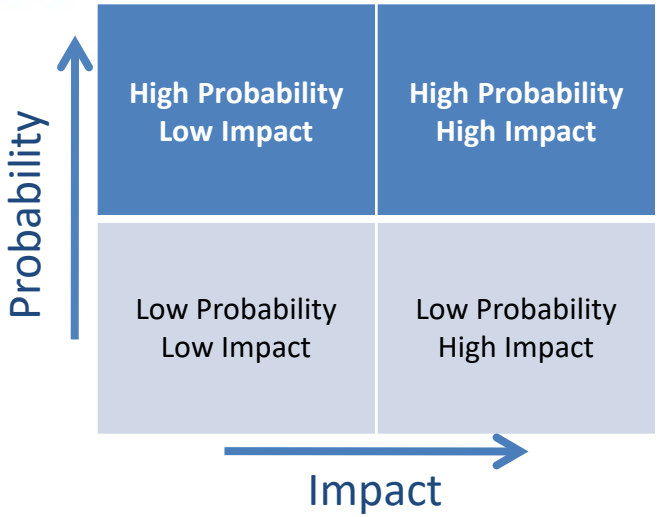
Town of Leicester

Hazard Mitigation & Resiliency Plan

Planning Timeline

- Mitigation Plan Update Adopted NLT April 24, 2024
- Submit Mitigation Plan to FEMA ~March 11, 2024
- Town Select Board Approval ~March 4, 2024
- Submit Mitigation Plan to MEMA for Review ~January 31, 2024
- Finalize Mitigation Action Matrix
- Public Engagement #2
- Public Engagement #1
- Business Community Engagement
- Assess:
    - Goals & Objectives
    - Mitigation Actions
- Update factual data
    - Hazard History
    - Census
    - Community Profile
- Format

Mitigation Planning Process



Hazard Identification

2018 Leicester HMP	2024 Leicester HMRP
Dam Failure	Average/Extreme Temperatures
Drought	Drought
Earthquake	Earthquake
Extreme Temperatures	Flooding from Precipitation
Flooding	Dam Overtopping
Hurricanes	Hurricanes/Tropical Cyclones
Severe Snowstorms/Ice Storms/Nor'easter	Invasive Species
Severe Thunderstorms/ Tornados/Wind	Landslides/Mudflows
Wildfire/Brushfire	Other Severe Weather
Other Hazards	Severe Winter Storms
	Tornados
	Wildfire

Hazard Identification

2018 Leicester HMP

Hazard Identification and Analysis for the Town of Leicester				
Type of Hazard	**Location of Occurrence**	**Probability of Future Events**	**Impact**	**Hazard Risk Index Rating**
Dam Failure	Small	Very Low	Limited	4
Drought	Large	Very Low	Minor	4
Earthquakes	Large	Very Low	Minor	5
Extreme Temperatures	Large	Moderate	Limited	4
Flooding	Medium	Low	Minor	3
Hurricanes	Large	Low	Limited	3
Severe Snowstorms / Ice Storms/ Nor'easter	Large	Very High	Limited	2
Severe Thunderstorms / Tornadoes / Wind	Small	Moderate	Minor	2
Wildfire / Brushfire	Medium	Moderate	Minor	4

Hazard Assessment Sources

- 2018 Leicester Hazard Mitigation Plan
- 2018 Municipal Vulnerability Preparedness Planning (MVP) Community Resilience Workshop
- 2022 Massachusetts Climate Change Assessment
- 2023 Massachusetts State Hazard Mitigation and Climate Action Plan
- ResilientMass (https://resilient.mass.gov/home.html)
- BioMap (https://biomap-mass-eoeea.hub.arcgis.com)
- Massachusetts Department of Agricultural Resources (MDAR)
- 2021 Leicester Open Space & Recreation Plan
- 2021 Leicester Water & Sewer District Infrastructure Study
- Leicester Conservation Commission Wetlands Protection Bylaw

Hazard Assessment

- Location
  - The locations where the hazard occurs
  - The geographic reach of consequences of the hazard scale
- Extent
  - The extent, or magnitude of consequence
    - human impacts
    - economic impacts
    - natural environmental impacts
- Probability of Future Events
  - The likelihood of a hazard occurring
    - informed by the historical record
    - climate projections
    - best available data and science for each hazard
- Vulnerability

Hazard Assessment-Location

Regional	Townwide	Extensive	Localized
Impacts spanning several municipalities or large regions of the state or consistent single-point occurrences	Effects on 75% or more of the Town without significant overflow to other towns or consistent single-point occurrences	An effected area between 10% - 74% of the Town or frequent single point occurrences	A focused and limited area of impact or isolated single-point occurrences.

Hazard	Impact	Consequences
Average/Extreme Temperatures	Regional	Regional
Drought	Regional	Townwide
Earthquakes	Regional	Regional
Flooding from Precipitation	Localized	Localized
Dam Overtopping	Extensive	Extensive
Hurricanes/Tropical Cyclones	Regional	Regional
Invasive Species	Regional	Regional
Landslides/Mudflows	Localized	Localized
Other Severe Weather	Townwide	Townwide
Severe Winter Storms	Regional	Townwide
Tornados	Regional	Townwide
Wildfires	Townwide	Townwide

Hazard Assessment-Extent

	Very High	High	Medium	Low	Very Low
Human	Loss of human life	Any injuries; disruptions of emergency routes, inability to carry out daily activities	Disruption in ability to work and/or carry out daily life and activities	Limited effects, inconvenience, minor power outages	Minimal injury and/or inconvenience
Economic	National-level disruption to and long-term impacts to the state and possibly at the national economy; severe economic losses across multiple sectors	Significant long-term disruption to the state economy with repercussions across multiple sectors, likely to result in economic decline, with impacts that last several years after a disaster	Prolonged disruption to economic activity that limits or restricts growth, with risk of mid- or long-term economic decline	Economic consequences to people, state, and business conditions requiring expense and effort to overcome; long-term constraints unlikely	Economic costs and consequences do not affect economic growth; economic costs may be incurred, but they are planned and are sustainable expenses
Natural Environment	Irreversible loss of ecosystem and/or key organisms	Extensive damage to ecosystem and/or key organisms; unlikely to recover to pre-disaster state	Damage to ecosystems or organisms, but a likely recovery to a pre-disaster state	Some losses to individual organisms but permanent ecosystem impacts unlikely	Minimal risk of impact to individual organisms or overall ecosystems

Hazard Assessment-Extent

Hazard	Human	Economic	Natural Environment
Average/Extreme Temperatures	Very High	High	Very High
Drought	High	High	High
Earthquakes	High	Medium	Low
Flooding from Precipitation	Very High	High	High
Dam Overtopping	Very High	Medium	High
Hurricanes/Tropical Cyclones	Very High	High	Medium
Invasive Species	High	High	Very High
Landslides/Mudflows	High	Low	Medium
Other Severe Weather	High	Low	Low
Severe Winter Storms	Very High	Medium	Low
Tornados	High	Medium	Medium
Wildfires	High	Medium	Very High

Hazard Assessment-Probability Likelihood

Very High	High	Medium	Low	Very Low
Almost certain to occur multiple times in a year	Almost certain to occur at least once in a year	Likely to occur at least once every 50 years (two or more occurrences in the next century)	Likely to occur at least once by the end of the century; some examples of historical occurrences, anticipated every 10 years	Very unlikely; minimal examples of historical occurrences

Hazard Assessment-Probability Warning Time

No Warning	Hours	1 Day	1-5 Days	1 Week	More than 1 Week (Months or Years
Very difficult to predict and anticipate location, severity, and onset; information available does not enable preparation	Occurs with little warning; a limited number of hours to adjust behavior or prepare	Reliable, actionable information on impact available one day (about 24 hours) allowing at least one day to prepare	Predictions of impact are accurate within one to five days before the hazard occurs	Predictions of impact are accurate enough within one week, enabling several days for preparation	Reliable, accurate prediction of hazard onset at several weeks (or significantly longer), specific enough to direct action

Hazard Assessment-Probability

Hazard	Likelihood	Warning Time
Average/Extreme Temperatures	Very High	1-5 days
Drought	Medium	More than 1 week
Earthquakes	Low	No warning
Flooding from Precipitation	Very High	1-5 days
Dam Overtopping	Very High	1 day
Hurricanes/Tropical Cyclones	Medium	1-5 days
Invasive Species	Very High	More than 1 week
Landslides/Mudflows	High	No warning
Other Severe Weather	Very High	1 day
Severe Winter Storms	High	1-5 days
Tornados	High	Hours
Wildfires	Very High	Hours

Specifically, the Committee will review the mitigation goals, objectives, and activities using performance-based indicators, including:

- Project completion
- Percent complete versus percent of resources allocated
- Under/over spending
- Achievement of the goals and objectives
- Resource allocation (e.g., If there had been more money would the activity have been more
- successful)

Mitigation measures are categorized by one or more of the following types:

- Infrastructure Improvement
- Land Improvement & Property Protection
- Enhancing Natural Resources
- Planning & Management
- Regulatory Change
- Education & Training

The planning committee will review the mitigation implementation strategy using performance- based indicators including:

- Timeframes
- Budgets
- Lead/support agency commitment
- Resources (funding, personnel [have people been reassigned or left?])
- Feasibility (Is it still an appropriate measure?)

Finally, the committee will evaluate how other programs and policies have conflicted, or augmented, planned or implemented measures. Other programs and policies can include those that address:

- Sustainability
- Economic development
- Water quality management
- Environmental protection
- Historic preservation
- Redevelopment
- Health and/or safety
- Recreation
- Land use/current and comprehensive planning
- Transportation
- Public education and outreach

Mitigation Actions

Mitigation Strategy Description	Hazard(s) Addressed	Who? Agencies involved	Potential Funding Sources	Priority Political & economic viability: High/Med/Low	Impact Mitigation impact: High/Med/Low	Estimated Cost High ($100k+)/ Med ($50k-100k)/ Low (<$50k)	Timeline Time needed to complete
A. Structure & Infrastructure Strategies							
Continue to Identify and prioritize capital/structural mitigation projects that are cost-effective and technically feasible (stormwater drainage, dam repairs, vegetative debris management, etc.).	All	Highway, TA	Local, State, Federal	High	High	Low	Ongoing
Properly clean (at least annually, or more often as may be required) all stormwater structures and basins.	FL, SS, ST, HU	Highway, MassDOT	Local, State, Federal	High	High	Low	Ongoing
Repair Waite Pond Dam, begin the design phase of the project and source funds to fully complete the project.	DF, FL, SS< ST, HU	Highway ODS	Local, State, Federal	Medium	Medium	High	2-3 Years
Maintain beaver control program	DF, FL, SS< ST, HU	Highway, BOH, CC	State, Local	High	High	Low	Ongoing
Assess and repair/replace culvert at Marshall Street at Southwick Brook	FL, SS, ST, HU	Highway	Local, State, Federal	High	High	High	1-2 Years
Study and prioritize the culverts in town, develop a long-range plan to repair/replace/upsize all culverts.	FL, SS, ST, HU	Highway	Local, State, Federal	High	High	Medium	1 Year
Reactivate the Whittemore Street Well	DR	Water Dept.	Local, State, Federal	Medium	High	High	2-3 Years
Conduct a study for constructing a new treatment plant for water tanks and to bring wells on line.	DR	Water Dept.	Local, State, Federal	Medium	High	High	2-3 Years

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Make improvements to Greenville Pond. Address the issue of invasive water based plant species infecting the Pond.	DF, FL, SS< ST, HU	Highway, CC	Local, State, Federal	Medium	Medium	High	2-3 Years
Repair and replace drainage infrastructure along Whittemore Street	FL, SS, ST, HU	Highway	Local, State, Federal	High	High	High	1-2 Years
Enlarge the culvert on Main Street(MA-9) at Lynde Brook	FL, SS, ST, HU	Highway	Local, State, Federal	High	High	High	1-2 Years
Upgrade the culvert at Marshall Street and MA-56	FL, SS, ST, HU	Highway, MassDOT	Local, State, Federal	High	High	High	1-2 Years
Enlarge culvert at Mannville and Main Street	FL, SS, ST, HU	Highway, MassDOT	Local, State, Federal	High	High	High	1-2 Years
Repair/Replace the problem culvert on Rawson Street	FL, SS, ST, HU	Highway	Local, State, Federal	High	High	High	1-2 Years
B. Preparedness, Coordination & Response Action Strategies							
Implement a vegetative debris management program to reduce debris and thereby mitigate risk of stormwater flooding, riverine flooding, winter storm damage	FL, SS, ST, HU	Highway	Local	High	High	Low	1 Year
Consider joining the Central Mass. Mosquito Control Project	FL, SS, ST, HU	TA, BOS	Local	Medium	Medium	Medium	1 Year
Sweep streets twice per year to increase stormwater management capacity; capture and dispose of appropriately.	FL, SS, ST, HU	Highway	Local	High	High	Low	Ongoing
Pursue funding that builds local capacity and supports grant-writing for mitigation actions identified in the hazard mitigation plan. Consider funding a fulltime grant writer.	All	TA	Local	Medium	Medium	High	1 Year

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Increase communication/coordination between federal, state, regional, county, municipal, private, and non-profit agencies in the area of hazard mitigation.	All	EMD	Local	High	High	Low	Ongoing
Help communities develop and enhance working relationships with the utility companies to improve mitigation of threats, and improve communication during events; ensure satellite spaces within each community for temporary emergency headquarters.	All	EMD	Local	High	High	Low	Ongoing
Improve Code RED hazard warning system and notification to vulnerable populations and the entire population. Continue to utilize social media	All	EMD	Local	High	High	Low	Ongoing
Identify HMP actions that are consistent with the objectives of other interest groups. Collaborate with others to undertake initiatives and achieve success. (Example: conservation or env. groups that support wetlands protection, river corridor acquisition, or reducing runoff may assist.)	All	TA	Local	Medium	Medium	Low	Ongoing
Maintain the Unified Incident Command program, train officials when appropriate	All	EMD	Local	High	High	Low	Ongoing

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Inventory shelter/emergency resources. Identify what services are available at the different shelters (e.g. food preparation, potable water, back-up electrical power, heat, showers, etc.) and whether the location of different shelters will be impacted by different hazards (i.e. whether flooding will make the shelter inaccessible to some residents). This would help ensure that suitable shelters are available for different types of natural hazards	All	EMD	Local	High	High	Low	Ongoing
C. Education & Awareness Strategies							
Educate all segments of the community in order to combat complacency and foster individual responsibility for mitigating disaster impacts.	All	EMD	Local	High	High	Low	Ongoing
Promote use of full range of federal and state resources related to disaster mitigation such as educational materials, training, and National Weather Service forecasts.	All	EMD	Local, State, Federal	High	High	Low	Ongoing
D. Local Planning & Regulatory Strategies							
Continue to actively enforce and comply with State Building Code Requirements.	All	BI	Local	High	High	Low	Ongoing
Continue to actively enforce and comply with the Massachusetts Wetlands Protection Act	All	CC	Local	High	High	Low	Ongoing
Develop a means for sharing information on a regional basis about successful disaster mitigation planning and programs. Create a feedback loop to improve pre-disaster planning by establishing a formal post-disaster assessment process.	All	EMD	Local, State, Federal	Medium	Medium	Low	1-2 Years

Mitigation Actions

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Find funding to review and update the hazard mitigation plan on a five-year cycle.	All	EMD. TA	Local, State, Federal	High	High	Low	1-2 Years
Incorporate hazard mitigation actions into appropriate local and regional plans – Master Plans, land use, transportation, open space, and capital programming.	All	TA, PB	Local	High	High	Low	Ongoing
Integrate hazard mitigation concerns into transportation projects (e.g. drainage improvements, underground utilities, etc.); Revise regulations to reduce inundation of flood prone areas	All	Highway, MassDOT	Local, State, Federal	High	High	Low	Ongoing
Expand the use and role of annual Capital Improvement Program	All	TA	Local	High	High	Low	Ongoing
Work with CMRPC on computer modeling for evacuation planning & re-routing post-disaster	All	EMD, CMRPC	Local, State, Federal	Medium	Medium	Low	1-2 Years
Encourage the adoption of underground utility requirements in local subdivision regulations, and retrofitting of existing infrastructure; revise regulations to reduce inundation of flood-prone areas	All	PB	Local	Medium	Medium	Low	Ongoing
Incorporate disaster mitigation concerns into the MEPA review process	All	CC	Local, State	High	High	Low	Ongoing

Mitigation Actions

Mitigation Strategy Description	**Hazard(s) Addressed**	**Who?** Agencies involved	**Potential Funding Sources**	**Priority** Political & economic viability: High/Med/Low	**Impact** Mitigation impact: High/Med/Low	**Estimated Cost** High ($100k+)/ Med ($50k-100k)/ Low (<$50k)	**Timeline** Time needed to complete
Integrate hazard mitigation concerns into subdivision, site plan review, 40B reviews, and other zoning reviews. In particular require the consideration of downstream flooding impacts caused by new projects. Work on model bylaw language for to reduce the amount of impervious coverage and increase opportunities for recharge and retention of stormwater	All	PB	Local	High	High	Low	Ongoing

QUESTIONS