

FOR APPROVAL

PUBLIC

OPEN SESSION

TO: Academic Board
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DATE: May 18, 2023 for May 25, 2023

AGENDA ITEM: 5

ITEM IDENTIFICATION:

Capital Project: *Report of the Project Planning Committee for University of Toronto Libraries Downsview High-Density Storage Expansion 2 – Project Scope and Sources of Funding*

JURISDICTIONAL INFORMATION:

Pursuant to section 4.2.3. of the Planning and Budget Committee’s terms of Reference, “...the Committee considers reports of project planning committees and recommends to the Academic Board approval in principle of projects (i.e. space plan, site, overall cost and sources of funds) with a capital cost as specified in the *Policy on Capital Planning and Capital Projects*.”

Pursuant to section 5.1 of the Academic Board’s Terms of Reference, the Board considers reports of project planning committees (i.e. space plan, site, overall cost and sources of funds) with a capital cost as specified in the *Policy on Capital Planning and Capital Projects*.

The *Policy on Capital Planning and Capital Projects* provides that capital projects with costs between \$10 million and \$50 million (Approval Level 2) on the St. George campus, will first be considered by the Planning & Budget Committee, which shall recommend approval to Academic Board. Such projects will be confirmed by the Executive Committee of the Governing Council on the recommendation of the Academic Board. [Section 3(b)(ii)(1)(a)]

GOVERNANCE PATH:

A. Project Planning Report, Total Project Cost, and Sources of Funding

1. Planning & Budget [for recommendation] (May 03, 2023)
2. **Academic Board [for approval] (May 25, 2023)**

3. Executive Committee [for confirmation] (June 15, 2023)

B. Execution of the Project:

1. Business Board [for approval] (June 20, 2023)

PREVIOUS ACTION TAKEN:

At the January 22, 2021 meeting of the Capital Project and Space Allocation (CaPS) Executive Committee, the project was brought forward to approve Terms of Reference, and the request for consultant fees for full design services.

On November 24, 2022 CaPS Executive Committee approved consultant fees to initiate Owner Design Consultant (ODC) services under a Design-Build delivery model for the project.

HIGHLIGHTS:

Project Background

UTL at Downsview (UTLD), the libraries' efficient high-density storage and preservation facility, originally opened its two-bay module and core UTLD operations in December 2005 with the objective to transfer important but less frequently used materials offsite.

The design of the facility (by University of Toronto's Design & Engineering Department) and its operational program was based on that of facilities already in place at institutions such as Harvard, Yale, and Ohio State Universities, as well as several other universities with large research libraries, located in similar climates.

In 2014, the UTLD Expansion 1 project added three additional bays (that accommodate 3,000,000 volumes (1,000,000 volumes per bay) as the original two bays reached capacity. This additional capacity led to the Keep@Downsview, an integral partnership established between the University of Toronto, the University of Ottawa, Western University, McMaster University, and Queen's University to preserve the scholarly record in Ontario in a shared high-density storage and preservation facility ensuring resources are available for research communities for generations to come.

Current projections foresee that UTL's existing high-density storage facility will be full by Fall 2024, requiring the further expansion of new bay modules to support the University's significant investments in collection and services. The current fill rate is 200,000 books per year (i.e. it typically takes five years to fill one 1 million volume bay). This timeline will be further compressed by anticipated large intake from other libraries on campus. Also, with the existing facility reaching capacity by the end of Fall 2024, and the new expansion proposed to be complete by Fall 2025, there will be a delay with the facility's ability to accept books during this time. Consequently, there is an urgent need to increase the facility's capacity in the immediate future.

After receiving CaPS Exec approval for consultant fees in January 2021 (for UTLD Expansion Project 2), the University of Toronto's Design & Engineering Department completed the schematic design and a

Class D costing for a two-bay high density storage expansion, which also included a one-storey processing area and a cold storage preservation facility for valuable media. Due to budget considerations, the cold storage area was removed from the current project scope but will be considered for a future expansion project. During 2022, the project was paused to consider alternative models of procurement and the possibility of collocating a UTP warehouse at the UTL high-density storage facility.

In October 2022, the project was authorized to continue with a revised scope to include an expansion of up to four high-density storage bays with Design Build as the preferred delivery model. From an administrative perspective it was decided to close out the previous project number (P149-20-183) and continue with a new project number (P149-22-094).

On November 24, 2022 the CaPS Executive committee approved a request for fees to initiate Owner Design Consultant (ODC) services led by the University's Design & Engineering Department.

Project Highlights

Since the last CaPS Exec approval in November 2022, numerous project scope items have now been confirmed:

- **Three bays of High-Density Storage.** Through the ODC process it has been confirmed by UTL that three bays of high-density storage will be built (additional capacity for 3,000,000 volumes). The racking system in all three bays is excluded from the scope of this project and will be procured and constructed separately as a subsequent project. Total net area for three bays is 2,242 m². Additional mechanical space for new mechanical equipment will be required, but it is anticipated that the existing electrical transformer has sufficient capacity for three additional bays and will not need to be upgraded for this scope.
- **Ancillary Uses.** A one-storey book processing area (net area 118 m²) will be added to the front of the facility.
- **Additional Mechanical Space.** An additional one-storey space (adjacent to the proposed book processing area) will be built to house new mechanical equipment for the new three-bay expansion. During the previous expansion project in 2014, within the mechanical mezzanine, a pad was constructed in anticipation of future mechanical equipment to support the next building expansion; however, subsequent changes to the sustainability requirements result in mechanical equipment that will be larger than was required to meet the previous sustainability requirements. As a result, a separate mechanical space is required. Uses for the unused mechanical space (in the existing mezzanine) are to be determined.
- **Overall Project Area.** The gross area of the project is 2,515 m² with a net program area of 2,360 m² (excludes mechanical space).
- **Occupancy.** It is anticipated that full operational occupancy will be achieved by October 2025. As previously mentioned, the high-density shelving installation is not included and will be

implemented as a separate project upon the completion of this facility along with the integration of the in-rack HVAC and fire-protection. See the next section for project schedule milestones.

Project Schedule

The proposed schedule for the project is as follows:

Terms of Reference and request for consultant fees	January 22, 2021
Request for Owner Design Consultant fees (Cycle 3)	November 24, 2022
Full governance (Cycle 6)	April 2023- June 2023
ODC Zoning Applicable Law Certificate Submission	April 2023
Design Build award	August 2023
Schematic Design/ Preliminary SPA preparation/U of T Review	August 2023-October 2023
Design Development 100%	March 2024-April 2024
Construction document 100%	September 2024-October 2024
Tender -below grade	June 2024-July 2024
Tender -above grade	November 2024-December 2024
Construction-below grade	July 2024-October2024
Construction-above grade	December 2024-September 2025
Full operation occupancy	October 2025

Municipal approvals will be verified through the submission of a Zoning Applicable Law Certificate to the City and may impact this schedule. Currently, a Site Plan Application (SPA) or a Minor Variance application are anticipated given the nature of the project.

The schedule for design and construction will be confirmed once the Design- Builder is engaged.

FINANCIAL IMPLICATIONS:

Discussion of overall costs and sources of funds can be found in the *in camera* document for this project.

RECOMMENDATIONS:

Be It Resolved:

THAT subject to confirmation by the Executive Committee,

THAT the project scope of the University of Toronto Libraries Downsview High-Density Storage Expansion as identified in the *Report of the Project Planning Committee for University of Toronto Libraries Downsview High-Density Storage Expansion 2*, dated March

28, 2023, be approved in principle; and,

· THAT the project totaling 2,360 net assignable square metres (m²) (2,515 gross square metres (gsm)), be approved in principle, to be funded by University of Toronto Libraries Future Major Capital Projects Reserve and University of Toronto Libraries Operating Funds.

DOCUMENTATION PROVIDED:

- *Report of the Project Planning Committee for University of Toronto Libraries Downsview High-Density Storage Expansion 2, dated March 28, 2023.*



UNIVERSITY OF
TORONTO

UNIVERSITY PLANNING, DESIGN & CONSTRUCTION
UNIVERSITY PLANNING

Report of the Project Planning Committee for
University of Toronto
University of Toronto Libraries Downsview High-Density Storage
Expansion 2

March 28, 2023

University Planning – University Planning, Design and Construction

I. Executive Summary

UTL at Downsview (UTLD), the libraries' efficient high-density storage and preservation facility, originally opened its two-bay module and core UTLD operations in December 2005 with the objective to transfer important but less frequently used materials offsite.

The design of the facility (by University of Toronto's Design & Engineering Department) and its operational program was based on that of facilities already in place at institutions such as Harvard, Yale, and Ohio State Universities, as well as several other universities with large research libraries, located in similar climates.

In 2014, the UTLD Expansion 1 project added three additional bays (that accommodate 3,000,000 volumes (1,000,000 volumes per bay) as the original two bays reached capacity. This additional capacity led to the Keep@Downsview, an integral partnership established between the University of Toronto, the University of Ottawa, Western University, McMaster University, and Queen's University to preserve the scholarly record in Ontario in a shared high-density storage and preservation facility ensuring resources are available for research communities for generations to come.

Current projections foresee that UTL's existing high-density storage facility will be full by Fall 2024, requiring the further expansion of new bay modules to support the University's significant investments in collection and services. The current fill rate is 200,000 books per year (i.e., it typically takes five years to fill one 1 million volume bay). This timeline will be further compressed by anticipated large intake from other libraries on campus. Also, with the existing facility reaching capacity by the end of Fall 2024, and the new expansion proposed to be complete by Fall 2025, there will be a delay with the facility's ability to accept books during this time. Consequently, there is an urgent need to increase the facility's capacity in the immediate future.

After receiving CaPS Exec approval for consultant fees in January 2021 (for UTLD Expansion Project 2), the University of Toronto's Design & Engineering Department completed the schematic design and a Class D costing for a two-bay high density storage expansion, which also included a one-storey processing area and a cold storage preservation facility for valuable media. Due to budget considerations, the cold storage area was removed from the project scope but will be considered for a future expansion project. During 2022, the project was paused to consider alternative models of procurement and the possibility of collocating a UTP warehouse at the UTL high-density storage facility. In October 2022, the project was authorized to continue with a revised scope to include an expansion of up to four high-density storage bays and a single-storey processing area with Design Build as the preferred delivery model. The project doesn't currently anticipate the inclusion of a UTP warehouse component and additional considerations to make this possible i.e., a secondary loading dock are no longer included in project scope. Since the CaPS Exec approval in November 2022, project scope items have been confirmed to be three-bays high-density storage and one-storage processing area. The total net area of the project including the one-storey processing area and three-bay high-density storage is approximately 2,360 square meters within a gross area of 2,515gsm.

Every effort must be made during the construction process to not interfere with the activities of other groups at the Downsview site, including the UTIAS facility directly adjacent and the UofT Press Facility at the Dufferin Street site entrance. The environment Canada facilities at 4905 Dufferin Street also shares usage of the upper portion of the main site driveway (via an access easement). Another secondary effect is the displacement of a few trees currently on the expansion site.

It is anticipated that full operational occupancy will be achieved by October 2025.

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II. Project Background

a) Membership

Glen Morales	Chief Administrative Officer, UTL
Emily Ling	Manager Capital Projects and Planning, UTL
Kyla Everall	User Services Librarian and Downsview Coordinator, UTL
Mark Phillips	Manager, UTL at Downsview
Loryl MacDonald	Associate University Librarian for Special Collections, UTL
Jelena Vulovic-Basic	Senior Manager, Building Mechanical Services, Facilities & Services
Romy Thomas	Senior Manager, Property Management, Facilities & Services
Vladimir Kouptchinski	Manager, Network Design and Implementation, EIS
Jacquanline Liu	Manager, Project Development (UPDC)
David Sasaki	Managing Director, University Planning (UPDC)
Tong Zhao	Planning Associate, University Planning (UPDC)

Previous membership included Lari Lanford, Head User Services, UTL. Kyla Everall, User Services Librarian and Downsview Coordinator, UTL has been added to the Project Planning Committee.

b) Terms of Reference

1. Identify the current and long-term storage requirements for the storage of library material, primarily books, of the University of Toronto Library system. Identify the frequency of use of this facility.
2. Identify the current and long-term storage requirements for the cold storage of film archives in the University of Toronto Library system.
3. Assess building considerations, as well as site and planning considerations.
4. Make recommendations for a detailed space program and functional layout to accommodate the proposed addition to High-Density Library Storage Facility and cold storage at Downsview Campus.
5. Demonstrate that the proposed space program is consistent with the Council of Ontario Universities' (COU) space standards, and University of Toronto guidelines.
6. Investigate any sustainability strategies that can be applied to the project.
7. Determine the secondary effects of the project, including any necessary space reallocation.
8. Review the capacity of existing site services and infrastructure especially electrical power supply capacity and determine the extent of upgrades, if required.
9. Identify all existing equipment and moveable furnishings to be relocated and reused, and new equipment and moveable furnishings necessary to the project and their related costs.
10. Identify all data, networking and communications requirements and their related costs.
11. Identify all security, occupational health and safety and accessibility requirements and their related costs.
12. Identify a phasing plan for the project, if required.
13. Develop a milestone schedule that considers governance path and the anticipated start of project construction.
14. Determine a total project cost (TPC) estimate for the capital project.

15. Identify all sources of funding for the project and increased operating costs once the project is complete.
16. Project Planning Report by early 2023.

c) Background Information

i. History & Context

UTL at Downsview (UTLD), the libraries' efficient high-density storage and preservation facility, originally opened its two-bay module and core UTLD operations in December 2005 with the objective to transfer important but less frequently used materials offsite. These two bays hold approximately 2,200,000 volumes and have allowed the University of Toronto libraries to provide an optimal mix of collections, spaces and services to meet the library needs at its central locations.

The design of the facility (by University of Toronto's Design & Engineering Department) and its operational program was based on that of facilities already in place at institutions such as Harvard, Yale, and Ohio State Universities, as well as several other universities with large research libraries, located in similar climates. It is considered an "exceptional facility" by the Ontario Council of Universities Libraries. The high-density storage system uses an industrial racking system with shelves that are deeper and wider than those in typical library units. As well, instead of books being individually placed on shelves, volumes of the same size are grouped together and placed in open trays. The volumes are encoded with a scannable UPC bar code as well as each box/tray, shelf and rack. With suitable hardware and software to identify, store, locate and retrieve individual items, the collection is stored without concern as to subject matter or author.

In 2014, the UTLD Expansion 1 project added three additional bays (that accommodate 3,000,000 volumes (1,000,000 volumes per bay) as the original two bays reached capacity. This additional capacity led to the Keep@Downsview, an integral partnership established between the University of Toronto, the University of Ottawa, Western University, McMaster University, and Queen's University to preserve the scholarly record in Ontario in a shared high-density storage and preservation facility ensuring resources are available for our research communities for generations to come.

The current fill rate is 200,000 books per year (i.e., it typically takes five years to fill one 1 million volume bay). However, this timeline will be further compressed by anticipated large intake from the Gerstein Stacks (500,000 books), Robarts Library 5th Floor government documents, the East Asian Library, and the Music Library. Also, with the existing facility reaching capacity by the end of Fall 2024, and the new expansion proposed to be complete by Fall 2025, there will be a delay with the facility's ability to accept books during this time. Consequently, there is an urgent need to increase the facility's capacity in the immediate future.

Building on the success of the design by the University of Toronto's Design & Engineering on previous project plans and the modularity of the UTLD facility, the

potential layout and associated costing of an additional three-bay expansion and one-storey additions for processing area at UTLD is investigated.

It is anticipated that full operational occupancy will be achieved by October 2025.

d) Consultation Process Summary

There have been two Project Planning Committee meetings.

- March 22nd, 2021: Project Kick off- overview of the project planning process and review of work in-progress
- January 31st, 2023: Project scope and delivery model updates and review of the Draft Project Planning Report

See appendix for presentation material and meeting minutes.

e) Governance Path and Timeline

The CaPS Executive Committee is the approval authority at the University of Toronto for proposed capital projects with a value of more than \$10 million dollars. CaPS Executive is a pre-governance committee that kicks-off the path to governance approval at the University. This path is typically referred to as a governance cycle and there are approximately six cycles per school year that take approximately two to three months each to complete. Depending on the nature of a project and its overall value, a series of Boards and Committees will approve the project with Governing Council being the final approval authority at the University.

For this project, there are three approvals anticipated at Caps Executive: approval of the terms of reference, approval for consultant fees (including ODC fees), and final project approval.

- Approval of Terms of Reference

Membership of the Project Planning Committee and the terms of reference for the project was submitted on January 8, 2021, and presented on January 22, 2021, for approval during the third governance cycle of the 2020-2021 academic year.

- Approval for Consultant Fees

The Project Report (PPR) created for first phase of expansion dated April 3, 2013, a project scope document and a Total Project Cost (TPC) that captures the scope of the project was submitted on January 8, 2021, and presented on January 22, 2021, to the CaPS Executive Committee for consultant fees to begin project design.

- Approval for Owner Design Consultant (ODC) Fees

On November 24, 2022, a cover letter, a project scope document and a TPC estimate for Owner Design Consulting fees were submitted and presented for approval during the Third governance

Cycle of the 2022-2023 academic year. The ODC will create the project specifications for the Design-Build process.

- Final Project Approval

Once the ODC completes the technical specification and Class D costing is prepared for the design-build procurement, this project will seek final project approval. The submission will include a Final Project Planning Report and Total Project Cost. Cycle 6 of the 2022 – 2023 governance cycle is the anticipated target for submission.

Please see the schedule section for an overall summary of milestones and anticipated dates.

f) Existing Space

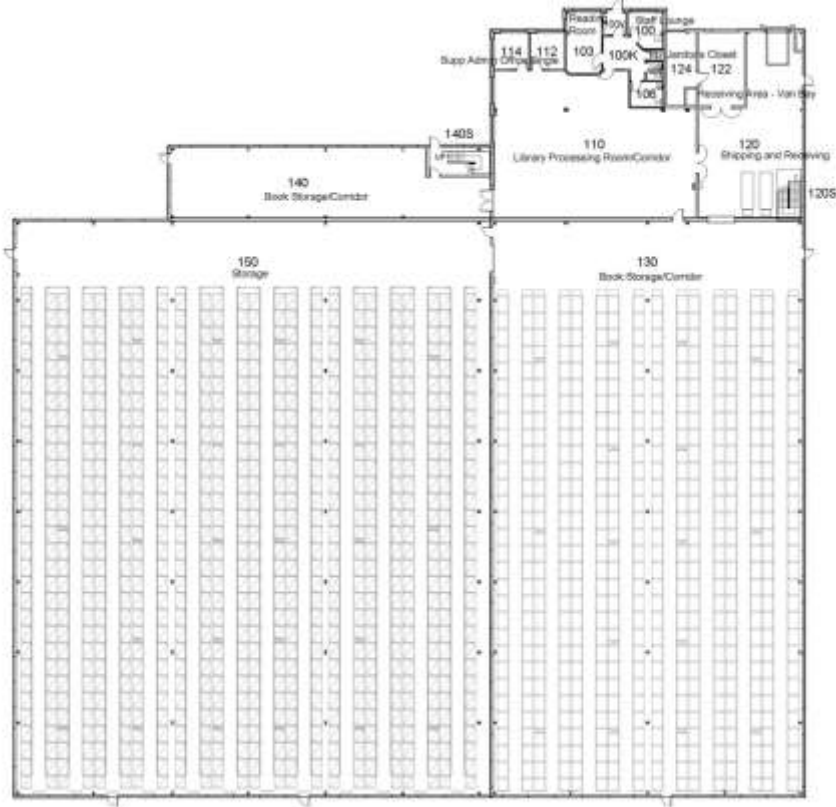
Existing space

The following table summarizes the existing assignable and non-assignable areas of UTL at Downsview:

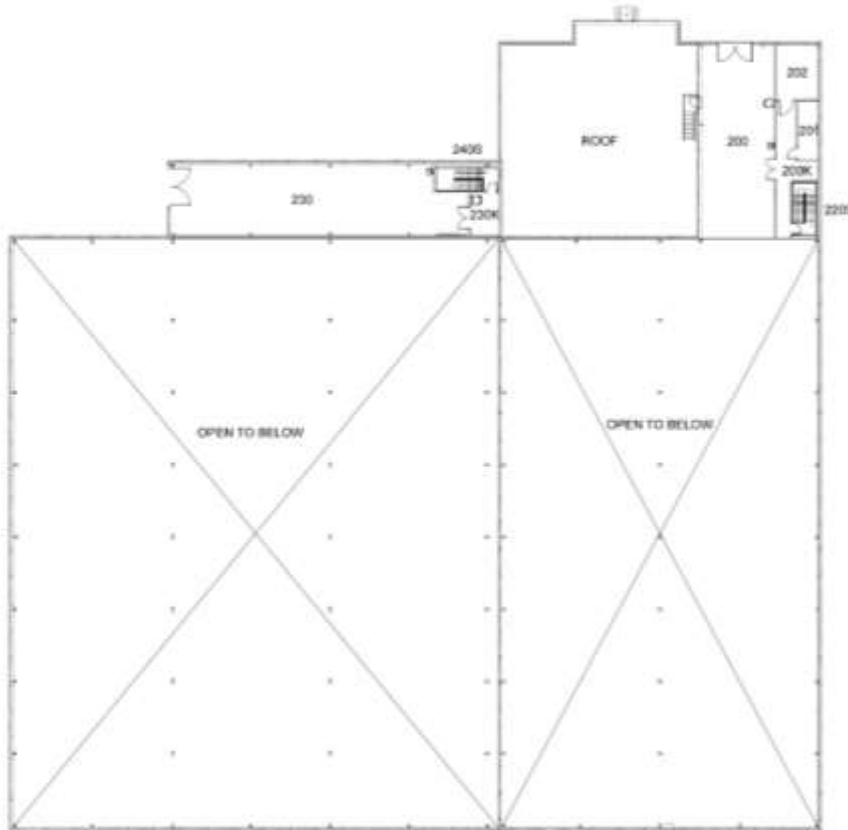
Building Name	Assignable Area	Non-Assignable Area	Net Area	Gross Area	Gross to NASM Ratio
UTL at Downsview	4080.61	629.63	4710.24	4930.98	1.2

The existing facility of 4080.61 nasm (4930.98gsm) includes 5 structural bays at 3528.76 nasm for high density storage currently accommodating up to 5,200,000 volumes and the processing/storage and administration space of 551.85 nasm is attached to the high-density storage on the North side.

COU Cat.	Cat. Description	Area	%
5.1	Library Collection Space	3428.85	72.8%
5.2	Library Office Space	20.66	0.4%
5.3	Library Support Space	631.10	13.4%
16.2	Other Non-Assignable Area	629.63	13.4%
	Total	4710.24	100%



Existing First Floor of UTL @Downsview



Existing Second Floor of UTL @ Downsview

Occupant Profile

The current staffing includes 3 full-time high-density shelving and retrieval associates, and 1 full time manager and additional student staff when required.

There are no anticipation changes to the current staffing at the completion of this project.

III. Project Description

a) Vision Statement

With demands on space at universities increasing while research collections continue to grow, academic research libraries across North America are striving to achieve the optimal mix of collections, spaces, and services that best serve their communities. To meet this challenge, UofT libraries will transfer less frequently borrowed items to a preservation facility located at the University of Toronto's Downsview campus in order to give much more room to the student study space at libraries on campus. The items in the Downsview collection are selected based on criteria established at each institution.

b) University of Toronto Library Strategic Plan

The mission Statement in the University of Toronto Library 2020-2025 Strategic Plan stated:

University of Toronto Libraries (UTL) sparks the search for knowledge and understanding in our university and the wider community. We are one of the leading research libraries in the world. We partner with our staff, faculty, and students as they pursue their paths to becoming creative and thoughtful scholars, learners, and citizens. We are the heart of the University; we ignite and amplify our community's academic curiosity, encourage dialogue, and provide essential context for critical engagement. Our commitment to openness will best facilitate knowledge creation in our diverse scholarly community.

This project of the addition to the University of Toronto's Downsview facility leads to the Keep@Downsview, which is a partnership of the University of Toronto, the University of Ottawa, Western University, McMaster University and Queen's University to preserve the scholarly record in Ontario in a shared high-density storage and preservation facility located at the University of Toronto's Downsview Campus in North Toronto. Preserving and maintaining this valuable collection ensures that these resources will be available for generations to come.

The Keep@Downsview partners share a high-density storage and preservation facility that supports long-term preservation and access to scholarly print materials and is designed to provide a secure environmentally controlled space that is optimal for long-term preservation. The facility uses cost-effective high-density rack storage, and has a capacity for 5 million volumes, with the potential for further expansion.

The Downsview high-density storage facility supports research activities internally and externally to University of Toronto and this project is of critical importance to UTL's 2020-2025 strategic plan as it supports the strategic use of downtown space to support integral library services, student activity and collaboration.

For reference, the UTL's 2020-2025 strategic plan and Keep@Downsview partnership document can be found here:

https://onsearch.library.utoronto.ca/sites/default/files/strategic_planning/strategic_plan_2020.2025_final.pdf

<http://downsviewkeep.org/>

c) Space Program and Functional Plan

Space Program

Current projections foresee that UTL's existing high-density storage facility will be full by Fall 2024, requiring the further expansion of new bay modules to support the University's significant investments in collection and services. The total proposed net area of this project is 2,360 sm, including three bays of high-density storage and a one-storey processing area. Additional non-assignable spaces such as circulation, Data & communication closets, Mechanical and electrical rooms will be required as part of the expansion.

Based on the design of the existing facilities, it is anticipated that the gross area required for the three bay expansion and the one-storey processing area would be approximately 2,515 gsm (including mechanical space).

COU Cat.	Space	Net Area (sm)	Climate Requirements
5.1	High-density Book Storage (4 bays)	2242	63 °F or 17 °C (+/- 2°F) and 40% RH (+/- 5%)
5.3	Processing Area	118	72 °F or 22 °C (+/- 2°F)
Total		2360	

COU guidelines for offsite compact library storage (within Category 5.1) recommend a space factor of 0.0035 nasm per equivalent volume (286 volumes per sq.m.), whereas the high-density racking system at Downsview has a space factor of .000644 (1552 volumes per square meter). This is recognized by the Ontario Council of University Libraries as being exceptional.

- Additional high-bay storage

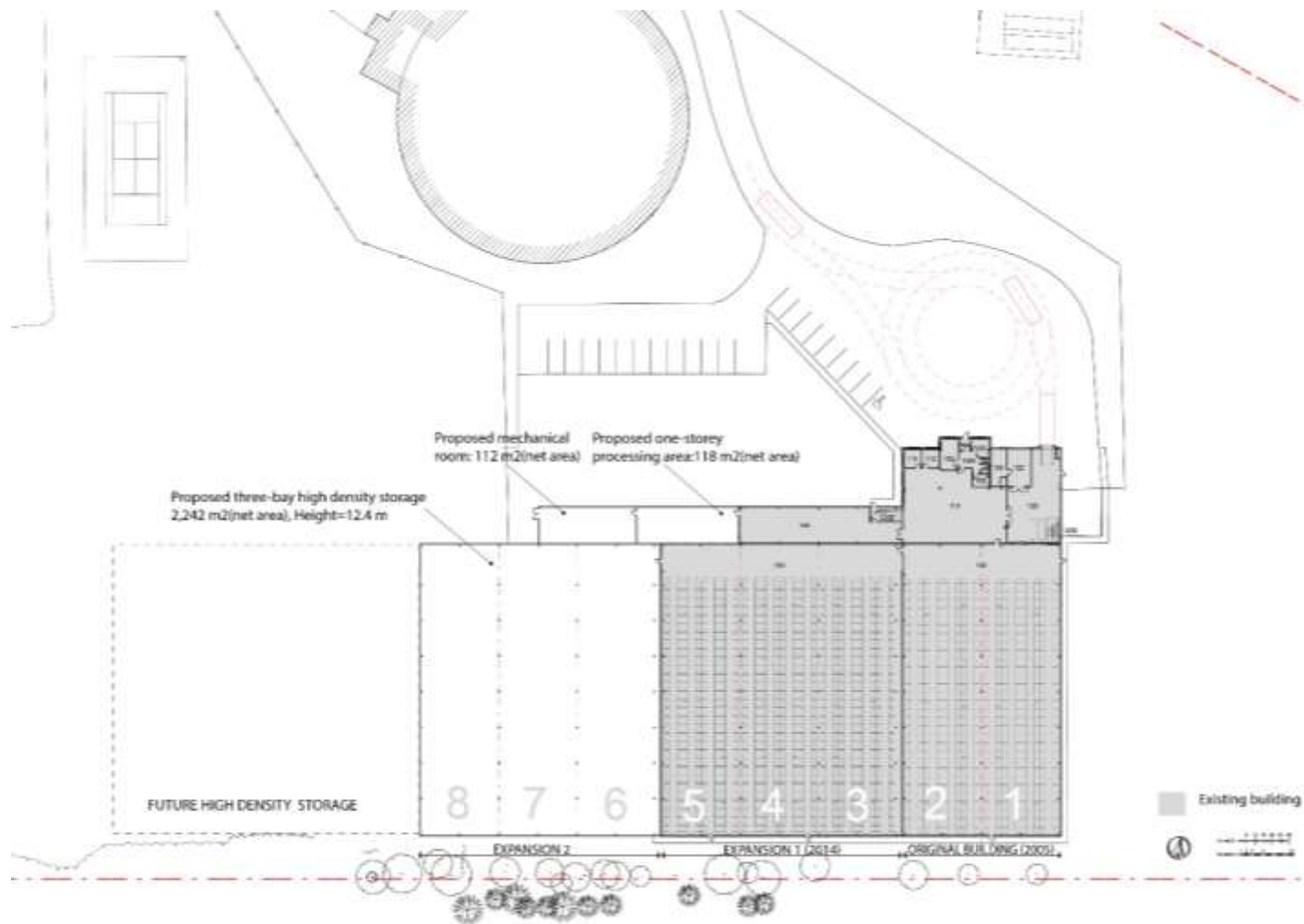
The proposed high density storage area consists of three bays forming a single building envelope that shares a wall with the existing facility and having a nominal capacity of one million volumes each (three million total) with a building environment of 17°C (+/- 2°C) and 40% RH (+/- 2%). The new building envelope should have a single oversized door opening capable of forklift passage between the existing storage area and the expansion.

The maintenance of a constant environment is crucial in the preservation of print material. Existing mechanical services will remain in use for the existing five bay section of the building, while new dedicated mechanical units will be added to service the proposed expansion.

- Additional processing space

A one-storey addition (net area 118 m²) for processing area is located adjacent to the existing book storage (Room 140).

Functional Plan



Proposed Site Plan showing Project scope

d) Building Considerations

Standards of construction

The expansion of the storage facility must be designed to the same standard as the original building (i.e., designed to avoid or resist 100-year floods, earthquakes, hurricanes etc.).

The project's design and construction are to adhere to the University of Toronto's Facilities & Services Design Standards. Details can be found at:

<https://www.fs.utoronto.ca/projects/design-standards-and-project-forms/>

Finishes should be durable, easily maintained and of mid-range quality. Special attention should be paid to the properties of material choices and their impact on the environment specifically regarding potential off-

gassing and influence on air quality. Finishes and natural elements should be introduced and selected for their ability to promote health and wellness.

Building Characteristics and Massing

The expansion consists of a single-storey processing area connected to the existing book storage room and three high density storage bays forming a single building envelope that shares a wall with the existing facility and having a nominal capacity of one million volumes for each bay (three million total). This high-density storage volume requirement translates into storage bays of approximately 52.3m deep by 14m wide for a total 731.5 square meter floor area with at least 31 feet clear height inside for each module bay. The precise interior dimensions will depend on the final configuration of racking (to match existing shelf system) and exterior envelope (to match existing construction).

The standards of the existing facility are to be followed for the expansion and include:

- Exterior cladding of pre-cast concrete
- "Super-flat" floor construction in the high-density storage area

A review of the existing facility conditions must be conducted as part of the due diligence of the design development process, including: any deferred maintenance issues, code and environmental requirements, environmental health, and safety.

Elevators

There is no elevator proposed for this project.

Sustainable Design and Energy Conservation

The University of Toronto has a long commitment to environmental sustainability across the academic and administrative operations of this institution. The University has been guided by an Environmental Protection Policy since 1994. In addition, U of T has joined the University Climate Change Coalition (UC3); a group of 13 leading research universities in North America committed in reducing greenhouse gas (GHG) emissions on their own campuses and in their communities. In doing so, the University has set a goal to reduce GHG emissions by at least 37 % below its 1990 level of 116,959 tonnes eCO₂ by 2030, working towards becoming a net-zero GHG institution. To accomplish this, the University introduced this now-governing Tri-Campus Energy Modelling & Utility Performance Standard. This new standard provides project-specific energy performance and water efficiency targets, necessary at a minimum, to achieve the 2030 goal, while also introducing a streamlined modelling and documentation submission approach.

The tool used to define the targets and budgets is called the "Charter" and completed by U of T staff (Refer to Appendix for Project Charter). The energy and GHG performance targets for new construction are defined for the year that occupancy is scheduled in the project planning reports. The approved energy modelling procedures will be used to calculate the energy and GHG performance for the designs and compared to the Charter targets throughout the design stages and included as part of the base project cost.

Targets will be revisited and adjusted regularly to ensure UofT remains in a leadership position. The consultants shall recognize the anticipated regulatory and published UofT Standards that will be in place at time of permit application. They shall inform the UofT Implementation Committee about which performance indices are to be used and provide design solutions compliant with the more stringent of the applicable UofT standards and authority requirements.

The Project Consultant Team must complete and submit an energy performance simulation (model) with associated documentation at each stage of the design process to demonstrate ongoing compliance with these performance targets. At occupancy, the simulation must be updated to reflect the as-constructed building characteristics. All energy performance simulations shall be approved and accepted by the U of T Implementation Committee.

As this project constitutes an addition to an existing non-LEED certified facility, LEED certification is not required, but it is generally recommended to shadow LEED Silver as per the tri-campus energy standard. LEED benchmarks for this project will be determined through further discussion with the Sustainability Office at the University.

Refer to the appendix for the current Project Charter. The space program is under the library archetype but adjustments have been made to account for indoor design conditions for the high-density storage. At a high-level, the Energy Conservation Measures (ECMs) should include:

- High-performance air-tight envelope optimized for the best TEDI-heating and TEDI-cooling performance following the US Army Corps of Engineers standard referenced in the Tri-Campus standard.
- Low-carbon HVAC systems such as heat pumps with electric backup for heating, cooling, dehumidification, and domestic hot water. No gas systems.
- Ventilation with heat recovery.
- High efficiency rooftop solar PV with net metering covering as much of the expansion roof as possible.
- High efficiency lighting with advanced controls including scheduling, occ sensors, dimming, and high-end trim.

Deploying a net metered solar photovoltaic (PV) system at the University of Toronto Libraries at Downsview aims to fulfill the campus climate positive plan and offset carbon emissions and energy costs for the site. The plan to install solar panels on the rooftops of the existing five high-density storage bays is supposed to be implemented in the summer of 2023.

The proposed high efficiency rooftop PV installation for this expansion project should take the above-mentioned solar panel installation into consideration as existing and have synergies of the electrical equipment and installation of the solar panels. Extra caution regarding the preservation and safeguarding the book storage materials should be assessed before designing and installing the solar panel system to prevent roof leakages.

Accessibility

As with the existing building, the expansion is not intended for general faculty, student, or public access; it will strictly be used for the secure, long-term storage of the library's low use material. Although the

expansion will be designed and constructed to meet all applicable building regulations and the administration/processing facility will be accessible, it is accepted that the storage bays will only be accessible by non-disabled personnel. The height of shelves in the racking system will require the use of lift-trucks and the depth of shelves will require staff who can readily and safely retrieve book trays.

The University is committed to equitable access to all the building's facilities by the whole campus community.

For additional information contact the University of Toronto's AODA Office.

<http://aoda.hrandequity.utoronto.ca/>

Personal safety and security

The building will conform to University of Toronto standards on building security. It will be used by staff, and open on weekdays between 8am and 10pm. All staff enters from current secured front entrance.

Signage, donor recognition

This project will need to provide necessary signage and wayfinding. Interior signage includes not only those signs mandated by the Ontario Building Code but also room names and numbers, room schedules (as required) and wayfinding.

University of Toronto has specifications and standards for signage that the design team will be required to implement for this project. Donor recognition signage will be subject to the University of Toronto Design Review Committee review if required.

Non-assignable space

Included in the building project are non-assignable elements that are not specifically described in the Space Program but will be part of the architect's responsibility for design.

Non-assignable spaces in this project include:

- Corridors, stairs, and public circulation space
- Data & communication closets
- Mechanical and electrical rooms

HVAC

The first Expansion in 2014 utilizes a custom air handling unit (AHU-2) manufactured by Bry-Air to serve the high-density book storage area. This unit is very similar to the unit serving the original building's book storage area (AHU-1). Supply air from the AHU is distributed at high level in the aisles, and return air is brought back using low level grilles at the side of the aisles in the high-density storage areas.

Exiting mechanical rooms are located in Room 200 and Room 230 at the mezzanine level.

Existing mechanical services will remain in use for the existing five-bay section of the building, while new dedicated mechanical units will be added to service the additional three bays of storage and a dedicated roof top air handling unit (RTU) will be provided to serve the processing area. Capacity of HVAC system will be designed to be adjusted when future additions are added. Within the mechanical mezzanine, a pad was constructed in anticipation of future mechanical equipment to support the next building expansion; however, subsequent changes to the sustainability requirements result in mechanical equipment that will be larger than was required to meet the previous sustainability requirements. As a result, a separate mechanical space needs to be built. Uses for the unused mechanical space are to be determined. New mechanical equipment is intended to be located in the proposed mechanical room on the ground level adjacent to the newly proposed book processing area.

As with the original building, the expansion will need to be secure, well lit, with multi-level sprinkler protection, and HVAC systems capable of maintaining a 17-22° C (+/- 2° C) and 40% RH (+/- 10%) year-round for 95% of the year in the Toronto climate. An air curtain and double doors between the dock and the storage area help to control the climate. The expansion will have its own HVAC system which should be integrated with the existing Building Automation System that can be monitored remotely from the downtown campus.

The fire protection system must be integrated with the existing facility.

Proposed design conditions are as follows:

	Proposed Temperature (Year Round)	Proposed Humidity (Year Round)	Filtration	Pressurization
High-density Book Storage	17±1°C (63±2°F)	40±5%RH	45% and 95% PM10 filters	Positive
Processing Area	22±1°C (72±2°F)	N/A	MERV 8	Neutral

Plumbing

Existing plumbing and drainage services are in the original building. No plumbing or drainage connections shall run through the existing or new book storage rooms.

Existing irrigation system needs to be modified.

Fire Protection

The building is fully sprinklered. Existing in-rack sprinklers within shelving system are provided for fire protection in the high-density storage area.

The fire protection system for the expansion of High-density storage and processing area must be integrated with the existing facility.

Storm drainage

Storm runoff from the proposed expansion's rooftop will be directed into one (1) underground infiltration trench, capable to accommodate all post-development flows up to a 100-year storm event.

Storm water should be drained locally. The retaining wall constructed during 2014 expansion along the South boundary of the site will need to be revisited in the aim of managing the storm water drainage.

Electrical and Data

The building is currently served by 1600A, 600V, 3PH, 4W main switchboard located at main electrical room #202, which is fed from existing oil type 1000kVA - 27.6kV/0.6kV outdoor pad mount transformer. It is anticipated that the existing electrical transformer has sufficient capacity for three additional bays and will not need to be upgraded for this scope.

Level of lighting in the storage area is 5 foot candles. LED high-bay lighting fixtures should be provided in book storage area and LED strip light fixtures in processing area.

Emergency lighting will be provided and fed by emergency battery units (720W each). And there is no intention to add an emergency back-up generator to the facility.

Fiber in the existing facility was upgraded recently. Current Wi-Fi coverage is only within the administrative facility and potentially loading dock area. The proposed extension of Wi-Fi expansion was provided in January 2023 in the building in front of the bookstacks. Similar coverage should be provided for this expansion project. Computer hardware must be networked / have internet access to connect to the newly implemented Library Service Platform. Any additional voice/data communications in the expanded storage area will need to be integrated with the existing data infrastructure already in place at the facility.

Furniture & Equipment

Similar storage system is to be used at the high-density storage area. The racking system in all three bays is excluded from the scope of this project and will be procured and constructed separately as a subsequent project.

The storage strategy of the existing facility is to be followed for the expansion:

- Each range of racking is 30 ft high, with 30 bays per range at 25 shelves per bay
- Each structural bay accommodates 8 ranges
- Total number of shelves per structural bay = 6,000

For the one-storey processing area, materials will be parked on skids and/or regular 7ft shelving relocated from Robarts Library.

Environmental Health and Safety

The Hazardous Construction Materials Group and Environmental Health & Safety (EHS) at the University of Toronto are the primary groups consulted during a building construction project to investigate and

identify (1) Designated Substances and (2) other site-specific hazardous materials present within the project area as per appropriate regulations and the Ontario Occupational Health and Safety Act (OHSa).

Assessment of the following existing conditions and constraints may be required:

- Noise and vibration (insulation or amelioration of sound sources from the building such as air handling equipment located on the roof)
- Designated substances and other site-specific hazardous materials
- Lighting

e) Site Considerations

Site context

UTL at Downsview is located fourteen miles north of downtown Toronto at 4961 Dufferin Street, Toronto. The facility is on the South end of the Downsview Campus site with the University of Toronto Institute for Aerospace and the Dome on the North side. These buildings are accessed via the shared driveway off Dufferin Street.



Site Plan

Master Plan

The project site is outside of University of Toronto's master plan boundary.

Zoning regulations

The site is governed by the City of Toronto Zoning Bylaw 569-2013, which has an approved zoning of E1.0, no maximum height requirement applies to a building that has permitted uses other than an office use.

Municipal approvals of zoning must be obtained prior to construction. Based on the planning undertaken for the last expansion and a preliminary review of the existing zoning bylaws, it is not anticipated that this second expansion will require any major variances.

Environmental Issues, Regional Conservation, Ministry of the Environment

The site of the project falls within a TRCA (Toronto Regional Conservation Authority) regulated area. A permit from TRCA prior to carrying out any new development or constructing an addition is required.

Landscape and Open Space Requirements

The landscape scope for this project includes some trees removal on the expansion site. Trees are to be relocated or replanted elsewhere on the site.

Site Access

The UTL at Downsview and the addition can be readily accessed by vehicles from Dufferin Street via the current driveway shared with the Institute for Aerospace Studies (UTIAS) and the Dome.

There are no impacts anticipated to site access due to this project.

Heritage Status

There are no heritage impacts anticipated for this project.

Heritage Context

There are no heritage buildings in the neighbouring context.

Soil conditions

A soil testing and conditions report will be required.

Site servicing; existing and proposed

The existing general site access routes, pathways and fire access will remain. Servicing of the project is not anticipated to change as a result of this project.

Hazardous Materials Disposal

No hazardous materials are anticipated.

f) Campus Infrastructure Considerations

Utilities (electrical capacity, water, gas, steam lines)

New electrical, water and sanitary service connections were added at the time of the initial UTL Storage Facility construction. It is not anticipated that any major upgrades to this infrastructure will be required at the municipal approvals level.

Sewer and storm water management

The existing rainwater is collected from high roof stored in cistern for irrigation and other sources of rainwater drain to adjacent landscape.

Pre-development drainage conditions will be maintained, and on-site storage will be required for the proposed expansion. Storm runoff from the proposed expansion's rooftop will be directed into one underground infiltration trench, capable to accommodate all post-development flows up to a 100-year storm event.

Bicycle parking

There is no bicycle parking involved in this project.

Vehicle parking:

There are 23 existing parking space, including 2 spaces that are accessible at the UTL site. Despite the increase of the floor area due to this addition, the number of staff who operate the facility is not expected to increase. Since the onsite parking is provided for the operating staff, there are no anticipated impacts to vehicle parking on site.

g) Phasing

The project is expected to be completed in one construction phase to meet scheduling targets.

The racking system in all three bays is excluded from the scope of this project and will be procured and constructed separately as a subsequent project.

Existing facility must remain fully operational during construction.

h) Secondary Effects

Occupants are expected to use the existing facilities during construction, so that disruptions, dust and noise should be mitigated as much as possible to make sure the ongoing storage activities in the existing UTL facilities are not adversely affected.

Site access during construction must be carefully planned so that fire routes are not blocked, pedestrian thoroughfares to the sports field and other destinations are not compromised and truck traffic controlled.

The labs in the Institute for Aerospace Studies (UTIAS) and the Dome are sensitive to vibration. A timetable of experiments taking place in the above-mentioned buildings should be provided by UTIAS in order to coordinate the disruptive work during construction.

The trailer at the Dome site belongs to students of Engineering at Downtown Campus and it should be removed before construction.

The project will displace trees on the expansion site. Trees are to be relocate or replanted elsewhere on the site.

i) Project milestones include:

- | | |
|---|------------------------------|
| • Terms of Reference and request for consultant fees | January 22, 2021 |
| • Request for Owner Design Consultant fees (Cycle 3) | November 24, 2022 |
| • Full governance(Cycle 6) | April 2023- June 2023 |
| • ODC Zoning Applicable Law Certificate Submission | April 2023 |
| • Design Build award | August 2023 |
| • Schematic Design/ Preliminary SPA preparation/U of T Review | August 2023-October 2023 |
| • Design Development 100% | March 2024-April 2024 |
| • Construction document 100% | September 2024-October 2024 |
| • Tender -below grade | June 2024-July 2024 |
| • Tender -above grade | November 2024-December 2024 |
| • Construction-below grade | July 2024-October 2024 |
| • Construction-above grade | December 2024-September 2025 |
| • Full operation occupancy & shelving installation | October 2025 |

Municipal approvals will be verified through the submission of a Zoning Applicable Law Certificate to the City and may impact this schedule. Currently, a Site Plan Application (SPA) or a Minor Variance application are anticipated given the nature of the project.

The schedule will be confirmed once the Design- Builder is engaged.

IV. Resource Implications

a) Total Project Cost Estimate

Refer to Appendix for the Total Project Cost Estimate.

b) Operating Costs

The current occupancy cost for UTL Downsview for 2022-23 is \$181.50/nasm and covers caretaking, building maintenance, utilities.

c) Other Related Costs

None anticipated at this time.

d) Funding Sources

The project will be funded by University of Toronto Libraries Future Major Capital Projects Reserve and University of Toronto Libraries Operating Funds.

V. APPENDICES:

1. Existing Space Inventory of UTL Downsview
2. Existing Floor Plans of UTL Downsview
3. Total Project Cost Estimate (on request to limited distribution)
4. Project Planning Committee meeting presentations and minutes
5. Project Charter