



DDO Park Project Steering Committee Meeting

Date of Meeting: October 24, 2017

Report Number: SREIS.17.021

Department: Environment and Infrastructure Services
Division: Facility Design Construction & Maintenance Services

Subject: David Dunlap Observatory Building Conditional Assessment Report

Purpose:

Report on the condition of the three Town facilities located within the David Dunlap Observatory (DDO) lands and associated capital repair cost.

Recommendation(s):

- a) That the David Dunlap Observatory Building Condition Assessment prepared on behalf of the Town by the Ventin Group Ltd. be received;
- b) That all the short term rehabilitation work as identified in the Conditional Assessment report carried out by the Ventin Group Ltd. for the Administration Building, Observatory Building and Radio Shack Building as outlined in SREIS.17.021 from year's 1 to 5 totaling \$5,745,300 be included as part of the 2018 Capital Budget process, and that the funding source be Cash in Lieu of Parkland Reserve Funding;
- c) That upon approval of the capital budget, staff be directed to retain the necessary project consultants to undertake the designs necessary to complete the rehabilitation work as outlined in SREIS.17.012 from year's 1 to 5;
- d) That the longer term rehabilitation work as identified in the Conditional Assessment report carried out by the Ventin Group Ltd. for the Administration Building and Observatory Building as outlined in SREIS.17.021 totaling \$698,000 be placed in year 2028 of the 10 Year Capital Program;
- e) That the ultimate occupancy work as identified in the Conditional Assessment report carried out by Ventin Group Ltd. for the Administration Building and Observatory Building as outlined in SREIS.17.021 totaling \$5,262,500 be placed in year 2023 of the 10 Year Capital Program.
- f) That staff be directed to report back on the next steps on the Radio Shack Building including options to decommission and or a restoration plan.

Contact Person:

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Submitted by:

"Signed version on file in the Office of the Clerk"

Italo Brutto, P. Eng.
Commissioner of Environment and Infrastructure Services

Approved by:

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Neil Garbe
Chief Administrative Officer

Background:

The David Dunlap Observatory (DDO) lands which includes the Observatory, Administration and Radio Shack Buildings was transferred into the Town buildings portfolio on March 21, 2017.

In order to determine with a greater degree of accuracy the overall repair and maintenance requirements for the facilities, the Town commissioned "The Ventin Group Ltd" (VG Architects) to undertake a facility conditional assessment for each facility in May of 2017. The conditional assessment report was completed on September 13, 2017, a copy is appended to this report as Appendix 1. The Town also commissioned Arcadis Canada Inc. to undertake a designated substance and hazardous materials survey which was completed June 29, 2017.

The purpose of the conditional assessment was to understand the condition of the critical building elements that included all major architectural, structural, fire/life safety, mechanical, electrical, plumbing systems and exterior grounds adjacent to the facilities. All telescope and associated specialized equipment, all the domes operating equipment including rotation and shutter operation, parking lot and exterior lighting were excluded from the conditional assessment.

Understanding the need to initiate programing on the site, staff and the consultant have structured the conditional assessment report to capture a phased rehabilitation plan. Given that the buildings were constructed in the early 1930's, there are significant challenges and limitations associated with the building uses and restoring them to be in

compliance with the current Building Code. The major Building Code issues are fire life and safety and accessibility.

In an attempt to move forward with programming and balancing the need to restore and rehabilitate all the critical elements of the building structure, the staff report has been structured to accommodate the various interests of each group.

In doing so, the background information contained in the staff report will be divided into three sections related to the DDO facilities:

- **Section 1** building conditional assessment
 - reports on the all the building elements and the cost to restore them to a reliable service level
- **Section 2** immediate facility use under a reduced occupant load
 - reports on how the building can be used in its current state and a reduced occupancy through a Fire Safety Plan
- **Section 3** future full building occupant load
 - reports on what is required to bring the building to full occupancy load and the associated costs to provide full accessibility

Section 1 - David Dunlap Observatory Buildings Conditional Assessment

What is the condition of the Administration Building and Observatory Building?

While the general structures of the Administration Building and Observatory Building are sound, approximately half of the building critical systems and components are considered to be in poor condition and at or exceeded their end of their service life.

What is the condition of the Radio Shack?

The Radio Shack Building, as described in the conditional assessment report, appears not to have been maintained for many years. The report found this facility to be in very poor condition and in a state of disrepair. Given the disrepair, the report confirms that the floor, wall, and ceiling finishes are not salvageable. The designated substance and hazardous materials survey identified that the interior wall boards, vinyl floor tiles and caulking applied throughout contain asbestos.

From a conditional assessment point of view, given the significant disrepair, the consultant's recommendation is to decommission the building. Before this recommendation is implemented, further consultation will be required with the Steering Committee and other regulatory agencies.

The deficiencies for each of the facilities existing systems were identified, along with recommendations for repairs, replacement, estimated costs and repair schedule. The schedule repair elements were grouped into the following classifications:

- Under 1 year (immediate repairs)
- Years 2 to 5
- Years 5 to 10

The conditional assessment estimates are based on a Class D estimate which is accurate to a level of +/- 25%. As summarized in Table 2 below, the total Class D estimated Project Cost to undertake all the recommended repairs and replacement in the time frames identified (years 1 to 10) for the DDO Buildings is \$6,443,300 (\$5,745,300 + \$698,000).

Table 2
DDO Building Repair Project
Class D Estimate Cost Summary

Description	Repairs within 1 Year (immediate)	Repairs 2 to 5 Years (incl. 3% escalation per year)	Years 1 to 5 Total Recommended Repairs	Repairs 10 Years (incl. 3% escalation per year)	Total Repairs Over 10 Year Period
Administration Building	\$3,085,800	\$887,500	\$3,973,300	\$561,000	\$4,534,300
Observatory Building	\$125,800	\$1,490,700	\$1,616,500	\$137,000	\$1,753,500
Radio Shack Building	\$0	\$155,500	\$155,500	\$0	\$155,500
Total Project Estimated Cost	\$3,211,600	\$2,533,700	\$5,745,300	\$698,000	\$6,443,300

Given the strong desire to use the recently acquired buildings, it is staff's view that the buildings be brought to a reasonable service level standard which would ensure safety and reliability of the core building elements as identified in the Conditional Assessment report.

This includes undertaking the works associated with the “**immediate repairs within 1 year**” and “**repairs within years 2 to 5**” totaling \$5,745,300 (\$3,211,600 + \$2,533,700). The estimated cost includes items such as designated substance allowance, consultant allowance and HST impact which are not reflected in the architect’s estimate (\$4,924,877).

It is staff’s recommendation that including the 2 to 5 year work into the project is a reasonable approach which adds value and synergies of work flow and will improve cost efficiency. It would also reduce the construction period and minimize user group disruption.

The conditional assessment report will be used as the guiding document to move the project through the Town’s budgeting process. Staff is recommending that \$5,745,000 be budgeted in the 2018 Capital Budget to undertake the design in 2018 followed by construction work commencing in 2019 that covers the immediate repairs within 1 to 5 years. Staff will report back on the project status, programming impacts and the adequacy of the construction component of the budget once the design is refined and a higher level of project estimate is developed.

Staff is also recommending that the \$698,000 associated with the repairs at year 10 be earmarked for repairs in year 2028 of the 10 Year Capital Program.

Section 2 - David Dunlap Observatory Buildings Immediate Facility Use With Reduced Occupant Load

Administration Building

The Administration Building which was built in 1933 has 2 stories plus a basement, 46 rooms and a Gross Floor Area (GFA) of approximately 14,080 sqft. (1308 sqm).

Under the current Building Code the Administration Building is classified as a Group A, Division 2 Assembly Occupancies intended for classrooms, lecture hall, museums, exhibition hall etc. The occupant load for the building is 278.

Although the maximum occupant load for the Administration Building is 278, which is based on the current Building Code, significant improvements covered in Section 3 of this report would need to be made to the facility in order to achieve this level of occupancy and to be in full compliance with the Building Code. Most notably is the lack of suitable emergency exits from the basement, first and second floor levels and the lack of washroom facilities.

Given the desire to occupy and program the building immediately in advance of the necessary building repairs that would bring the building to a reasonable level, staff are engaging an interim solution that includes the development of a Fire Safety Plan in compliance with the Ontario Fire Code. This would include but not limited to maintenance, testing and inspection of all life safety systems and the development of an

approved fire safety plan. Staff has engaged the services of VG Architects to prepare a fire safety plan.

The fire safety plan will outline the limitations of use such as maximum occupancy load in each of the rooms and floor area, the responsibility of the building operators while the building is open to the public and the mitigating measures that need to be implemented.

If the mitigating measures that are required as a result of the fire safety plan are minor in nature and can be absorbed in the existing operating budget, staff will proceed to implement the recommendations of the fire safety plan accordingly. If the mitigating measures of the fire safety plan are significant, and cannot be easily absorbed in the operating budget, staff will report back to the Steering Committee for further direction.

Observatory Building

The circular 61' (18.6m) diameter Observatory Building which houses the telescope was built in 1939 and is located to the north of the Administration Building. The structure is 2 stories with a deck and 10 rooms with a Gross Floor Area of 6500 sqft. (604 sqm).

The telescope itself is supported separately from the building by a concrete pier foundation that extends to more than 25'-0" (7.6m) below grade to minimize the risk of vibration.

The Observatory Building under the current Building code is classified as a Group F, Division 2 medium hazard industrial type of occupancy intended for laboratories, warehouses, television studios, hangers etc.

The occupant load is based on assumed capacity of existing spaces such as lab rooms and offices. Building services that includes, storage rooms, observatory decks, corridors etc. are assumed to be ancillary spaces to the prime program spaces and do not contribute to the overall occupant load. The occupant load for the building is 10.

Similar to the Administration Building, in order to safely occupy the building in its current state, to deliver specific programming requirements, the building must comply with the Ontario Fire Code. As previously mentioned, this would include but not limited to maintenance, testing and inspection of all life safety systems and the development of an approved fire safety plan.

The fire safety plan will outline the limitations of use such as maximum occupancy load of rooms and floor area, the responsibility of the building operators while the building is open to the public and the mitigating measures that need to be implemented.

As noted previously, VG Architects has been commissioned to prepare a Fire Safety Plan.

Radio Shack Building

The Radio Shack built in 1950 is a small single story 1 room wood frame structure with corrugated asbestos cement cladding that has a GFA of approximately 250 sqft. (23 sqm).

The Radio Shack Building under the current Building Code, similar to the Observatory Building, is classified as a Group F, Division 2 medium hazard industrial type of occupancy intended for laboratories, warehouses, television studios, hangers etc.

The occupant load is based on assumed capacity of existing spaces such as lab rooms and offices. Building services that includes storage rooms, observatory decks, corridors etc. are assumed to be ancillary spaces to the prime program spaces and do not contribute to the overall occupant load. The occupant load for the building is 4.

The Radio Shack Building, as described in the conditional assessment report, appears not to have been maintained for many years. The report has identified this facility to be in very poor condition and in a state of disrepair. The report confirms that there are no elements such as the floor, wall and ceiling finishes that would be salvageable. The designated substance and hazardous materials survey identified that the interior wall boards, vinyl floor tiles and caulking applied throughout contain asbestos.

The consultant's recommendation is to decommission the building. Further consultation with the Steering Committee and other regulatory agencies would be required prior to any decision regarding decommissioning of the building. Staff will report back on the various options available on decommissioning the building including any other options available

Section 3 - David Dunlap Observatory Buildings Future Full Building Occupant Load to Current Building Code Compliance

VG Architects reviewed the April 2016 David Dunlap Park Master Plan and used it as a guide to demonstrate how program improvements, such as repurposing of the Observatory Building for community use and retrofitting the Administration Building to provide for maximum building occupancy could impact the buildings structure along with the associated order of magnitude Class D cost estimate. The major impacts are related to the buildings life safety and accessibility. Also included in the estimate is a cost to replicate the Radio Shack Building.

In order to provide the information, VG Architects undertook numerous audits that included:

- Ontario Building Code (OBC)
- Fire Life Safety Audit
- Accessibility Audit

The results of the above audits were used to identify the corrective measures that would be necessary to provide the ultimate building occupancy ensuring compliance with the OBC, Ontario Fire Code as well as making the buildings fully accessible.

The estimated Class D project costs to provide full building occupancy is \$5,262,500 as shown in Table 3 below.

This cost includes for items such as designated substance allowance, consultant allowance escalation and HST impact which is not included in the architect's estimate (\$2,869,700).

Table 3
DDO Building Ultimate Occupancy
Class D Estimate Project Cost Summary

Description	Enhanced Program Improvements (incl. escalation)
Administration Building	\$2,663,500
Observatory Building	\$2,306,100
Radio Shack Building (replication)	\$292,900
Total Project Estimated Cost	\$5,262,500

Before the Ultimate Occupancy work described in Table 3 is undertaken, staff will report back to the Steering Committee with a request to undertake a feasibility study including a Heritage Impact Assessment.

It is staff's recommendation that the \$5,262,500 be included in year 2023 of the 10 Year Capital Program.

Financial/Staffing/Other Implications:

This report covers three primary areas of capital rehabilitation for the David Dunlap Observatory Buildings.

The primary short term focus is to invest in restoring the end of life components associated with the structural, fire/life and safety, mechanical, electrical and plumbing systems identified through the Conditional Assessment report from years 1 to 5 as shown on Table 2 of staff report SREIS.17.021. The total Class D project estimate cost is \$ 5,745,300.

The second priority classified as secondary in the Conditional Assessment report and which are recommended to be done in year 10 to maintain a state of good repair, is shown on Table 2 of staff report SREIS.17.021. The total Class D project estimate cost is \$698,000.

The improvements associated with the above will restore the core critical systems, including mechanical, electrical, fire/life and safety, and plumbing to use the building safely, albeit with a restriction on the number of occupants.

In order to achieve maximum occupancy of the buildings in accordance with the Building Code classification, additional life safety work is necessary. This work would include and not be limited to, adding appropriate accessible washrooms to each floor as opposed to only having one non accessible washrooms on the basement level, providing appropriate fire exits at either end of the building as opposed to one exit from the front, constructing an elevator to provide barrier free access to each floor and amongst other items building appropriate accessible ramps.

The total Class D project estimate cost of the above work as shown on Table 3 of staff report SREIS.17.021 is \$5,262,500.

At this time staff are recommending that \$5,745,000 be budgeted in the 2018 Capital Budget to undertake the design in 2018 and construction work commencing in 2019 that covers the repairs from years 1 to 5 and further that the \$698,000 be ear marked for repairs in year 2028 of the 10 Year Capital Program.

The recommended funding source would be the source is Cash in Lieu of Parkland Reserve Funding.

Relationship to the Strategic Plan:

Goal Three of the Strategic Plan “A More Vibrant Richmond Hill” is achieved by the receipt of the DDO Building Conditional Assessment and the approval of recommended funding to undertake the necessary building repairs that will promote the Towns heritage by showcasing this local history.

Conclusion:

The transfer of the David Dunlap Observatory Buildings to the Town’s building portfolio will provide the Town with an opportunity to further serve the community. Unfortunately many of the buildings core elements have reached their end of life requiring significant investment to restore the buildings reliability. The desire to use the buildings in advance of the restoring the core building elements is a challenge that staff can overcome by limiting the building use through the implementation of a Fire Safety Plan. In order to ensure a safe, reliable building that will be free from unplanned breakdowns, the base core building elements will need to be replaced immediately.

Staff has developed a phased in approach that can be implemented over a period of time. The initial focus will be to begin programming the building with the limitations imposed by the Fire Safety Plan. The second phase which may impact the users will be to replace the core building elements identified in the Conditional Assessment. This phase will restore the reliability of the core systems; however, it will still limit the occupancy. The last phase which will require direction from the Steering Committee is to implement a full occupancy building that takes advantage of the existing floor area and that is fully accessible.

Attachments:

- Appendix 1 - The David Dunlap Observatory Building Conditional Assessment September 13, 2017

A copy of Appendix 1 - The David Dunlap Observatory Building Conditional Assessment September 13, 2017 can be found at the following link:
<https://calendar.richmondhill.ca/council/Detail/2017-10-24-David-Dunlap-Observatory-Park-Project-Steering-Com/SREIS.17.021%20-%20Appendix%201%20-%20David%20Dunlap%20Observatory%20Building%20Conditional%20Assessment.pdf>