

Board of Directors Meeting Agenda

Thursday, February 2, 2023



A Healthy Watershed for Everyone

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A Healthy Watershed for Everyone

Board of Directors Meeting

Thursday, February 2, 2023 at 6:00 p.m.

This meeting will be held in person for Board of Directors members and designated, limited staff only.

The public may view the meeting live on HCA's You Tube Channel: https://www.youtube.com/user/HamiltonConservation

Santina Moccio

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2. Declarations of Conflict of Interest
3. Approval of Agenda
4. Cheque Presentation

4.1. Friends of Westfield Heritage Village Cheque Presentation

5. Delegations
6. Consent Items for Applications, Minutes and Correspondence

6.1. Applications – Development, Interference with Wetlands, Alterations to Shorelines and Watercourses
6.2. Approval of Board of Directors Minutes – January 5, 2023
6.3. Email from Lorraine Hannaford – January 18, 2023

7. Foundation Briefing

8. Member Briefing
9. Business Arising from the Minutes

1. Call to Order

9.1. Follow up on Board direction/motion re:
Natural Heritage Offsetting Guidelines- Scott PeckPage 21

10. Reports from Budget & Administration Committee and Conservation Advisory Board

11. Other Staff Reports/Memorandums

Reports for Approval

11.1. Records Management Reserve Fund Request for Archive Assistant11.2. Initiation of new HCA Strategic Plan11.3. HCA Climate Change Strategy	– Jaime Tellier – Lisa Burnside – Fionnula Wade & Scott Peck	Page 33 Page 37 Page 41
Memorandums to be Received		
11.4. Watershed Conditions Report11.5. Conservation Areas Experiences	Jonathan BastienGord Costie	Page 107 Page 113

12. New Business

13. In-Camera Items

14. Next Meeting – Thursday, March 3, 2023 at 6:00 p.m.

15. Adjournment

S	Hamilton Conservation Authority

A Healthy Watershed for Everyone

Memorandum

то:	Board of Directors
FROM:	Lisa Burnside, Chief Administrative Officer
RECOMMENDED & PREPARED BY:	T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer/Director, Watershed Planning and Engineering Mike Stone, MCIP, RPP, Manager, Watershed Planning, Stewardship & Ecological Services
DATE:	February 2, 2023
RE:	Summary Enforcement Report Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation 161/06

HCA Regulation applications approved by staff between the dates of December 16, 2022 to January 20, 2023 are summarized in the following Summary Enforcement Report (SER-2/23).

RECOMMENDATION

THAT the Board of Directors receive this Summary Enforcement Report SER-2/23 as information.

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HAMILTON REGION CONSERVATION AUTHORITY

DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS January 25, 2023 Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, February 02, 2023

The proposed works are subject to Ontario Regulation 161/06, and in particular Section 2, Subsection (1).

SUMMARY ENFORCEMENT REPORT SER 2/23

File Number	Date Received	Date Permit Issued	Review Days	Applicant Name	Location	Application Description	Recommendation / Conditions
H/F,C,A/22/75	27-Sep-22	20-Dec-22	44		515 Victoria Ave N Lot 12, Concession BF Hamilton	Rehabilitation of the Wellington Street North storm sewer outfall structure, in a regulated area of Hamilton Harbour.	Approved subject to standard conditions.
A/F,C,A/21/105	16-Dec-21	05-Jan-23	49		1244 Wilson St E Lot 52, Concession 2 Ancaster	Installation of a new gas service line by directional bore, in a regulated area of Ancaster Creek.	Approved subject to standard conditions.
F/F,C/22/52	18-Jul-22	09-Jan-23	29		2 Fallsview Rd Lot 10, Concession 1 Flamborough	Construction of a deck attached to an existing dwelling and a second deck attached to an existing garage, in a regulated area of Middle Spencer Creek.	Approved subject to standard conditions.
A/C/22/94	08-Dec-22	09-Jan-23	58		941 Old Mohawk Rd (937, 941 and 945 Old Mohawk Rd) Lot 51, Concession 2 Ancaster	Construction of three single family residences and retaining walls on three severed lots, in a regulated area of Tiffany Creek.	Approved subject to standard conditions.

HAMILTON REGION CONSERVATION AUTHORITY

DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS

January 25, 2023

Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, February 02, 2023

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SUMMARY ENFORCEMENT REPORT SER 2/23

SC/F,C,A/21/78	16-Sep-21	11-Jan-23	65	62B Windemere Rd Lot 1, Concession BF Stoney Creek	Construction of shore protection in a regulated area of Lake Ontario.	Approved subject to standard conditions.
F/F,C,A/22/91	11-Nov-22	18-Jan-23	60	From 695 to 1431 6th Conc Rd W Lot 10 to 29, Concession 6 Flamborough	Hydro One Harpers Corners to Westover Transmission Line Refurbishment (Circuit B5C) using Standard Compliane Requirements (SCR).	Approved subject to standard conditions.
D/F,C/22/96	19-Dec-22	18-Jan-23	15	28 Ravine Dr Lot 20, Concession 1 Dundas	Replacement of existing deck, and construction of retaining walls, new deck, and associated landscaping in a regulated area of Borer's Creek.	Approved subject to standard conditions.
F/F,C/22/95	12-Dec-22	20-Jan-23	28	36 Clappison Ave (44 Clappison Ave) Lot 12, Concession 3 Flamborough	Construction of two multi-unit commercial buildings with parking and loading spaces in a regulated area of Borer's Creek.	Approved subject to standard conditions.

Hamilton Region Conservation Authority

Minutes

Board of Directors Meeting

January 5, 2023

Minutes of the Board of Directors meeting held on Thursday, January 5, 2023 at 6:00 p.m., at the HCA main office, 838 Mineral Springs Road, in Ancaster, and livestreamed on YouTube.

PRESENT:	Santina Moccio – in the Chair				
	Dan Bowman	Craig Cassar			
	Brad Clark	Jim Cimba			
	Susan Fielding	Matt Francis			
	Cynthia Janzen	Maria Topalovic – via Webex			
	Alex Wilson	Maureen Wilson			
	Jennifer Stebbing – Foundation Chair				

REGRETS: None

STAFF PRESENT: Lisa Burnside, Grace Correia, Gord Costie, Scott Fleming, Matt Hall, Bruce Harschnitz, Scott Peck, Jaime Tellier, and Nancy Watts

OTHERS: None

1. Call to Order

The Chair called the meeting to order and welcomed everyone present. The Chair also welcomed the new City of Hamilton Councillor appointments to HCA's Board of Directors (Councillors Craig Cassar, Matt Francis, Alex Wilson and Maureen Wilson), and congratulated Hamilton Councillor Brad Clark and Township of Puslinch citizen appointment, Susan Fielding, on their reappointments to the Board.

2. Declarations of Conflict of Interest

The Chair asked the members to declare any conflicts under the Board's Governance Policy. Brad Clark declared a conflict of interest for item 12.3 in camera, specific to 140 Garner Road East, as his son has a retail business interest with the principal planner for the appeal for that development application.

3. Approval of Agenda

The Chair requested any additions or deletions to the agenda. Lisa Burnside advised of an additional item related to a property matter to be added as item 12.4 in camera.

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BD12, 3121 MOVED BY: Brad Clark SECONDED BY: Cynthia Janzen

THAT the agenda be approved, as amended.

CARRIED

4. Member Briefing

4.1. Bill 23 More Homes Built Faster Act Update

Lisa Burnside presented an update regarding Bill 23, noting that on December 28th, all Conservation Authorities (CAs) received letters from MNRF. The letters outlined that as of January 1, 2023, CAs can no longer provide planning comments beyond Natural Hazards for a number of prescribed Acts and that our planning and permit fees cannot be changed in the 2023 calendar year. Our member municipalities received similar letters. Key points in the update included:

- The legislative changes prohibit CAs from providing comments/reviews for natural heritage impacts; moving forward, CA commenting and review as part of the planning approvals process will focus on natural hazards only
- Given that the Province did not provide any transition time or guidelines, we still have many submissions currently under review on non-hazard-related matters. It is our understanding that those reviews will continue, although how the results will be shared with municipalities is still unclear
- MNRF staff have clarified if a CA has approved a fee change prior to the effective date of the direction, there is no concern with using the fee schedule that was already approved, as such, the HCA 2023 fees will move forward as these were approved at the September 1, 2022 Board meeting
- Going forward, and for the term of the Minister's direction from January 1 31, 2023, CAs cannot change the amount of the fee it charges or the manner in which it determines the fee for any program or service described in the Minister's direction
- Amendments have been made to require additional information to be provided as part of a required land inventory to be completed by December 31, 2024. The additional information relates to CA lands suitable for housing.

Further legislative changes regarding CA development regulations will come into effect following a new Minister's regulation.

Lisa answered various questions posed by Board members.

BD12, 3122	MOVED BY: Dan Bowman
	SECONDED BY: Jim Cimba

THAT the verbal update regarding Bill 23 More Homes Built Faster Act be received.

CARRIED

5. Delegations

There were none.

6. Consent Items for Applications, Minutes and Correspondence

The following consent items were adopted:

- 6.1. Applications Development, Interference with Wetlands, Alterations to Shorelines and Watercourses
- 6.2. Approval of Board of Directors Minutes November 3, 2022
- 6.3. Approved November 17, 2022 Budget & Administration Committee Minutes for receipt only
- 6.4. Letter from Minister of the Environment, Conservation and Parks regarding the Review of updated assessment reports and source protection plan for the Halton Hamilton Source Protection Region, received November 4, 2022
- 6.5. Letter from Ministry of Municipal Affairs and Housing regarding Greenbelt Amendments and Revocation of the Central Pickering Development Plan and O. Reg 154/03, dated December 16, 2022
- 6.6. Letter from Ministry of Natural Resources and Forestry regarding Minister's direction for conservation authorities regarding fee changes associated with planning, development and permitting fees, including Attachment A "Minister's Direction to Not Change Fees", dated December 28, 2022
- 6.7. Letter from Ministry of Natural Resources and Forestry regarding legislative and regulation changes affecting conservation authorities, dated December 28, 2022

For item 6.2, clarification was sought regarding the biodiversity strategy. Scott Peck confirmed this is a City of Hamilton initiative that HCA is assisting with. It was put

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forward that the biodiversity strategy may be a Category 2 or 3 service and an opportunity for the City to continue to work with HCA.

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Clarification was requested regarding the protocols for the referenced 25% reduction in water takings for Level 2 Low Water Conditions. Scott advised that the reductions in takings are voluntary and are focussed on users that have water taking permits. The Permit to Take Water program is administered by the Ministry of the Environment, Conservation and Parks. The reductions in water takings are not monitored by HCA.

7. Foundation Briefing

Jennifer Stebbing reported on the following:

Donations

The Foundation received a total of \$49,822 in donations in November, which brought the unaudited fiscal year total to \$762,446. November donations included \$25,830 from the Friends of Westfield to be used for the Westfield Locomotive Restoration, and \$14,146 to our General (Unrestricted) Fund, in response to the fall appeal. In December, the Foundation received a total of \$65,344 in donations, which included \$28,355 directed to the Environmental Education Fund and \$18,647 to the General (Unrestricted) Fund in response to the fall appeal and year-end reminders.

2022 Highlights

Jennifer provided an overview on projects funded in 2022 highlighting the first instalment on a \$2 million pledge from Heritage Green Community Trust contributed greatly to the Foundation's fundraising success for the year. As a result, the Foundation contributed \$525,000 toward the construction of the first wetland at Saltfleet Conservation Area, which is now completed, with additional funds to be disbursed over the next few years.

Looking Ahead

Fundraising focuses for 2023 include continuing to fully fund the Environmental Education Program, funding future work at Saltfleet Conservation Area, as well as other projects identified through HCA master plans. The intent is to increase the Education Endowment to a level where it will generate sufficient income to fully fund the annual operating needs of the education program.

In addition, the Foundation will be reviewing governance materials to ensure compliance with the new Ontario Not for Profit Corporations Act and, with HCA staff, reviewing the HCA-Foundation Memorandum of Understanding that is up for renewal later this year.

There was a question regarding the investment policy for the Foundation's endowment fund with regard to ESG investing. It was noted that the Foundation has a diversified portfolio to best manage the fund. Following a question by member Maureen Wilson regarding the Foundation's gift acceptance policy, Grace Correia advised that she will forward the Foundation's gift acceptance policy to the Board members for their information.

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BD12, 3123 MOVED BY: Susan Fielding SECONDED BY: Jim Cimba

THAT the Foundation Briefing be received.

CARRIED

8. Business Arising from the Minutes

8.1. HCA Quarterly Report #3 to MNRF

Lisa Burnside provided a summary of the report and answered the members' questions.

BD12, 3124 MOVED BY: Brad Clark SECONDED BY: Susan Fielding

THAT the memorandum entitled HCA Quarterly Report #3 to MNRF be received.

CARRIED

8.2. 2023 Budget – Verbal Update

Scott Fleming provided a verbal update regarding the 2023 capital budget as approved for submission to the City of Hamilton by the Board of Directors in October, 2022. Staff have received notice from the City of Hamilton that a one-time \$300K request for a special collaborative City/HCA project for municipal road improvements, culvert restoration, and retaining wall replacement at the Ancaster Well appears to have been approved. City staff are currently determining how the funding will be distributed, whether through the Public Works block funding or another funding source.

9. Reports from Budget & Administration Committee and Conservation Advisory Board

9.1. <u>Budget and Administration Committee – November 17 and December 15, 2022</u> (Recommendations)

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9.1.1. BA 2241 <u>2023 Mileage Rate</u>

Santina Moccio provided an overview of the staff report and put forward the recommendation.

BD12, 3125 MOVED BY: Dan Bowman SECONDED BY: Jim Cimba

THAT the Budget and Administration Committee recommends to the Board of Directors:

THAT the mileage rate of 56 cents per kilometre be increased to 58 cents per kilometre effective January 1, 2023.

CARRIED

9.1.2. BA 2246 Annual General Meeting 2023

Santina Moccio provided an overview of the staff report and put forward the recommendation.

BD12, 3126 MOVED BY: Jim Cimba SECONDED BY: Dan Bowman

THAT the Budget & Administration Committee recommend to the Board of Directors:

THAT the HCA Annual General Meeting (AGM) be postponed until the completion of all appointments from HCA's participating municipalities.

CARRIED

9.1.3. BA 2247 <u>Email Voting</u>

Santina Moccio presented a summary of the report and put forward the recommendation.

Brad Clark inquired as to how votes will be recorded for the public record. It was noted the previous clause in the by-law did include a statement that all votes by

telephonic or electronic means shall be minuted in the same way as votes at inperson Board meetings and that this should be added to the new language. A statement was added to the motion and the vote taken as amended.

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BD12, 3127 MOVED BY: Brad Clark SECONDED BY: Alex Wilson

THAT the Budget & Administration Committee recommends to the Board of Directors:

THAT the Administrative By-law under Section C -Meeting Procedures related to Electronic Meetings and Participation for electronic votes be revised with the following wording:

The Chair or the Chair's designate may administer a vote on a motion by electronic means if the motion is required on an urgent basis, or for any other reason as deemed necessary by the Chair or the Chair's designate. A deadline will be prescribed within which the votes must be cast, and the motion will pass by a majority vote. All votes by telephonic or electronic means shall be minuted in the same way as votes at in-person Board meetings.; and further

THAT staff be directed to amend the Administrative Bylaw with this update.

CARRIED

10.Other Staff Reports/Memoranda

10.1. 2023 Board of Directors Meeting Schedule

Lisa Burnside presented a summary of the report.

BD12, 3128 MOVED BY: Susan Fielding SECONDED BY: Craig Cassar

THAT the 2023 scheduled meeting dates for the Board of Directors as noted in this report, be approved.

CARRIED

10.2. Natural Heritage Offsetting Policy Guidelines

Scott Peck presented a summary of the report and answered a number of questions regarding the intent of clauses in the guidelines and how the policies would be applied in specific scenarios.

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There was a lengthy discussion regarding the uncertainty for recourse available to HCA should there be an impasse on an offsetting agreement between HCA and the recipient of a Ministerial Zoning Order (MZO). Staff were directed to seek clarification from MNRF and obtain a legal opinion regarding the process should an impasse occur. Staff will also contact other Conservation Authorities who have offsetting guidelines in effect to understand their experiences and procedures in the event of an MZO.

Staff were also directed to review the current guidelines and to strengthen language, if deemed advisable by staff, and to add a section to the guidelines outlining general procedures for implementing offsetting conditions, particularly in the event of an impasse.

It was noted there has been no direction from the Province to develop offsetting guidelines, however Conservation Ontario did encourage all Conservation Authorities to have offsetting guidelines in place should an MZO be issued in their jurisdiction.

BD12, 3129	MOVED BY:
	SECONDED BY:

THAT the Board of Directors approve the HCA "Natural Heritage Offsetting Guidelines" document dated January 5, 2023 that address issues associated with Ministerial Zoning Orders and other Provincially and Municipally led environmental assessment projects.

TABLED

BD12, 3130 MOVED BY: Cynthia Janzen SECONDED BY: Susan Fielding

THAT the initial motion be tabled;

THAT staff be directed to seek clarification from MNRF with regard to the mediation/arbitration process should there be an impasse on an offsetting agreement per an MZO; THAT staff be directed to obtain a legal opinion to strengthen our policies should arbitration/mediation for an MZO be required, to understand what is the anticipated impact of an MZO, and what recourse we have should there be an impasse on an offsetting agreement per an MZO;

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THAT staff to return with any language they would like to strengthen in the offsetting guidelines as it relates to section 2.2;

THAT staff add language to the offsetting guidelines, new item 5.0, to outline the procedure for implementing offsetting guidelines should there be an impasse; and further

THAT staff return with the results of the MNRF clarification, legal opinion, and revised offsetting guidelines at the February 2, 2023 Board of Directors meeting.

CARRIED

10.3. CA Act Transition Plan (Ice Management Plan)

Scott Peck presented a summary of the report and answered the members' questions. Staff have confirmed with the City of Hamilton that the equipment is available should operational intervention be required to prevent ice and debris jams. Staff are in the field and monitor conditions daily.

BD12, 3131 MOVED BY: Jim Cimba SECONDED BY: Craig Cassar

THAT the Board of Directors approve the Hamilton Conservation Authority Ice Management Plan dated December 1, 2022.

CARRIED

10.4. HCA Comments to the Environmental Registry of Ontario Regarding Bill 23

Scott Peck presented a summary of HCA's comments on the Environmental Registry of Ontario (ERO) postings related to Bill 23. All seven ERO's are now

closed for commenting. Some of the proposed legislation and revisions are now in effect, while others are not.

BD12, 3132 MOVED BY: Alex Wilson **SECONDED BY: Cynthia Janzen**

> THAT the memorandum entitled HCA Comments to the Environmental Registry of Ontario Regarding Bill 23 be received.

CARRIED

10.5. Watershed Conditions Report

Scott Peck provided a summary of the memorandum and answered the members' questions. Conditions have not changed since the report was written on December 16[,] 2022.

BD12, 3134 **MOVED BY: Alex Wilson** SECONDED BY: Cynthia Janzen

THAT the memorandum entitled Watershed Conditions Report be received.

CARRIED

10.6. Conservation Areas Experiences

Gord Costie provided a summary of the memorandum and answered the members' questions. The cabins at Valens Lake will be open for Valentine's Day and Family Day weekend. Susan Fielding commended Westfield Heritage Village staff on the Christmas event.

Gord answered questions posed by members related to the recent deer harvest. Staff have not received a report on the number of deer taken by the HWHA at this time.

MOVED BY: Alex Wilson BD12, 3135 SECONDED BY: Cynthia Janzen

THAT the memorandum entitled Conservation Areas Experiences be received.

CARRIED

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11.New Business

There was none.

12.In-Camera Items

BD12, 3136 MOVED BY: Susan Fielding SECONDED BY: Dan Bowman

THAT the Board of Directors moves *in camera* for matters of law, personnel and property.

CARRIED

During the *in camera* session, two personnel matters, one legal matter, and one property matter were discussed.

12.4. Confidential Verbal Update - BD/Jan 04-2023

Scott Peck provided a verbal update regarding a property matter and answered the members' questions.

BD12, 3137 MOVED BY: Jim Cimba SECONDED BY: Cynthia Janzen

THAT the confidential verbal update entitled BD/Jan 04-2023 be received and remain in camera

CARRIED

Maria Topalovic declared a conflict of interest for item 12.1 as one of the recommended appointees to the Conservation Advisory Board is a work-related acquaintance.

Maria Topalovic left the meeting.

12.1. Confidential Report – BD/Jan 01-2023

Dan Bowman provided a summary of the staff report regarding a personnel matter and answered the members' questions.

BD12, 3138 MOVED BY: Dan Bowman SECONDED BY: Alex Wilson

THAT the confidential report entitled BD/Jan 01-2023 be approved and remain in camera.

CARRIED

Maria Topalovic returned to the meeting.

12.2. Confidential Verbal Update - BD/Jan 02-2023

Lisa Burnside provided a verbal update regarding a personnel matter and answered the members' questions.

Brad Clark left the meeting as per his declared conflict of interest specific to 140 Garner Road East, as his son has a retail business interest with the principal planner for the appeal for that development application.

12.3. Confidential Memorandum – BD/Jan 03-2023

Scott Peck provided a summary of the memorandum regarding a legal matter and answered the members' questions.

BD12, 3139 MOVED BY: Dan Bowman SECONDED BY: Alex Wilson

THAT the confidential memorandum entitled BD/Jan 03-2023 be received and remain in camera.

CARRIED

BD12, 3140 MOVED BY: Cynthia Janzen SECONDED BY: Craig Cassar

THAT the Board of Directors moves out of in camera.

CARRIED

Following the in-camera portion of the meeting, a resolution approving the appointment of six new citizen representatives to HCA's Conservation Advisory

Board (CAB) was read. The following citizens were appointed to CAB under the current terms of reference:

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Helena Cousins Tyler Cunningham Natalie Faught Haley McRae Sherry O'Connor Courtney Oliver

13.Next Meeting

The next meeting of the Board of Directors will be held on Thursday, February 2, 2023 at 6:00 p.m. at the HCA Main Administration Office – Woodend Auditorium, 838 Mineral Springs Road, Ancaster, Ontario.

14. Adjournment

On motion, the meeting adjourned.

Scott Fleming Secretary-Treasurer This page intentionally left blank.

Dear Board member,

I am writing a formal complaint since my phone calls last year seem not to have made an impact.

I called last year complaining about the fact that at Christie's for the past 2 years and this year, rather than snowplowing the section leading to the causeway/walkway end (closest to Middletown Rd)they have simply put up barriers.

This end of the park is my favourite as I am into photography and the lake is picturesque from this end as well as birds and waterfowl frequent the area. It's also very pretty to walk in that forested area.

I have been to Valens and 50Point and Dundas Valley in the dead of winter and ALL the roadways were very well maintained.

It also bothers me that I can't just whip into Tews or Webster's Falls for 20 minutes (and be able to park in the gated lot on the left as we enter. I am 60 my husband 70 and my daughter has Down syndrome so we're not all as sure footed as in former years plus I only want to take a few pictures and leave. I'm not fit enough to walk to the peak.

I have bought a membership for many years now (and a separate one for my daughter so workers can take her)as I am 3 minutes from Christie's and close to the others in this area. We would really appreciate it if you would address these concerns.

I am attaching a cellphone shot I took yesterday at Christie's.

Thank you very much for your time and consideration.

Sincerely,

Lorraine Hannaford



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A Healthy Watershed for Everyone

Report

TO:	Board of Directors
FROM:	Lisa Burnside, CAO
RECOMMENDED & PREPARED BY:	T. Scott Peck, MCIP, RPP, Deputy CAO/Director, Watershed Management Services
MEETING DATE:	February 2, 2023
RE:	Follow up on Board direction/motion re: Natural Heritage Offsetting Guidelines

STAFF RECOMMENDATION

THAT the Board of Directors approve the HCA "Natural Heritage Offsetting Guidelines" document dated February 2, 2023 that address issues associated with Ministerial Zoning Orders and other Provincially and Municipally led environmental assessment projects.

BACKGROUND

At the January 5, 2023 Board of Directors meeting, staff presented a report and proposed natural heritage offsetting guidelines to be used in the event of the submission of an MZO or a project approved through a Provincially and municipally led environmental assessment. The guidelines are required and will be used to assist staff in the implementation of the HCA's Natural Heritage Offsetting Policy that was approved in November 2021.

Following the staff presentation and a discussion regarding the process and impacts of an MZO, the Board of Directors approved the following motion.

THAT staff be directed to seek clarification from MNRF with regard to the mediation/arbitration process should there be an impasse on an offsetting agreement per an MZO;

THAT staff be directed to obtain a legal opinion to strengthen our policies should arbitration/mediation for an MZO be required, to understand what is the

anticipated impact of an MZO, and what recourse we have should there be an impasse on an offsetting agreement per an MZO;

THAT staff to return with any language they would like to strengthen in the offsetting guidelines as it relates to section 2.2;

THAT staff add language to the offsetting guidelines, new item 5.0, to outline the procedure for implementing offsetting guidelines should there be an impasse; and further

THAT staff return with the results of the MNRF clarification, legal opinion, and revised offsetting guidelines at the February 2, 2023 Board of Directors meeting.

Staff have followed up on the Board motion and offer the responses below.

STAFF COMMENT

1. THAT staff be directed to seek clarification from MNRF with regard to the mediation/arbitration process should there be an impasse on an offsetting agreement per an MZO;

On January 12, 2023, staff sent an email to the Ministry of Natural Resources and Forestry. However, at the time of writing this report, staff have not received an answer providing clarification. MNRF staff have indicated they are reviewing, and HCA staff will continue to inquire in this regard to try to obtain a response for the February 2, 2023 Board of Directors meeting.

2. THAT staff be directed to obtain a legal opinion to strengthen our policies should arbitration/mediation for an MZO be required, to understand what is the anticipated impact of an MZO, and what recourse we have should there be an impasse on an offsetting agreement per an MZO;

Staff have obtained a legal opinion from Gowlings WLG and they provide the following response to the specific questions posed through the Board of Directors motion.

(1) What is the potential impact of an MZO to the HCA?

The potential impact is that, if an applicable MZO were issued, the process set out under s.28.0.1 of the *CA Act* may apply, and this may result in a developer being permitted to proceed with a development despite any conditions that the HCA seeks to impose—the Minister or the OLT (the developer has some choice, as between the two, and may proceed to the OLT if the Minister declines to undertake a review) would have the ability to vary or remove any conditions sought to be imposed by the HCA.

However, it appears that the HCA would retain the ability to seek to impose appropriate Offsets, as part of the required agreement, even after the applicable conditions are determined; development work could not proceed without an agreement. The only apparent recourse a developer would have is to apply to the Court for judicial review.

2) What recourse does the HCA have in the event an impasse occurs in the development of an agreement?

In the event of an impasse, it does not appear that there is a statutory mechanism. Judicial review would be possible, as is always the case (to a greater or lesser extent, depending upon the circumstances). The parties also could agree to arbitrate or mediate any dispute, but one party could not compel the other party to participate—It is noted that the MNRF became involved to help mediate a resolution of conditions in which the Lake Simcoe Region Conservation Authority became involved after an MZO was issued, which also indicates that it was known by all parties to be voluntary. Further, a development project that falls within s.28.0.01 could not begin until the required agreement is reached, so developers are strongly incentivized to reach an agreement, inclusive of Offsets. As such, an impasse does not appear likely.

3. **T**HAT staff to return with any language they would like to strengthen in the offsetting guidelines as it relates to section 2.2.

Staff have reviewed Section 2.2 of the proposed Guidelines with a view to strengthen the language. Given that the offsetting policy has been set and approved by the Board of Directors, the proposed guidelines will provide guidance to staff in considering offsetting. Staff consider the language as proposed in the guidelines to be appropriate as it allows for flexibility and allowances for site specific considerations as part of agreeing to offsetting for a project. Further, the wording does prioritize "net gain" first with the secondary approach being "no net loss".

4. THAT staff add language to the offsetting guidelines, new item 5.0, to outline the procedure for implementing offsetting guidelines should there be an impasse

Section 5.0 has been added to the guidelines that speaks to agreement implementation. The agreement as noted in Section 28.0.1 of the *Conservation Authorities Act* is a legislated requirement and work on a project cannot proceed until such an agreement has been finalized. The guideline confirms that the process for an agreement would be for the HCA and the proponent to work towards a satisfactory agreement or if agreed upon, work towards an agreement through voluntary mediation. As noted in the answer provided through the legal opinion, developers are strongly incentivized to

reach an agreement. It is noted that ultimately, Section 28.0.1, subsection (24) to (26) note that an agreement is required, the agreement must set out actions the permit holder must satisfy to compensate for ecological impacts, that work cannot commence until the agreement is in place and that there are penalties in place for non-compliance in this regard.

STRATEGIC PLAN LINKAGE

The initiative refers directly to the HCA Strategic Plan 2019 – 2023:

- Strategic Priority Area Natural Area Conservation
 - Initiatives Promote sustainable development by working with the City of Hamilton on natural heritage issues and undertake HCA plan input and review program.

AGENCY COMMENTS

Not applicable

LEGAL/FINANCIAL IMPLICATIONS

Not applicable

CONCLUSIONS

This report addresses the Board of Directors motion from the January 5, 2023 Board meeting relating to the issues associated with an MZO. Staff have detailed that the proposed wording in the guidelines is appropriate and that a new section detailing any procedures is not required as Section 28.0.1 requires that an agreement must be entered into prior to any development taking place.

The proposed HCA Natural Heritage Offsetting Guidelines have been prepared based on a review of offsetting studies and approaches and on current practices related to offsetting by conservation authorities with offsetting policies in place. The proposed HCA Natural Heritage Offsetting Guidelines will provide guidance to HCA staff when considering MZO's and environmental assessments proposed by the Province of Ontario, the City of Hamilton, County of Wellington or the Township of Puslinch. Hamilton Conservation Authority Natural Heritage Offsetting Guidelines

February 2, 2023

1.0 Introduction and Background

The Hamilton Conservation Authority (HCA) Strategic Plan 2019-2023 outlines that the HCA's Vision is a "A healthy watershed for everyone" and that our Mission is "To lead in the conservation of our watershed and connect people to nature". Five Key Strategic areas are noted in the strategic plan with Natural Heritage Conservation being one of the key strategic areas for the HCA. Natural Heritage Conservation relates to the conservation, restoration and enhancement of watershed natural areas and ecology. Several initiatives are listed under Natural Heritage Conservation to further advancements in this regard. Specifically, one initiative is to "Promote sustainable development by working with the City of Hamilton on natural heritage issues and undertake the HCA plan input and review program".

As part of the HCA's work related to Natural Heritage Conservation and as directed by the HCA Board of Directors, in 2021 the HCA completed a review of natural heritage offsetting with consideration given to the potential benefits of adding offsetting policy to the HCA's Planning & Regulation Policies and Guidelines document.

A Discussion Paper was prepared by HCA staff and endorsed by the HCA Board of Directors. The Discussion Paper was used to consult with watershed stakeholders and the public. HCA staff reviewed the stakeholder and public input received through the consultation process and developed an approach that maintained the existing policy framework for natural heritage but noted that offsetting/compensation be incorporated in policy but be limited to address issues associated with Ministerial Zoning Orders and other provincially and municipally led environmental assessment projects.

Flowing from the staff recommendation, on November 4, 2021, the HCA Board of Directors approved the following motion.

THAT the Board of Directors receive the report titled "Natural Heritage Offsetting Policy Review", dated November 4, 2021;

THAT the existing policy framework for natural heritage features as outlined in Section 3 of the HCA's Planning & Regulation Policies and Guidelines, October 2011, be maintained; and,

THAT offsetting/compensation be incorporated in the policy but be limited to address issues associated with Ministerial Zoning Orders and other Provincially and municipally led environmental assessment projects and to that end, the following policy amendment should be added to Section 3.1 General Policies, Natural Heritage of the HCA's Planning & Regulation Policies and Guidelines, October 2011.

"Section 3.1 i) – In the instance of a Ministerial Zoning Order (MZO) being issued by the Province of Ontario or a Provincially or municipally led environmental assessment that requires the removal or partial removal of a designated or regulated natural heritage feature, offsetting/compensation can be utilized to provide for "net gain" or at a minimum, "no net loss".

It is noted that the approved policy does not permit offsetting/compensation for planning or permit applications. The policy only allows for offsetting/compensation for MZO's and projects approved through a Provincially and municipally led environmental assessment

With the Boards approval of the above noted policy for compensation/offsetting for MZO's and projects approved through a Provincially and municipally led environmental assessment, offsetting/compensation guidelines are required. It is noted that pursuant to Section 28.0.1(24)(25) of the Conservation Authorities Act, R.S.O. 1990, c. C.27, an agreement is required for permits issued for MZO's to compensate for ecological impacts associated with the proposed development.

As reviewed in the HCA Natural Heritage Offsetting Policy Development Discussion Paper, April 1, 2021", the mitigation hierarchy should be followed when offsetting/compensation is being considered. The mitigation hierarchy is as follows:



Source – Credit Valley Conservation Ecosystem Offsetting Guidelines, March 13, 2020

In the review of environmental assessment proposals and as per the Board of Directors approved policy, HCA comments and direction will speak to the need to avoid, minimize or mitigate impacts to natural heritage features with offsetting always considered as a last resort for such projects. In these cases, the guidelines as detailed in this document will be used. As noted, the Conservation Authorities Act requires a conservation authority to enter into an offsetting/compensation agreement where a Ministerial Zoning Order has been issued and a permit required. In these circumstances, the offsetting guidelines will be used to develop such agreements.

HCA Natural Heritage Offsetting Guidelines, February 2, 2023

2.0 Guidelines

Infrastructure or similar provincial and municipal projects that, after following the requirements of the mitigation hierarchy, will result in the removal or partial removal of a natural heritage feature such as a wetland and/or a significant woodland, will be required to offset/compensate for the loss of these features and their ecological functions. These guidelines will also be used in the development of an agreement resulting from the issuance of a Ministerial Zoning Order.

It is noted that there are natural heritage features that cannot be replaced due to the rare nature of these features and offsetting/compensation will not be considered in this regard. These features include rare vegetation communities as defined by the Natural Heritage Reference Manual (NDMNRF, 2010), bogs or fens. Further, as a general guideline, offsetting/compensation will not be considered for watercourses, as defined by the Conservation Authorities Act.

2.1 Prerequisites for Ecological Offsetting

As part of the review process of an environmental assessment or MZO that proposes offsetting/compensation for the loss of a natural heritage feature, the following must be addressed through the Environmental Impact Study (EIS) or similar comprehensive environmental study:

• Demonstrate conformity with applicable provincial and local plans, including the Greenbelt Plan, A Place to Grow: Growth Plan for the Greater Golden Horseshoe and the City of Hamilton and County of Wellington Official Plans as applicable.

• Satisfy the "no negative impact test" for the loss of natural heritage feature to ensure consistency with Section 2.1 of the Provincial Policy Statement (PPS).

• Assess the impacts to natural heritage features and ecological functions such as wetlands, woodlands, and watercourses, as well as their associated vegetation protection zones.

• Demonstrate that the mitigation hierarchy steps of avoiding, minimizing and mitigating have been followed and that compensation is the only viable option.

• Include a preliminary Ecological Offsetting Strategy (EOS) that describes, in concept, how the loss of natural heritage feature will be compensated. This would include identifying the feature to be removed, proposal for replacement and general principles for feature creation.

2.2 Ecological Offsetting Strategy

An Ecological Offsetting Strategy (EOS) will be required where compensation is the only viable option. It will be the responsibility of the proponent to develop and implement this

HCA Natural Heritage Offsetting Guidelines, February 2, 2023

EOS. The EOS must demonstrate how the loss of natural heritage feature(s) will be compensated for and that this offset will result in a "net gain" or at a minimum "no net loss' of natural heritage features. Ecological offsetting compensation projects must be both feasible and completed within a reasonable timeframe, preferably prior to the removal of the original feature. The EOS must also include a monitoring component to ensure the successful installation of compensation projects. The components of an EOS are further described in Appendix A.

2.3.Wetlands

All wetlands eligible for offsetting must be identified according to provincial standards such as the Ontario Wetland Evaluation System (OWES) or Ecological Land Classification (ELC). Ecological offsetting may be considered for the loss of wetland provided that the wetland is not a bog, fen or rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of wetland and associated vegetation protection zone will be offset at a replacement ratio for the areal extent of the feature. The replacement ratio for the areal extent of the wetland shall be 3:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial and time scales to ensure that the value of loss is supported with an appropriate net gain or at a minimum, no net loss.

2.3.1. Exceptions

- a. Ecological offsetting will not be required for wetlands that are smaller than 0.5 ha or manmade features where it can be demonstrated to the satisfaction of the HCA that:
 - i. The wetland is not part of an evaluated wetland complex;
 - ii. The wetland is not part of or associated with a *significant* natural heritage feature or municipally designated natural heritage feature or natural heritage system;
 - iii. The wetland is not part of or associated with a *sensitive* or *vulnerable* ground water feature or surface water feature;
 - iv. The impacts to natural features, *ecological functions* and *hydrologic functions* are minimized to the satisfaction of HCA; and
 - v. *Ecological functions* and *hydrologic functions* will be restored, enhanced or replaced to the greatest extent possible and to the satisfaction of HCA.

2.4. Woodlands

All woodlands eligible for offsetting must be identified according to provincial standards such as Ecological Land Classification (ELC) and the provincial criteria for defining woodlands. Ecological offsetting may be considered for the loss of woodland provided that the woodland is not a rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of woodland and associated vegetation protection zone will be offset at a replacement ratio for the areal extent of the feature. The replacement ratio for the areal extent of the feature will be 2:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial and time scales to ensure that the value of loss is supported with an appropriate net gain or at a minimum, not net loss.

2.4.1 Exceptions

Ecological offsetting will not be required for woodlands that are within the City and County provided the tree by-laws have comparable compensation requirements and duplication of tree replacement will also be avoided. Ecological offsetting will also not be required for woodlands that are plantations managed for the production of fruits, nuts, Christmas trees, nursery stock or tree products or for woodlands identified smaller than 0.5 ha where it can be demonstrated to the satisfaction of the HCA that it does not provide any of the following features or functions:

• Any woodlands wholly or partially within 30 m of a key natural heritage / key hydrological or protected feature.

• Any woodland containing a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the Ministry of Natural Resources and Forestry Natural Heritage Information Centre (NHIC).

Additional exclusions may be considered for communities that are dominated by the invasive non-native tree species buckthorn (Rhamnus species) or Norway maple (Acer platanoides), which threaten good forestry practices and environmental management. Such exceptions may be considered where native species cover less than 10% of the ground and are represented by less than 100 stems of any size per hectare.

3.0 Implementation

This Ecological Offsetting/Compensation Guideline provides implementation direction related to Section 3.1 i) of the HCA's Planning & Regulation Policies and Guidelines, October 2011. This guideline will be implemented for proposals under the Environmental Assessment Act and similar provincial and municipal processes. For example, a preliminary Ecological Offsetting Strategy (EOS) will be required for the loss of a natural feature as part of any EIS flowing from an environmental assessment. A detailed EOS will be required as part of a complete application for a permit related to the detailed design of an environmental assessment. This Ecological Offsetting/Compensation Guideline will be applied through the permitting process under section 28(1) of the Conservation Authorities Act where a Zoning Order has been made by the Minister of Municipal Affairs and Housing under section 47 of the Planning Act.

4.0 Effectiveness Monitoring

The proponent responsible for implementing approved ecological offsetting compensation projects will also be responsible for demonstrating that the projects have been completed and the associated natural heritage features are functioning as anticipated. Any monitoring or reporting requirements should be determined through the Ecological Offsetting Strategy (EOS), in consultation with HCA, prior to the implementation of any ecological offsetting compensation projects.

5.0 Ministerial Zoning Order – Required Agreement Implementation

For projects that are subject to a Ministerial Zoning Order, the Conservation Authorities Act outlines that the holder of a permission must enter into an agreement with the Conservation Authority to set out the actions the permission holder must complete or satisfy to compensate for ecological impacts that may result from the development project.

The agreement as noted in Section 28.0.1 of the Conservation Authorities Act is a legislated requirement and it is noted that work on a project cannot proceed until such an agreement has been finalized. In this regard, the process for the development of an agreement will be for the HCA and the proponent to work co-operatively towards a satisfactory agreement, and if required and agreed upon by the HCA and the proponent, work towards an agreement through voluntary mediation.

Completing an agreement that satisfies both the HCA and the proponent and compensates for the ecological impacts from the development project is the priority. However, it is noted that the requirements of the Conservation Authorities Act must be met and that ultimately, Section 28.0.1, subsection (24) to (26) note that an agreement is required, the agreement must set out actions the permit holder must satisfy to compensate for ecological impacts, that work cannot commence until the agreement is in place and that there are penalties in place for non-compliance.

Appendix A – Components of an Ecological Offsetting Strategy

Through an agreed upon Terms of Reference with HCA, an Ecological Offsetting Strategy (EOS) must include the following information:

- Description, location and area of feature being lost.
- Description, location and area for where feature replacement is proposed.
- Description, location and area for any proposed feature enhancements (e.g. invasive species management, habitat creation, etc.).
- Detailed design drawings and supporting technical studies for feature replacement and any enhancements.
- Timing for implementation and project completion.
- Monitoring plan and schedule to demonstrate that features are functioning as anticipated.
- Contingency plan should timelines not be met or features not function as anticipated.

• Allowance for ensuring features are protected in perpetuity (e.g. zoning, transfer to public agency, etc.).

• Commitment to complete ecological offsetting requirements through a formal written agreement, as applicable.


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A Healthy Watershed for Everyone

Report

то:	Board of Directors
FROM:	Lisa Burnside, Chief Administrative Officer
RECOMMENDED & PREPARED BY:	Jaime Tellier, Executive Assistant / Records Management Coordinator
MEETING DATE:	February 2, 2023
RE:	Records Management Reserve Fund Request for an Archive Assistant Internship

STAFF RECOMMENDATION

THAT staff be permitted to withdraw funds from the records management reserve, up to a maximum of \$50,000.00, to fund a one-year internship to assist with the **HCA Archive Revitalization Project.**

BACKGROUND

In 2019, HCA began a series of initiatives to modernize its records management practices. A key initiative in the development of a comprehensive records management program was the completion of a comprehensive inventory of HCA's records, undertaken in 2019 and 2020. In completing the records inventory, a significant amount of legacy records were identified. The legacy records have never been evaluated against any retention criteria and are not organized in such a way as to be readily useable by staff. These legacy records help document the history of HCA.

In 2003, HCA began a limited internal archive, however it subsequently became inactive without clear guidance for how materials are to be added and a mechanism in place for its continued management.

STAFF COMMENT

To address the need for a system to manage HCA's significant historical records, staff have developed a proposal and work plan for an archive revitalization project.

The project proposes to broaden the scope of the existing archive to better capture all of HCA's corporate records and to ensure the regular transfer of records to the archive through integration with the corporate records management program.

The project will formalize and expand our existing internal archive, evaluate the contents, and normalize the practice of transferring records and materials to the archive through regular implementation of the corporate records retention schedule. Once established, the archive will be managed on an ongoing basis as part of HCA's overall records management program.

While described as an archive, the project will not result in a true archive as this would require specialization and resources beyond the scope of HCA. The aim of the project is to improve the organization of and access to historical records of HCA, and to do so in such a way that they may be transferred to a recognized archival institution for preservation in the future, should HCA choose to do so. This is an initiative that some other Conservation Authorities have undertaken.

Staff have applied for a Young Canada Works at Building Careers in Heritage internship grant through the Canadian Council of Archives, for the 2023 term, to partially fund an Archive Assistant position to assist with the revitalization project.

The intern will assist with developing a new file arrangement system for the archive, reorganize the contents based on the revised system, review legacy records against inclusion criteria in HCA's records retention schedule and Collections Policy, weed unsuitable material, and update the collections register with these changes.

STRATEGIC PLAN LINKAGE

The initiative refers directly to the HCA Strategic Plan 2019 – 2023:

- Strategic Priority Area Organizational Excellence
 - Initiatives Modernize records management and digitize historical records and archives

AGENCY COMMENTS

N/A

LEGAL/FINANCIAL IMPLICATIONS

HCA has a records management reserve fund. This fund is earmarked for strategic projects that will advance the records management goals of the organization. To-date, funds have been used to digitize and apply optical character recognition technology to

all of HCA's historical Board, Advisory Board, and Advisory Committee records, significantly improving the speed and comprehensiveness of searches of these records and resulting in an electronic back up of the records.

The proposed rate of pay for the archives intern is comparable to other similar positions in the archives industry. The salary will not exceed \$50,000.00, including employer expenses for benefits. The internship grant applied for would contribute 50% up to \$15,000.00. Should the grant be approved, HCA's contribution to the salary would be less \$35,000.00. Should we not be successful in obtaining the grant, staff will continue to apply for other funding sources. However, in the interest of advancing the project, and the records management program as a whole, staff would like to proceed with this project in 2023 and are therefore requesting to withdraw up to the full amount from the records reserve this year.

CONCLUSIONS

The archive revitalization project is a key component of HCA's developing records management program. The evaluation of current contents and formal establishment of an archive with a plan for continued accessions and long-term management, particularly through integration with the corporate records program, will greatly improve the organization of and access to historical records of HCA. An intern to assist with this work will be fundamental to the success of the project.

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A Healthy Watershed for Everyone

Report

TO:	Board of Directors
FROM:	Lisa Burnside, Chief Administrative Officer (CAO)
MEETING DATE:	February 2, 2023
RE:	Initiation of a new Hamilton Conservation Authority (HCA) Strategic Plan

STAFF RECOMMENDATION

WHEREAS the HCA believes that the presence of the strategic plan provides valuable direction to the organization;

WHEREAS recent provincial legislation changes stemming from Bill 229 and 23 are still in process causing uncertainty in several jurisdictional areas leading to the need for more collaborative effort with our municipalities for Category 1, Category 2 and Category 3 programs and services and require the next Strategic Plan to be built on a full understanding of the new landscape to function as a real source of valuable input to the budget process and divisional workplans;

WHEREAS the existing strategic plan has a current end date of December 31st, 2023;

THEREFORE, BE IT RESOLVED

THAT the staff be authorized to extend the use of the existing Strategic Plan for one additional year until December 31st, 2024; and further

THAT staff be authorized to initiate the new strategic planning process for the period of 2025 – 2029 beginning this Spring; and further to that end

THAT a staff steering committee be put in place, comprised of the CAO, Deputy CAO and other staff from across the organization as determined by the CAO; and further

THAT the Committee report back to the full Board with a draft strategic plan for approval by end of June 2024 which provides sufficient time to appropriately influence the creation of the Fiscal 2025 Capital and Operating Plans.

BACKGROUND

The Strategic Plan is a key document that sets the overall aims of the HCA. Over the past five years, the current strategic plan has been an important document directing the priorities of the organization and guiding staff such that their work aligns with and contributes to the larger mission of the HCA. Staff have made significant strides in accomplishing the initiatives identified in the current Plan with annual progress reports shared with the Board and the public.

The HCA Strategic Plan 2019-2023 document was apportioned into five key priority areas:

- Organizational Excellence
- Water Management
- Conservation Area Experience
- Natural Heritage Conservation and
- Education & Environmental Awareness

Each Strategic Priority Area includes examples of what type of work would be undertaken for that priority and following from that, specific initiatives to be addressed over the life of the Strategic Plan.

STAFF COMMENT

Staff are recommending that once again a new strategic plan be developed for the next five-year period. However, it is also Executive Team consensus that the current plan should remain in place for one further year allowing staff to understand and then include in the new plan, the impacts from recent changes to the *Conservation Authorities Act*, from Bills 23 and 229, and align approval of the plan to inform the 2025 budget process. Additionally, the full renewal of the HCA Board will not be complete until sometime this Spring and holding the existing Strategic Plan in place an additional year provides the new Board members an opportunity to become more familiar with HCA and as they provide input to help inform the strategic direction of the organization moving forward.

Strategic Plan Renewal Process

As noted in the HCA Administrative Bylaws, it is a responsibility of the CAO to develop a Strategic Plan for approval by the Board of Directors. As was done for previous strategies, a staff committee is proposed comprised of the CAO, Deputy CAO and other staff from across the organization to steer the development of the plan. This committee, with the assistance of an external consultant, will oversee the development of the new

Strategic Plan and coordinate the consultation process including engagement with the Conservation Advisory Board, Board of Directors and other watershed stakeholders that will provide input on current and future trends, partnership and business opportunities and priority areas, programs and services for HCA. Previously consultant support was utilized in the development of the Strategic Plan to help coordinate and facilitate a survey, feedback, and priority areas as well as creating the graphic format of the new plan. It is envisioned that a consultant will once again be utilized for similar purposes. The existing Strategic priority areas and initiatives will both be reviewed to ensure their continued focus and alignment with future priorities, programs and services as well as the vision and mission statements as needed.

Staff intend to develop this plan on a schedule culminating by June 30th, 2024 with the following project timeline

PHASE 1 Q2 2023	PHASE 2 Q3 2023	PHASE 3 Q4 2023	PHASE 4 Q1-Q2 2024
Seek endorsement to initiate strategic planning process from HCA Board of Directors	Research/finalize all implications of Bills 23 and 229	Revise key strategic areas and develop initiatives to align with Provincial mandate, inventory of programs and services and feedback from engagement	Finalize and design Strategic plan
Convene strategic plan staff working group	Review and Identify key strategic issues/areas for HCA	As needed, revise vision, mission statements	Seek endorsement from HCA Board of Directors
Draft terms of reference for consultant support	Initiate staff engagement	Identify any key performance indicators to help set annual work plans and measure progress	Share completed Strategic plan with public and stakeholders
Retain consultant and draft workplan	Initiate CAB, Board and stakeholder engagement	Undertake preparations for any final input and draft strategic plan	Publish the 2025-2029 strategic Plan and incorporate in 2025 Capital and Operating Plans

Table 1: High Level Project Objectives by Phase for Strategic Plan Renewal

STRATEGIC PLAN LINKAGE

The development of the HCA Strategic Plan 2025-2029 builds off the current plan while addressing recent changes driven by new provincial legislation and sets the strategic direction for the HCA. As such, future reports to the Board of Directors and advisory boards will highlight the strategic plan linkage as it relates to this new strategic plan.

AGENCY COMMENTS

Not applicable.

LEGAL/FINANCIAL IMPLICATIONS

The HCA Strategic Plan 2025-2029 will guide programs and projects for those 5 years and work plans, operating and capital budgets will be developed based on this guidance.

The strategic plan will be undertaken largely with staff resources but will require some consultant support. The end result will be a clear and engaging final product in digital format, as well as some print copies, which will communicate HCA's direction moving forward. At this time the cost for consultant support and any required external strategic plan design support and print costs are estimated at less than \$35,000 and have been built into the 2023 operating budget and if needed will be in the 2024 operating budget.

CONCLUSION

With the current HCA strategic plan expiring at the end of 2023, a new plan is needed. With the changes to the *Conservation Authorities Act* as a result of both Bill 229 and 23, it is prudent to push out the creation of the next plan a year so that all required new directions and key operational and environmental challenges may be addressed. Additionally, the approval of a new plan by mid-year 2024 aligns well to inform the 2025 budget process. This approach also dovetails with giving the new Board members an opportunity to become more familiar with the workings of the Authority on a more comprehensive basis. The new plan will be developed through a staff steering committee with consultant support and be brought to the Board of Directors for approval.



A Healthy Watershed for Everyone

Report

TO:	Board of Directors
FROM:	Lisa Burnside, Chief Administrated Officer (CAO)
RECOMMENDED BY:	T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer/ Director, Watershed Management Services
PREPARED BY:	Fionnula Wade, Climate Change Coordinator
MEETING DATE:	February 2, 2023
RE:	HCA Corporate Climate Change Strategy

STAFF RECOMMENDATION

THAT HCA staff recommends to the Board of Directors:

THAT the HCA Corporate Climate Change Strategy be approved as detailed in the report titled "HCA Corporate Climate Change Strategy", dated February 2, 2023;

THAT staff be directed to report on the progress on 2023 program initiatives noted by year end; and further

THAT staff be directed to develop work priorities and identify funding streams and 2024 budget allocations for Board approval by July of 2023.

BACKGROUND

At the May 2, 2019 Board of Directors meeting, the following motion was adopted.

THAT staff be directed to undertake a review and update the HCA's Climate Change Strategy as detailed in the report titled "HCA Climate Change Strategy Review", dated April 15, 2019.

Based on this direction from the Board of Directors, Hamilton Conservation Authority (HCA) staff have undertaken a review of past work the HCA has completed related to climate change. Previous projects and reports reviewed included the 2012 Climate Change Strategy, 2012 Sustainability Audit, 2012 EcoStride Group report and the 2016

Vulnerability Study. The attached "Towards a Net-Zero Future: Hamilton Conservation Authority's Corporate Climate Change Strategy" was developed building on the foundation created through these previous projects and the strategy is built around four key areas of HCA focus:

- Operations
- Environment and natural heritage
- Experience, education, and awareness
- Partnership

The intent of the updated Corporate Climate Change Strategy is to provide direction and guidance within our organization for climate change action and make the necessary changes to reduce HCA's greenhouse gas (GHG) emissions while also increasing our resiliency to the changing climate.

STAFF COMMENT

Towards a Net-Zero Future: Hamilton Conservation Authority's Corporate Climate Change Strategy

The "Towards a Net-Zero Future: Hamilton Conservation Authority's Corporate Climate Change Strategy" is a guiding parent document for HCA's climate change mitigation and adaptation actions moving forward for our lands and operations. This is a corporately based document relating to how the HCA can address climate change from a program and operations perspective. This document has compiled previous GHG emissions data from 2005 to present, and 2015-2019 emissions data along with ongoing benchmarking will allow for the setting of goals to reduce the HCA carbon footprint moving forward. The compiled data found that the main contributor to GHG emissions throughout the HCA is gas products (i.e., gasoline and diesel), followed by natural gas usage. The GHG inventory will be updated regularly accompanied by annual GHG emission tracking reports. This information will be reported to the Board of Directors annually and will help identify how and to what degree our GHG emissions can be reduced to reach Net-Zero.

The strategy details climate change issues that already have and/or are projected to impact HCA operations and lands. Mitigation and adaptation actions are proposed throughout the strategy to both reduce our GHG emissions and adapt to changes as they arise.

Main areas of focus are highlighted in the Corporate Climate Change Strategy area as follows:

• Operations

- GHG Emissions:
 - Reduce emissions
 - Increase the amount of available data

- Achieve cost savings
- Promote eco-friendly solutions within our buildings, fleet, and operations
- o Energy Use
 - Increase use of renewable energy
 - Make our buildings as energy efficient as possible
 - Actively reduce our use of energy

• Environment and Natural Heritage

- Water Management
 - Increase access to data for decision-making purposes
 - Better understand how land uses impact water quality during storm events
 - Reduce water runoff, contamination, soil erosion, and other impacts of climate change on water systems
 - Reduce flooding and its impacts on lands, communities, and infrastructure
- o Wetland Management
 - Identify threats to wetlands and make it easier for ecosystems to adapt to climate change
- Carbon Sequestration
 - Increase natural carbon stores which help remove excess CO₂ form the atmosphere
- o Invasive Species
 - Research and monitor invasive species
 - Implement best practices in preventing their spread
 - Communicate trends and impacts of invasive species locally
 - Collaborate with partners
- o Protection of Wildlife
 - Mitigate threats to biodiversity
 - Better understand assisted migration
 - Increase pollinator health
- Monitoring Programs
 - Expand long-term monitoring programs
 - Increase the HCA's ability to: forecast and plan proactively related to weather and climate variability; project and monitor drought conditions, and manage and allocate water resources

• Experience, Education and Awareness

- Conservation Area Experience
 - Maintain HCA regulations and planning program as it relates to natural hazards and climate change implications
 - Anticipate and respond to operational impacts due to climate change
 - Protect staff and visitor safety

- Education and Awareness
 - Ensure an informed public related to invasive species and potential health risks
 - Increase awareness of individual roles in addressing climate change
 - Protect staff and visitor safety
- Partnerships
 - o Strengthen community approach and build systems for collaboration
 - o Learn from the work of others
 - Collaboratively address threats and identify opportunities for climate adaptation and GHG reductions
 - Strengthen relationships with Indigenous communities

Next Steps

The HCA's Climate Change Strategy should be considered a "living document" that provides direction to HCA staff in mitigating and adapting to climate change while allowing revisions as more information is available, specific targets are identified through our continued work and programs and projects being implemented. The key requirement at this time is Board of Director approval of the Climate Change Strategy to allow for the direction of the strategy to be initiated. A Climate Change Coordinator has been hired on a contract basis with the main priority and task of the position to guide HCA's efforts related to climate change and to focus on climate change strategy approval and implementation.

As part of this approach, a Climate Change Program Committee has been established. The Committee's purpose is to assist with the implementation of climate change actions listed within HCA's Climate Change Strategy. This committee is to provide support and guidance on projects that the Climate Change Coordinator undertakes in order to improve HCA's climate change action. This committee allows for collaboration and knowledge sharing across several departments at HCA so that the most up to date information and knowledge is known prior to project implementation.

Through the development of the Climate Change Strategy and work of the Climate Change Coordinator and committee, the following work priorities have been identified for 2023 upon approval of the Climate Change Strategy:

- Continued work on programs such as watershed monitoring (water quality, aquatic and terrestrial)
- Invasive species management and strategy
- Energy audits for HCA buildings
- Continued work to fully understand HCA GHG emissions and opportunities to reduce
- Pilot project development and funding for the installation of an electric vehicle charging station(s) and purchase of an electric vehicle. This will provide the

required understanding related to a program to transition to electric vehicles for the HVA fleet.

Progress on these initiatives and work priorities and budget allocations for 2024 will be reported to the Board of Directors in of 2023.

Corporate Climate Change Strategy – Condensed Version

The attached condensed version of HCA's Corporate Climate Change Strategy is a focussed version of the above noted parent document. The purpose of this document is to provide a condensed version of the strategy to the general public that highlights HCA's Climate Change Strategy going forward. This version provides the opportunity for a quick review of the strategy, and will be available on the HCA website, along with the full Corporate Climate Change Strategy.

STRATEGIC PLAN LINKAGE

HCA's Strategic Plan 2019 – 2023 outlines its major strategic priority areas and related initiatives for advancing HCA's Vision to provide a healthy watershed for everyone. HCA implements a wide variety of programs over these Strategic Priority Areas and the HCA Corporate Climate Change Strategy should be considered as an integral part of our programming and operations.

AGENCY COMMENTS

Comments on the strategy as it was developed were obtained from the City of Hamilton and the Bay Area Climate Change Council (BACCC). City of Hamilton and BACCC comments were supportive of the strategy. The City of Hamilton provided comments related carbon sequestration and sustainable procurement actions and the strategy reflects the comments received.

LEGAL/FINANCIAL IMPLICATIONS

Budget requirements for the Climate Change Strategy have been implemented in the 2023 approved budget for the Climate Change Coordinator position as well as funding for the building energy audits. Costs for each climate change action will vary and will be addressed on a year to year basis through our budgetary process and through funding applications as programs become available.

CONCLUSIONS

The priority for the HCA is the approval of the "Toward a Net-Zero Future: Hamilton Conservation Authority's Corporate Climate Change Strategy". The focus of this strategy is HCA's: Operations, environment and natural heritage, experience, education and awareness, and partnerships. Staff recommend that the Board of Directors approve the Climate Change Strategy and the associated condensed version. Progress on 2023 initiatives and work priorities and budget allocations for 2024 will be reported to the Board of Directors in 2023 as noted in the staff recommendation.

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Toward a Net-Zero Future

Hamilton Conservation Authority's Corporate Climate Change Strategy



A Healthy Watershed for Everyone

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1. Executive Summary

Since the industrial revolution, human activities have been increasing greenhouse gas (GHG) emissions in the atmosphere due to burning fossil fuels and land use changes. As a result of these activities, there has been an observed change in the Earth's climate, referred to as anthropogenic climate change. The Hamilton Conservation Authority (HCA) has a role to play in understanding climate change impacts within the conservation boundaries, and the adaptation and mitigation efforts required to help reduce them. The primary objective of this climate change strategy is to identify and provide suggestions for mitigation and adaptation actions were possible in order to reduce overall GHG emissions, resulting in HCA becoming completely net-zero in the future. In order to address climate change within HCA's jurisdiction, this document has compiled previous GHG emissions data from 2015 to present, in order to set benchmarking goals for emissions reductions. Additionally, solutions for carbon storage, energy usage, water management, wetland management, as well as invasive species, natural heritage and wildlife protection are explored. Education and monitoring are a large part of HCA's work, so this plan also sets out ways we can continue education around climate change internally and externally within the community. While this plan is a first step towards the implementation of climate change strategies, HCA will continue to document and monitor all climate change related work within the Conservation Authority. This document will lead further discussion to setting the mentioned climate change goals and benchmarking.

2. Glossary

Definitions obtained from the 2018: Annex I: Glossary report. Retrieved from https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Annexl_Glossary.pdf

Climate change: Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.

Greenhouse gases: Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the earth's surface, the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃) are the primary GHGs in the earth's atmosphere. Moreover, there are a number of entirely human-made GHGs in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances, dealt with under the Montreal Protocol. Beside CO₂, N₂O and CH₄, the Kyoto Protocol deals with the GHGs sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Mitigation (of climate change): A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt. **Carbon sink:** A reservoir (natural or human, in soil, ocean, and plants) where a greenhouse gas, an aerosol or a precursor of a greenhouse gas is stored.

Carbon sequestration: The process of storing carbon in a carbon pool.

3. Introduction

In the Province of Ontario, the Hamilton Conservation Authority (HCA) is one of 36 Conservation Authorities whose mandate includes addressing the impacts of flooding and erosion and managing natural resources on a watershed basis in partnership with member municipalities. This work also includes considering and addressing the effects of climate change at the watershed level. The HCA has a strong role to play in addressing these impacts of climate change. This role includes considerations relating to overall operations and how to reduce HCA's carbon footprint. Many of HCA's programs involve issues related to climate change mitigation and adaptation including:

- Flood forecasting and warning
- Dam operations
- Land use planning and regulations
- Aquatic and terrestrial monitoring
- Land stewardship
- Operation of conservation areas and education

The HCA owns over 11,000 acres of land within the watershed. These lands provide valuable functions such as protecting flood and erosion attenuation, water quality, providing habitats for a large variety of species, natural heritage protection, education, and recreation. These lands will need to be continually protected and monitored, as climate change poses threats such as rising temperatures, changing precipitation, extreme weather, and reduced biodiversity. Climate Change is a complex issue, and there will not be an easy solution. The solutions or suggestions in this document are both broad and comprehensive, and touch upon all aspects of the Hamilton Conservation Authority's operations and lands.

4. Background Information

Climate change affects us all and Hamilton is not immune to the effects it will have on the climate, economy, environment, and social issues. Since the Industrial Revolution in the 1800s, the average surface temperatures over Canada has increased at a fast rate, most recently scientists have observed an increase of 1.5°C from 1950 to 2010.¹ In the same timeframe, the average precipitation across the country has increased by approximately 13%.² The key driver of climate change and the temperature increases in parts of the world are greenhouse gases (GHG's). These gases cause what is known as "The Greenhouse Effect." The greenhouse effect is a natural process that occurs near the Earth's surface to help maintain a temperature range that allows for all life to be sustained. The greenhouse effect works by trapping outgoing radiation near the Earth's surface with GHG's.³ While this is a natural occurrence, increased concentrations of GHG's have been released into the atmosphere since the industrial revolution, creating what is known as the enhanced greenhouse effect, which is the main driver of climate change. The main GHG's driving climate change are water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂), and fluorinated gases (HFCs, PFCs, SF₆). Anthropogenic activities such as land use change and burning fossil fuels are the main contributor to the release of these gases.⁴ Increased concentrations of GHG emissions are having a significant impact on our climate, evidenced by the extreme weather events that Canada has experienced in the last few years, as record-breaking temperatures across Canada have been accompanied by wildfire seasons and floods.

Figures 1-4 are from an infographic created by the City of Hamilton from their most recent report on future climate projections in Hamilton, 2021. This infographic shows projections including annual mean temperature, seasonal mean temperature, temperature extremes, tropical nights, heatwaves, annual mean precipitation, seasonal mean precipitation, and precipitation events for the City of Hamilton for the years 2021-2050 and 2051-2080. These projections are compared to annual baseline values which is generally measurements from the period between 1975-2005.⁵

¹ Warren, F.J. and Lemmen, D.S., editors (2014). Canada in a changing climate: Sector perspectives on impacts and adaptation; Government of Canada, Ottawa, ON, p. 7

² Warren, F.J. and Lemmen, D.S., editors (2014): Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation; Government of Canada, Ottawa, ON, p.29

 ³ NASA. (n.d.). The Cause of Climate Change. Retrieved from https://climate.nasa.gov/causes/
⁴ Met Office. (n.d.). Retrieved from https://www.metoffice.gov.uk/weather/climate-change/causes-of-climate-change



Figure 1: Annual and seasonal mean temperature projections for the City of Hamilton for the years 2021-2050 and 2051-2080, along with the annual baseline.⁶

⁶ City of Hamilton. (2021). Future Climate Projections https://engage.hamilton.ca/16238/widgets/94095/documents/58708

HEATWAVES

Heatwaves are defined as three or more days in a row which reach or exceed 30°C. Sustained heat exposure can have significant impact on the health of individuals including heat stroke and even death.

In Hamilton, the length of an average heatwave is expected to increase.





by the year 2080.



Typically cooler nights can mitigate exposure to extreme heat, however, an increased number of tropical nights eliminates the possibility for relief and magnifies health risks, especially to vulnerable populations such as infants, older adults, and those who work outdoors.

Night-time temperatures above 20°C are expected to see a fivefold increase by 2080.



Figure 2: Climate projections for heatwaves, tropical nights, and temperatures extremes in the City of Hamilton for 2050 and 2080.⁷

⁷ City of Hamilton. (2021). Future Climate Projections

https://engage.hamilton.ca/16238/widgets/94095/documents/58708



*Figure 3:*Freeze-thaw cycles, annual mean precipitation, and seasonal mean precipitation climate projections for the City of Hamilton. Projections for 2021-2050 and 2051-2080 are included, along with the annual baseline measurements.⁸





The projections show that the annual mean temperature could increase by 4.2°C by 2080, heatwaves will go from being on average 3.8 days in length to 8.4 days, tropical nights are expected to increase by a fivefold, and we will begin to experience more hot days than cold days per year. Climate change in the region is also projected to impact precipitation with an increase in annual mean precipitation by 79 mm, as well as more intense and frequent precipitation events. Additionally, there will be a decrease in the number of days with freeze-thaw cycles. All of these changes will have negative impacts on the region's environment, infrastructure, and society.

The projected scenarios that comes to pass is dependent on our abilities to curb emissions. To achieve climate targets set out by the International Panel on Climate Change (IPCC) this will require significant GHG reductions to achieve netzero by the year 2050, in order to limit the increase of global temperatures by 1.5°C.¹⁰ Reductions are achievable to meet this transformation, as seen in the past when Ontario's emissions fell approximately 17% between 2007 and 2014, as a

⁸ City of Hamilton. (2021). Future Climate Projections

https://engage.hamilton.ca/16238/widgets/94095/documents/58708 ⁹ City of Hamilton. (2021).

¹⁰ IPCC. (2018). Special Report: Global Warming of 1.5°C: Summary for Policymakers. Retrieved from (https://www.ipcc.ch/sr15/chapter/spm/

result of phasing out coal fired electricity generators.¹¹ Getting to net-zero will require the same level of systems change across all sectors, from retrofitting buildings, to electrifying vehicles, phasing out natural gas, and investing in renewable energy. It is important for local organizations to provide a message of hope and positive action. Local governments and organizations need to begin adapting by taking steps to prepare for the existing and future impacts associated with a changing climate and leading by example.

The HCA recognizes the importance of the organizations mitigation actions to reduce the impacts on the local ecosystem and climate. However, the consequences of climate change are already being seen in Ontario and thus adaptation actions need to be considered and implemented in addition to preventative actions. The difference between climate change mitigation strategies and climate change adaptation is that mitigation is aimed at tackling the causes and minimising the possible impacts of climate change, whereas adaptation looks at how to reduce the negative effects it has and how to take advantage of any opportunities that arise.¹² This report will review HCA's actions for mitigation and adaptation to climate change, and the HCA's role in communicating the need for and taking action on climate change. It does not cover specific instructions on how to implement these actions, rather it outlines potential actions that should be considered.

5. Previous and Continuing Efforts

5.1.2012 Climate Change Strategy

In 2012 the HCA released their first Climate Change Strategy. This strategy included an overall goal and four major strategic directions (or strategies) that reflect the Authority's mandate and its focus on watershed health. These strategies included: Understand the problem, share information, integrate into existing policies, and develop new policies. The overall goal was "to increase the resiliency of our

¹¹ Harris, M., Beck, M. & Gerasimchuk, I. (2015). The End of Coal: Ontario's coal phase-out: IISD Report. Retrieved from https://www.iisd.org/system/files/publications/end-of-coal-ontario-coal-phase-out.pdf

¹² Iberdrola. (n.d.) Adapting to climate change: what will the Earth look like in 2030? Retrieved from https://www.iberdrola.com/environment/climate-change-mitigation-and-adaptation

watersheds, systems (natural and man-made) and communities to meet the challenge of climate change." One of the actions was to identify opportunities for HCA to corporately reduce GHG emissions and create a plan. This strategy influenced the HCA to further conduct the 2012 sustainability audit, the 2012 EcoStride Group report, and the 2016 Vulnerability Study.

5.2. Sustainability Audit

In 2012, a Sustainability Audit for the HCA Ancaster main office was conducted in collaboration with McMaster University. This audit identified areas of improvement which focused on four parts: staff transportation, fleet vehicles, redesigned parking lot, and solar panels. The first part involved a transportation survey and potential carpooling opportunities. Due to the isolated nature of the Ancaster office, carpooling would be difficult. Secondly, the cost of purchasing electric vehicles was analysed, and the results showed potential savings of \$5,500 a year from the transportation budget. Thirdly, the audit analysed aspects of greening the staff parking lot, including the use of permeable pavement and rain gardens. Lastly, the feasibility and affordability of solar panels were investigated. Some of these aspects were not deemed feasible at the time, however, sustainable technology has improved, and prices have lowered, so similar solutions may be available to be considered currently. Additionally, as the cost of fuel increases and carbon pricing is implemented, renewable energy projects may result in higher saving than what was previously calculated in 2012.

5.3. S-core Report

In 2012, the HCA commissioned the assistance of EcoStride Group, a local consulting firm, to conduct an analysis of HCA's operations and practices with respect to sustainability. Through the resulting report, it was identified that the HCA at the time was engaging in 64 sustainable practices, organized by EcoStride Group into 9 different areas and 29 themes. Under 26 of these themes and in all 9 areas, EcoStride Group submitted 46 Ideas for Action where HCA could improve its practices to move toward greater sustainability. These ideas consisted of suggesting to senior management that the HCA needs to create a strategy, formal policies and structures to embed sustainability in the culture and practices of the organization.

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Among sustainability, these categories included energy reduction, waste, office supplies, and transportation, amongst others. Their overall conclusion is that the HCA was only at the starting stage, but needed to build sustainability into the very core of the HCA to move forward and have a concrete plan to lead by example. The recommendations from EcoStride Group were analysed to include applicable recommendations into this strategy.

5.4. Vulnerability Study

The 2016 pilot study named "Environmental & Infrastructure Vulnerabilities to *Climate Change*" was completed by Matrix Solutions Inc. and partners. This study was completed within the Spencer Creek Watershed in Hamilton and focused on an in-depth analysis of the relationship of future climate temperature, precipitation, and hydrology/hydraulic characteristics to potential effects on riverine infrastructure (e.g., bridges) and four environmental features. It recommended adaptation measures to address the risks posed to the watershed by both current and future climate scenarios. It discussed how adaptation measures, such as changes to environmental policy/restoration planning, acceptable risk levels, environmental/infrastructure monitoring, emergency response, design guidelines, and operation and maintenance, may improve the ability of the City of Hamilton and the Conservation Authority in managing and protecting their infrastructure and environmental features. Further studies will need to be conducted to assess species individual resiliency and to collaborate with local organizations to share information. The data presented in that study was analysed to produce some of the recommendations featured in this strategy.

5.5. Sustainability Committee

The HCA has a sustainability committee comprised of staff, in which the purpose of the committee is to "*to promote and ensure that all internal operations and practices are as environmentally sound as possible, recognizing that we must aim to be a leader within our community and watershed.*" After the s-core report, the Sustainability Committee developed a work plan, which included an itemized list of HCA's current practices and the 46 Ideas for Action identified through the S-core Report. The Committee then highlighted the current practices and ideas for action

where HCA was identified in the report as being less than 50% toward reaching the industry benchmark for the associated theme. The sustainability committee proved to be a valuable resource in the HCA for implementing sustainability actions, as in the committee's third year of operation, HCA continued to take action on 80% of the recommended Ideas for Action in the Sustainability Committee work plan. The last sustainability monitoring report released by the committee was in 2015, although they continue to meet regularly. The continuation of these reports will be necessary to track the HCA's progress on reducing emissions, as the committee reports investigated utility data and how actions taken changed resource use. Without monitoring the year-to-year changes in data, it will be impossible to track if the HCA is on target to meet goals. One of their suggestions was "to adopt a long-term goal to use more renewable and sustainable fuel sources that can ultimately lead to significant cost advantages (i.e. natural gas, solar, wind, hybrid vehicles, etc.). As technology continues to grow and make alternative fuel sources available, adoption costs to implement them will continue to become more economically feasible. This mindset should be adopted for all HCA activities moving forward in order to achieve positive long term economic and environmental success". The sustainability committee's 2015 goal was to promote reducing the use of resources where possible, while not interfering with necessary activities, and to promote increasing efficiency where possible, in the hope that up to a 10% reduction in overall resource use may be possible. The goal was to reduce resource use by 10% of the baseline 5-year average within this next five-year period, 2015 to 2019. Analysing the utility data for 2005-2009 compared to 2015-2019 determined that there was not a 10% reduction, in fact, GHG emissions rose by 13%. The reasons for not meeting this goal should be analysed to prevent future targets from being missed. It is the intent that after the climate change strategy is completed this goal can be met within the next 5-year period, 2022-2026. The sustainability committee will be reviewing this document as an advisory committee and therefore implementation of the individual action items will be undertaken subject to Executive Team and Board of Directors approvals. The Committee will submit recommendations for ideas for action to be implemented to the Executive Team for consideration.

6. Partnerships

The HCA has long standing relationships with local organizations (Bay Area Restoration Council, Centre for Climate Change Management), conservation authorities, and The City of Hamilton. These relationships ensure that the flow of important information can be accessed and shared, thus ensuring the health of not only the HCA lands but the surrounding areas as well. Invasive species, along with other ecosystem health indicators can begin in other areas and move into HCA lands, which is why the sharing of information is vital so issues can be caught early. HCA should continue to work with stakeholders in regards to climate action within the conservation authority boundaries. It is important reach out to local Indigenous communities to discuss opportunities for knowledge sharing surrounding environmental implications within HCA's watershed.

6.1. The City of Hamilton

In 2019, Hamilton City Council declared a Climate Change Emergency and directed Staff to identify and investigate actions to achieve net-zero carbon emissions by 2050. After the City of Hamilton announced the goal of achieving net zero GHG emissions by 2050, the City released a document in 2020 named "*Low-Carbon Actions Catalogue*". This document, along with their website, detail some plans and actions The City of Hamilton plans to take to reach this goal. Their 9 Corporate Climate Change Goals are as follows:

Buildings: To increase the number of new and existing high-performance state-of-the-art buildings that improve energy efficiency and adapt to a changing climate.

Active and Sustainable Travel: To change the modal split and investigate strategies so that more trips are taken by active and sustainable transportation than single use occupancy vehicles.

Transportation: To accelerate the uptake of modes of transportation that are low and/or zero emissions.

Planning: To ensure a climate change lens is applied to all planning initiatives to encourage the use of best climate mitigation and adaptation practices.

Procurement: To procure goods, services and construction from vendors who conduct their business in a sustainable and ethical manner that considers equity, diversity and inclusion that contributes to the greater good of the community.

Protect and Restore the Natural Environment: To increase our carbon sinks and local food production through the preservation and enhancement of the natural environment, including local farmland.

Climate Adaptation: To improve Hamilton's climate resiliency by decreasing our vulnerability to extreme weather, minimizing future damages, take advantage of opportunities, and better recover from future damages.

Diversity, Health, and Inclusion: To ensure all our work promotes equity, diversity, health and inclusion and improves collaboration and consultation with all marginalized groups, including local Indigenous Peoples.

Education and Awareness: To increase the knowledge and empower City staff and the Hamilton community including business, non-governmental organizations (NGOs) and individual citizens while advocating to higher levels of government to take action on climate change.

As the City of Hamilton and the HCA work collaboratively, this document will point out where the HCA's actions closely relate to the City of Hamilton's actions and their 9 Corporate Climate Change Goals.¹³ The City of Hamilton has also created benchmarking goals to help them ensure they meet their 2050 net-zero target and

¹³ City of Hamilton. (2021). Climate Change Action. Retrieved from https://www.hamilton.ca/cityinitiatives/strategies-actions/climate-change-action

created a Corporate Climate Change Task Force. The HCA will work within its framework to complete climate change goals and many of these goals will relate to the City of Hamilton's goals and provide a net benefit to the climate and community.

6.2. Bay Area Climate Change Council

The Bay Area Climate Change Council (BACCC) is working with partners to cut carbon emissions in both Bay Area communities by 50% by the year 2030, and reach net-zero by 2050. BACCC has chosen to focus on three main areas: transportation, buildings, and industry. Their goals amongst these areas include improving low carbon modes of transportation like biking, walking, and public transit, supporting the successful implementation of home energy retrofit programs, using net-zero standards for new buildings, and reducing local industrial emissions without carbon leakage. While this is not our focus, the HCA is a member of BACCC, we support their goals and work with the committee to address climate change through our watershed management activities and the management of our conservation areas.

7. What is Net-Zero?

The concept of net-zero is a state in which the amount of GHG's released into the atmosphere is equal to the amount removed from the atmosphere. In the International Panel on Climate Change's report titled *"Climate Change 2021 The Physical Science Basis"* it states: "From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO₂ emissions, reaching at least net-zero CO₂ emissions, along with strong reductions in other greenhouse gas emissions." The Canadian Federal Government has pledged to be net-zero by 2050 along with over 120 countries.

To achieve net-zero, benchmarking utilities and GHG emissions in order to understand current usage and create a plan to reduce them is needed. These goals are typically broken into stages, or year goals (5-year, 10-year, 20-years) that focus on achieving small reductions at a time in categories such as transportation emissions, building sustainability, and human behaviour. The climate change opportunities below will help create future goals to reducing these emissions.

8. Benchmarking

Benchmarking is a critical component of any climate change strategy. Benchmarking can define key categories for GHG reductions, with an end goal potentially of net-zero. These benchmarks track key metrics over time, such as hydro, water, and propane use, and help to identify where the usage is coming from and how to reduce the associated GHG emissions. For example, to reduce fleet emissions, vehicle mileage was assessed, and compared with switching to electric. Energy audits will be needed to determine specific actions for utility data and to create specific benchmarking that is attainable.

When measuring and reporting on GHG emissions, the GHG protocol is used. The GHG protocol is a set of standards created for organizations to follow when reporting their GHG emissions. This protocol categorizes emissions into three categories: Scope 1, 2 and 3, also referred to as direct, indirect, and other indirect emissions, respectfully (see Table 1 for specific parameters). Scope 1 emissions are direct emissions that are produced by an organization, this includes building emissions (e.g., furnace, boilers), vehicles, and equipment. Scope 2 emissions are indirect emissions that the organization produces, this includes purchased electricity. Scope 3 emissions are more complex to calculate as they include all other indirect emissions produced by an organization through various types of activities such as the production and transportation of purchased goods, waste disposal, and employee travel.¹⁴ Under the GHG protocol, it is standard to report on Scope 1 and 2 emissions with Scope 3 being optional. However, it is increasingly becoming more important to report on scope 3 emissions, as often times, they are a large contributor to an organization's total GHG emissions. The HCA will calculate and report on Scope 1 and 2 emissions annually, with the potential to consider reporting on Scope 3 emissions in the future based on the scope of what is to be considered under that approach.

¹⁴ GHG Protocol. (n.d.). A Corporate Accounting and Reporting Standard. Retrieved from https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

Scope 1	Scope 2	Scope 3	
(Direct)	(Indirect)	(Other Indirect)	
- Company vehicles	- Purchased electricity	- Extraction & production of	
- Furnaces		purchased materials and fuel	
- Boilers		- Transportation of	
- On-site equipment		purchased materials and fuel	
		- Business travel	
		- Employees commute	
		- Waste disposal	
		- Use of sold products and	
		services	

Table 1: Reporting Requirements for Scope 1, 2, and 3 under the GHG Protocol.

Figure 6 displays HCA's emissions from 2005 to 2019, comprised of emissions data (hydro, natural gas, propane, gas, diesel, and furnace oil). While figure 7 shows the breakdown of HCA's emissions by fuel source. The pie graph shows that HCA's GHG emissions come predominately from fuel usage (gasoline and diesel), which is a result of HCA vehicle use and maintenance equipment.





Figure 6: HCA's GHG emissions for 2015-2019 breakdown by fuel type.

Goals will be established following this report to reduce HCA's emissions, based on the benchmarking start point of 2015-2019 (see table 2). The sections of the report that follow are potential actions that can be taken as mitigation and adaptation strategies.

Table 2: HCA's annual benchmarks	(data obtained from 20	15-2019).
----------------------------------	------------------------	-----------

Hydro	Natural Gas	Water	Propane	Diesel	Gas	Furnace Oil
1,295,508kWh	51,919m ³	19,339m ³	34,433L	60,422L	73,758L	17,143L

9. Carbon Storage

One thing that can be considered when looking at benchmarking GHG emissions is offsetting. Offsetting emissions involves using the natural carbon storing properties of forests and natural environments to reduce the net amount of GHG emissions of an organization. The HCA owns lands that act as an important mitigation tool for climate change. By having naturalized lands that are monitored and maintained, they are healthy carbon sequestration tools and wildlife havens. The
HCA aims to minimize the reliance on carbon storage on its lands as they are for the benefit of the community and to move towards net-zero emissions. As it stands currently, the approximate carbon storage of HCA lands exceeds that of its operational GHG emissions. Carbon sequestration rates were calculated by Mohawk Students in 2020. It is estimated that HCA's managed conservation areas have a combined carbon storage of 284,778 tCO₂/year. It is important to note that the carbon sequestration rates used within this project were determined through literature review, so they are not fully accurate for HCA conservation lands, and only provide an estimate for the amount of carbon sequestration. Calculating carbon sequestration of wetlands and forested areas is complex and generally requires field assessments. It is recommended that if HCA intents to use natural areas for carbon off-setting both internally and/or within the community, that a carbon sequestration inventory is conducted.

10. HCA Operations

As climate change is a complex issue, there is no one-size-fits-all approach. There are many categories of change needed to reduce emissions, and the section below will describe these. These are potential opportunities the HCA can undertake in the future, but in some cases more research and information is needed before action can be taken. From completing or investigating these opportunities, such as energy audits, target reductions can be identified and give more direction as more information leads the way to net-zero. This paper is a starting point to meaningful climate action.

The overall important message on climate change is to try and prevent it. The actions needed are called mitigation, which is done by reducing GHG emissions and by enhancing sinks that absorb GHG from the atmosphere. These actions include increasing the use of renewable energy, becoming more energy efficient, and increasing the health and size of natural lands that sequester carbon.

As climate change progresses, impacts will be seen on the natural environment. Climate change adaptation involves actions that help the natural environment adjust and thrive despite these impacts, such as temperature change and extreme weather. Ecosystems can adapt to climate change, a process that can be supported by human intervention. Protection and restoration of natural and seminatural areas helps build resilience, making it easier for ecosystems to adapt.

10.1. GHG Emissions

As mentioned previously, GHG emissions are the leading cause for climate change, which is why it is imperative to lessen emissions to reduce climate change impacts. The HCA has completed a review of the current GHG emissions resulting from the HCA's annual operations including hydro, fuel, furnace oil, natural gas, and propane. A plan will be formed to benchmark these emissions and to reduce them over a set amount of time. Data collected for HCA's emissions between 2015-2019 found that the average yearly emissions were equal to 569,262kgCO₂, which is the equivalent to the usage of 68 home's energy for one year.¹⁵ The HCA's top contributor to emissions are from gasoline and diesel. Therefore, an action that should be investigated is electrifying the vehicle fleet, which includes installing charges for the fleet. There are SUVs in the fleet that would be suitable to switch over to electric, with the potential savings of up to approximately \$5,000 on fuel per vehicle per year, as well as the emissions that go along with it (see table 1 in Appendix A). Installing electric vehicle chargers at the HCA's main office would also allow visitors to charge their electric vehicles while visiting the property. Maintenance equipment such as lawn mowers and trimmers could also be switched over to electric, saving fuel and limiting noise pollution. As natural gas is the second largest emitter in the HCA, all the furnaces should be investigated for age and efficiency, and replaced as needed. If possible, the use of geothermal heat pumps and/or air source heat pumps should be investigated as to completely replace natural gas furnaces.

Sustainable purchasing policies are a great way to help reduce emissions close to the beginning of the products life cycle. Sustainable purchasing policy, also referred to as sustainable procurement, are used to reduce an organizations carbon footprint while purchasing products. Sustainable purchasing ensures that an organization is making informed decisions and purchasing the most eco-friendly

¹⁵ EPA. (n.d.). Greenhouse Gas Equivalencies Calculator. Retrieved from https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

options.¹⁶ HCA should continue to use the sustainable purchasing policy that is in place to reduce supply chain emissions. The current policy states: "Where possible, the HCA will give preference to the purchase of goods, services and contractor/construction projects that minimize adverse environmental impacts and GHG emissions and that promote recycling, re-use and reduction of waste. Authorized Staff will review and modify existing procurement specifications, and create new specifications, to include environmentally and socially responsible options or criteria to be considered along with price and performance."

Mitigation Summary

- Switch from gas/diesel vehicles to electric
- Conduct energy audits for all HCA buildings while investigating furnace age and feasibility to replace with more energy efficient, on demand heating
- Switch over maintenance equipment to electric
- Review HCA's sustainable/environmentally preferable purchasing policy

10.2. Energy Usage

The HCA Authority owns several buildings spread out across all of the conservation areas, including the main office located in Ancaster. While not every location is suitable for solar power or renewable energy, the 2012 Sustainability Study determined that the main office roof would be suitable for solar panels. Further studies should be conducted at each location to determine the suitability and feasibility for solar power, in order to reduce reliance on the Ontario hydro grid, which has non-renewable energy sources (see figure 8¹⁷). In addition, an energy audit is essential to assessing the following:

- The current electrical and heating/cooling usage at each property
- Identifying conservation actions, such as fixing air drafts, using a more efficient air conditioner/furnace, or improving the insulation
- Retrofit older buildings to meet the more modern standards of sustainability

¹⁶ Green Business Bureau. (2021). What is a Green Procurement Policy? Retrieved from https://greenbusinessbureau.com/blog/what-is-a-green-procurement-policy/

¹⁷ Ontario Energy Board. (n.d.). Overview of energy sector. Retrieved from https://www.oeb.ca/aboutus/mission-and-mandate/ontarios-energy-sector

By making each building as efficient as possible, it will reduce the carbon footprint and save on operational costs. One method to consider to reduce building emissions is using LEED building standards. LEED stands for Leadership in Energy and Environmental Design and is the most widely-used green building rating system in the world.¹⁸ The advantage of using LEED is that it provides a method and standardization to sustainable buildings, and is a globally recognized achievement. The HCA could follow the LEED framework as a guide to making their buildings more sustainable. Although the HCA may not construct many buildings in the future, focus for new builds should be on achieving net-zero. Additionally, the BACCC released a Building Retrofitting cost-benefit analysis document that looks at the different forms of retrofits that can be undergone and their GHG emissions potential. It is recommended that HCA references BACCC's documents and suggestions when retrofitting any current and or future buildings.



Figure 7: 2020 Electricity Supply Mix for Ontario by fuel type.

Mitigation Summary

- Conduct energy audits on all HCA buildings
- Retrofit existing buildings (more efficient lighting, heating/cooling systems)
- Examine the feasibility of installing solar panels at the HCA main office

¹⁸ U.S. Green Building Standard. (n.d.) LEED rating system. Retrieved from https://www.usgbc.org/leed

- Use most efficient office equipment
- Consider LEED Standard's for future buildings

11. Environment and Natural Heritage

11.1. Water Management

In Ontario, climate change is anticipated to result in milder, shorter winters with earlier snowmelt, less ice cover on lakes, changing rainfall patterns, and increased evapotranspiration. It is important that the HCA's watershed is protected against the impacts of climate change. Monitoring is important as it can catch impacts before they become severe. Although this report will not go into an in-depth climate review, some research has already been completed as to precipitation changes in the HCA watershed. The data presented in Figure 8 shows a slight uptrend in average rainfall, although other graphs such as the amount of rain storms per year > 15 mm has been fairly flat since 1970.



Figure 8: 5-year average rainfall between 1965-2019 within the HCA. Data shows a slight increase in rainfall over the studied time frame.

The HCA has been involved with a water quality monitoring program in partnership with the Hamilton Harbour Remedial Action Plan (HHRAP), Ministry of the Environment, Conservation and Parks (MECP), and the City of Hamilton since the spring of 2014. The monitoring program has been adapted from a previous sampling program undertaken by the Royal Botanical Gardens (RBG) aimed at understanding conditions contributing to Cootes Paradise, which has been identified as an area of concern for the Hamilton Harbour Remedial Action Plan. From 2014 to 2017, the program was expanded further by adding more monitoring sites and automated samplers, along with extending the sampling season to year-round. The additional sampler locations allows HCA to better understand how land uses impact water quality during storm events. In 2018, additional monitoring emphasis along Chedoke Creek began with the addition of 4 new grab sample locations as well as one more on Ancaster Creek above the escarpment. The HCA conducted a vulnerability study of the Spencer Creek watershed and identified areas where it may be vulnerable to climate change effects, and this information was used to identify some mitigation and adaptation actions.

Logging does not take place generally on HCA lands and as such, erosion and runoff from this use is not an issue. However, the HCA has several parking lots and internal road systems that can increase runoff and erosion. These parking lots and roads are non-permeable and not only absorb heat, but can lead to pollution and contaminants flowing into the waterways. The benefits of building low-impact permeable parking lots and roads include water infiltration, flood mitigation, and ground water recharging. A permeable parking lot design for the HCA main office was detailed in the 2012 sustainability audit which included the use of rain gardens and a bioswale on the west side of the parking lot. Additionally, reducing the amount of clean water used for things such as public toilets can be accomplished by using rainwater capture systems in public washrooms.

One of the side effects of human development is ecosystem fragmentation and the creation of barriers to aquatic connectivity. These barriers include structures such as dams, weirs, bridge abutments, pedestrian walkways, roads and other natural barriers. Investigating potential barriers and their removal increases the resilience of aquatic ecosystems to climate change as barriers change river habitat, reduce habitat and population connectivity, and alter natural flow, temperature, sediment, and nutrient transport regimes.¹⁹ The HCA could investigate further

¹⁹ Wilkinson, J. et al. (2017). Environmental Markets and Stream Barrier Removal: An Exploration of Opportunities to Restore Freshwater Connectivity Through Existing Mitigation Programs. The Nature 27

remediation/restoration projects such as channel reconfiguration and meandering, reach-scale bank restoration, and construction of in-stream habitat structures, on HCA land where applicable.²⁰

As climate change progresses, so will the impacts to water and watershed management will have to adapt. These changes will include increased frequency of flooding events, changes in seasonal precipitation patterns, and changes in water chemistry as a result of increased water temperatures and changes in stream flows. All these changes can affect local wildlife and aquatic organisms, certain invasive species will flourish, or local species may decline. To understand how exactly flooding will affect HCA lands, completing more detailed and updated floodplain mapping will help educate property owners that they are on a floodplain and identify steps needed to take to reduce potential damage.

Along with increased flooding, we will see an increase in erosion and impact to stream flows, also referred to as critical flow. Critical flow is the speed of water flow that causes the movement of total suspended solids (TSS). TSS's cause contamination of streams/creeks/rivers and usually include silt, sand, microorganisms, plant or animal matter, and industrial wastes that remain suspended in the water column. Excessive amounts of TSS can negatively impact streams and rivers as it can transport phosphorus, decrease light penetration, and alter aquatic habitats. Increased TSS's will also be seen as a result of increased intense rain events.

As the global average temperature continues to increase, we will begin to see decreasing water levels in aquatic environments. Additionally, the average water temperature will increase resulting in unfavourable conditions for a variety of species, while welcoming new species. This includes an increase in algal production, which impacts the water chemistry similarly to TSS's, by altering sunlight and phosphorous levels within the water.²¹ It is projected that water temperatures will

Conservancy.: Arlington, Va. Retrieved from

https://www.nature.org/content/dam/tnc/nature/en/documents/2017_Stream_Barrier_Removal_and_M itigation_Report.pdf

²⁰ Wilkinson, J. et al. (2017).

²¹ Tomalty, R & Komorowski, B. (2011). Climate Change Adaptation: Ontario's Resilient Greenbelt. Retrieved from

increase in the spring and fall, which poses a threat to cold water species (e.g., Brooke Trout).²² Longer periods of warm water in lakes can result in longer periods of stratification in lakes. Lakes stratify when the warmer water stays near the top of the lake and the colder water stays near the bottom, resulting in less oxygen availability lower in the lake.²³ Increasing water temperatures will also have negative impacts on streams and other aquatic ecosystems. Monitoring will have to continue watching for these levels to understand the impacts and research will have to be done to understand how to adapt.

When planning for future development, focus should be directed towards lowimpact development which mimic natural water flow and reduce flooding. Additionally, continued efforts to educate property owners with riverbanks on their property about how they can play a part in reducing erosion is important.

Water Management Summary

- Continue monitoring efforts to catch climate change impacts proactively
- Consider the use of permeable parking lots
- Rainwater capture systems for public washrooms, rain gardens
- Investigate removing/assessing barriers to aquatic connectivity
- Assess impacts from previous floods and how to mitigate damage
- Use floodplain mapping (continue to finalize flood plain mapping for coverage throughout watershed) to educate homeowners they are on a floodplain and the steps they can take to reduce damage.
- Investigate ways to increase infiltration and reduce flow as a means to improve erosion, water quality, increased TSS, and increased levels of phosphorous as a result of climate change impacts.
- Continue to focus on utilizing the Permitting and Planning responsibilities to limit development within the floodplain.
- Encourage storm water management designs that account for climate change-influenced runoff.

²² Tomalty, R & Komorowski, B. (2011).

http://d3n8a8pro7vhmx.cloudfront.net/greenbelt/pages/41/attachments/original/1376571502/Climate_ Change_Adaption_Ontario's_Resilient_Greenbelt.pdf?1376571502

²³ Tomalty, R & Komorowski, B. (2011).

- Encourage low impact development
- Periodic reviews of operational strategies for Christie Lake dam (both for storm events and low water conditions).
- Periodic reviews of the precipitation thresholds expected to result in High Water or Significant Flooding (as required due to future changes in general rainfall intensities).

11.2. Wetland Management

Mitigation

Wetlands are important ecosystems for combating climate change, but also one of the most vulnerable. Wetlands are particularly vulnerable to changes in hydrology as they exist between fully aquatic and fully terrestrial ecosystems. Intermittent streams and small, isolated wetlands are likely to be particularly vulnerable due to changes in the timing and volumes of spring peak flows.²⁴ As temperatures increase, wetlands will decrease in size, or dry up altogether. As storms increase and wetlands experience increased runoff, the ecosystem will be altered and so will the relationship between these wetlands and their plant and animal species. Without wetlands operating at full health, they cannot provide natural services like maintaining shoreline integrity, reducing erosion, filtering contaminants, and providing fish and wildlife habitats.²⁵ Keeping wetland areas healthy helps mitigate climate change by acting as a carbon sink (reduces GHG concentrations), regulating temperature, slowing the impacts of drought, and reducing flood risks (water permeation). In addition to acting as a carbon store, wetlands contain a large amount of methane gas, which is a potent GHG. The loss of wetlands result in the release of stored methane, thus contributing to increased concentrations in the atmosphere.

Losses of native species, particularly at the southern end of their ranges, and increases in species at the northern end of their ranges, may be common.

²⁴ Wisconsin wetlands Association. (2018). How will wetlands be affected by climate change? Retrieved from https://www.wisconsinwetlands.org/updates/how-will-wetlands-be-affected-by-climatechange/

²⁵ Natural Resources Conservation Policy Branch. (2017). Archived – Wetland conservation strategy. Retrieved from https://www.ontario.ca/page/wetland-conservation-strategy

Opportunistic, easily adaptable, and invasive species, pests, and diseases will take advantage of these changes and will increase. Addressing and identifying these threats as changes occur will be key to improving wetland health. While wetlands cover only 6% of the world's land surface, they store approximately 20-30% of the global soil carbon.²⁶ As many wetlands in Ontario have been drained historically for farmland, more wetlands should be created and existing ones protected. Ongoing monitoring and research will have to be done to assess threats to wetlands and effective strategies to mitigate these impacts.

Mitigation Summary

- Investigate opportunities for new development to integrate measures to enhance, reclaim or create wetlands.
- Identify resilient, native species to target for restoration, address fragmented corridors, consider how ecosystems will move, and restore floodplain natural areas.
- Continue to investigate current and emerging threats to wetland
- Use lessons learned from Saltfleet Conservation Authority to create new wetland areas.

Adaptation

The question is, as the climate changes, how can we help wetlands adapt? There is no one-size-fits-all approach, as each local climate and ecosystem varies, and even factors such as land-use changes over time will have a significant effect on the way the carbon is stored and the wetland functions. Impaired wetland function will negatively affect critical functions and ecosystem services such as carbon storage, biodiversity support, wildlife habitat, and water quality.²⁷ The key for wetland climate change adaptation is understanding how climate change will impact wetlands and tailoring the solutions to each location. As they are such an important carbon store, it is important to prevent them from drying and releasing their carbon to the

²⁶ Nahlik, A., & Fennessy, M. (2016). Carbon storage in US wetlands. *Nat Commun* **7**, 13835. https://doi.org/10.1038/ncomms13835

²⁷ Moomaw, W.R., Chmura, G.L., Davies, G.T. *et al.* (2018). Wetlands in a Changing Climate: Science, Policy and Management. *Wetlands* 38, 183–205. https://doi.org/10.1007/s13157-018-1023-8

atmosphere. The best way to do this is monitoring and research, which is covered in the sections below.

Wetlands also aid in reducing urban flooding during increased rain and ice melting events. It is important to maintain the integrity of wetland health to help aid in flood reduction within the watershed. HCA has begun construction on the Saltfleet Conservation Area, which will consist of four man-made wetlands. This project was created to help manage urban flooding within the area, as well as provide habitat for wildlife and recreational use for the community. The Saltfleet project is a great example of how creating wetlands can be used to adapt to increased urban flooding, while also helping to promote and protect biodiversity.

Adaptation Summary

- Control drainage of wetlands to prevent oxidation of wetland soils and the resulting releases of carbon into the atmosphere.
- Gather and summarize research information and potential options to minimize impacts of climate change on wetlands.
- Encourage integration of wetland restoration/creation/management into local adaptation plans. Collaborate with local planners to provide information regarding the importance of wetland systems, and potential for no-regrets wetland strategies for nonpoint source and climate management.
- Use Saltfleet Conservation Area as an example of how man-made wetlands can be used as an adaptation strategy for flood management.

11.3. Carbon Sequestration

Mitigation

As stated previously, in order for an organization to become net-zero, the amount of GHG's emitted by such an organization must equal the amount that is being sequestered and/or off-set. Although offsetting and tree planting is beneficial, reducing the GHG's emitted should take a higher priority. The HCA owns 5,200 acres of forests, 2,940 acres of wetlands, and 3,000 acres of other types of land. All these lands act as carbon stores, which help remove excess CO₂ from the atmosphere. Future work should continue to maintain the health of these lands, and

to look for opportunities to purchase more land and create/restore wetlands. Maintaining and enhancing the forests by promoting management techniques that create a sustainable healthy forest that will be resilient to potential impacts from climate change.

Mitigation Summary

- Create more wetlands to act as carbon sinks
- Increase forest and prairie cover (also reduces erosion, moderate water flow)

11.4. Invasive Species

Adaptation

The HCA has always been a champion of monitoring and controlling invasive species, while also collaborating with local organizations to ensure information sharing. The HCA released an invasive species strategy in 2016 which outlines HCA's seven strategies, which are focused on prevention, communication, best management practices, prioritization, implementation, collaboration and research and monitoring. Additionally, the HCA's strategic plan for 2019-2023 outlines actions for natural heritage preservation which includes "[implementing] the approved Invasive Species Strategy and natural heritage plans as detailed in HCA master plans". These master plans are specific for conservation lands and underline the Natural Areas Inventories which include all the flora/fauna/aguatic life, and conservation area management such as land and water management. As previous and continuing efforts to control and manage invasive species are extensive, recommendations include continuing these efforts, and monitoring for climate change related impacts. Species like phragmites are disrupting Ontario's sensitive wetland ecosystems and impacting at least 25 percent of Ontario's species at risk. If monitoring continues and expands, any invasive species that migrate due to climate change can hopefully be mitigated and caught early.

One challenge of climate change adaptation is knowing in advance what changes will happen before they happen. Each conservation area can have unique plant and animal species that each react differently to climate change. A 2020 study that looked at the projection of alien species talks about these challenges, stating "Biological invasions have steadily increased over recent centuries."²⁸ However, we still lack a clear expectation about future trends in alien species numbers. In particular, we do not know whether alien species will continue to accumulate in regional floras and faunas, or whether the pace of accumulation will decrease due to the depletion of native source pools. This study predicts that the number of established alien species will increase by 36% between 2005 and 2050.²⁹ The HCA is already doing monitoring and identifying, and needs to continue to maintain these as high priorities. Conservation areas will need to be prioritized based on their vulnerability and invasive species, and proactive measures that support early warning and eliminating alien species before they become invasive.

Adaptation Summary

- Continue phragmites control and boost efforts to eradicate
- Continue HCA efforts to create action plan for each HCA conservation area
- Continue efforts to complete invasive species mapping and implement an updating schedule to ensure mapping is current and accurate.
- Research into preventative invasive species actions (e.g., install wash stations, boot stations)
- Conduct regular invasive species monitoring to assess species movement due to climate change.
- Add more ecological monitoring and assessment network (EMAN) plots to cover a wider area
- Assess all new land purchases for invasive species
- Use Natural Areas Inventories results to understand how the invasive species will react to climate change and how their territory will move or expand (e.g., Spongey Moths, Beech Scale).
- Continue actions under the invasive species strategy
- Increase educational signage about invasive species in parks

 ²⁸ Seebens, H, Bacher, S, Blackburn, TM, et al. (2021). Projecting the continental accumulation of alien species through to 2050. *Glob Change Biol.* 27: 970– 982. https://doi.org/10.1111/gcb.15333
 ²⁹ Seebens, H, Bacher, S, Blackburn, TM, et al. (2021).

11.5. Protection of Wildlife

Adaptation

With climate change, comes a threat to species biodiversity. In fact, the HCA falls within the Lake Erie Lowlands ecoregion, which was identified as a "crisis ecoregion" by a 2020 study that examined each ecoregion in Southern Canada based on their biodiversity and threat level.³⁰ It was found that the land within the Lake Erie Lowlands has a high level of biodiversity, but a low level of conservation efforts, thus having a high level of threat for biodiversity loss.³¹ Mitigating these threats will have to become the heart of environmental management strategies, along with utilizing the most up to date science and technology. Understanding the precise actions to take will be difficult, in which it is vital to collaborate with local partners to share information and techniques to ensure thoroughness. Previous studies have been done by the HCA (The Vulnerability Study) which assessed which species in the HCA lands will be most susceptible to climate change. However, the individual resilience of these species cannot be fully understood and repeating this study in the future will ensure this list is up to date. Strengthening the habitats of the species and eliminating potential points of vulnerability will assist species in becoming more resilient to climate change. For example, creating more pollinator gardens and adding beehives on HCA property will help essential pollinator health. Mohawk College and The City of Hamilton have both implemented beehives. Over one third of the human diet comes directly or indirectly from insect-pollinated plants, and about 80 percent of wild, flowering plant species would not exist without pollination. Climate Change may affect the foraging behaviour of pollinators as well as the attractiveness of plants. Upon further monitoring, other specific species actions will become apparent, both for mitigation and adaptation. Species most vulnerable to climate change usually have small ranges and population sizes and live in areas that are isolated. If Hamilton undergoes severe warming, the risk of wildfires may increase. Additionally, as climate change shifts the ranges of ecological

 ³⁰ Kraus, D. & Hebb, A. (2020). Southern Canada's crisis ecoregions: identifying the most significant and threated places for biodiversity and conservation. *Biodivers Cobserv 29,* 3573-3590. https://doi.org/10.1007/s10531-020-02038-x
 ³¹ Kraus, D. & Hebb, A. (2020).

³⁵

zones, planting species that are already adapted to a warmer climate will be beneficial to a thriving ecosystem.

Living species have a remarkable ability to adapt to change. However, as we continue to see record breaking temperatures, evolution and resiliency may not be able to keep up, and human intervention may be needed. This help may be in the form of assisted migration, as suitable habitats and ecosystems shift with changing conditions. For example, terrestrial ecologists will want to plant what will be able to survive under future conditions. Assisted migration projects are occurring across Ontario by different organizations including the planting of six different hardwood species from varying distances in Claremont Ontario, lead by Natural Resources Canada.³² The Upper Thames River Conservation Authority is also using assisted migration of Bur Oak trees.³³ Many of the assisted migration projections being undergone in Ontario are for research purposes in order to better understand how this technique can be used as an adaptation measure in the future.

As current habitats become unsuitable for some species, it is important to maintain habitat connectivity to facilitate movement between climate refuges to allow them to colonize new areas. Protecting and enhancing ecological connectivity will become increasingly important as the climate continues to change. The northern portion of Beverly Swamp consists primarily of white cedar and tamarack coniferous swamp, whereas the southern portion consists primarily of silver maple deciduous swamp. The predicted climate change impacts may induce a shift in the boundary between these life zones, as conditions would be preferable for the deciduous forest zone.

³² Natural Resources Canada. (2020). Assisted Migration. Retrieved from

https://www.nrcan.gc.ca/climate-change-adapting-impacts-and-reducing-emissions/climate-change-impacts-forests/adaptation/assisted-migration/13121

³³ Forest Gene Conservation Association. (n.d.). Assisted Migration. Retrieved from https://fgca.net/climate-change/assisted-migration/

Adaptation Summary

- Increase pollinator gardens, add beehives
- Assess conservation actions of vulnerable species identified in HCA Vulnerability Study [Limit sportfishing of vulnerable species (e.g., northern pike, largemouth bass) and encourage fishing/removal of invasive species (e.g., Asian carp)].
- Redo vulnerability study in the future to re-assess.
- Follow the 50-year plan recommendations and take conservation actions in Dundas Valley to protect against climate change impacts.
- Protect and enhance the Valley's Ecology and Natural Areas
- Maintain and protect the Valley's cultural heritage and historical features
- Promote sustainable passive recreational opportunities within the Valley's Green Spaces
- Ensure conservation area facilities are accessible and convenient
- Consider the use of assisted migration of plant species as temperatures increase
- Understand how tree and plant species will react to climate change, how can we react and help?
- Understand how animal and aquatic species will react to climate change
- Work with partners to increase the biodiversity of urban/rural wildlife habitats to adapt to shifts in the timing of life cycle events and other climate impacts.

11.6. Monitoring Programs

In the 2012 Hamilton Conservation Authority's Climate Change Strategy, it discusses future climate change impacts; "To adapt to these changes, we need first to recognize when they are occurring or are likely to occur and what the magnitude of the changes will be. This requires a robust water and climate change monitoring network and up-to-date forecasting tools." The HCA throughout its history has always made monitoring a priority. Additionally, the HCA practices the principle of adaptive management, which will allow plans and actions to be guided by information obtained over time through environmental monitoring. This is key to climate change monitoring and subsequent actions, as ecosystems and their constituents slowly experience climate change impacts over the upcoming decades.

The types of monitoring and the depth involved will change. Additional new types of monitoring may have to be considered, such as soil moisture monitoring. Important applications of soil moisture information include forecasting of weather and climate variability, projection and monitoring of drought conditions, management and allocation of water resources, or monitoring of ecosystem response to climate change, to name just a few. As increased rainfall is possible in the Hamilton area, erosion monitoring will have to be undertaken or continued (done by The City of Hamilton in cooperation with HCA) to assess the impacts and how to mitigate them. Long term monitoring programs should continue and expand to cover more HCA land, and the monitoring results will have to be carefully examined so as to not miss any impacts of climate change.

Monitoring Programs Summary

- Need to maintain HCA regulations and planning program as it relates to natural hazards and the impact of climate change
- City of Hamilton erosion monitoring: assess where it is getting worse and what can be done.
- Enhance HCA erosion and sediment control initiatives to consider climate impacts
- Soil moisture monitoring
- How will increased CO₂ levels affect local species and water bodies (Undertake research to further understand the impacts of climate change on aquatic communities).
- Monitor the spread of damaging pests and species
- Increasing temperatures and drought can cause gaps in the forest canopy, impacting soil conditions, and potentially moving in invasive species there that can survive. Create monitoring program to assess forest health continually and plant to fill in these gaps.
- Enhanced long-term water resources and environmental monitoring programs will allow for hydrologic and environmental changes to be observed and identified as they occur.
- Enhanced predictive modelling for species vulnerability

12. Experience, Education and Awareness

12.1. Conservation Area Experience

Tourism season may be prolonged as the spring and fall seasons become milder, and with that comes different management expectations of both the environment and people. Increased frequency, duration, and intensity of rainfall events will influence trail erosion on HCA lands and will impact trail maintenance. Trails will need to be evaluated to determine what best management practice should be used, including possible trail closures. Predicted lower spring and summer flows and warmer temperatures during the summer months have the potential to affect recreational activities at Christie Reservoir. While less ice cover on lakes³⁴ during the winter months may impact winter tourism at Valen's Lake. Nutrient loading in lower flow conditions and warmer water temperatures may create conditions favourable for bacterial and algal growth that could result in swimming restrictions and beach closures. The maintenance of sufficient water levels for swimming and boating activities may also be affected by greater requirements for the reservoir to increasingly augment downstream flows.

Conservation Area Experience Summary

- Plan for a longer tourist season, due to longer warm periods (may have to keep water at recreational levels longer, longer camping season, etc.).
- Increased staff resources may be required to address clean-up from damaging storms, fire or insect and disease damage, an extended growing season (e.g., additional grass cutting), and invasive species control.
- Enhanced Marketing and communications to alert of impacts for closed areas following storm damage, fire bans, low reservoir water levels for recreation use, closed beaches due to poor water quality, unsafe ice conditions etc.
- Increased capital resources may be required to address storm and erosion damage to trails, bridges, parking lots, roads and other infrastructure and facilities.

³⁴ Woolway, R., Sharma, S., & Smol, J. (2022). Lakes in Hot Water: The Impacts of a Changing Climate on Aquatic Ecosystems. *BioScience*. https://doi.org/10.1093/biosci/biac052

 Update and revise safe working procedures for staff to address working in heat, tick safety, inclement weather and any other climate change risks identified.

12.2. Education and Awareness

Although the HCA does not conduct in-depth science research itself on climate change impacts, conducting regular review of other's research will ensure that their information is up to date. Educating visitors to HCA lands will become more important as climate change impacts become visible. Education can be done through increased signage about invasive species and ecology changes in the parks, or through social media campaigns. This is the role of the stewardship program and HCA education program.

With changes in the local climate, the HCA may begin to see increased vectorborne diseases and threats to human health. The HCA works to spread awareness within the community and to conservation land users about ticks and mosquitoes and how to best protect yourself from these risks. It is important that the HCA continues to make use of educational mediums including blog posts and effective signage throughout the conservation areas.

Education and Awareness Summary

- Identify opportunities for using nature-based solutions for climate adaptation and GHG reductions, in collaboration with partners.
- Increase signage to educate visitors on invasive species and ecological changes in parks
- Use social media campaigns to educate the public

13. Measuring Success and Continual Learning

In order to ensure climate change goals are being met, milestone goals should be created. These goals can be on time frames of 1, 5 or 10 years, and mark specific goals to be accomplished, such as GHG reductions or renewable energy targets. These goals should be built into the next strategic plan for the HCA. Along with creating benchmark goals, policy and monitoring programs should also have a timeline for review, as new information is discovered. Additionally, climate change

policy and reports should be a priority for the HCA, so all departments are a part of the plan and knowledge. Along with involving all aspects of the HCA and departments, regular meetings and workshops should be held for staff to obtain feedback and educate staff on impacts of climate change on HCA lands.

Measuring Success and Continual Learning Summary

- Review policies, guidelines, programs and strategies on a five-year basis to incorporate new climate change science and information to reduce risk and liability
 - Energy and waste audits will be conducted to identify potential efficiencies, justify improvements and measure effectiveness of policies and practices. These audits will also determine a baseline to measure against and timelines in which changes are to be made. The audits could be part of an HCA Climate Change Strategy annual report.
- Develop and implement tools and approaches for integrating climate change knowledge into the assessment, stewardship and management of species, ecosystems, and natural resources.
- Work towards net-zero carbon emissions over a specific timeframe that will be determined based on further data collection and benchmarking.
- Create cross-jurisdictional partnerships to identify emerging trends requiring proactive adaptation action.
- Develop and report performance measures for climate change programs recognizing that environmental action today translates to long-term benefits.
- Set ongoing targets for energy and GHG emission reductions
- Undergo annual review of new research, biodiversity reports, invasive species, and climate change reports.
- Create a template for annual sustainability reports, measuring effort and giving suggestions for future effort
- Create staff feedback form for adopting programs to climate change

14. Conclusion

As humans continue to burn fossil fuels and make land use change, climate change is worsening and impacting communities all over the world, including Hamilton, Ontario. As an active member in the community, HCA has a responsibility to address climate change impacts within the conservation boundaries, and take action in order to help mitigate and adapt to these impacts. This Climate Change Strategy has highlighted the work that HCA has done thus far, while also highlighting recommendations for work that can be done going forward to help get HCA properties to net-zero. Recommendations in this report look at mitigation and adaptation opportunities for HCA's energy usage, water management, wetland management, invasive species, carbon sequestration, and the protection of wildlife. Additionally, ways in which HCA can continue to use pre-existing monitoring programs partnerships and educational programs to help work together on tackling climate change. It is more important than ever to implement climate action into our everyday lives and organizations, and if we all work together, GHG emissions reductions can be achieved.

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16. Appendices

16.1. Appendix A – 2018 Data for Kms and fuel for HCA Vehicles

Sample Calculations down below, GHG % reductions are based on the 2015-2019 yearly baseline for GAS emissions only. Note that Km and fuel data does not exist prior to 2018.

Vehicle	Designed Fuel Economy	Actual Fuel Economy	Km and Fuel (L) for 2018	Fuel costs (\$1.20/L)	Annual Electricity cost*	Money and GHG saved if electric (per year)
Chevrolet Silverado (E417) 2011	18.8L/ 100km	21.02L/10 0km	22,645km with 4762L	\$5,714	\$667	\$5,047 on fuel 12,857kg of CO ₂ (109.95kg of CO ₂ from electric) 6.4% gas GHG
Chevrolet EXP (E430) 2003	16.7L/100k m	20.4L/100 km	5,465km, 1115L	\$1,338	\$161	\$1,177 on fuel 3,010kg of CO ₂ (26.53kg of CO ₂ from electric) 1.41% GHG from gas
Ford Escape (E403) 2014	6.2L/100 km	9.57L/100 km	15,412km, 1,476L	\$1,771	\$454	\$1,317 on fuel 3,985kg of CO ₂ (74.83kg of CO ₂ from electric) 1.86% GHG from gas
Chevrolet Silverado (E434) 2012	13.84L/ 100km	15.3L/100 km	18,745km, 2,866L	\$3,439	\$552	\$2,887 on fuel, 7,738kg of CO ₂ , (91.01kg of CO ₂ from electric) 3.6% on GHG from gas
GMC Sierra (E411) 2012	13.84L/ 100km	16.6L/100 km	16,798km, 2,784L	\$3,340	\$495	\$2,845 on fuel, 75,16kg of CO ₂ , (81.56kg of CO ₂ from electric) 3.5% on GHG from gas

Vehicle	Designed Fuel Economy	Actual Fuel Economy	Km and Fuel (L) for 2018	Fuel costs (\$1.20/L)	Annual Electricity cost*	Money and GHG saved if electric (per year)
Chevrolet Colorado (E421) 2011	13L/100km	12.3L/100 km	1,3511km, 1,674L	\$2,008	\$398	\$1,610 on fuel, 4,519kg of CO ₂ , (65.60kg of CO ₂ from electric) 2.1% on GHG from gas

* Based on the assumption that an electric vehicle has a range of 415km/charge

Toward a Net-Zero Future Corporate Climate Change Strategy: An Overview

6.0.8



Hamilton Conservation Authority

A Healthy Watershed for Everyone

Introduction

Toward a net-zero future - in our operations and on our lands

Becoming net zero is the ultimate goal of the Hamilton Conservation Authority. Our *Corporate Climate Change Strategy* is a guiding document and the next important step in that journey.

Our role is critical as environmental leaders – not only for the natural heritage we oversee, but for the communities we serve and for society as a whole.

This strategy, and the actions within, respond to the fundamental question:

What more can the HCA do to reduce our footprint and adapt to the realities of climate change in the way we work and how we conserve our lands?

Climate Change: A global problem with local impacts

The impacts of climate change are being felt across the globe and in our communities. Due to increasing greenhouse gas (GHG) emissions, we see raging wildfires, devastating floods, extreme rainfalls, rising temperatures, and more. Right here in our own watershed, we have experienced periods of prolonged droughts, increased flooding, and erosion.

The City of Hamilton projects annual average temperatures could increase by more than 4°C by 2080 and the amount of rain in a five-minute downpour is projected to increase by 10%. These changes will have real and lasting impacts we have to mitigate or be ready for.



HCA's role

The mandates of Ontario's conservation authorities are directly related to addressing and adapting to climate change. That's why what we do everyday at the HCA to achieve our vision of *a healthy watershed for everyone* means we need to strive to be local leaders in how we operate and reduce our carbon footprint. Our programs and services include:

- Flood forecasting and warning
- Dam operations
- Land use planning and regulations
- Aquatic and terrestrial monitoring
- Land stewardship
- Operation of conservation areas and education

The HCA owns and manages 11,000 acres, 6 major creek systems, 11 significant wetland complexes and has identified more than 1,000 species of plants and animals. **Net zero means** the amount of greenhouse gasses released into the atmosphere is equal to the amount removed from the atmosphere.

Where we've been: Progress since 2012

The overall important message on climate change is to try and prevent it. The HCA has not been standing still. We developed our first strategy in 2012 to increase the resiliency of our watershed, systems, and operations.

What we learned then was that the HCA was at a starting point. We needed to build sustainability into the core of our operations, gather more robust data and strengthen partnerships with other local organizations working to achieve similar goals.

Since developing the 2012 strategy, we've conducted audits and assessments of our office, operations, and practices with respect to sustainability. We increased our monitoring, planting, and stormwater diversion. We enhanced our work with the City of Hamilton and the Bay Area Climate Change Council (BACCC). We also established an internal Sustainability Committee to help reduce our footprint. Now, we are taking steps to build on what we learned and continuously do better.

Rising to meet the challenge: HCA's *Corporate Climate Change Strategy*

Looking ahead: guiding decision-making practically and realistically

HCA's *Corporate Climate Change Strategy* document continues the work we started in 2012. It lays out the next steps we will take on the road to becoming net zero.

Addressing climate change is complex. There are no easy solutions and no quick fixes. This strategy is a guiding document. It will inform decision-making and future budgets in ways that move us closer to our net-zero goal practically and realistically.

Our strategy is based on three overarching approaches:



Monitoring and data collection is a focus on the areas where we need more information to set specific targets (e.g., GHG inventory, utilities tracking, etc.). Once we have effective data, we can then set targets and move to develop and implement the next steps of mitigation and adaptation.

- **Mitigation strategies** are actions that reduce greenhouse gas emissions with the goal to make the impacts of climate change less severe (e.g., retrofitting buildings, using electric vehicles).
- Adaptation strategies include measures to help reduce the impacts of climate change for our natural environment as well as for our community, visitors and staff (e.g., introducing climate-resilient species, enhancing wetlands).

Four key areas of focus

HCA's Corporate Climate Change Strategy focuses on our operations and land management practices to reduce our energy use and implement more sustainable practices in four overarching areas under our control:





HCA Operations

GREENHOUSE GAS (GHG) EMISSIONS

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Reduce emissions Increase the amount of	 Establish ongoing monitoring and data reporting practices 			
available data • Achieve cost savings	Conduct energy audits			
 Promote eco-friendly solutions within our buildings, fleet, and operations 	Set specific targets to reduce emissions			
	Review HCA's sustainable/environmentally preferable purchasing policy		•	

ENERGY USE

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Increase use of renewable energy Make our buildings as energy efficient as possible Actively reduce our use of energy 	 Conduct feasibility studies to use alternative sources of energy (such as solar panels) 			
	 Retrofit buildings to meet modern standards of sustainability 			
	Consider LEED standards for future buildings			
	• Implement sustainable practices throughout HCA's buildings (adjust thermostats, turn off computer monitors, etc.)			
	• Switch to electric-powered vehicles and maintenance equipment			



WATER MANAGEMENT

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Increase access to data for decision-making purposes 	• Continue to enhance monitoring efforts to better understand/anticipate climate change impacts			•
Better understand how land uses impact water quality during storm events	• Plan for permeable parking lots and rain gardens			
 Reduce water runoff, contamination, soil erosion, and other impacts of climate change on water systems 	 Create rainwater capture systems to provide water for public washrooms 			
	• Assess impacts from previous floods and how to			
 Reduce flooding and its impacts on lands, communities, and infrastructure 	miligale damage			
	 Create flood forecasting plans and conduct permit reviews 			

WETLAND MANAGEMENT

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
• Identify threats to wetlands and make it easier for ecosystems to adapt to climate change	 Investigate opportunities to enhance, reclaim, or create wetlands 			
	 Identify resilient native species to target for restoration 			
	Restore floodplain natural areas			
	Control drainage of wetlands			
	• Encourage integration of wetland restoration, creation, and management into local adaptation plans			

CARBON SEQUESTRATION

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Increase natural carbon stores which help remove excess CO₂ from the atmosphere 	• Create more wetlands to act as carbon sinks			
	 Increase forest and prairie cover, which also reduces erosion and moderates water flow 			
	• Look for opportunities to purchase more land and create or restore wetlands			

INVASIVE SPECIES

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Research and monitor invasive species 	Create action plans for each conservation area			
 Implement best practices in preventing their spread Communicate trends and impacts of invasive species locally Collaborate with patters 	Continue invasive species mapping			
	• Research preventive invasive species actions,			
	such as installing wash stations or boot stations			
	 Understand how invasive species will react to 			
	climate change			
partners	Increase education about invasive species in parks			

PROTECTION OF WILDLIFE

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
Mitigate threats to biodiversity	Increase pollinator gardens, add beehives			
Better understand	• Use assisted migration of plant species			
assisted migration • Increase pollinator health	• Assess conservation actions such as limiting sportfishing of vulnerable species and encouraging the fishing of invasive species like the Asian carp	•		•
	• Understand how plants and animals will react to climate change, and how we can react and help			

MONITORING PROGRAMS

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Expand long-term monitoring programs Increase the HCA's 	 Maintain HCA regulations and planning program as it relates to natural hazards and climate change implications 	•		
ability to: forecast and plan proactively related	• Enhance HCA erosion and sediment control initiatives			
to weather and climate variability; project and monitor drought conditions, and manage and allocate water resources	• Consider new monitoring programs such as soil moisture monitoring and forest health monitoring			
	 Research how increased CO₂ levels will affect local species and water bodies 	•		
	• Monitor the spread of damaging pests and species			



CONSERVATION AREA EXPERIENCE

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Maintain HCA regulations and planning program as it relates to natural hazards and climate change implications 	• Plan for a longer tourist season			
	 Increase staff resources to address clean-up from damaging storms, an extended growing season, and invasive species control 			•
 Anticipate and respond to operational impacts due to climate change 	• Maintain water levels for swimming and boating			
Protect staff and visitor safety	 Increase capital resources to address storm and erosion damage to trails, bridges, parking lots, roads, etc. 			•
	 Update and revise safe working procedures for staff as required 			
	• Communicate impacts to the public, such as closed areas following storm damage, closed beaches due to poor water quality etc.			

EDUCATION AND AWARENESS

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Ensure an informed public related to invasive species and potential health risks 	 Increase signage to educate visitors about invasive species and ecology changes in parks 			
 Increase awareness of individual roles in addressing 	 Use social media campaigns to educate the public 			
climate change Protect staff and visitor safety	• Update procedures to respond to things like working in the heat, tick safety, and inclement weather			



Partnerships

GOALS	SAMPLE HIGH-LEVEL ACTIONS	Monitor	Mitigation	Adaptation
 Strengthen community approach and build systems for collaboration Learn from the work of others 	 Continue active involvement with the City of Hamilton and BACCC 	•		•
	 Establish processes and practices of sharing local climate change data 	•		
 Collaboratively address threats and identify opportunities for climate adaptation and GHG reductions Strengthen relationships with Indigenous communities 	• Continue to support partners in their research and monitoring of climate change effects (including McMaster University, Mohawk College, other levels of government, and other conservation authorities)	٠		
	 Reach out to local Indigenous communities to discuss opportunities to share knowledge and collaborate where appropriate 			
Goals and Progress

A strategy is only valuable if progress and success can be measured. We have a plan for monitoring our progress as we move towards net zero and we will work on actions each year as funding and budget allows. We will also keep our Board of Directors, staff, and the public informed along the way with annual sustainability reports, through our website and social media channels.

The HCA has a responsibility to conserve the lands under our stewardship – for current and future generations.

We acknowledge that each climate change strategy we develop is a living document as we continue to learn, gather more data and adjust to improve our results.

This strategy deepens our focus on climate change, and embeds monitoring, mitigation, and adaptation efforts in all we do. It ensures we are doing what we can to increase our knowledge, protect our lands and watershed, and enhance the resilience of species, while slowing the pace of climate change.

HCA's Corporate Climate Change Strategy leads us forward to achieving net-zero status for our lands.



A Healthy Watershed for Everyone

838 MINERAL SPRINGS ROAD ANCASTER, ONTARIO L9G 4X1 TEL: 905-525-2181 FAX: 905-648-4622 WWW.CONSERVATIONHAMILTON.CA



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A Healthy Watershed for Everyone

Memorandum

TO:	Board of Directors
FROM:	Lisa Burnside, Chief Administrative Officer (CAO)
RECOMMENDED BY:	T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer / Director, Watershed Planning & Engineering
PREPARED BY:	Jonathan Bastien, Water Resources Engineer
DATE:	February 2, 2023
RE:	Watershed Conditions Report

SYNOPSIS

During the period of December 16th 2022 to January 26th 2023, there were no observations or reports of significant watercourse flooding events or Lake Ontario shoreline flooding events.

Currently, there are no significant watercourse flooding, public safety concerns, or Lake Ontario shoreline flooding. Current flows are elevated above baseflow conditions. That said, the current and average monthly flows in January so far have ranged considerably (between significantly below long-term averages to near long-term averages). Below average flow trends were found in past months.

The Lake Ontario mean daily water level averaged across the entire lake is currently about 12 cm above average for this time of year.

Current Christie Lake and Valens Lake levels are within the preferred winter operating levels.

There are currently no significant rainfall or snowmelt events (+20 mm in a day) forecasted for the watershed over the next 2 weeks. In the next 9 days, no significant Lake Ontario shoreline flooding is expected.

The most recent drought assessment (including data up to December 31) indicated that Level 1 Low Water Conditions are an appropriate overall characterization of the

watershed. This was the first recent assessment to support downgrading the active Level 2 Low Water Conditions. As such, HCA suggested deferring a downgrade until the next scheduled assessment.

CURRENT WATERSHED CONDITIONS – January 26th, 2023

Current Flows in Major Area Watercourses

There are no observations, reports, or expectations that significant watercourse flooding or significant public safety concerns are occurring at this time. Current flows are elevated above baseflow conditions but well below the adopted thresholds for significant public safety concerns or for significant watercourse flooding. This is consistent at the five available streamflow gauges (Upper Spencer Creek at Safari Road, Middle Spencer Creek at Highway 5, Lower Spencer Creek at Market Street, Ancaster Creek at Wilson Street, and Red Hill Creek at Barton Street).

Current flows are well below to significantly below long-term average monthly flows for January at the three Spencer Creek gauges (36% to 52% of long-term averages). Current flows are below long-term average monthly flows for January at the Red Hill Creek at Barton Street and Ancaster Creek at Wilson Street gauges (66% of long-term averages).

The average monthly flows in January so far have ranged from below to near long-term averages. Upper Spencer Creek at Safari Road flows have been 90% of the long-term average (considered near average). Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street flow have been 57% and 61% of the long-term average during December, respectively (considered below average). Red Hill Creek at Barton Street flows have been 109% of long-term averages (considered near average). An assessment is not currently available for the Ancaster Creek at Wilson Street gauge.

Below average flow trends were found in past months. December was significantly below long-term averages, at most gauges. Average monthly flows at the Upper Spencer Creek at Safari Road gauge were 35% of the long-term average. Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street flows were 23% and 32%, respectively. The exception was Red Hill Creek at Barton Street gauge, where flows were 63% (considered below average). An assessment is not currently available for the Ancaster Creek at Wilson Street gauge.

November was below to significantly below average. Average monthly flows at the Upper Spencer Creek at Safari Road gauge were 61% of long-term average (considered below average). Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street flows were 12% and 18%, respectively (considered significantly below average). Ancaster Creek at Wilson Street flows were 52% (considered well below average). Red Hill Creek at Barton Street flows were 30% (considered significantly below average).

October was significantly below long-term averages, at most gauges. Average monthly flows at the Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street gauges were 13% and 10% of long-term averages, respectively. Ancaster Creek at Wilson Street and Red Hill Creek at Barton Street flows were 37% and 29%, respectively. The exception was Upper Spencer Creek at Safari Road gauge, where flows were 93% (considered near average).

September was well below to significantly below average, at most gauges. Average monthly flows at the Middle Spencer Creek at Highway 5 gauge were predominantly lower than recordable limits during September, while Lower Spencer Creek at Market Street flows were 22% of the long-term average (considered significantly below average). Ancaster Creek at Wilson Street and Red Hill Creek at Barton Street flows were 47 and 42%, respectively (considered well below average). The exception was Upper Spencer Creek at Safari Road gauge, where flows were 76% (considered slightly below average).

August was well below to significantly below average at all gauges. Average monthly flows at the Middle Spencer Creek at Highway 5 gauge were predominantly lower than recordable limits during August, while Upper Spencer Creek at Safari Road and Lower Spencer Creek at Market Street flows were 38 to 39% of the long-term average, respectively (considered significantly below average). Ancaster Creek at Wilson Street and Red Hill Creek at Barton Street flows were 55 and 45%, respectively (considered well below average).

July was significantly below average in Spencer Creek (10 to 35% of the long-term average monthly flows), and below average in Ancaster Creek and Red Hill Creek (66 and 65% of averages, respectively).

June was well below average in Spencer Creek (41 to 55% of the long-term average monthly flows), and slightly below average in Ancaster Creek and Red Hill Creek (74 and 75% of averages, respectively).

Furthermore, May was slightly below average at all available gauges (69 to 89% of the long-term average monthly flows), and the average monthly flows in April were below to well below average (47 to 68% of the long-term average monthly flows).

Current Lake Ontario Water Levels

At this time, there are no observations, reports or expectations of significant Lake Ontario shoreline flooding. The Lake Ontario mean daily water level in the Hamilton area was 74.76 – 74.78 m IGLD85 as of yesterday. The Lake Ontario mean daily water level averaged across the entire lake (74.70 m IGLD85 as of yesterday) is about 12 cm above average for this time of year.

Current Storages in HCA Reservoirs

Current Christie Lake levels (765.49 ft) are within the preferred winter operating levels (765.3 to 765.8 ft). Current Valens Lake levels (274.30 m) are within the preferred winter operating levels (274.15 to 274.40 m).

Current Soil Conditions

The surface and root-zone soils are currently moist, and partially frozen.

RECENT STORM EVENTS

During the period of December 16th 2022 to January 26th 2023, there were no observations or reports of significant watercourse flooding events or Lake Ontario shoreline flooding events.

RECENT WATERSHED LOW WATER CONDITIONS

The most recent drought assessment (including data up to December 31) indicated that Level 1 Low Water Conditions are an appropriate overall characterization of the watershed. This was the first recent assessment to support downgrading the active Level 2 Low Water Conditions. As such, HCA suggested deferring a downgrade until the next scheduled assessment.

The Hamilton Low Water Response Team declared a Level 2 Low Water Condition for the entire HCA watershed on October 20th. This includes Spencer Creek, Chedoke Creek, Redhill Creek, Stoney Creek and Battlefield Creek, Stoney Creek Numbered Watercourses, as well as all of their tributaries and other minor watercourses. The HCA watershed had been in a Level 1 Low Water Condition since July 28th, 2022.

A Level 2 press release was issued encouraging a 20 percent voluntary reduction in normal water use and a fact sheet provided suggested strategies for reducing water use. This water conservation request applies to all users of water supplied from watercourses, waterbodies, and groundwater sources within the HCA watershed. Also, this message was posted on HCA's website and social media. In addition, letters were sent to local Permit to Take Water holders communicating this message. Furthermore, Hamilton LWRT members are sharing the water conservation message with other water users in their area / sector.

FORECASTED WATERSHED CONDITIONS

Watercourse Flooding

There are currently no significant rainfall or snowmelt events (+20 mm in a day) forecasted for the watershed over the next 2 weeks. HCA staff continue to monitor conditions and forecasts routinely. Resultant water levels and flows from currently anticipated rain and snowmelt are not expected to result in significant watercourse flooding.

Lake Ontario Shoreline Flooding

In the next 9 days, no significant Lake Ontario shoreline flooding is expected. According to International Lake Ontario – St. Lawrence River Board information, weather conditions, including temperatures and precipitation, will primarily determine the rate and magnitude of water level fluctuations over the coming weeks.

Watershed Low Water Conditions

HCA staff will undertake monthly drought assessments throughout the winter, and coordinate with the Hamilton Low Water Response team as required.

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Memorandum

то:	Board of Directors
FROM:	Lisa Burnside, Chief Administrative Officer (CAO)
PREPARED BY:	Gordon R. Costie, Director, Conservation Area Services
MEETING DATE:	February 2, 2023
RE:	Conservation Areas Experiences Update

BACKGROUND:

HCA provides high quality, diverse conservation areas that promote outdoor recreation, health and well being and strengthen public awareness of the importance of being in or near our conservation areas.

STAFF REPORTING COMMENTS

- <u>Valens Lake Drumlin Cabins –</u> Testing period now completed with media release for public reservations underway. Day one is February 8, 2023.
- <u>Ice Fishing/Ice Skating/Ice Climbing Conservation Areas</u> Up to date conditions report to be shared with the Board for Valens Lake, Fifty Point, and Dundas Valley Conservation Areas.
- <u>Family Day Weekend February 18,19,20</u> all HCA Conservation Areas open for self guided winter activities in the great outdoors. Some family long weekend suggestions included with your membership pass or regular entrance fee:
 - o <u>Christie Lake</u> 18-hole Championship Disc Golf course
 - <u>Eramosa Karst</u> hike this 285-acre Conservation Area and check out the Nexus Cave
 - <u>Westfield Heritage Village</u> check out over 35 historical buildings and hike several well-marked recreational trails easily accessed from the village in this 503-acre Conservation Area
 - <u>Fifty Point</u> bring your binoculars to bird watch at this Golden Horseshoe hotspot
 - <u>Dundas Valley</u> Hike the main loop and warm up at the newly remodelled Trail Centre including modern washrooms, brochures, and maps detailing the 40-kilometer trail system maintained by HCA staff.