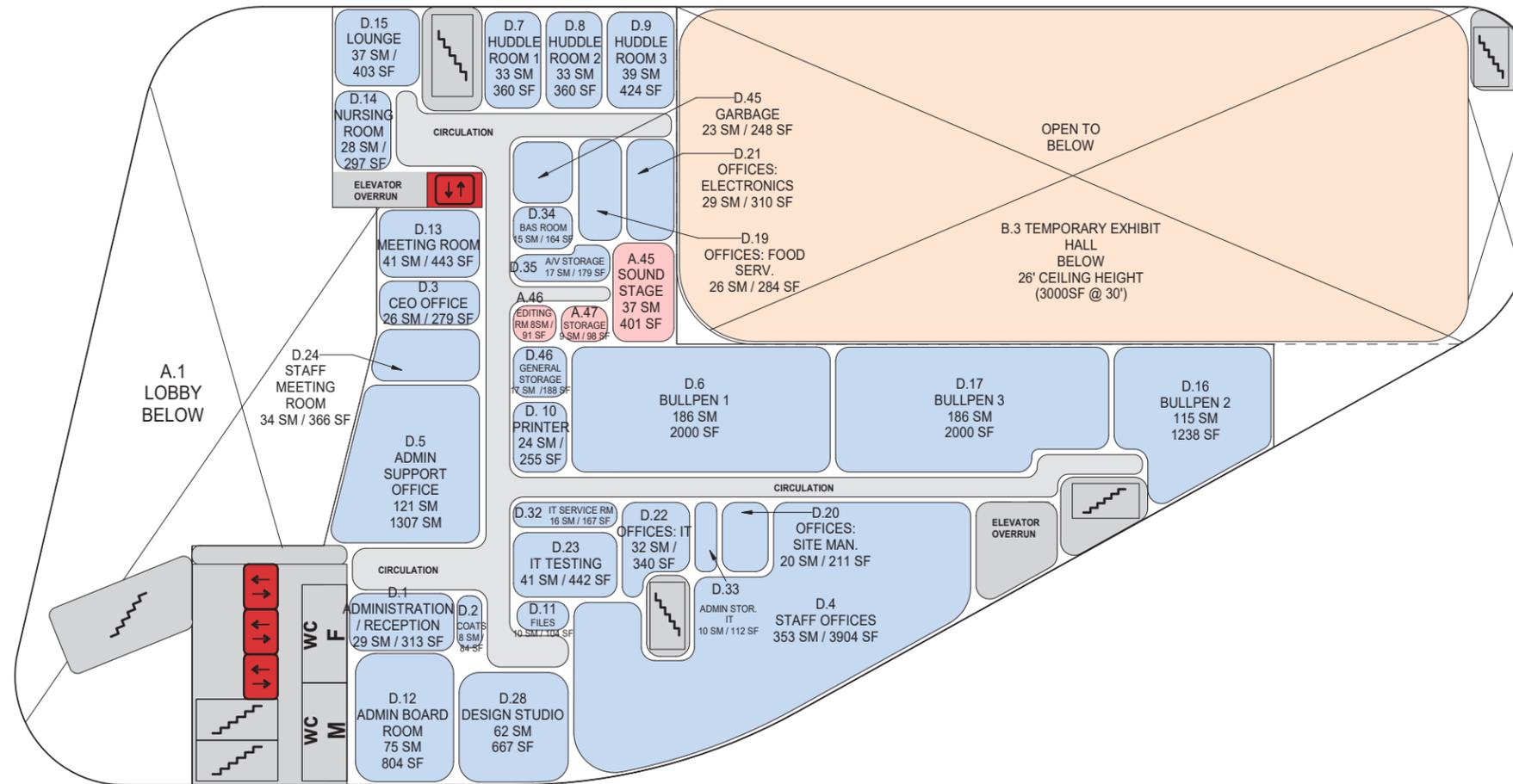
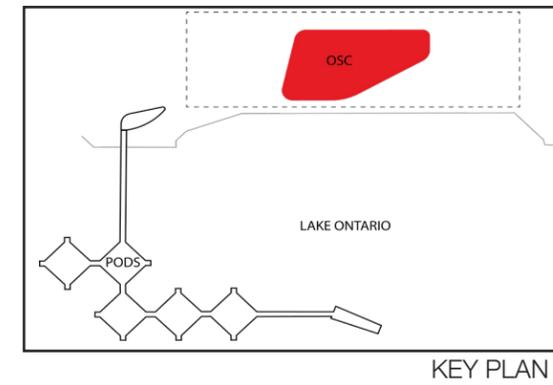


Ground Floor

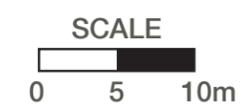


Legend:

- Zone A
- Zone D
- Zone B
- Zone E
- Zone C
- Circulation / Service

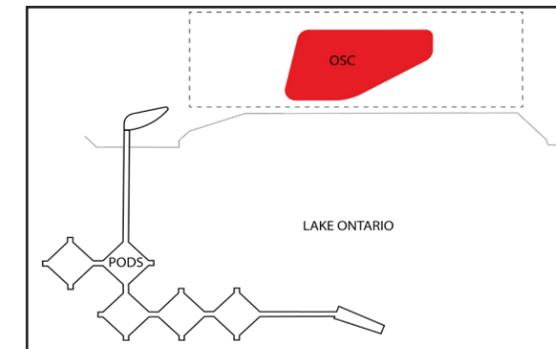


Second Floor

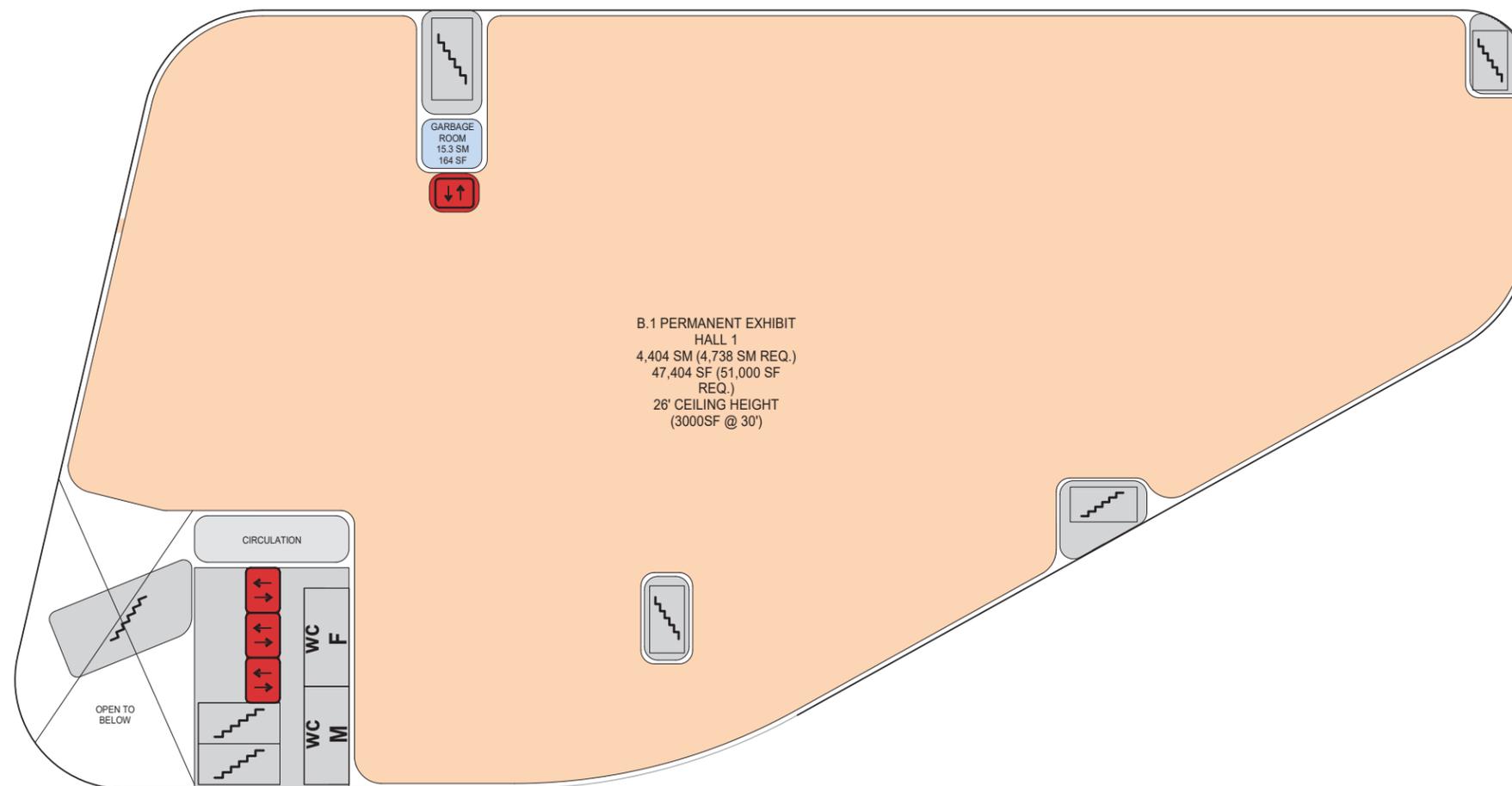


Legend:

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- Circulation / Service



KEY PLAN

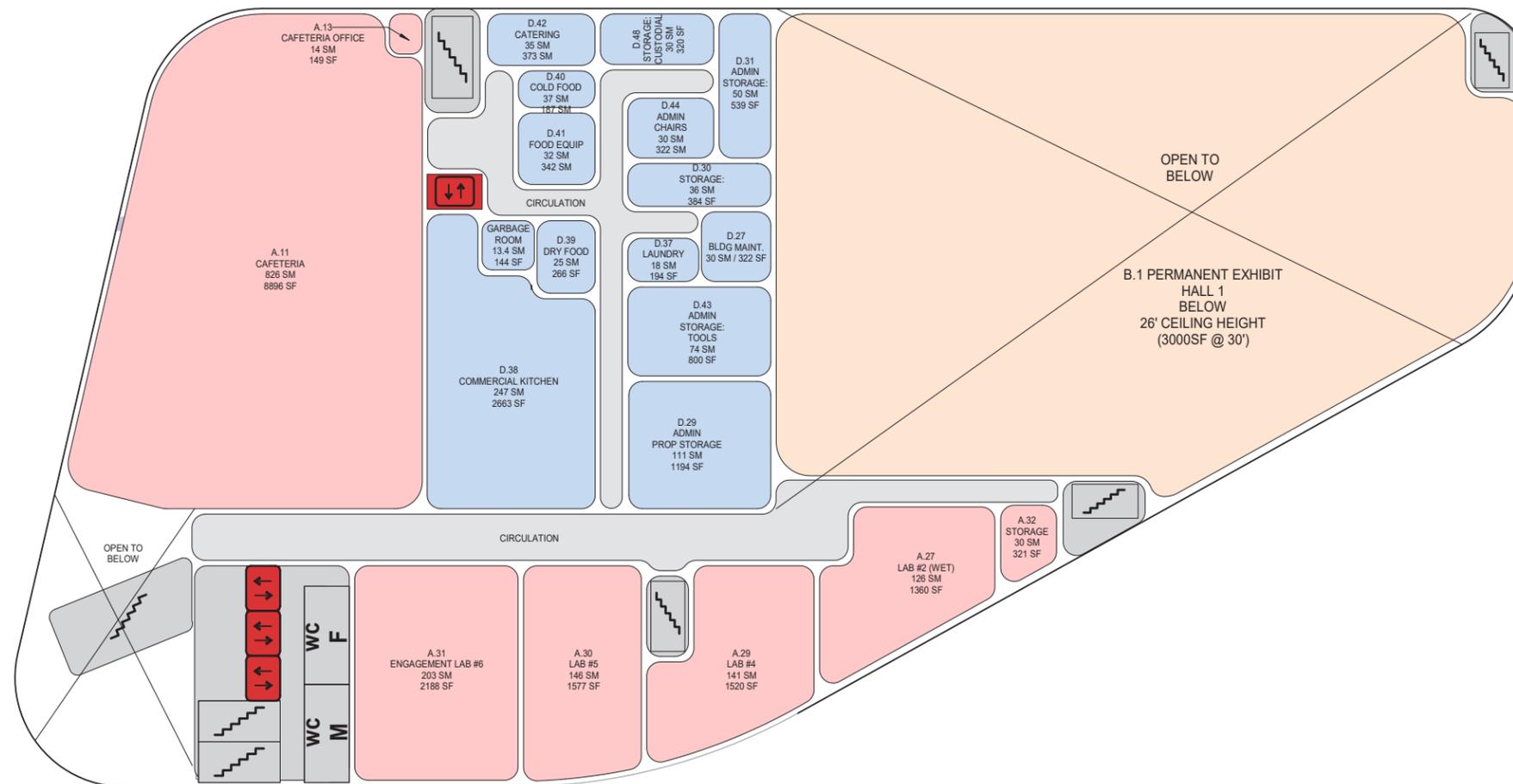
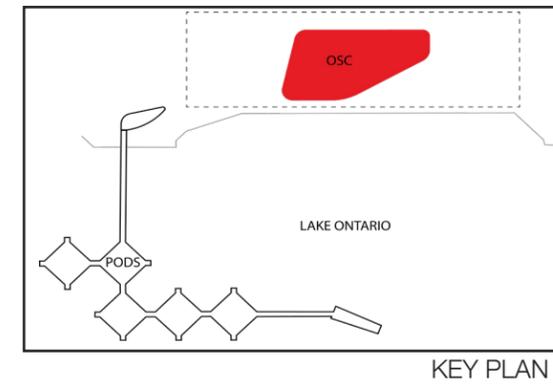


Third Floor



Legend:

- Zone A
- Zone D
- Zone B
- Zone E
- Zone C
- Circulation / Service

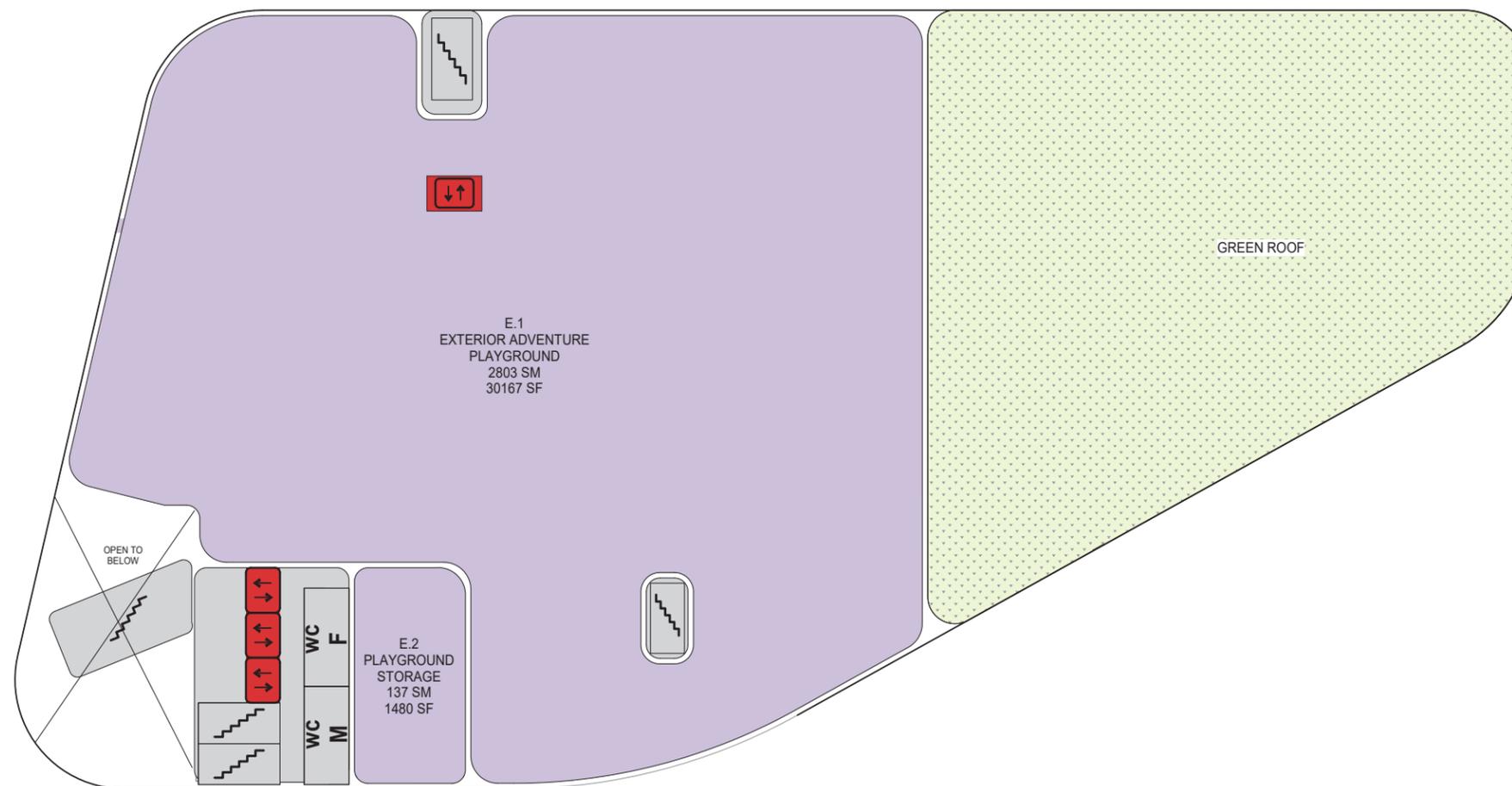
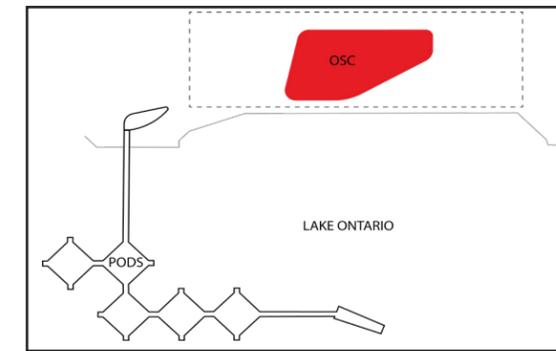


Fourth Floor

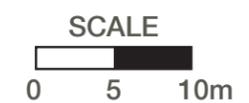


Legend:

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- Circulation / Service

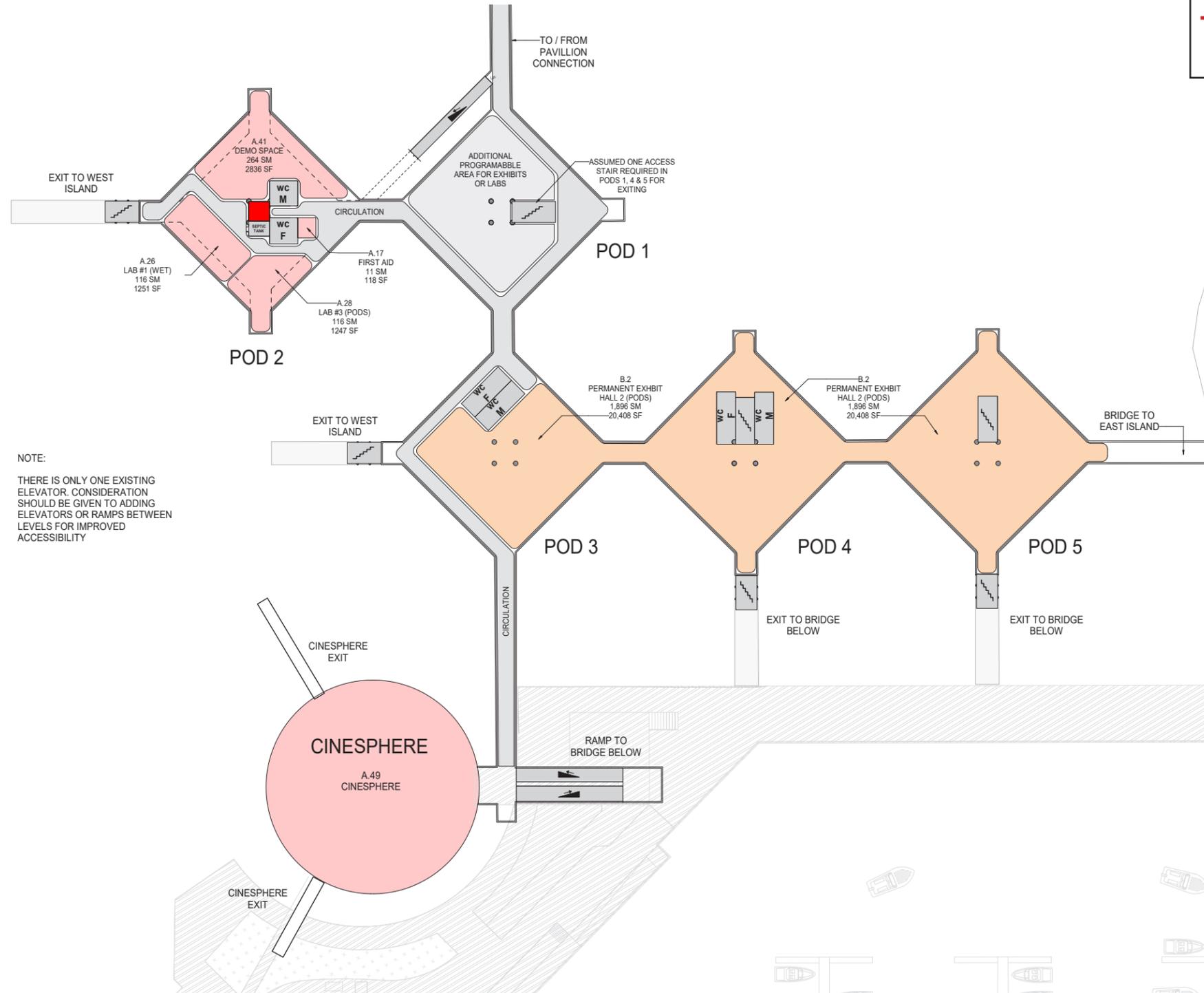
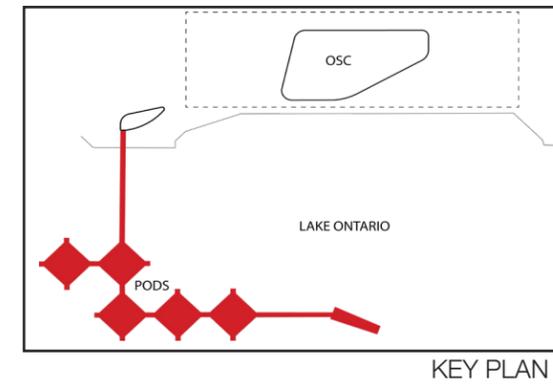


Roof Level



Legend:

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- Circulation / Service

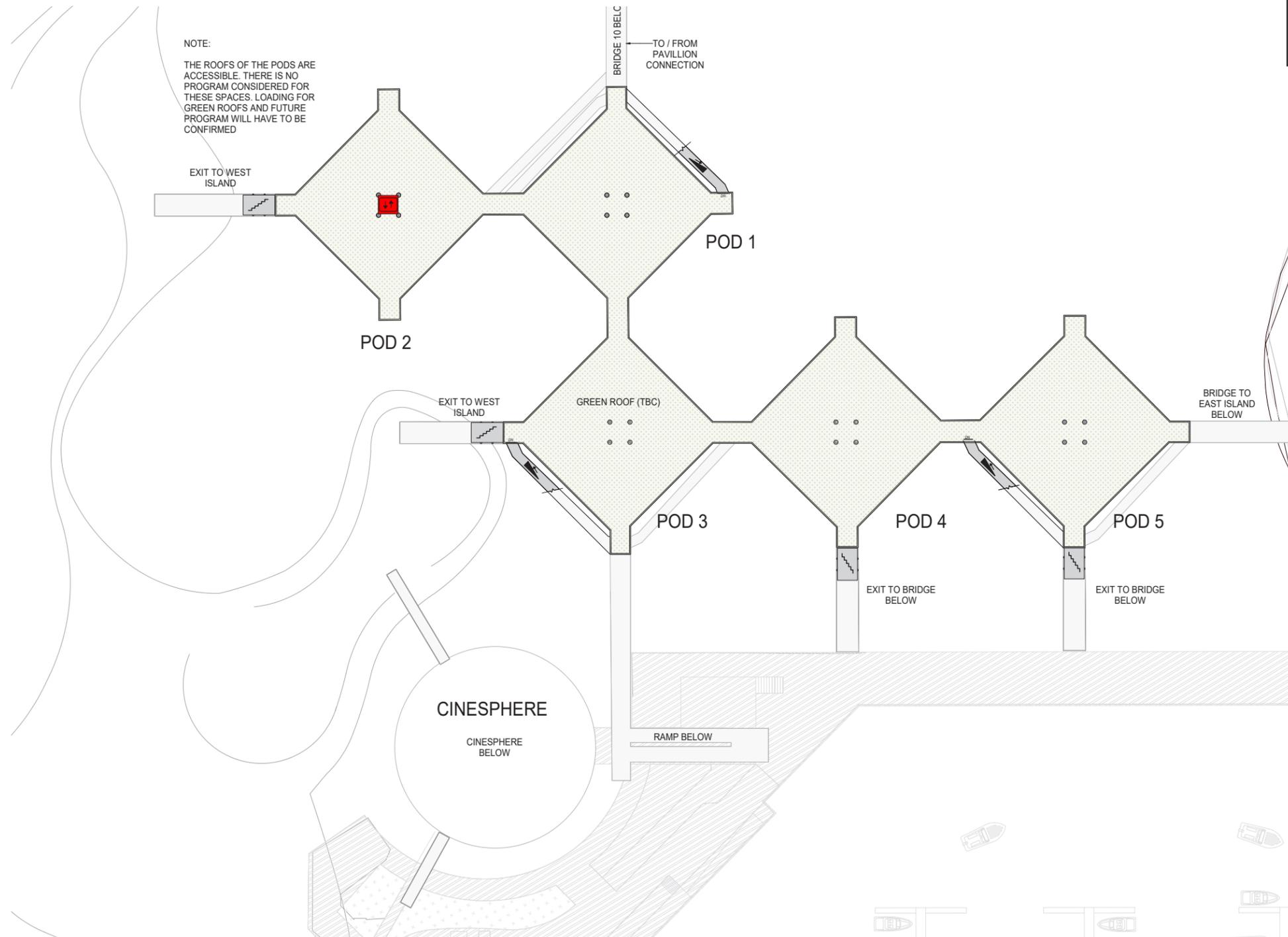
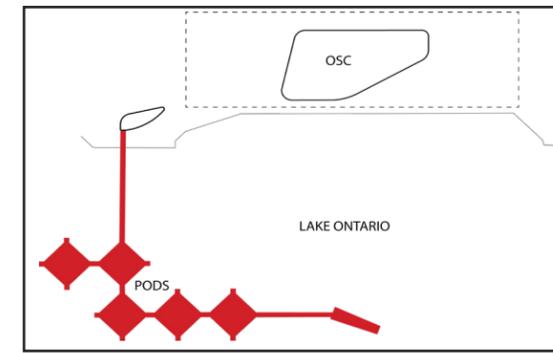


Pods Level 1



Legend:

- Zone A
- Zone B
- Zone C
- Zone D
- Zone E
- Circulation / Service



Pods Roof



Floor	GBA Gross Building Area (no exclusions)		GFA Exemptions (sm)	GFA	
	sm	sf		sm	sf
Roof					
Roof	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	3,031.0	32,625.1	0.0	3,031.0	32,625.1
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	139.6	1,503.1	139.6	0.0	0.0
Elevators	35.1	377.8	35.1	0.0	0.0
Garbage Room	19.9	214.4	19.9	0.0	0.0
ROOF SUB-TOTAL	3,225.6	34,720.4	194.7	3,031.0	32,625.1
Floor 4					
Fourth Floor	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	2,717.8	29,254.7	0.0	2,717.8	29,254.7
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	139.6	1,503.1	139.6	0.0	0.0
Elevators	35.1	377.8	35.1	0.0	0.0
Garbage Room	13.4	144.4	13.4	0.0	0.0
FLOOR 4 SUB-TOTAL	2,906.0	31,280.0	188.2	2,717.8	29,254.7
Floor 3					
Third Floor	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	4,488.2	48,310.5	0.0	4,488.2	48,310.5
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	139.6	1,503.1	139.6	0.0	0.0
Elevators	35.1	378.0	35.1	0.0	0.0
Garbage Room	19.9	214.4	19.9	0.0	0.0
FLOOR 3 SUB-TOTAL	4,682.9	50,406.0	194.7	4,488.2	48,310.5
Floor 2					
Second Floor	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	2,193.1	23,605.9	0.0	2,193.1	23,605.9
M&E	60.9	655.6	60.9	0.0	0.0
Stairs	139.6	1,502.6	139.6	0.0	0.0
Elevators	35.1	378.0	35.1	0.0	0.0
Garbage Room	23.0	247.5	23.0	0.0	0.0
FLOOR 2 SUB-TOTAL	2,451.7	26,389.6	258.6	2,193.1	23,605.9
GROUND FLOOR					
Ground Floor	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	4,016.4	43,232.3	0.0	4,016.4	43,232.3
M&E	6.2	66.6	6.2	0.0	0.0
Stairs	158.1	1,701.3	158.1	0.0	0.0
Elevator Lobbies	106.9	1,150.3	0.0	106.9	1,150.3
Elevators	84.7	911.9	84.7	0.0	0.0
Garbage Room	17.2	185.1	17.2	0.0	0.0
GROUND FLOOR SUB-TOTAL	4,389.4	47,247.5	266.2	4,123.3	44,382.6
PAVILLION BUILDING TOTAL					
	17,655.6	190,043.6	1,102.3	16,553.4	178,178.8

Floor	GBA Gross Building Area (no exclusions)		GFA Exemptions (sm)	GFA	
	sm	sf		sm	sf
Parking Level P1					
Parking Garage	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	970.5	10,446.8	0.0	970.5	10,446.8
Vestibules	19.9	214.4	0.0	19.9	214.4
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	0.0	0.0	0.0	0.0	0.0
Elevator Lobbies	41.3	444.4	0.0	41.3	444.4
Elevators	43.2	464.6	43.2	0.0	0.0
Open to Loading Area	730.6	7,863.6	730.6	0.0	0.0
Washrooms	47.5	511.5	47.5	0.0	0.0
Air shafts & Storage	0.0	0.0	0.0	0.0	0.0
P1 SUB-TOTAL	1,853.0	19,945.3	821.2	1,031.7	11,105.5
Parking Level P2					
Parking Garage	0.0	0.0	0.0	0.0	0.0
Pavillion Program Spaces	1,316.3	14,169.1	0.0	1,316.3	14,169.1
Vestibules	54.9	590.9	0.0	54.9	590.9
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	0.0	0.0	0.0	0.0	0.0
Elevator Lobbies	51.3	552.2	0.0	51.3	552.2
Elevators	41.3	444.5	41.3	0.0	0.0
Loading Area	723.7	7,790.0	723.7	0.0	0.0
Bus Loop	0.0	0.0	0.0	0.0	0.0
Air shafts & Storage	0.0	0.0	0.0	0.0	0.0
P2 SUB-TOTAL	2,187.6	23,546.7	765.0	1,422.5	15,312.2
PAVILLION UNDERGROUND AREA TOTAL					
	4,040.5	43,492.0	1,586.3	2,454.3	26,417.7

PODS LEVEL 1					
Ground Floor	0.0	0.0		0.0	0.0
Pavillion Program Spaces	3,896.2	41,938.3	0.0	3,896.2	41,938.3
M&E	0.0	0.0	0.0	0.0	0.0
Stairs	175.4	1,888.2	175.4	0.0	0.0
Elevator Lobbies	0.0	0.0	0.0	0.0	0.0
Elevators	12.4	133.9	12.4	0.0	0.0
Garbage Room	0.0	0.0	0.0	0.0	0.0
PODS LEVEL 1 SUB-TOTAL	4,084.1	43,960.3	187.9	3,896.2	41,938.3
PODS TOTAL					
	4,084.1	43,960.3	187.9	3,896.2	41,938.3

*Assumes Pods Bridge and Exterior Ramps are not included in GBA

Requested Net OSC Program Area

<p>Total Net Program Area Requested by Lord Cultural Resources:</p> <p>± 16,312 sm</p> <p>± 175,580 sf</p>	
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Note: Net program area does not include circulation space.

Provided Gross OSC Program Area

<p>Gross Area Provided for OSC Program:</p> <p>Total Gross Building Area Provided:</p> <p>± 25,780.2 sm</p> <p>± 277,495 sf</p> <p>Total Gross Floor Area Provided:</p> <p>± 22,904 sm</p> <p>± 246,535 sf</p>	
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Note: Gross area includes all circulation and support space required for operation of the requested net program area.

Statistics GBA / GFA Summary				
TOTALS			sm	sf
	Total Above Grade GBA		17,655.6	190,043.6
	Total OSC Below Grade GBA		4,040.5	43,492.0
	Total Pods GBA		4,084.1	43,960.3
	Total OSC Program GBA		25,780.2	277,495.9 *
	* Not Including U/G Pods Connection			
	Total Above Grade GFA		16,553.4	178,178.8
	Total OSC Below Grade GFA		2,454.3	26,417.7
	Total Pods GFA		3,896.2	41,938.3
	Total OSC Program GFA		22,903.8	246,534.8 *
* Not Including U/G Pods Connection				

Assumptions and Exclusions:

GBA:

No By-law definition has been provided. For this project, Gross Building Area shall mean; the aggregate area of each floor measured from the exterior side of the exterior walls. Excludes only balconies, open to below areas as noted, and terraces. Includes all shafts, stairs, loading areas, below grade parking, and mechanical penthouses.

GFA:

as per By-law 569-2013, Gross Floor Area shall mean; the sum of the total area of each floor level of a building, above and below the ground, measured from the exterior of the main wall of each floor level.

30.5.40.40(1) Gross Floor Area Calculations for a Non-residential Building in a Commercial Zone Category

In the Commercial Zone category the gross floor area of a non-residential building is reduced by the area in the building used for:

- (A) required parking, loading and bicycle parking below-ground;
- (B) required loading spaces at the ground level and required bicycle parking spaces at or above-ground;
- (C) storage rooms, washrooms, electrical, utility, mechanical and ventilation rooms in the basement;
- (D) shower and change facilities and bicycle maintenance facilities required by this By-law for required bicycle parking spaces; [By-law: 839-2022]
- (E) elevator shafts;
- (F) mechanical penthouse; and
- (G) exit stairwells in the building.

NRGFA (Non Residential Gross Floor Area) as per By-law 569-2013 has been interpreted to exclude;

A Room or enclosed area, including its enclosing walls above or below grade that is used for heating, cooling, ventilation, CACF, mechanical or electrical equipment; required Loading facilities, moving rooms, service corridors, or Garbage rooms.

Statistics Summary

			OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED				
Zone	Functional Category	Space Name	Net Area Required(sf)	Net Area Required(sm)	Net Area Provided(sf)	Net Area Provided(sm)	Preferred Location	Location on Drawings	Critical Adjacencies
A		Building Entry and Visitor Amenities	26,650	2,476	36,259	3,369			
A.1	Visitor Care Space	Atrium / Lobby "Wow Experience"	6,000	557	10,304	957	New Building	Ground Floor	A.2, A.3
A.2	Visitor Care Space	Student, Camp and Group Intake / Marshalling	5,000	465	7,970	740	New Building	P1 & P2 Level	A.1
A.3	Visitor Care Space	Cloakroom / Lockers	1,000	93	1,029	96	New Building	P1 Level	A.2
A.4	Visitor Care Space	Public "Brown Bag" Lunch Area	Included in A.2	Included in A.2	-	-	New Building	P1 and P2 Level	A.2
A.5	Visitor Care Space	Ticketing Kiosks	Included in A.1	Included in A.1	-	-	New Building	Ground Floor	A.1
A.6	Visitor Care Space	Visitor Services / Admissions / Memberships	1,000	93	1,054	98	New Building	Ground Floor	A.1
A.7	Visitor Care Space Support	Admissions Office / Cash Room	100	9	171	16	New Building	Ground Floor	A.6
A.8	Visitor Care Space	Retail / Gift Shop	2,500	232	3,143	292	New Building	Ground Floor	A.1
A.9	Visitor Care Space Support	Gift Shop Office / Merchandise Storage	500	46	552	51	New Building	Ground Floor	A.8
A.10	Visitor Care Space	Retail Kiosks - Distributed (x4)	Distributed	Distributed	-	0	New Building and Pods	New Building and Pods	Distributed
A.11	Visitor Care Space	Cafeteria and Seating - Main	8,000	743	8,896	826	New Building	Level 4	One Pod (possibly mezzanine)
A.12	Visitor Care Space	Cafeteria and Seating - Satellite	1,000	93	1,117	104	New Building	Ground Floor	A.1
A.13	Visitor Care Space Support	Cafeteria Office / Cash Room	100	9	149	14	Pods	Pods Level 1	A.11
A.14	Visitor Care Space Support	Strollers and Wheelchair Storage	400	37	458	43	New Building	Ground Floor	A.3
A.15	Storage	Miscellaneous Lobby Storage	200	19	540	50	New Building	Ground Floor	A.1
A.16	Visitor Care Space	First Aid / Sick Room 1	350	33	361	34	New Building	P1 Level	A.1
A.17	Visitor Care Space	First Aid / Sick Room 2	100	9	118	11	Pods	Pods Level 1	Pods
A.18	Visitor Care Space	Visitor Care Room	400	37	397	37	New Building	P1 Level	A.1
A.19	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	GFA	-	-	Distributed	Distributed	
A		Education (Science School)	2,600	242	2,657	247			
A.20	Engagement Space (Exhibits/Programs)	Science School Classroom #1 WET	1,000	93	1,006	93	New Building	P1 Level	A.21
A.21	Engagement Space (Exhibits/Programs)	Science School Classroom #2 DRY	1,000	93	1,000	93	New Building	P1 Level	A.20
A.22	Storage	Secure Chemical Storage	100	9	110	10	New Building	P1 Level	A.20
A.23	Storage	Specimen Storage Cold	100	9	110	10	New Building	P1 Level	A.20
A.24	Engagement Space (Exhibits/Programs)	Student Lounge/Lockers/Kitchenette	400	37	431	40	New Building	P1 Level	A.20, A.21
A.25	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	GFA			New Building	New Building	
A		Engagement Spaces (Exhibit/Program TBD)	12,500	1,161	13,271	1,233			
A.26	Engagement Space (Exhibits/Programs)	Workshop (Lab) #1 - Wet Lab	1,250	116	1,251	116	Pods	Pods Level 1	A.28

			OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED				
Zone	Functional Category	Space Name	Net Area Required(sf)	Net Area Required(sm)	Net Area Provided(sf)	Net Area Provided(sm)	Preferred Location	Location on Drawings	Critical Adjacencies
A.27	Engagement Space (Exhibits/Programs)	Workshop (Lab) #2 - Wet Lab	1,250	116	1,356	126	New Building	Level 4	A.29,A.30
A.28	Engagement Space (Exhibits/Programs)	Workshop (Lab) #3	1,250	116	1,247	116	Pods	Pods Level 1	A.26
A.29	Engagement Space (Exhibits/Programs)	Workshop (Lab) #4	1,500	139	1,520	141	New Building	Level 4	A.27, A30
A.30	Engagement Space (Exhibits/Programs)	Workshop (Lab) #5	1,500	139	1,577	147	New Building	Level 4	A.29, A.27
A.31	Engagement Space (Exhibits/Programs)	Workshop (Lab) #6 - Escape Room	2,000	186	2,188	203	New Building	Level 4	A.30
A.32	Storage	Workshops: Dedicated Storage	300	28	323	30	New Building	Level 4	
A.33	Engagement Space (Exhibits/Programs)	Maker Space	2,500	232	2,851	265	New Building	Ground Floor	A.1,A.2, B.1
A.34	Engagement Space (Exhibits/Programs)	Change Room / Lockers (Camps and Maker Spaces)	500	46	502	47	New Building	Ground Floor	A.33
A.35	Storage	Maker Space: Dedicated Storage	450	42	456	42	New Building	Ground Floor	A.33
A.36	Visitor Care Space	Gender Neutral / Family Restrooms	GFA	GFA			Distributed	Distributed	
A		Engagement Spaces (Exhibit/Program TBD)	8,880	825	9,405	874			
A.37	Engagement Space (Exhibits/Programs)	Prototyping Lab - Maker	2,500	232	2,545	236	New Building	Ground Floor	A.33
A.38	Engagement Space (Exhibits/Programs)	Prototyping Lab - "Research Live"	1,000	93	1,184	110	New Building	Ground Floor	B.1
A.39	Engagement Space (Exhibits/Programs)	Prototyping Lab - Staff Office	100	9	109	10	New Building	Ground Floor	B.1
A.40	Storage	Prototyping Lab - Storage	400	37	411	38	New Building	Ground Floor	B.1
A.41	Engagement Space (Exhibits/Programs)	Science Demonstration Space 1	2,800	260	2,836	263	Pods	Pods Level 1	B.1
A.42	Engagement Space (Exhibits/Programs)	Science Demonstration Space 2	1,000	93	1,214	113	New Building	Ground Floor	B.1
A.43	Storage	Educator Prep Prop Room / Storage (SDH)	300	28	303	28	New Building	Ground Floor	A.43
A.44	Storage	Secure Chemical Storage and Prep (SDH)	200	19	213	20	New Building	Ground Floor	A.43
A.45	Building Support	Sound Stage / Studio	400	37	401	37	New Building	Level 2	Administrative area
A.46	Building Support	Production, Sound and Editing Room	100	9	91	8	New Building	Level 2	A.46
A.47	Storage	Production Studio - Storage Room	80	7	98	9	New Building	Level 2	A.46
A		Engagement Spaces (Exhibit/Program TBD)	0	0	0	0			
A.48	Engagement Space (Exhibits/Programs)	Planetarium	0	0			TBD. Future "add on"	TBD. Future "add on"	A.1
A.49	Engagement Space (Exhibits/Programs)	Cinesphere (including interior circulation)	0	0			Cinesphere	Cinesphere	
A.50	Engagement Space (Exhibits/Programs)	Gender Neutral / Family Restrooms	GFA	GFA			Distributed	Distributed	
B		Engagement Space (Exhibition)	88,000	8,175	83,287	7,738			
B.1	Engagement Space (Exhibits/Programs)	Permanent Exhibit Hall 1	51,000	4,738	47,404	4,404	New Building	Level 3	B.3, E.1, A.41

OSC Program

			OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED				
Zone	Functional Category	Space Name	Net Area Required(sf)	Net Area Required(sm)	Net Area Provided(sf)	Net Area Provided(sm)	Preferred Location	Location on Drawings	Critical Adjacencies
B.2	Engagement Space (Exhibits/Programs)	Permanent Exhibit Hall 2	22,000	2,044	20,408	1,896	Pods	Pods Level 1	Pods
B.3	Engagement Space (Exhibits/Programs)	Temporary Exhibit Halls	15,000	1,394	15,475	1,438	New Building	Ground floor	B.1, E.1
B.4	Engagement Space (Exhibits/Programs)	Gender Neutral / Family Restrooms	GFA	GFA	0		Distributed	Distributed	
C		Exhibit Support Spaces	11,400	1,059	14,317	1,330			
C.1	Visitor Care Space	Adult / Accessible Changing Room	700	65	700	65	New Building	P2 Level	B.1
C.2	Storage	Kidspark: Supplies Storage	600	56	612	57	New Building	P2 Level	B.1
C.3	Building Support	Kidspark: Dedicated Laundry Room	200	19	201	19	New Building	P2 Level	B.1
C.4	Visitor Care Space	Kidspark: Dedicated Restrooms	GFA	GFA			New Building	New Building	B.1
C.5	Building Support	Exhibit Maintenance Open Work Area	800	74	1,219	113	New Building	P2 Level	B.1
C.6	Building Support	Enclosed Collection Loading Bay	1,600	149	1,623	151	New Building	P2 Level	C.6
C.7	Building Support	Shipping / Receiving	3,000	279	3,017	280	New Building	P2 Level	C.6
C.8	Building Support	Crating / Uncrating Area	800	74	2,759	256	New Building	P2 Level	C.6
C.9	Office Space	Shipping / Receiving Security Station incl. Offices	500	46	691	64	New Building	P2 Level	C.6
C.10	Storage	Isolation / Quarantine	100	9	168	16	New Building	P2 Level	C.6
C.11	Storage	Crate Storage	800	74	768	71	New Building	P2 Level	C.6
C.12	Storage	Temporary Exhibits (Transit) Storage Area	800	74	770	72	New Building	P2 Level	C.6
C.13	Building Support	Clean Workshop / Exhibition Prep.	1,500	139	1,789	166	New Building	P2 Level	C.6
D		Administrative - OSC	14,000	1,301	14,401	1,338			
D.1	Office Space	Reception and Waiting	250	23	277	26	New Building	Level 2	Administrative area
D.2	Office Space	Coat Closet	50	5	65	6	New Building	Level 2	Administrative area
D.3	Office Space	Office CEO	250	23	279	26	New Building	Level 2	Administrative area
D.4	Office Space	Offices: OSC Senior Leadership and Staff	3,600	334	3,804	353	New Building	Level 2	Administrative area
D.5	Office Space	Open Workstations: Admin Support	1,300	121	1,307	121	New Building	Level 2	Administrative area
D.6	Office Space	Bullpen - Open Work Area (Frontline Staff)	2,000	186	2,000	186	New Building	Level 2	Administrative area
D.7	Meeting Space	Flex / Work "Huddle" Room #1	350	33	360	33	New Building	Level 2	Administrative area
D.8	Meeting Space	Flex / Work "Huddle" Room #2	350	33	360	33	New Building	Level 2	Administrative area
D.9	Meeting Space	Flex / Work "Huddle" Room #3	350	33	424	39	New Building	Level 2	Administrative area
D.10	Storage	Printer / Photocopy / Supplies	250	23	255	24	New Building	Level 2	Administrative area
D.11	Storage	Secure Hard Copy Records / File Storage	100	9	78	7	New Building	Level 2	Administrative area
D.12	Meeting Space	Board / Committee Meeting Room	800	74	849	79	New Building	Level 2	Administrative area
D.13	Meeting Space	Internal Management / Staff Meeting Room	450	42	443	41	New Building	Level 2	Administrative area
D.14	Building Support	Staff Lactation Room	300	28	297	28	New Building	Level 2	Administrative area

OSC Program

			OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED				
Zone	Functional Category	Space Name	Net Area Required(sf)	Net Area Required(sm)	Net Area Provided(sf)	Net Area Provided(sm)	Preferred Location	Location on Drawings	Critical Adjacencies
D.15	Building Support	Staff Lounge / Kitchenette / Lunchroom	400	37	403	37	New Building	Level 2	Administrative area
D.16	Office Space	Bullpen - Open Work Area (Volunteers)	1,200	111	1,200	111	New Building	Level 2	Administrative area
D.17	Office Space	Bullpen - Open Work Area (Student Employees)	2,000	186	2,000	186	New Building	Level 2	Administrative area
D.18	Office Space	Gender Neutral Restrooms	GFA	GFA			Distributed	Distributed	Administrative area
D		Administrative - Support	1,750	163	1,953	181			
D.19	Office Space	Offices - Food Services	200	19	284	26	New Building	Level 2	Administrative area
D.20	Office Space	Offices - Site Managers	200	19	211	20	New Building	Level 2	Administrative area
D.21	Office Space	Offices - Electronics Team	300	28	310	29	New Building	Level 2	Administrative area
D.22	Office Space	Offices - IT Team	300	28	340	32	New Building	Level 2	Administrative area
D.23	Building Support	IT Testing and Training Room	400	37	442	41	New Building	Level 2	Administrative area
D.24	Meeting Space	Infrastructure Ontario / Services Staff Meeting Room	350	33	366	34	New Building	Level 2	Administrative area
D.25	Building Support	Staff Lockers and Showers	GFA	GFA			New Building	New Building	Administrative area
D		Building Support	9,800	910	9,954	925			
D.26	Building Support	Staff / Maintenance Entry	GFA	GFA			New Building	New Building	E.12
D.27	Building Support	Building Maintenance Work Area	250	23	322	30	New Building	Level 4	D.43
D.28	Building Support	Graphics and Design Studio (incl. Storage)	600	56	890	83	New Building	Level 2	
D.29	Storage	Exhibit Case / Prop Storage	1,200	111	1,194	111	New Building	Level 4	C.6
D.30	Storage	Exhibit Lighting / Electrical Storage	400	37	384	36	New Building	Level 4	D.30,D31
D.31	Storage	Electronics Workshop and Storage	500	46	539	50	New Building	Level 4	D.30,D31
D.32	Building Support	IT Server Room	125	12	167	16	New Building	Level 2	D.32, D.33, D.34
D.33	Storage	IT Asset Storage Room	100	9	112	10	New Building	Level 2	D.32, D.33, D.34
D.34	Building Support	BAS Room	150	14	164	15	New Building	Level 2	D.32, D.33, D.34
D.35	Storage	AV Storage Room	150	14	179	17	New Building	Level 2	D.32, D.33, D.35
D.36	Storage	AV Closets (Distributed)	GFA	GFA	GFA	GFA	New Building	New Building	Distributed
D.37	Building Support	Laundry Room - Industrial	250	23	194	18	New Building	Level 4	D.37, D.38
D.38	Visitor Care Space Support	Food Services: Commercial Kitchen	2,500	232	2,663	247	New Building	Level 4	D.37, D.38
D.39	Storage	Food Services: Dry Storage / Consumables	250	23	266	25	New Building	Level 4	D.38
D.40	Storage	Food Services: Cold Storage	200	19	187	17	New Building	Level 4	D.38
D.41	Storage	Food Services: Equipment Storage	350	33	342	32	New Building	Level 4	D.38
D.42	Visitor Care Space Support	Food Services: Catering Staging Area	300	28	373	35	New Building	Level 4	D.38
D.43	Storage	General Building / Equipment and Tool Storage	800	74	800	74	New Building	Level 4	D.27
D.44	Storage	Table and Chair Storage (General)	700	65	322	30	New Building	Level 4	
D.45	Building Support	Garbage and Recycling Room / Compactor	250	23	248	23	New Building	Level 2	

			OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED					
Zone	Functional Category	Space Name	Net Area Required(sf)	Net Area Required(sm)	Net Area Provided(sf)	Net Area Provided(sm)	Preferred Location	Location on Drawings	Critical Adjacencies	
D.46	Storage	General Building / Misc Storage	175	16	188	17	New Building	Level 2		
D.47	Storage	Chemical / Hazardous Storage and Disposal	100	9	100	9	New Building	Level 4		
D.48	Storage	Custodial Centre / Storage	450	42	320	30	New Building	Level 4		
D.49	Storage	Custodial Closets	GFA	GFA	GFA	GFA	New Building	New Building	Distributed	
D.50	Building Support	Freight / Service Elevator	GFA	GFA	GFA	GFA	New Building	New Building		
D.51	Building Support	Gender Neutral Restrooms	GFA	GFA	GFA	GFA	Distributed	Distributed		
E		Exterior	Not Counted in Building Net Area							
E.1	Exterior	Adventure Playground (Ticketed)	30,000	2,787	30882	2869	Exterior	Level 4	A.33	
E.2	Exterior	Dedicated Storage (Adventure Playground)	1,500	139	1615	150	Exterior	Level 4	A.33	
E.3	Exterior	Rootop Observation Experience	0	0			Exterior	Exterior	A.48	
E.4	Exterior	Green Roof	TBD	TBD			Exterior	Exterior		
E.5	Exterior	Exterior Lockers - Covered	0	0			Exterior	Exterior	E.7	
E.6	Exterior	Outdoor Café Seating	0	0			Exterior	Exterior	E.7	
E.7	Exterior	Entry Plaza / Outdoor Activity (Non Ticketed)	0	0			Exterior	Exterior	A.1	
E.8	Exterior	Car / Taxi / Valet Drop-off	0	0			Exterior	Exterior	A.1	
E.9	Exterior	School Bus Queuing / Parking	0	0			Exterior	Exterior	A.1	
E.10	Exterior	Bicycle Parking	0	0			Exterior	Exterior	A.1	
E.11	Exterior	Guest Parking	0	0			Exterior	Exterior		
E.12	Exterior	Service Parking	0	0			Exterior	Exterior	D.26	
E.13	Exterior	Exterior Service Loading Area	0	0			Exterior	Exterior		
E.14	Exterior	Exterior Refuse Bins	0	0			Exterior	Exterior		
NET AREA SUB TOTAL (New Building and Pods)			175,580	16,312	185,505	17,234				

OSC Program Area Summary

Summary Totals Per Functional Category	OSC PROGRAM REQUIREMENTS		BDPQ PROVIDED	
	Net Area (sf)	Net Area (sm)	Net Area Provided (sf)	Net Area Provided (sm)
Engagement Space (Exhibits/Programs)	109,550	10,178	106,105	9,857
Office Space	12,150	1,129	11,568	1,186
Meeting Space	2,650	246	2,802	260
Building Support	11,125	1,034	14,227	1,322
Storage	10,155	943	10,148	943
Visitor Care Space	26,050	2,420	35,089	3,260
Visitor Care Space Support	3,900	362	4,366	406
Total Net Area	175,580	16,312	184,305	17,234

Summary Totals by Location	Net Area (sf)	Net Area (sf)	Net Area (sf)	Net Area (sf)
New Building	135,580	12,596	139,804	13,540
Pods	40,000	3,716	45,701	3,694
Cinesphere	0	0	0	0
Total Net Area	175,580	16,312	185,505	17,234

- Program Spaces and Areas as per OSC Draft Space List provided by Lord Cultural Resources / Dated 02-Dec-22
- Ontario Place Pods, Cinesphere and Bridge Information taken from Pods Drawings A011 to A016, A101 to A103, A301, A500 to A506, A508, A510 to A513 and A516

OSC Program Summary

Appendix L
Ontario Science Centre Site Land Value Analysis

Confidential and Privileged Advice to Government

3.1.1 Table Lands Option 1

This option explores the development of the table lands based on a transit oriented communities approach which provides opportunities to build vibrant, higher-density, mixed use communities that are connected to transit stations. This option illustrates range of 30- to 45-storey mixed-use buildings along Don Mills Road, with the highest buildings located adjacent to the proposed transit stations.

This option retains the existing Ontario Science Centre Building (Building A – 770 Don Mills Road) and the associated drop off area. The existing building may be retrofitted and/or re-purposed for cultural, institutional, or other non-residential uses.

Non-residential uses may refer to commercial, retail, office or employment uses.

STREETS – This option proposes a series of new streets (18.5m ROW) that extends the proposed road network south from the CreateTO development to align with Rochefort Drive. The existing road network adjacent to the OSC building will be retained.

BUILT FORM – This option proposes a series of high-rise buildings along Don Mills Road. Buildings range from 30- to 45-storeys, with the highest buildings located adjacent to the proposed Flemingdon Park Station, transitioning down from 45-, 40- and 30-storeys and back up-to 35- and 40-storeys towards Eglinton Avenue. The proposed heights and densities transition down towards the existing Ontario Science Centre Building to contribute to a varied skyline and complement the cultural significance and landmark attributes of the Ontario Science Centre Building. Towers are oriented along Don Mills Road with 6-storey podiums serving as the interface to the valley lands.

LAND USE - All buildings include some retail uses at-grade (approximately 25% of the ground-floor) and residential uses above. Furthermore, the building adjacent to Flemingdon Park Station, also proposes non-residential uses within the podium levels of the building.

PARKING - It is assumed that any parking required would be located below-grade, however there may be opportunities to provide parking above-grade, with the proper screening and design. While the subject lands are identified within Parking Zone A in the recently-revised city-wide parking standards, the parking calculations in this report have utilized provisions of Parking Zone B to capture the regional nature of the subject lands' future redevelopment. Similar to the existing Ontario Science Centre, future institutional uses on the subject lands are anticipated to draw visitors from beyond the city limits, therefore requiring a higher rate of parking.

DENSITY – The overall density for this option is 4.27 FSI.

PARKS AND OPEN SPACE – The existing park/ front lawn is proposed to serve as a key focal point within the lands, connecting the northern and southern portions of the site, and serving as the arrival point or gateway to the OSC building and connections to the valley. A series of mid-block connections are also envisioned between buildings to enhance pedestrian porosity and to connect any proposed publicly accessible open spaces (or courtyards).

DEVELOPMENT SUMMARY

TOTAL DEVELOPMENT AREA: 51,370 sm
(12.69ac)

TOTAL UNITS: 1,882 units

TOTAL GFA: 219,536 sm

Total Residential GFA: 188,166 sm

Total Non-Residential GFA: 14,785 sm

Total Commercial/Retail GFA: 2,949 sm

Total Institutional (Existing) GFA: 13,636 sm

Total Institutional (New) GFA: 0 sm

TOTAL PARKING: 136 spaces**

***for institutional uses only*

VALUATION SUMMARY (ERNST YOUNG)

The option was valued on an Order-of-Magnitude basis based on a high-level, comparable land sales research. The option allocates 2,057,162 SF of mixed-use multifamily (with surface-level retail), which is valued at a market-derived benchmark of \$160 PSF. In addition, a non-residential component consisting of 159,146 SF was valued at a market benchmark for comparable commercial office developments of \$80 PSF. The values were summed to a total value of \$341,878,000.

VALUATION ASSUMPTIONS - For illustrative purposes, an Order-of-Magnitude cost estimate was considered to account for:

1. Adaptive reuse of the existing OSC welcome pavilion; and,
2. Replacement parking.

Deductions for the average hard and soft costs of providing an estimated 136 surface parking spots netted an OSC value estimate of \$337,588,114. Further deductions for OSC retrofitting costs for the adaptive re-use of the original OSC building netted an average value creation estimate of \$283,769,881.

VALUE INDICATION:

\$283,770,000

Please refer to the Ernst Young OSC Valuation Summary for more details.

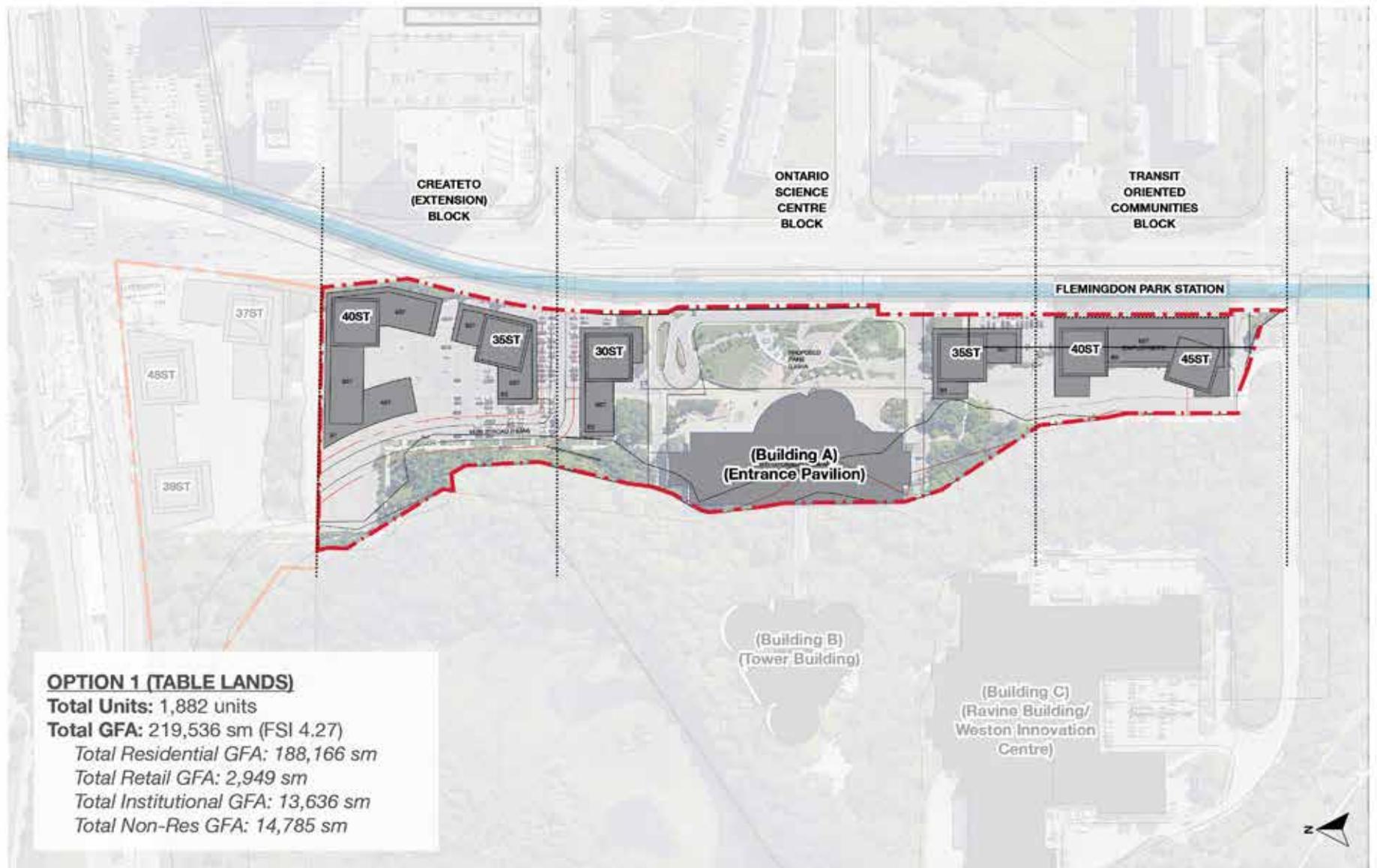


FIGURE 14: Table Lands Option 1 (Retain)



FIGURE 15: Table Lands Option 1 (Retain) - View Looking Northwest

3.1.2 Table Lands Option 2

This option explores the development of the table lands based on a transit oriented communities approach which provides opportunities to build vibrant, higher-density, mixed use communities that are connected to transit stations.

This option illustrates range of 30- to 45-storey mixed-use buildings along Don Mills Road, with the highest buildings located adjacent to the proposed transit stations. In addition to exploring the development of the table lands, this option proposes to restore the original OSC facade by demolishing the existing IMAX portion of and adding an 8-storey addition on top of the retained portions of the building (Building A – 770 Don Mills Road). The existing building may be retrofitted, re-purposed, and added onto for cultural, institutional or other non-residential uses, with additional non-residential GFA provided through the new addition. Non-residential uses may include commercial, office, retail or employment uses.

STREETS – This option proposes a series of new streets (18.5m ROW) that extends the proposed road network south from the CreateTO development to align with Rochefort Drive. The existing road network adjacent to the OSC building will be retained.

BUILT FORM –The proposed heights and densities transition down towards the Ontario Science Centre Building (existing/addition) to contribute to a varied skyline and complement the cultural significance and landmark attributes of the Ontario Science Centre Building. Towers are oriented along Don Mills Road with 6-storey podiums serving as the interface to the valley lands. Specifically, this option proposes a series of high-rise buildings that range from 30 to 45-storeys, with the highest buildings located adjacent to the proposed Flemingdon Park Station, transitioning down from 45-, 40- and 35-storeys and back up-to 30-, 35- and 40-storeys towards Eglinton Avenue.

The existing OSC building has a very elongated and horizontal profile. The addition shall be designed in a way that complements the existing profile of the building while defining it as a landmark within the site and area. The proposed addition will increase the building height to 10-storeys (2-storey existing + 8-storey addition). The shape and form of non-residential floor plates are larger than typical residential floor plates, at approximately 1,500sm, keeping the building low and more elongated. The size, height and form of the building is also aligned with several local and international precedents that inspired the building addition, such as the Ribbon Building Proposal in the Distillery District, the Richmond Peter Building, and the St. Thomas Street Addition in Toronto, Ontario.

LAND USE - This option proposes to demolish the existing IMAX portion of the OSC building, keeping to its original form, and building a new addition (non-residential) on-top. All buildings include some retail uses at-grade (approximately 25% of the ground-floor) and residential uses above. Furthermore, the building adjacent to Flemingdon Park Station, also proposes non-residential uses within the podium levels of the building.

PARKING - It is assumed that any parking required would be located below-grade, however there may be opportunities to provide parking above-grade, where proper screening and design. While the subject lands are identified within Parking Zone A in the recently-revised city-wide parking standards, the parking calculations in this report have utilized provisions of Parking Zone B to capture the regional nature of the subject lands' future redevelopment. Similar to the existing Ontario Science Centre, future institutional uses on the subject lands are anticipated to draw visitors from beyond the city limits, therefore requiring a higher rate of parking.

DENSITY – The overall density for this option is 4.47 FSI.

PARKS AND OPEN SPACE – The existing park/front lawn is envision to serve as a key focal point within the lands, connecting the northern and southern portions of the site, and serving as the arrival point or gateway to the OSC building and connections to the valley. A series of mid-block connections are also envisioned between buildings to enhance pedestrian porosity and to connect any proposed publicly accessible open spaces (or courtyards). With the partial demolition of the IMAX portion of the OSC building, there will also be some opportunities to re-imagine and redesign the new space adjacent to the building.

DEVELOPMENT SUMMARY

TOTAL DEVELOPMENT AREA: 51,370 sm
(12.69ac)

TOTAL UNITS: 1,931 units

TOTAL GFA: 229,696 sm
Total Residential GFA: 193,066 sm
Total Non-Residential GFA: 21,885 sm
Total Commercial/Retail GFA: 2,949 sm
Total Institutional (Existing) GFA: 11,796 sm

TOTAL PARKING: 118 spaces**
***for institutional uses only*

VALUE INDICATION:
\$305,669,000 (Option 2)

Please refer to the Ernst Young OSC Valuation Summary for more details

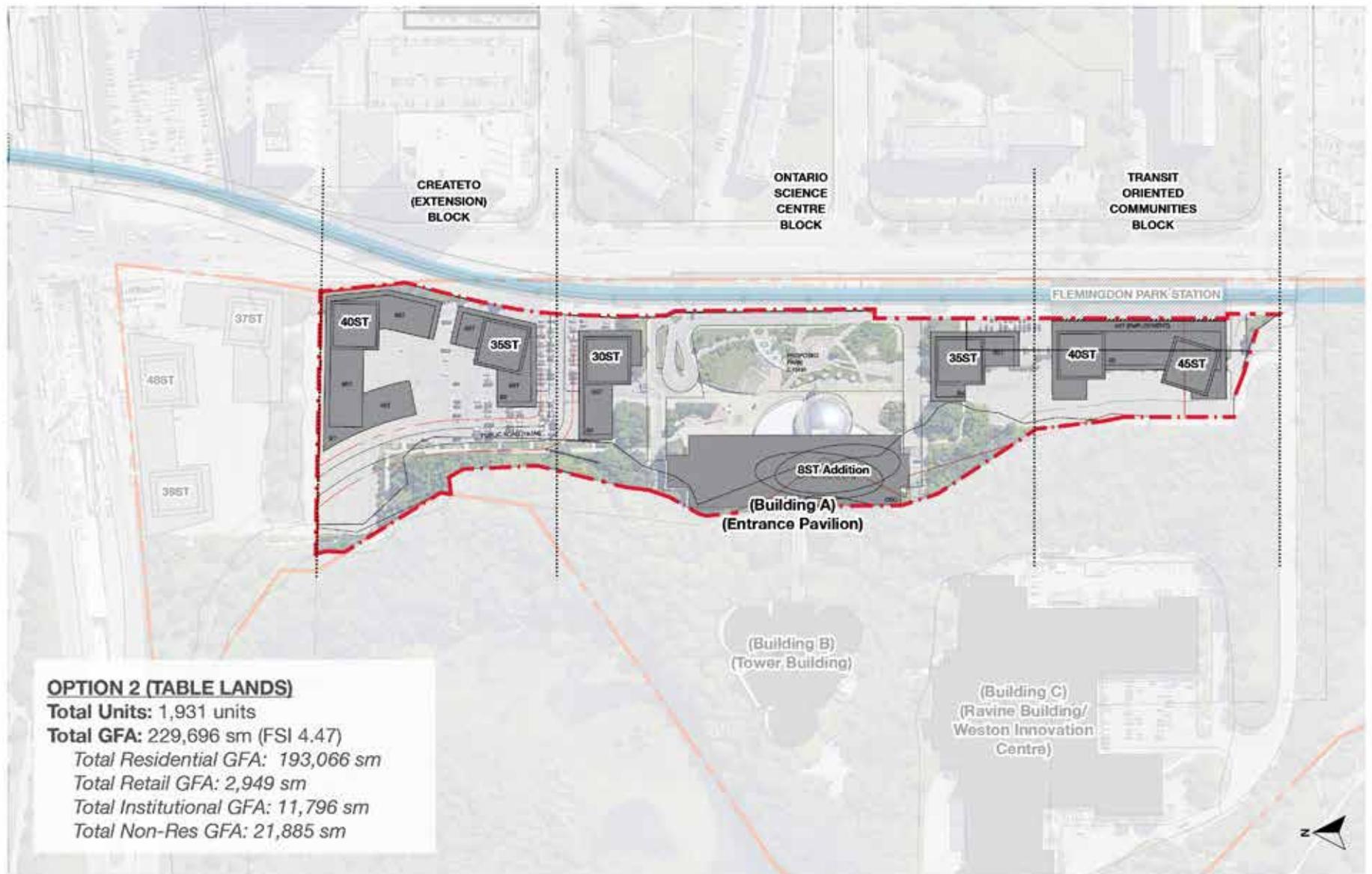


FIGURE 17: Table Lands Option 2 (Retain/Addition)



FIGURE 18: Table Lands Option 2 (Retain/Addition) - View Looking Northwest

3.1.4 Valuation - Bench Marks (EY)

ASSUMPTIONS: Research was conducted by EY on comparable development land sales for alternative uses. Sales data was used to derive various land use value benchmarks per buildable square feet of space (Figure 1), sourced from Altus as well as an internal database. The summarized benchmarks reflect a high-level market estimate, with minimal adjustments made for site-specific attributes. As a caveat, some additional assumptions warranted in the comparable unit value benchmarks derived are:

- / For Senior’s Housing benchmarks, variations in both the type and/or allocation of care delivered will have an impact on the underlying land values, such as long-term care facilities (LTCs) and Assisted/ Independent living facilities.
- / For Affordable Housing benchmarks, variations in the income level for mixed-income properties limit the reliability of a blended market average rate (e.g., 80% market vs. 100% affordable).
- / To better estimate the value of the site under different contemplated uses, EY would recommend that a pro forma is developed, where timing and use allocation may be manipulated to inform estimates of value. The analysis would further benefit in permitting a sensitivity analysis to evaluate yield capitalization assumptions.

In our analysis of comparable unit value benchmarks for the Valley Land component (Section 3.2), a subjective discount of 25% was applied to Commercial Office and Senior’s Housing benchmarks (Figure 2). The discount, derived from primary EY research and secondary data sources, was applied on account of the Valley Land’s impaired accessibility characteristics, and the heritage preservation designation. These factors are estimated to present additional volatility and risk towards proposed developments to the Weston building relative to other development land transactions and warrant a decrease in the unit value benchmarks for proposed uses. As such, an adjusted benchmark of \$60 for Commercial Office and \$89 for Senior’s Housing appears to be better supported for Valley Land development projects.

It should be noted this order-of-magnitude estimate of land value is based on the hypothetical assumed ‘end state’ whereby all transit infrastructure is in place and operational.

Figure 1: Comparable Benchmarks

Land Use	
High-Rise Condominium	\$160
High-Rise Rental	\$140
Commercial Office	\$80
Senior's Housing	\$118
Affordable Housing	\$75

Source: RealNet & EY Research



Figure 2: Comparable Unit Value Benchmarks

	Commercial Office	Senior's Housing
Value Benchmark	\$80	\$118
EY Subjective Discount		
- Impaired access	-25%	-25%
- Heritage preservation		
Adj. Benchmark	\$60	\$89



3.1.5 Valuation - Summary (EY)

The valuation analysis assumed the Subject's Highest & Best Use as a high-density condominium tower, typically with street-facing retail at the base of the towers. To ensure comparability to proposed developments on the Subject site, data was compiled from comparable high-density residential land sales in the northeast Toronto, with the majority situated in proximity to future the Crosstown and/or existing transit service. A time adjustment, calculated to be approximately 4.75% per annum, was supported by a paired sales analysis for a comparably large, mixed-use site in the Leaside sub-market on Eglinton Avenue. The top-line values illustrated (Figure 3) reflect an Order-of-Magnitude value assessment based on a conceptual site design parameter and are subject to further adjustments outlined below.

Secondly, all options presented a non-residential component, estimated to be employment/office space, contributing to the overall mixed-use development. Likewise, Order-of-Magnitude value assessments based on the site design parameters are outlined below (Figure 4).

Lastly, the component values are assumed to determine the gross total value for each option (Figure 6). Adjustments to the combined component value, the sum of the multi-residential and office developments value, are indicated by the following deductions:

1. A deduction for replacement parking, consisting of 136 surface-level stalls or 30,000 square feet based on 200 square feet per stall with an efficiency/gross up of +10%. The average total hard costs and soft costs for the construction of the parking facilities was sourced from the Altus 2022 Cost Guide for the Greater Toronto Area.
2. A deduction for partial/full retrofitting costs of the existing OSC building for Option 1 and Option 2 for new uses as institutional/community space. Retrofitting costs were estimated based on a range of fit-out costs from cost guides and comparable retrofitted projects and were deducted as non-marketable space to be incorporated in the development.
3. A deduction for partial/full demolition costs of the existing OSC building for Option 2 and Option 3. Demolition costs were estimated based on a range of demolition and razing costs from cost guides.

4. A deduction for new community space for Option 3, indicated to be for the construction of a new 4-storey institutional podium. New improvement costs were sourced from the Altus 2022 Cost Guides for the Greater Toronto Area for assumed museum/gallery space as a placeholder for institutional space.

Of note, further analysis would be required by EY to account for the site's planning status (e.g., MZO), the prospect for affordable housing and/or the site's end use (e.g., purpose-built rental). Should additional information surface, EY would incorporate into its determination of the site's valuation.

3.2.1 Valley Lands Option 1

This option proposes to retain Building C (Ravine/Weston Innovation Building) and an additional level (of similar footprint) above the retained portions of the building (Building C – Ravine Lands) and a two-level parking structure in place of the existing surface parking lot. The existing building may be retrofitted, re-purposed, with new cultural, institutional or non-residential/office/employment uses, provided above.

LAND USE SUMMARY

TOTAL AREA: 31,000 sm (7.66 ac)

TOTAL GFA: 40,065 sm (1.29 FSI)

Total Institutional (Existing) GFA: 25,405 sm

Total Institutional (New) GFA: 14,660 sm

Total Parking Structure GFA: 12,700 sm

** Three (3) levels*

TOTAL PARKING: 392 spaces**

***for institutional uses only*

VALUATION SUMMARY (ERNST YOUNG)

The option assumes the non-market transfer of the existing Weston Building facility from one government entity to another, relying on an estimated depreciated capital cost (or “book value”) rather than the market value for the value of the improved property. The value indication rests on the presumption that no capital offset would be required for the other existing improvements, and that the additional density is permitted yet provides no commercial value.

VALUATION ASSUMPTIONS

- / The replacement cost, calculated based on 174,828 square feet of existing space, was valued at a replacement cost of \$709 PSF based on the Altus 2022 Cost Guide. Based on the Subject building’s effective age of 53 years, the Marshall & Swift Depreciation Rate of 80% was used to depreciate the existing improvements. This resulted in a discounted capital cost indication of \$24,796,000 (or approximately \$142/PSF).
- / OSC’s 2020 Annual Report identifies nearly \$11 million (\$10,622,000) of leasehold improvements/capital assets on their balance sheet. It is unclear on how this figure is allocated across the OSC, so the amount would be considered a minimum ‘value’ in the context of a non-profit/intergovernmental transfer.
- / Replacement parking was calculated for a proposed parking facility of 392 spots, deducted from the value indication.

Therefore, the average non-profit value indication for this option is the average of the DCC indication for existing space, and the book value for leasehold improvements from the OSC’s financial statements.

VALUE INDICATION:

\$5,660,000 (or \$32 PSF)

Please refer to the Ernst Young OSC Valuation Summary for more details

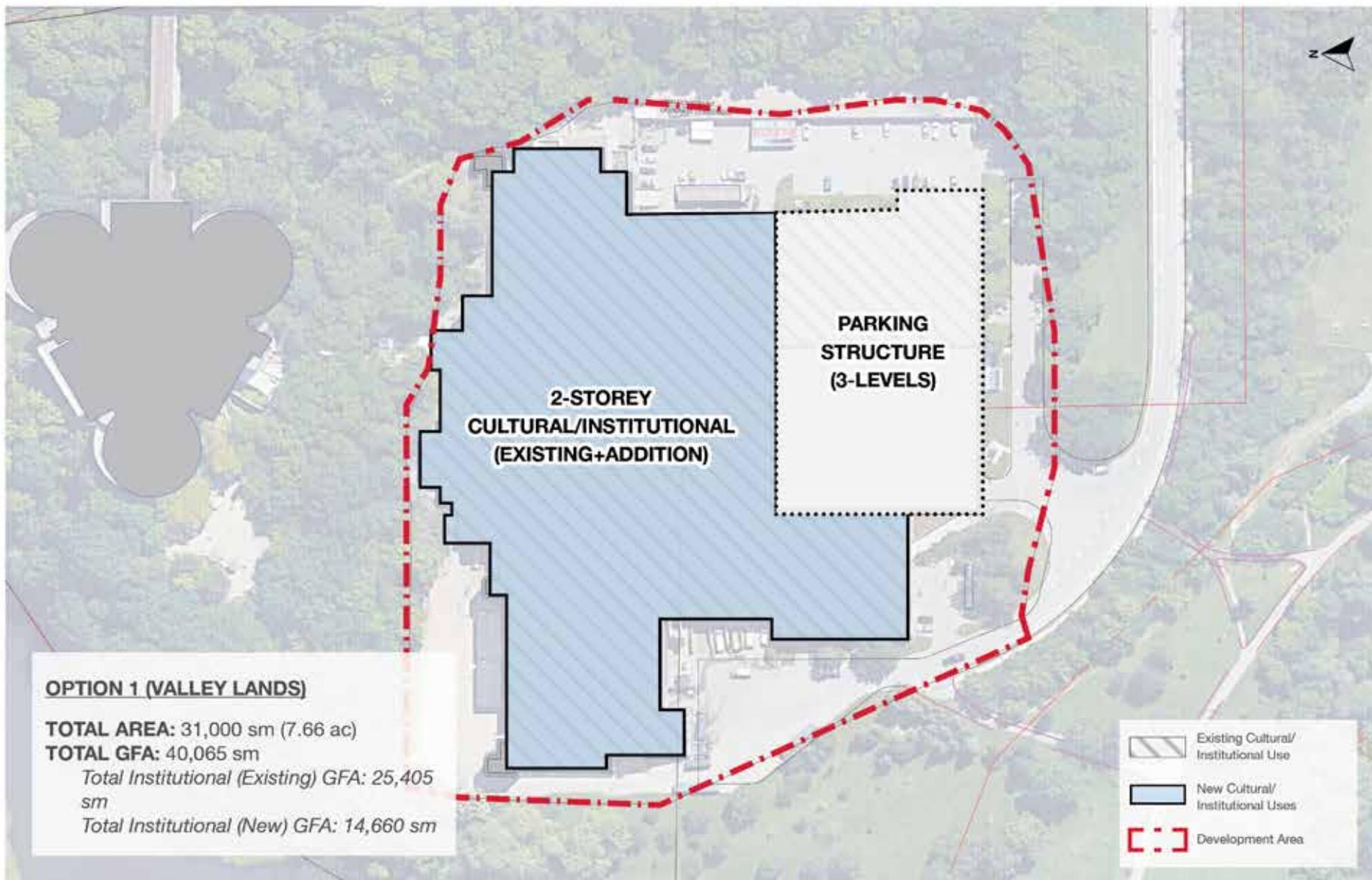


FIGURE 27: Valley Lands Land Use Option 1

3.2.2 Valley Lands Option 2

This option proposes to retain Building C (Ravine/Weston Innovation Building) and adds three additional levels of non-residential/office/employment uses above the eastern portion and one additional level of non-residential/office/employment above the of western portion of the retained building (Building C – Ravine Lands). A two-level parking structure is located in place of the existing surface parking lot. The existing building may be retrofitted, re-purposed, with the new cultural, institutional or non-residential uses, provided above.

LAND USE SUMMARY

TOTAL AREA: 31,000 sm (7.66 ac)

TOTAL GFA: 42,805 sm (1.38 FSI)

Total Institutional (Existing) GFA: 25,405 sm

Total Institutional (New) GFA: 0 sm

*Total Employment/Non-Res/Office (New)
GFA: 17,400 sm*

Total Parking Structure GFA: 12,700 sm

** Three (3) levels*

TOTAL PARKING: 367 spaces**

***for institutional uses only*

VALUATION SUMMARY (ERNST YOUNG)

The option assumes that the existing Weston Building facility would be adapted into an office/innovation node. An adjusted unit value benchmark of \$60, having applied a -25% discount, is used to arrive an indicative market value (Figure 2). EY would typically use building condition information for the existing improvements to better understand project complexity and potential cost implications but has applied a unit value benchmark for conceptual purposes on the presumption that no capital offset would be required for existing improvements and that additional density will be permitted

VALUATION ASSUMPTIONS:

- / The discounted capital cost of existing improvements, as calculated in Option 1, is equal to \$17,709,000 (\$101 PSF).
- / Additional density for non-residential/employment space, estimated to be 187,224 SF and valued at a rate of \$60 PSF, results in a value indication of \$11,233,400 for the employment component.
- / Replacement parking was calculated for a proposed parking facility of 392 spots, deducted from the value indication.

VALUE INDICATION:

\$16,610,000 (or \$95 PSF)

Please refer to the Ernst Young OSC Valuation Summary for more details

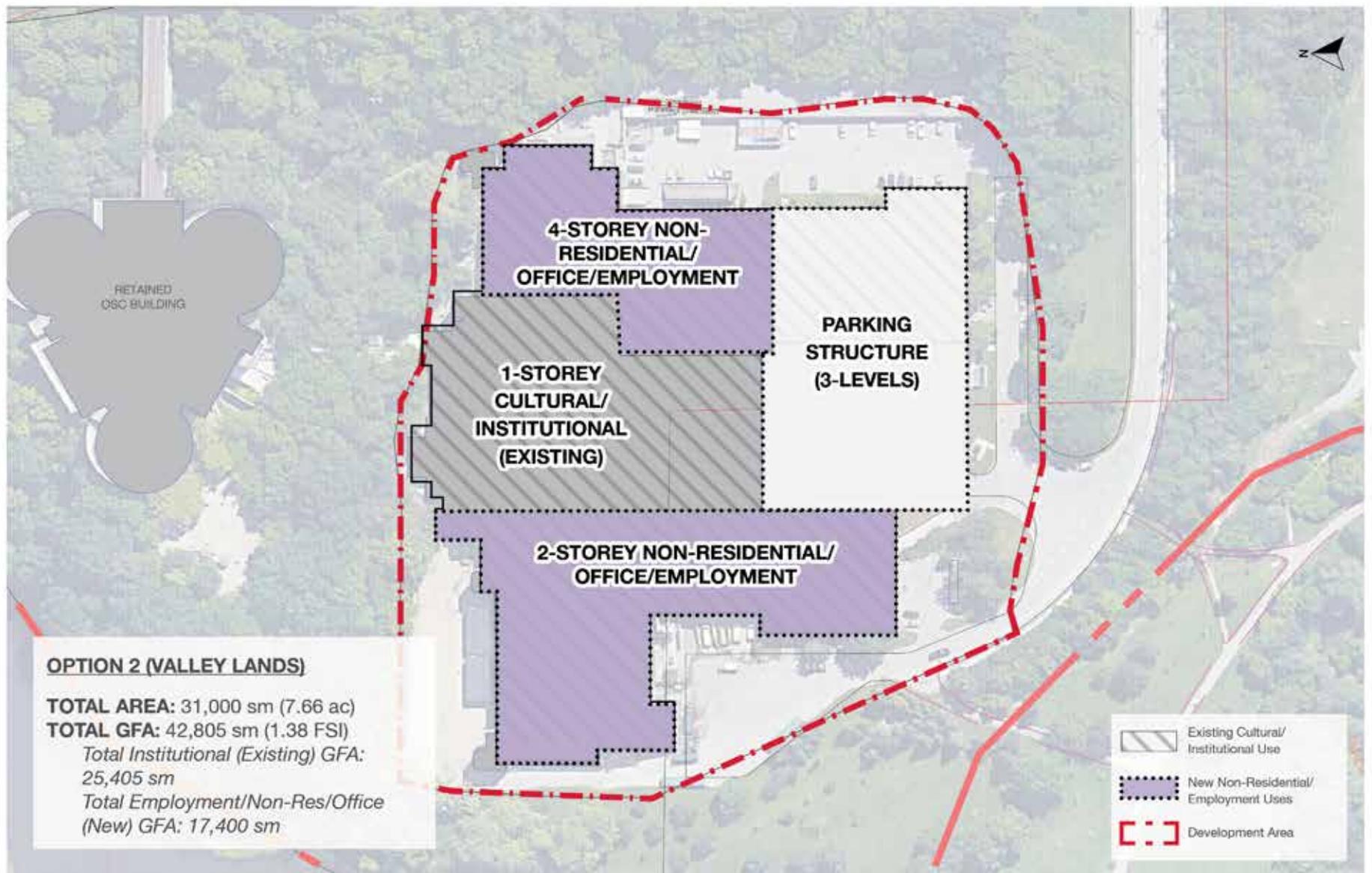


FIGURE 28: Valley Lands Land Use Option 2

3.2.3 Valley Lands Option 3

This option proposes the re-adaptation of the existing Building C (Ravine/Weston Innovation Building) into a mixed-use hub with one level of cultural/institutional uses and three additional levels of non-residential/office/employment and three additional levels of long-term care uses, provided above. On the southern portion, one level of cultural institutional uses are proposed above a two-level parking structure. The proposed uses do not exceed the existing building footprint of Building C.

LAND USE SUMMARY

TOTAL AREA: 31,000 sm (7.66 ac)

TOTAL GFA: 52,425 sm (1.69 FSI)

Total Institutional (Existing) GFA: 0 sm

Total Institutional (New) GFA: 12,925 sm

Total Employment/Non-Res/Office (New) GFA: 23,000 sm

Total Long-term Care (New) GFA: 16,500 sm

Total Parking Structure GFA: 8,776 sm

** Two (2) levels*

TOTAL PARKING: 251 spaces**

***for institutional uses only*

VALUATION SUMMARY (ERNST YOUNG)

The option assumes that the existing Weston Building facility would be adapted into mixed-use hub. An adjusted unit value benchmark of \$78 for proposed office space and \$89 for proposed Long-Term Care space, having applied a -25% discount to both, was used to arrive an indicative market value. EY would typically use building condition information for the existing improvements to better understand project complexity and potential cost implications but has applied a unit value benchmark for conceptual purposes on the presumption that no capital offset would be required for existing improvements and that additional density will be permitted.

VALUATION ASSUMPTIONS:

- / The discounted capital cost of existing improvements, as calculated in Option 1, is equal to \$17,709,000 (\$101 PSF).
- / Additional density for non-residential/employment space, estimated to be 247,480 SF and valued at a rate of \$60 PSF, results in a value indication of \$14,848,000 for the employment component.
- / Additional density for Long-Term Care space, estimated to be 177,540 SF and valued at a rate of \$89 PSF, results in a value indication of \$15,717,290 for the LTC component
- / Replacement parking was calculated for a proposed parking facility of 267 spots, deducted from the value indication.

VALUE INDICATION:

\$39,860,000

Please refer to the Ernst Young OSC Valuation Summary for more details

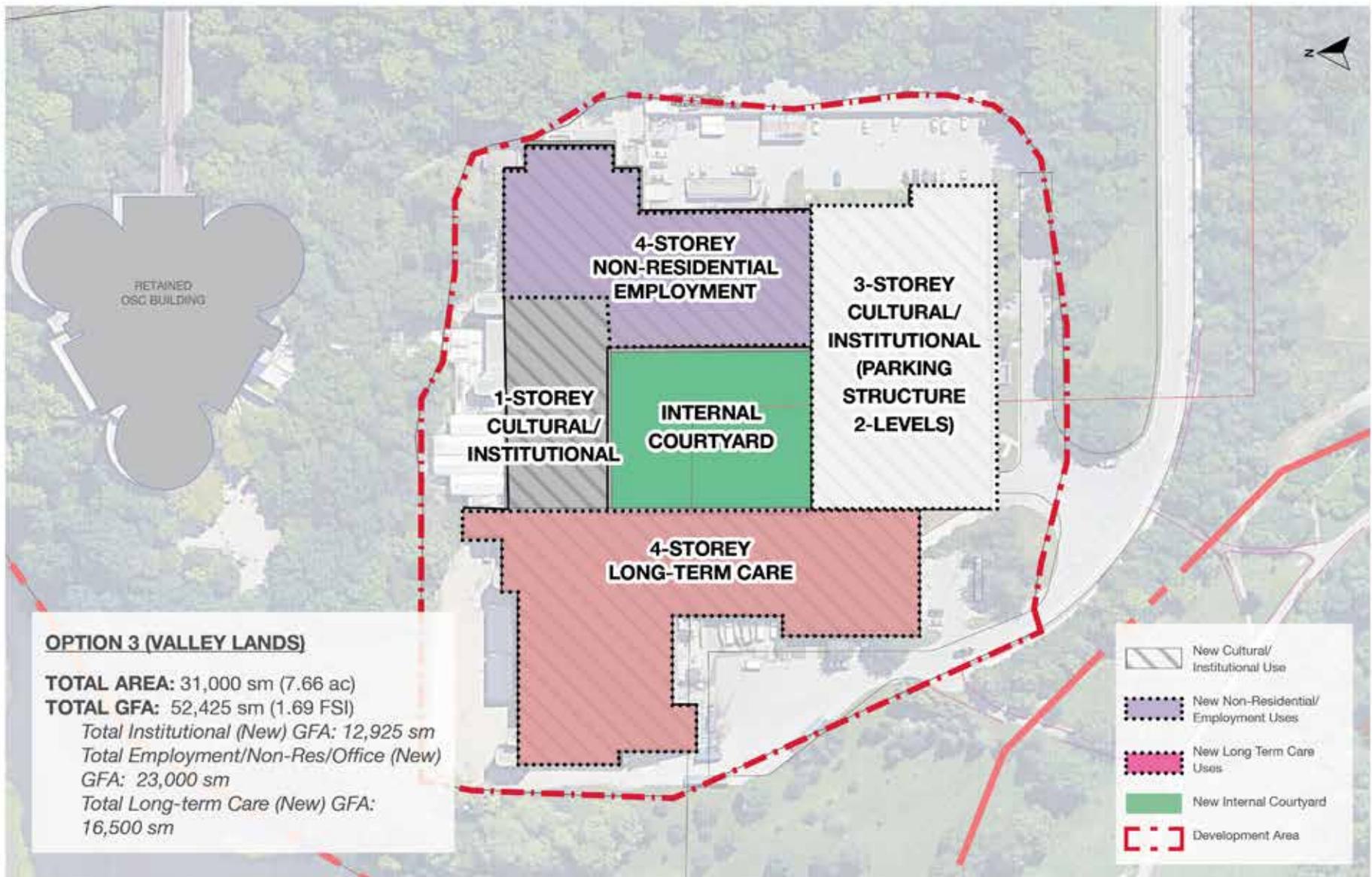


FIGURE 29: Valley Lands Land Use Option 3

Appendix M
Class D Cost Estimate: Relocate Option

Confidential and Privileged Advice to Government

Ontario Science Centre (OSC) Relocation

Class D Estimate (Rev.1)



Prepared for:
Infrastructure Ontario (IO)

Prepared by:

A.W. HOOKER®
QUANTITY SURVEYORS

2265 Upper Middle Rd. E Suite 400
Oakville, ON L6H 0G5

T 905.823.8111
F 905.823.5111
info@awhooker.com

www.awhooker.com

February 3, 2023

February 3, 2023

Infrastructure Ontario
1 Dundas Street West, Suite 2000
Toronto, ON M5G 1Z3

Attn: Rachael McLeod, Senior Project Manager, Project Delivery

Re: Ontario Science Centre (OSC) Relocation Class D Estimate (Rev.1)

Dear Rachael,

Please find enclosed our Class D Estimate (Rev.1) for the above project. The estimate is based on design information provided by Infrastructure Ontario (IO) received on January 04, 2023.

This version of the estimate incorporates comments received during the meeting held on January 24, 2023 and comments received on January 26, 2023.

This estimate is meant to reflect the fair market value for the construction of this project; it is not intended to be the prediction of the lowest bid and should be representative of the median bid amount received in a competitive bidding scenario.

We recommend that the owner and/or the design team carefully review the cost estimate report, including line item descriptions, unit price clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. This is to ensure that the design intent is captured within the content of the report.

Please refer to the preamble of our cost report for all exclusions, assumptions, and information pertaining to the estimate.

Requests for modifications of any apparent errors or omissions to this document must be made to A.W. Hooker Associates Ltd. within ten (10) business days of receipt of this estimate. Otherwise, it will be understood that the contents in this estimate have been concurred with and accepted as final version of the cost report.

We trust our work will assist in the decision making process and look forward to our continued involvement in this important project.

Sincerely,
A.W. Hooker Associates Ltd



Elvan Eryoner, PQS
Associate

Sincerely,
A.W. Hooker Associates Ltd



Stew Kyle, PQS, CET
Partner

Encl. (Class D Estimate (Rev.1) – February 3, 2023)

122240, Ontario Science Centre (OSC) Relocation

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1. Introduction to the Estimate

1.1 Project Description

The new OSC will be housed in a combination of new structure/building, and the adaptively reused Ontario Place Pods Complex (Pods), Cinesphere and connecting Bridges. OSC determined which functions will be located in the Pods and which to be assigned in the new building. As a result, of the total 175,580 net sq.ft. OSC requires, 40,500 net sq.ft. be in the Pods, and 135,080 net sq.ft. for the new building. The Cinesphere (not included in the OSC net area) will remain as a 614-seat projection-based venue for both mission-driven and non-mission-driven movies, features, and other OSC programming.

Space programming includes two key measurements, 1) identification of net square footage (the usable programmable space required for functions or activities and 2) determination of a gross square footage multiplier (represented as a percentage of the net area) leading to a total gross building area.

1.2 Type of Estimate

This Class D Estimate is intended to establish a realistic elemental estimate of the hard construction costs based on the level of design information provided. Detailed quantities have been measured from drawings where possible for the proposed building and associated site development. This estimate reflects our opinion as to the fair market value for the hard construction of this project.

The accuracy of the estimate is based on the documentation provided and design stage is intended to be **+/- 25%**. This accuracy is based on the definition for Estimate Classifications (Class D) outlined in the *Guide to Cost Predictability in Construction prepared by the Joint Federal Government & an Industry Cost Predictability Taskforce. Contingencies are included to offset the accuracy risk, to the extent that the estimated amount represents the current opinion of the likely fair market value at the time of tender.

The intention of the estimate is not to predict the low bid price received; typically based on historical tender results estimates are more likely to be towards the median value of bids received under competitive conditions. This is a deliberate methodology due to the inherent risk in attempting to predict the low bid and numerous factors which can contribute to lower than anticipated tender submissions which are beyond our control.

*Reference: http://www.cca-acc.com/pdfs/en/CCA/Guide_to_Cost_Predictability.pdf

2. Basis of the Estimate

2.1 General Information

From the design information provided, we have measured quantities where possible and applied typical unit rates for each of the specific elements based on the project specifications. Where specific design information has not been provided, unit rates are based on historical cost data for this type of project. In some instances where design information is limited, we have made reasonable assumptions based on our experience with projects of a similar scope and design. Estimates for mechanical and electrical systems are developed based on information prepared by the project engineers, historical projects and experience.

Significant changes to the basis of design will impact the estimate value; this is particularly critical where changes are made after the final estimate prior to tender. We recommend that all major design or scope changes be reviewed for their cost, time and constructability impact prior to incorporation in a finalized tender package.

2.2 Location Cost Base

The location cost base for this estimate is Toronto, Ontario.

2.3 Unit Rates

The unit rates in the preparation of the elemental estimate include labour and material, equipment, and subcontractors overheads and profits. We have assumed the fair wage policy would be in effect. The unit rates for each of the elements are based on typical mid-range costs for the type of design, construction, and materials proposed.

Unit rates in all estimates combine the material, labour, and equipment components for a single unit cost for ease of presentation. This estimate is not a prediction of low bid. Pricing assumes competitive bidding for every aspect of the work.

2.4 Taxes

Harmonized Sales Tax (HST) is excluded from our estimate.

2.5 Construction Schedule

The estimate has been prepared on the assumption that the work will be performed within the timelines of a normal construction schedule. The duration of the schedule would be based on the work being performed during regular daytime work hours. We have assumed the structural components of the building would be constructed in predominantly non-winter months. No allowances have been included for premium time and after hours work associated with an accelerated construction schedule.

2.6 General Requirements and Fees

The General Requirements for the Project Co are included as a percentage of the hard construction cost. This estimate of the prime contractor's site overheads includes site supervision and labour, access to the site, site accommodations, site protection, temporary utilities, clean up, equipment, and other miscellaneous project requirements provided by the Project Co.

The Fee element of the estimate is meant to cover the Project Co's fee to perform the work. The fee would be based on the competitive nature of the bidding process and the market conditions at the time of tender.

2.7 Bonding and Insurance

We have included the median estimated costs for 50% Performance, 50% Labour and Materials, and 10% bid bonds. These are the traditional bonding requirements commonly requested by the owner. The actual final bonding costs will vary depending on the selected contractors' performance history.

The estimate includes an allowance for general liability and builder's risk insurance based on an average cost per \$1,000 of estimated hard construction costs. The actual insurance costs would be subject to the insurance requirements for the project.

2.8 Delivery Model

The estimate reflects Design Build Finance (DBF) model as the base condition, which considers the following statement of inclusion/ exclusions:

- a. Estimate reflects hard construction costs only (including General Requirements & Fees).
- b. Includes Project Co ancillaries, including design and associated consulting team.
- c. Includes Project Co's management team expense and an allowance for risks transferred from Owner's side.
- d. Includes Risk Contingency associated with the DBF Procurement Model
- e. Excludes Life Cycle, Operating and Maintenance costs.

2.9 Specifications

Where detailed and comprehensive specifications are unavailable, we have assumed that no onerous special requirements will be applicable to this project. It was assumed that all materials and equipment could be substituted with an alternative product to avoid sole-sourcing which results in a non-competitive market condition.

2.10 Soft Costs

The estimated soft costs have been included in this estimate.

An itemized list of potential soft costs has been shown on the Master Estimate Summary. These costs include items traditionally funded by the owner and separate from the hard construction costs which would be applicable to the contractor. The soft costs include items such as consultant fees; disbursements; project management fees; independent inspection and testing; third party commissioning; legal fees; permits and development charges; operational and moving expenses; financing and loan fees; owner supplied furnishings, fixtures, and equipment; land acquisition costs; and Harmonized Sales Tax.

3. Contingencies

3.1 Design and Pricing Contingency

A design and pricing contingency of **25% for renovation and 15% for new building** has been included in our estimate. This contingency is meant to cover design and pricing unknowns in the preparation of an estimate to reflect the incomplete nature of the design information provided at the time the estimate is prepared

The contingency where included in our estimate is not meant to cover significant additional program space or quality modifications, but rather to provide some flexibility as the design develops. The design contingency typically decreases as the design progresses and more definition and detail is available to refine the basis of the cost estimate. If the owner anticipates significant changes to the basis of design we recommend additional contingency be retained as a reserve for the scope modifications.

3.2 Escalation Contingency

The estimate includes an allowance for escalation. This allowance of is meant to provide for increases in construction costs due to changes in market conditions between the time of the estimate and the potential construction commencement. For projects with a schedule in excess of 12 months, the contingency is based on a timeframe that takes escalation to the midpoint of the construction phase.

Escalation	
Assumed Tender Date	- Q2 (June) 2025
Escalation % per annum	-
2023	10%
2024	6%
2025	5%
2026	4%
2027	4%
Total % Escalation	- 27.8%

Milestone Dates	Low
Project Initiation Date	
RFQ Open	July 1, 2024
RFQ Close	November 1, 2024
RFP Open	December 1, 2024
RFP Close Technical	June 1, 2025
RFP Close Financial	June 1, 2025
Financial Close/Contract Execution	September 1, 2025
Interim Completion (if applicable)	
Substantial Completion/Performance	September 1, 2028
Final Completion	
N/A	
N/A	
Duration Days	1,096
Months of Construction	36

3.3 Construction Contingency (Post Contract Changes)

A construction contingency of **15% for renovation and 10% for new building** has been included in our estimate. This contingency is meant to cover the potential cost of post contract changes (Change Order) that may occur after the project is tendered.

This contingency excludes any major program or scope requests by the client; these should form part of an overall project management reserve or be reflected in increased funding.

4. General Liability

4.1 Statement of Probable Costs

A.W. Hooker Associates Ltd. (HOOKER) has no control over the cost of labour and materials, the general contractors or any subcontractors' methods of determining prices, or competitive bidding and market conditions. This opinion of probable cost of construction is based on the experience, qualifications, and best judgment of the professional consultant familiar with the construction industry. HOOKER does not warranty that proposals or actual construction costs will not vary from this or subsequent estimates.

4.2 Ongoing Cost Control

A.W. Hooker Associates Ltd. **recommends** that the owner and/or the design team carefully review the cost estimate report, including line item descriptions, unit price clarifications, exclusions, inclusions and assumptions, contingencies, escalation, and mark-ups. This is to ensure that the design intent is captured within the content of the report. This is especially important at early stage estimates which tend to be based on a lesser level of design completion.

If the project is over budget or there are unresolved budget issues, alternative systems or schemes should ideally be evaluated before proceeding with the design phase. We recommend that cost control be implemented throughout the various stages of the design process to ensure the proposed design remains within the overall budget. It is recommended that the final estimate be produced by HOOKER using Bid Documents to determine overall cost changes, which may have occurred since the preparation of this estimate. The final update estimate will address changes and additions to the documents as well as addenda issued during the bidding process. HOOKER cannot reconcile bid results to any estimate not produced from bid documents including all addenda.

5. Estimate Scope Clarifications

5.1 List of Exclusions

1. Harmonized Sales Tax (HST)
2. Phasing Premium
3. Accelerated construction schedule
4. Building Permit
5. Independent Test and Inspection
6. Foundation, slab on grade and wall below grade to new building as this scope is covered by Others (Underground Parking Garage)
7. Basement level to new building
8. Underwater construction
9. Demolition of existing site elements (included in separate Site Master Plan Estimate)

10. Parking:
 - a. School Bus Queuing/ Parking
 - b. Bicycle Parking
 - c. Guest Parking
 - d. Service Parking (automated access, 1,000 car capacity)
11. Shell Renovation:
 - a. All PODS to be single level (Level 40), existing mezzanine level (Level 50) to be demolished, existing mechanical space mezzanine level (Level 60) to remain
 - b. New cladding (heavy gauge prefinished metal plate panel) to PODs; existing to repair at Cinesphere.
 - c. New curtain wall system to Bridges, existing to repair to PODs and Cinesphere Entrances
 - d. New roofing to existing buildings
 - e. 400 x 1200mm porcelain unilock pavers to remaining
 - f. New guardrail to POD and Bridges roof perimeter
12. Interior demolition of existing buildings (PODs and Bridges)
13. Removal of existing roofing and perimeter guardrail (PODs and Bridges)
14. Removal of existing cladding (PODs and Bridges)
15. Hard and Soft Landscaping (PODs and Bridges)
16. The Cinesphere exterior and interior renovation
17. Outdoor Exhibitory Cost
18. Moving Walk to Bridge#10

5.2 List of Assumptions

Architectural / Structural:

1. Test Fit assumes a 4 story building for the main building, therefore some of the useable space is below grade (2,750m² balance between program and test fit model) and therefore shell costs are covered by others.
2. Shell New Building, assumes:
 - a. Suspended concrete floor structure throughout
 - b. Roof construction includes a mixture of suspended concrete structure and structural steel structure
 - c. High-performance solid exterior envelope, assumed 60% of total envelope area
 - i. heavy gauge prefinished metal plate panel, assumed 50% of solid area
 - ii. masonry veneer walls, assumed 50% of solid area
 - d. Aluminum framed curtain wall system, assumed triple glazed, low e coating, and argon filled, assumed 40% of total envelop area
 - e. Prefinished metal panel to Penthouse Levels, assumed 6.0m high including parapet
 - f. Green roof to 60% roof area as per City of Toronto Green Roof Bylaw
 - g. Feature stair from Ground to 3rd Floor
3. Interior Partitions:
 - a. Education, Workshop and Maker Spaces, Demonstration Spaces, Planetarium and Cinesphere, Event Spaces, Exhibits, assumed mixture of 50% CMU, 40% gypsum board and 10% glazed partitions
 - b. Building Entry and Visitor Amenities, Administrative and Support Spaces, Offices & Support, assumed mixture of 90% gypsum board and 10% glazed partition
 - c. Building Support, assumed equal mixture of CMU and gypsum board partitions
 - d. gross up areas, assumed CMU various sizes
4. Floor Finishes:
 - a. Education, Workshop and Maker Spaces, Demonstration Spaces, Planetarium and Cinesphere, Event Spaces, Exhibits, assumed mixture of resinous flooring, wood flooring, homogeneous heavy-duty vinyl sheet flooring, dissipative vinyl sheet flooring
 - b. Building Entry and Visitor Amenities, Administrative and Support Spaces, Offices & Support, assumed mixture of carpet tile, homogeneous heavy-duty vinyl sheet flooring,
 - c. Building Support, assumed mixture of carpet tile, homogeneous heavy-duty vinyl sheet flooring,
 - d. Gross up areas, assumed mixture of resinous flooring, porcelain tile, homogeneous heavy duty vinyl sheet flooring.

5. Ceiling Finishes:
 - a. Education, Workshop and Maker Spaces, Demonstration Spaces, Planetarium and Cinesphere, Event Spaces, Exhibits, assumed 30% gypsum board ceiling, 40% acoustic tile, 30% feature ceiling similar to wood slat ceiling,
 - b. Building Entry and Visitor Amenities, Administrative and Support Spaces, Offices & Support, assumed 30% gypsum board ceiling, 70% acoustic tile,
 - c. Building Support, assumed 30% gypsum board ceiling, 70% acoustic tile,
 - d. Gross up areas, assumed 30% gypsum board ceiling, 70% acoustic tile.
6. Wall Finishes:
 - a. Education, Workshop and Maker Spaces, Demonstration Spaces, Planetarium and Cinesphere, Event Spaces, Exhibits, assumed mixture of epoxy paint, paint, backsplash tile,
 - b. Building Entry and Visitor Amenities, Administrative and Support Spaces, Offices & Support, assumed mixture of paint, backsplash tile, ceramic tile,
 - c. Building Support, assumed mixture of paint, epoxy paint,
 - d. Gross up areas, assumed mixture of paint, ceramic tile.
7. Window treatments, motorized operation, assumed to 5% of glazed area to new building and PODs, offices only
8. The estimate includes allowances for the Bridge 10 upper deck enclosure (the bridge has to be fully enclosed and heated and cooled), plus an allowance for special lighting, sound has been included for the Bridge to be experiential.
9. Allowance for accessibility upgrade for the existing structures has been included. Scope of work includes 1 freight sized elevator being added to one of the pods (includes access to roof), upgrade of existing ramps from pod 3 (cinesphere ramp) and pod 5 (live nation ramp)
10. Exhibits budget provided by IO;
 - a. Indoor 'Exhibitory Costs' (revised total \$53.2M) – OSC has opted to not program three of the pods on opening day, therefore remove \$16.8M from from the previous allowance of \$70M
 - b. Permanent Exhibition Space (indoor) fabrication, installation, and testing (\$700/SF)

Mechanical:

11. Commercial quality, electronically operated plumbing fixtures installed throughout.
12. Specialty plumbing systems for Wet Labs and Demonstration areas is provided. (specialty plumbing extends beyond the defined lab spaces – OSC wanted greater flexibility so an allowance has been included to extend throughout the engagement space)
13. An allowance has been included for separately controlled mechanical system in temp gallery space for humidity and temperature.
14. Heat pump type water heaters will be utilized from central plant.
15. Wet sprinklers provided throughout. Specialty systems included where required by Functional Narrative.
16. Heat recovery chillers with supplemental electric boilers will be utilized. Lake will be used for condenser water.
17. In-slab heating, perimeter radiation, etc. provided throughout.
18. Air handling units will have energy recovery as required and humidification / filtration to be Class B (Museum environment).
19. Specialty exhaust systems to be provided as per Functional Narrative.
20. Design is assumed to be Net Zero compliant.
21. BAS will be by major controls vendors (equal to JCI, Siemens, Honeywell, etc.)

Electrical:

22. Work will be performed by union labor during regular working hours.
23. Power will be transformed at the building level feeding 347/600V switchboards. 347/600V distribution panels provide power to the major equipment and to the 120/208V transformers that feed the 120/208V lighting and power panels.
24. The Electrical division provides power connections to the mechanical equipment with associated line and load side wiring.
25. Lighting is provided using energy-efficient LED fixtures that accent the buildings and the architectural features of the facility.
26. Lighting control is provided using a central LV control for the entire facility with local occupancy sensors, daylight harvesting, dimming, and local switching as required to facilitate the effective utilization of each area of the facility.
27. Power outlets and receptacles are provided throughout the facility to accommodate the effective utilization of the facility and meet maintenance requirements.
28. A complete CAT 6 structured cabling system is provided to facilitate hard access points for displays and wireless access throughout the facility.
29. Empty raceway infrastructure is provided to facilitate the installation of the production equipment required to effectively utilize each area of the facility.

General:

30. Various assumptions have been made based on the design information available and our experience with projects of a similar nature. Please refer to the specific items within the estimate for the detailed assumptions made.

6. Documentation Received

Drawings and design documentation were provided by Infrastructure Ontario (IO):

Pages	Documentation	Documentation Received
35 pages	OSC.FunctionalProgram.FINAL.December 22_2022	January 5, 2023

7. Gross Floor Area Summary

The following gross floor areas of new and renovation construction are based on program areas provided by Infrastructure Ontario (IO).

7.1 Summary of New and Renovation Area

	Functional Program Area and GFA Summary					
	GFA (SF)			GFA (m2)		
		New building	Reno		New building	Reno
Zone A Public Spaces / Amenities	50,630 SF			4,704 m2		
1.1-N Building Entry and Visitor Amenities - New Building	18,450 SF	26,650 SF	35,130 SF	1,714 m2	3,264 m2	1,440 m2
1.1-R Building Entry and Visitor Amenities - Renovation	8,200 SF			762 m2		
1.2-N Education (Science School) - New Building	2,600 SF	2,600 SF		242 m2		
1.2-R Education (Science School) - Renovation	0 SF			0 m2		
1.3-N Engagement Spaces (Exhibit/Program TBD) - New Building	8,000 SF	12,500 SF		743 m2		
1.3-R Engagement Spaces (Exhibit/Program TBD) - Renovation	4,500 SF			418 m2		
1.4-N Engagement Spaces (Exhibit/Program TBD) - New Building	6,080 SF	8,880 SF		565 m2		
1.4-R Engagement Spaces (Exhibit/Program TBD) - Renovation	2,800 SF			260 m2		
1.5-N Engagement Spaces (Exhibit/Program TBD) - New Building (Planet./Cinesp)	0 SF	0 SF		0 m2		
1.5-R Engagement Spaces (Exhibit/Program TBD) - Renovation (Planet./Cinesp)	0 SF			0 m2		
Zone B Engagement Space (Exhibition)	88,000 SF			8,176 m2		
2.1-N Exhibits - Permanent and Temporary - New Building	66,000 SF	88,000 SF	66,000 SF	6,132 m2	6,132 m2	2,044 m2
2.1-R Exhibits - Permanent and Temporary - Renovation	22,000 SF			2,044 m2		
Zone C Exhibit Support Support	11,400 SF			1,059 m2		
3.1-N Exhibit Support Spaces - New Building	11,400 SF	11,400 SF	11,400 SF	1,059 m2	1,059 m2	0 m2
3.1-R Exhibit Support Spaces - Renovation	0 SF		0 SF	0 m2		
Zone D Administrative / Building Support	25,550 SF			2,374 m2		
4.1-N Administrative - OSC - New Building	14,000 SF	14,000 SF	23,050 SF	1,301 m2	2,142 m2	232 m2
4.1-R Administrative - OSC - Renovation	0 SF			0 m2		
4.2-N Administrative - Support - New Building	1,750 SF	1,750 SF		163 m2		
4.2-R Administrative - Support - Renovation	0 SF			0 m2		
4.3-N Building Support - New Building	7,300 SF	9,800 SF		678 m2		
4.3-R Building Support - Renovation	2,500 SF			232 m2		
Zone E Exterior						
5.1 Exterior	0 SF			0 m2		
Total Programmed Net Area	175,580 SF	175,580 SF	135,580 SF	16,313 m2	12,597 m2	3,716 m2
Building Grossing, including:	100,120 SF			9,301 m2		
BG1a Reno-Non Program (Bridges 9 and 10)	17,500 SF			1,626 m2		
BG1b Reno-Program (Cinesphere)	19,700 SF			1,830 m2		
BG1c New-Non Program (New Bridge to POD#5) - Excluded	0 SF			0 m2		
BG2 Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building (198,000SF-135,580SF)	62,420 SF			5,799 m2		
BG3 Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods (40,500SF-40,000SF)	500 SF			46 m2		
Building Grossing Area	100,120 SF		62,420 SF	9,301 m2	5,799 m2	3,502 m2
Gross Building Area	275,700 SF		198,000 SF	25,614 m2	18,396 m2	7,218 m2

Element/Sub-Element			Reno	New	Fit-out - Reno	Fit-out - New	Site	Total
BASE CONSTRUCTION COST			7,218	18,396	7,218	18,396	5,344	25,614
			77,695,000	198,011,000	77,695,000	198,011,000	57,523,000	275,706,000
A	Shell - Renovation		\$14,768,651					\$14,768,651
B	Shell - New Building			\$60,452,121				\$60,452,121
C	Interior Fit-out (Renovation)				\$15,890,765			\$15,890,765
D	Interior Fit-out (New)					\$58,853,963		\$58,853,963
E	Site						\$3,864,500	\$3,864,500
F								\$0
G	SUB-TOTAL		\$14,768,651	\$60,452,121	\$15,890,765	\$58,853,963	\$3,864,500	\$153,830,000
		Cost/m2	\$2,046	\$3,286	\$2,202	\$3,199	\$723	\$6,005.77
		Cost/SF	\$190	\$305	\$205	\$297	\$67	\$558
MARK-UPS & ALLOWANCES								
H	Mark-ups		\$4,292,000	\$17,567,000	\$4,617,000	\$17,102,000	\$1,123,000	\$44,701,000
H1	Phasing Premium	0.0%	\$0	\$0	\$0	\$0	\$0	\$0
H2	General Requirements	17.0%	\$2,511,000	\$10,277,000	\$2,701,000	\$10,005,000	\$657,000	\$26,151,000
H3	Insurance & Bonding	2.5%	\$369,000	\$1,511,000	\$397,000	\$1,471,000	\$97,000	\$3,845,000
H4	Premium (winter/ after hours/ weekend work)	0.0%	\$0	\$0	\$0	\$0	\$0	\$0
H5	Project Co's Fees (OH&P)	8.0%	\$1,412,000	\$5,779,000	\$1,519,000	\$5,626,000	\$369,000	\$14,705,000
I	Allowances	Reno New	\$12,899,000	\$47,566,000	\$13,878,000	\$46,308,000	\$3,041,000	\$123,692,000
I1	Design & Pricing Allowance	25.0% 20.0%	\$4,765,000	\$15,604,000	\$5,127,000	\$15,191,000	\$998,000	\$41,685,000
I2	Escalation Allowance	27.8% 27.8%	\$6,612,000	\$25,982,000	\$7,114,000	\$25,295,000	\$1,661,000	\$66,664,000
I3	Market Volatility based on current market conditions	5.0% 5.0%	\$1,522,000	\$5,980,000	\$1,637,000	\$5,822,000	\$382,000	\$15,343,000
TOTAL ESTIMATED CONSTRUCTION COST EXC. HST			\$31,960,000	\$125,585,000	\$34,386,000	\$122,264,000	\$8,029,000	\$322,223,000
		Cost/m2	\$4,428	\$6,827	\$4,764	\$6,646	\$1,502	\$12,580
		Cost/SF	\$411	\$634	\$443	\$617	\$140	\$1,169
J	Soft Costs	Reno New	\$135,511,000	\$17,941,000	\$4,912,000	\$17,466,000	\$1,147,000	\$176,977,000
J1	Indoor Exhibitory (Owner's FF&E)		\$53,200,000	Incl	Incl	Incl	Incl	\$53,200,000
J2	Allowance for Soft Costs (Indoor Exhibitory) reduced by \$4.2M (revised total \$13.3M) to account for the reduction in exhibitory costs.	25.0% 25.0%	\$13,300,000	Incl	Incl	Incl	Incl	\$13,300,000
J3	Allowance for Soft Costs (Construction Cost)	20.0% 20.0%	\$64,445,000	Incl	Incl	Incl	Incl	\$64,445,000
J4	Owner's Construction Contingency (Change Orders)	15.0% 10.0%	\$4,566,000	\$17,941,000	\$4,912,000	\$17,466,000	\$1,147,000	\$46,032,000
TOTAL PROJECT COST (EXC. HST)								\$499,200,000

UNIFORMAT SUMMARY - BASE HARD ESTIMATE
ONTARIO SCIENCE CENTRE RELOCATION
 CLASS D ESTIMATE (Rev.1)
 FEBRUARY 03, 2023

Gross Floor Area **25,614** m2

Description Element\Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost		\$ per m2 Sub Element	\$ per m2 Element	%
					Sub Element	Element Total			
A SUBSTRUCTURE									
A10 Foundation						\$0		\$0.00	0.0%
A1010 - Standard Foundations	0.11	2,750	m2	\$0.00	\$0		\$0.00		
A1020 - Special Foundations	0.00	0	m2	\$0.00	\$0		\$0.00		
A1030 - Slab on Grade	0.11	2,750	m2	\$0.00	\$0		\$0.00		
A20 Basement Construction						\$0		\$0.00	0.0%
A2010 - Basement Excavation	0.00	0	m3	\$0.00	\$0		\$0.00		
A2020 - Basement Walls	0.00	0	m2	\$0.00	\$0		\$0.00		
B SHELL									
B10 Superstructure						\$15,120,526		\$590.32	9.8%
B1010 - Floor Construction	0.61	15,646	m2	\$527.33	\$8,250,609		\$322.11		
B1020 - Roof Construction	0.21	5,404	m2	\$1,271.27	\$6,869,917		\$268.21		
B20 Exterior Enclosure						\$25,603,773		\$999.60	16.7%
B2010 - Exterior Walls	0.22	5,717	m2	\$3,016.67	\$17,246,796		\$673.33		
B2020 - Exterior Windows	0.16	4,155	m2	\$1,882.38	\$7,821,290		\$305.35		
B2030 - Exterior Doors	0.00	109	m2	\$4,908.73	\$535,687		\$20.91		
B30 Roofing						\$5,250,420		\$204.98	3.4%
B3010 - Roof Coverings	0.20	5,077	m2	\$1,003.57	\$5,095,110		\$198.92		
B3020 - Roof Openings	0.00	52	m2	\$3,000.00	\$155,310		\$6.06		
C INTERIORS									
C10 Interior Construction						\$15,951,126		\$622.75	10.4%
C1010 - Partitions	0.91	23,241	m2	\$223.96	\$5,204,881		\$203.20		
C1020 - Interior Doors	0.01	367	LVS	\$3,853.65	\$1,415,410		\$55.26		
C1030 - Fittings	1.00	25,613	m2	\$364.30	\$9,330,835		\$364.29		
C20 Stairs						\$2,297,032		\$89.68	1.5%
C2010 - Stairs Construction	0.05	1,385	m	\$1,131.37	\$1,566,952		\$61.18		
C2020 - Stairs Finishes	0.02	457	m2	\$1,597.55	\$730,080		\$28.50		
C30 Interior Finishes						\$11,027,964		\$430.54	7.2%
C3010 - Wall Finishes	1.54	39,509	m2	\$42.04	\$1,661,051		\$64.85		
C3020 - Floor Finishes	0.87	22,239	m2	\$268.70	\$5,975,552		\$233.29		
C3030 - Ceiling Finishes	0.87	22,239	m2	\$152.50	\$3,391,360		\$132.40		
D SERVICES									
D10 Conveying						\$4,200,000		\$163.97	2.7%
D1010 - Elevators and Lifts	0.00	3	NO	\$1,270,000.00	\$3,810,000		\$148.75		
D1020 - Escalators and Moving Walks	0.00	2	NO	\$195,000.00	\$390,000		\$15.23		
D1090 - Other Conveying Systems	0.00	0	NO	\$0.00	\$0		\$0.00		
D20 Plumbing						\$7,481,926		\$292.10	4.9%
D2010 - Domestic Water Distribution	1.00	25,614	m2	\$119.90	\$3,071,101		\$119.90		
D2020 - Sanitary Waste	1.00	25,614	m2	\$47.17	\$1,208,143		\$47.17		
D2030 - Building Support Plumbing System	1.00	25,614	m2	\$24.15	\$618,472		\$24.15		
D2040 - General Service Compressed Air System	1.00	25,614	m2	\$7.02	\$179,884		\$7.02		
D2090 - Process Support Plumbing Systems	1.00	25,614	m2	\$93.87	\$2,404,325		\$93.87		
D30 HVAC						\$29,420,030		\$1,148.59	19.1%
D3010 - Facility Fuel System	1.00	25,614	m2	\$13.94	\$357,173		\$13.94		
D3020 - Heat Generating Systems	1.00	25,614	m2	\$229.99	\$5,891,074		\$229.99		
D3030 - Cooling Generating Systems	1.00	25,614	m2	\$229.99	\$5,891,074		\$229.99		
D3040 - Facility HVAC Distribution System	1.00	25,614	m2	\$246.43	\$6,311,967		\$246.43		
D3050 - Ventilation System	1.00	25,614	m2	\$187.68	\$4,807,145		\$187.68		
D3060 - Special Purpose HVAC System	1.00	25,614	m2	\$41.49	\$1,062,771		\$41.49		
D3070 - Systems Testing and Balancing	1.00	25,614	m2	\$19.27	\$493,540		\$19.27		
D3080 - Other HVAC System and Equipment	1.00	25,614	m2	\$179.80	\$4,605,286		\$179.80		
D40 Fire Protection						\$2,259,766		\$88.22	1.5%
D4010 - Fire Suppression	1.00	25,614	m2	\$64.58	\$1,654,216		\$64.58		
D4020 - Fire Protection Specialities	1.00	25,614	m2	\$23.64	\$605,550		\$23.64		
D50 Electrical Systems						\$15,019,371		\$586.37	9.8%
D5010 - Electrical Service and Distribution	1.00	25,614	m2	\$68.62	\$1,757,629		\$68.62		
D5020 - Lighting and Branch Wiring	1.00	25,614	m2	\$360.92	\$9,244,707		\$360.92		
D5030 - Communication and Security	1.00	25,614	m2	\$134.03	\$3,433,099		\$134.03		
D5090 - Other Electrical Systems	1.00	25,614	m2	\$22.80	\$583,937		\$22.80		
D80 Integrated Automation						\$3,228,509		\$126.04	2.1%
D8010 - Integrated Automation System	1.00	25,614	m2	\$126.04	\$3,228,509		\$126.04		

UNIFORMAT SUMMARY - BASE HARD ESTIMATE
ONTARIO SCIENCE CENTRE RELOCATION
 CLASS D ESTIMATE (Rev.1)
 FEBRUARY 03, 2023

Gross Floor Area **25,614** m2

Description Element/Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost		\$ per m2 Sub Element	\$ per m2 Element	%
					Sub Element	Element Total			
E EQUIPMENT AND FURNISHING									
E10 Equipment						\$1,042,056		\$40.68	0.7%
E1010 - Commercial Equipment	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
E1020 - Institutional Equipment	1.00	25,614	m2	\$40.68	\$1,042,056	\$0	\$40.68		
E1030 - Vehicular Equipment	0.00	0	NO	\$0.00	\$0	\$0	\$0.00		
E1090 - Other Equipment	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
E20 Furnishings						\$11,909,484		\$464.96	7.7%
E2010 - Fixed Furnishings	0.01	169	m2	\$236.00	\$39,872	\$0	\$1.56		
E2020 - Movable Furnishings	1.00	25,614	m2	\$463.40	\$11,869,612	\$0	\$463.40		
F SPECIAL CONSTRUCTION AND DEMOLITION									
F10 Special Construction						\$0		\$0.00	0.0%
F1010 - Special Structures	0.07	1,830	m2	\$0.00	\$0	\$0	\$0.00		
F1020 - Integrated Construction	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
F1030 - Special Construction Systems	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
F1040 - Special Facilities	0.00	1	m2	\$0.00	\$0	\$0	\$0.00		
F1050 - Special Controls and Instrumentation	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
F20 Selective Building Demolition						\$0		\$0.00	0.0%
F2010 - Building Elements Demolition	0.47	11,937	m2	\$0.00	\$0	\$0	\$0.00		
F2020 - Hazardous Components Abatement	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G BUILDING SITWORK									
G10 Site Preparation						\$1,000,000		\$39.04	0.7%
G1010 - Subsurface Investigation	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G1020 - Site Clearing	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G1030 - Site Demolition and Relocations	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G1040 - Site Earthwork	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G1050 - Hazardous Waste Remediation	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G1060 - Site Buildings	1.00	25,614	m2	\$39.04	\$1,000,000	\$0	\$39.04		
G20 Site Improvement						\$974,500		\$38.05	0.6%
G2010 - Roadways	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G2020 - Parking Lots	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G2030 - Pedestrian Paving	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G2040 - Site Development	1.00	25,614	m2	\$38.05	\$974,500	\$0	\$38.05		
G2050 - Landscaping	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G30 Site Mechanical Utilities						\$650,000		\$25.38	0.4%
G3010 - Water Supply	1.00	25,614	m2	\$5.86	\$150,000	\$0	\$5.86		
G3020 - Sanitary Sewer	1.00	25,614	m2	\$5.86	\$150,000	\$0	\$5.86		
G3030 - Storm Sewer	1.00	25,614	m2	\$9.76	\$250,000	\$0	\$9.76		
G3040 - Fuel Distribution Systems	1.00	25,614	m2	\$1.95	\$50,000	\$0	\$1.95		
G3050 - Special Plumbing Systems	1.00	25,614	m2	\$1.95	\$50,000	\$0	\$1.95		
G40 Site Mechanical Utilities						\$1,200,000		\$46.85	0.8%
G4010 - Steam Distribution Systems	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G4020 - Hydronic Distribution Systems	1.00	25,614	m2	\$46.85	\$1,200,000	\$0	\$46.85		
G50 Site Electrical Utilities						\$40,000		\$1.56	0.0%
G5010 - Electrical Distribution	1.00	25,614	m2	\$0.39	\$10,000	\$0	\$0.39		
G5020 - Site Lighting	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G5030 - Site Communication and Security	0.00	0	m2	\$0.00	\$0	\$0	\$0.00		
G5090 - Other Site Electrical Utilities	1.00	25,614	m2	\$1.17	\$30,000	\$0	\$1.17		
ESTIMATED BASE CONSTRUCTION COST (nearest ,000)						\$153,676,000		\$5,999.71	100.0%

UNIFORMAT SUMMARY - SHELL COST ESTIMATE
ONTARIO SCIENCE CENTRE RELOCATION
 CLASS D ESTIMATE (Rev.1)
 FEBRUARY 03, 2023

Gross Floor Area **25,614** m2

Description Element\Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost		\$ per m2 Sub Element	\$ per m2 Element	%
					Sub Element	Element Total			
A SUBSTRUCTURE									
A10 Foundation						\$0		\$0.00	0.0%
A1010 - Standard Foundations	0.11	2,750	m2	\$0.00	\$0		\$0.00		
A1020 - Special Foundations	0.00	0	m2	\$0.00	\$0		\$0.00		
A1030 - Slab on Grade	0.11	2,750	m2	\$0.00	\$0		\$0.00		
A20 Basement Construction						\$0		\$0.00	0.0%
A2010 - Basement Excavation	0.00	0	m3	\$0.00	\$0		\$0.00		
A2020 - Basement Walls	0.00	0	m2	\$0.00	\$0		\$0.00		
B SHELL									
B10 Superstructure						\$15,120,526		\$590.32	19.1%
B1010 - Floor Construction	0.61	15,646	m2	\$527.33	\$8,250,609		\$322.11		
B1020 - Roof Construction	0.21	5,404	m2	\$1,271.27	\$6,869,917		\$268.21		
B20 Exterior Enclosure						\$25,603,773		\$999.60	32.4%
B2010 - Exterior Walls	0.22	5,717	m2	\$3,016.67	\$17,246,796		\$673.33		
B2020 - Exterior Windows	0.16	4,155	m2	\$1,882.38	\$7,821,290		\$305.35		
B2030 - Exterior Doors	0.00	109	m2	\$4,908.73	\$535,687		\$20.91		
B30 Roofing						\$5,250,420		\$204.98	6.6%
B3010 - Roof Coverings	0.20	5,077	m2	\$1,003.57	\$5,095,110		\$198.92		
B3020 - Roof Openings	0.00	52	m2	\$3,000.00	\$155,310		\$6.06		
C INTERIORS									
C10 Interior Construction						\$2,933,890		\$114.54	3.7%
C1010 - Partitions	0.12	3,138	m2	\$237.00	\$743,651		\$29.03		
C1020 - Interior Doors	0.01	134	LVS	\$4,111.85	\$552,953		\$21.59		
C1030 - Fittings	0.36	9,301	m2	\$176.03	\$1,637,287		\$63.92		
C20 Stairs						\$2,297,032		\$89.68	2.9%
C2010 - Stairs Construction	0.05	1,385	m	\$1,131.37	\$1,566,952		\$61.18		
C2020 - Stairs Finishes	0.02	457	m2	\$1,597.55	\$730,080		\$28.50		
C30 Interior Finishes						\$2,150,650		\$83.96	2.7%
C3010 - Wall Finishes	0.21	5,334	m2	\$33.68	\$179,677		\$7.01		
C3020 - Floor Finishes	0.26	6,724	m2	\$196.34	\$1,320,186		\$51.54		
C3030 - Ceiling Finishes	0.26	6,724	m2	\$96.79	\$650,788		\$25.41		
D SERVICES									
D10 Conveying						\$4,200,000		\$163.97	5.3%
D1010 - Elevators and Lifts	0.00	3	NO	\$1,270,000.00	\$3,810,000		\$148.75		
D1020 - Escalators and Moving Walks	0.00	2	NO	\$195,000.00	\$390,000		\$15.23		
D1090 - Other Conveying Systems	0.00	0	NO	\$0.00	\$0		\$0.00		
D20 Plumbing						\$2,565,905		\$100.18	3.2%
D2010 - Domestic Water Distribution	1.00	25,614	m2	\$40.16	\$1,028,687		\$40.16		
D2020 - Sanitary Drainage	1.00	25,614	m2	\$16.09	\$412,160		\$16.09		
D2030 - Building Support Plumbing System	1.00	25,614	m2	\$8.34	\$213,611		\$8.34		
D2040 - General Service Compressed Air	1.00	25,614	m2	\$2.05	\$52,491		\$2.05		
D2090 - Process Support Plumbing System	1.00	25,614	m2	\$33.53	\$858,955		\$33.53		
D30 HVAC						\$9,877,016		\$385.61	12.5%
D3010 - Facility Fuel System	1.00	25,614	m2	\$4.19	\$107,407		\$4.19		
D3020 - Heat Generating Systems	1.00	25,614	m2	\$77.15	\$1,976,247		\$77.15		
D3030 - Cooling Generating Systems	1.00	25,614	m2	\$77.15	\$1,976,247		\$77.15		
D3040 - Facility HVAC Distribution System	1.00	25,614	m2	\$82.10	\$2,102,825		\$82.10		
D3050 - Ventilation System	1.00	25,614	m2	\$64.43	\$1,650,289		\$64.43		
D3060 - Special Purpose HVAC System	1.00	25,614	m2	\$12.47	\$319,516		\$12.47		
D3070 - Systems Testing and Balancing	1.00	25,614	m2	\$6.42	\$164,336		\$6.42		
D3080 - Other HVAC System and Equipment	1.00	25,614	m2	\$61.69	\$1,580,150		\$61.69		
D40 Fire Protection						\$674,021		\$26.31	0.9%
D4010 - Fire Suppression	1.00	25,614	m2	\$20.08	\$514,240		\$20.08		
D4020 - Fire Protection Specialties	1.00	25,614	m2	\$6.24	\$159,781		\$6.24		
D50 Electrical						\$3,541,530		\$138.27	4.5%
D5010 - Electrical Service Distribution	1.00	25,614	m2	\$50.35	\$1,289,747		\$50.35		
D5020 - Lighting and Branch Wiring	1.00	25,614	m2	\$55.12	\$1,411,797		\$55.12		
D5030 - Communication and Security	1.00	25,614	m2	\$28.03	\$718,079		\$28.03		
D5090 - Other Electrical Systems	1.00	25,614	m2	\$4.76	\$121,908		\$4.76		
D80 Integrated Automation						\$966,636		\$37.74	1.2%
D8010 - Integrated Automation	1.00	25,614	m2	\$37.74	\$966,636		\$37.74		

UNIFORMAT SUMMARY - SHELL COST ESTIMATE
ONTARIO SCIENCE CENTRE RELOCATION
 CLASS D ESTIMATE (Rev.1)
 FEBRUARY 03, 2023

Gross Floor Area **25,614** m2

Description Element/Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost		\$ per m2 Sub Element	\$ per m2 Element	%
					Sub Element	Element Total			
E EQUIPMENT AND FURNISHING									
E10 Equipment						\$0		\$0.00	0.0%
E1010 - Commercial Equipment	0.00	0	m2	\$0.00	\$0		\$0.00		
E1020 - Institutional Equipment	1.00	25,614	m2	\$0.00	\$0		\$0.00		
E1030 - Vehicular Equipment	0.00	0	NO	\$0.00	\$0		\$0.00		
E1090 - Other Equipment	0.00	0	m2	\$0.00	\$0		\$0.00		
E20 Furnishings						\$39,872		\$1.56	0.1%
E2010 - Fixed Furnishings	0.01	169	m2	\$236.00	\$39,872		\$1.56		
E2020 - Movable Furnishings	1.00	25,614	m2	\$0.00	\$0		\$0.00		
F SPECIAL CONSTRUCTION AND DEMOLITION									
F10 Special Construction						\$0		\$0.00	0.0%
F1010 - Special Structures	0.07	1,830	m2	\$0.00	\$0		\$0.00		
F1020 - Integrated Construction	0.00	0	m2	\$0.00	\$0		\$0.00		
F1030 - Special Construction Systems	0.00	0	m2	\$0.00	\$0		\$0.00		
F1040 - Special Facilities	0.00	1	m2	\$0.00	\$0		\$0.00		
F1050 - Special Controls and Instrumentation	0.00	0	m2	\$0.00	\$0		\$0.00		
F20 Selective Building Demolition						\$0		\$0.00	0.0%
F2010 - Building Elements Demolition	0.47	11,937	m2	\$0.00	\$0		\$0.00		
F2020 - Hazardous Components Abatement	0.00	0	m2	\$0.00	\$0		\$0.00		
G BUILDING SITWORK									
G10 Site Preparation						\$1,000,000		\$39.04	1.3%
G1010 - Subsurface Investigation	0.00	0	m2	\$0.00	\$0		\$0.00		
G1020 - Site Clearing	0.00	0	m2	\$0.00	\$0		\$0.00		
G1030 - Site Demolition and Relocations	0.00	0	m2	\$0.00	\$0		\$0.00		
G1040 - Site Earthwork	0.00	0	m2	\$0.00	\$0		\$0.00		
G1050 - Hazardous Waste Remediation	0.00	0	m2	\$0.00	\$0		\$0.00		
G1060 - Site Buildings	1.00	25,614	m2	\$39.04	\$1,000,000		\$39.04		
G20 Site Improvement						\$974,500		\$38.05	1.2%
G2010 - Roadways	0.00	0	m2	\$0.00	\$0		\$0.00		
G2020 - Parking Lots	0.00	0	m2	\$0.00	\$0		\$0.00		
G2030 - Pedestrian Paving	0.00	0	m2	\$0.00	\$0		\$0.00		
G2040 - Site Development	1.00	25,614	m2	\$38.05	\$974,500		\$38.05		
G2050 - Landscaping	0.00	0	m2	\$0.00	\$0		\$0.00		
G30 Site Mechanical Utilities						\$650,000		\$25.38	0.8%
G3010 - Water Supply & Distribution	0.00	0	m2	\$0.00	\$150,000		\$5.86		
G3020 - Sanitary Sewer Systems	0.00	0	m2	\$0.00	\$150,000		\$5.86		
G3030 - Storm Sewer Systems	0.00	0	m2	\$0.00	\$250,000		\$9.76		
G3040 - Fuel Distribution Systems	0.00	0	m2	\$0.00	\$50,000		\$1.95		
G3050 - Special Plumbing Systems	0.00	0	m2	\$0.00	\$50,000		\$1.95		
G40 Site Mechanical Utilities						\$1,200,000		\$46.85	1.5%
G4010 - Steam Distribution Systems	0.00	0	m2	\$0.00	\$0		\$0.00		
G4020 - Hydronic Distribution Systems	0.00	0	m2	\$0.00	\$1,200,000		\$46.85		
G50 Site Electrical Utilities						\$40,000		\$1.56	0.1%
G5010 - Electrical Distribution	0.00	0	m2	\$0.00	\$10,000		\$0.39		
G5020 - Site Lighting	0.00	0	m2	\$0.00	\$0		\$0.00		
G5030 - Site Communication and Security	0.00	0	m2	\$0.00	\$0		\$0.00		
G5090 - Other Site Electrical Utilities	0.00	0	m2	\$0.00	\$30,000		\$1.17		
G90 Other Site Construction						\$0		\$0.00	0.0%
G9010 - Service and Pedestrian Tunnels	0.00	0	m2	\$0.00	\$0		\$0.00		
G9020 - Other Site Systems and Equipments	0.00	0	m2	\$0.00	\$0		\$0.00		
ESTIMATED BASE CONSTRUCTION COST (nearest ,000)						\$79,086,000		\$3,087.60	100.0%

UNIFORMAT SUMMARY - PROGRAM/ FIT-UP ESTIMATE
ONTARIO SCIENCE CENTRE RELOCATION
 CLASS D ESTIMATE (Rev.1)
 FEBRUARY 03, 2023



Gross Floor Area **25,614 m2**

Description Element/Sub-Element	Ratio	Quantity	Unit	Unit Rate	Elemental Cost		\$ per m2 Sub Element	\$ per m2 Element	%
					Sub Element	Element Total			
C INTERIORS									
C10 Interior Construction						\$13,017,235		\$508.21	17.4%
C1010 - Partitions	0.785	20,103	m2	\$221.92	\$4,461,230		\$174.17		
C1020 - Interior Doors	0.01	233	LVS	\$3,704.51	\$862,457		\$33.67		
C1030 - Fittings	0.64	16,312	m2	\$471.66	\$7,693,548		\$300.36		
C20 Stairs						\$0		\$0.00	0.0%
C2010 - Stairs Construction	0.00	0	m	\$0.00	\$0		\$0.00		
C2020 - Stairs Finishes	0.00	0	m2	\$0.00	\$0		\$0.00		
C30 Interior Finishes						\$8,877,314		\$346.58	11.9%
C3010 - Wall Finishes	1.33	34,175	m2	\$43.35	\$1,481,375		\$57.83		
C3020 - Floor Finishes	0.61	15,515	m2	\$300.06	\$4,655,366		\$181.75		
C3030 - Ceiling Finishes	0.61	15,515	m2	\$176.64	\$2,740,573		\$107.00		
D SERVICES									
D10 Conveying						\$0		\$0.00	0.0%
D1010 - Elevators and Lifts	0.00	0	NO	\$0.00	\$0		\$0.00		
D1020 - Escalators and Moving Walks	0.00	0	NO	\$0.00	\$0		\$0.00		
D1090 - Other Conveying Systems	0.00	0	NO	\$0.00	\$0		\$0.00		
D20 Plumbing						\$4,916,021		\$191.93	6.6%
D2010 - Domestic Water Distribution	1.00	25,614	m2	\$79.74	\$2,042,415		\$79.74		
D2020 - Sanitary Drainage	1.00	25,614	m2	\$31.08	\$795,983		\$31.08		
D2030 - Building Support Plumbing System	1.00	25,614	m2	\$15.81	\$404,861		\$15.81		
D2040 - General Service Compressed Air	1.00	25,614	m2	\$4.97	\$127,393		\$4.97		
D2090 - Process Support Plumbing System	1.00	25,614	m2	\$60.33	\$1,545,369		\$60.33		
D30 HVAC						\$19,696,933		\$768.99	26.4%
D3010 - Facility Fuel System	1.00	25,614	m2	\$9.75	\$249,766		\$9.75		
D3020 - Heat Generating Systems	1.00	25,614	m2	\$152.84	\$3,914,827		\$152.84		
D3030 - Cooling Generating Systems	1.00	25,614	m2	\$152.84	\$3,914,827		\$152.84		
D3040 - Facility HVAC Distribution System	1.00	25,614	m2	\$164.33	\$4,209,142		\$164.33		
D3050 - Ventilation System	1.00	25,614	m2	\$123.25	\$3,156,856		\$123.25		
D3060 - Special Purpose HVAC System	1.00	25,614	m2	\$29.02	\$743,255		\$29.02		
D3070 - Systems Testing and Balancing	1.00	25,614	m2	\$12.85	\$329,205		\$12.85		
D3080 - Other HVAC System and Equipment	1.00	25,614	m2	\$124.11	\$3,179,055		\$124.11		
D40 Fire Protection						\$1,585,744		\$61.91	2.1%
D4010 - Fire Suppression	1.00	25,614	m2	\$44.51	\$1,139,976		\$44.51		
D4020 - Fire Protection Specialties	1.00	25,614	m2	\$17.40	\$445,768		\$17.40		
D50 Electrical Systems						\$11,477,841		\$448.11	15.4%
D5010 - Electrical Service Distribution	1.00	25,614	m2	\$18.27	\$467,882		\$18.27		
D5020 - Lighting and Branch Wiring	1.00	25,614	m2	\$305.81	\$7,832,910		\$305.81		
D5030 - Communication and Security	1.00	25,614	m2	\$106.00	\$2,715,020		\$106.00		
D5090 - Other Electrical Systems	1.00	25,614	m2	\$18.04	\$462,029		\$18.04		
D80 Integrated Automation						\$2,261,873		\$88.31	3.0%
D8010 - Integrated Automation	1.00	25,614	m2	\$88.31	\$2,261,873		\$88.31		
E EQUIPMENT AND FURNISHING									
E10 Equipment						\$1,042,056		\$40.68	1.4%
E1010 - Commercial Equipment	0.00	0	m2	\$0.00	\$0		\$0.00		
E1020 - Institutional Equipment	1.00	25,613	m2	\$40.69	\$1,042,056		\$40.68		
E1030 - Vehicular Equipment	0.00	0	NO	\$0.00	\$0		\$0.00		
E1090 - Other Equipment	0.00	0	m2	\$0.00	\$0		\$0.00		
E20 Furnishings						\$11,869,612		\$463.40	15.9%
E2010 - Fixed Furnishings	0.00	0	m2	\$0.00	\$0		\$0.00		
E2020 - Movable Furnishings	0.64	16,312	m2	\$727.67	\$11,869,612		\$463.40		
ESTIMATED BASE CONSTRUCTION COST (nearest ,000)						\$74,745,000		\$2,918.12	100.0%

Description Element/Sub-Element	Zone A Public Spaces / Amenities					Zone B Display Areas					Zone C Collection Support					Zone D Building Support					TOTAL				
	4,704 m2		Elemental Cost			8,175 m2		Elemental Cost			1,059 m2		Elemental Cost			2,374 m2		Elemental Cost			16,312 m2		Elemental Cost		
	Quantity	Unit	Unit Rate	Sub Element	Element Total	Quantity	Unit	Unit Rate	Sub Element	Element Total	Quantity	Unit	Unit Rate	Sub Element	Element Total	Quantity	Unit	Unit Rate	Sub Element	Element Total	Quantity	Unit	Unit Rate	Sub Element	Element Total
C INTERIORS					\$3,870,079					\$6,465,391					\$827,392					\$1,854,373					\$13,017,235
C10 Interior Construction																									
C1010 - Partitions	4,282	m2	\$218.53	\$935,834		7,685	m2	\$249.77	\$1,919,451		2,510	m2	\$197.40	\$495,474		5,626	m2	\$197.40	\$1,110,471		20,103	m2	\$221.92	\$4,461,230	
C1020 - Interior Doors	72	LVS	\$3,557.34	\$256,212		99	LVS	\$3,557.34	\$352,177		19	LVS	\$4,111.85	\$78,386		43	LVS	\$4,111.85	\$175,682		233	LVS	\$3,704.51	\$862,457	
C1030 - Fittings	4,704	m2	\$569.35	\$2,678,034		8,175	m2	\$512.97	\$4,193,763		1,059	m2	\$239.39	\$253,531		2,374	m2	\$239.39	\$568,221		16,312	m2	\$471.66	\$7,693,548	
C20 Stairs					\$0					\$0					\$0					\$0					\$0
C2010 - Straits Construction	0	FLT	\$0.00	\$0		0	FLT	\$0.00	\$0		0	FLT	\$0.00	\$0		0	FLT	\$0.00	\$0		0	FLT	\$0.00	\$0	
C2020 - Straits Finishes	0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0	
C30 Interior Finishes					\$2,767,049					\$3,964,842					\$695,665					\$1,449,758					\$8,877,314
C3010 - Wall Finishes	7,280	m2	\$47.45	\$345,432		13,064	m2	\$44.01	\$574,895		4,267	m2	\$38.47	\$164,145		9,563	m2	\$41.50	\$396,902		34,175	m2	\$43.35	\$1,481,375	
C3020 - Floor Finishes	4,427	m2	\$305.71	\$1,353,289		7,930	m2	\$312.72	\$2,479,881		974	m2	\$304.17	\$296,369		2,184	m2	\$240.79	\$525,828		15,515	m2	\$300.06	\$4,655,366	
C3030 - Ceiling Finishes	4,427	m2	\$241.34	\$1,068,328		7,930	m2	\$114.76	\$910,066		974	m2	\$241.34	\$235,151		2,184	m2	\$241.34	\$527,027		15,515	m2	\$176.64	\$2,740,573	
D SERVICES					\$0					\$0					\$0					\$0					\$0
D10 Conveying					\$0					\$0					\$0					\$0					\$0
D1010 - Elevators and Lifts	0	STS	\$0.00	\$0		0	STS	\$0.00	\$0		0	STS	\$0.00	\$0		0	STS	\$0.00	\$0		0	STS	\$0.00	\$0	
D1020 - Escalators and Moving Walks	0	m	\$0.00	\$0		0	m	\$0.00	\$0		0	m	\$0.00	\$0		0	m	\$0.00	\$0		0	m	\$0.00	\$0	
D1090 - Other Conveying Systems	0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0	
D20 Plumbing					\$1,701,129					\$2,250,359					\$279,748					\$684,786					\$4,916,021
D2010 - Domestic Water Distribution	4,704	m2	\$139.28	\$655,128		8,175	m2	\$115.00	\$940,171		1,059	m2	\$115.00	\$121,795		2,374	m2	\$137.05	\$325,321		16,312	m2	\$125.21	\$2,042,415	
D2020 - Sanitary Drainage	4,704	m2	\$62.10	\$292,110		8,175	m2	\$40.25	\$329,060		1,059	m2	\$40.25	\$42,628		2,374	m2	\$55.69	\$132,185		16,312	m2	\$48.80	\$795,983	
D2030 - Building Support Plumbing System	4,704	m2	\$23.47	\$110,390		8,175	m2	\$24.44	\$199,786		1,059	m2	\$28.75	\$30,449		2,374	m2	\$27.06	\$64,236		16,312	m2	\$24.82	\$404,861	
D2040 - General Service Compressed Air	4,704	m2	\$23.20	\$109,124		8,175	m2	\$0.00	\$0		1,059	m2	\$17.25	\$18,269		2,374	m2	\$0.00	\$0		16,312	m2	\$7.81	\$127,393	
D2090 - Process Support Plumbing System	4,704	m2	\$113.61	\$534,377		8,175	m2	\$95.57	\$781,342		1,059	m2	\$62.89	\$66,607		2,374	m2	\$68.69	\$163,044		16,312	m2	\$94.74	\$1,545,369	
D30 HVAC					\$5,677,458					\$10,040,088					\$1,245,712					\$2,733,675					\$19,696,933
D3010 - Facility Fuel Systems	4,704	m2	\$22.13	\$104,114		8,175	m2	\$12.00	\$98,105		1,059	m2	\$18.00	\$19,064		2,374	m2	\$12.00	\$28,484		16,312	m2	\$15.31	\$249,766	
D3020 - Heating Systems	4,704	m2	\$240.00	\$1,128,874		8,175	m2	\$240.00	\$1,962,096		1,059	m2	\$240.00	\$254,181		2,374	m2	\$240.00	\$569,677		16,312	m2	\$240.00	\$3,914,827	
D3030 - Cooling Systems	4,704	m2	\$240.00	\$1,128,874		8,175	m2	\$240.00	\$1,962,096		1,059	m2	\$240.00	\$254,181		2,374	m2	\$240.00	\$569,677		16,312	m2	\$240.00	\$3,914,827	
D3040 - Facility HVAC Distribution System	4,704	m2	\$240.00	\$1,128,874		8,175	m2	\$276.00	\$2,256,410		1,059	m2	\$240.00	\$254,181		2,374	m2	\$240.00	\$569,677		16,312	m2	\$258.04	\$4,209,142	
D3050 - Ventilation	4,704	m2	\$180.00	\$846,656		8,175	m2	\$207.00	\$1,692,308		1,059	m2	\$180.00	\$190,635		2,374	m2	\$180.00	\$427,258		16,312	m2	\$193.53	\$3,156,856	
D3060 - Special Purpose HVAC Systems	4,704	m2	\$82.17	\$386,511		8,175	m2	\$22.50	\$183,946		1,059	m2	\$60.00	\$63,545		2,374	m2	\$46.03	\$109,253		16,312	m2	\$45.57	\$743,255	
D3070 - Systems Testing and Balancing	4,704	m3	\$19.84	\$93,335		8,175	m2	\$20.70	\$169,231		1,059	m2	\$20.00	\$21,182		2,374	m2	\$19.15	\$45,457		16,312	m2	\$20.18	\$329,205	
D3080 - Other HVAC System and Equipment	4,704	m4	\$182.88	\$860,221		8,175	m2	\$209.89	\$1,715,897		1,059	m2	\$178.21	\$188,744		2,374	m2	\$174.50	\$414,193		16,312	m2	\$194.89	\$3,179,055	
D40 Fire Protection					\$479,418					\$846,154					\$95,318					\$164,855					\$1,585,744
D4010 - Fire Suppression	4,704	m2	\$65.00	\$305,737		8,175	m2	\$74.75	\$611,111		1,059	m2	\$65.00	\$68,841		2,374	m2	\$65.00	\$154,287		16,312	m2	\$69.89	\$1,139,976	
D4020 - Fire Protection Specialties	4,704	m2	\$36.92	\$173,681		8,175	m2	\$28.75	\$235,043		1,059	m2	\$25.00	\$26,477		2,374	m2	\$4.45	\$10,568		16,312	m2	\$27.33	\$445,768	
D50 Electrical Systems					\$3,444,424					\$6,476,143					\$566,823					\$990,452					\$11,477,841
D5010 - Electrical Service and Distribution	4,704	m2	\$22.44	\$105,563		8,175	m2	\$35.25	\$288,183		1,059	m2	\$36.00	\$38,127		2,374	m2	\$15.17	\$36,009		16,312	m2	\$28.68	\$467,882	
D5020 - Lighting and Branch Wiring	4,704	m2	\$537.27	\$2,527,124		8,175	m2	\$540.00	\$4,414,716		1,059	m2	\$276.00	\$292,308		2,374	m2	\$252.25	\$598,763		16,312	m2	\$480.20	\$7,832,910	
D5030 - Communication and Security	4,704	m2	\$150.13	\$706,174		8,175	m2	\$182.40	\$1,491,193		1,059	m2	\$187.20	\$198,261		2,374	m2	\$134.56	\$319,392		16,312	m2	\$166.45	\$2,715,020	
D5090 - Other Electrical Systems	4,704	m2	\$22.44	\$105,563		8,175	m2	\$34.50	\$282,051		1,059	m2	\$36.00	\$38,127		2,374	m2	\$15.29	\$36,288		16,312	m2	\$28.32	\$462,029	
D80 Integrated Automation					\$638,685					\$1,128,205					\$190,635					\$304,348					\$2,261,873
D8010 - Integrated Automation	4,704	m2	\$135.79	\$638,685		8,175	m2	\$138.00	\$1,128,205		1,059	m2	\$180.00	\$190,635		2,374	m2	\$128.22	\$304,348		16,312	m2	\$138.66	\$2,261,873	
E EQUIPMENT AND FURNISHING					\$653,562					\$0					\$182,009					\$206,485					\$1,042,056
E10 Equipment					\$653,562					\$0					\$182,009					\$206,485					\$1,042,056
E1010 - Commercial Equipment	0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0	
E1020 - Institutional Equipment	4,704	m2	\$138.95	\$653,562		8,175	m2	\$0.00	\$0		1,059	m2	\$171.86	\$182,009		2,374	m2	\$86.99	\$206,485		16,312	m2	\$63.88	\$1,042,056	
E1030 - Vehicular Equipment	0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0		0	NO	\$0.00	\$0	
E1090 - Other Equipment	0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0	
E20 Furnishings					\$2,132,536					\$2,515,255					\$325,840					\$6,895,982					\$11,869,612
E2010 - Fixed Furnishings	0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0		0	m2	\$0.00	\$0	
E2020 - Movable Furnishings	4,704	m2	\$453.38	\$2,132,536		8,175	m2	\$307.66	\$2,515,255		1,059	m2	\$307.66	\$325,840		2,374	m2	\$2,905.22	\$6,895,982		16,312	m2	\$727.67	\$11,869,612	
ESTIMATED BASE CONSTRUCTION COST (nearest ,000)					\$21,364,000					\$33,686,000					\$4,409,000					\$15,285,000					\$74,745,000

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
A. SUBSTRUCTURE						
A10 SUBSTRUCTURE - FOUNDATIONS						
A1010 - Standard Foundations						
1	Foundation Design for New Build					Excluded
2	Bridge to Pod #5 - 2 storey, 152m longx3.96m wide, including:					Excluded
2.1	- piers / foundation on water					
3	Bridge to Bridge10 - 2 storey, 115m longx3.96 wide, including:					Excluded
3.1	- foundation on land					
4	Premium for underwater construction					Excluded
TOTAL FOR SUBSTRUCTURE - Standard Foundations		0.11	2,750	m2	\$0.00	\$0
A1030 - Slab on Grade						
5	Level and compact subgrade					Excluded
6	Level - 1 - Concrete slab on grade including:	2,750	m2			Excluded
6.1	- non woven geotextile					
6.2	- granular A sub base, assumed 300mm depth					
6.3	- vapour barrier					
6.4	- synthetic fibre reinforcing, assumed 40 kg/m3					
6.5	- concrete, assumed 200mm thick					
6.6	- 1.5m rigid insulation to perimeter					
6.7	- screed and cure					
6.8	- steel trowel finish					
TOTAL FOR SUBSTRUCTURE - Slab on Grade		0.11	2,750	m2	\$0.00	\$0
B. SHELL						
B10 SHELL - SUPERSTRUCTURE						
B1010 - Floor Construction						
7	Suspended concrete structure to ground floor slab, area based on Design Test Fit received on January 24, 2023	4,676	m2	\$290.85	\$1,360,015	
8	Allowance for pits and trenches	1	LS	\$30,000.00	\$30,000	
9	Allowance for housekeeping pads	1	LS	\$30,000.00	\$30,000	
10	Suspended concrete structure, area based on Design Test Fit received on January 24, 2023, including:	10,970	m2	\$581.70	\$6,381,249	
10.1	- column and beam formwork					
10.2	- soffit formwork					
10.3	- reinforcing steel					
10.4	- concrete					
10.5	- screed and cure					
10.6	- steel trowel finish					
11	Extra over for 3rd Level long span structure	2,482	m2	\$155.00	\$384,710	
12	Extra over for additional loading requirements for new build Mechanical Penthouse Levels	417	m2	\$155.00	\$64,635	
13	Allowance for structural alteration to existing buildings, including:					Excluded
13.1	- PODs					Excluded
13.2	- Cine-sphere					Excluded
13.3	- Connection Bridges					Excluded
13.4	- PODs Mechanical Spaces					Excluded
14	Bridge to Pod #5 - 2 storey, 152m longx3.96m wide, including:					Excluded
14.1	- structural steel structure, upper floor construction, assumed galvanized					
15	Bridge to Bridge10 - 2 storey, 115m longx3.96 wide, including:					Excluded
15.1	- structural steel structure, upper floor construction					
TOTAL FOR SHELL - Floor Construction		0.61	15,646	m2	\$527.33	\$8,250,609

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>B1020 - Roof Construction</u>						
16	Crane tower rental					Included above
17	Roof construction; mixture of suspended concrete structure and structural steel roof construction to new build, including:	4,660	m2	\$794.10	\$3,700,506	
17.1	- column and beam formwork					
17.2	- soffit formwork					
17.3	- reinforcing steel					
17.4	- concrete					
17.5	- screed and cure					
17.6	- steel trowel finish					
18	Structural steel roof construction to new build Mech. Penthouse including:	417	m2	\$607.70	\$253,411	
18.1	- base plates and anchor bolts					
18.2	- structural steel columns					
18.3	- structural steel beams					
18.4	- open web steel joists					
18.5	- bridging and bracing					
18.6	- metal deck					
19	Bridge to Pod #5 - 2 storey, 152m longx3.96m wide, including:					Excluded
19.1	- structural steel structure, roof construction, assumed galvanized					
20	Bridge to Bridge10 - 2 storey, 115m longx3.96 wide, including:					
20.1	- structural steel structure, roof construction					
21	Allowance for structural alteration to existing buildings, including:					Excluded
21.1	- PODs					Excluded
21.2	- Cine-sphere					Excluded
21.3	- Bridge 10	327	m2	\$8,000.00	\$2,616,000	
22	Framing to roof openings					Included above
23	Allowance for Main Entrance Canopy	100	m2	\$3,000.00	\$300,000	
TOTAL FOR SHELL - Roof Construction		0.21	5,404	m2	\$1,271.27	\$6,869,917

B20 SHELL - EXTERIOR ENCLOSURE

B2010 - Exterior Walls

24	High-performance solid exterior envelope, assumed 60% of total envelope area, total area based on Design Test Fit received on January 24, 2023, including:	5,069	m2	\$800.16		\$4,056,000
24.1	- heavy gauge prefinished metal plate panel, assumed 50% of solid area	2,535	m2	\$1,000.00	\$2,535,000	
24.2	- masonry veneer walls, assumed 50% of solid area	2,535	m2	\$600.00	\$1,521,000	
25	Prefinished metal panel to Penthouse Levels, assumed 6.0m high including parapet	648	m2	\$700.00	\$453,713	
26	High-performance solid exterior envelope, assumed 50% of total envelope area, including:					Excluded
26.1	- Bridge to Pod #5 - 2 storey, 152m longx3.96m wide					
26.1	- Bridge to Bridge10 - 2 storey, 115m longx3.96 wide					
27	Structural wall bracing (2kgs/m2)	6	TN	\$6,136.00	\$39,064	
28	Allowance for projections, including:	18,396	m2	\$100.00	\$1,839,960	
28.1	- roof terrace					
28.2	- exterior wall parapets including roofing membrane, cant strip, blocking, and prefinished cap flashing (exterior wall assembly included A3.2)					
28.3	- canopy to Main Entrance including structure, roof finish, soffit finish, and fascia					
28.4	- roof screens to mechanical equipment					
28.5	- fall protection/window washing system					
28.6	- roof ladder					
28.7	- bollards					
28.8	- frost slab to entrances					
28.9	- exterior building signature signage					
28.10	- continuous sunshades					
28.11	- fire exit stair to Bridge to Bridge10, assumed every 45m					Excluded
29	Soffits, including:					
29.1	- to new building	1,305	m2	\$472.00	\$615,960	
29.2	- to new bridges					Excluded

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
30	Existing buildings, including:					
30.1	- PODs - new cladding					Excluded
30.2	- Cine-sphere - repair existing					Excluded
31	Allowance for unique logistic					Excluded
32	Soffit underneath PODs and Bridges					Excluded
33	Handrail to PODs roof					Excluded
34	Allowance for accessibility upgrade for the existing structures has been included. Scope of work includes 1 freight sized elevator being added to one of the pods (includes access to roof), upgrade of existing ramps from pod 3 (cinesphere ramp) and pod 5 (live nation ramp)	1	LS	\$10,000,000.00	\$10,000,000	
Structural Walls Above Grade						
35	Extra over for cast-in-place concrete walls behind cladding above (stairs), including formwork, reinforcing, and concrete	274	m2	\$885.00	\$242,490	
TOTAL FOR SHELL - Exterior Walls		0.22	5,717	m2	\$3,016.67	\$17,246,796
B2020 - Exterior Windows						
36	Aluminum framed curtain wall system, assumed triple glazed, low e coating, and argon filled, assumed 40% of total envelop area	3,379	m2	\$1,700.00	\$5,744,300	
37	Aluminum framed curtain wall system, assumed triple glazed, low e coating, and argon filled, assumed 50% of total envelop area					Excluded
37.1	- Bridge to Pod #5 - 2 storey, 152m longx3.96m wide					
37.1	- Bridge to Bridge10 - 2 storey, 115m longx3.96 wide					
38	Extra over to add Ceramic Frit, assumed 10% of the curtain wall area	338	m2	\$100.00	\$33,790	
39	Allowance for structural support to high curtain wall area, assumed 60% of curtain wall (2kqs/m2)	4	TN	\$6,100.00	\$24,400	
40	Aluminum framed curtain wall system, assumed triple glazed, low e coating, and argon filled to existing buildings, including:					Excluded
40.1	- PODs - repair to existing					Excluded
40.1	- Bridges - new curtain wall to Bridge 10	776	m2	\$2,600.00	\$2,017,600	
40.1	- Cine-sphere - repair to existing					Excluded
41	Allowance for louvres to mechanical room to new building	1	LS	\$1,200.00	\$1,200	
TOTAL FOR SHELL - Exterior Windows		0.16	4,155	m2	\$1,882.38	\$7,821,290
B2030 - Exterior Doors						
42	Revolving door to Main Entrance, 2000mm dia	5	NO	\$80,000.00	\$400,000	
43	Aluminum framed fully glazed doors including installation and finish					
43.1	- single (1036mm x 2686mm), to Level 1	4	NO	\$3,400.00	\$13,600	
43.2	- double (2-1036mm x 2686mm), to Level 1	6	PR	\$6,800.00	\$40,800	
43.3	- single (1036mm x 2686mm), to upper level terraces	6	NO	\$3,400.00	\$20,400	
44	Insulated hollow metal door and frame including installation and paint finish					
44.1	- single, assumed 1100mm x 2700mm	1	NO	\$5,728.93	\$5,729	
44.2	- double, assumed 2-1100mm x 2700mm	1	PR	\$11,457.87	\$11,458	
45	Door hardware supply allowance					Included above
46	Barrier free operators, assumed to aluminum double doors	6	NO	\$3,500.00	\$21,000	
47	Overhead door to loading area, 3000mm x 4000mm	1	NO	\$22,700.00	\$22,700	
48	Aluminum framed fully glazed doors including installation and finish to new Bridges					Excluded
4.1	- double (2-1036mm x 2686mm), assumed to both Level each end					
49	Insulated hollow metal door and frame including installation and paint finish					Excluded
49.1	- single, assumed 1100mm x 2700mm, assumed fire exit to Bridge to Bridge 10					
50	Doors to existing buildings					Excluded
50.1	Aluminum framed fully glazed doors including installation and finish					
50.2	- double (2-1036mm x 2686mm)					Excluded
50.3	Insulated hollow metal door and frame including installation and paint finish					
50.4	- single, assumed 1100mm x 2700mm					Excluded
50.5	- double, assumed 2-1100mm x 2700mm					Excluded

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
50.6	Barrier free operators, assumed to aluminum double doors					Excluded
TOTAL FOR SHELL - Exterior Doors		0.00	109	m2	\$4,908.73	\$535,687

B30 SHELL - ROOFING

B3010 - Roof Coverings

51	Membrane roofing, including filter fabric, insulation, roof membrane, densglas sheathing (including provisions for roof equipment), including:	5,077	m2	\$439.60		\$2,231,852
51.1	- new building	5,077	m2	\$413.00	\$2,096,801	Excluded
51.2	- new bridges					
51.3	- renovation area, assumed 100% new roofing	327	m2	\$413.00	\$135,051	
52	Extra over for tapered insulation, assumed to 100% roof area	5,077	m2	\$0.00		\$0
52.1	- new building	5,077	m2		Included above u.rate	
52.2	- new bridges				Excluded	
52.3	- renovation area, assumed 100% new roofing				Excluded	
53	Extra over for green roof including membrane, soil, and growing medium, 60% roof area as per City of Toronto Green Roof Bylaw	3,046	m2	\$448.40		\$1,365,826
53.1	- new building	3,046	m2	\$448.40	\$1,365,826	
53.2	- renovation area, assumed 100% new roofing				Excluded	
54	Flashing to vertical surfaces	358	m	\$53.10	\$19,010	
55	Flashing to openings	1	LS	\$11,800.00	\$11,800	
56	Roof pavers, assumed to 40% roof area	2,031	m2	\$354.00		\$718,974
56.1	- new building	2,031	m2	\$354.00	\$718,974	
56.2	- renovation area				Excluded	
57	Exterior wall parapets including roofing membrane, cant strip, blocking, and prefinished cap flashing, including masonry cladding (assumed 600mm height)	548	m	\$826.00	\$452,648	
58	Allowance for window washing anchors/ equipment (fall arrest anchors, davit arm bases, etc.)					
58.1	- to new building	1	LS	\$295,000.00	\$295,000	
58.2	- to PODs and Bridges				Excluded	
TOTAL FOR SHELL - Roof Coverings		0.20	5,077	m2	\$1,003.57	\$5,095,110

B3020 - Roof Openings

59	Allowance for Skylight	52	m2	\$3,000.00	\$155,310	
TOTAL FOR SHELL - Roof Openings		0.00	52	m2	\$3,000.00	\$155,310

C. INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 - Partitions

60	Interior partitions, combination of gypsum board partition, CMU partition and glazed partition, including:					
Zone A Public Spaces / Amenities						
60.1	Building Entry and Visitor Amenities - New Building	1,611	m2	\$197.40	\$318,048	
60.2	Building Entry and Visitor Amenities - Renovation	716	m2	\$197.40	\$141,354	
60.3	Education (Science School) - New Building	227	m2	\$197.40	\$44,820	
60.4	Education (Science School) - Renovation	0	m2	\$197.40	\$0	
60.5	Workshops and Maker Spaces - New Building	647	m2	\$249.77	\$161,501	
60.6	Workshops and Maker Spaces - Renovation	364	m2	\$249.77	\$90,844	
60.7	Demonstration Spaces - New Building	491	m2	\$249.77	\$122,741	
60.8	Demonstration Spaces - renovation	226	m2	\$249.77	\$56,525	
60.9	Planetarium and Cinesphere - New Building	0	m2	\$256.18	\$0	
60.10	Planetarium and Cinesphere - Renovation	0	m2	\$256.18	\$0	
60.11	Zone B Display Areas					
60.12	Exhibits - Permanent and Temporary - New Building	5,764	m2	\$249.77	\$1,439,589	
60.13	Exhibits - Permanent and Temporary - Renovation	1,921	m2	\$249.77	\$479,863	
60.14						

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
60.15	Zone C Collection Support					
60.16	Exhibit Support Spaces - New Building	2,510	m2	\$197.40	\$495,474	
60.17	Exhibit Support Spaces - Renovation	0	m2	\$197.40	\$0	
60.18	Zone D Building Support					
60.19	Administrative - OSC - New Building	3,082	m2	\$197.40	\$608,477	
60.20	Administrative - OSC - Renovation	0	m2	\$197.40	\$0	
60.21	Administrative - Support - New Building	385	m2	\$197.40	\$76,060	
60.22	Administrative - Support - Renovation	0	m2	\$197.40	\$0	
60.23	Building Support - New Building	1,607	m2	\$197.40	\$317,277	
60.24	Building Support - Renovation	550	m2	\$197.40	\$108,657	
60.25	Building Grossing, including:					
60.26	Reno-Non Program (Bridges)	683	m2	\$237.00	\$161,849	
60.27	Reno-Program (Cinesphere)	0	m2	\$0.00	\$0	
60.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$237.00	\$0	
60.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	2,436	m2	\$237.00	\$577,223	
60.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	19	m2	\$237.00	\$4,579	

TOTAL FOR INTERIORS - Partitions

0.91	23,241	m2	\$223.96	\$5,204,881
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C1020 - Interior Doors

61	Interior doors, combination of hollow metal and aluminum framed doors including hardware, installation and finish					
61.1	Zone A Public Spaces / Amenities					
61.2	Building Entry and Visitor Amenities - New Building	31	LVS	\$3,557.34	\$109,754	
61.3	Building Entry and Visitor Amenities - Renovation	14	LVS	\$3,557.34	\$48,780	
61.4	Education (Science School) - New Building	4	LVS	\$3,557.34	\$12,889	
61.5	Education (Science School) - Renovation	0	LVS	\$3,557.34	\$0	
61.6	Workshops and Maker Spaces - New Building	9	LVS	\$3,557.34	\$31,727	
61.7	Workshops and Maker Spaces - Renovation	5	LVS	\$3,557.34	\$17,846	
61.8	Demonstration Spaces - New Building	7	LVS	\$3,557.34	\$24,112	
61.9	Demonstration Spaces - renovation	3	LVS	\$3,557.34	\$11,104	
61.10	Planetarium and Cinesphere - New Building	0	LVS	\$4,310.86	\$0	
61.11	Planetarium and Cinesphere - Renovation	0	LVS	\$4,310.86	\$0	
61.12	Zone B Display Areas					
61.13	Exhibits - Permanent and Temporary - New Building	74	LVS	\$3,557.34	\$263,243	
61.14	Exhibits - Permanent and Temporary - Renovation	25	LVS	\$3,557.34	\$88,933	
61.15	Zone C Collection Support					
61.16	Exhibit Support Spaces - New Building	19	LVS	\$4,111.85	\$78,386	
61.17	Exhibit Support Spaces - Renovation	0	LVS	\$4,111.85	\$0	
61.18	Zone D Building Support					
61.19	Administrative - OSC - New Building	23	LVS	\$4,111.85	\$96,264	
61.20	Administrative - OSC - Renovation	0	LVS	\$4,111.85	\$0	
61.21	Administrative - Support - New Building	3	LVS	\$4,111.85	\$12,033	
61.22	Administrative - Support - Renovation	0	LVS	\$4,111.85	\$0	
61.23	Building Support - New Building	12	LVS	\$4,111.85	\$50,195	
61.24	Building Support - Renovation	4	LVS	\$4,111.85	\$17,190	
61.25	Building Grossing, including:					
61.26	Reno-Non Program (Bridges)	29	LVS	\$4,111.85	\$120,346	
61.27	Reno-Program (Cinesphere)	0	LVS	\$0.00	\$0	
61.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	LVS	\$4,111.85	\$0	
61.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	104	LVS	\$4,111.85	\$429,203	
61.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	1	LVS	\$4,111.85	\$3,405	

TOTAL FOR INTERIORS - Doors

0.01	367	LVS	\$3,853.65	\$1,415,410
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
C1030 - Fittings						
62	Fittings and fixtures including tack boards, lockers, wshroom accessories, storage shelving, handrails, washroom partitions, millworks, specialties etc.					
62.1	Zone A Public Spaces / Amenities					
62.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$512.97	\$879,260	
62.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$512.97	\$390,782	
62.4	Education (Science School) - New Building	242	m2	\$512.97	\$123,907	
62.5	Education (Science School) - Renovation	0	m2	\$512.97	\$0	
62.6	Workshops and Maker Spaces - New Building	743	m2	\$646.49	\$480,481	
62.7	Workshops and Maker Spaces - Renovation	418	m2	\$646.49	\$270,270	
62.8	Demonstration Spaces - New Building	565	m2	\$646.49	\$365,165	
62.9	Demonstration Spaces - renovation	260	m2	\$646.49	\$168,168	
62.10	Planetarium and Cinesphere - New Building	0	m2	\$646.49	\$0	
62.11	Planetarium and Cinesphere - Renovation	0	m2	\$646.49	\$0	
62.12	Zone B Display Areas					
62.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$512.97	\$3,145,322	
62.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$512.97	\$1,048,441	
62.15	Zone C Collection Support					
62.16	Exhibit Support Spaces - New Building	1,059	m2	\$239.39	\$253,531	
62.17	Exhibit Support Spaces - Renovation	0	m2	\$239.39	\$0	
62.18	Zone D Building Support					
62.19	Administrative - OSC - New Building	1,301	m2	\$239.39	\$311,354	
62.20	Administrative - OSC - Renovation	0	m2	\$239.39	\$0	
62.21	Administrative - Support - New Building	163	m2	\$239.39	\$38,919	
62.22	Administrative - Support - Renovation	0	m2	\$239.39	\$0	
62.23	Building Support - New Building	678	m2	\$239.39	\$162,349	
62.24	Building Support - Renovation	232	m2	\$239.39	\$55,599	
62.25	Building Grossing, including:					
62.26	Reno-Non Program (Bridges)	1,626	m2	\$239.39	\$389,243	
62.27	Reno-Program (Cinesphere)	1,830	m2	\$0.00	\$0	
62.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$239.39	\$0	
62.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$213.52	\$1,238,222	
62.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$213.52	\$9,822	

TOTAL FOR INTERIORS - Fittings

1.00	25,613	m2	\$364.30	\$9,330,835
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C20 STAIRS

C2010 - Strairs Construction

63	Poured concrete stairs, including:	1,071	m	\$442.50	\$473,918	
63.1	- stair 1 to 6 (from Ground Floor to 5th Floor)	1,071	m	\$442.50	\$473,918	
64	Lobby feature stair (floating treads)					
64.1	- feature stair (assumed from Ground to 3rd Floor)	314	m	\$3,481.00	\$1,093,034	

TOTAL FOR INTERIOR - Stairs

0.05	1,385	m	\$1,131.37	\$1,566,952
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C2020 - Stairs Finishes

65	Poured concrete stairs	857	NO	\$600.00	\$514,080	
65.1	- stair 1, 2 (from Ground Floor to 5th Floor)	857	NO	\$600.00	\$514,080	
66	Lobby feature stair (floating treads)					
66.1	- feature stair (assumed from Ground to 3rd Floor)	180	NO	\$1,200.00	\$216,000	

TOTAL FOR INTERIOR - Stair Finishes

0.02	457	m2	\$1,597.55	\$730,080
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
C30 INTERIOR FINISHES						
C3010 - Wall Finishes						
67	Wall finishes, combination of paint, ceramic tiles					
67.1	Zone A Public Spaces / Amenities					
67.2	Building Entry and Visitor Amenities - New Building	2,739	m2	\$44.01	\$120,532	
67.3	Building Entry and Visitor Amenities - Renovation	1,217	m2	\$44.01	\$53,570	
67.4	Education (Science School) - New Building	386	m2	\$51.55	\$19,897	
67.5	Education (Science School) - Renovation	0	m2	\$51.55	\$0	
67.6	Workshops and Maker Spaces - New Building	1,099	m2	\$51.55	\$56,663	
67.7	Workshops and Maker Spaces - Renovation	618	m2	\$51.55	\$31,873	
67.8	Demonstration Spaces - New Building	835	m2	\$51.55	\$43,064	
67.9	Demonstration Spaces - renovation	385	m2	\$51.55	\$19,832	
67.10	Planetarium and Cinesphere - New Building	0	m2	\$51.55	\$0	
67.11	Planetarium and Cinesphere - Renovation	0	m2	\$51.55	\$0	
67.12	Zone B Display Areas					
67.13	Exhibits - Permanent and Temporary - New Building	9,798	m2	\$44.01	\$431,171	
67.14	Exhibits - Permanent and Temporary - Renovation	3,266	m2	\$44.01	\$143,724	
67.15	Zone C Collection Support					
67.16	Exhibit Support Spaces - New Building	4,267	m2	\$38.47	\$164,145	
67.17	Exhibit Support Spaces - Renovation	0	m2	\$38.47	\$0	
67.18	Zone D Building Support					
67.19	Administrative - OSC - New Building	5,240	m2	\$44.01	\$230,597	
67.20	Administrative - OSC - Renovation	0	m2	\$44.01	\$0	
67.21	Administrative - Support - New Building	655	m2	\$38.47	\$25,198	
67.22	Administrative - Support - Renovation	0	m2	\$38.47	\$0	
67.23	Building Support - New Building	2,732	m2	\$38.47	\$105,110	
67.24	Building Support - Renovation	936	m2	\$38.47	\$35,997	
67.25	Building Grossing, including:					
67.26	Reno-Non Program (Bridges)	1,161	m2	\$33.68	\$39,105	
67.27	Reno-Program (Cinesphere)	0	m2	\$0.00	\$0	
67.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$33.68	\$0	
67.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	4,140	m2	\$33.68	\$139,465	
67.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	33	m2	\$33.68	\$1,106	
TOTAL FOR INTERIORS - Wall Finishes		1.54	39,509 m2	\$42.04	\$1,661,051	

C3020 - Floor Finishes

68	Floor finishes, combination of porcelain/ceramic tiles, carpet tiles, resilient flooring					
68.1	Zone A Public Spaces / Amenities					
68.2	Building Entry and Visitor Amenities - New Building	1,577	m2	\$304.17	\$479,649	
68.3	Building Entry and Visitor Amenities - Renovation	701	m2	\$304.17	\$213,177	
68.4	Education (Science School) - New Building	222	m2	\$304.17	\$67,593	
68.5	Education (Science School) - Renovation	0	m2	\$304.17	\$0	
68.6	Workshops and Maker Spaces - New Building	721	m2	\$304.17	\$219,281	
68.7	Workshops and Maker Spaces - Renovation	406	m2	\$304.17	\$123,346	
68.8	Demonstration Spaces - New Building	548	m2	\$312.72	\$171,337	
68.9	Demonstration Spaces - renovation	252	m2	\$312.72	\$78,905	
68.10	Planetarium and Cinesphere - New Building	0	m2	\$339.57	\$0	
68.11	Planetarium and Cinesphere - Renovation	0	m2	\$339.57	\$0	
68.12	Zone B Display Areas					
68.13	Exhibits - Permanent and Temporary - New Building	5,948	m2	\$312.72	\$1,859,911	
68.14	Exhibits - Permanent and Temporary - Renovation	1,983	m2	\$312.72	\$619,970	
68.15	Zone C Collection Support					
68.16	Exhibit Support Spaces - New Building	974	m2	\$304.17	\$296,369	
68.17	Exhibit Support Spaces - Renovation	0	m2	\$304.17	\$0	
68.18	Zone D Building Support					
68.19	Administrative - OSC - New Building	1,197	m2	\$304.17	\$363,962	
68.20	Administrative - OSC - Renovation	0	m2	\$304.17	\$0	
68.21	Administrative - Support - New Building	150	m2	\$163.97	\$24,525	
68.22	Administrative - Support - Renovation	0	m2	\$163.97	\$0	
68.23	Building Support - New Building	624	m2	\$163.97	\$102,305	
68.24	Building Support - Renovation	214	m2	\$163.97	\$35,036	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
68.25	Building Grossing, including:					
68.26	Reno-Non Program (Bridges)	1,463	m2	\$312.72	\$457,629	
68.27	Reno-Program (Cinesphere)	0	m2	\$0.00	\$0	
68.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$312.72	\$0	
68.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,219	m2	\$163.97	\$855,769	
68.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	41	m2	\$163.97	\$6,788	
TOTAL FOR INTERIORS - Floor Finishes						
		0.87	22,239	m2	\$268.70	\$5,975,552

C3030 - Ceiling Finishes

69	Ceiling finishes, combination of suspended gypsum board ceiling, acoustical tile ceiling, gypsum bulkheads					
69.1	Zone A Public Spaces / Amenities					
69.2	Building Entry and Visitor Amenities - New Building	1,577	m2	\$241.34	\$380,574	
69.3	Building Entry and Visitor Amenities - Renovation	701	m2	\$241.34	\$169,144	
69.4	Education (Science School) - New Building	222	m2	\$241.34	\$53,631	
69.5	Education (Science School) - Renovation	0	m2	\$241.34	\$0	
69.6	Workshops and Maker Spaces - New Building	721	m2	\$241.34	\$173,987	
69.7	Workshops and Maker Spaces - Renovation	406	m2	\$241.34	\$97,868	
69.8	Demonstration Spaces - New Building	548	m2	\$241.34	\$132,230	
69.9	Demonstration Spaces - renovation	252	m2	\$241.34	\$60,895	
69.10	Planetarium and Cinesphere - New Building	0	m2	\$241.34	\$0	
69.11	Planetarium and Cinesphere - Renovation	0	m2	\$241.34	\$0	
69.12	Zone B Display Areas					
69.13	Exhibits - Permanent and Temporary - New Building	5,948	m2	\$114.76	\$682,550	
69.14	Exhibits - Permanent and Temporary - Renovation	1,983	m2	\$114.76	\$227,517	
69.15	Zone C Collection Support					
69.16	Exhibit Support Spaces - New Building	974	m2	\$241.34	\$235,151	
69.17	Exhibit Support Spaces - Renovation	0	m2	\$241.34	\$0	
69.18	Zone D Building Support					
69.19	Administrative - OSC - New Building	1,197	m2	\$241.34	\$288,782	
69.20	Administrative - OSC - Renovation	0	m2	\$241.34	\$0	
69.21	Administrative - Support - New Building	150	m2	\$241.34	\$36,098	
69.22	Administrative - Support - Renovation	0	m2	\$241.34	\$0	
69.23	Building Support - New Building	624	m2	\$241.34	\$150,579	
69.24	Building Support - Renovation	214	m2	\$241.34	\$51,568	
69.25	Building Grossing, including:					
69.26	Reno-Non Program (Bridges)	1,463	m2	\$96.79	\$141,638	
69.27	Reno-Program (Cinesphere)	0	m2	\$0.00	\$0	
69.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$96.79	\$0	
69.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,219	m2	\$96.79	\$505,142	
69.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	41	m2	\$96.79	\$4,007	
TOTAL FOR INTERIORS - Ceiling Finishes						
		0.87	22,239	m2	\$152.50	\$3,391,360

D. SERVICES

D10 CONVEYING

D1010 - Elevators and Lifts

70	Elevators, including:	7	NO	\$544,285.71		\$3,810,000
70.1	- passenger (public) elevators (serving 3 stops Parking 2 to Ground Level)	2	NO	\$270,000.00	\$540,000	
70.1	- passenger (public) elevators (serving 7 stops Parking 2 to 5th Level)	4	NO	\$630,000.00	\$2,520,000	
70.2	- service elevator #1 (serving 7 stops Parking 2 to 5th Level) large size	1	NO	\$750,000.00	\$750,000	
71	Allowance to refurbish existing elevators					Excluded
72	Allowance for new elevator addition to PODs as per comments					Included in item 34
TOTAL FOR SERVICES - Elevators and Lifts						
		0.00	3	NO	\$1,270,000.00	\$3,810,000

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>D1020 - Escalators and Moving Walks</u>						
73	Escalator to Lobby as per Design Test Fit received on January 24, 2023	2	NO	\$195,000.00	\$390,000	
74	Moving walk					Excluded
TOTAL FOR SERVICES - Escalators and Moving Walks		0.00	2	NO	\$195,000.00	\$390,000

D20 PLUMBING

D2010 - Domestic Water Distribution

75	Domestic cold water services are extended from the incoming water service to the building with central water meter and backflow preventer assembly, to fixtures and fittings throughout, as well as mechanical cooling systems make-up and general interior and exterior hose bibb coverage. All domestic cold water is thermally insulated. plumbing fixtures included					
<u>Zone A Public Spaces /Amenities</u>						
75.1	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$115.00	\$197,115	
75.2	- Building Entry and Visitor Amenities - Renovation	762	m2	\$115.00	\$87,607	
75.3	- Education (Science School) - New Building	242	m2	\$115.00	\$27,778	
75.4	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
75.5	- Workshops and Maker Spaces - New Building	743	m2	\$172.50	\$128,205	
75.6	- Workshops and Maker Spaces - Renovation	418	m2	\$172.50	\$72,115	
75.7	- Demonstration Spaces - New Building	565	m2	\$172.50	\$97,436	
75.8	- Demonstration Spaces - renovation	260	m2	\$172.50	\$44,872	
75.9	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
75.10	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
75.11						
<u>Zone B Display Areas</u>						
75.12	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$115.00	\$705,180	
75.13	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$115.00	\$235,060	
75.14						
<u>Zone C Collection Support</u>						
75.15	- Exhibit Support Spaces - New Building	1,059	m2	\$115.00	\$121,785	
75.16	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
75.17						
<u>Zone D Building Support</u>						
75.18	- Administrative - OSC - New Building	1,301	m2	\$115.00	\$149,615	
75.19	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
75.20	- Administrative - Support - New Building	163	m2	\$115.00	\$18,745	
75.21	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
75.22	- Building Support - New Building	678	m2	\$172.50	\$116,955	
75.23	- Building Support - Renovation	232	m2	\$172.50	\$40,020	
75.24						
<u>Building Grossing, Including</u>						
75.25	- Reno-Non Program (Bridges)	1,626	m2	\$115.00	\$186,990	
75.26	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
75.27	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
75.28	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$143.99	\$834,999	
75.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$143.99	\$6,624	
75.30						
TOTAL FOR SERVICES - Domestic Water Distribution		1.00	25,614	m2	\$119.90	\$3,071,101

D2020 - Sanitary Waste

76	A complete system of sanitary waste and vent collection are provided to serve plumbing fixtures, floor drains and equipment throughout. Condensate drainage is provided to serve HVAC equipment piped to floor / hub drains throughout. Service connects to outlet to site sanitary sewer. Grease interceptor is provided for commercial kitchen.					
<u>Zone A Public Spaces /Amenities</u>						
76.1	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$40.25	\$68,990	
76.2	- Building Entry and Visitor Amenities - Renovation	762	m2	\$40.25	\$30,662	
76.3	- Education (Science School) - New Building	242	m2	\$40.25	\$9,722	
76.4	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
76.5	- Workshops and Maker Spaces - New Building	743	m2	\$92.00	\$68,376	
76.6	- Workshops and Maker Spaces - Renovation	418	m2	\$92.00	\$38,462	
76.7	- Demonstration Spaces - New Building	565	m2	\$92.00	\$51,966	
76.8	- Demonstration Spaces - renovation	260	m2	\$92.00	\$23,932	
76.9	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
76.10	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
76.11						
<u>Zone B Display Areas</u>						
76.12	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$40.25	\$246,813	
76.13	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$40.25	\$82,271	
76.14						

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
76.15	Zone C Collection Support					
76.16	- Exhibit Support Spaces - New Building	1,059	m2	\$40.25	\$42,625	
76.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
76.18	Zone D Building Support					
76.19	- Administrative - OSC - New Building	1,301	m2	\$40.25	\$52,365	
76.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
76.21	- Administrative - Support - New Building	163	m2	\$40.25	\$6,561	
76.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
76.23	- Building Support - New Building	678	m2	\$80.50	\$54,579	
76.24	- Building Support - Renovation	232	m2	\$80.50	\$18,676	
76.25	Building Grossing, Including					
76.26	- Reno-Non Program (Bridges)	1,626	m2	\$51.75	\$84,146	
76.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
76.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
76.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$56.12	\$325,417	
76.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$56.12	\$2,581	
TOTAL FOR SERVICES - Sanitary Waste		1.00	25,614	m2	\$47.17	\$1,208,143

D2030 - Building Support Plumbing System

77 A complete systems of roof/storm water drainage will be provided to collect rainwater from roofs and green roofs. Service will connect to outlets to site storm sewer. Adjacent overflow "daylight" drains will spill to grade. Special provision for noise sensitive area drainage is also included

77.1 Zone A Public Spaces /Amenities

77.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$28.75	\$49,279	
77.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$11.50	\$8,761	
77.4	- Education (Science School) - New Building	242	m2	\$28.75	\$6,944	
77.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
77.6	- Workshops and Maker Spaces - New Building	743	m2	\$28.75	\$21,368	
77.7	- Workshops and Maker Spaces - Renovation	418	m2	\$11.50	\$4,808	
77.8	- Demonstration Spaces - New Building	565	m2	\$28.75	\$16,239	
77.9	- Demonstration Spaces - renovation	260	m2	\$11.50	\$2,991	
77.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
77.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	

77.12 Zone B Display Areas

77.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$28.75	\$176,295	
77.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$11.50	\$23,506	

77.15 Zone C Collection Support

77.16	- Exhibit Support Spaces - New Building	1,059	m2	\$28.75	\$30,446	
77.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

77.18 Zone D Building Support

77.19	- Administrative - OSC - New Building	1,301	m2	\$28.75	\$37,404	
77.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
77.21	- Administrative - Support - New Building	163	m2	\$28.75	\$4,686	
77.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
77.23	- Building Support - New Building	678	m2	\$28.75	\$19,493	
77.24	- Building Support - Renovation	232	m2	\$11.50	\$2,668	

77.25 Building Grossing, Including

77.26	- Reno-Non Program (Bridges)	1,626	m2	\$28.75	\$46,748	
77.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
77.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
77.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$28.54	\$165,524	
77.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$28.54	\$1,313	

TOTAL FOR SERVICES - Building Support Plumbing System		1.00	25,614	m2	\$24.15	\$618,472
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>D2040 - General Service Compressed Air System</u>						
78	Provisional sum allowance for compressed air system to serve the building c/w compressor, filters, regulators, piping, outlets, hose reels, etc.					
78.1	<u>Zone A Public Spaces /Amenities</u>					
78.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$0.00		\$0
78.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$0.00		\$0
78.4	- Education (Science School) - New Building	242	m2	\$57.50		\$13,889
78.5	- Education (Science School) - Renovation	0	m2	\$0.00		\$0
78.6	- Workshops and Maker Spaces - New Building	743	m2	\$57.50		\$42,735
78.7	- Workshops and Maker Spaces - Renovation	418	m2	\$57.50		\$24,038
78.8	- Demonstration Spaces - New Building	565	m2	\$34.50		\$19,487
78.9	- Demonstration Spaces - renovation	260	m2	\$34.50		\$8,974
78.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00		\$0
78.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00		\$0
78.12	<u>Zone B Display Areas</u>					
78.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$0.00		\$0
78.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$0.00		\$0
78.15	<u>Zone C Collection Support</u>					
78.16	- Exhibit Support Spaces - New Building	1,059	m2	\$17.25		\$18,268
78.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00		\$0
78.18	<u>Zone D Building Support</u>					
78.19	- Administrative - OSC - New Building	1,301	m2	\$0.00		\$0
78.20	- Administrative - OSC - Renovation	0	m2	\$0.00		\$0
78.21	- Administrative - Support - New Building	163	m2	\$0.00		\$0
78.22	- Administrative - Support - Renovation	0	m2	\$0.00		\$0
78.23	- Building Support - New Building	678	m2	\$0.00		\$0
78.24	- Building Support - Renovation	232	m2	\$0.00		\$0
78.25	<u>Building Grossing, Including</u>					
78.26	- Reno-Non Program (Bridges)	1,626	m2	\$0.00		\$0
78.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00		Excluded
78.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$0.00		\$0
78.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$8.98		\$52,080
78.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$8.98		\$413
TOTAL FOR SERVICES - General Service Compressed Air System		1.00	25,614	m2	\$7.02	\$179,884

D2050 - Process Support Plumbing Systems

79	Allowance for process support plumbing system including specialty services, miscellaneous work, general accounts including: Supervision, submittals, warranty, hoisting and millwrighting, fire stopping, cutting and coring, and general overheads (site and office)					
79.1	<u>Zone A Public Spaces /Amenities</u>					
79.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$57.50		\$98,558
79.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$52.11		\$39,697
79.4	- Education (Science School) - New Building	242	m2	\$132.07		\$31,901
79.5	- Education (Science School) - Renovation	0	m2	\$0.00		\$0
79.6	- Workshops and Maker Spaces - New Building	743	m2	\$191.82		\$142,561
79.7	- Workshops and Maker Spaces - Renovation	418	m2	\$182.38		\$76,247
79.8	- Demonstration Spaces - New Building	565	m2	\$179.24		\$101,242
79.9	- Demonstration Spaces - renovation	260	m2	\$169.80		\$44,171
79.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00		\$0
79.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00		\$0
79.12	<u>Zone B Display Areas</u>					
79.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$110.06		\$674,888
79.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$52.11		\$106,512
79.15	<u>Zone C Collection Support</u>					
79.16	- Exhibit Support Spaces - New Building	1,059	m2	\$62.89		\$66,601
79.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00		\$0
79.18	<u>Zone D Building Support</u>					
79.19	- Administrative - OSC - New Building	1,301	m2	\$57.50		\$74,808
79.20	- Administrative - OSC - Renovation	0	m2	\$0.00		\$0
79.21	- Administrative - Support - New Building	163	m2	\$57.50		\$9,373
79.22	- Administrative - Support - Renovation	0	m2	\$0.00		\$0
79.23	- Building Support - New Building	678	m2	\$88.05		\$59,696
79.24	- Building Support - Renovation	232	m2	\$82.66		\$19,176

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
79.25	Building Grossing, Including					
79.26	- Reno-Non Program (Bridges)	1,626	m2	\$61.09	\$99,338	
79.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
79.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
79.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$129.95	\$753,580	
79.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$129.95	\$5,978	
TOTAL FOR SERVICES - Process Support Plumbing Systems		1.00	25,614	m2	\$93.87	\$2,404,325

D30 HVAC

D3010 - Facility Fuel System

Generator Fuel Supply

80	Generator fuel oil supply including storage tanks - double wall vacuum monitored with initial fill of fuel oil and monitoring controls, lockable remote stainless fuel fill cabinet and alarm, fill station, fuel oil transfer pump c/w strainer and pressure reliefs, painted steel drip tray, adjustable back pressure valve and flow switch, skid mounted, fuel oil piping and venting, Sch.40 black mild steel with screwed joints and fittings					
80.1	Natural gas service to boilers and other gas-fired equipment, as well as kitchen equipment c/w distribution piping, hook-up connection assemblies and PRV stations / valving					
80.2	Zone A Public Spaces /Amenities					
80.3	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$12.00	\$20,569	
80.4	- Building Entry and Visitor Amenities - Renovation	762	m2	\$12.00	\$9,142	
80.5	- Education (Science School) - New Building	242	m2	\$12.00	\$2,899	
80.6	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
80.7	- Workshops and Maker Spaces - New Building	743	m2	\$36.00	\$26,756	
80.8	- Workshops and Maker Spaces - Renovation	418	m2	\$36.00	\$15,050	
80.9	- Demonstration Spaces - New Building	565	m2	\$36.00	\$20,334	
80.10	- Demonstration Spaces - renovation	260	m2	\$36.00	\$9,365	
80.11	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
80.12	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
80.13	Zone B Display Areas					
80.14	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$12.00	\$73,584	
80.15	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$12.00	\$24,528	
80.16	Zone C Collection Support					
80.17	- Exhibit Support Spaces - New Building	1,059	m2	\$18.00	\$19,062	
80.18	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
80.19	Zone D Building Support					
80.20	- Administrative - OSC - New Building	1,301	m2	\$12.00	\$15,612	
80.21	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
80.22	- Administrative - Support - New Building	163	m2	\$12.00	\$1,956	
80.23	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
80.24	- Building Support - New Building	678	m2	\$12.00	\$8,136	
80.25	- Building Support - Renovation	232	m2	\$12.00	\$2,784	
80.26	Building Grossing, Including					
80.27	- Reno-Non Program (Bridges)	1,626	m2	\$0.00	\$0	
80.28	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
80.29	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
80.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$18.37	\$106,552	
80.31	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$18.37	\$845	
TOTAL FOR SERVICES - Facility Fuel System		1.00	25,614	m2	\$13.94	\$357,173

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
D3020 - Heat Generating Systems						
81	Central high efficiency condensing style hot water boilers (with acid neutralization and primary heating water pumps) are utilized to provide hot water to serve the building heating loads. Air and expansion control and chemical pot feeder are provided. Heat exchangers are provided for freeze protection for hot glycol loop. Hot and hot glycol water heating piping is extended to air handling units, perimeter radiation, in-floor heating, unit heaters and VAV reheat coils throughout utilizing fully redundant secondary circulation pumps c/w VFD's.					
81.1	Zone A Public Spaces /Amenities					
81.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$240.00	\$411,371	
81.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$240.00	\$182,832	
81.4	- Education (Science School) - New Building	242	m2	\$240.00	\$57,971	
81.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
81.6	- Workshops and Maker Spaces - New Building	743	m2	\$240.00	\$178,372	
81.7	- Workshops and Maker Spaces - Renovation	418	m2	\$240.00	\$100,334	
81.8	- Demonstration Spaces - New Building	565	m2	\$240.00	\$135,563	
81.9	- Demonstration Spaces - renovation	260	m2	\$240.00	\$62,430	
81.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
81.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
81.12	Zone B Display Areas					
81.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$240.00	\$1,471,680	
81.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$240.00	\$490,560	
81.15	Zone C Collection Support					
81.16	- Exhibit Support Spaces - New Building	1,059	m2	\$240.00	\$254,160	
81.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
81.18	Zone D Building Support					
81.19	- Administrative - OSC - New Building	1,301	m2	\$240.00	\$312,240	
81.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
81.21	- Administrative - Support - New Building	163	m2	\$240.00	\$39,120	
81.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
81.23	- Building Support - New Building	678	m2	\$240.00	\$162,720	
81.24	- Building Support - Renovation	232	m2	\$240.00	\$55,680	
81.25	Building Grossing, Including					
81.26	- Reno-Non Program (Bridges)	1,626	m2	\$180.00	\$292,680	
81.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
81.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
81.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$288.00	\$1,670,112	
81.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$288.00	\$13,248	
TOTAL FOR SERVICES - Heat Generating Systems		1.00	25,614	m2	\$229.99	\$5,891,074

D3030 - Cooling Generating Systems

82	Central, high efficiency water cooled chillers provide chilled water to serve the building HVAC loads. Chilled water loops are provided with primary circulation pumps c/w VFD's. Air and expansion control and chemical pot feeder are provided. Chilled water piping is extended to air handling units and space cooling units throughout utilizing fully redundant secondary circulation pumps c/w VFD's.					
82.1	Zone A Public Spaces /Amenities					
82.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$240.00	\$411,371	
82.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$240.00	\$182,832	
82.4	- Education (Science School) - New Building	242	m2	\$240.00	\$57,971	
82.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
82.6	- Workshops and Maker Spaces - New Building	743	m2	\$240.00	\$178,372	
82.7	- Workshops and Maker Spaces - Renovation	418	m2	\$240.00	\$100,334	
82.8	- Demonstration Spaces - New Building	565	m2	\$240.00	\$135,563	
82.9	- Demonstration Spaces - renovation	260	m2	\$240.00	\$62,430	
82.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
82.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
82.12	Zone B Display Areas					
82.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$240.00	\$1,471,680	
82.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$240.00	\$490,560	
82.15	Zone C Collection Support					
82.16	- Exhibit Support Spaces - New Building	1,059	m2	\$240.00	\$254,160	
82.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
82.18	Zone D Building Support					
82.19	- Administrative - OSC - New Building	1,301	m2	\$240.00	\$312,240	
82.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
82.21	- Administrative - Support - New Building	163	m2	\$240.00	\$39,120	
82.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
82.23	- Building Support - New Building	678	m2	\$240.00	\$162,720	
82.24	- Building Support - Renovation	232	m2	\$240.00	\$55,680	
82.25	Building Grossing, Including					
82.26	- Reno-Non Program (Bridges)	1,626	m2	\$180.00	\$292,680	
82.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
82.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
82.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$288.00	\$1,670,112	
82.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$288.00	\$13,248	
TOTAL FOR SERVICES - Cooling Generating Systems		1.00	25,614	m2	\$229.99	\$5,891,074

D3040 - Facility HVAC Distribution System

83 Heating/cooling and ventilation is achieved through central indoor mounted energy recovery air handling units and supplemented with localized spot cooling units to suit special purpose needs. Variable air volume (VAV) AHU's with noise sensitive overhead air distribution to supply conditioned air to the spaces via a network of sheetmetal ducts to localized air control terminals (VAV boxes and/or VAV w/ reheat coils) and supply air diffusers. Return air will be ducted or via ceiling plenum based on building design.

Zone A Public Spaces /Amenities

83.1	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$240.00	\$411,371	
83.2	- Building Entry and Visitor Amenities - Renovation	762	m2	\$240.00	\$182,832	
83.3	- Education (Science School) - New Building	242	m2	\$240.00	\$57,971	
83.4	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
83.5	- Workshops and Maker Spaces - New Building	743	m2	\$240.00	\$178,372	
83.6	- Workshops and Maker Spaces - Renovation	418	m2	\$240.00	\$100,334	
83.7	- Demonstration Spaces - New Building	565	m2	\$240.00	\$135,563	
83.8	- Demonstration Spaces - renovation	260	m2	\$240.00	\$62,430	
83.9	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
83.10	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	

Zone B Display Areas

83.11	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$288.00	\$1,766,016	
83.12	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$240.00	\$490,560	

Zone C Collection Support

83.13	- Exhibit Support Spaces - New Building	1,059	m2	\$240.00	\$254,160	
83.14	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

Zone D Building Support

83.15	- Administrative - OSC - New Building	1,301	m2	\$240.00	\$312,240	
83.16	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
83.17	- Administrative - Support - New Building	163	m2	\$240.00	\$39,120	
83.18	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
83.19	- Building Support - New Building	678	m2	\$240.00	\$162,720	
83.20	- Building Support - Renovation	232	m2	\$240.00	\$55,680	

Building Grossing, Including

83.21	- Reno-Non Program (Bridges)	1,626	m2	\$180.00	\$292,680	
83.22	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
83.23	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
83.24	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$309.65	\$1,795,673	
83.25	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$309.65	\$14,244	

TOTAL FOR SERVICES - Facility HVAC Distribution System		1.00	25,614	m2	\$246.43	\$6,311,967
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>D3050 - Ventilation System</u>						
84	Semi-Custom quality air handling units generally comprising of: 4" thick Double Wall insulated casing, solid stainless steel base (drain pan), chilled water cooling/hot water heating coil section, energy recovery section (where required, assume 30% of units), mixing box section, MERV8/13 Pre / Final filter sections, variable frequency drives, supply and return/exhaust fan arrays c/w vibration isolation, access sections with marine lights, airflow stations, factory installed building automation BACnet, and intake and discharge plenums equal to Trane / Daikin / Carrier					
84.1	<u>Zone A Public Spaces /Amenities</u>					
84.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$180.00	\$308,528	
84.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$180.00	\$137,124	
84.4	- Education (Science School) - New Building	242	m2	\$180.00	\$43,478	
84.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
84.6	- Workshops and Maker Spaces - New Building	743	m2	\$180.00	\$133,779	
84.7	- Workshops and Maker Spaces - Renovation	418	m2	\$180.00	\$75,251	
84.8	- Demonstration Spaces - New Building	565	m2	\$180.00	\$101,672	
84.9	- Demonstration Spaces - renovation	260	m2	\$180.00	\$46,823	
84.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
84.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
84.12	<u>Zone B Display Areas</u>					
84.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$216.00	\$1,324,512	
84.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$180.00	\$367,920	
84.15	<u>Zone C Collection Support</u>					
84.16	- Exhibit Support Spaces - New Building	1,059	m2	\$180.00	\$190,620	
84.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
84.18	<u>Zone D Building Support</u>					
84.19	- Administrative - OSC - New Building	1,301	m2	\$180.00	\$234,180	
84.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
84.21	- Administrative - Support - New Building	163	m2	\$180.00	\$29,340	
84.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
84.23	- Building Support - New Building	678	m2	\$180.00	\$122,040	
84.24	- Building Support - Renovation	232	m2	\$180.00	\$41,760	
84.25	<u>Building Grossing, Including</u>					
84.26	- Reno-Non Program (Bridges)	1,626	m2	\$180.00	\$292,680	
84.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
84.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
84.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$232.24	\$1,346,754	
84.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$232.24	\$10,683	
TOTAL FOR SERVICES - Ventilation System		1.00	25,614	m2	\$187.68	\$4,807,145
<u>D3060 - Special Purpose HVAC System</u>						
85	Allowance for special purpose HVAC system including speciality HVAC and exhaust system including fine particle, dust collection systems and smoke/fume exhaust systems					
85.1	<u>Zone A Public Spaces /Amenities</u>					
85.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$0.00	\$0	
85.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$0.00	\$0	
85.4	- Education (Science School) - New Building	242	m2	\$120.00	\$28,986	
85.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
85.6	- Workshops and Maker Spaces - New Building	743	m2	\$180.00	\$133,779	
85.7	- Workshops and Maker Spaces - Renovation	418	m2	\$180.00	\$75,251	
85.8	- Demonstration Spaces - New Building	565	m2	\$180.00	\$101,672	
85.9	- Demonstration Spaces - renovation	260	m2	\$180.00	\$46,823	
85.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
85.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
85.12	<u>Zone B Display Areas</u>					
85.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$30.00	\$183,960	
85.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$0.00	\$0	
85.15	<u>Zone C Collection Support</u>					
85.16	- Exhibit Support Spaces - New Building	1,059	m2	\$60.00	\$63,540	
85.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
85.18	Zone D Building Support					
85.19	- Administrative - OSC - New Building	1,301	m2	\$0.00		\$0
85.20	- Administrative - OSC - Renovation	0	m2	\$0.00		\$0
85.21	- Administrative - Support - New Building	163	m2	\$0.00		\$0
85.22	- Administrative - Support - Renovation	0	m2	\$0.00		\$0
85.23	- Building Support - New Building	678	m2	\$120.00	\$81,360	
85.24	- Building Support - Renovation	232	m2	\$120.00	\$27,840	
85.25	Building Grossing, Including					
85.26	- Reno-Non Program (Bridges)	1,626	m2	\$0.00		\$0
85.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00		Excluded
85.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00		\$0
85.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$54.67	\$317,046	
85.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$54.67	\$2,515	
TOTAL FOR SERVICES - Special Purpose HVAC System		1.00	25,614	m2	\$41.49	\$1,062,771

D3070 - Systems Testing and Balancing

86	Adjust, balance and set air and liquid flow rates to design specifications. Submit report and commissioning system to first class (enhanced) operating condition					
86.1	Zone A Public Spaces /Amenities					
86.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$18.00	\$30,853	
86.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$18.00	\$13,712	
86.4	- Education (Science School) - New Building	242	m2	\$21.00	\$5,072	
86.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
86.6	- Workshops and Maker Spaces - New Building	743	m2	\$22.00	\$16,351	
86.7	- Workshops and Maker Spaces - Renovation	418	m2	\$22.00	\$9,197	
86.8	- Demonstration Spaces - New Building	565	m2	\$22.00	\$12,427	
86.9	- Demonstration Spaces - renovation	260	m2	\$22.00	\$5,723	
86.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
86.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
86.12	Zone B Display Areas					
86.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$21.60	\$132,451	
86.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$18.00	\$36,792	
86.15	Zone C Collection Support					
86.16	- Exhibit Support Spaces - New Building	1,059	m2	\$20.00	\$21,180	
86.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
86.18	Zone D Building Support					
86.19	- Administrative - OSC - New Building	1,301	m2	\$18.00	\$23,418	
86.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
86.21	- Administrative - Support - New Building	163	m2	\$18.00	\$2,934	
86.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
86.23	- Building Support - New Building	678	m2	\$21.00	\$14,238	
86.24	- Building Support - Renovation	232	m2	\$21.00	\$4,872	
86.25	Building Grossing, Including					
86.26	- Reno-Non Program (Bridges)	1,626	m2	\$14.00	\$22,764	
86.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00		Excluded
86.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00		\$0
86.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$24.22	\$140,442	
86.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$24.22	\$1,114	
TOTAL FOR SERVICES - Systems Testing and Balancing		1.00	25,614	m2	\$19.27	\$493,540

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>D3080 - Other HVAC System and Equipment</u>						
87	Allowance for HVAC support system including specialty systems, miscellaneous work, general accounts including: Supervision, submittals, warranty, hoisting and millwrighting, fire stopping, cutting and coring, and general overheads (site and office)					
87.1	<u>Zone A Public Spaces /Amenities</u>					
87.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$166.07	\$284,654	
87.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$166.07	\$126,513	
87.4	- Education (Science School) - New Building	242	m2	\$188.04	\$45,419	
87.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
87.6	- Workshops and Maker Spaces - New Building	743	m2	\$203.21	\$151,033	
87.7	- Workshops and Maker Spaces - Renovation	418	m2	\$203.21	\$84,956	
87.8	- Demonstration Spaces - New Building	565	m2	\$203.21	\$114,785	
87.9	- Demonstration Spaces - renovation	260	m2	\$203.21	\$52,861	
87.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
87.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
87.12	<u>Zone B Display Areas</u>					
87.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$224.49	\$1,376,573	
87.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$166.07	\$339,450	
87.15	<u>Zone C Collection Support</u>					
87.16	- Exhibit Support Spaces - New Building	1,059	m2	\$178.21	\$188,729	
87.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
87.18	<u>Zone D Building Support</u>					
87.19	- Administrative - OSC - New Building	1,301	m2	\$166.07	\$216,059	
87.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
87.21	- Administrative - Support - New Building	163	m2	\$166.07	\$27,070	
87.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
87.23	- Building Support - New Building	678	m2	\$188.04	\$127,488	
87.24	- Building Support - Renovation	232	m2	\$188.04	\$43,624	
87.25	<u>Building Grossing, Including</u>					
87.26	- Reno-Non Program (Bridges)	1,626	m2	\$131.07	\$213,122	
87.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
87.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$0.00	\$0	
87.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$207.52	\$1,203,405	
87.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$207.52	\$9,546	
TOTAL FOR SERVICES - Other HVAC System and Equipment		1.00	25,614	m2	\$179.80	\$4,605,286

D40 FIRE PROTECTION

D4010 - Fire Suppression

88	The building will be fully standpiped, sprinklered, designed, installed and tested in accordance to NFPA13 and OBC. Sprinkler coverage includes black steel screwed / Victaulic joint mains, branches, drops and heads extended from risers. Fire hose cabinets will be located on each level at stairwells and other locations where required throughout. Hand-held fire portable dry chemical fire extinguishers will be located inside fire hose cabinets, food outlets, mechanical and electrical rooms and other service rooms					
88.1	<u>Zone A Public Spaces /Amenities</u>					
88.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$65.00	\$111,413	
88.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$65.00	\$49,517	
88.4	- Education (Science School) - New Building	242	m2	\$65.00	\$15,700	
88.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
88.6	- Workshops and Maker Spaces - New Building	743	m2	\$65.00	\$48,309	
88.7	- Workshops and Maker Spaces - Renovation	418	m2	\$65.00	\$27,174	
88.8	- Demonstration Spaces - New Building	565	m2	\$65.00	\$36,715	
88.9	- Demonstration Spaces - Renovation	260	m2	\$65.00	\$16,908	
88.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
88.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
88.12	<u>Zone B Display Areas</u>					
88.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$78.00	\$478,296	
88.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$65.00	\$132,860	
88.15	<u>Zone C Collection Support</u>					
88.16	- Exhibit Support Spaces - New Building	1,059	m2	\$65.00	\$68,835	
88.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
88.18	Zone D Building Support					
88.19	- Administrative - OSC - New Building	1,301	m2	\$65.00	\$84,565	
88.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
88.21	- Administrative - Support - New Building	163	m2	\$65.00	\$10,595	
88.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
88.23	- Building Support - New Building	678	m2	\$65.00	\$44,070	
88.24	- Building Support - Renovation	232	m2	\$65.00	\$15,080	
88.25	Building Grossing, Including					
88.26	- Reno-Non Program (Bridges)	1,626	m2	\$65.00	\$105,690	
88.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
88.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
88.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$69.89	\$405,273	
88.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$69.89	\$3,215	
TOTAL FOR SERVICES - Fire Suppression		1.00	25,614	m2	\$64.58	\$1,654,216

D4020 - Fire Protection Specialities

89	Allowance for enhanced or supplemental fire protection services including preaction, or clean agent system to special rooms.					
89.1	Zone A Public Spaces /Amenities					
89.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$0.00	\$0	
89.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$0.00	\$0	
89.4	- Education (Science School) - New Building	242	m2	\$65.00	\$15,700	
89.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
89.6	- Workshops and Maker Spaces - New Building	743	m2	\$65.00	\$48,309	
89.7	- Workshops and Maker Spaces - Renovation	418	m2	\$65.00	\$27,174	
89.8	- Demonstration Spaces - New Building	565	m2	\$100.00	\$56,485	
89.9	- Demonstration Spaces - Renovation	260	m2	\$100.00	\$26,013	
89.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
89.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
89.12	Zone B Display Areas					
89.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$30.00	\$183,960	
89.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$25.00	\$51,100	
89.15	Zone C Collection Support					
89.16	- Exhibit Support Spaces - New Building	1,059	m2	\$25.00	\$26,475	
89.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
89.18	Zone D Building Support					
89.19	- Administrative - OSC - New Building	1,301	m2	\$0.00	\$0	
89.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
89.21	- Administrative - Support - New Building	163	m2	\$65.00	\$10,595	
89.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
89.23	- Building Support - New Building	678	m2	\$0.00	\$0	
89.24	- Building Support - Renovation	232	m2	\$0.00	\$0	
89.25	Building Grossing, Including					
89.26	- Reno-Non Program (Bridges)	1,626	m2	\$0.00	\$0	
89.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
89.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
89.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$27.33	\$158,482	
89.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$27.33	\$1,257	
TOTAL FOR SERVICES - Fire Protection Specialities		1.00	25,614	m2	\$23.64	\$605,550

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
D50 ELECTRICAL						
D5010 - Electrical Service and Distribution						
90	Normal power distribution system with 347/600V mechanical distribution panels, 120/208V power and lighting panels and associated transformers, Power connection with line and load side wiring for mechanical equipment , and Feeders for the above distribution equipment using rw90 copper conductors in EMT conduit to circuit panels.					
90.1	Zone A Public Spaces / Amenities					
90.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$12.00	\$20,569	
90.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$12.00	\$9,142	
90.4	Education (Science School) - New Building	242	m2	\$18.00	\$4,348	
90.5	Education (Science School) - Renovation	0	m2	\$18.00	\$0	
90.6	Workshops and Maker Spaces - New Building	743	m2	\$36.00	\$26,756	
90.7	Workshops and Maker Spaces - Renovation	418	m2	\$36.00	\$15,050	
90.8	Demonstration Spaces - New Building	565	m2	\$36.00	\$20,334	
90.9	Demonstration Spaces - renovation	260	m2	\$36.00	\$9,365	
90.10	Planetarium and Cinesphere - New Building	0	m2	\$36.00	\$0	
90.11	Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
90.12	Zone B Display Areas					
90.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$41.00	\$251,394	
90.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$18.00	\$36,789	
90.15	Zone C Collection Support					
90.16	Exhibit Support Spaces - New Building	1,059	m2	\$36.00	\$38,127	
90.17	Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
90.18	Zone D Building Support					
90.19	Administrative - OSC - New Building	1,301	m2	\$18.00	\$23,411	
90.20	Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
90.21	Administrative - Support - New Building	163	m2	\$12.00	\$1,951	
90.22	Administrative - Support - Renovation	0	m2	\$0.00	\$0	
90.23	Building Support - New Building	678	m2	\$12.00	\$8,138	
90.24	Building Support - Renovation	232	m2	\$10.80	\$2,508	
90.25	Building Grossing, including:					
90.26	Reno-Non Program (Bridges)	1,635	m2	\$12.00	\$19,620	
90.27	Reno-Program (Cinesphere)	0	m2	\$12.00	\$0	
90.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storev)	0	m2	\$12.00	\$0	
90.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$218.93	\$1,269,575	
90.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$12.00	\$552	
TOTAL FOR SERVICES - Electrical Service and Distribution		1.00	25,614	m2	\$68.62	\$1,757,629

D5020 - Lighting and Branch Wiring

91	Lighting control system including local switch/dimmer, occupancy sensors, daylight harvesting, etc, Supply and installation of LED light fixtures with associated wiring and supports, Specialty/convenience receptacles and power connections c/w conduit and wire					
91.1	Zone A Public Spaces / Amenities					
91.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$684.00	\$1,172,408	
91.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$684.00	\$521,070	
91.4	Education (Science School) - New Building	242	m2	\$444.00	\$107,246	
91.5	Education (Science School) - Renovation	0	m2	\$444.00	\$0	
91.6	Workshops and Maker Spaces - New Building	743	m2	\$276.00	\$205,128	
91.7	Workshops and Maker Spaces - Renovation	418	m2	\$276.00	\$115,385	
91.8	Demonstration Spaces - New Building	565	m2	\$492.00	\$277,904	
91.9	Demonstration Spaces - renovation	260	m2	\$492.00	\$127,982	
91.10	Planetarium and Cinesphere - New Building	0	m2	\$822.00	\$0	
91.11	Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
91.12	Zone B Display Areas					
91.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$552.00	\$3,384,615	
91.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$504.00	\$1,030,100	
91.15	Zone C Collection Support					
91.16	Exhibit Support Spaces - New Building	1,059	m2	\$276.00	\$292,308	
91.17	Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	
91.18	Zone D Building Support					
91.19	Administrative - OSC - New Building	1,301	m2	\$276.00	\$358,974	
91.20	Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
91.21	Administrative - Support - New Building	163	m2	\$276.00	\$44,872	
91.22	Administrative - Support - Renovation	0	m2	\$0.00	\$0	
91.23	Building Support - New Building	678	m2	\$219.60	\$148,930	
91.24	Building Support - Renovation	232	m2	\$198.00	\$45,987	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
91.25	Building Grossing, including:					
91.26	Reno-Non Program (Bridges)	1,635	m2	\$220.00	\$359,697	
91.27	Reno-Program (Cinesphere)	0	m2	\$180.00	\$0	
91.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$180.00	\$0	
91.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$180.00	\$1,043,820	
91.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$180.00	\$8,280	

TOTAL FOR SERVICES - Lighting and Branch Wiring

1.00	25,614	m2	\$360.92	\$9,244,707
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D5030 - Communication and Security

92 Addressable fire alarm system consisting of a control panel c/w integral annunciator, pullstations, smoke/heat detectors, audible/visual alarms, etc..., Communications system c/w vertical, horizontal cabling system, racks, patch panels, and wire management, Public Address system c/w equipment devices and wiring, Audio visual device outlets and conduit infrastructure, Intercommunication systems and paging, Clock and program systems, Security system for access control system, video surveillance system, intercom system, and duress and intrusion system .

92.1	Zone A Public Spaces / Amenities					
92.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$112.80	\$193,344	
92.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$112.80	\$85,931	
92.4	Education (Science School) - New Building	242	m2	\$228.00	\$55,072	
92.5	Education (Science School) - Renovation	0	m2	\$228.00	\$0	
92.6	Workshops and Maker Spaces - New Building	743	m2	\$187.20	\$139,130	
92.7	Workshops and Maker Spaces - Renovation	418	m2	\$187.20	\$78,261	
92.8	Demonstration Spaces - New Building	565	m2	\$187.20	\$105,739	
92.9	Demonstration Spaces - renovation	260	m2	\$187.20	\$48,696	
92.10	Planetarium and Cinesphere - New Building	0	m2	\$228.00	\$0	
92.11	Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
92.12	Zone B Display Areas					
92.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$187.20	\$1,147,826	
92.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$168.00	\$343,367	
92.15	Zone C Collection Support					
92.16	Exhibit Support Spaces - New Building	1,059	m2	\$187.20	\$198,261	
92.17	Exhibit Support Spaces - Renovation	0	m2	\$188.45	\$0	
92.18	Zone D Building Support					
92.19	Administrative - OSC - New Building	1,301	m2	\$150.00	\$195,095	
92.20	Administrative - OSC - Renovation	0	m2	\$188.45	\$0	
92.21	Administrative - Support - New Building	163	m2	\$150.00	\$24,387	
92.22	Administrative - Support - Renovation	0	m2	\$188.45	\$0	
92.23	Building Support - New Building	678	m2	\$112.80	\$76,499	
92.24	Building Support - Renovation	232	m2	\$100.80	\$23,411	
92.25	Building Grossing, including:					
92.26	Reno-Non Program (Bridges)	1,635	m2	\$96.00	\$156,959	
92.27	Reno-Program (Cinesphere)	0	m2	\$96.00	\$0	
92.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$96.00	\$0	
92.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$96.00	\$556,704	
92.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$96.00	\$4,416	

TOTAL FOR SERVICES - Communication and Security

1.00	25,614	m2	\$134.03	\$3,433,099
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D5090 - Other Electrical Systems

93 Emergency distribution system with 347/600V life safety and non life safety ATS, lighting panels and 120/208V power panels and critical power panels with the associated transformers. Lightning and grounding protection systems

93.1	Zone A Public Spaces / Amenities					
93.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$12.00	\$20,569	
93.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$12.00	\$9,142	
93.4	Education (Science School) - New Building	242	m2	\$18.00	\$4,348	
93.5	Education (Science School) - Renovation	0	m2	\$18.00	\$0	
93.6	Workshops and Maker Spaces - New Building	743	m2	\$36.00	\$26,756	
93.7	Workshops and Maker Spaces - Renovation	418	m2	\$36.00	\$15,050	
93.8	Demonstration Spaces - New Building	565	m2	\$36.00	\$20,334	
93.9	Demonstration Spaces - renovation	260	m2	\$36.00	\$9,365	
93.10	Planetarium and Cinesphere - New Building	0	m2	\$36.00	\$0	
93.11	Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	
93.12	Zone B Display Areas					
93.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$36.00	\$220,736	
93.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$30.00	\$61,315	
93.15	Zone C Collection Support					
93.16	Exhibit Support Spaces - New Building	1,059	m2	\$36.00	\$38,127	
93.17	Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
93.18	Zone D Building Support					
93.19	Administrative - OSC - New Building	1,301	m2	\$18.00	\$23,411	
93.20	Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
93.21	Administrative - Support - New Building	163	m2	\$12.00	\$1,951	
93.22	Administrative - Support - Renovation	0	m2	\$0.00	\$0	
93.23	Building Support - New Building	678	m2	\$12.00	\$8,138	
93.24	Building Support - Renovation	232	m2	\$12.00	\$2,787	
93.25	Building Crossing, including:					
93.26	Reno-Non Program (Bridges)	1,635	m2	\$32.00	\$52,320	
93.27	Reno-Program (Cinesphere)	0	m2	\$12.00	\$0	
93.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$12.00	\$0	
93.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$12.00	\$69,588	

TOTAL FOR SERVICES - Other Electrical Systems

1.00	25,614	m2	\$22.80	\$583,937
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D80 CONTROLS & AUTOMATION

D8010 - Integrated Automation System

94 A new Building Automation System (BAS) is provided consisting of direct digital controls, connected to existing system. The BAS controls will monitor all HVAC systems and equipment, and various plumbing, fire protection and electrical systems where required. System allows operators to start and stop equipment and automatically control zone temperatures, air and water flow rates. System and system graphics allow full monitoring, trending and reporting of set points, equipment control and alarm functions. Damper and valve actuators are electric / electronic type with direct digital control (DDC). Ventilation rates are controlled by main duct run mounted carbon dioxide sensors (demand ventilation) throughout the facility. Humidification is controlled by humidistats throughout the facility. Metering is provided on electrical, water, chilled and heating water services

94.1 Zone A Public Spaces /Amenities

94.2	- Building Entry and Visitor Amenities - New Building	1,714	m2	\$96.00	\$164,548	
94.3	- Building Entry and Visitor Amenities - Renovation	762	m2	\$96.00	\$73,133	
94.4	- Education (Science School) - New Building	242	m2	\$180.00	\$43,478	
94.5	- Education (Science School) - Renovation	0	m2	\$0.00	\$0	
94.6	- Workshops and Maker Spaces - New Building	743	m2	\$180.00	\$133,779	
94.7	- Workshops and Maker Spaces - Renovation	418	m2	\$180.00	\$75,251	
94.8	- Demonstration Spaces - New Building	565	m2	\$180.00	\$101,672	
94.9	- Demonstration Spaces - renovation	260	m2	\$180.00	\$46,823	
94.10	- Planetarium and Cinesphere - New Building	0	m2	\$0.00	\$0	
94.11	- Planetarium and Cinesphere - Renovation	0	m2	\$0.00	\$0	

94.12 Zone B Display Areas

94.13	- Exhibits - Permanent and Temporary - New Building	6,132	m2	\$144.00	\$883,008	
94.14	- Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$120.00	\$245,280	

94.15 Zone C Collection Support

94.16	- Exhibit Support Spaces - New Building	1,059	m2	\$180.00	\$190,620	
94.17	- Exhibit Support Spaces - Renovation	0	m2	\$0.00	\$0	

94.18 Zone D Building Support

94.19	- Administrative - OSC - New Building	1,301	m2	\$96.00	\$124,896	
94.20	- Administrative - OSC - Renovation	0	m2	\$0.00	\$0	
94.21	- Administrative - Support - New Building	163	m2	\$96.00	\$15,648	
94.22	- Administrative - Support - Renovation	0	m2	\$0.00	\$0	
94.23	- Building Support - New Building	678	m2	\$180.00	\$122,040	
94.24	- Building Support - Renovation	232	m2	\$180.00	\$41,760	

94.25 Building Crossing, Including

94.26	- Reno-Non Program (Bridges)	1,626	m2	\$96.00	\$156,096	
94.27	- Reno-Program (Cinesphere)	1,830	m2	\$0.00	Excluded	
94.28	- New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m longx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
94.29	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$138.66	\$804,098	
94.30	- Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$138.66	\$6,378	

TOTAL FOR SERVICES - Integrated Automation System

1.00	25,614	m2	\$126.04	\$3,228,509
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
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E. EQUIPMENT AND FURNISHING

E10 EQUIPMENT

E1020 - Institutional Equipment

95	Institutional Equipment (Library equipment, Theater and stage equipment, Laboratory equipment etc)					
95.1	Zone A Public Spaces / Amenities					
95.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$0.00		\$0
95.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$0.00		\$0
95.4	Education (Science School) - New Building	242	m2	\$293.37		\$70,862
95.5	Education (Science School) - Renovation	0	m2	\$293.37		\$0
95.6	Workshops and Maker Spaces - New Building	743	m2	\$293.37		\$218,036
95.7	Workshops and Maker Spaces - Renovation	418	m2	\$293.37		\$122,645
95.8	Demonstration Spaces - New Building	565	m2	\$293.37		\$165,707
95.9	Demonstration Spaces - renovation	260	m2	\$293.37		\$76,313
95.10	Planetarium and Cinesphere - New Building	0	m2	\$293.37		\$0
95.11	Planetarium and Cinesphere - Renovation	0	m2	\$293.37		\$0
95.12	Zone B Display Areas					
95.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$0.00		\$0
95.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$0.00		\$0
95.15	Zone C Collection Support					
95.16	Exhibit Support Spaces - New Building	1,059	m2	\$171.86		\$182,009
95.17	Exhibit Support Spaces - Renovation	0	m2	\$171.86		\$0
95.18	Zone D Building Support					
95.19	Administrative - OSC - New Building	1,301	m2	\$0.00		\$0
95.20	Administrative - OSC - Renovation	0	m2	\$0.00		\$0
95.21	Administrative - Support - New Building	163	m2	\$0.00		\$0
95.22	Administrative - Support - Renovation	0	m2	\$0.00		\$0
95.23	Building Support - New Building	678	m2	\$226.80		\$153,810
95.24	Building Support - Renovation	232	m2	\$226.80		\$52,675
95.25	Building Grossing, including:					
95.26	Reno-Non Program (Bridges)	1,626	m2	\$0.00		\$0
95.27	Reno-Program (Cinesphere)	1,830	m2	\$0.00		\$0
95.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$0.00		\$0
95.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$0.00		\$0
95.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m2	\$0.00		\$0

TOTAL FOR EQUIP. & FURN. - Institutional Equipment	1.00	25,614	m2	\$40.68		\$1,042,056
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E1090 - Other Equipment

96	Planetarium equipment for 60' (18.3m) dia tilted dome, provided by Lord including:					Excluded
96.1	- display system					
96.2	- projection dome screen					
96.3	- scaffold for installation of dome screen and loudspeakers					
96.4	- seating					
97	Extra over for structure to support dome screen, 60' (18.3m) dia 30 degree tilted dome (estimated weight 16,000ka). assumed 25ka/m2					Excluded

TOTAL FOR EQUIP. & FURN. - Other Equipment	0.00		m2	\$0.00		\$0
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LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
E20 FURNISHINGS						
E2010 - Fixed Furnishings						
98	Window treatments, motorized operation, assumed to 5% of glazed area to new building (office only)	169	m2	\$236.00	\$39,872	
99	Window treatments, motorized operation, assumed to 5% of glazed area to PODs	0	m2	\$236.00	\$0	
TOTAL FOR EQUIP. & FURN. - Fixed Furnishings		0.01	169	m2	\$236.00	\$39,872
E2020 - Movable Furnishings						
100	Movable Furnishings (Furniture and accessories, Movable rugs and mats, Movable multiple seating etc)					
100.1	Zone A Public Spaces / Amenities					
100.2	Building Entry and Visitor Amenities - New Building	1,714	m2	\$307.66	\$527,346	
100.3	Building Entry and Visitor Amenities - Renovation	762	m2	\$307.66	\$234,376	
100.4	Education (Science School) - New Building	242	m2	\$615.32	\$148,629	
100.5	Education (Science School) - Renovation	0	m2	\$615.32	\$0	
100.6	Workshops and Maker Spaces - New Building	743	m2	\$615.32	\$457,319	
100.7	Workshops and Maker Spaces - Renovation	418	m2	\$615.32	\$257,242	
100.8	Demonstration Spaces - New Building	565	m2	\$615.32	\$347,562	
100.9	Demonstration Spaces - renovation	260	m2	\$615.32	\$160,062	
100.10	Planetarium and Cinesphere - New Building	0	m2	\$311.14	\$0	
100.11	Planetarium and Cinesphere - Renovation	0	m2	\$311.14	\$0	
100.12	Zone B Display Areas					
100.13	Exhibits - Permanent and Temporary - New Building	6,132	m2	\$307.66	\$1,886,441	
100.14	Exhibits - Permanent and Temporary - Renovation	2,044	m2	\$307.66	\$628,814	
100.15	Zone C Collection Support					
100.16	Exhibit Support Spaces - New Building	1,059	m2	\$307.66	\$325,840	
100.17	Exhibit Support Spaces - Renovation	0	m2	\$307.66	\$0	
100.18	Zone D Building Support					
100.19	Administrative - OSC - New Building	1,301	m2	\$2,905.22	\$3,778,620	
100.20	Administrative - OSC - Renovation	0	m2	\$2,905.22	\$0	
100.21	Administrative - Support - New Building	163	m2	\$2,905.22	\$472,328	
100.22	Administrative - Support - Renovation	0	m2	\$2,905.22	\$0	
100.23	Building Support - New Building	678	m2	\$2,905.22	\$1,970,280	
100.24	Building Support - Renovation	232	m3	\$2,905.22	\$674,754	
100.25	Building Grossing, including:					
100.26	Reno-Non Program (Bridges)	1,626	m2	\$0.00	\$0	
100.27	Reno-Program (Cinesphere)	1,830	m2	\$0.00	\$0	
100.28	New-Non Program (New Bridge to POD#5 - approx. 152m longx3.96m wide-2 storey + 115m lonx3.96 wide-2 storey)	0	m2	\$0.00	\$0	
100.29	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - New Building	5,799	m2	\$0.00	\$0	
100.30	Estimated primary circulation, M&E spaces, including estimated structure and exterior walls - Pods	46	m3	\$0.00	\$0	
TOTAL FOR EQUIP. & FURN. - Movable Furnishings		1.00	25,614	m2	\$463.40	\$11,869,612
F. SPECIAL CONSTRUCTION AND DEMOLITION						
F10 SPECIAL CONSTRUCTION						
F1010 - Special Structures						
101	Renovation budget for cinesphere provided by Altus 103810 - OPEW Cinesphere, Class D, Rev 1, November 15, 2021 - \$8,601,119 (before 10% const. contingency) - escalated bv 10%					Excluded
TOTAL FOR SPEC.CON.S. & DEMO. - Special Structures		0.07	1,830	m2	\$0.00	\$0
F20 SELECTIVE BUILDING DEMOLITION						
F2010 - Building Elements Demolition						
102	Demolition of existing buildings, including:					Excluded
TOTAL FOR SPEC.CON.S. & DEMO. - Build. Elem. Demo.		0.47	11,937	m2	\$0.00	\$0

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>F2020 - Hazardous Components Abatement</u>						
103	Hazardous components abatement					Excluded
	TOTAL FOR SPEC.CON.S. & DEMO. - Hazard. Comp. Abat.	0.00	0	m2	\$0.00	\$0

G. BUILDING SITEWORK

G10 SITE PREPARATION

G1020 - Site Clearing

104	Clear and grub site, including building footprint					Excluded
105	Site erosion control					Excluded
106	Site protection (temporary fast fence)					Excluded
107	Mudmat					Excluded
	TOTAL FOR BUILDING SITEWORK - Site Clearing	0.00		m2	\$0.00	\$0

G1030 - Site Demolition and Relocations

108	Demolition of existing site elements					Excluded, assumed by Others
	TOTAL FOR BUILDING SITEWORK - Site Demo. and Reloc.	0.00	0	m2	\$0.00	\$0

G1040 - Site Earthwork

109	Building Footprint rough grading including:					Excluded	\$0
109.1	- removal and disposal of existing asphalt, curbs etc					Excluded	
109.2	- allowance for dewatering					Excluded	
109.3	- dispose excess material off site to an approved disposal site					Excluded	
109.4	- proof roll after rough grading					Excluded	
109.5	- fine grade impacted site area					Excluded	
110	Site Wide rough grading including:					Excluded	\$0
110.1	- removal and disposal of existing asphalt, curbs etc					Excluded	
110.2	- machine excavation to achieve desired sub-grade elevations, assumed 500mm depth					Excluded	
110.3	- existing material to be disposed off site					Excluded	
110.4	- rough grade and proof roll					Excluded	
	TOTAL FOR BUILDING SITEWORK - Site Earthwork	0.00		m2	\$0.00	\$0	

G1050 - Hazardous Waste Remediation

111	Hazardous waste remediation					Excluded	
	TOTAL FOR BUILDING SITEWORK - Hazard. Waste Remed.	0.00	0	m2	\$0.00	\$0	

G1060 - Site Buildings

112	Allowance for pump station to use lake water for condenser water as per Mechanical		1	LS	\$1,000,000.00	\$1,000,000	
	TOTAL FOR BUILDING SITEWORK - Site Buildings	1.00	25,614	m2	\$39.04	\$1,000,000	

G20 SITE IMPROVEMENTS

G2010 - Roadways

113	Excluded						\$0
	TOTAL FOR BUILDING SITEWORK - Roadways	0.00		m2	\$0.00	\$0	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>G2020 - Parking Lots</u>						
114	Excluded					
	TOTAL FOR BUILDING SITEWORK - Parking Lots	0.00	m2	\$0.00	\$0	
<u>G2030 - Pedestrian Paving</u>						
115	Granite Mosaic (smooth) walkway					Excluded
116	Hardscape, assumed 40% of remaining site area (Entry Plaza, Car/Taxi/Valet Drop-off)					
116.1	- Granite unit pavers to vehicular layby, assumed 50%					Excluded
116.1	- Granite Mosaic (smooth) for pedestrian, assumed 50%,					Excluded
117	Granite curbs (straight and curved)					Excluded
	TOTAL FOR BUILDING SITEWORK - Pedestrian Paving	0.00	m2	\$0.00	\$0	
<u>G2040 - Site Development</u>						
118	Outdoor Structures and Spaces, including:		1 LS	\$355,000.00		\$355,000
118.1	Adventure Playground		1 LS	\$250,000.00	\$250,000	
118.1	Dedicated Storage (Adventure Playground)		1 LS	\$5,000.00	\$5,000	
118.1	Exterior Service Loading Area		1 LS	\$50,000.00	\$50,000	
118.1	Exterior Refuse Bins		1 LS	\$50,000.00	\$50,000	
119	Allowance for preparation services and support to outdoor exhibits	929	m2	\$500.00	\$464,500	
120	Allowance for building identification signage, pylon signage		1 LS	\$55,000.00	\$55,000	
121	Allowance for wayfinding signage		1 LS	\$100,000.00	\$100,000	
	TOTAL FOR BUILDING SITEWORK - Site Development	1.00	25,614 m2	\$38.05	\$974,500	
<u>G2050 - Landscaping</u>						
122	Sod and topsoil					Excluded
123	Feature landscaping to mark Entrance					Excluded
124	Large stature deciduous canopy street trees					Excluded
125	Small stature deciduous trees					Excluded
	TOTAL FOR BUILDING SITEWORK - Landscaping	0.00	m2	\$0.00	\$0	
<u>G30 SITE MECHANICAL UTILITIES</u>						
<u>G301 - Water Supply</u>						
126	Allowance for service connections for water supply and distribution		1 LS	\$150,000.00	\$150,000	
	TOTAL FOR BUILDING SITEWORK - Water Supply	1.00	25,614 m2	\$5.86	\$150,000	
<u>G302 - Sanitary Sewer</u>						
127	Allowance for service connections for sanitary sewer systems		1 LS	\$150,000.00	\$150,000	
	TOTAL FOR BUILDING SITEWORK - Sanitary Sewer	1.00	25,614 m2	\$5.86	\$150,000	
<u>G303 - Storm Sewer</u>						
128	Allowance for service connections for storm sewer systems		1 LS	\$250,000.00	\$250,000	
	TOTAL FOR BUILDING SITEWORK - Storm Sewer	1.00	25,614 m2	\$9.76	\$250,000	

LEVEL IV

No.	Description	Quant.	Unit	Rate	Sub Total	Total
<u>G304 - Fuel Distribution Systems</u>						
129	Allowance for service connections for fuel distribution systems		1 LS	\$50,000.00	\$50,000	
	TOTAL FOR BUILDING SITEWORK - Fuel Distribution Systems	1.00	25,614 m2	\$1.95	\$50,000	
<u>G3050 - Special Plumbing Systems</u>						
130	Allowance for service connections for special plumbing systems		1 LS	\$50,000.00	\$50,000	
	TOTAL FOR BUILDING SITEWORK - Special Plumbing Systems	1.00	25,614 m2	\$1.95	\$50,000	
<u>G40 SITE HVAC UTILITIES</u>						
<u>G402 - Hydronic Distribution Systems</u>						
131	Hydronic Distribution Systems		1 LS	\$1,200,000.00	\$1,200,000	
	TOTAL FOR BUILDING SITEWORK - Hydronic Distribution Systems	1.00	25,614 m2	\$46.85	\$1,200,000	
<u>G50 SITE ELECTRICAL UTILITIES</u>						
<u>G501 - Electrical Distribution</u>						
132	Allowance for service connections to building distribution equipment		1 LS	\$10,000.00	\$10,000	
	TOTAL FOR BUILDING SITEWORK - Electrical Distribution	1.00	25,614 m2	\$0.39	\$10,000	
<u>G502 - Site Lighting</u>						
133	Lighting System (fixtures and transformers, poles, wiring conduits and ductbanks etc.)				Excluded	
	TOTAL FOR BUILDING SITEWORK - Site Lighting	0.00		\$0.00	\$0	
<u>G503 - Site Communication and Security</u>						
134	Site Communication and Security				Excluded	
	TOTAL FOR BUILDING SITEWORK - Site Comm. and Security	0.00		\$0.00	\$0	
<u>G504 - Other Site Electrical Utilities</u>						
135	Allowance for incoming service connection		1 LS	\$30,000.00	\$30,000	
	TOTAL FOR BUILDING SITEWORK - Other Site Elect. Utilities	1.00	25,614 m2	\$1.17	\$30,000	

Appendix N
Attendance Projections for OSC

Confidential and Privileged Advice to Government

ONTARIO SCIENCE CENTRE RELOCATION

Revised Attendance Projections

December 2022

Lord Cultural Resources is a global professional practice dedicated to creating cultural capital worldwide.

We assist people, communities and organizations to realize and enhance cultural meaning and expression.

We distinguish ourselves through a comprehensive and integrated full-service offering built on a foundation of key competencies: visioning, planning and implementation.

We value and believe in cultural expression as essential for all people. We conduct ourselves with respect for collaboration, local adaptation and cultural diversity, embodying the highest standards of integrity, ethics and professional practice.

We help clients clarify their goals; we provide them with the tools to achieve those goals; and we leave a legacy as a result of training and collaboration.

Our Toronto office is located within the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples. Toronto is home to many diverse First Nations, Inuit, and Métis peoples. Our New York office is located on the traditional lands of the Lenape peoples. We encourage you to acknowledge the presence of the people who came before, wherever you are.

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Ontario Science Centre Relocation – Attendance Projections

1. Introduction and Core Assumptions

The following document provides a revised projection of attendance (revised from June 2021) for the opening three years of operation of the Ontario Science Centre if located at Ontario Place. The projections are derived using a combination of quantifiable comparable data and contextual and qualitative analyses.

The attendance projections take into account updated assumptions from the initial projections in the June 2021 Attendance Projections report and the updated December 2022 Functional Program. The updated Functional Program, developed in collaboration with the Ontario Science Centre, identifies all spaces and their functions – programs and exhibitions, administration, back-of-house and others - that are anticipated for the proposed complex. Each space is accompanied by a corresponding net area value.

To determine attendance projections, exhibition spaces are used for comparability. Per the OSC Functional Program, Engagement Spaces (flex exhibition and programming spaces) is being applied to benchmark. The net area for the OSC Engagement Space is 109,550 sq. ft.

On-Site Attendance Projections

To prepare attendance projections first requires a reasonable definition of who would or would not be defined as a visitor. For the purposes of this analysis, a visitor to the Ontario Science Centre is someone who will attend the exhibitions, participate in programs, visit the Cinesphere at the Ontario Place site.

Persons who attend day and evening events, regardless of whether it is an OSC or a third party event, are also included in the definition as a visitor as they would be categorized as part of an “indirect paid” admission category, along with program participants and members. As there is no dedicated rental space for events contemplated for the new facility, OSC will consider the temporary exhibit hall, lobby, Cinesphere and student intake spaces as potential spaces for rentals.

Not included in the definition of a visitor are staff, volunteers, service and delivery people. Also excluded would be those who enter the building only for retail or food service in a free admission zone. And while outreach programs and digital access are vitally important to the institution, they are not included in the on-site attendance projections.

Other important considerations and assumptions in preparing the attendance projections are as follows:

- There is no one simple formula that leads to accurate attendance projections because motivations to be first time and repeat visitors depend on the visitor experience, visitor service, perceived value for time and money, and other factors. Ratios and formulas have been used based on the experience of comparable or similar institutions elsewhere and

- existing institutions/attractions in Toronto, including the 2019 (pre-COVID) OSC operations. These ratios help to inform our judgment and experience.
- The experience of comparable institutions is central to attendance projections but there is rarely exact comparability. In the case of the OSC, the most useful benchmarks are modern science centres (not science museums – which include collections) within similar regional population areas and located at a downtown or waterfront site.
 - Also considered are attendance levels for the main year-round and charged admission attractions in Toronto.
 - In utilizing data from other museums and attractions there are a variety of definitions of what constitutes a visitor and no complete certainty that the comparative attendance figures reported are accurate. For example, some museums or science centres double count the same visitors attending permanent exhibitions, temporary exhibitions and large format theatre shows as two or three different visitors. Some will use infrared counters to count every person coming through the entrance even if staff, volunteers, or delivery people. Fortunately, these and other attendance exaggerations are not common but they do happen.
 - To take weaknesses inherent in ratios and formulas into account, we offer our judgment regarding the impact on attendance of a variety of key largely qualitative factors.
 - The attendance projections do not assume a phasing of the new facility at Ontario Place. It is assumed to open all at once. As such, the attendance projections reflect a common pattern in which the curiosity and novelty factor and media attention results in very high opening year attendance levels. In using data from existing science centres, all are well established and therefore serve as benchmarks for Year 3 as a stabilized attendance year that will be representative of subsequent years of operation.

2. Comparative and Quantitative Analysis

The following is a series of benchmarking data points that when analyzed collectively informs a baseline attendance figure. This together with the determination of qualitative factors in the section will determine the projected attendance for the OSC.

Benchmarks for Stabilized Year

The following benchmarks that help to inform attendance projections for a stabilized year of operation (Year 3) are as follows:

Based on Extrapolations from Comparable Science Centres

The other science centres identified to offer comparability to the Ontario Science Centre are located in U.S. and Canadian cities with regional populations of at least 2 million residents and located in downtown or waterfront locations. Those selected were the science centres in San Francisco, Miami, Dallas and Columbus in the U.S. and Montreal and Vancouver in Canada. The reported 2019 attendance figures for all comparables, and therefore prior to COVID, were utilized.

The extrapolations for on-site attendance below are based on both the size of the exhibition space and the regional resident population.

- Extrapolation from Visitors per Sq. Ft. of Exhibition Space:** The following table summarizes reported on-site attendance and total exhibit space for the selected comparables to create a ratio of visitors per sq. ft. The average size of the exhibition space at the selected comparable science centres is 69,000 net sq. ft. compared to the current OSC 134,000 net sq. ft. and the assumed 109,550 net sq. ft of Engagement Space at an Ontario Place site. The average visitors per sq. ft. ratio emerging from the comparable science centres is 13.03 visitors per sq. ft. When applied to the 109,550 net sq. ft. of exhibition/programming space assumed for the future OSC it leads to an attendance estimate of a rounded **1,430,000 on-site visitors in the stabilized Year 3.**
- Extrapolation Based on Regional Population:** In addition to visitors per square foot of exhibition space, we also consider a ratio of visitors per 1,000 regional residents within the Metropolitan Statistical Area (MSA) population in the U.S. and Census Metropolitan Area (CMA) in Canada. The following table indicates an average of 217.62, which applied to the approximately 5.928 million residents in the Toronto CMA in 2020 suggests **a stabilized attendance of a rounded 1,290,000 visitors.**

Benchmarks from Selected Science Centres							
Name of Museum	Admission Basis	Stabilized Attendance Estimate	Building Size (Sq.ft.)	Exhibition Space (Sq.ft.)	Metro (MSA) Population	Visitors per SF Exhibition Space	Visitors per 1,000 MSA Population
Exploratorium, San Francisco	Charged	833,868	217,000	75,000	4,729,484	11.12	176.31
Phillip and Patricia Frost Museum of Science, Miami	Charged	728,738	250,000	47,200	6,198,782	15.44	117.56
COSI, Columbus	Charged	761,130	329,740	123,210	2,106,541	6.18	361.32
Perot Museum of of Nature and Science, Dallas	Charged	950,396	180,000	60,000	7,540,371	15.84	126.04
Montreal Science Centre, Montreal	Charged	617,850	80,000	37,000	4,098,927	16.70	150.73
Science World, Vancouver	Charged	920,663	132,350	71,300	2,463,431	12.91	373.73
Average		802,108	198,182	68,952	4,522,923	13.03	217.62
OSC 2019	Charged	885,000	568,000	134,000	5,928,040	6.60	149.29

Based on Extrapolation from Existing OSC

Visitors per Sq. Ft. Figures of Exhibition Space at the Existing OSC Applied to the Assumed Engagement Space in the New Facility:

Utilizing the 885,000 pre-COVID 2019 attendance for the current OSC in 134,000 net sq. ft. of exhibition space leads to a ratio of about 6.60 visitors per sq. ft. Applying this ratio to the planned 109,550 net sq. ft. of Engagement Space in the new facility at Ontario Place leads to an attendance estimate of a rounded **723,000** on-site visitors in the stabilized Year 3. While this ratio considers the quantity of the Engagement Space it does not consider the quality of the new exhibitions and programs to be offered.

Based on Average Attendance at All Major Charged Admission Attractions in Toronto

There are a number of major cultural, family and tourist attractions in Toronto that are worthy of analysis with respect to attendance. Except for the Toronto Zoo, these attractions are within

the downtown core and/or close to the waterfront. Excluded is Harbourfront Centre because it encompasses a multitude of free and charged opportunities and its attendance figure includes double counting. Included are the CN Tower and Ripley's Aquarium in this method because they are located downtown.

The 2019 reported attendance at the Art Gallery of Ontario (AGO) was 951,000 visitors. This figure was gathered at a time when the AGO offered free admission to everyone aged 25 and under. Comparing the AGO figure to the number of visitors reported by the Ontario Science Centre is questionable. Accordingly, we have used the approximately 700,000 attendance figure for the AGO before it introduced the substantial free admission.

The average annual attendance of these attractions is a rounded **1,362,000** as outlined in the following table. This method is weak because it assumes that the OSC will achieve the average attendance of the other selected attractions in Toronto on the basis of an Ontario Place site and other qualitative enhancements discussed below. It also leads to an unrealistically high attendance estimate in our judgment because it includes private sector attractions that do not require the focus on education as do the OSC and other public museum-related institutions.

Benchmarks from Selected Attractions in Toronto	
Name of Attractions	Reported Attendance
Ripley's Aquarium	2,068,000
CN Tower	1,500,000
Royal Ontario Museum	1,340,000
Toronto Zoo	1,200,000
Art Gallery of Ontario*	700,000
Average	1,361,600
2019 OSC	885,000
*Attendance before admission was made free to all 25 and younger.	

Based on Main Public Education-Focused Attractions Only in Toronto

Excluding the private sector Ripley's Aquarium and CN Tower, which do not have the same requirements for a focus on education relative to the OSC and other public museum-related attractions, the average attendance is about **1,080,000**, as seen in the following table.

Benchmarks from Main Public Attractions Only	
Name of Attractions	Reported Attendance
Royal Ontario Museum	1,340,000
Toronto Zoo	1,200,000
Art Gallery of Ontario*	700,000
Average	1,080,000
2019 OSC	885,000
*Attendance before admission was made free to all 25 and younger.	

Based on Estimate that Excludes the Toronto Zoo

Attendance at the Toronto Zoo is primarily because of the outdoor Zoo exhibitions and attendance is very much weather dependent and so less relevant a comparison to the Ontario Science Centre than either the Royal Ontario Museum or the Art Gallery of Ontario. The following table therefore excludes the Zoo and focuses only on attendance levels and exhibition spaces for the ROM and AGO as applied to the assumed 109,550 net sq. ft. of exhibition space for the OSC at Ontario Place.

The average ratio of visitors per sq. ft. of exhibition space of the ROM and the AGO is 5.34 visitors per sq. ft. Applied to the assumed 109,550 net sq. ft. for the OSC it leads to an attendance estimate of about 585,000 visitors.

Benchmarks from ROM and AGO Only			
Name of Attractions	Reported Attendance	Exhibition Space	Visitors per Sq. Ft.
Royal Ontario Museum	1,340,000	253,000	5.30
Art Gallery of Ontario*	700,000	129,900	5.39
Average	1,020,000	191,450	5.34
2019 OSC	885,000		
* Before when all visitors 25 and younger were free			

Benchmarks from ROM and AGO Only	
Name of Attractions	Reported Attendance
Royal Ontario Museum	1,340,000
Art Gallery of Ontario*	700,000
Average	1,020,000
2019 OSC	885,000
*Attendance before admission was made free to all 25 and younger.	

Average of All Methods

As stated, all of the methods used have weaknesses, but are nonetheless critical in establishing attendance parameters for the future Ontario Science Centre at Ontario Place. The average of the ratios leads to a rounded attendance figure of 1,080,000 visitors in a stabilized Year 3 of operation.

Averaging Ratios Based on 109,550 Sq. ft. of Engagement Space	
Ratio/Method. Based On:	Projected Stabilized Attendance
Selected Comparable Science Centres -Exhibition Space	1,430,000
Selected Comparable Science Centres - Regional Population	1,290,000
Attendance to OSC Engagement Space of 109,500 Sq. Ft.	723,000
Average Attendance at Selected Major Attractions	1,362,000
Average Attendance at Public Museum-Related Attractions	1,080,000
Attendance at ROM and AGO Only Based on Exhibition Space	585,000
Average	1,078,333

3. Qualitative Analysis

The ratios above suggest about 1,078,000 total visitors in the stabilized Year 3. Other qualitative factors set out below help to refine the analysis and guide our judgment further to suggest either higher or lower attendance for the OSC at Ontario Place in comparison to the current suburban OSC site:

Main Market Segments:

- **Proximity to the Suburban Young Family Resident Market:** This is the core market for the OSC. Ontario Place is a longer travel distance for more suburban families than the current OSC site. The market data indicate that in 2020 the population within a 10 km. radius of Ontario Place was about 1.10 million compared to the 1.54 million population within a 10 km. radius of the existing OSC site. This will likely have a somewhat negative impact on attendance and especially on repeat visitation and membership levels from among the suburban young family market.

- **Proximity to School Group Markets:** As with the young family market that resides primarily in suburban locations, Ontario Place will require more travel time by school buses for most schools, with associated concerns about traffic delays. This will be a somewhat limiting factor for attendance among more distant school groups.
- **Proximity for Tourist Markets:** Very positive is access by tourist markets staying in downtown hotels and driving from day trip cities along the QEW like Hamilton and Buffalo, and those combining trips to Niagara Falls or Niagara on the Lake. In addition, there will be greater likelihood of crossover visits with waterfront and downtown sports, cultural and entertainment venues. The tourist market should increase substantially at an Ontario Place site but resident and school markets will continue to be larger.
- **Visitors to Complementary Attractions at Ontario Place:** Positive for attendance, especially by older teenagers and young adults, is proximity to music concerts and the other planned attractions at Ontario Place.
- **Proximity to Downtown Convention, Conference and Business Markets:** This is especially positive for venue rentals attendance. The OSC trade and consumer show business at the Enercare Centre and other facilities at Exhibition Place will also contribute positively to venue rentals.

Access and Parking:

- **Access by Automobile:** As indicated above with respect to suburban resident and school markets, there will be greater concerns regarding downtown traffic and travel time that will limit attendance levels.
- **Access by Public Transportation:** Until implementation of subway or light rail links to Ontario Place this will be a limiting factor on potential attendance.
- **Availability and Cost of Nearby Parking:** Without dedicated OSC parking there is no opportunity to control prices and offer discounted or free parking to members. This is another limiting factor on attendance.

Other Features and Other Assumptions Associated with Future OSC:

- **Enhanced Exhibitions:** It is not only the size of the exhibition space that will affect attendance levels but also the quality and appeal of enhanced exhibitions offering more recent interpretive methods and technology and that aligns with the vision of the OSC for the future.
- **Large Format Theatre:** The Cinesphere offers up to 600 seats, which exceeds the capacity of the existing OmniMax but the capacity is rarely likely to be reached. The increased seat count at the large format theatre is therefore a neutral factor.
- **Planetarium:** The OSC at Ontario Place does not include a planetarium at this stage in planning. A larger capacity planetarium (larger than what is offered at the current OSC) and one with a larger screen would be a positive factor for attendance, especially for school group visits and special programs for teenagers and young adults. A planetarium would also provide opportunities for greater venue rentals.
- **Outdoor Visitor Experiences:** The OSC offers great outdoor experiences at its current location (Cohon Family Nature Escape). The OSC at Ontario does not include a major

outdoor visitor experience at this stage of planning. An outdoor experience would have a positive impact on attendance.

- **Admission Charges:** It is assumed that admission charges will remain as they would at its current location and would have no impact on attendance.
- **Operating Schedule:** It is assumed that operating hours will remain mostly as they currently are now. It is likely that the OSC would extend hours for Cinesphere (presumably for non-mission related content) use beyond the regular hours of the exhibitions at OSC and perhaps introduce evening hours for one night a week during the summer to take advantage of concert goers. These extended hours would have a positive impact on attendance particularly for teenagers and young adults.

4. Conclusions

Overall, based on our analysis, experience and judgement, the new OSC at Ontario Place will generate the most significant excitement and interest among visitors in the opening year. By Year 3 we expect the attendance at the OSC to stabilize. Assuming 109,550 sq. ft. of Engagement space, we expect attendance to stabilize at about 1,000,000 visitors per year.

As is common with the opening (and the reopening as would be the case for OSC) of major cultural attractions, curiosity factor and media attention will push opening year attendance between 15% and 20% higher than the long term stable visitor attendance. Year 2 attendance will moderate but still be higher than Year 3.

OSC is contemplating additional visitor experiences that is currently not included in the Functional Program. These experiences are an immersive state-of-the-art planetarium, an outdoor, adventure playground and play structure and an indoor, interactive large scale transformative immersive experience. These additions, if included as part of the overall OSC experience, would have a positive impact on attendance.

In summary, our final projections of attendance levels at a relocated and expanded Ontario Science Centre at Ontario Place assuming 109,550 sq. ft. of exhibition space are as follows:

Year 1: 1,150,000

Year 2: 1,050,000

Year 3: 1,000,000

Appendix O
Interim Report for Revenue Opportunities, Cost Reductions &
Benefits of Relocating

Confidential and Privileged Advice to Government

ONTARIO SCIENCE CENTRE RELOCATION

**Final Report
Revenue and Cost Reduction
Opportunities and Benefits of
Relocation**

Updated and Revised - December 16, 2022

Lord Cultural Resources is a global professional practice dedicated to creating cultural capital worldwide.

We assist people, communities and organizations to realize and enhance cultural meaning and expression.

We distinguish ourselves through a comprehensive and integrated full-service offering built on a foundation of key competencies: visioning, planning and implementation.

We value and believe in cultural expression as essential for all people. We conduct ourselves with respect for collaboration, local adaptation and cultural diversity, embodying the highest standards of integrity, ethics and professional practice.

We help clients clarify their goals; we provide them with the tools to achieve those goals; and we leave a legacy as a result of training and collaboration.

Our Toronto office is located within the traditional territory of many nations, including the Mississaugas of the Credit, the Anishnabeg, the Chippewa, the Haudenosaunee and the Wendat peoples. Toronto is home to many diverse First Nations, Inuit, and Métis peoples. Our New York office is located on the traditional lands of the Lenape peoples. We encourage you to acknowledge the presence of the people who came before, wherever you are.

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BACKGROUND

Lord Cultural Resources had been commissioned by Infrastructure Ontario initially in 2020 to explore a reimagined Ontario Science Centre, including potential relocation, as an opportunity to achieve both the OSC's modernization and sustainability objectives, and the government's vision for Ontario Place as an exciting, year-round destination for local and international visitors alike.

The study included:

- Translating the OSC vision to create a functional program
- Producing a high-level concept design of a relocated OSC at Ontario Place
- Developing order-of-magnitude capital costs (Class D estimates)
- Identifying revenue and cost savings opportunities, benefits of modernization and relocation, and delivery models
- Estimating attendance for a relocated OSC at Ontario Place

Updated study:

In 2022, Lord was recommissioned to update the study to include a revision to the functional program and a re-evaluation of revenue and cost reduction opportunities.

CONTENTS OF REPORT

The following Interim Report includes revisions and updates to the initial report developed and delivered in June 2021. The areas for review are as follows:

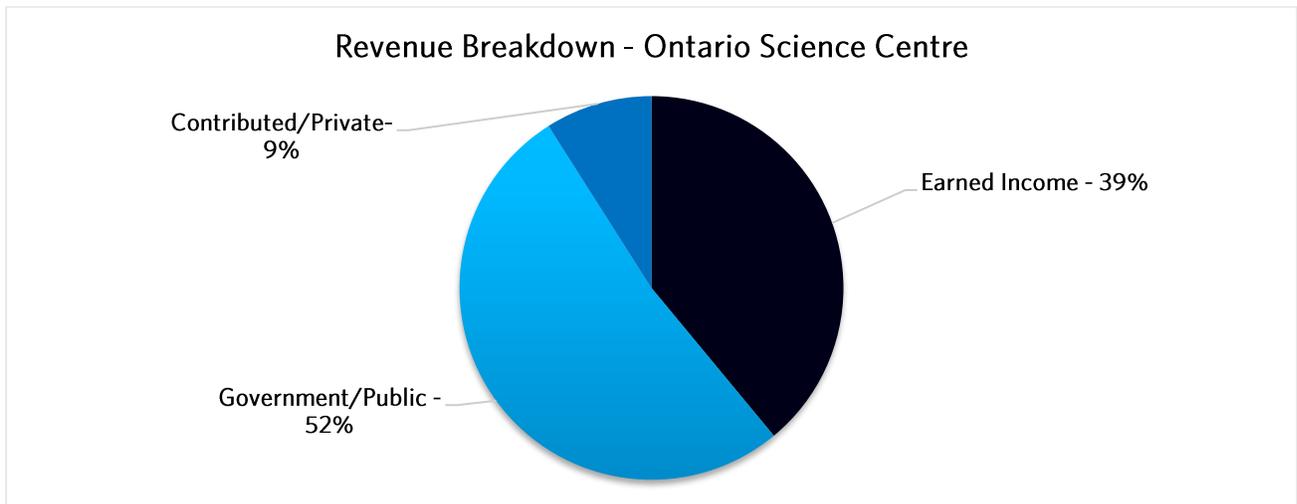
1. Preliminary Revenue Opportunities
2. Preliminary Cost Reduction Opportunities
3. Benefits of Relocation
4. General Principles for Functional Programming

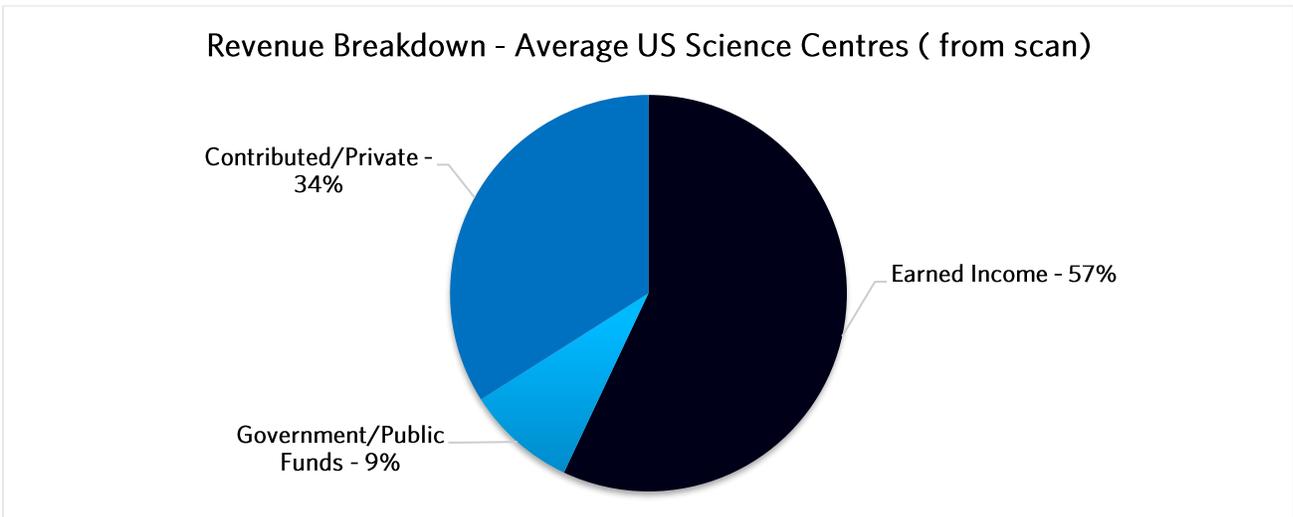
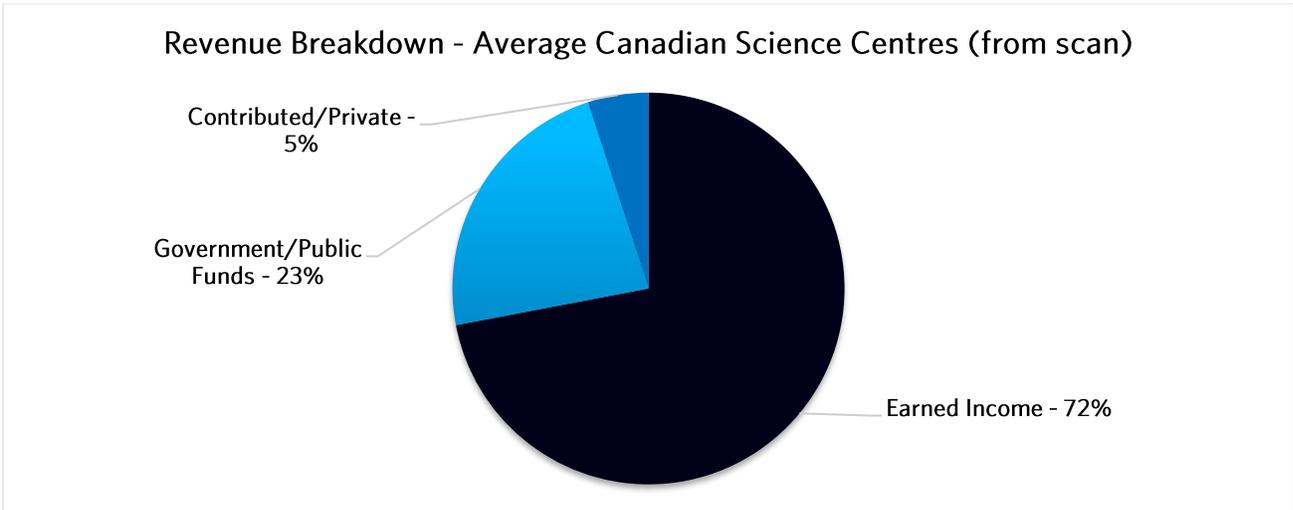
1. PRELIMINARY REVENUE OPPORTUNITIES

Revenue for science centres, as it is for other museum types, is derived through the following streams:

1. Earned Revenue - includes revenue through admissions, third party venue rentals, public programs, retail (on-site and on-line), food service (ie cafes, restaurants) and memberships. Museums can also derive income through loans of temporary exhibitions (that is, ones development by the institution themselves) and some museums may derive earned revenue through parking admissions.
2. Contributed Income (private funds) - includes sponsorships and donations - annual and special gifts and fundraising events
3. Government- includes direct annual funding from local, provincial/state or federal governments. It also includes operating grants at the various levels of government.

The following is a breakdown of the three revenue streams by percentage for the OSC, the average for Canadian science centres and the average for US science centres for 2019 (Pre-COVID._





The following are preliminary revenue opportunities for a relocated Ontario Science Centre at Ontario Place.

PUBLIC FUNDING

As outlined above, the Ontario Science Centre currently receives substantial public operating funding. As an agency of the Province of Ontario, the OSC received in 2018-2019, \$15.8 million in direct funding from the Province - 42% of the OSC's total operating revenue - in addition to an occupancy grant of \$3.9 million to cover rent, taxes, maintenance and some operating costs. In 2020-2021 and 2021-2022, the OSC received a 22% increase to the direct contribution made by the Province of \$19.3 million (60% of total operating revenue) in addition to stabilization funding of \$4.7 million for COVID relief.

It is assumed that the OSC will remain an agency of the Province of Ontario and continue to receive annual operating funds when it relocates to Ontario Place. The amount the OSC will receive from the Province for operating is yet to be determined. It is likely, however, that the occupancy costs at a new Provincially-owned site and smaller building will be reduced and that the OSC will be able to operate as it had pre-COVID and therefore assumed that the occupancy grant the Province provides to the OSC will be reduced and stabilization funding unnecessary. It is likely the OSC will continue to apply for project and program grants as they have in the past.

CREATING THE CONDITIONS FOR MORE VENUE RENTALS INCOME

The OSC currently derives revenue through events and rentals including private functions, corporate meetings and others. There are some limitations with the current rental spaces and therefore OSC is unable to optimize the revenue that could be derived from them.

The new OSC at Ontario Place would benefit greatly from flexible, multi-functional spaces that could also be used as rental opportunities. While there is no exclusively, dedicated rental venue contemplated for the OSC at Ontario Place, other spaces can be rented including the temporary exhibit hall, lobby, student intake space, pod spaces and the Cinesphere. The new location will increase access to downtown corporate offices, conventions (nearby Enercare Centre) hotels, condo residents and other market segments that are primarily adults not accompanied by children.

Interviews conducted in a variety of cities over the years focused on potential rentals at science centres indicated a common comment that they are considered “kid’s places” far less appropriate for corporate meetings, weddings and other “higher end” events than art and history museums. Science centres that are in downtowns are much more successful in generating rentals income, and those with waterfront sites are particularly successful.

While the Ontario Science Centre name/brand should not be considered for modification at an Ontario Place site, there are opportunities to design the new lobby and other spaces as mentioned above, to appeal to corporate, wedding and other higher end renters. This could include consideration of rooftop rentals opportunities in the new building or the existing pods that offer a very special view of both the lake and the urban skyline.

INCREASING ATTENDANCE AND REVENUES FROM YOUNGER CHILDREN

Science centres are not children’s museums, whose age focus is increasingly limited to 0-10 or even 0-8 because 11-12-year-old and older children are not defining themselves as children and generally do not wish to be in the same space as younger children. The age focus for science centres generally starts at age 5-6 and extends to adults not accompanying children but peaks at age 7-12.

Children’s museums are often very successful in attracting very young families, and experience high levels of repeat visitation. The following table from the American Alliance of Museums shows that children’s museums trail only zoos/aquaria and science centres/museums in attracting large numbers

of visitors and in generating a higher percentage of operating funds from earned sources (admissions, retail, food, rentals, programs, memberships) compared to other museum types.

Latest Data Comparing Sources of Operating Income by Museum Type	Art Museums	Children's Museum	History/ Historic House/Site	Natural History/ Anthropology	Science/ Technology Centre/ Museum	Multi-Disciplinary	Arboretum/ Botanic Garden/ Nature Center	Zoo/ Aquarium	Total Sample/ Weighted Average
Sample Size	209	36	408	31	31	100	27	15	857
Earned Income	26%	52%	35%	42%	57%	33%	45%	59%	35.1%
Private Donations/ Sponsorships	42%	33%	33%	28%	31%	35%	31%	25%	35.0%
Investment/Endowment Income	16%	2%	12%	9%	2%	8%	10%	4%	11.4%
Government Income (All State)	17%	13%	21%	22%	10%	24%	14%	12%	19.3%
Source: American Alliance of Museums, Museum Board Leadership 2017: A National Report									
Sample Size	156	18	279	32	25	71	N/A	17	671
Reported Attendance	44,878	130,870	11,500	58,176	357,103	58,500	N/A	208,574	26,500
Source: Financial Survey of the American Alliance of Museums, 2009									

There is no children’s museum in Toronto. The closest children’s museums in southwestern Ontario are in Hamilton and London. The Ontario Science Centre recognized the need for science-focused education and play for younger children many years ago, implementing KidSpace. It quickly proved to be very popular and was expanded, but is still relatively small. Other science centres/museums that include children’s museum components include the Perot Museum of Nature in Dallas, COSI in Columbus and the Fort Worth Museum of Science and History.

The OSC could consider a further expansion to KidSpace at the new facility to widen the market to younger children and also reduce the likelihood for a separate children’s museum to be implemented in Toronto. Ideally this would include a separate ToddlerSpace for one- and two-year olds. These could all be accommodated potentially in the allocation for the Engagement Space planned for the new site. A substantial OSC outdoor play/exhibit space is also being considered at Ontario Place to serve all children.

A greater focus on younger children will increase repeat visitation levels and therefore the motivation for membership. An additional focus on very young children should also be reflected in the merchandise the OSC will sell in the retail store. Birthday party opportunities for children under four years of age should also be considered.

Admissions are currently free to children two and under. A more substantial children’s museum component that will include a toddler’s space could allow for admissions to be charged for one- and two-year olds.

MEMBERSHIPS, DONATIONS AND SPONSORSHIPS

MEMBERSHIPS

Science centres are among the most successful museum types in generating earned income because they are mass market attractions with relatively high levels of attendance and repeat visitation. The desire for repeat visitation, especially among children, creates the demand for membership.

The OSC reported \$1.8M in memberships in 2019 (substantially dropping during the Pandemic). The trend for membership levels and revenues at the OSC, like attendance, has been declining in recent years reflecting demographics and limited capital reinvestment. Photos associated with prices and benefits of membership in OSC marketing material, only depict young families and how long they have been members, which is good, but there are no images of, for example, a senior couple or individual student. Additional images should be considered also showing adults and seniors not accompanying children.

Benefits are set out in a variety of lower and upper level categories with lower level categories referred to as Lunar, Planetary and Stellar (\$125 to \$275 per year) and Upper as Galactic and Cosmic (\$500 and \$1,000). Benefits increase with higher prices. Noteworthy is that all include a 10% discount on OSC restaurants but there is no reference to a discount on retail.

The upper level Galactic and Cosmic membership categories refer to “help make a difference” but there is no clarity regarding how the amounts paid for two cardholders and up to four guests make a difference. One idea that might be considered is that guest passes at upper levels could be distributed through social service agencies and religious institutions to provide free admission to those who need it. The donor would understand how they are making a difference to providing access to those in need and receive a tax receipt for doing so.

Whereas adults expect change to motivate repeat visitation, children enjoy familiarity. An increase in the size of KidSpace in the future OSC could help to motivate more repeat visits and therefore the value of membership among the young family market.

An Ontario Place site and modification to admission charge categories to put those 18-24 years old in the youth ticket category (13-24) as well as programming oriented to young adults should increase attendance and the value of memberships for this age cohort. Similarly, there should be an opportunity to increase membership levels among adults and seniors not accompanying children, but levels would likely be modest relative to the core young family market.

RETAIL AND FOOD SERVICE

RETAIL

Retail is an important source of revenue to support the operating costs of science centres. While revenue levels have long depended on attendance, there has been a trend to more on-line sales as well. Retail at the OSC currently is modest with about 400 sq.ft. independently run kiosks. A larger sized retail presence at Ontario Place is contemplated. Consideration should be given to the substantial competition from Amazon and other on-line retailers for products that are very similar to

those sold at the OSC. The COVID-19 pandemic has increased consumer confidence in on-line purchases so that the likelihood is that the trend to more on-line sales will increase.

While the new OSC will increase its physical footprint at Ontario Place, they will also increase their focus on a virtual retail presence for on-line shopping.

FOOD SERVICE

While not a substantial revenue generator, visitors expect food opportunities. In some cases, where science centres are located in downtown or commercial locations with nearby food opportunities, food service is limited, including integrating “grab and go” food service inside retail stores. This creates staffing efficiencies and also exposes more visitors to retail products. Where food service is concessioned, which is the norm, it allows the supplier to eliminate their on-site staffing costs, thereby creating opportunities to sell the grab and go items to the Centre at lower cost. This in turn, allows for somewhat lower prices for visitors, thereby increasing sales and visitor satisfaction.

For the Ontario Science Centre at Ontario Place the idea of limiting food service to grab and go within a retail store is likely impractical unless there will be substantial fast food and full-service restaurants or cafes within the new precinct. It is expected that there will be food service opportunities at Therme, however it will be contained within the complex. The OSC is therefore planning for a sit-down cafeteria, similar to what they have currently, and located within the Pods. An additional satellite location is planned for the new building.

DONATIONS AND SPONSORSHIPS

The OSC reported revenues from donations and sponsorships in 2019 of about \$3.4M, accounting for about 9% of total operating income (understandably this number was about half in 2021 and 2022). This is fairly typical for Canadian science centers with a range of 7-9% from donations and sponsorships, very much reflecting the fact that financial support for museums and science centres in Canada is largely from government sources, while in the United States it is mostly private funding. This is because of the different tax laws and traditions in each country.

Whereas donations are motivated largely by philanthropy, sponsorships are motivated very much by the seeking of a return on investment in exposure of a company brand to as many visitors as possible. If higher attendance at an Ontario Place site is achieved, it will help lead to more sponsorships.

Many science centres in the United States and some in Canada, namely the Montreal Science Centre, have established independent foundations. Foundations are registered charities, and they are created to raise money to direct funds for specific initiatives such as exhibitions, research and outreach programs.

One of the challenges facing the Ontario Science Centre is that as an agency of the Province, some potential private funders perceive that it is well looked after by the provincial government and does not need much financial support from private sources. A relocation to Ontario Place should help to mitigate that challenge by raising the profile and visibility of OSC and being seen to meet a wider need of enhancing Ontario Place as a year-round destination for residents, school groups and tourists.

Identifying “causes” also motivates private support. Zoos, including the Toronto Zoo, have addressed this issue by focusing on its important conservation role.

New and continuing OSC initiatives such as science literacy or science capital and a science focused workforce are among the motivators that should be addressed along with climate change. Another, given a waterfront location, could relate to fresh water.

2. PRELIMINARY COST REDUCTION OPPORTUNITIES

STAFFING

The largest single expense for any cultural institution including science centres is staffing. Typically staffing costs (salaries and benefits) for science centres are in the 40-50% range of overall expenses. The current OSC staffing is approximately 60% of total expenses for the institution.

Without knowing the specific operations – that is exhibitions, activities and programs at the new OSC – it is not yet possible to know the potential impacts on staffing. We do know, however, that the new complex at Ontario Place which will include the pods, Cinesphere and a new building will be substantially smaller than the current facility at Don Mills and Eglinton.

A smaller building/complex could potentially have an impact on front and back of house staffing as well as maintenance, janitorial and security. There is less building to operate and maintain and therefore fewer staff may be required.

OCCUPANCY COSTS

The OSC currently pays \$4.7m in occupancy costs, or \$8/sq.ft. at the Don Mills location. Occupancy costs include utilities, repairs and maintenance, building insurance and security systems. This is on the high side of the spectrum for occupancy costs but not surprising given the age and the condition of the building.

Occupancy costs should be reduced substantially at the Ontario Place location. The overall size of the complex will be smaller, and it is assumed that the new building and the renovated pods will be energy efficient resulting in lower utilities costs with less building to heat, cool and power.

SHARED SERVICES

The vision for a reimagined Ontario Place will include an exciting all-season family attraction, a four-season music and entertainment venue. Without knowing the details of each of the new tenants at Ontario Place, there should be some opportunities to share services and costs with OSC's site neighbours that could include security and maintenance. Further shared services could include joint marketing and promotion, joint admissions and Ontario Place passes.

3. BENEFITS OF RELOCATION

ONTARIO SCIENCE CENTRE – CURRENT CONDITIONS AND CHALLENGES

CURRENT CONDITIONS

The Ontario Science Centre opened in 1969 and is considered a pioneer in the “second wave” of science centres - focused on hands-on, interactive learning.

It is located in the mixed-used, planned community of Don Mills, one of Toronto’s earliest suburbs at the southwest corner of Don Mills and Eglinton Avenue East. The OSC had become a key to placemaking for a burgeoning and coming-of-age city in its then suburban location.

Designed by renowned architect Raymond Moriyama, the brutalist style 568,000 sq.ft. complex is comprised of three main buildings connected by a series of bridges and escalators that follow the contours of the Don River valley. The building sits on 55 acres of land, the majority of which is environmentally sensitive ravine lands.

CHALLENGES

Over 50 years later the OSC is an aging building and capital and operating costs for repairs and maintenance as well as utility costs are substantial each year, and will continue to increase. According to the 2016 Ontario Science Centre Modernization Business Case, deferred maintenance costs (accumulative to 2025) had been estimated to be over \$147 million.

The current building is 568,000 sq.ft. – roughly double or larger than the size of most science centres that have been built in the last 5-10 years and too large for OSC’s needs. The building is largely inefficient with oversized corridors and circulation spaces and back of house functions.

OSC has excessively high occupancy costs - a function of an oversized and inefficient facility. The Province currently subsidizes the occupancy costs; this in addition to the operating grant the Province gives the to OSC for operations.

The OSC had consistently attracted in the range of one million visitors annually with attendance levels varying by the popularity of temporary exhibitions, school disruptions and other factors. In 2010

attendance was about 1.3 million and has declined to less than 900,000 annual visitors. Declining attendance has had a direct negative impact on earned revenue over the same period.

ONTARIO SCIENCE CENTRE – RELOCATION OPPORTUNITIES AND BENEFITS

ICONIC SITE

Opened in 1971, Ontario Place was created as a symbol of the province’s economic and cultural prosperity. As a unique and accessible waterfront site coupled with ground-breaking modernist architecture, Ontario Place quickly became one of the great iconic cultural and tourist destinations in the world. Millions of visitors participated in myriad entertainment and cultural activities which included live music, exhibits, a Children’s Village play area and the world’s first IMAX theatre – the Cinesphere. However due to increased competition and declining attendance, Ontario Place was forced to shut down in 2011 – save for a few remaining activities including the Budweiser Stage, Cinesphere, outdoor events and the Trillium Park and William G. Davis Trail.

Despite the closures, Ontario Place remained a familiar and iconic landmark. And with the province’s planned revitalization, Ontario Place is intended to return to the status it once enjoyed. The Ontario Science Centre will have the opportunity to not only be a part of this rejuvenation but will be an anchor within an established and well-known site.

WATERFRONT LOCATION

Not only is Ontario Place an iconic and symbolically important site for the province of Ontario but is one of the great waterfront locations. Urban waterfront locations’ natural beauty and connectivity to nature is a natural draw for residents and tourists. The OSC will benefit from a waterfront location for a number of reasons. First is the increased visitation to the site. The second is the revenue generating opportunities through third party events and functions (the waterfront is a premium location for events). The third reason is the programming opportunities for OSC – incorporating the environment including Lake Ontario into OSC programming.

TOURISM

A relocated Ontario Science Centre to Ontario Place will benefit from Toronto’s substantial tourist market – 28 million in 2019 – with a significant portion of tourist visits to the downtown and waterfront. Additionally, a revitalized Ontario Place is certain to increase the tourist draw to Toronto, thus creating additional markets for hotels, retail and restaurant facilities. Given its relatively isolated location for tourists, the current OSC is challenged to attract a larger share of the tourism market. As discussed earlier an Ontario Place site will help to build the tourist market for the OSC, something they have not been able to achieve to any significant degree at its current location.

CULTURAL AND ENTERTAINMENT CLUSTERING – A NEW PRECINCT

Ontario Place is planned to be a new cultural and entertainment cluster within which Ontario Science Centre will be “the” cultural anchor. Highly successful cultural attractions are often part of a cluster offering resident visitors and tourists a variety of offerings and experiences.

The preliminary vision for Ontario Place estimates 5.5 million visitors (excluding OSC visitors) to the precinct by 2030 with a combination of an all-season family attraction – a definite synergy with the OSC’s kids and family focus - a four-season music and entertainment venue and an outdoor all-season adventure play zone. The OSC will certainly benefit with the huge increase in visitation to the precinct (something the current OSC does not have).

PRECINCT PARTNERSHIP OPPORTUNITIES

The new and current tenants at Ontario Place will provide valuable partnership opportunities for the OSC. There could be opportunities for cost sharing that include maintenance and security for example. Additionally OSC could partner with the tenants for joint programming and marketing, cross promotions and discounted admissions.

HERITAGE AND CULTURAL VALUE

Aside from being an iconic landmark, Ontario Place is also an important heritage site of significant cultural and historic value and was added to the list of Provincial Heritage Properties in 2014. An important part of the site is the architecture – the distinctive pods, bridges and Cinesphere – which will be preserved and adaptively reused to become part of the new Ontario Science Centre. New purpose-built space will also be required to accommodate all the needs and requirements of the OSC but it can be substantially smaller than the existing OSC building. However, the OSC will also benefit from association with the Cinesphere, pods and walkways in the eyes of the public, media and potential sponsors and funders.

BUILDING TO SUIT

The relocation of the OSC provides the opportunity to design and right-size a facility that meets the centre’s current and anticipated needs. A new complex, which would include the pods and bridges) would be smaller, but more importantly would function more efficiently, thereby reducing maintenance and other operating costs.

PUBLIC TRANSIT

The OSC at Ontario Place will benefit from the planned rapid transit initiative to the area. The 15 station Ontario Line will connect the current Ontario Science Centre to Exhibition Place and Ontario Place through a mix of at-grade (surface) track, elevated guideways and underground tunnels.

SUSTAINABILITY

The Ontario Place location should provide greater opportunities for the OSC to increase earned revenue to support its long-term sustainability. It should also increase the likelihood for donations and sponsorships.

4. GENERAL PRINCIPLES FOR FUNCTIONAL PROGRAMMING

The following are the general principles for functional programming:

- Functional programming is a collaborative process that seeks to find shared common goals across institutional mission, user needs, facility requirements and budget constraints.
- Jointly created by all stakeholders, the program is the comprehensive roadmap designed to equip museum staff with the knowledge and confidence to communicate the needs of their building,
- The functional program is a data-driven, recommendations-based document that outlines and quantifies the spaces and adjacencies necessary to meet the functional requirements of the subject institution.
- Functional program will make recommendations for types, quantities and sizes of required rooms and spaces. These recommendations should be confirmed by client and architect teams prior to commencing design.
- Space allocation will identify net areas for interior spaces only.
- An estimate of gross area and total building area will be provided. This will be based on professional experience. It is assumed that gross area will be 1.4 times net area. Gross area includes horizontal and vertical circulation, mechanical and service spaces, wall thicknesses and washrooms.
- The space program identifies exterior program areas but does not assign a net area to these spaces.
- The space program will also sub-classify museum zones for interior spaces, determined by whether spaces are public or not and whether they contain collections or not.

Appendix P
OSC+ Components

OSC + Component no. 1:
Immersive Experience

CONTEXT

The relocation of the Ontario Science Centre as part of the Ontario Place revitalization will require a reduction in the size of the building/square footage, requiring a rationalization of the current activities. Some aspects of the current offerings cannot be included in the functional plan and yet are core to the overall experience and should be contemplated within the relocation project.

ACTIVITY DESCRIPTION

Current state - The Ontario Science Centre offers unique, interactive large scale transformative immersive experiences that the entire family can enjoy. The TELUS Rainforest at the current site is one example of a large scale immersive experience. This space in the Living Earth exhibit hall is dedicated to engaging visitors about biodiversity and unique characteristics of plants and animals living in a rainforest.

As you walk into the Rainforest you will notice immediately that it is very hot and humid. To create a replica rainforest the climatic conditions must also be created so that the visitor immediately feels like they are experiencing the wonder of being in another part of the world. The temperature change along with the smell of plants, water and soil catch your attention and transport you immediately. Butterflies and birds are flying throughout the space and you can hear the buzzing of insects and frogs. As you move further into the space you traverse a rocky pathway lined with enormous trees and saprophytic plants populating the space much as it would in Costa Rica. Everywhere you look you see things that remind you that you are no longer in a building in Toronto. There is a small wooden bridge that brings you adjacent to a large waterfall and you can see the fish swimming beneath your feet. As you explore the space further you discover featured rainforest animals – the poison dart frogs. Spectacular colours help you learn about the natural features these creatures have to warn predators away from seeing them as a tasty treat.

The functional program created for OSC@OP does not currently contemplate the opportunity for a large immersive space that replicates the experience of the TELUS Rainforest. This creates a gap in the overall science centre experience. Most notable science centres that are considered world-class include this unique and visceral experience as part of their offering. Such experiences integrate mind, body and emotion and offer a powerful learning opportunity that can engage all types of learners.

RATIONALE FOR INCLUSION

Immersive spaces are critical features in science centers. The experience allows you to learn on a whole new level by being fully transported to another environment to experience all that you would in that space and that what the visitors sees or feels is genuine and captivating. Visitors engage with all their senses and are curious about all that is around them. This inspires them to learn more and pursue their curiosity.

Immersive experiences can be incredibly influential with visitors. These types of experiences don't compare to what you can experience at home or at smaller facilities, these experiences require world class attention to detail and creativity to have the highest impact.

More and more immersive spaces are being created by using digital tools or try to put the visitor into feeling like they are in a diorama or walking through a giant version of the item you are exploring. These experiences are also valuable but do not replace an immersive and authentic environment where many senses are being stimulated. The person has to feel as though they really experienced what it would be like to be in the actual environment being created. We feel it is essential for a visitor to engage with all their senses, smell, sound, touch as well as what you see. This approach is essential to truly feel like they have experienced a slice of something so true to life that it creates a memory and -- feeling stays with and inspires them long after they leave.

This type of space generates interest and is in itself a compelling reason to visit. It creates opportunities for special programming that can drive attendance. It also attracts revenues through sponsorships.

EXPECTED IMPACT

A unique and fully immersive experience is what helps create a world class tourist destination. Visitors will return time and time again to experience something they would not be able to experience in their own lives. These experiences are what make the museum experiences so unique and memorable. These types of experiences are also often captures in visitor photos and shared on social media to allow grassroots marketing to promote the unique experience. Inspiring a visitor by creating a novel transformative experience that allows them to explore using all their senses is an incredible opportunity to reach visitors of all ages, all learning and skill levels. These experiences are universally appealing and different cultural lenses can be applied to deepen connections to the natural world.

APPROXIMATE SIZE AND COSTING

Space assumption:

3,000 square feet (as the current OSC TELUS Rainforest)

Assumes that space is incorporated into the new OSC facility

Costing:

Space – \$2,130,000 (3,000 sq. ft. at \$710 per sq. ft.)

Exhibitry - \$2,400,000 to \$3,000,000 (\$800 to \$1,000 sq. ft.)

Total Cost: \$4,530,000 to \$5,130,000

INSPIRATION

California Academy of Science has a 4 storey rainforest filled with plants, free flying birds, fish and butterflies.

<https://www.calacademy.org/exhibits/osher-rainforest>

Earthquake simulator <https://www.calacademy.org/exhibits/earthquake-life-on-a-dynamic-planet>

Gardens by the Bay, Singapore immersive gardens and cloud forest

<https://www.gardensbythebay.com.sg/>

Exploratorium Fog Bridge <https://www.exploratorium.edu/exhibits/fog-bridge-72494>

Dynamic Earth – Underground Mine Experience <https://www.sciencenorth.ca/dynamic-earth#underground>

Butterfly Conservatory - <https://www.niagaraparks.com/visit/attractions/butterfly-conservatory/>

<https://www.niagaraparks.com/visit/attractions/journey-behind-the-falls/>

OSC + Component no. 2:
Outdoor Experience

CONTEXT

The relocation of the Ontario Science Centre as part of the Ontario Place revitalization will require a reduction in the size of the building/square footage, requiring a rationalization of the current activities. Some aspects of the current offerings cannot be included in the functional plan and yet are core to the overall experience and should be contemplated within the relocation project.

ACTIVITY DESCRIPTION

An adventure playground and iconic climbing/risky play structures throughout a large defined space. Some activities will be for all ages and include large-scale experiences that are iconic both visually and experientially. Some experiences will be specifically for children and create an area for fun and adventure.

It will be designed for use all year long, with some areas free and others pay-to-play. It will complement the other activities on the OP site but also be a destination unto itself.

It will take advantage of the natural environment and beautiful lakefront location.

The design of the area specifically for children will be guided by research in early learning and the development of 21st century skills that include collaboration, perseverance, creativity, and problem solving. It will also support the mental health and wellbeing of children – correlation with helicopter parenting, overly safe play spaces, opportunities to help build a space for kids to explore and experiment without parental interaction or suggestion, without being observed – necessary for child growth and development.

RATIONALE FOR INCLUSION

Risky play and free-choice learning are at the core of children's development and necessary for critical thinking development. The Ontario Science Centre at Don Mills road includes this kind of play through its existing outdoor spaces such as the Science Plaza at the front of the building (formerly called TELUSCAPE); the Cohon Family Nature Escape, rated one of the most popular experiences by our visitors; and the (seasonal) facilitated nature walks to the wetlands behind the science centre.

The new OSC@OP has limited outdoor space envisioned in the current plans. The opportunity to create an Adventure Park for families, school groups, children and others visiting the OP

precinct will allow for the OSC to continue to engage its audiences in outdoor play. This will also allow for cohesion of experiences on the OP site with the experiences created and managed by a trusted and beloved Ontario brand – the Ontario Science Centre.

EXPECTED IMPACT

The overall OSC experience will be limited without including outdoor fun and science-based experiences. This space will be an opportunity for revenue generation through one-time user fees, multi-passes, memberships and sponsorships. In addition, partnerships with post-secondary institutions focused on how children learn through play/adventurous play will support impact studies and could create revenue opportunities through research grants.

The space will be designed to be visually iconic, and create another must-see destination at the OP site.

It will support Toronto and the revitalized Ontario Place as a tourism destination for people from across the province and beyond.

It will increase accessibility of activities at Ontario Place (both the reality and the perception of such) for the public.

APPROXIMATE SIZE AND COSTING

Size assumption:

6.4 acres (278,783 sq. ft.)

Former EcoRecReo site

Costing:

\$70 to \$140 per sq. ft.

Including play structures and surfacing

Total Cost: \$19,400,000 to \$39,000,000

INSPIRATION

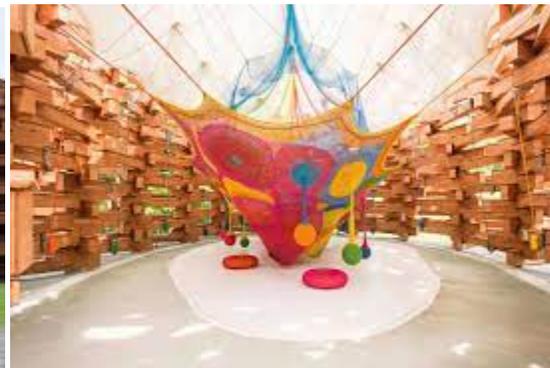
<https://www.youtube.com/watch?v=FOSXJfe3uGo> Telus Spark (Edmonton) Junkyard Playground

Governer's Island Adventure Playground NYC <https://www.youtube.com/watch?v=dZxjZfpK8Qo>

<https://www.blogto.com/city/2017/09/adventure-playground-toronto-history/>



Hanoke Open Air Museum, Japan





(old waterslide tower idea)



Children's Museum of Denver Adventure Forest



City Museum, St. Louis

OSC + Component no. 3:
Planetarium

OSC+ ACTIVITY – PLANETARIUM

CONTEXT

The relocation of the Ontario Science Centre as part of the Ontario Place revitalization will require a reduction in the size of the building/square footage, requiring a rationalization of the current activities. Some aspects of the current offerings cannot be included in the functional plan and yet are core to the overall experience and should be contemplated within the relocation project.

Planetariums are invaluable tools for science communication and sharing the riches of the night sky with everyone. There are more than 1,000 planetariums in North America alone. There is currently no public major sized planetarium in Toronto.

ACTIVITY DESCRIPTION

Planetariums are designed for discovery and exploration and draw our imaginations to new worlds and possibilities. **An immersive state-of-the-art modern New Planetarium is core to the science centre experience and we are proposing that we build a large planetarium (90 ft).** The rationale is that at this size, the New Planetarium would be the largest of all planetariums or giant dome theatres in North America, and in fact, the largest in the Western Hemisphere that warrants world-class attention and will be a landmark for Toronto. Only one other planetarium in North America comes close: the planetarium at Liberty Science Centre in Jersey City, NJ, has a diameter of 89 feet. The next largest comparable planetarium in the US or Canada is at the renowned Griffith Observatory in Los Angeles, which has a diameter of 76 feet.

RATIONALE FOR INCLUSION

Unique, Inspirational Environment: Every planetarium immerses visitors in a 3-D environment that evokes realism. The sight of stars appearing in a dark sky, now being lost to light pollution in many areas, immediately captures attention and evokes awe. As cities expand, the lack of personal contact with nature is producing negative psychological effects. A planetarium's night sky is a powerful, memorable, and soothing image which encourages learning. Immersion sparks a viewer's creativity, interest, and engagement, aspects of education's affective domain. At one time anyone could go into their backyard and look up and see the stars but kids living in cities don't get to see the stars with the same clarity due to light pollution and this experience helps them feel more inspired to seek out darker spaces for optimal viewing.

The night sky view is our connection to a broader universe. The planetarium offers some guidance for us to understand what we are seeing when we are awe-struck looking above us. It

has the potential to influence behavior and spark curiosity long after the visit as it helps to connect the person with what they are actually seeing when they look up at night.

Place for Inquiry-based Learning: Inquiry-based learning is a teaching strategy and learning method that prioritizes student questions, ideas, and analyses. The planetarium environment triggers learner curiosity in ways that normal classrooms cannot. Students are able to discover sky changes that are parts of important long-term cycles, including day and night as a result of Earth's rotation, differences in the daytime paths of the Sun during different seasons, lunar phase and position changes during a month, and planet movement among the fixed stars. Acceleration of these sky changes, so that they occur in a convenient student-visit time period, provides exceptional opportunities for learning astronomy with inquiry procedures.

Help for the Difficult Learner: The planetarium experience can be an important gateway to learning for children who dislike learning in formal environments. Additionally, live planetarium programs benefit learners with short attention spans.

A Positive Social Environment: The planetarium is a place where diversity and equality can be promoted, particularly when facilitators use interactive techniques. Live programming provides the opportunity for participants to connect with each other and the presenter. Also, accommodations have been developed for people with disabilities: the visually and hearing impaired, those with autism spectrum disorder, people with intellectual disabilities, and more.

EXPECTED IMPACT

Impacting Communities: Planetariums are not just for young learners. They welcome everyone from the community to attend public events. Many community groups and professional organizations visit the planetarium for lifelong learning experiences. Many STEM-related issues affect our planet today. It is the public who must have the capacity to understand these issues to make informed decisions and encourage powerful, global impact. Planetariums inform the public on these matters.

The recognition of First Nations contributions to science has been on the rise in recent years. In astronomy, instead of teaching constellations and stories from the Greeks and Romans, we will need to start teaching the star stories of the people who have lived on this land for thousands of years. Some of those stories are part of how Indigenous people made sense of the world around them—a form of science separate from, but with kinship to, the enterprise of observation, prediction, and questioning built around what we call the scientific method. It is important that no one underestimates the importance stars and the night sky plays in the daily lives of Indigenous people from around the world.

A state-of-the-art spectacular planetarium has the potential to engage researchers as scholars interested in engaging with the public. This would allow strong partnerships with Universities in Toronto and Southern Ontario and even internationally.

Revenue Generation: Planetariums can be programmed and ticketed separately during the day and rented out for private, social and corporate events.

A new planetarium would be a significant naming opportunity for a corporate or philanthropic sponsor, generating notable revenues.

A planetarium can be visually iconic, and create another must-see destination in Toronto for people from across the province and beyond.

APPROXIMATE SIZE AND COSTING

Space assumption:

1,100,000 cubic feet (LED screen)

or 1,150,000 cubic feet (projection screen)

- Assumes that ticketing, lobby and washroom space are within main OSC facility

- Assumes 90 foot screen and 285 seats

Costing:

LED Screen

- Building shell and fit out - \$23,277,000

- Equipment costs - \$14,690,000

- Seating - \$330,000

Total LED cost - \$38,297,000

Projection Screen

- Building shell and fit out - \$22,452,000

- Equipment costs - \$5,410,000

- Seating - \$330,000

Total LED cost - \$28,192,000

INSPIRATION

Shanghai Astronomy Museum Planetarium

<https://www.ennead.com/work/shanghai-astronomy-museum>

Hayden Planetarium

https://www.yelp.ca/biz_photos/hayden-planetarium-new-york-2

OSC + Component no. 4:
Fabrication Facility

CONTEXT

The relocation of the Ontario Science Centre as part of the Ontario Place revitalization will require a reduction in the size of the building/square footage, requiring a rationalization of the current activities. Some aspects of the current offerings cannot be included in the functional plan and yet are core to the overall experience and should be contemplated within the relocation project.

ACTIVITY DESCRIPTION

Fabrication facility that supports the creation of exhibitions and individual experience elements for display/use at the Ontario Science Centre as well as created for external clients to support revenue generating activities that extend the OSC brand throughout the province, country and internationally.

A facility would include equipment to support the work of the various departments or 'shops' including woodshop, paint shop, and finishing shop, as well as those associated with graphic production and electronics. The facility would also require a space where exhibits can be prototyped, assembled, tested, repaired, and crated for shipping.

A loading dock is required to facilitate the transport of finished products.

RATIONALE FOR INCLUSION

Fabrication facilities currently exist at the Ontario Science Centre's Don Mills location. This is considered a shared resource for the organization to fulfil its mandate (the creation of exhibitions is included in the Act for the Centennial Centre of Science & Technology) and to support renewal and revitalization of the onsite experiences. The work supports revenue generation through sales to other science centres worldwide that include individual exhibit experiences to the creation 5000+ square foot exhibitions for permanent installation as well as exhibitions that are rented to science centres and museums in North America and beyond for time-limited periods for a rental fee.

The revenue associated with sales and rentals of exhibitions is \$2.5-3M annually (pre covid). Revenue opportunities also exist with the ability to respond to provincial and federal grants that include the creation of physical experiences. The work also supports the revenue generated through admissions to the Centre as renewed and new exhibit experiences drive attendance and membership sales.

The functional plan for the OSC@OP does not include space for fabrication. A space for this function of the OSC work is required. Ideally there is some proximity to the OP precinct, but this is not required.

APPROXIMATE SIZE AND COSTING

Infrastructure Ontario engaged CBRE to undertake a market scan for suitable industrial properties to house the fabrication facility with the following parameters:

- In the GTA within close proximity to a 400-series highway
- 24 foot clear ceilings
- Minimum 30,000 sq. ft.
- Drive-up and Dock-level doors for loading and unloading of materials and exhibits
- Long-term lease

CBRE has identified a total of 9 currently available listings in Mississauga, Vaughan, Richmond Hill, Scarborough and Toronto. They are all at minimum 1 km and at most 4 km from a 400-series highway.

Lease prices ranged from \$14 to \$23 per sq. ft. Based on these psf ranges, a 30,000 sq. ft. facility would lease for between \$420,000 to \$690,000 per year.

Excluded from the above lease costs is the fit-out cost for the fabrication facility. This would be one-time cost and will be determined at a later date dependant on the facility selected to house the fabrication facility.

EXPECTED IMPACT

Ability to have the full capabilities to conceptualize, design and fabricate exhibitions is consistent with the OSC mandate and will allow the revenue streams associated with this activity to continue. The newly established Digital department will allow for integration of new approaches to exhibition design and fabrication that is expected to create a new customer base that will grow revenues.

In addition, there are opportunities to consider how a stand-alone fabrication facility can extend the impact and support the priorities of the OSC (being a hub, financial sustainability) through exploration of:

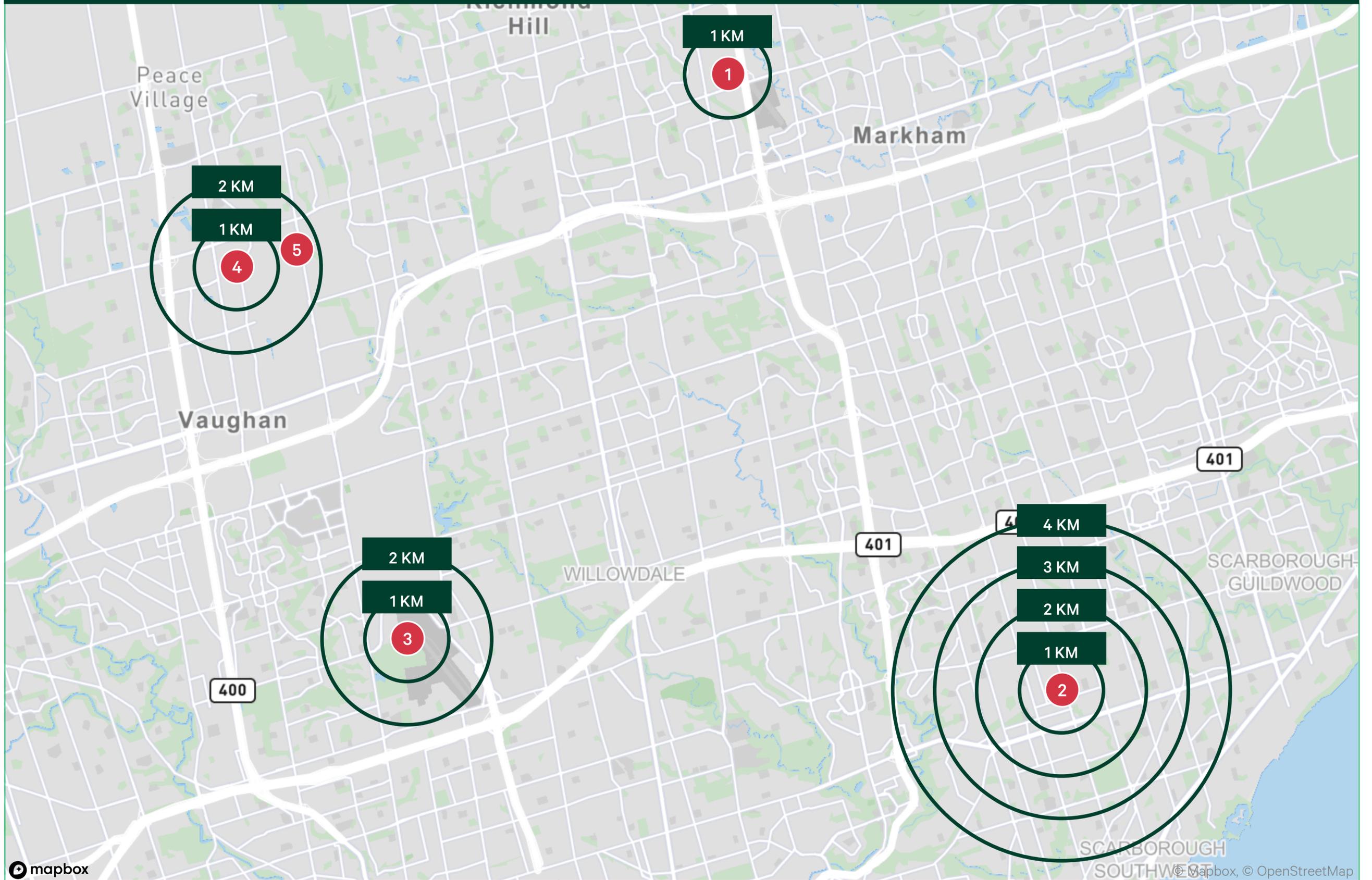
- coordination with the Ministry of Education for secondary school cooperative education placements and integration into the curriculum associated with trades.
- partnerships with post-secondary institutions for increased student experiences (access

to equipment, apprenticeship placements, etc) such as skilled trade programs at colleges such as George Brown and Seneca and art/design/technical production programs at universities such as OCADU and Toronto Metropolitan University.

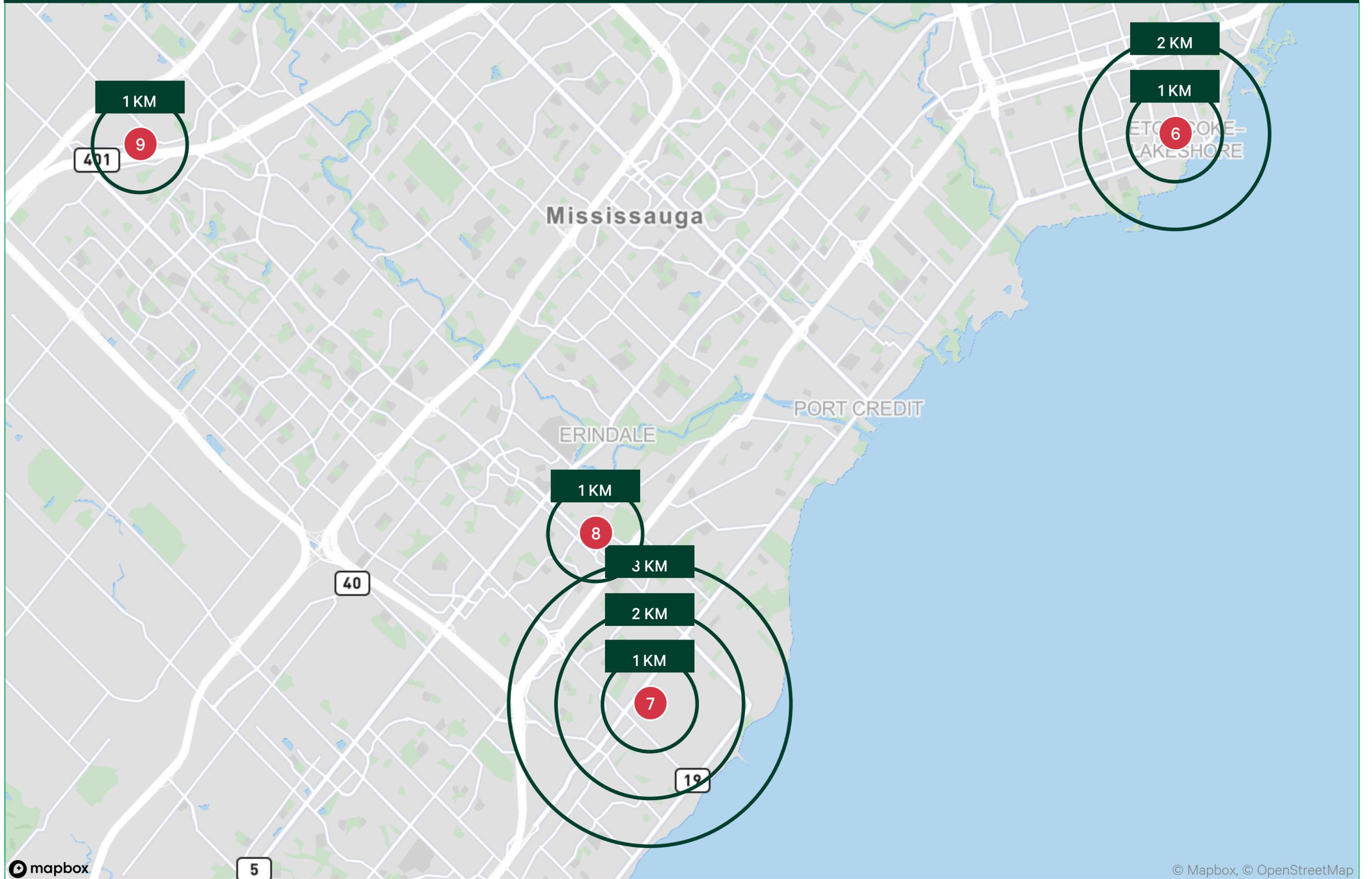
- partnership with Skilled Trades Ontario and the Ministry of Labour, Immigration, Training and Skills Development to support goals associated with career development and re-skilling of Ontarians to support economic strength

In addition to revenue associated with the above, additional revenues could be seen through provincial and federal grants as well as private organizations and foundations for whom skilled trade development is a priority.

North East



South West



Map no.	Address	City	SF	Clear Height (24'+)	Base Rent/ SF / annum	TMI / SF / annum	Truck Level Doors	Drive-In/Ground Level Doors	Availability Date	KM from Highway	Comments
North East Map											
1	50 Vogel Road, Units 6-7	Richmond Hill	32,337	24	\$17.00	\$4.42	4	1	Apr-23	1.1	CBRE Listing. Various divisible options but Landlord would prefer at least a three year deal. TTC Access. Large yard for additional car and trailer parking, CBRE Listing.
2	1120 Birchmount Road	Scarborough	220,465	35	\$14.00 - \$16.50	\$3.20	16	1	Immediate	4.8	
3	Downsview Airport	Toronto	Multiple 90,000 SF hangars side by side	90	\$18.00-\$20.00	\$4.75 (est.)	N/A	Ground Level	Immediate	3.8	Multiple airplane hangars available for lease. Can be modified as required to support the required size. No structural columns within the hangars. Transit access. No TMI is current available so estimate included.
4	51 Graniteridge Road	Vaughan	33,638	24	\$18.00 + escalations	\$4.85	4	1	Jun-23	2.2	Close to public transportation routes.
5	4030 Keele Street	Vaughan	31,000	24	\$22.74 (Gross)	N/A	4	2	01-Aug-23	4	Amp electricity can be increase.
South West Map											
6	60 Birmingham Street, Bld 1	Toronto	157,710	36	\$20.00-\$22.00	\$4.50	32	2	Q2 2023	2.4	Q2 2023 construction complete. Various divisible options. Excellent connection to Mississauga Transit & Go Station.
7	2520 Royal Windsor Drive	Mississauga	132,988	36	\$18.00 + escalations	\$3.85	28	3	Immediate	2.5	
8	2225 Erin Mills Parkway	Mississauga	30,311	24	\$19.00	\$4.00	2		Immediate	1	Possibility to add a drive-in door and office space. CBRE Listing.
9	2475 Meadowpine Boulevard	Mississauga	132,719	36	\$18.00 + escalations	\$3.75	25	2	Immediate	1.7	Various divisible options. Central to public transportation routes and two go stations. CBRE Listing.

Appendix Q
Interim Operating Estimates

Confidential and Privileged Advice to Government

Policy Objective:
Maintain an in-person OSC service offering, while scaling back programming/operating costs. Expedite decant from existing site.

Pros:

- Maintain an in-person OSC service offering, while scaling back programming/operating costs.
- Expedites decant from existing site to reduce risk.
- Provides sufficient time to either identify/lease space and complete fit-up or complete virtual fit-up and prepare pop ups.
- Allows sufficient time for staffing reductions resulting in surplussing.
- Interim operations could be leveraged as a communications and marketing opportunity to build anticipation for a new facility

Cons:

- Strategy accepts operational, health & safety risks by the program.
- Occupancy of existing site must terminate by March 31 2025.
- A reduction in programming or closure would likely result in negative stakeholder and public reaction

Option 1A: Decant to Alternate Space

	2022/23	2023/24	2024/25	2025/26	2026-27	2027-28	TOTAL
Capital	\$2.3M	\$1.5M					\$3.8M
Fit-up				\$11-22M			\$11-22M
Lease				\$2-5M	\$2-5M	\$2-5M	\$6-15M
Revenue Loss				\$7-8M	\$7-8M	\$7-8M	\$21-24M
Decommissioning					\$20-24M		\$20-24M
Operating Savings/Pressure	\$3.9M	\$5.6M	\$2M	-\$13-14M	-\$13-14M	-\$13-14M	-\$27.5-30.5M
TOTAL COST TO GOVERNEMENT							\$34.3-58.3M