



P.O. Box 1749
Halifax, Nova Scotia
B3J 3A5 Canada

Item No. 5
Halifax Regional Council
March 19, 2024

TO: Mayor Savage and Members of Halifax Regional Council

Original Signed

SUBMITTED BY:

Cathie O'Toole, Chief Administrative Officer

DATE: March 12, 2024

SUBJECT: Use of Managed Retreat as a Climate Adaptation Approach

INFORMATION REPORT

ORIGIN

On September 12, 2023, the following motion of Regional Council was put and passed:

MOVED by Councillor Outhit, seconded by Councillor Cuttell

THAT Halifax Regional Council:

1. Direct the Chief Administrative Officer (CAO) to provide a staff report on managed retreat as a climate adaptation approach to manage risks and impacts associated with extreme weather events in the municipality.
2. Direct the Mayor to write a letter to the Premier of Nova Scotia requesting the provincial government work with the municipality to create a provincial buyout program specific to the Union Street properties in Bedford impacted by extreme flooding in July 2023, similar to what was done in 2016 in Sydney, Cape Breton.

LEGISLATIVE AUTHORITY

Halifax Regional Municipality Charter, S.N.S. 2008, c. 39

7A The purposes of the Municipality are to (a) provide good government; (b) provide services, facilities and other things that, in the opinion of the Council, are necessary or desirable for all or part of the Municipality; and (c) develop and maintain safe and viable communities.

61 (1) The Municipality may acquire, and own property granted or conveyed to the Municipality either absolutely or in trust for a public or charitable purpose.

61 (3) The property vested in the Municipality, absolutely or in trust, is under the exclusive management and control of the Council, unless an Act of the Legislature provides otherwise.

65 (1) Where the Council considers it necessary to acquire real property, including real property outside the Municipality, for a purpose for which it may spend money, the Council may expropriate the real property, but this power to expropriate does not authorize the Municipality to expropriate property of another municipality.

79A (1) Subject to subsections (2) to (4), the Municipality may only spend money for municipal purposes if (a) the expenditure is included in the Municipality's operating budget or capital budget or is otherwise authorized by the Municipality; (b) the expenditure is in respect of an emergency under the Emergency Management Act; or (c) the expenditure is legally required to be paid.

BACKGROUND

Climate change adaptation means planning for and acting on the anticipated impacts of climate change. Climate change is already causing impacts such as warmer temperatures, more frequent and severe storm events, increased drought, and warmer and rising seas, among others. Adaptation helps build resilience by increasing capacity to prepare and respond to climate-related impacts such as natural disasters.

Flooding is Canada's most frequent and most costly natural disaster¹. In 2022 alone, damage from extreme weather cost \$3.1 billion in insured damages, and Canadians now pay \$3 out-of-pocket for every \$1 in damage covered by insurance². Residential and commercial districts face increasingly frequent and intense floods due to climate change. Sea-level rise, heavy precipitation, rapid snowmelt, and more frequent and severe storms can overwhelm urban drainage infrastructure. These risks are further perpetuated by decades of development in floodplains³.

In addition to protection and accommodation, managed retreat is a climate change adaptation approach to managing the risks and hazards shorelines pose to built infrastructure. Managed retreat is a collective term for management and mitigation tools designed to move existing and planned development out of areas at risk to hazards such as floodplains, eroding coastlines, and coastal hazards. Managed retreat is based on proactively moving out of harm's way and strategies include: 1) abandonment, 2) relocation, and 3) avoidance. These strategies employ management tools, such as building restrictions, setbacks, land acquisition (buyouts), and disincentives to development⁴.

This information report provides an overview of managed retreat strategies and opportunities that could be employed within HRM to adapt to flood hazards and risks associated with climate change.

¹ Kennedy, B. 2019. "[There Will Be Floods](#)". *The Star*. June 6, 2019.

² Insurance Bureau of Canada. 2023. "[Severe Weather in 2022 Caused \\$3.1 Billion in Insured Damage -- making it the 3rd Worst Year for Insured Damage in Canadian History](#)."

³ Thistlethwaite, J., Le Geyt, M., Martin, G., Cottar, S., & Whittaker, L. 2023. *Buying Out the Floodplain: Recommendations for Strategic Relocation Programs in Canada*. *Partners for Action*, University of Waterloo.

⁴ Neal, W. J., Bush, D. M., & Pilkey, O. H. (2005). *Managed retreat*. *Encyclopedia of coastal science*, 14, 603-605.

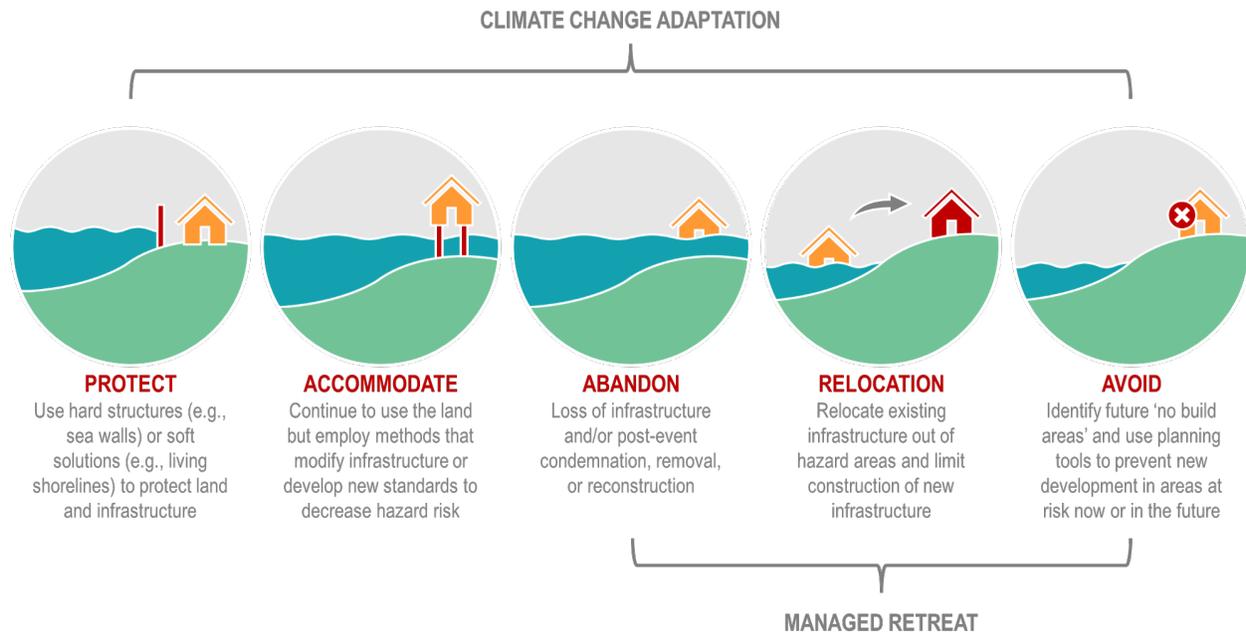


Figure 1: Climate change adaptation responses to coastal hazards⁵

DISCUSSION

1. ABANDONMENT

Abandonment can occur unexpectedly or as part of a deliberate withdrawal strategy. Historically, unplanned abandonment often follows destructive events like storms, leading to the loss of buildings and land, making reconstruction impractical, especially in cases of bluff retreat. A long-term planned abandonment approach, sometimes referred to as the "do nothing" strategy, involves acknowledging the fixed lifespan of infrastructure. When the infrastructure is overcome by the sea, bay, or lake, no effort is made to safeguard it. Alternatively, planned abandonment can be executed by either prohibiting post-storm reconstruction or mandating relocation landward of the revised post-storm setback control line. Discouraging rebuilding after storms can also be achieved through other methods, such as denying flood insurance and other subsidy programs⁶.

This approach can be applied to several types of infrastructure such as roads and wells, especially when rebuilding and relocation are not possible after a disaster due to significant damage or contamination.

2. RELOCATION

Relocation is the primary form of managed retreat. Active relocation is the proactive relocation of infrastructure before any threat arises or, if threatened, before it is damaged. Passive relocation entails reconstructing a demolished or damaged structure in a different area, positioned away from the shoreline and beyond the reach of coastal hazard zones.

The concept of long-term relocation typically involves a comprehensive strategy embedded in community zoning or land use plans. These plans identify a frontal zone of infrastructure susceptible to the impacts of

⁵ Based on: Tasman District Council. (2021) Coastal Management Options for Tasman Bay/Te Tai o Aore and Golden Bay/Mohua.

⁶ Neal, W. J., Bush, D. M., & Pilkey, O. H. (2005). Managed retreat. *Encyclopedia of coastal science*, 14, 603-605.

known erosion rates or projected flood levels resulting from storm surge and coastal flooding. Subsequently, these identified structures are slated for relocation over an extended period, assuming they won't be lost in impending storms. Relocation can be applied to several types of infrastructure including (but not limited to), residential buildings, roads, telecommunications infrastructure, and other utilities. For example, the Province of Nova Scotia recently announced plans to relocate a 500-metre section of road along Lawrencetown Beach farther away from the coast to protect it from storm surges and pounding surf. The current section of road will be naturalized and made available for new recreation and amenities⁷.

One relocation managed retreat tool is a property buyout/land acquisition program — which involves the relocation of high-risk infrastructure (often neighbourhoods) via the government acquisition of property. These programs are considered among the most effective forms of risk management since they directly reduce exposure to flooding. Strategic relocation intentionally withdraws people from hazardous, flood-prone areas and relocates or demolishes buildings and infrastructure. Well-planned buyout programs can effectively eliminate flood risk to people and property, restore natural flood protection along shorelines, and open land for public recreation⁸.

A buyout program can be designed in several ways and may include the following considerations:

- **Compensation:** Assessments can be based on the previous year's Market Value Assessment per the Assessment Roll provided by Property Valuation Services Corporation (PVSC). Most programs use pre-disaster property values as a baseline to calculate compensation, sometimes using third-party appraisals, and while such offers are more appealing for residents, they also result in higher program costs⁹. Other programs cap property values based on a damage threshold. For example, New Brunswick has a structural damage payout program and a buyout program for homeowners affected by floods where individuals can receive up to \$200,000 in financial assistance over a property's lifetime, after which the property is ineligible for further aid. In Newfoundland and Labrador, after Hurricane Fiona, the province employed a buyout program that set a home's replacement value at a minimum of \$200/ft² based on a detailed assessment, replacement value of the property contents in accordance with Disaster Financial Assistance Arrangements, and a value for land or provision of a suitable land option^{10,11}. The consensus in research is that financial offers need to be high enough that they make homeowners feel like they are getting appropriate value for their property and allow them to recreate their same quality of life elsewhere.
- **Program Approach:** Buyouts can be mandatory or voluntary, however, mandatory programs are rare since they face social and political opposition. As such, most buyout programs are explicitly voluntary by design even though legal mechanisms exist in some jurisdictions for authorities to acquire property for public safety. While voluntary programs are likely to be more acceptable to residents and elected officials since they offer flexibility for individuals to determine whether they want to participate, they can also be less efficient as property that is left behind remains exposed to flooding. In the case of Gatineau, Quebec, the buyout program offered after spring flooding in 2017 called for mandatory buyouts for damaged properties within the 1:20 zone (area that is at risk of flooding during floods that have a five per cent chance of occurring in any given year) and voluntary buyouts for damaged properties outside the 1:20 zone¹². Relocation also risks disproportionately impacting the already socially vulnerable, however, research has shown that through robust engagement, public consultation, program

⁷ Deer, T. 2023. ["Province to relocate road along Lawrencetown Beach to avoid storm damage."](#) CBC News.

⁸ Calil, J., & Newkirk, S. 2017. "Aligning Natural Resource Conservation, Flood Hazard Mitigation, and Social Vulnerability Remediation in Florida." *Journal of Ocean and Coastal Economics* 4 (1).

⁹ Salvesen, D., T. BenDor, C. Kamrath & B. Ganser. 2018. "Are Floodplain Buyouts a Smart Investment for Local Governments?" UNC Policy Collaboratory.

¹⁰ Mullin, M. 2023. ["They were displaced en masse. A year on from the storm, Fiona's victims are still living in limbo."](#) CBC News.

¹¹ Province of Newfoundland and Labrador. 2022. *Provincial Government Announces Financial Support Details for Residents Impacted by Hurricane Fiona. Executive Council and Justice and Public Safety News Release. November 15, 2022.*

¹² Laucius, J. 2019. ["Letting nature take its course: insurance, relocation may be part of the solution."](#) Ottawa Citizen. May 2, 2019.

transparency, and partnership with local community groups and leaders, trust can be built, and resource deficits can be addressed¹³.

- **Timing:** A major flood brings attention to an inundated community's risks, opening a post-disaster window of opportunity to initiate new policies that involve significant changes and costs. Proactive programs can be more cost-efficient, engage a wider set of stakeholders, and facilitate a more systematized rollout. This is especially important in the face of known and compounding hazards such as hurricanes, flood risks, and extreme precipitation¹⁴.
- **Governance:** Most programs are implemented by local level governments using provincial and federal investments. As such, implementing a buyout program requires collaboration across all levels of government. The federal Disaster Mitigation and Adaptation Fund (DMAF) has previously funded provincial buyout programs (e.g., Grand Forks, British Columbia¹⁵). Well-run, efficient buyout programs require significant human and financial resources and capacity—from consulting with the public and administering the program to processing funding applications and managing land use planning¹⁶.

Property Buyout Opportunities

Nova Scotia's Disaster Financial Assistance programs are designed to help municipalities, small businesses, and not-for-profit groups after a major storm or natural disaster. This program helps those whose losses aren't covered by insurance and can cover damage up to \$200,000¹⁷. In the wake of recent extreme flooding events and in anticipation of future extreme events, there is the opportunity to discuss and partner with the Province of Nova Scotia on the development of a new buyout program or modify the existing provincial disaster assistance program to include buyouts. For example, after major flooding in parts of Sydney, Nova Scotia, and area in 2016, the Government of Nova Scotia bought out 18 homeowners whose properties were deemed uninhabitable¹⁸. The homes were assessed at their pre-flood fair market value, and there was a \$200,000 financial assistance limit set by the province. Homes were demolished and the area was deemed a 'no-build zone'¹⁹.

When considering land acquisition and property buyouts, it is important to note that they are primarily funded by provincial and federal governments, in collaboration with municipalities. For example, in 2018, Grand Forks and surrounding area faced a 1-in-200-year flood, displacing 1,471 households and causing extensive damage, costing the city nearly \$60 million. The Government of British Columbia sought federal assistance through DMAF, leading to the approval of a buyout program by the Grand Forks City Council. The municipality reserved the right to expropriate homes if owners chose to stay, and the DMAF funding mandated returning acquired properties to their natural state²⁰. The program yielded a 3.4:1 return on investment according to a cost-benefit analysis²¹.

HRM and Halifax Water have previously identified the ten most flood prone areas within the municipal service boundary, which included the Sackville River Floodplain, and identified potential solutions and costs, one being property buyouts²². Lastly, as per the September 12, 2023, Regional Council Motion, Mayor

¹³ Thistlethwaite, J., Le Geyt, M., Martin, G., Cottar, S., & Whittaker, L. 2023. *Buying Out the Floodplain: Recommendations for Strategic Relocation Programs in Canada. Partners for Action, University of Waterloo.*

¹⁴ Baker, C.K., S. B. Binder, A. Greer, P. Weir & K. Gates. 2018. "Integrating Community Concerns and Recommendations into Home Buyout and Relocation Policy." *Risk, Hazards & Crisis in Public Policy* 9 (4): 455–79. <https://doi.org/10.1002/rhc3.12144>

¹⁵ Thistlethwaite, J., Le Geyt, M., Martin, G., Cottar, S., & Whittaker, L. 2023. *Buying Out the Floodplain: Recommendations for Strategic Relocation Programs in Canada. Partners for Action, University of Waterloo.*

¹⁶ Mach, K. J., C.M. Kraan, M. Hino, A. R. Siders, E. M. Johnston & C. B. Field. 2019. "Managed Retreat through Voluntary Buyouts of Flood-Prone Properties." *Science Advances* 5 (10): eaax8995

¹⁷ Government of Nova Scotia. n.d. [Disaster Financial Assistance](#).

¹⁸ Parnham, H. 2023. "[managed] retreat: the elephant in the adaptation framework." Prepared for CLIMAtlantic by DV8 Consulting.

¹⁹ Weeks, J. 2016. "[Sydney Flood Victims Agree Home Should be Torn Down](#)." CBC News. October 24, 2016.

²⁰ Thistlethwaite, J., Le Geyt, M., Martin, G., Cottar, S., & Whittaker, L. 2023. *Buying Out the Floodplain: Recommendations for Strategic Relocation Programs in Canada. Partners for Action, University of Waterloo.*

²¹ NOR-EX Engineering Ltd. 2019. "[City of Grand Forks DMAF Step II Hazard Risk Assessment](#)."

²² [National Disaster Mitigation Plan - Flood Risk Implementation Plan - May 3/22 Regional Council | Halifax.ca](#)

Savage wrote a letter to the Premier of Nova Scotia requesting the provincial government work with the municipality to create a provincial buyout program specific to the Union Street properties in Bedford impacted by extreme flooding in July 2023, like what was done in 2016 in Sydney, Cape Breton. A copy of the letter is provided in Attachment A. As of the writing of this report, HRM has not received a response from the Premier.

3. AVOIDANCE

Avoiding hazards is the most effective method to eliminate losses of property and lives by not establishing infrastructure in hazardous areas. Here, zoning plays a vital role in ensuring the secure placement of infrastructure, keeping it away from coastal dangers through setbacks and easements.

Setbacks are an avoidance management tool that aims to keep structures out of extreme-to-high hazard zones, or at least at a distance from the hazardous processes (e.g., coastal erosion, storm surge). Setbacks can be a fixed distance from a reference point or adjusted, for example, as the shoreline erodes or storm impacts change. "Safe" setback distances vary from location to location according to erosion rates, climate projections, the type of infrastructure, and other factors.²³.

CONCLUSION

This report provides an overview of managed retreat strategies in response to climate change and extreme weather. When choosing an adaptation strategy (i.e., protection, accommodation, or managed retreat), considerations for public safety, infrastructure type, asset lifespan, budget, available budget, legislative authority, insurance coverage, type and degree of climate risk/hazard, and political/social will must be made. As climate change and extreme weather continue to threaten to HRM assets, critical infrastructure, communities, and the environment, managed retreat is a key adaptation tool that can be employed to maintain or improve levels of service and public safety.

FINANCIAL IMPLICATIONS

There are no financial implications associated with this information report.

COMMUNITY ENGAGEMENT

There are no community engagement implications associated with this information report.

ATTACHMENTS

Attachment A: Letter to the Premier of Nova Scotia Re: Buyout Program for Union Street Properties in Bedford Impacted by Extreme Flooding in July 2023

A copy of this report can be obtained online at halifax.ca or by contacting the Office of the Municipal Clerk at 902.490.4210.

Report Prepared by: Shannon Fernandes, Manager, Climate Adaptation, Property, Fleet, and Environment,
782.641.1069

²³ Neal, W. J., Bush, D. M., & Pilkey, O. H. (2005). *Managed retreat. Encyclopedia of coastal science*, 14, 603-605

Larissa Sweeney, Junior Environmental Professional, Property, Fleet, and Environment,
902.877.4007

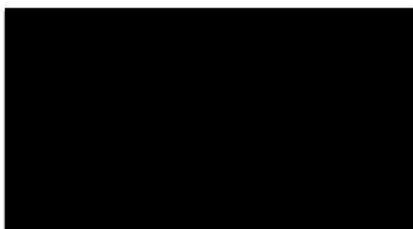
HALIFAX



MIKE SAVAGE

MAYOR
LE MAIRE
ME'R

October 16, 2023



Dear Premier Houston:

Re: Buyout Program for Union Street Properties in Bedford Impacted by Extreme Flooding in July 2023

Overview:

Solutions need to be found for the impacted properties on Union Street that have been damaged by repetitive severe floods, particularly the extreme flooding that occurred in July 2023. Property buyout programs—which involve the relocation of high-risk neighbourhoods via the government acquisition of property—are considered among the most effective forms of risk management since they directly reduce exposure to flooding. Well-planned buyout programs can effectively eliminate flood risk to people and property, restore natural flood protection along shorelines, and open up land for public recreation.

Background:

Flooding is Canada's most frequent and most costly natural disaster. In 2018 alone, damage from extreme weather cost \$1.9 billion in insured damages, and Canadians now pay \$3 out-of-pocket for every \$1 in damage covered by insurance. Due to climate change, residential and commercial districts face increasingly frequent and intense floods, whether from sea-level rise along the coasts, heavy precipitation and rapid snowmelt that overflow riverways, and more frequent and severe storms that overwhelm urban drainage infrastructure. And these risks are all perpetuated by decades of development in floodplains.

After major flooding in parts of Sydney, Nova Scotia, and area in 2016, the Government of Nova Scotia bought out 18 homeowners whose properties were deemed uninhabitable. The homes were assessed at their pre-flood fair market value, and there was a \$200,000 financial assistance limit set by the province. Homes were demolished and the area was deemed a 'no-build zone'.

Buyout Program Considerations:

A buyout program can be designed in several ways and may include the following considerations:

- *Compensation:* Assessments can be based on the previous year's tax assessment, pre-flood fair market value, post-flood fair market value etc. Most programs use pre-disaster property values as a baseline to calculate compensation, sometimes using third-party appraisals. While such offers are more appealing for residents, they also result in high program costs. Others capped property values based on a damage threshold. However, the consensus in the research is that financial offers need to be high enough that they make homeowners feel like they are getting appropriate value for their property and allow them to recreate their same quality of life elsewhere.
- *Program Approach:* Buyouts can be mandatory or voluntary, for example, if a property is in a floodplain that's likely to experience a one in twenty years flood. Mandatory buyouts can be enforced through expropriation. These programs, however, are rare since they face social and political opposition. As such, most buyout programs are explicitly voluntary by design even though legal mechanisms exist in some jurisdictions for authorities to acquire property for public safety. While voluntary programs are likely to be more acceptable to residents, they can also be less efficient as property that is left behind remains exposed to flooding. Relocation also risks disproportionately impacting the already socially vulnerable. However, research has shown that through robust engagement, public consultation, program transparency, and partnership with local community groups and leaders, trust can be built, and resource deficits can be addressed.
- *Timing:* A major flood brings attention to an inundated community's water risks, opening a post-disaster window of opportunity to initiate new policies that involve significant changes and costs. Proactive programs can be more cost-efficient, engage a wider set of stakeholders, and facilitate a more systematized rollout. This can be especially important in the face of known and compounding hazards such as hurricanes, flood risks, and extreme precipitation.

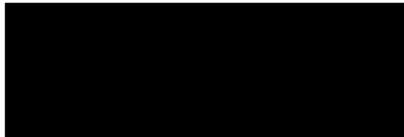
The Honourable Tim Houston, Premier of Nova Scotia
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- *Governance:* Most programs are implemented at local levels by governments with national and sub-national governments are often involved as sources of financial and administrative capacity. The federal Disaster Mitigation and Adaptation Fund has previously funded provincial buyout programs (e.g., Grand Forks, British Columbia). Well-run, efficient buyout programs require significant human and financial resources and capacity—from consulting with the public and administering the program to processing funding applications and managing land use planning.

Ask:

Nova Scotia's Disaster Financial Assistance programs are designed to help municipalities, small businesses, and not-for-profit groups after a major storm or natural disaster. This program helps those whose losses aren't covered by insurance and can cover damage up to \$200,000. In the wake of extreme flooding events and in anticipation of future extreme events, the time is now for the Province of Nova Scotia to discuss and partner with Halifax Regional Municipality on the development of a new buyout program or modification of an existing provincial disaster assistance program to include the buyout of properties on Union Street, Bedford that were impacted by extreme flooding in July 2023.

Kind regards,



Mike Savage
Mayor

/bmj