



Appendix A

Complete Adaptation Action Register

This plan was produced with the assistance of the Green Municipal Fund, a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the views of the author(s), and FCM and the Government of Canada accept no responsibility for them.

ID	Adaptation Action Name	Description	Lead Department	Key Supporting Areas	Partner Groups	Timeline	Level of Effort	Cost Band
PEOPLE & COMMUNITY								
A1	Warming & Cooling Centres	Establish a network of accessible indoor Warming and Cooling Centres and outdoor cooling supports (splash pads, misters, shaded canopies) with equitable distribution, transit access, and extended hours during heat events, providing shelter during severe winter storms, power outages, and other emergencies requiring public shelter. Includes back-up power, indoor air filtration, and embedding centre designation in the Town's facility capital planning cycle.	Customer & Corporate Services, Parks, Recreation & Culture	Fire Services; Library	Simcoe County; OPP	2027–2029 (audit & designation) 2030–2035 (buildout)	Moderate (2)	Moderate (\$\$)
A2	Flood Risk Planning & Home Protection Program	Improve public access to existing flood mapping and preparedness information, paired with a home flood protection grant/subsidy program (backflow valves, sump pumps, lot grading) and outreach to owners and renters. Explicitly covers basement flooding and sewer backup on private property and Town-owned facilities. Reference programs: City of Toronto's Basement Flooding Protection Subsidy Program; City of Ottawa's Rain Ready Ottawa.	Infrastructure Department	Growth & Development	Conservation Authorities	2027–2029	Moderate (2)	Moderate (\$\$)
A3	Shoreline Public Access & Erosion Management	Develop a shoreline management strategy that protects public and Indigenous access, addresses erosion through naturalized and engineered measures (including repairing existing damaged shoreline structures), and establishes transparent criteria for how public dollars are allocated between residential vs. commercial/tourism shoreline protection. Includes educating condominium corporations and private shoreline property owners on the benefits of naturalized shoreline treatments.	Parks, Recreation & Culture	Communications Team	Health Unit; Conservation Authorities; Indigenous Groups	2027–2029	High (3)	High (\$\$\$)
A4	Risk Event Communications Program	Build a consistent, multi-channel public communications program covering heat, smoke, flood, freezing rain, snow, and water quality, with audience segmentation and content tailored for tourists and seasonal residents in addition to permanent residents. This is the outward-facing delivery system that works in tandem with A17: Partner Coordination & Climate Risk Communications.	Communications Team; Customer & Corporate Services	Parks, Recreation & Culture; Infrastructure Department	Health Unit; BIA/tourism partners; Community Groups	2027–2029 (segmentation & outreach) 2030–2035 (full program)	Moderate (2)	Low (\$)
SERVICES & OPERATIONS								
A5	Climate-Adjusted Stormwater & Wastewater Standards	Update design criteria for stormwater and wastewater infrastructure to reflect climate-projected rainfall and meltwater volumes; pair with an inflow-and-infiltration reduction program tied to capital and operating budgets. Consistent with design guidance already developed through the Stormwater Management Master Plan and carried forward into the Town's Engineering Standards update.	Infrastructure Department		Conservation Authority	2027–2029 (standards review) 2026 onwards (ongoing implementation) - timing pending confirmation	High (3)	High (\$\$\$)
A6	Asset Management Climate Integration	Integrate climate vulnerability into the Town's Asset Management Plan across the full asset lifecycle - restoration, renewal, operations, maintenance, replacement, and disposal. Covers both methodology work (climate-weighted renewal prioritization, risk scoring, vulnerability-adjusted lifecycle costing, demographic weighting of critical infrastructure) and programmatic O&M-specific resilience (climate-adjusted inspection regimes, preventive maintenance intervals, materials selection). Manufacturer service intervals and industry references such as RSM means do not currently account for climate change, focusing primarily on liability and baseline performance considerations, which is part of why this review is needed. Names the staffing and asset management capacity required to deliver the work.	Finance	Customer & Corporate Services		2027–2029 (methodology) 2026 onwards (ongoing) - timing pending confirmation	Low (1)	Low (\$)
A7	Natural Asset Valuation & Integration	Adopt a natural asset valuation methodology so that wetlands, urban forest, shoreline vegetation, and other natural heritage features on Town-owned land are accounted for in the Asset Management Plan as infrastructure with a replacement cost.	Finance; Parks, Recreation & Culture	Customer & Corporate Services	Conservation Authorities; Community Groups	2027–2029 (inventory & methodology) 2030–2035 (AMP integration)	Moderate (2)	Moderate (\$\$)

ID	Adaptation Action Name	Description	Lead Department	Key Supporting Areas	Partner Groups	Timeline	Level of Effort	Cost Band
A8	Resilient Facility Retrofit & Asset Management Capacity	Build resilience features (back-up power, passive cooling, snow/ice loading, flood protection, indoor air filtration) into municipal facilities, prioritizing those serving vulnerable populations and those designated as Warming and Cooling Centres. Pair capital retrofits with the asset management staffing and lifecycle O&M capacity needed to operate and maintain resilience features over time.	Customer & Corporate Services	Parks, Recreation & Culture	Utility Companies	2027–2029 (retrofit plan & inspections) 2030–2035 (capital retrofits)	High (3)	High (\$\$\$)
A9	Emergency Management Modernization	Refresh emergency plans, MOUs, mutual aid, insurance review, and communications protocols, including formalized coordination protocols with fire, police, EMS, and the Health Unit covering climate event response. Add scenarios for cumulative/concurrent events, tourist and seasonal-population surges, and regular tabletop and live simulation exercises. Modernization is collaborative and refined in coordination with specific partner agencies (Health Unit, utility providers, fire, police, EMS, Conservation Authorities, EM Ontario); partner-led actions are worked out during action-planning rather than pre-committed.	Fire Services	Communications Team; Infrastructure Department	Health Unit; Simcoe County; OPP	2027–2029	High (3)	Moderate (\$\$)
A10	Voluntary Green and Climate-Ready Engineering Standards	Support the development of voluntary standards for site plan, zoning, and engineering requirements to encourage green infrastructure, low-impact development, tree preservation, and climate-ready building design (cooling rough-ins, oversizing, future-proofing for longer-horizon climate conditions), led where possible by the County of Simcoe, with the Town prepared to develop these provisions directly should the County not take on that role.	Growth & Development	Customer & Corporate Services; Parks, Recreation & Culture	Simcoe County	2027–2029 (bylaws & guidelines) 2030–2035 (incentive program launch)	High (3)	Low (\$)
A11	Climate Resilience Financial Strategy	Conduct a structured, exploratory review - not a funding commitment - of how Collingwood's climate adaptation costs are financed, considering mechanisms that more transparently reflect the contribution of seasonal and tourist use to infrastructure demand, including development charges, the Municipal Accommodation Tax, and a possible stormwater utility rate, all subject to Council approval and applicable policy, while attending to equity of financial burden for permanent residents across income levels.	Finance; Growth & Development	Infrastructure Department; Customer & Corporate Services		2027–2029 (review) 2030–2035 (mechanism implementation)	Moderate (2)	Low (\$)
NATURAL ENVIRONMENT								
A12	Urban Forest & Canopy Expansion	Pursue a Town-wide tree canopy target with priority to urban heat islands and underserved neighbourhoods. Strengthen the tree preservation bylaw and dedicate enforcement capacity. Includes completing and maintaining an inventory of public trees and plantable spaces to identify priority locations for future planting.	Parks, Recreation & Culture	Legislative Services; Growth & Development	Conservation Authority, Community Groups	2027–2029 (maintenance program & bylaw) 2030–2035 (full canopy program)	High (3)	High (\$\$\$)
A13	Naturalization & Pollinator-Positive Public Realm	Expand naturalized gardens, edible streetscapes, and pollinator-supporting plantings on public land; support private land programs through education, demonstration sites, and incentives. Coordinate with A16 to avoid duplication on invasive-species response.	Parks, Recreation & Culture	Communications Team	Conservation Authority, Community Groups	2027–2029	Moderate (2)	Low (\$)
A14	Shoreline & Wetland Protection Program	Protect and restore wetlands, riparian corridors, and shoreline vegetation for flood mitigation, water quality, habitat, and natural cooling, coordinated with local conservation authority and MNRF/DFO. Continues to apply existing shoreline and riparian buffer protections under the Official Plan and Zoning By-law through development review and site plan approval; this action does not create new enforcement mechanisms beyond those already available.	Parks, Recreation & Culture; Conservation Authority (co-lead)	Infrastructure Department	Community Groups; Indigenous Groups	2027–2029 (enforcement & stewardship) 2030–2035 (land acquisition & bioengineering)	Moderate (2)	High (\$\$\$)
A15	Water Quality, Source Protection & Potable Water Availability	Strengthen runoff controls, stormwater quality treatment, and lake/creek monitoring to protect drinking water sources, beach access, and culturally and recreationally important water uses. Also covers drinking-water supply resilience: lake-level impacts, source-water availability during drought, and drought-response conservation programs. Beach water quality monitoring is already conducted by the Health Unit and MECP; Town Parks also conducts some existing harbour monitoring.	Infrastructure Department	Parks, Recreation & Culture	Health Unit; Conservation Authorities; Community Groups; Indigenous Groups	2027–2029	High (3)	Moderate (\$\$)

ID	Adaptation Action Name	Description	Lead Department	Key Supporting Areas	Partner Groups	Timeline	Level of Effort	Cost Band
A16	Invasive Species & Ecosystem Health Program	Implement an early-detection and rapid-response program for climate-enabled invasive species, integrated with urban forestry and naturalization programs. Coordinate with A13 to distinguish landscape-choice work (A13) from rapid-response work (A16). Includes developing a public-facing directory, hosted on the Town's website, that helps residents identify potentially invasive species and connects them with local organizations and service providers, drawing on resources already maintained by Conservation Authorities and provincial/federal agencies rather than duplicating them.	Parks, Recreation & Culture; Conservation Authority	Customer & Corporate Services	Community Groups; Indigenous Groups	2027–2029 (monitoring & EAB plan)	Moderate (2)	High (\$\$\$)
A17	Partner Coordination & Climate Risk Communications	Establish and maintain the coordination infrastructure, MOUs, and information-sharing protocols with external partners that make the Town's Risk Event Communications Program (A4) possible, including a Collingwood Climate Adaptation Working Group and formal agreements with local conservation authority, SMDHU, utility providers, and Emergency Services on climate-event coordination, response, and communications.	Communications Team; Customer & Corporate Services	Fire Services	Conservation Authority; Simcoe County (Emergency Services); OPP; Health Unit; Indigenous Groups	2027–2029	High (3)	Low (\$)
A18	Tracking Climate Events Leading to Event and Programming Cancellations	Develop and maintain a standard, low-burden method for logging events, programs, and services cancelled, postponed, or significantly altered due to climate hazards (extreme heat, flooding, severe storms, poor air quality), with lead departments and facilities logging disruptions as they occur and annual compilation of trends and impacts reported through Section 8.3 to inform prioritization and budget discussions.	Customer & Corporate Services; Parks, Recreation & Culture	Communications Team; Emergency Management	Community Groups; Simcoe County (Emergency Services); OPP; Health Unit; Indigenous Groups	2026-2029	Low (1)	Low (\$)



Appendix B

Risk Assessment Results

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Table B-1 High Priority Risks: Near Term (2021-2050)

ID	Climate Impact Statement	Recurrent/ Slow Onset	Near Term (2021-2050)	C _S	C _E	C _N	R _{S-NT}	R _{E-NT}	R _{N-NT}	R _{T-NT}	Vulnerability Rating	Vulnerable Populations
45	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may increase demand on emergency and municipal services, resulting in reduced response capacity during concurrent or prolonged emergencies.	Recurrent	4	18	16	13	72	64	52	188	High	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Unhoused populations; Mobility challenged
57	Increased precipitation intensity may increase runoff, resulting in surface contaminants transported to water bodies (streams, rivers, lakes) deteriorating aquatic habitats and drinking water sources, impacting recreational water use and culturally and spiritually significant activities.	Recurrent	4	15	16	14	60	64	56	180	Medium	Low-income households; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Indigenous; Unhoused populations.
12	Hotter summers with more frequent heat waves and tropical nights (>20°C) may reduce the effectiveness of passive cooling, resulting in increased reliance on mechanical cooling and increasing electricity demand.	Recurrent	4	14	13	16	56	52	64	172	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Unhoused population; Mobility challenged
26	Increased precipitation intensity may flood homes, resulting in displacement of residents, damage to residential property, and increased insurance and uninsured financial losses.	Recurrent	4	19	13	11	76	52	44	172	High	Low-income households; Outdoor workers; Elderly; Renters; Indigenous; Unhoused populations; Mobility challenged
36	Hotter summers with more frequent heat waves and tropical nights (>20°C) may increase the consequences of power outages during heat events, resulting in rapid indoor overheating and elevated health and safety risks.	Recurrent	4	13	12	14	52	48	56	156	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Indigenous; Unhoused population; Mobility challenged
21	Warmer, wetter winters may increase winter meltwater volumes, resulting in overloading of stormwater and sanitary systems.	Recurrent	4	14	14	10	56	56	40	152	Medium	
47	Increased precipitation intensity may increase inflow into wastewater treatment systems, resulting in treatment by-pass events that degrade water quality in receiving waters.	Recurrent	4	14	12	12	56	48	48	152	High	Indigenous
49	Hotter summers, with more days with maximum temperatures greater than 30°C may deteriorate lake water quality with warmer water and increased algal growth, resulting in degraded lake water quality.	Recurrent	4	11	13	14	44	52	56	152	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Unhoused population; Indigenous
39	Hotter, more humid summers may increase competition for shaded and cooled public spaces, resulting in crowding, access constraints, and equity concerns.	Slow Onset	4	14	9	13	56	36	52	144	Medium	Most vulnerable populations: Low-income households; Outdoor workers; Immunocompromised; Elderly; Hospital/care facilities; Unhoused population; Mobility challenged
22	Warmer, wetter winters may increase snow and ice loading on roofs, canopies, and infrastructure, resulting in higher risk of structural damage and service disruptions.	Recurrent	4	11	14	6	44	56	24	124	Medium	Low-income households; Outdoor workers

Notes:

S – Sociocultural; **E**- Economic; **N** – Natural; **C** – Consequence; **R** – Risk; **NT** – Near-Term; **Red Shading** – High / Very High / Extreme Risk Rating; **Gold Shading** – Medium Risk Rating; **Green Shading** -Very Low / Low / Medium Low Risk Rating

Table B- 2 High Priority Risks: Long Term (2051-2080)

ID	Climate Impact Statement	Recurrent/ Slow Onset	Long Term (2051-2080)	C _S	C _E	C _N	R _S - LT	R _E - LT	R _N - LT	R _T - LT	Vulnerability Rating	Vulnerable Populations
45	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may increase demand on emergency and municipal services, resulting in reduced response capacity during concurrent or prolonged emergencies.	Recurrent	5	18	16	13	90	80	65	235	High	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Unhoused populations; Mobility challenged
47	Increased precipitation intensity may increase inflow into wastewater treatment systems, resulting in treatment by-pass events that degrade water quality in receiving waters.	Recurrent	5	14	12	21	70	60	105	235	High	Indigenous
12	Hotter summers with more frequent heat waves and tropical nights (>20°C) may reduce the effectiveness of passive cooling, resulting in increased reliance on mechanical cooling and increasing electricity demand.	Recurrent	5	14	13	16	70	65	80	215	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Unhoused population; Mobility challenged
36	Hotter summers with more frequent heat waves and tropical nights (>20°C) may increase the consequences of power outages during heat events, resulting in rapid indoor overheating and elevated health and safety risks.	Recurrent	5	13	12	14	65	60	70	195	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Indigenous; Unhoused population; Mobility challenged
21	Warmer, wetter winters may increase winter meltwater volumes, resulting in overloading of stormwater and sanitary systems.	Recurrent	5	14	14	10	70	70	50	190	Medium	
34	Hotter summers with more frequent heat waves and tropical nights (>20°C) may increase periods of poor air quality, resulting in elevated respiratory health risks and reduced outdoor activity.	Recurrent	5	13	12	13	65	60	65	190	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Indigenous; Unhoused population; Mobility challenged
49	Hotter summers, with more days with maximum temperatures greater than 30°C may deteriorate lake water quality with warmer water and increased algal growth, resulting in degraded lake water quality.	Recurrent	5	11	13	14	55	65	70	190	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Unhoused population; Indigenous
39	Hotter, more humid summers may increase competition for shaded and cooled public spaces, resulting in crowding, access constraints, and equity concerns.	Slow Onset	5	14	9	13	70	45	65	180	Medium	Most vulnerable populations: Low-income households; Outdoor workers; Immunocompromised; Elderly; Hospital/care facilities; Unhoused population; Mobility challenged
40	Hotter, drier summers may increase exposure to wildfire smoke and air pollution, resulting in degraded air quality and reduced safe access to outdoor environments.	Recurrent	5	13	12	11	65	60	55	180	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Unhoused population; Hospital/care facilities; Indigenous

ID	Climate Impact Statement	Recurrent/ Slow Onset	Long Term (2051-2080)	C _S	C _E	C _N	R _{S-LT}	R _{E-LT}	R _{N-LT}	R _{T-LT}	Vulnerability Rating	Vulnerable Populations
57	Increased precipitation intensity may increase runoff, resulting in surface contaminants transported to water bodies (streams, rivers, lakes) deteriorating aquatic habitats and drinking water sources, impacting recreational water use and culturally and spiritually significant activities.	Recurrent	4	15	16	14	60	64	56	180	Medium	Low-income households; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Indigenous; Unhoused populations.
44	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may damage buildings and vehicles, resulting in reduction in areas where insurance coverage is available, increasing insurance coverage costs becoming unaffordable, increasing uninsured costs to repair or replace damaged property.	Recurrent	5	13	13	9	65	65	45	175	High	Low-income households; Outdoor workers; Renters; Unhoused population
54	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may damage trees and vegetation, resulting in cascading disruptions to parks, power supply, transportation routes, and other public services.	Recurrent	5	13	11	11	65	55	55	175	High	Low-income households; Outdoor workers; Elderly; Indigenous; Mobility challenged; Unhoused population
26	Increased precipitation intensity may flood homes, resulting in displacement of residents, damage to residential property, and increased insurance and uninsured financial losses.	Recurrent	4	19	13	11	76	52	44	172	High	Low-income households; Outdoor workers; Elderly; Renters; Indigenous; Unhoused populations; Mobility challenged
41	Warmer, wetter winters may increase rain-on-snow events, resulting in flooding of homes and properties.	Recurrent	5	12	11	11	60	55	55	170	High	Low-income households; Elderly; Renters; Unhoused population; Mobility challenged
43	Warmer winters may increase exposure to infectious diseases, resulting in increased health risks.	Slow Onset	5	13	12	9	65	60	45	170	High	Low-income households; Immunocompromised; Elderly; Children; Hospital/care facilities; Indigenous; Unhoused population; Mobility challenged
50	Hotter, drier summers may increase stress on vegetation, resulting in reduced plant health and loss of ecosystem services.	Slow Onset	5	12	8	13	60	40	65	165	High	Low-income households; Outdoor workers; Elderly; Children; Renters; Indigenous; Unhoused population; Immunocompromised
55	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may accelerate erosion of shoreline and watercourses, resulting in loss of land stability and reduced availability of natural and developed shoreline areas.	Recurrent	5	11	11	11	55	55	55	165	High	Low-income households; Children; Unhoused population; Mobility challenged
25	Increasing frequency of extreme weather events may reduce recovery time between events, resulting in cumulative stress on infrastructure, services, and communities.	Recurrent	5	12	12	8	60	60	40	160	Medium	
61	Earlier spring onset and later fall onset may increase pest and invasive species pressures, resulting in greater stress on native ecosystems and agricultural systems	Slow Onset	5	12	9	11	60	45	55	160	Medium	Low-income households; Outdoor workers; Elderly; Children; Indigenous; Unhoused population; Immunocompromised
62	Hotter, more humid summers may increase the survival and spreading of invasive species, resulting in increased pressure on native ecosystems and biodiversity.	Slow Onset	5	12	9	11	60	45	55	160	High	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Indigenous; Renters

ID	Climate Impact Statement	Recurrent/ Slow Onset	Long Term (2051-2080)	C _S	C _E	C _N	R _S - LT	R _E - LT	R _N - LT	R _T - LT	Vulnerability Rating	Vulnerable Populations
11	Hotter summers with more frequent heat waves and tropical nights (>20°C) may increase indoor overheating, resulting in reduced housing habitability and comfort for residents without adequate cooling.	Recurrent	5	12	8	11	60	40	55	155	Medium	Low-income households; Outdoor workers; Elderly; Children; Renters; Unhoused population; Mobility challenged
22	Warmer, wetter winters may increase snow and ice loading on roofs, canopies, and infrastructure, resulting in higher risk of structural damage and service disruptions.	Recurrent	5	11	14	6	55	70	30	155	Medium	Low-income households; Outdoor workers
30	More precipitation may increase lake levels, resulting in reduced access to beaches, waterfront trails, and culturally and recreationally important shoreline areas.	Recurrent	5	10	11	10	50	55	50	155	High	Outdoor workers; Children; Indigenous; Unhoused population; Mobility challenged
9	Hotter summers, with more days with maximum temperatures greater than 30°C may accelerate deterioration of pavement and building materials, resulting in reduced service life of infrastructure and buildings.	Slow Onset	5	8	11	11	40	55	55	150	Medium	Low-income households; Outdoor workers; Mobility challenged
20	Warmer, wetter winters may increase occurrence of mixed precipitation events such as freezing rain, resulting in hazardous travel conditions and service disruptions.	Recurrent	5	10	12	8	50	60	40	150	High	
33	Hotter summers, with more days with maximum temperatures greater than 30°C may reduce the feasibility and comfort of outdoor community events, resulting in reduced participation and increased risk to participant health and safety.	Recurrent	5	11	8	11	55	40	55	150	High	Low-income households; Outdoor workers; Elderly; Children; Renters; Indigenous; Unhoused populations; Mobility challenged; Immunocompromised; Hospital/care facilities
67	Hotter summers, with more days with maximum temperatures greater than 30°C may increase warm-weather tourism, resulting in increased use of recreational areas and visitor-serving infrastructure.	Slow Onset	5	9	7	12	45	35	60	140	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospital/care facilities; Unhoused population
4	More precipitation may raise lake and receiving water levels, resulting in operational challenges for wastewater treatment facilities and stormwater systems.	Recurrent	5	8	11	7	40	55	35	130	High	Low-income households; Unhoused population; Immunocompromised; Renters; Mobility challenged

Notes:

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Table B-3 Medium Priority Risks: Near Term (2021-2050) and Long Term (2051-2080)

ID	Climate Impact Statement	Recurrent/ Slow Onset	Near Term (2021- 2050)	Long Term (2051- 2080)	C _S	C _E	C _N	R _{S-NT}	R _{E-NT}	R _{N-NT}	R _{T-NT}	R _{S-LT}	R _{E-LT}	R _{N-LT}	R _{T-LT}	Vulnerability Rating	Vulnerable Populations
23	Increased frequency of storm events (rain, snow, lightning, hail, freezing rain, windstorms) may damage power and communication infrastructure through ice and wind loading, resulting in more frequent outages and extended restoration times.	Recurrent	4	5	10	10	8	40	40	32	112	50	50	40	140	High	Low-income households; Outdoor workers; Immunocompromised; Elderly, Children; Renters; Hospital/care facilities; Mobility challenged
53	Warmer, wetter winters may increase occurrence of mixed precipitation events such as freezing rain, resulting in increased ice accretion, runoff, and physical stress on vegetation, soils, and aquatic systems.	Recurrent	4	5	9	10	9	36	40	36	112	45	50	45	140	Medium	Outdoor workers; Hospital/care facilities; Mobility challenged
2	Increased winter precipitation may increase winter maintenance requirements for transportation network and municipal facilities, resulting in reduced reliability of winter operations and service delivery.	Slow Onset	3	4	13	12	9	39	36	27	102	52	48	36	136	Medium	
68	Increased precipitation intensity may damage crops, resulting in reduced agricultural productivity and increased risk to local food systems.	Recurrent	4	4	11	13	10	44	52	40	136	44	52	40	136	Medium	Low-income households; Indigenous; Unhoused population
1	Increased precipitation intensity may flood roads, resulting in disrupted transportation networks and reduced reliability of goods, services, and emergency response.	Recurrent	4	4	12	13	8	48	52	32	132	48	52	32	132	Medium	Low-income households; Immunocompromised; Elderly; Outdoor workers; Hospital/care facilities; Unhoused population; Mobility challenged
56	Changes in precipitation patterns may increase runoff, resulting in reduced groundwater recharge and degraded groundwater quality.	Slow Onset	4	4	10	10	12	40	40	48	128	40	40	48	128	Medium	Immunocompromised; Hospital/care facilities; Indigenous; Unhoused population
5	More precipitation may increase lake levels, resulting in increased exposure of shoreline infrastructure, docks, trails, and waterfront facilities to wave action and flooding.	Recurrent	4	5	9	8	8	36	32	32	100	45	40	40	125	High	
42	Warmer winters may reduce reliability of winter-dependent community events, resulting in increased cancellations and reduced participation in winter programming.	Slow Onset	4	5	7	10	8	28	40	32	100	35	50	40	125	High	Outdoor workers
66	Earlier spring onset and later fall onset may increase tourism in shoulder seasons, resulting in increased use of public spaces and visitor-serving amenities.	Slow Onset	4	5	9	6	10	36	24	40	100	45	30	50	125	Medium	Outdoor workers

ID	Climate Impact Statement	Recurrent/ Slow Onset	Near Term (2021- 2050)	Long Term (2051- 2080)	C _S	C _E	C _N	R _{S-NT}	R _{E-NT}	R _{N-NT}	R _{T-NT}	R _{S-LT}	R _{E-LT}	R _{N-LT}	R _{T-LT}	Vulnerability Rating	Vulnerable Populations
46	Increasing frequency and severity of climate-related events may contribute to cumulative stress and mental health impacts for residents and responders over time, resulting in increased demand for mental health and social support services and reduced individual and workforce resilience.	Slow Onset	4	5	10	8	6	40	32	24	96	50	40	30	120	High	Immunocompromised; Hospital/care facilities
37	Hotter summers and more frequent heat waves may increase heat-related illness and injury among outdoor workers and vulnerable populations, resulting in reduced safe work and activity periods, productivity losses, and increased pressure on health, emergency, and community services.	Recurrent	4	5	9	7	7	36	28	28	92	45	35	35	115	Medium	Low-income households; Outdoor workers; Immunocompromised; Elderly; Hospital/care facilities; Unhoused population
59	Decreasing number of extreme cold days may increase the survival of invasive species, resulting in increased pressure on native flora and fauna.	Slow Onset	3	4	9	8	11	27	24	33	84	36	32	44	112	Medium	Outdoor workers; Children; Indigenous
65	Decreasing number of extreme cold days may reduce the reliability of winter tourism and cold-dependent economic activities, resulting in reduced seasonal economic activity and employment.	Slow Onset	3	4	7	11	7	21	33	21	75	28	44	28	100	High	Outdoor workers; Indigenous
18	Warmer winters may increase the number of freeze-thaw events, resulting in accelerated deterioration of roads, concrete structures, and other built infrastructure.	Slow Onset	3	2	14	14	13	42	42	39	123	28	28	26	82	High	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Renters; Hospitals/care facilities; Unhoused population; Mobility challenged.

Notes:

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Red Shading – High / Very High / Extreme Risk Rating; **Gold Shading** – Medium Risk Rating; **Green Shading** -Very Low / Low / Medium Low Risk Rating

Table B-4 Low Priority Risks: Near Term (2021-2050) and Long Term (2051-2080)

ID	Climate Impact Statement	Recurrent/ Slow Onset	Near Term (2021-2050)	Long Term (2051-2080)	C _S	C _E	C _N	R _{S-NT}	R _{E-NT}	R _{N-NT}	R _{T-NT}	R _{S-LT}	R _{E-LT}	R _{N-LT}	R _{T-LT}	Vulnerability Rating	Vulnerable Populations
7	Increasing humidity may accelerate the deterioration of moisture-sensitive goods and materials, resulting in loss or damage to stored agricultural products and cultural artifacts.	Slow Onset	3	3	6	11	9	18	33	27	78	18	33	27	78	High	Low-income households; Indigenous; Unhoused population; Outdoor workers; Immunocompromised
14	Hotter, more humid summers may accelerate corrosion and reduce reliability of electrical and mechanical components, resulting in increased maintenance demands and service disruptions.	Slow Onset	4	4	6	8	4	24	32	16	72	24	32	16	72	Medium	Low-income households; Hospital/care facilities
15	Hotter, drier summers may increase the frequency and severity of wildfires, resulting in direct damage to natural environments, buildings, and critical infrastructure.	Recurrent	1	1	17	21	23	17	21	23	61	17	21	23	61	High	Low-income households; Outdoor workers; Immunocompromised; Elderly; Children; Hospital/care facilities; Unhoused population; Mobility challenged
16	Warmer winters may lower lake levels due to reduced ice coverage that may increase evaporation rates, resulting in operational challenges for drinking water treatment systems.	Recurrent	3	2	7	11	9	21	33	27	81	14	22	18	54	High	Low-income households; Children; Elderly; Unhoused population; Renters
27	Increased precipitation intensity may increase demand on emergency services, resulting in reduced response capacity during concurrent or cascading emergency events.	Recurrent	3	4	9	10	4	27	30	12	69	36	40	16	92	High	Immunocompromised; Elderly; Children; Hospital/care facilities; Unhoused population; Mobility challenged
28	Increased precipitation intensity may increase inflow into sanitary system, resulting in sewer backups that affect homes and businesses.	Recurrent	4	4	8	10	8	32	40	32	104	32	40	32	104	High	Low-income households; Elderly; Children; Renters
52	Warmer winters may increase the number of freeze-thaw events, resulting in increased reliance on road salt and de-icing practices.	Slow Onset	3	2	7	10	12	21	30	36	87	14	20	24	58	Medium	Outdoor workers; Indigenous
58	More fall precipitation may alter the timing and magnitude of streamflows, resulting in disrupted aquatic habitat conditions during critical fish spawning and early life stages.	Slow Onset	2	2	7	9	10	14	18	20	52	14	18	20	52	Medium	Indigenous

Notes:

S – Sociocultural; **E** - Economic; **N** – Natural; **C** – Consequence; **R** – Risk; **NT** – Near Term; **LT** – Long Term

Red Shading – High / Very High / Extreme Risk Rating; **Gold Shading** – Medium Risk Rating; **Green Shading** -Very Low / Low / Medium Low Risk Rating



Appendix C

Climate Projection Data

This plan was produced with the assistance of the Green Municipal Fund, a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the views of the author(s), and FCM and the Government of Canada accept no responsibility for them.

Table C-1 Climate Projections: Collingwood, Ontario (Prairie Climate Centre, 2026)

Climate Variable	Baseline (1976-2005)	RCP4.5 (2021-2050)	RCP4.5 (2051-2080)	RCP8.5 (2021-2050)	RCP8.5 (2051-2080)
Mean Temperature (°C)	7.2	9.1	10.2	9.3	11.5
Mean Temperature – Spring (°C)	5.3	7.1	8.1	7.3	9.2
Mean Temperature - Summer (°C)	19	20.8	21.9	21.1	23.4
Mean Temperature – Fall (°C)	9.5	11.5	12.3	11.7	13.7
Mean Temperature – Winter (°C)	-5.4	-3.1	-1.8	-2.9	-0.3
Maximum Temperature (°C)	32.7	35	36	35.1	37.6
Minimum Temperature (°C)	-25.7	-21.8	-17.4	-19.9	-11.3
Ice Days ($\leq 0^{\circ}\text{C}$)	63.7	46.2	37.8	45.2	28.3
Mild Winter Days ($\leq -5^{\circ}\text{C}$)	84.5	65.4	54.9	63.6	42.8
Winter Days ($\leq -15^{\circ}\text{C}$)	22.5	12.5	7.7	11.3	3.9
Very Hot Days ($\geq 30^{\circ}\text{C}$)	9.7	23.2	33.3	25.2	48.6
Tropical Nights ($\geq 20^{\circ}\text{C}$)	4.4	11.8	18.8	14	32.7
Number of Heat Waves (count)	1.1	3.2	4.5	3.5	6
Average Length of Heat Waves (days)	2.5	4.4	5.2	4.7	6.7
Cooling Degree Days (count)	227.3	386.6	492.7	416.6	660.8
Heating Degree Days (count)	4180	3621	3352	3575	3018
Total Precipitation – Annual (mm)	906	950	980	964	994
Total Precipitation – Spring (mm)	197	211	218	217	232

Climate Variable	Baseline (1976-2005)	RCP4.5 (2021-2050)	RCP4.5 (2051-2080)	RCP8.5 (2021-2050)	RCP8.5 (2051-2080)
Total Precipitation – Summer (mm)	215	218	221	219	214
Total Precipitation - Fall (mm)	251	258	269	262	262
Total Precipitation – Winter (mm)	242	264	272	267	287
Wet Days ≥ 10 mm (count)	23	24.7	26	25.7	29.9
Wet Days ≥ 20 mm (count)	5	5.7	6.3	5.8	6.6
Max 1-Day Precipitation (mm)	40	44	46	44	47
Dry Days (count)	185.5	185.6	185.8	185	186.6
Frost-Free Season (days)	168	189	197	191	215
Frost Days	143.3	119.6	107.7	117.4	91.3
Date of Last Spring Frost	May 3	Apr 24	Apr 20	Apr 23	Apr 12
Date of First Fall Frost	Oct 21	Nov 1	Nov 7	Nov 3	Nov 17
Freeze-Thaw Cycles	65.2	59.9	56.7	58.9	51.7

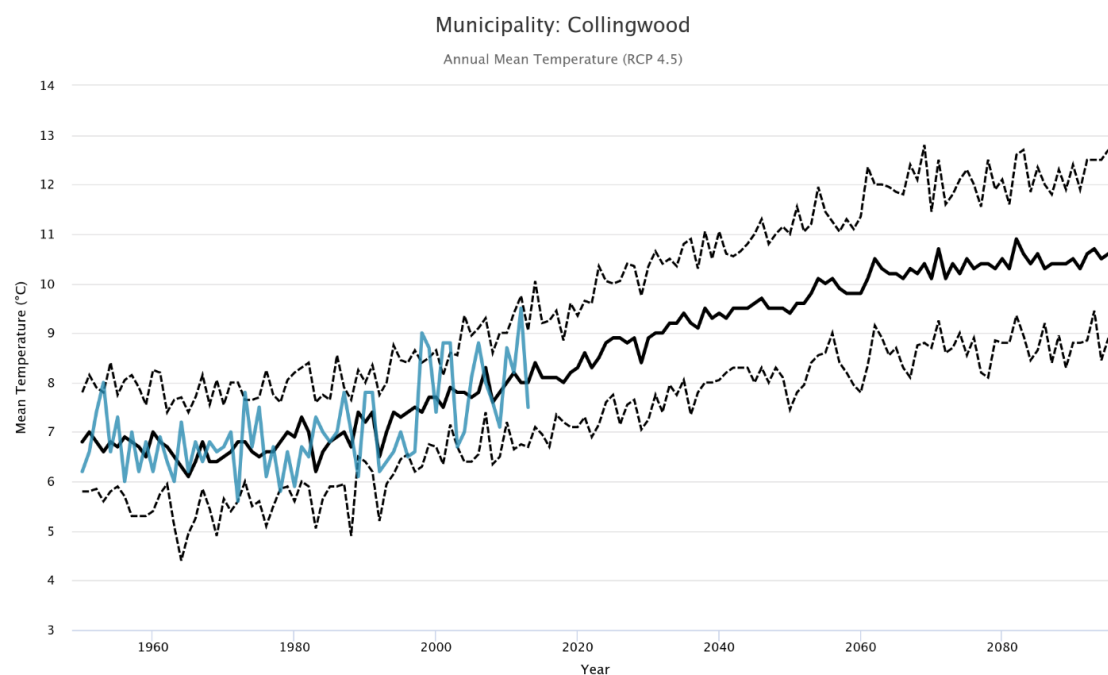


Figure C-1 Annual Mean Temperature (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

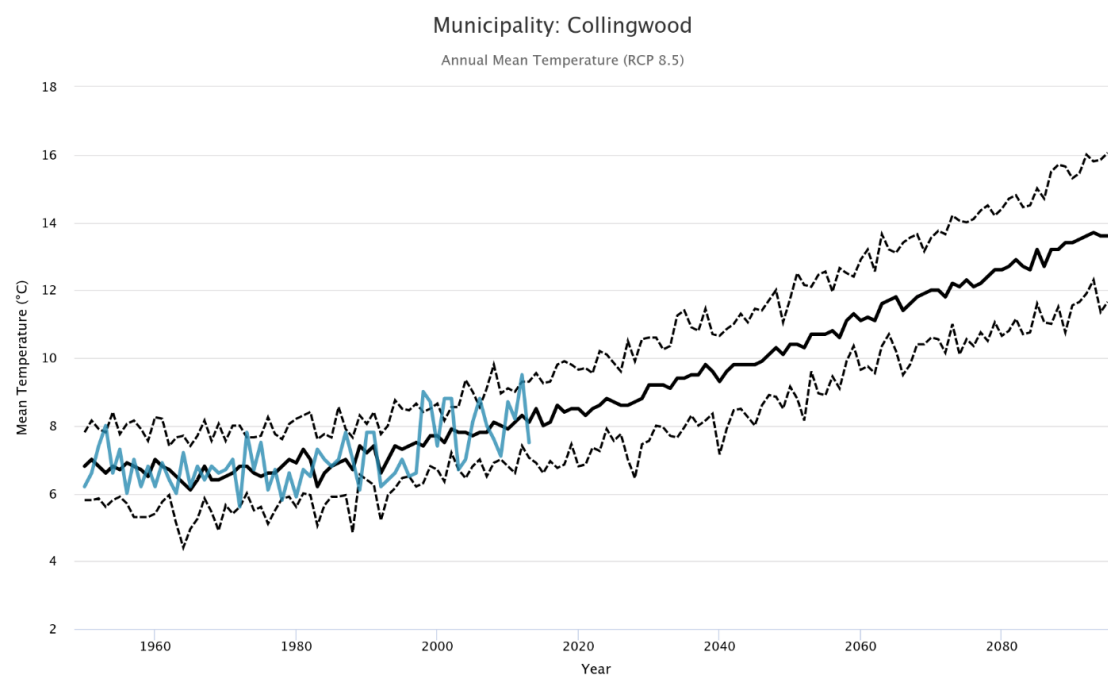
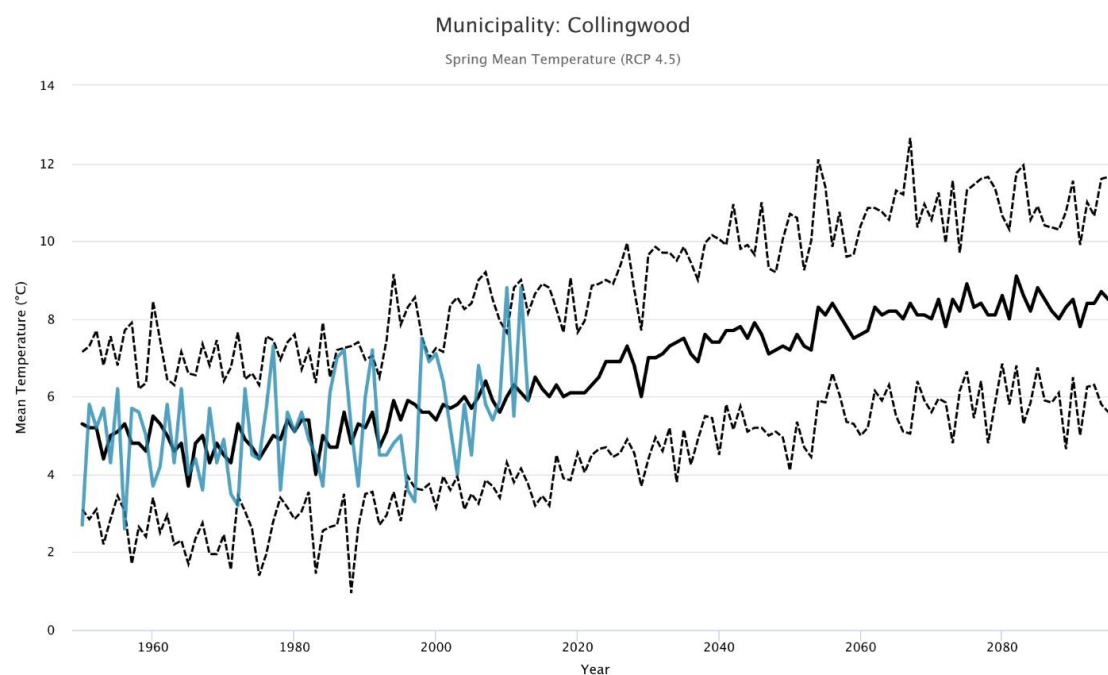


Figure C-2 Annual Mean Temperature (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)



Figure

C-3 Spring Mean Temperature (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

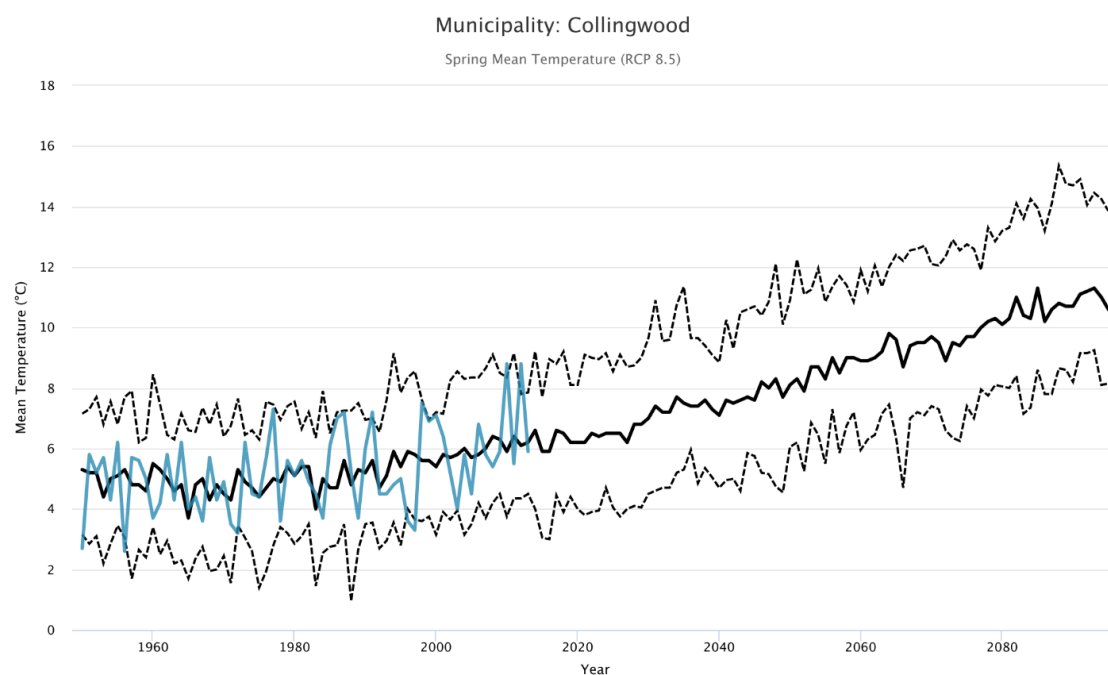


Figure C-4 Spring Mean Temperature (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

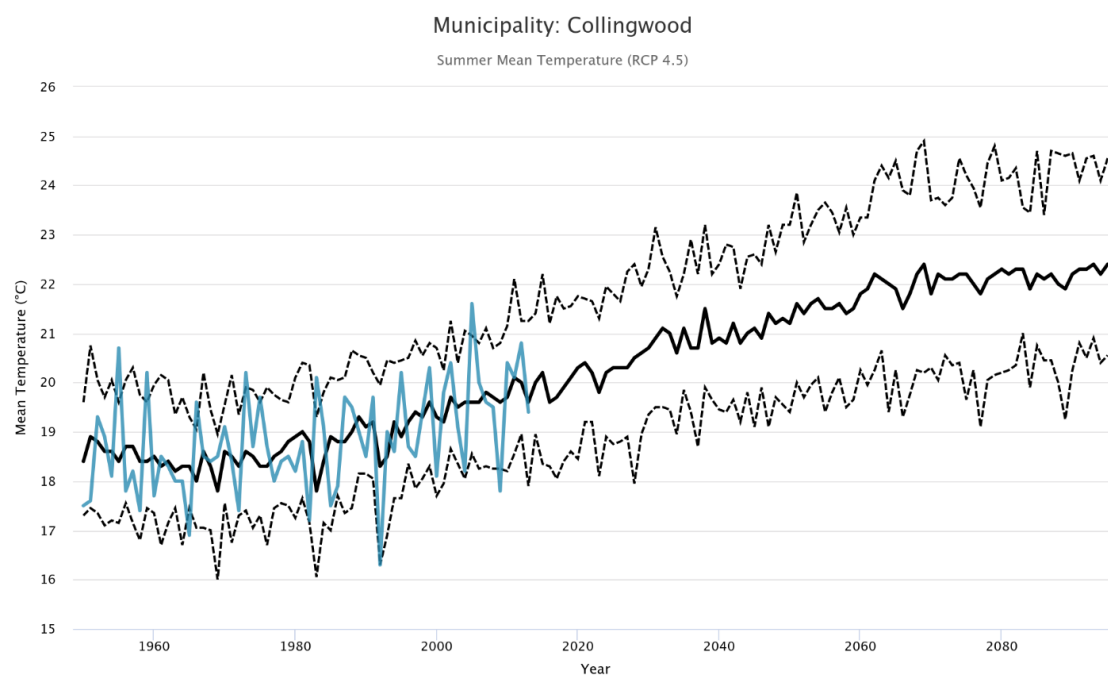


Figure C-5 Summer Mean Temperature (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

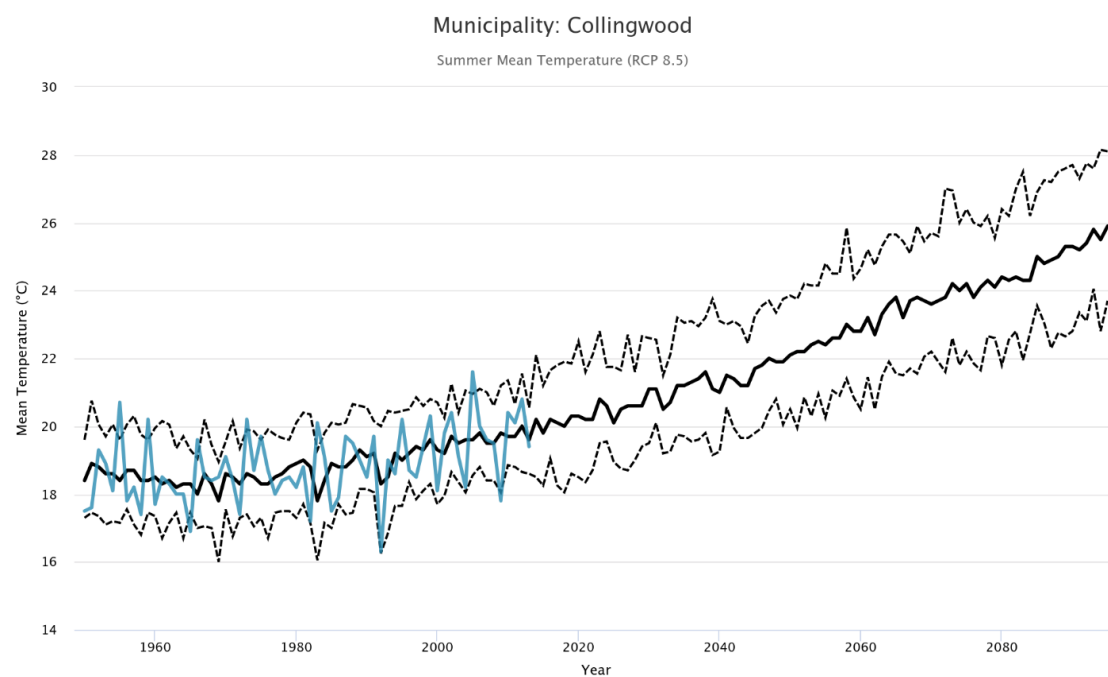


Figure C-6 Summer Mean Temperature (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

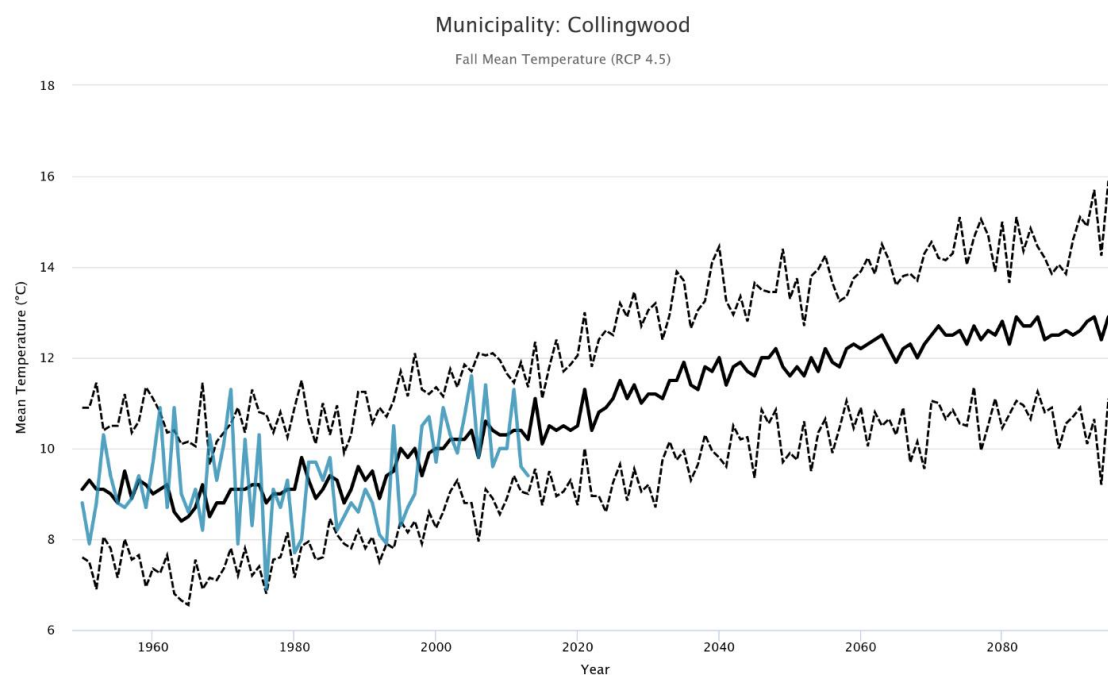


Figure C-7 Fall Mean Temperature (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

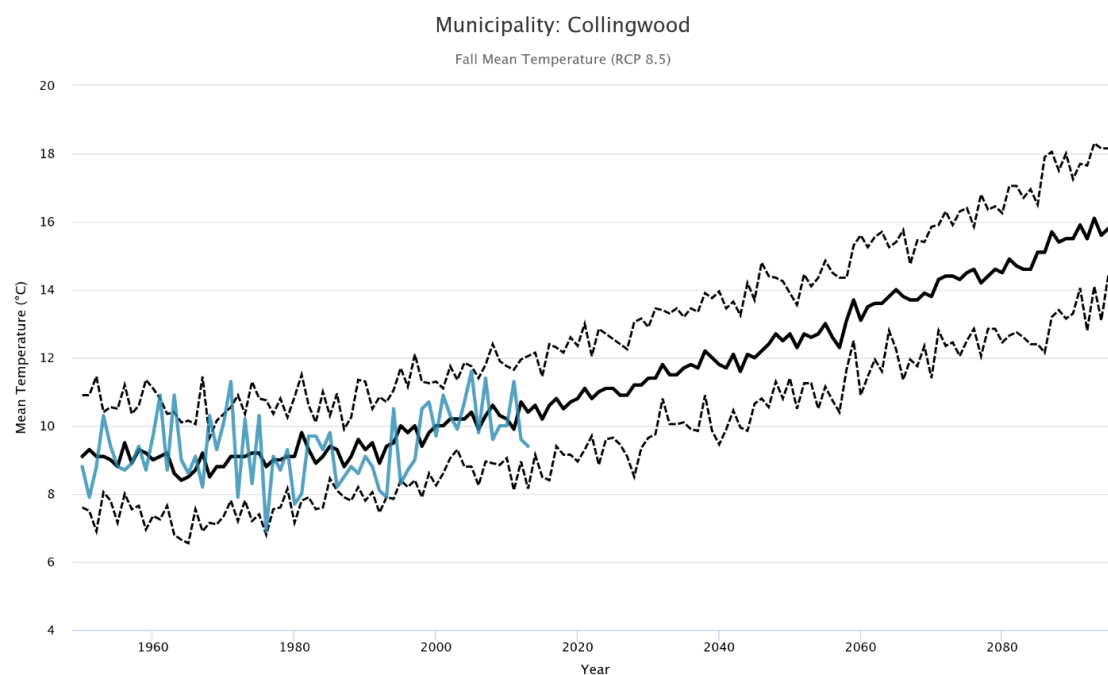


Figure C-8 Fall Mean Temperature (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

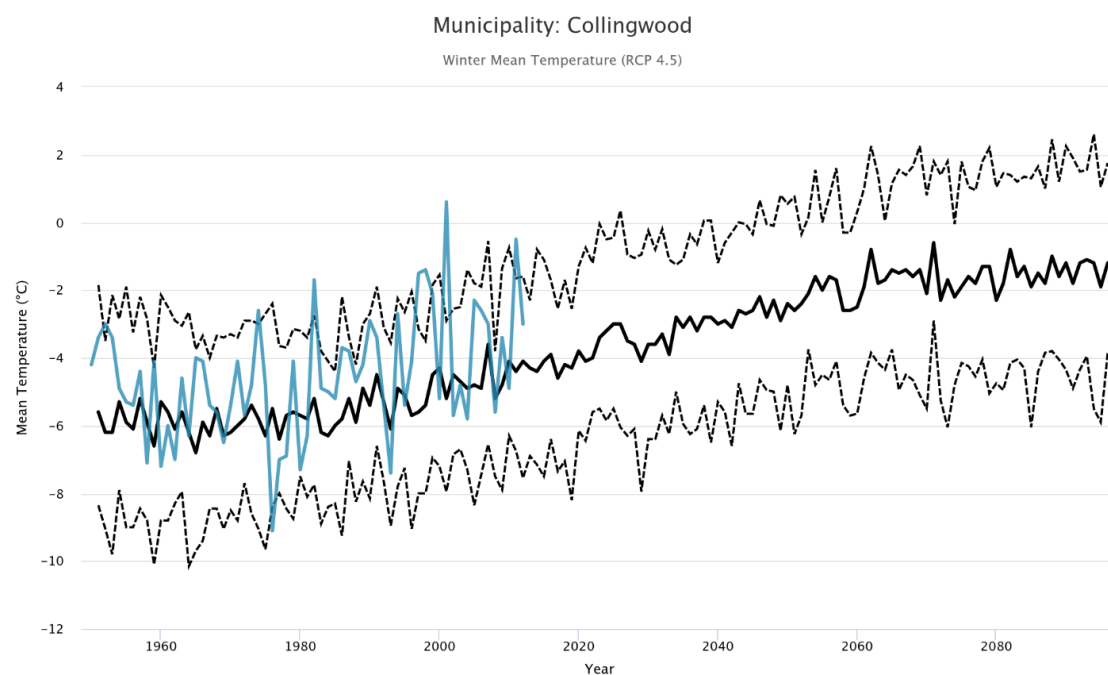


Figure C-9 Winter Mean Temperature (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

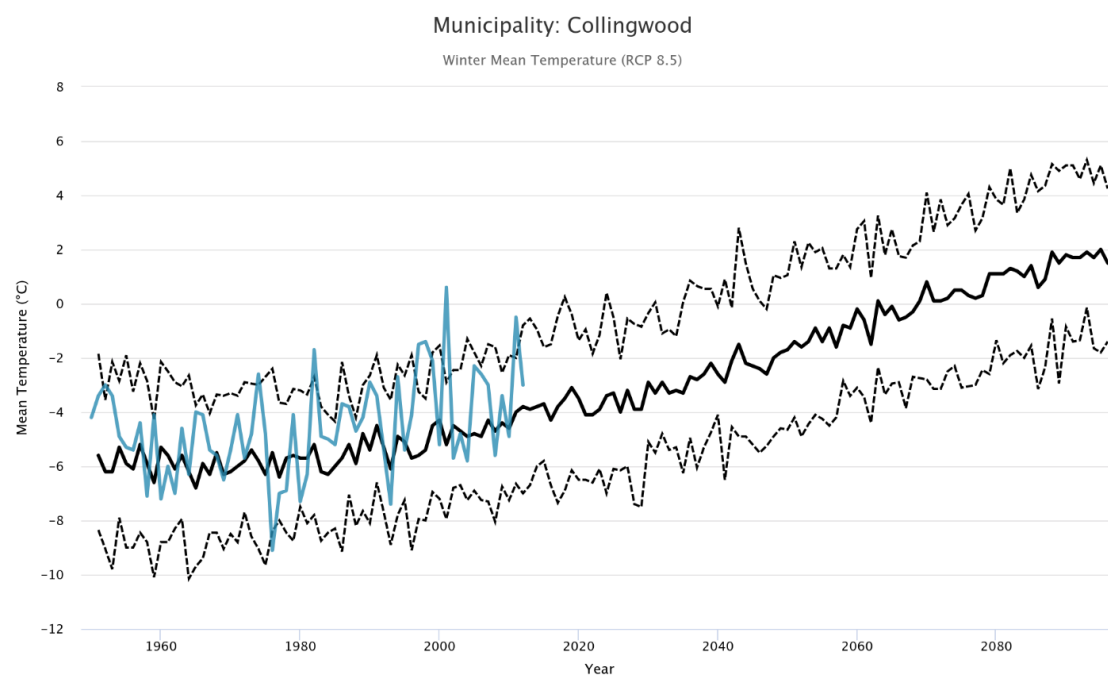


Figure C-10 Winter Mean Temperature (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

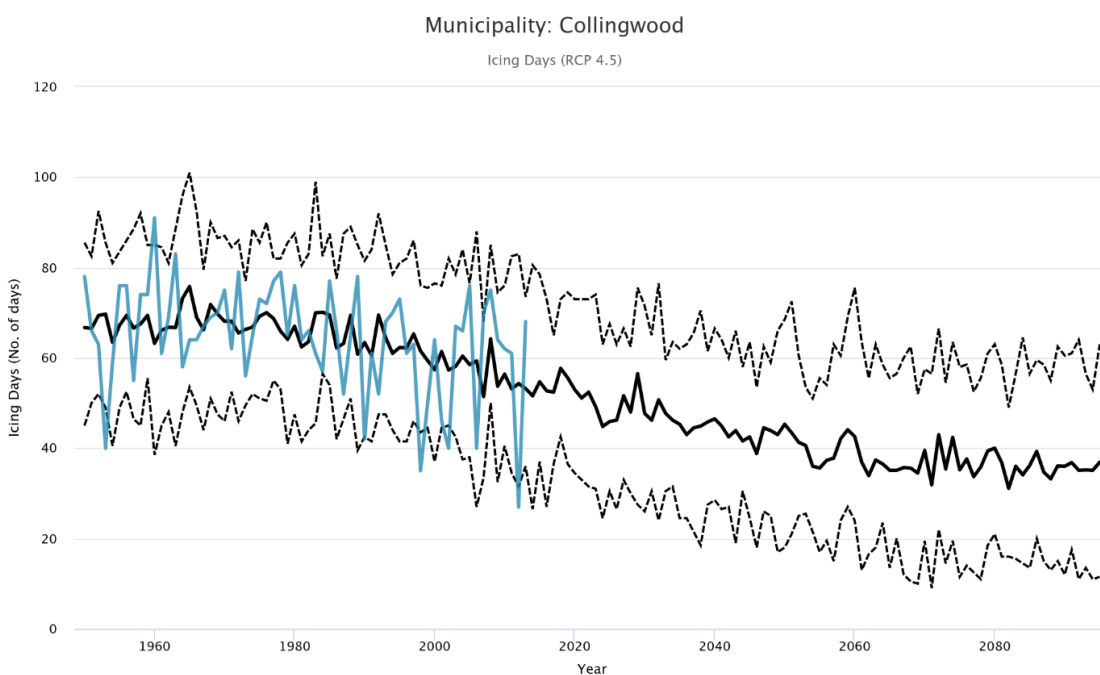


Figure C-11 Icing Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

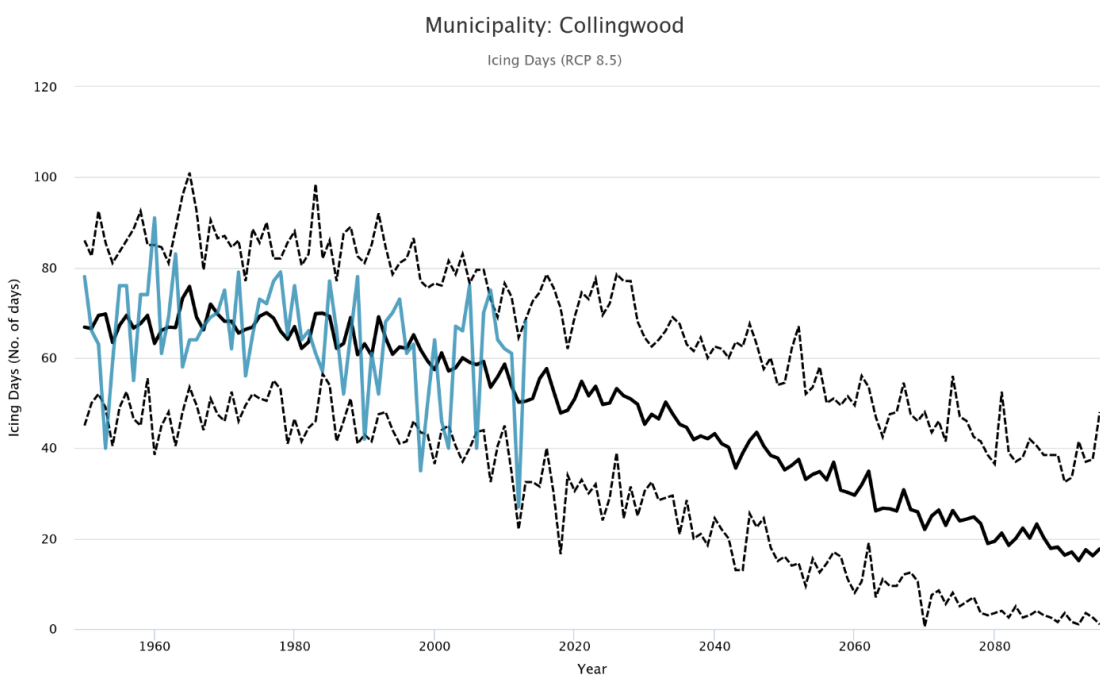


Figure C-12 Icing Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

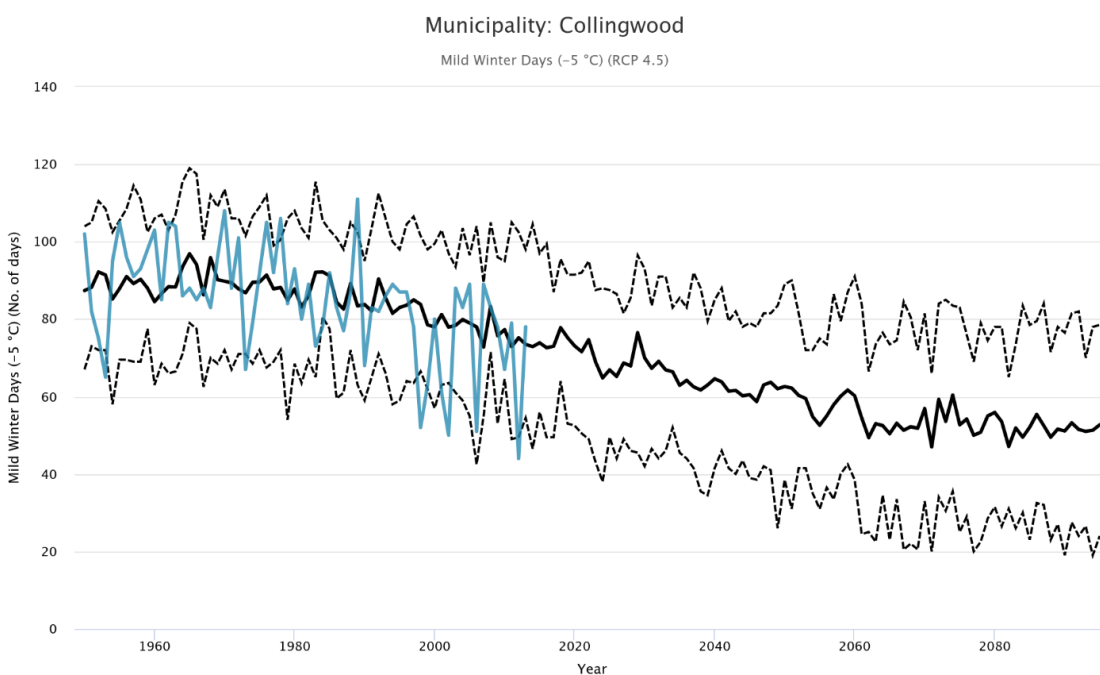


Figure C-13 Mild Winter Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

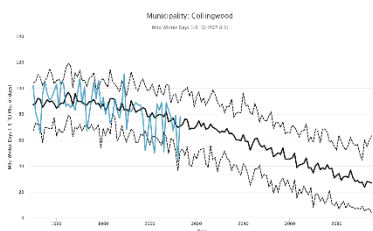


Figure C-14 Winter Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

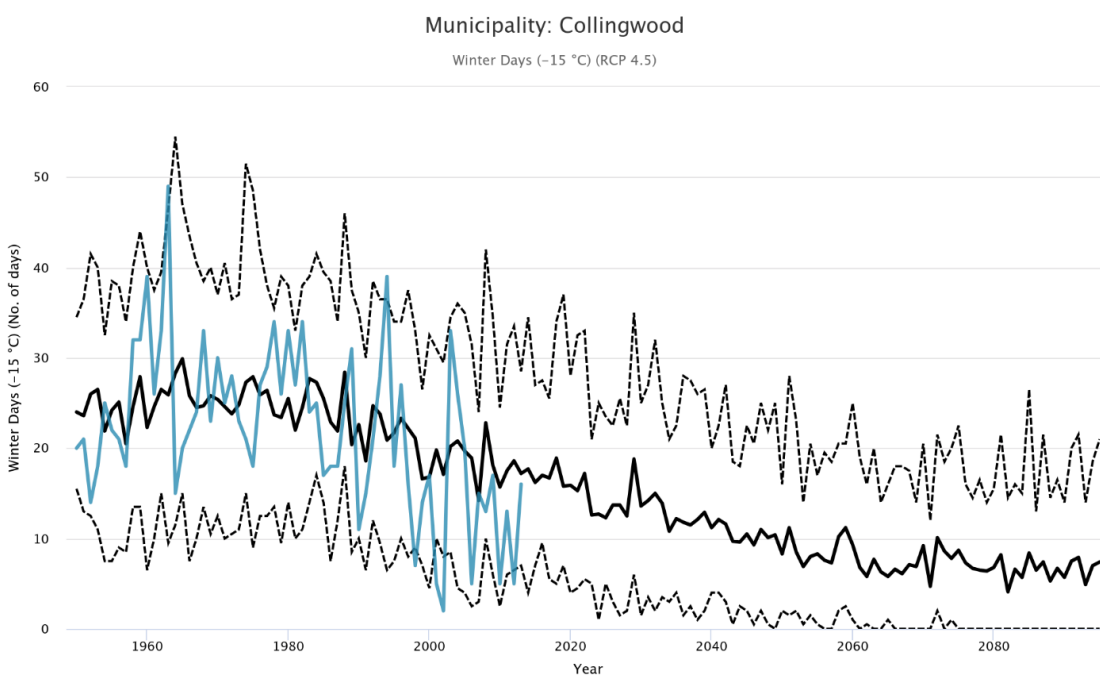


Figure C-15 Cold Winter Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

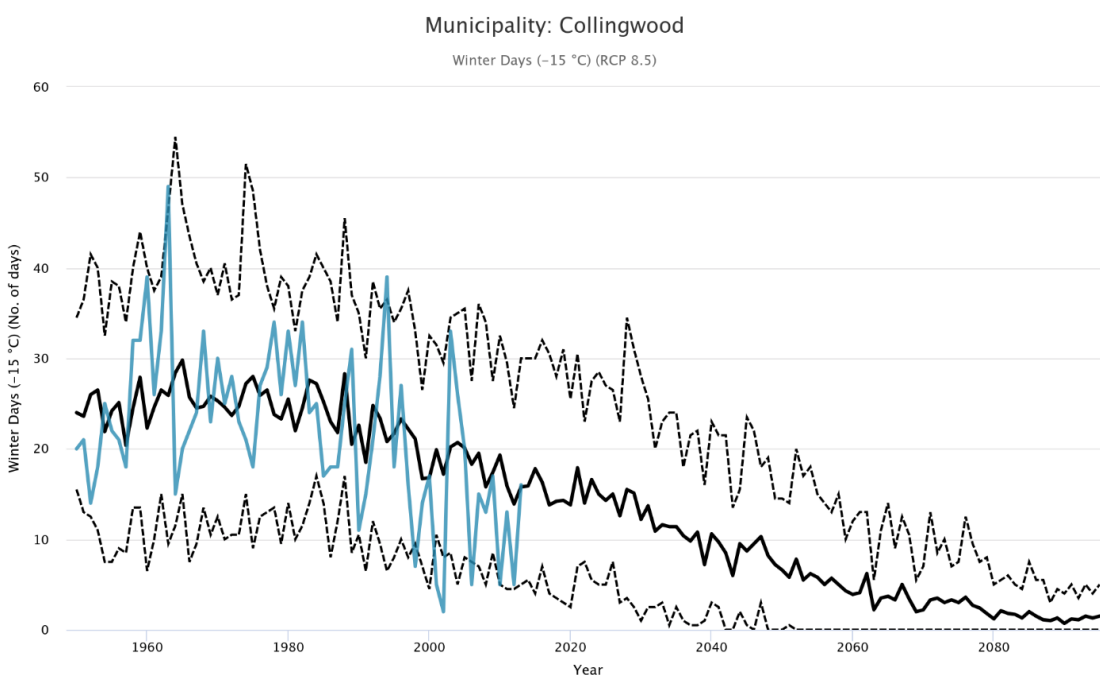


Figure C-16 Cold Winter Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

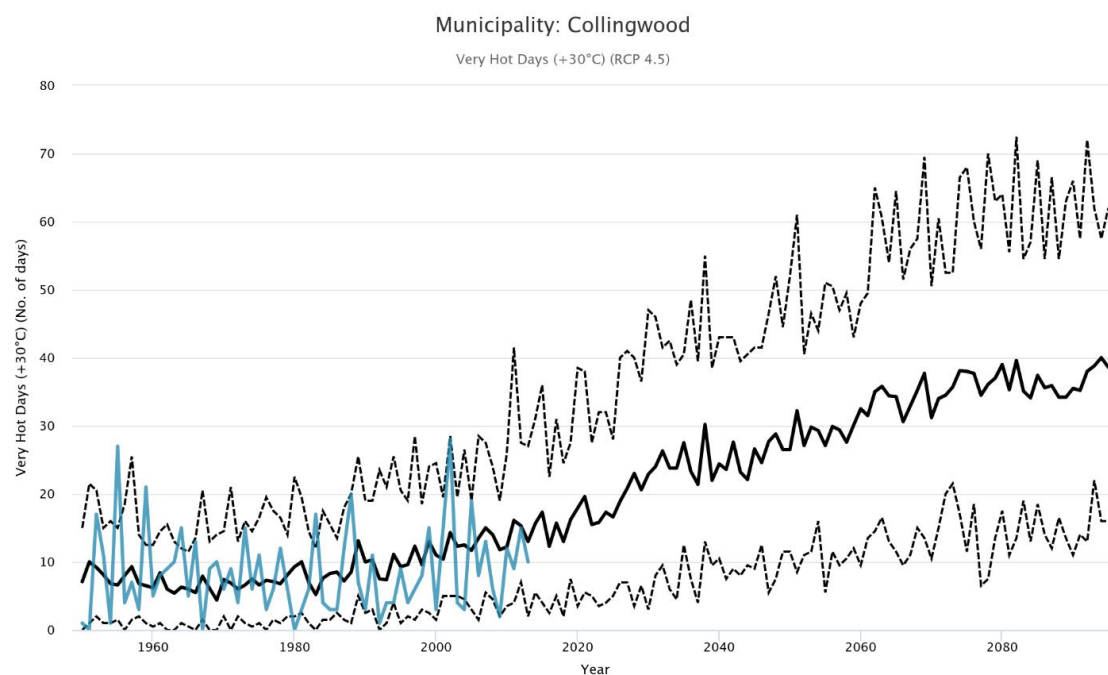


Figure C-17 Very Hot Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

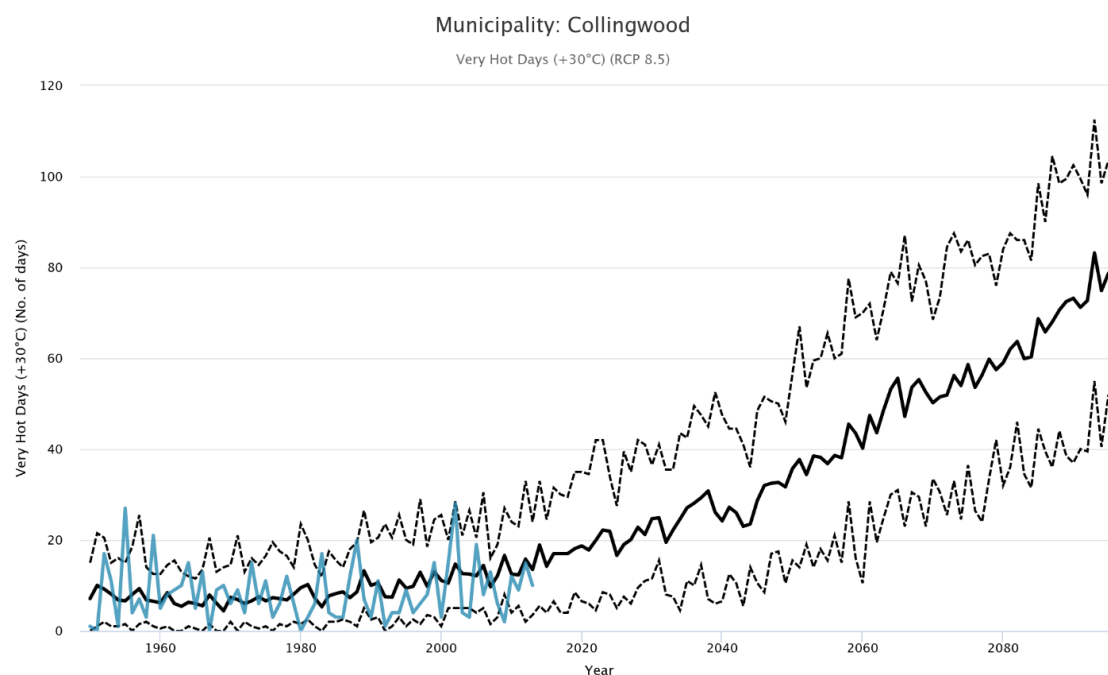


Figure C-18 Very Hot Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

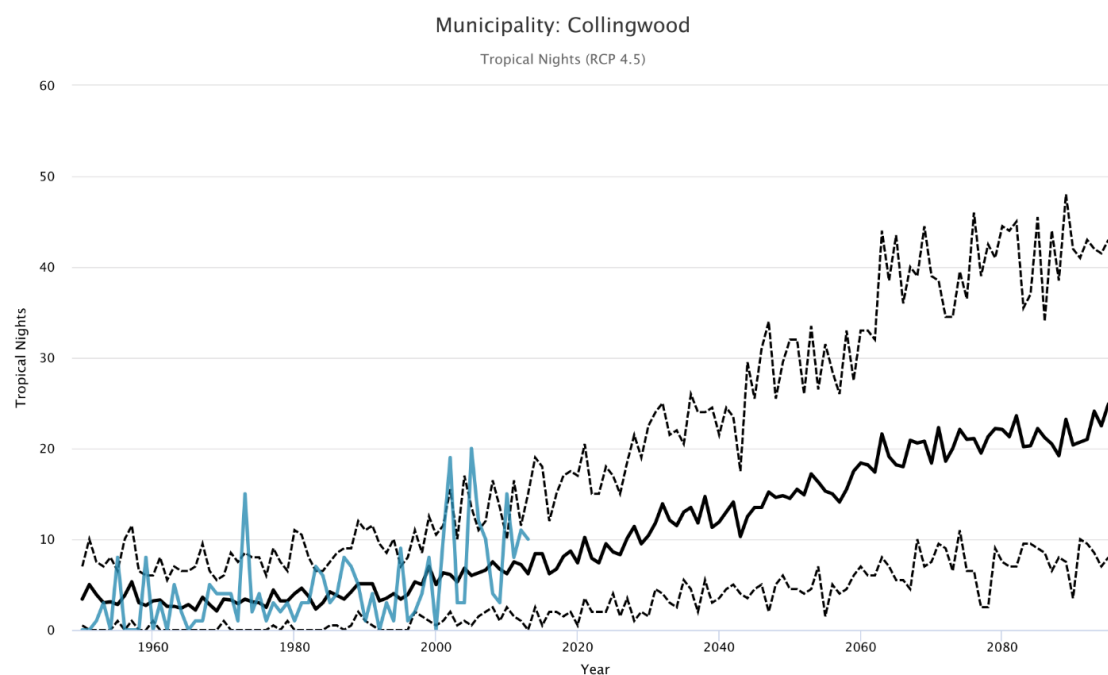


Figure C-19 Tropical Nights (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

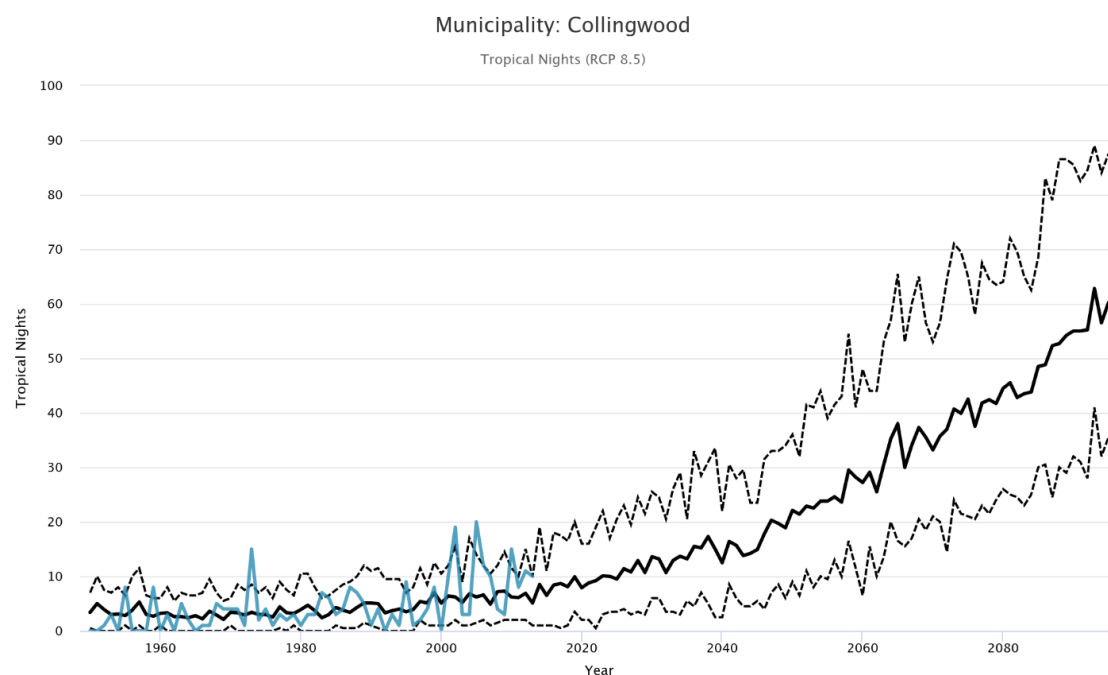


Figure C-20 Tropical Nights (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

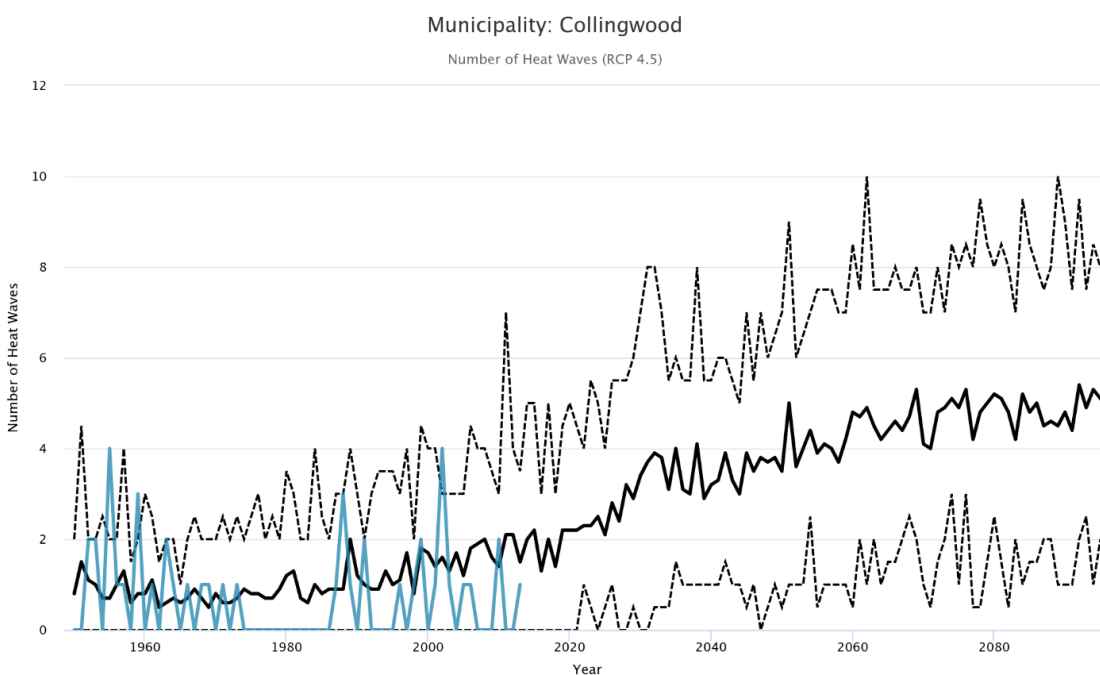


Figure C-21 Number of Heat Waves (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

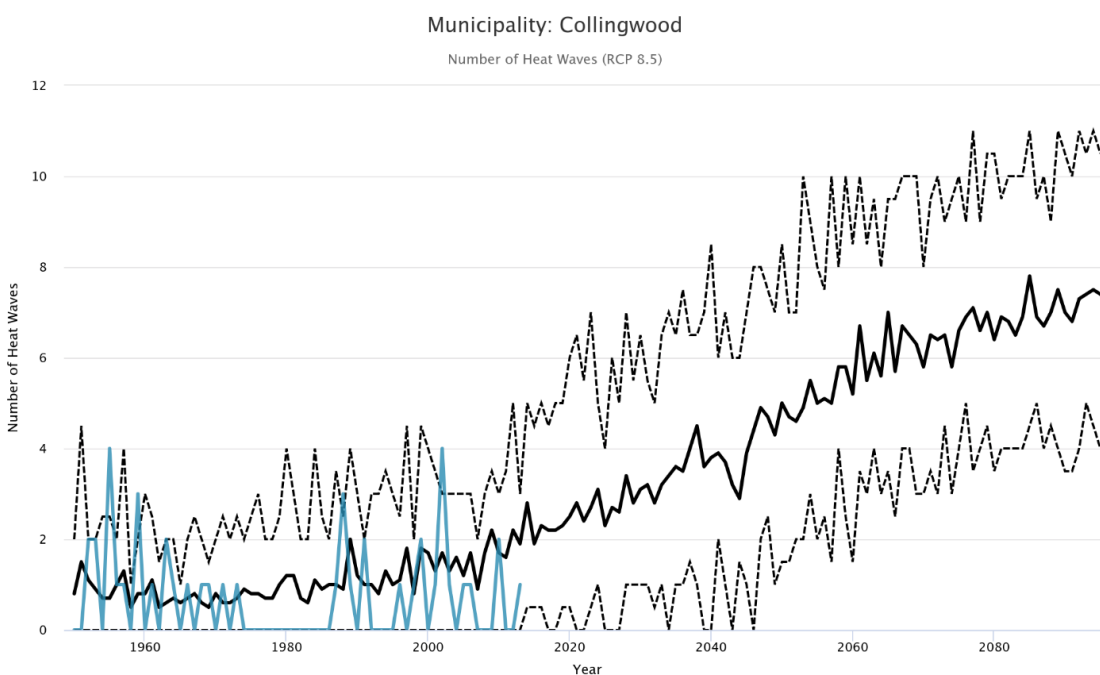


Figure C-22 Number of Heat Waves (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

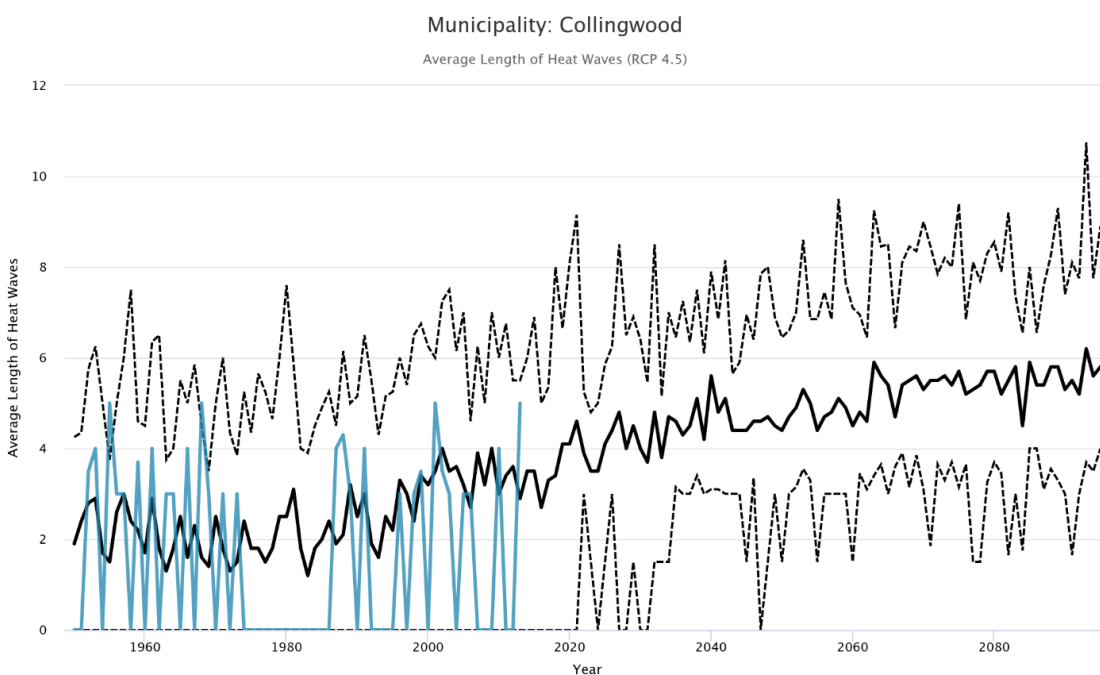


Figure C-23 Length of Heat Waves (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

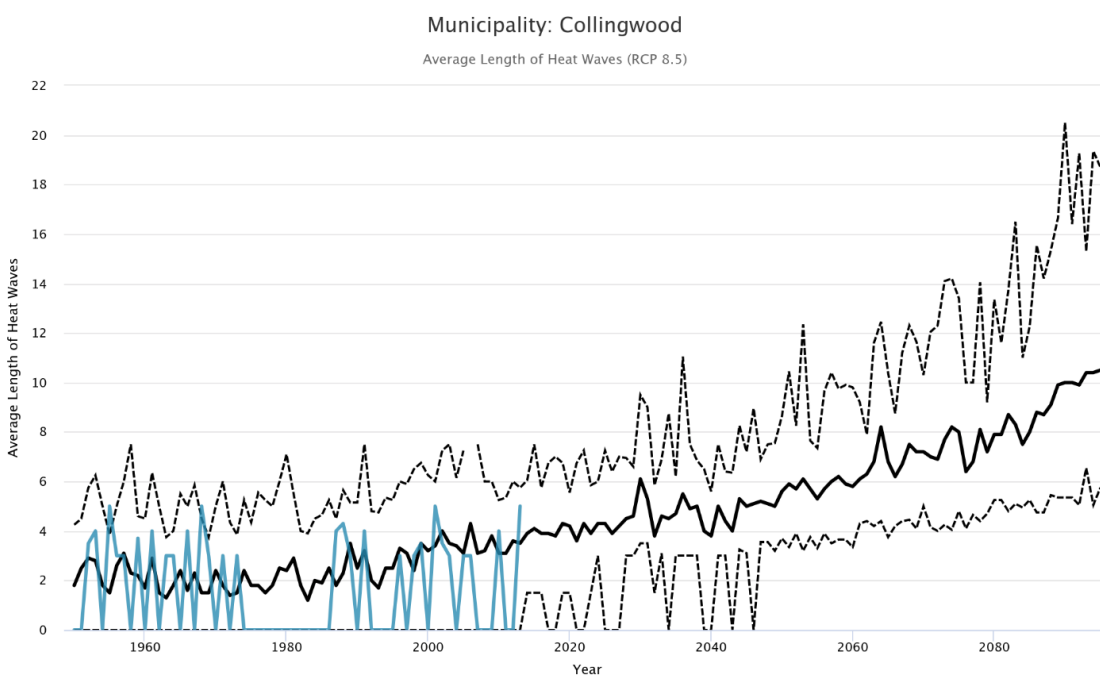


Figure C-24 Length of Heat Waves (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

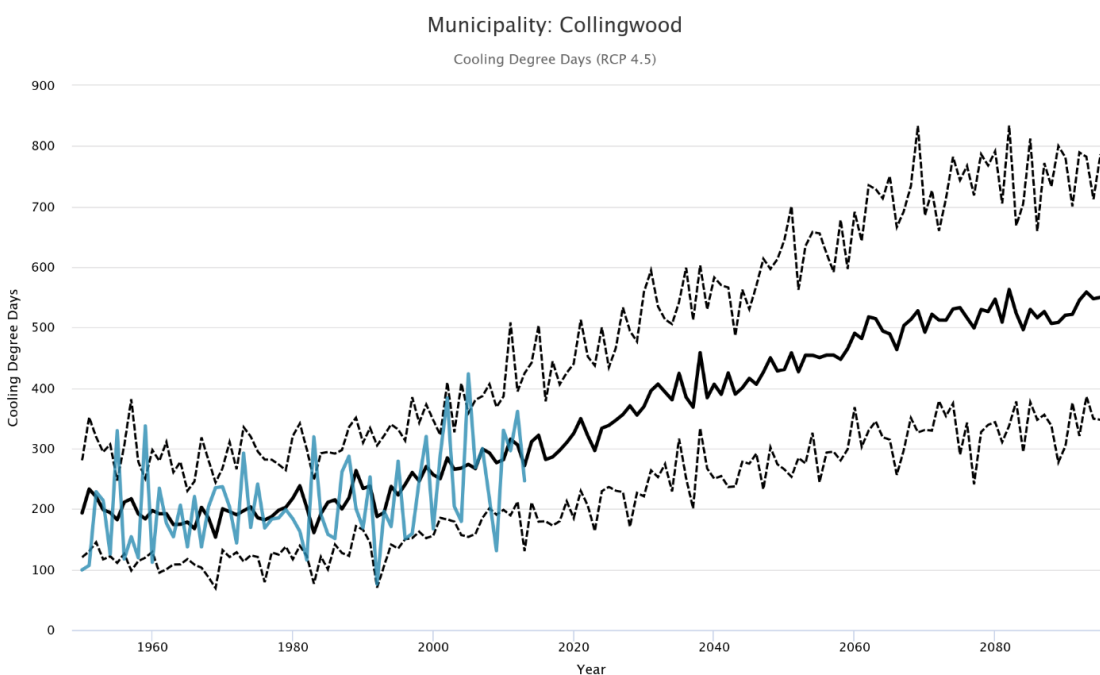


Figure C-25 Cooling Degree Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

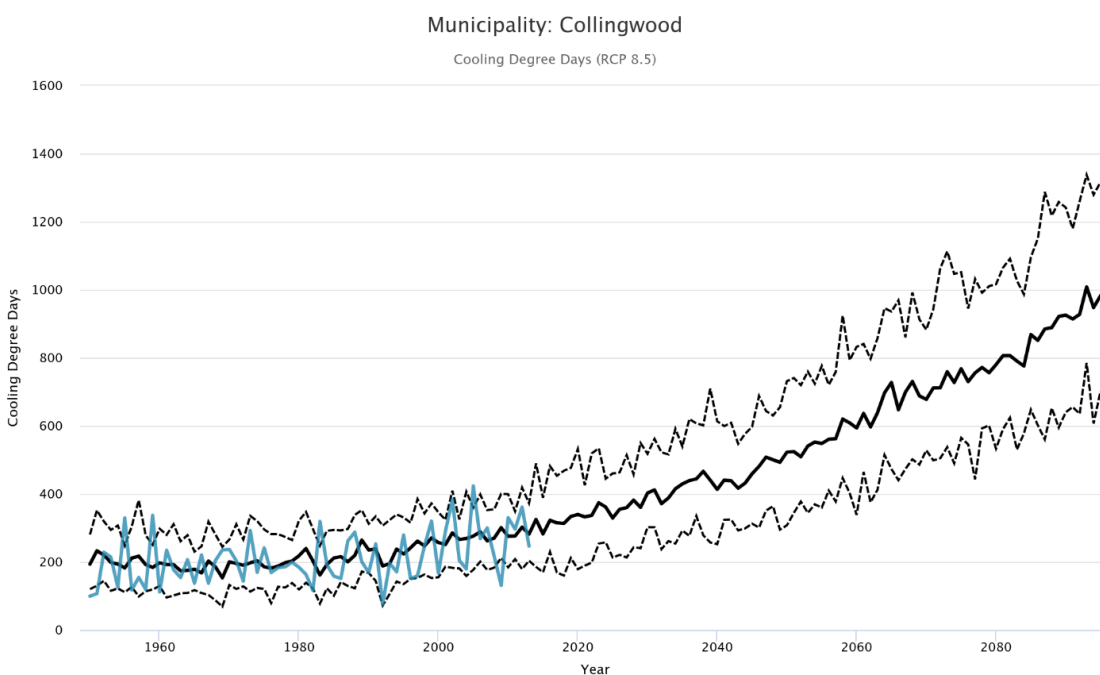


Figure C-26 Cooling Degree Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

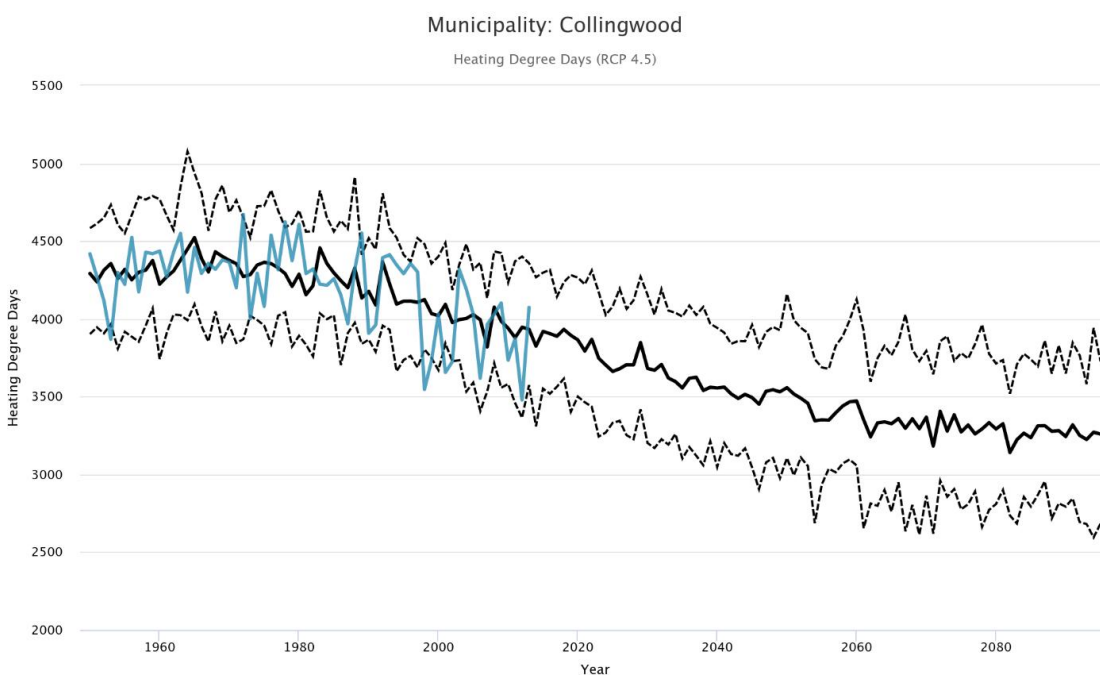


Figure C-27 Heating Degree Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

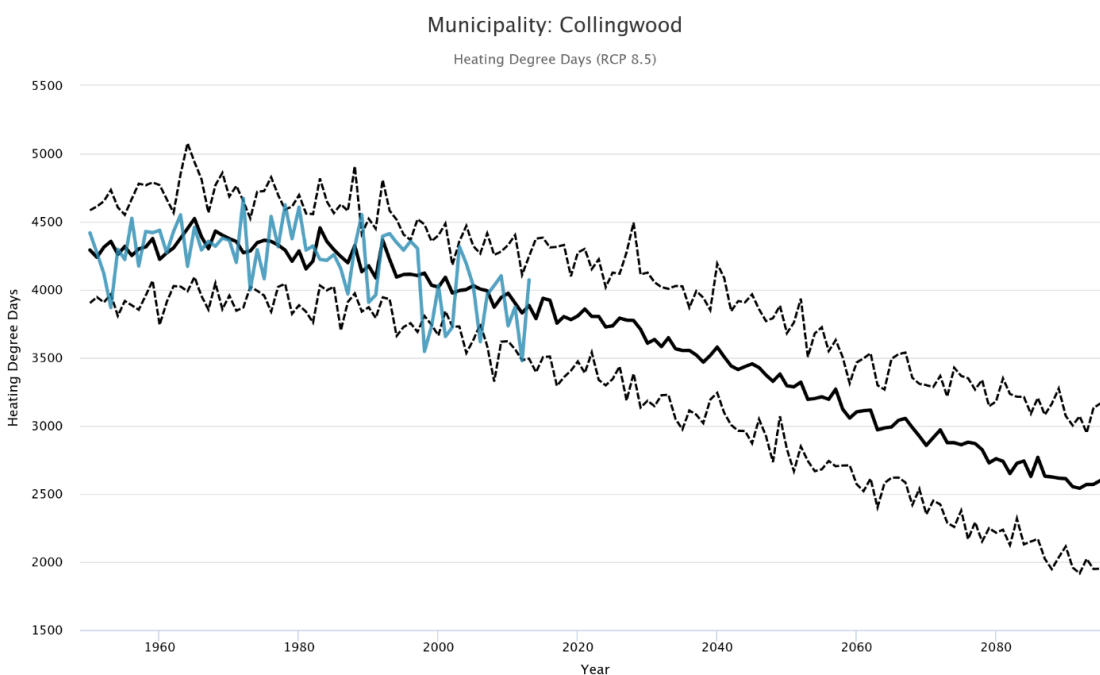


Figure C-28 Heating Degree Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

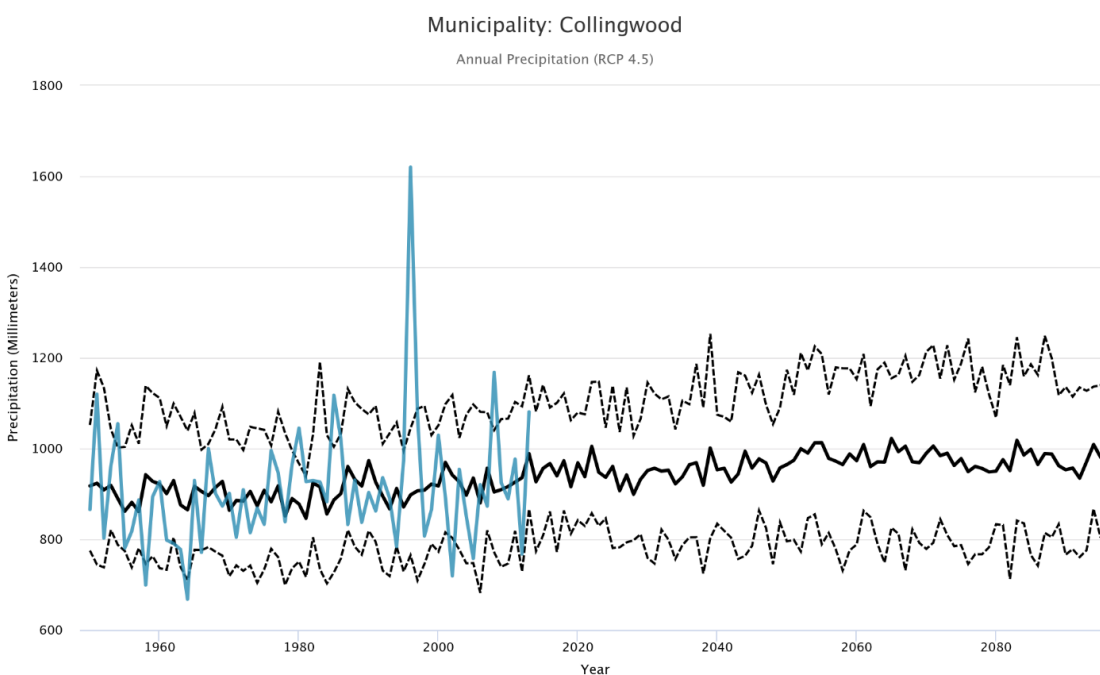


Figure C-29 Total Annual Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

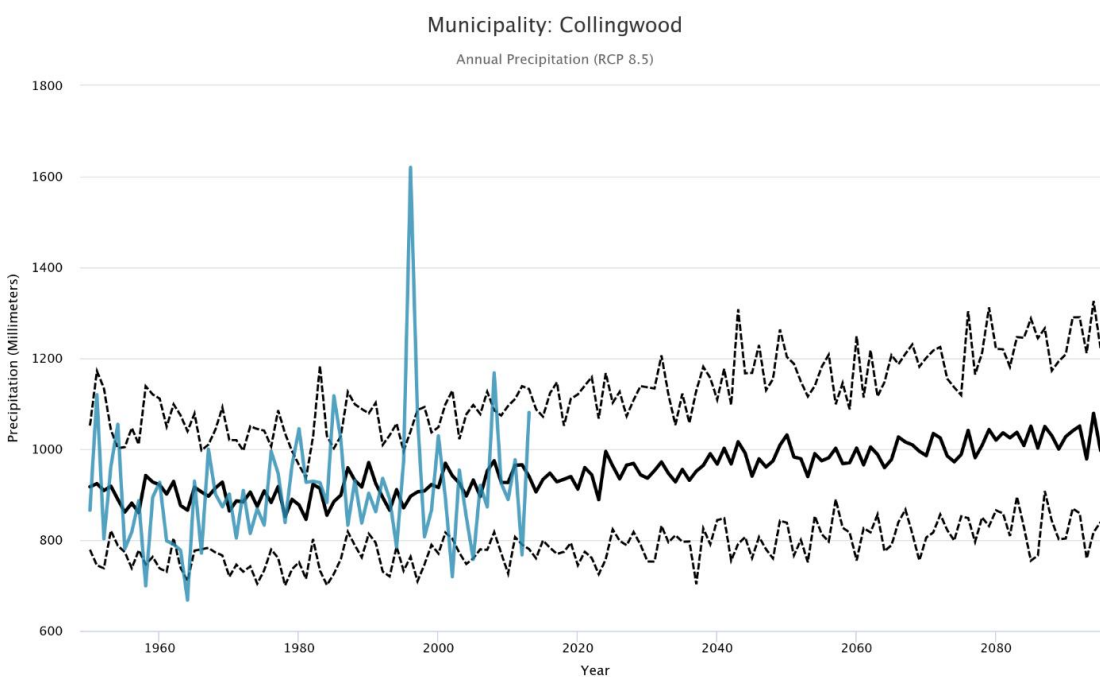


Figure C-30 Total Annual Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

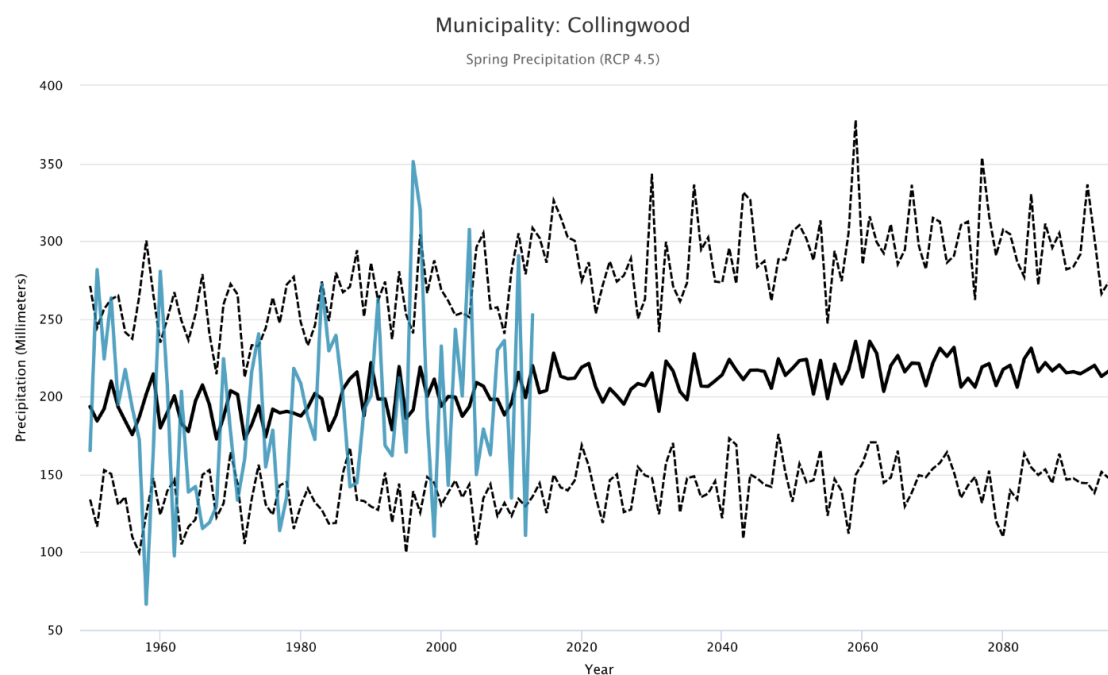


Figure C-31 Total Spring Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

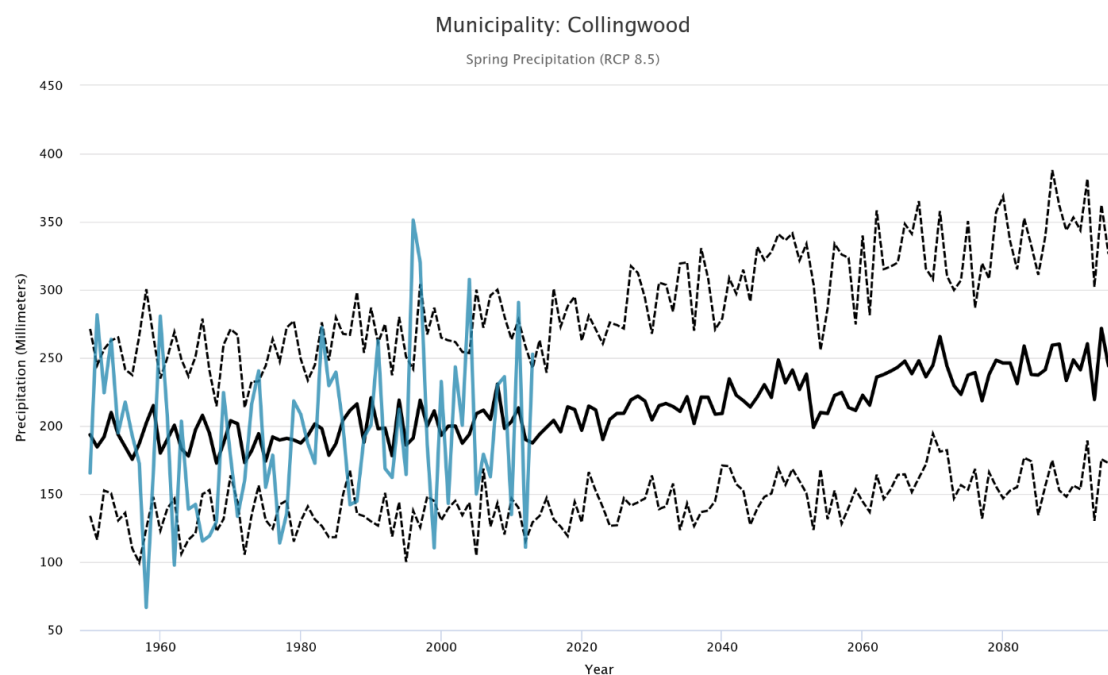


Figure C-32 Total Spring Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

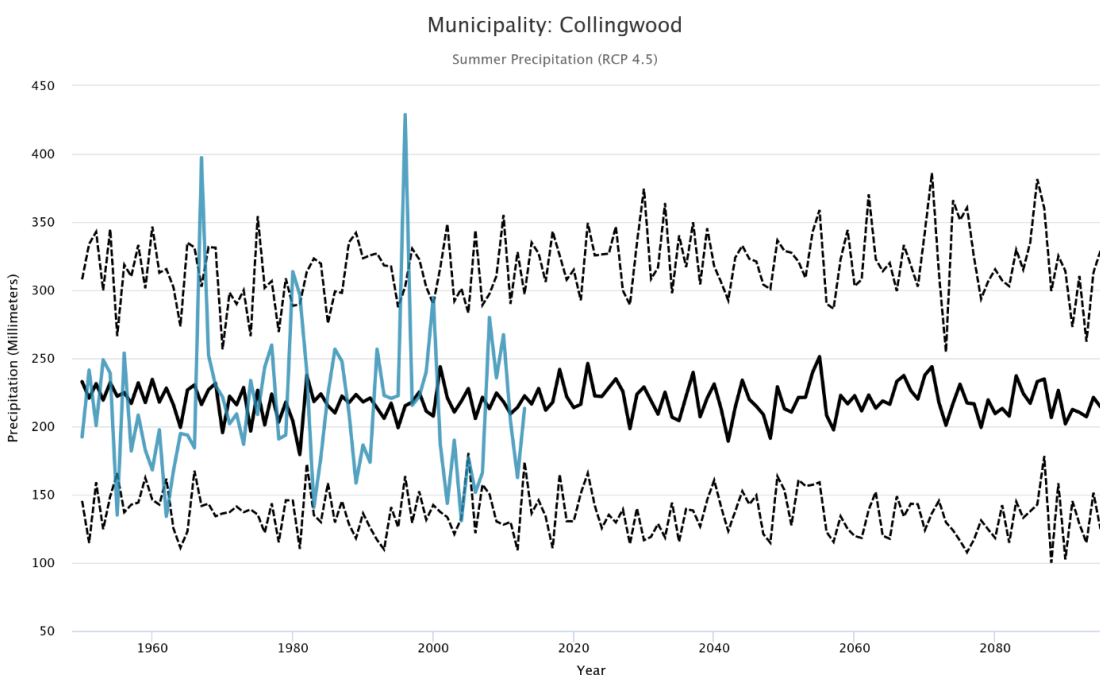


Figure C-33 Total Summer Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

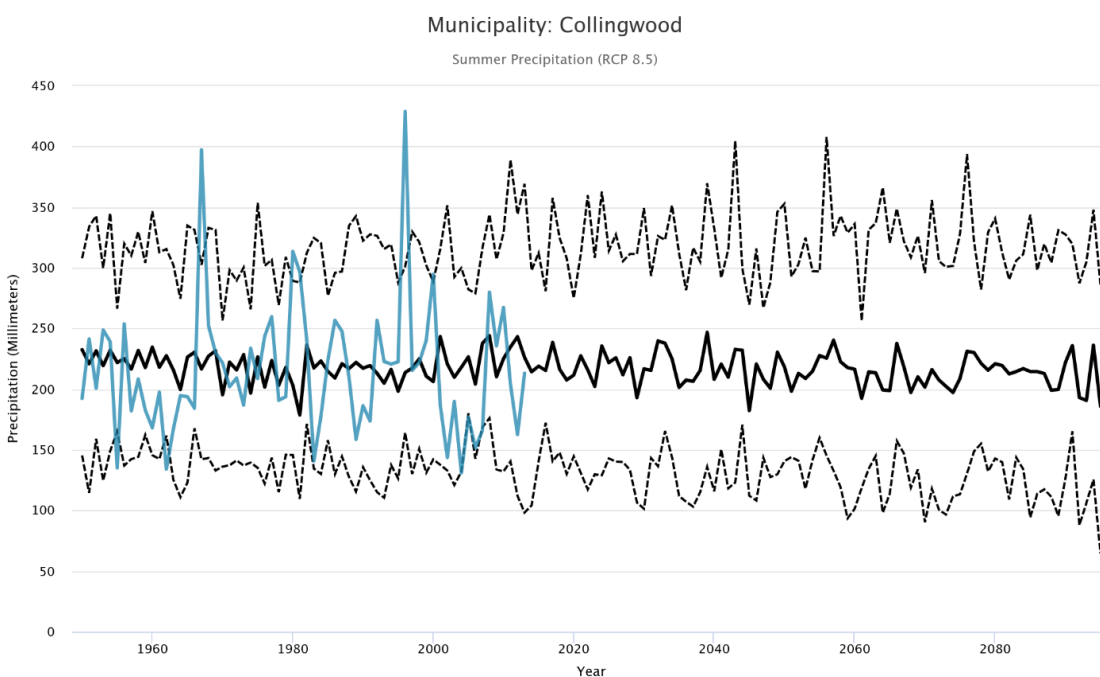


Figure C-34 Total Summer Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

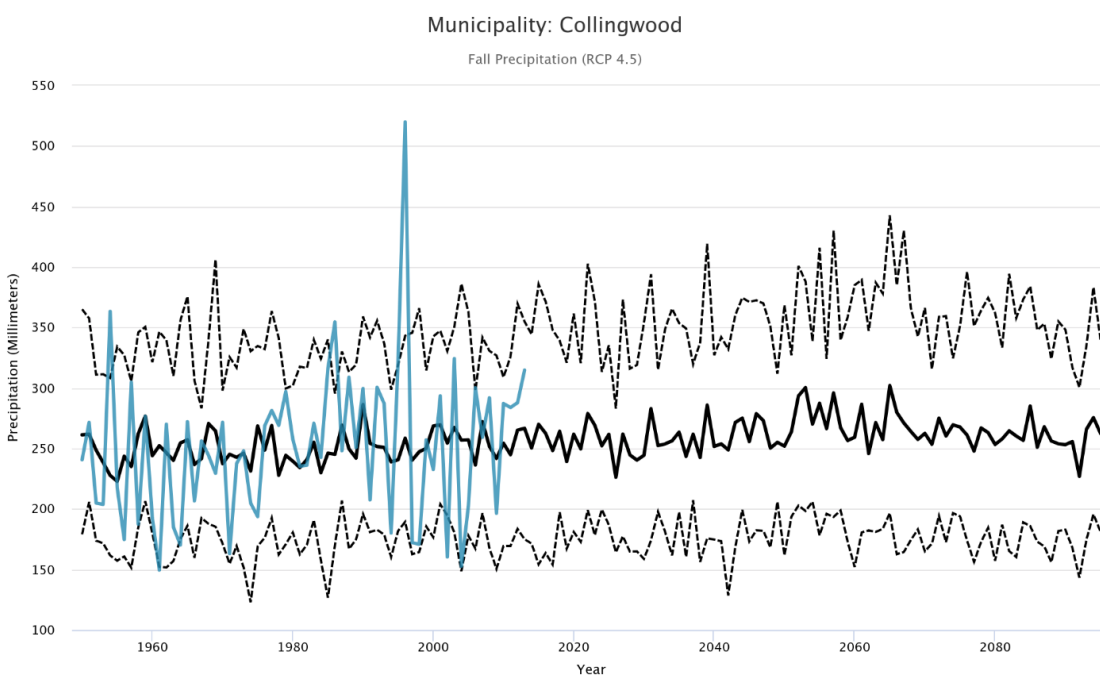


Figure C-35 Total Fall Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

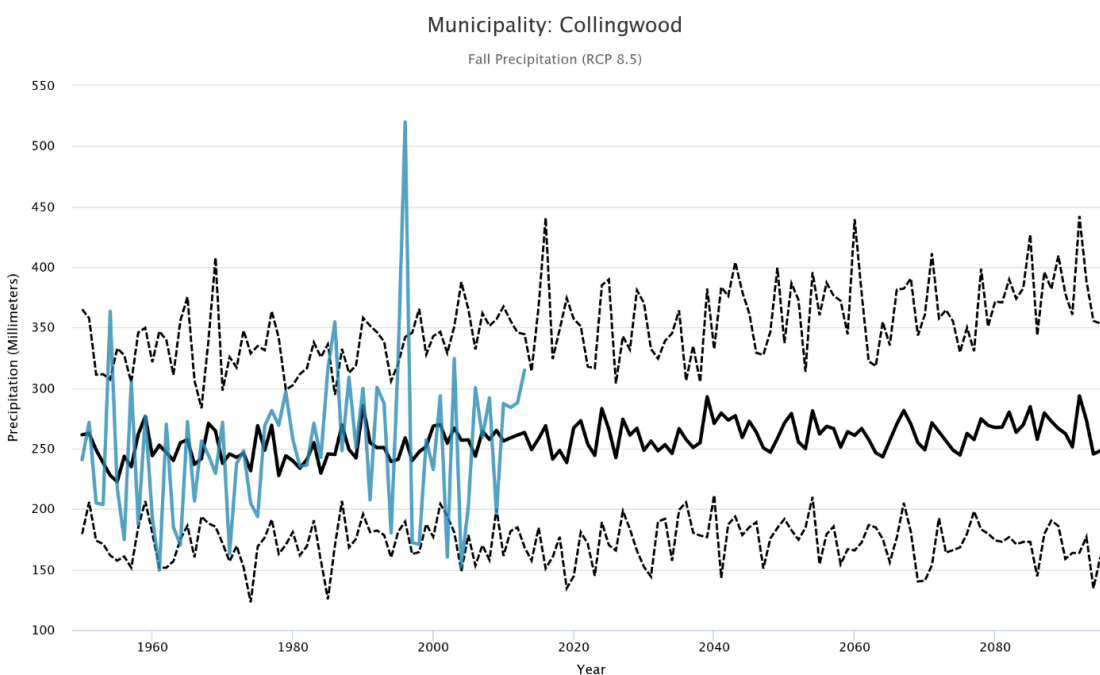


Figure C-36 Total Fall Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

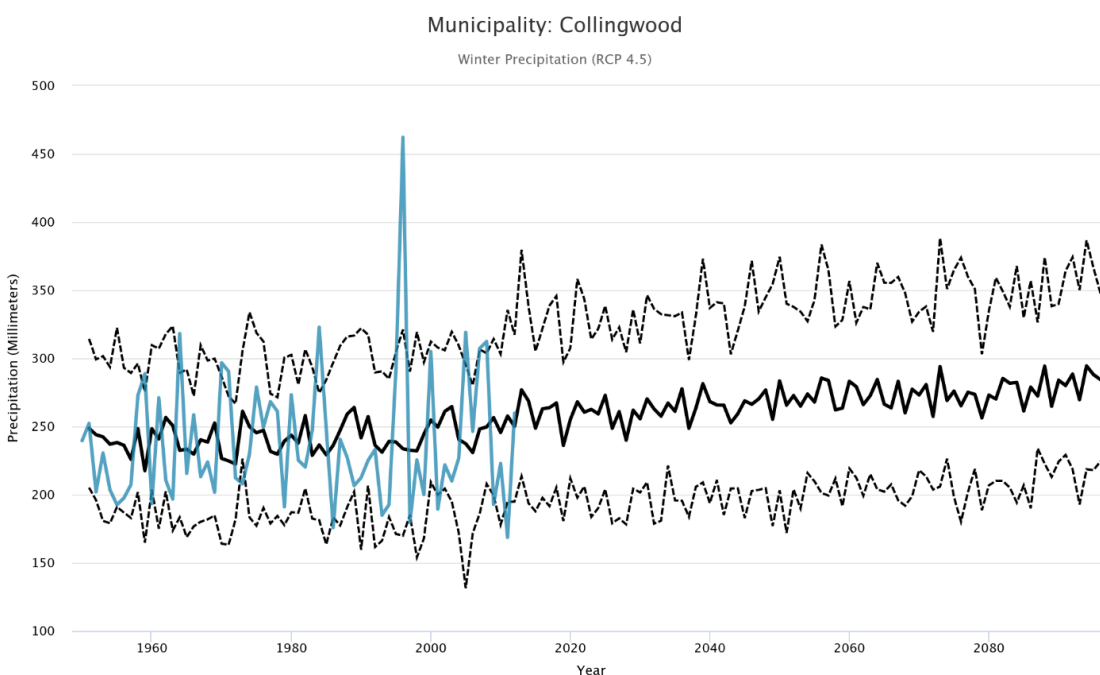


Figure C-37 Total Winter Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

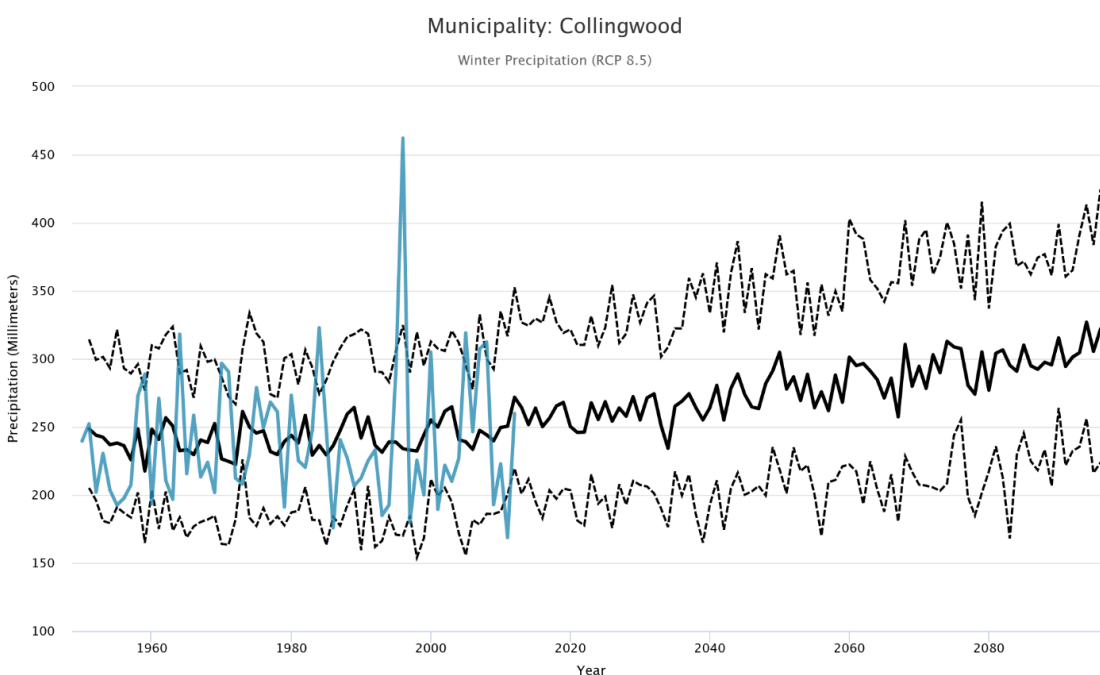


Figure C-38 Total Winter Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

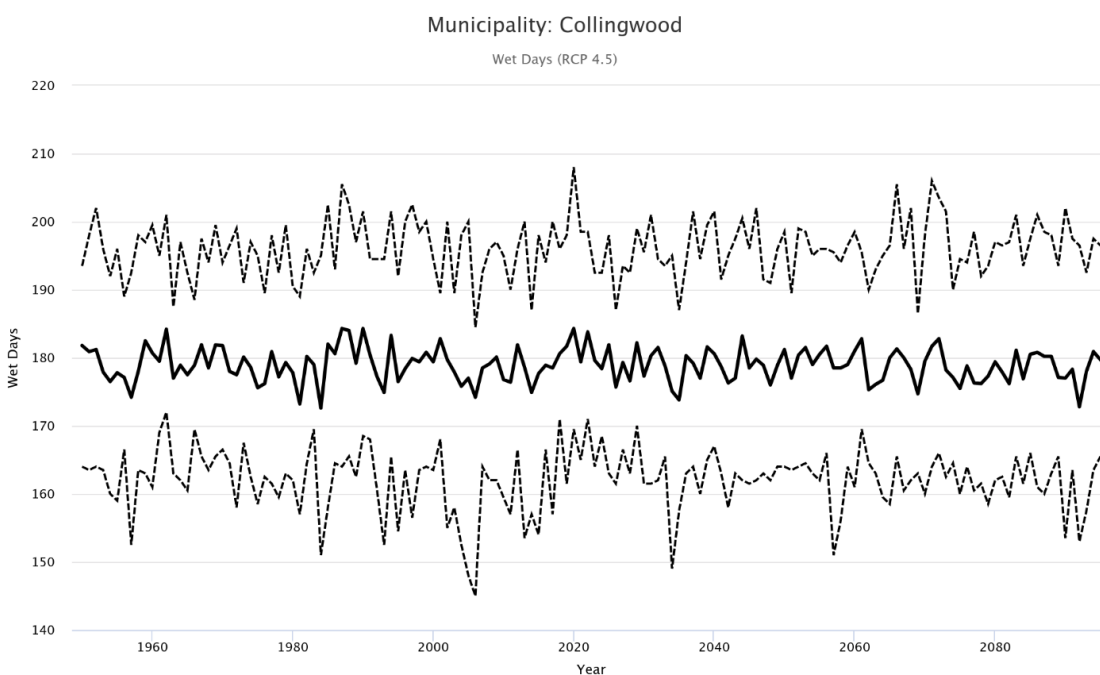


Figure C-39 Number of Wet Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

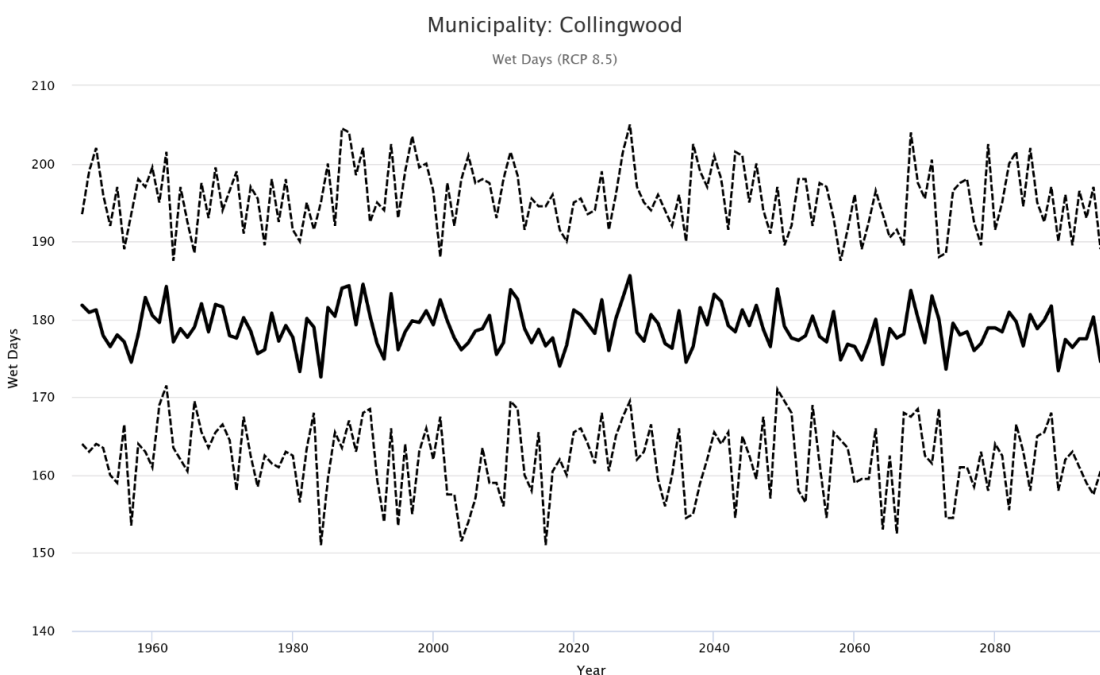


Figure C-40 Number of Wet Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

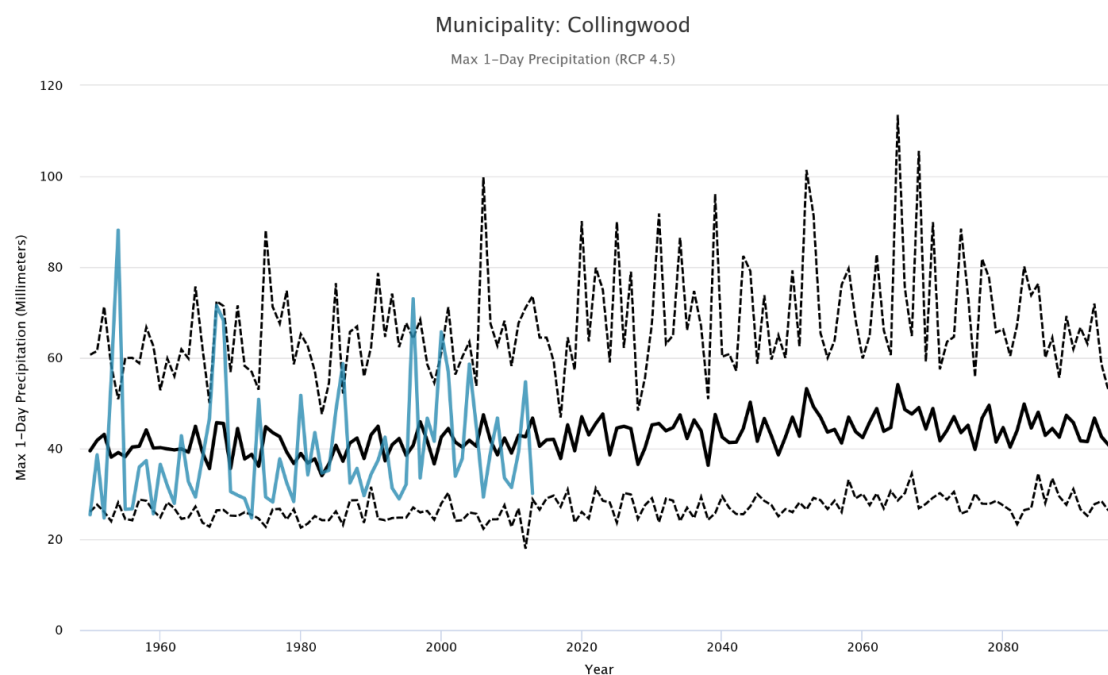


Figure C-41 Maximum 1-Day Precipitation (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

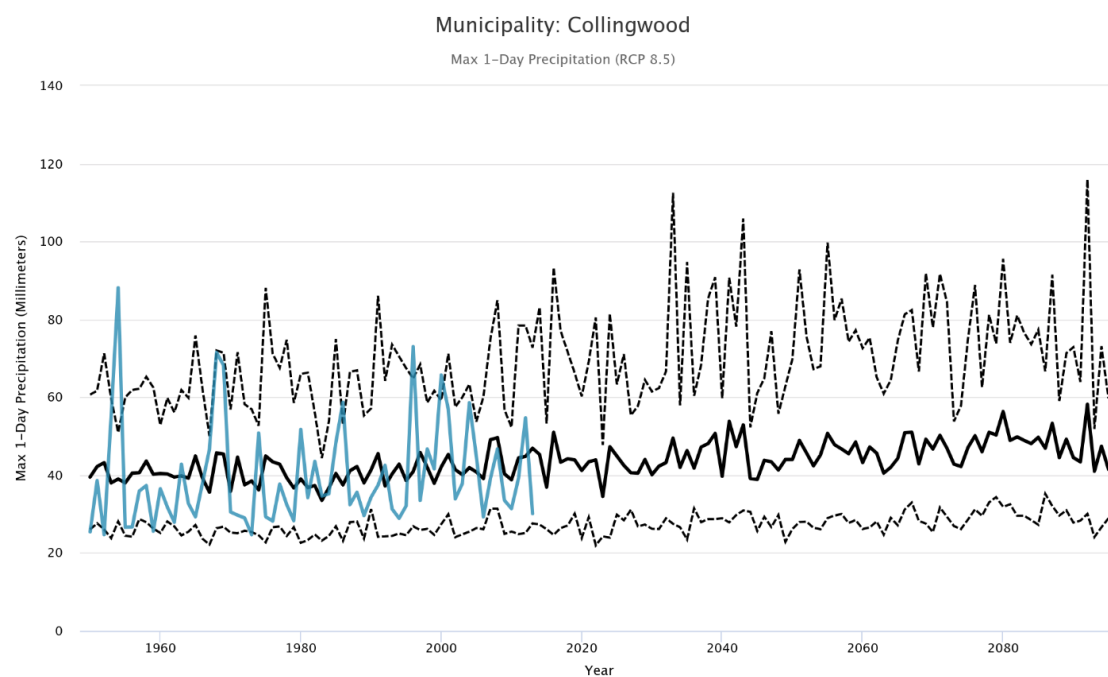


Figure C-42 Maximum 1-Day Precipitation (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

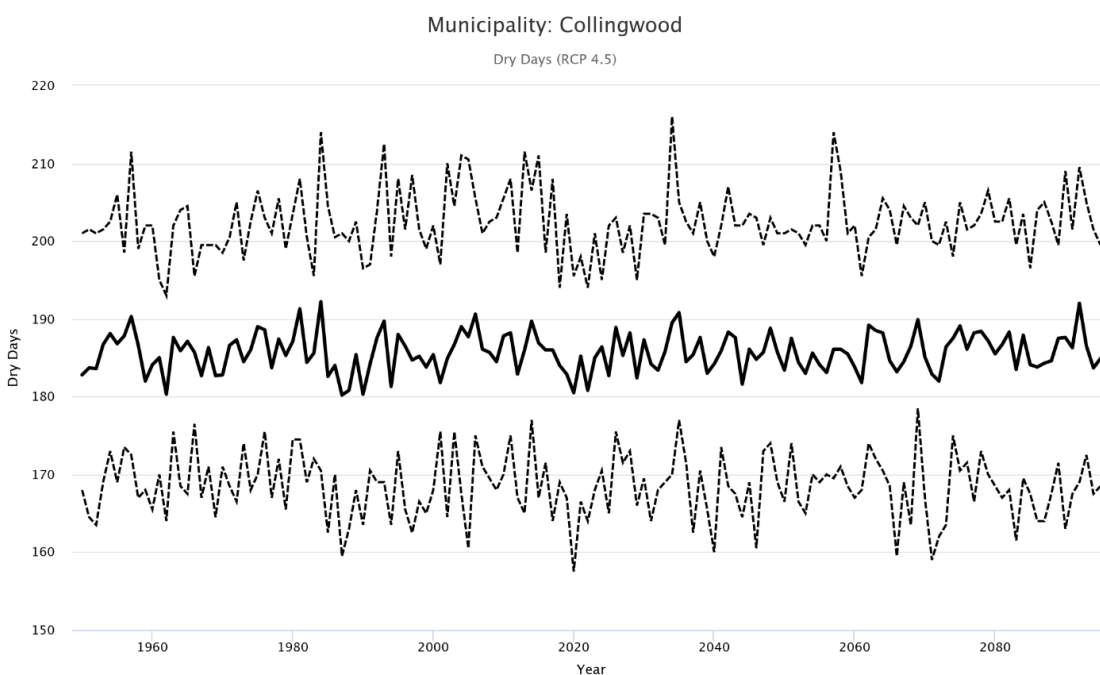


Figure C-43 Number of Dry Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

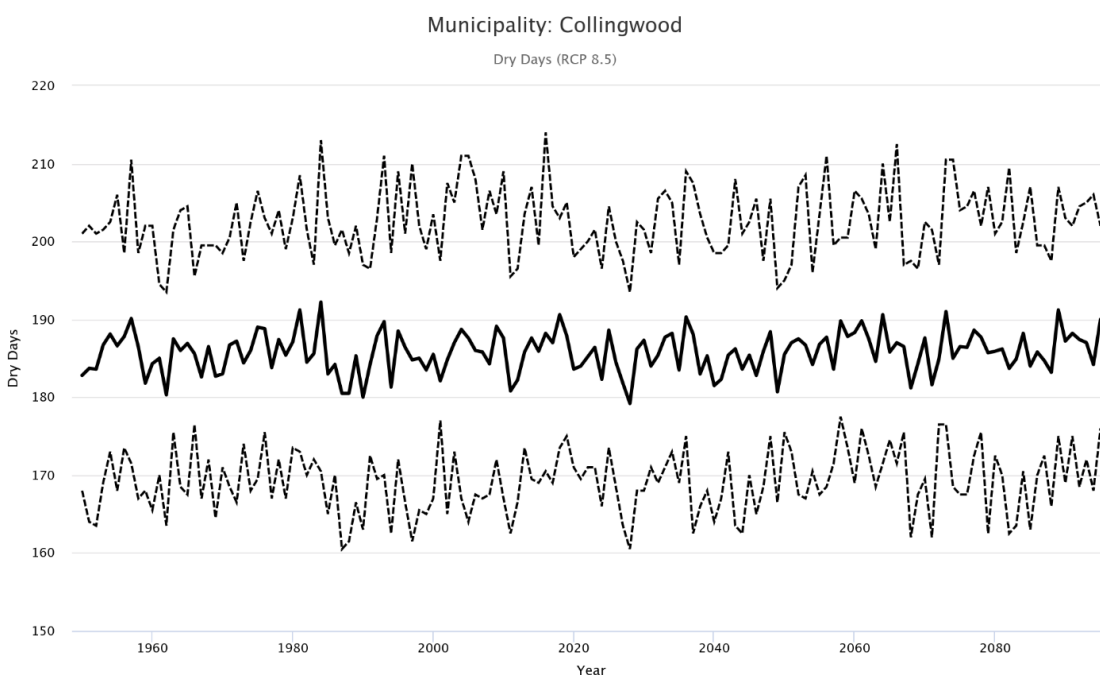


Figure C-44 Number of Dry Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

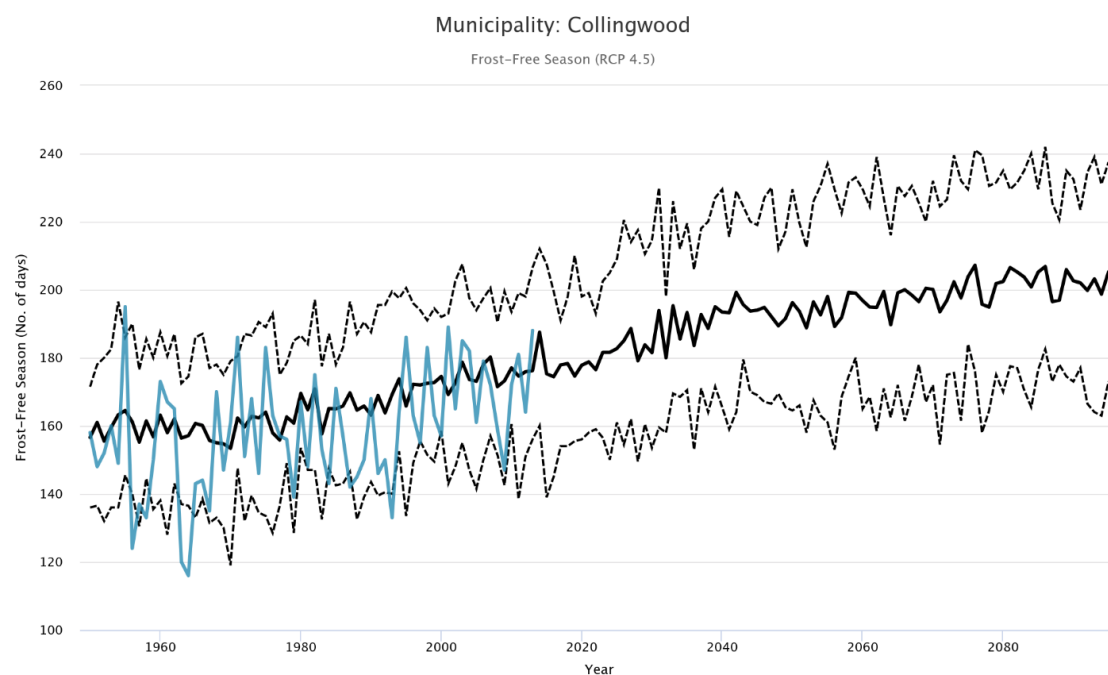


Figure C-45 Frost-Free Season (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

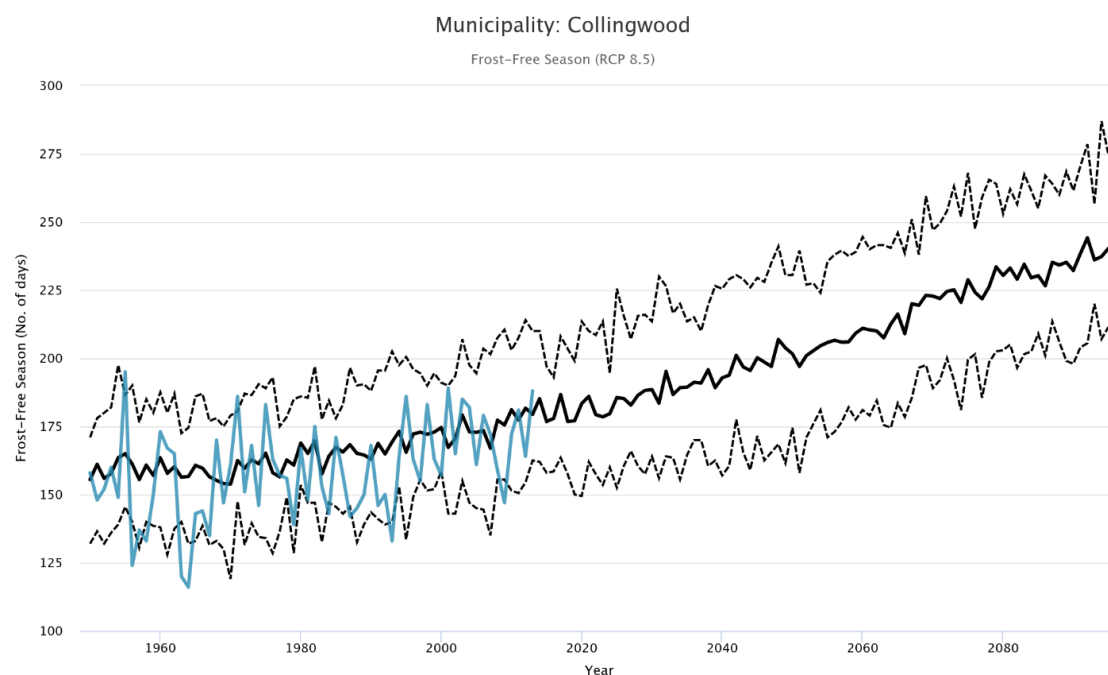


Figure C-46 Frost-Free Season (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

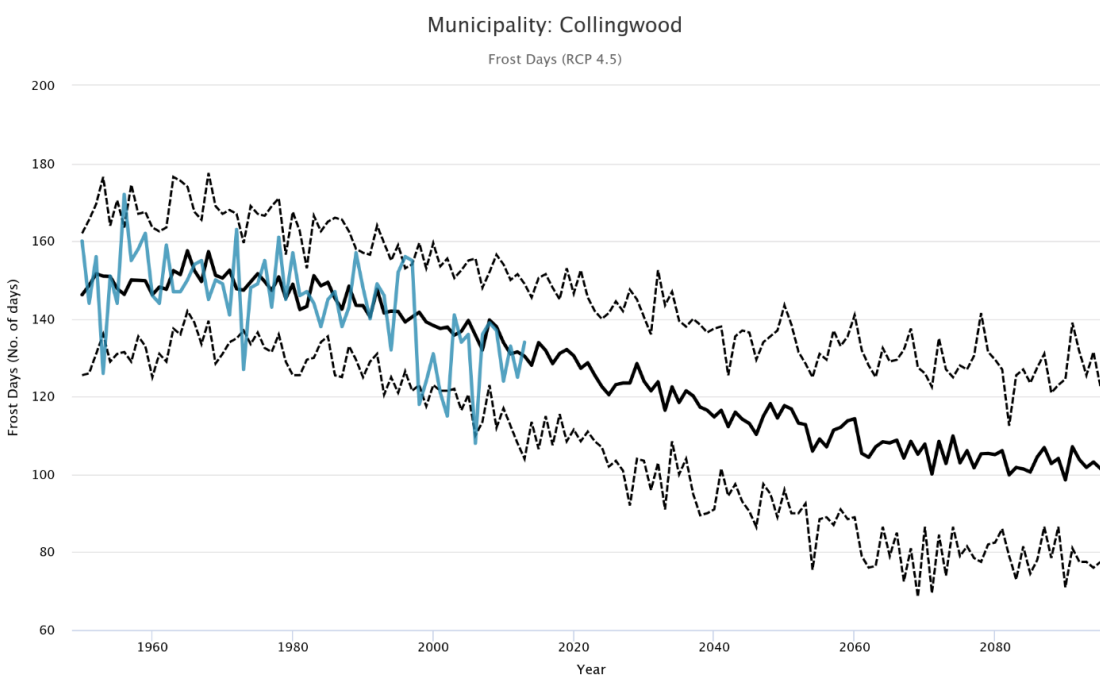


Figure C-47 Number of Frost Days (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

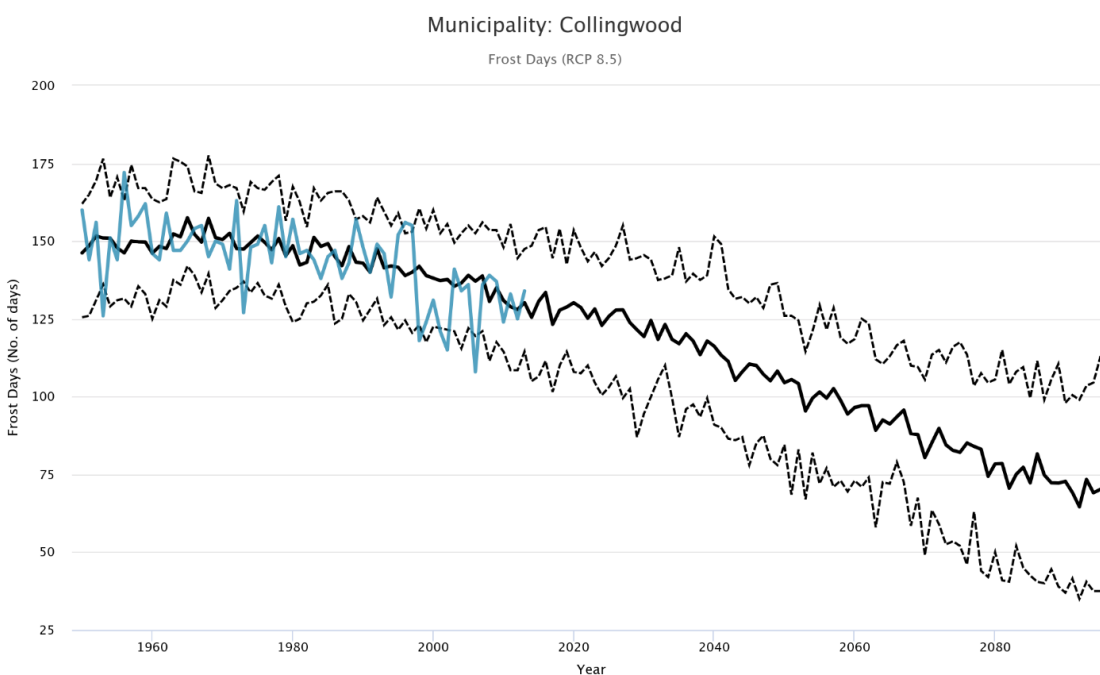


Figure C-48 Number of Frost Days (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

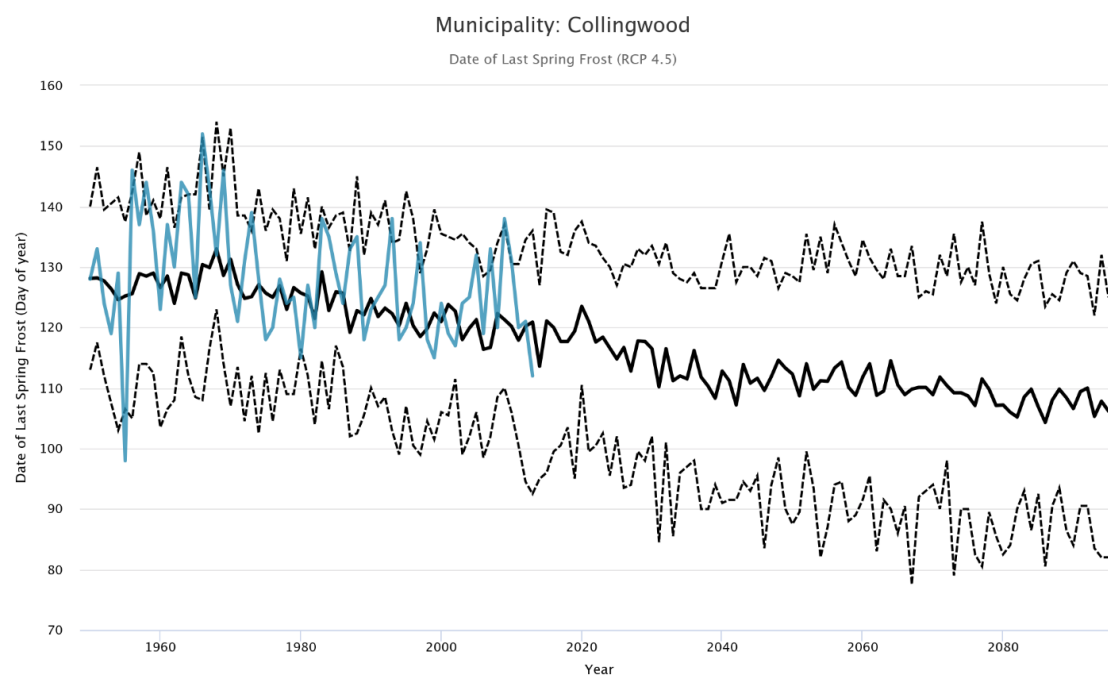


Figure C-49 Date of Last Spring Frost (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

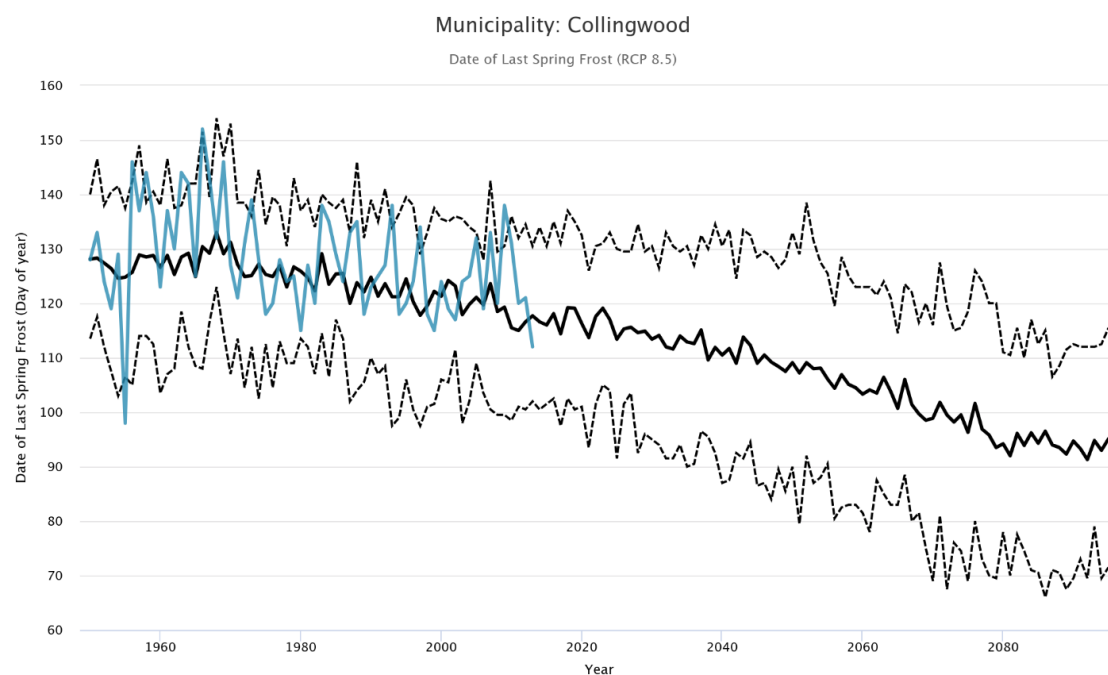


Figure C-50 Date of Last Spring Frost (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

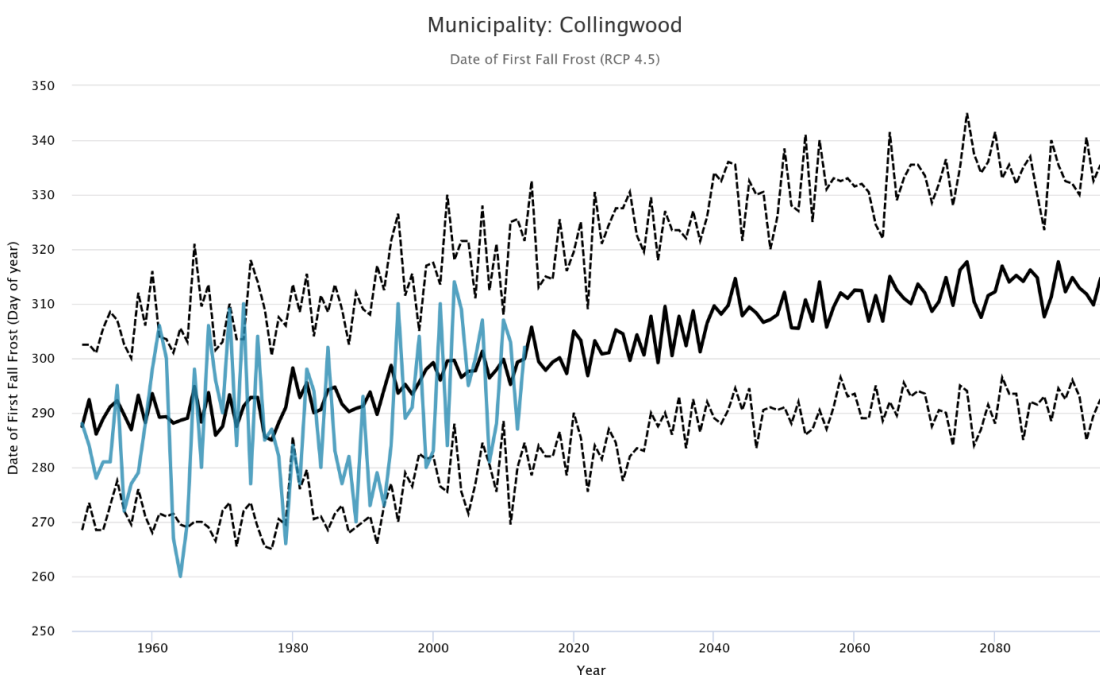


Figure C-51 Date of First Fall Frost (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

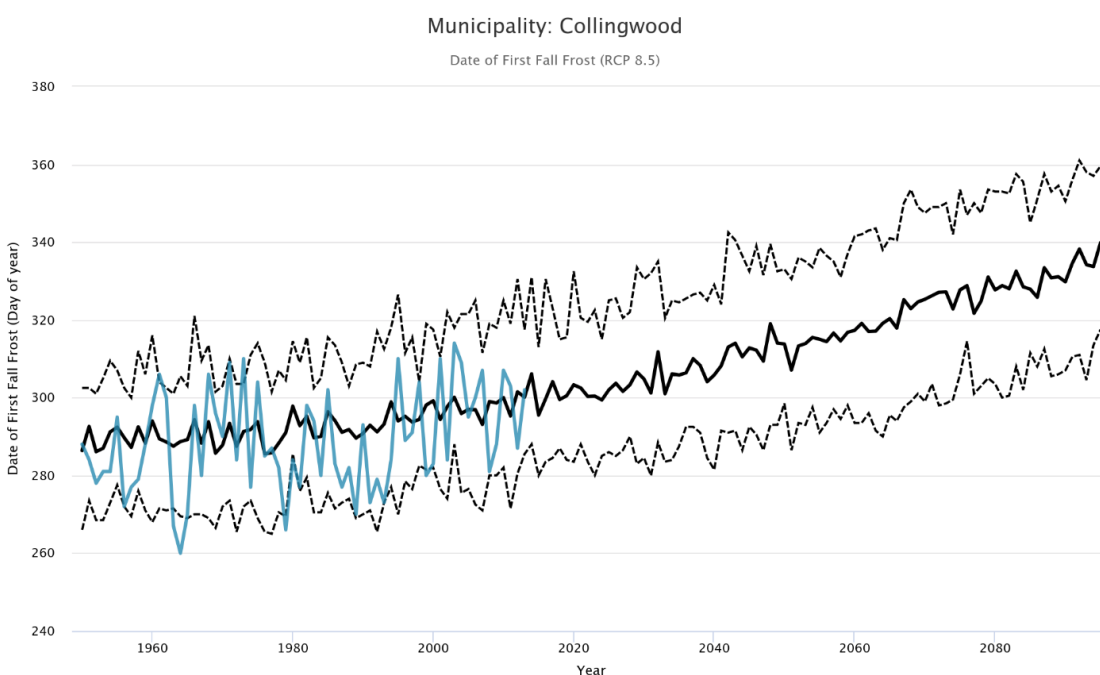


Figure C-52 Date of First Fall Frost (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)

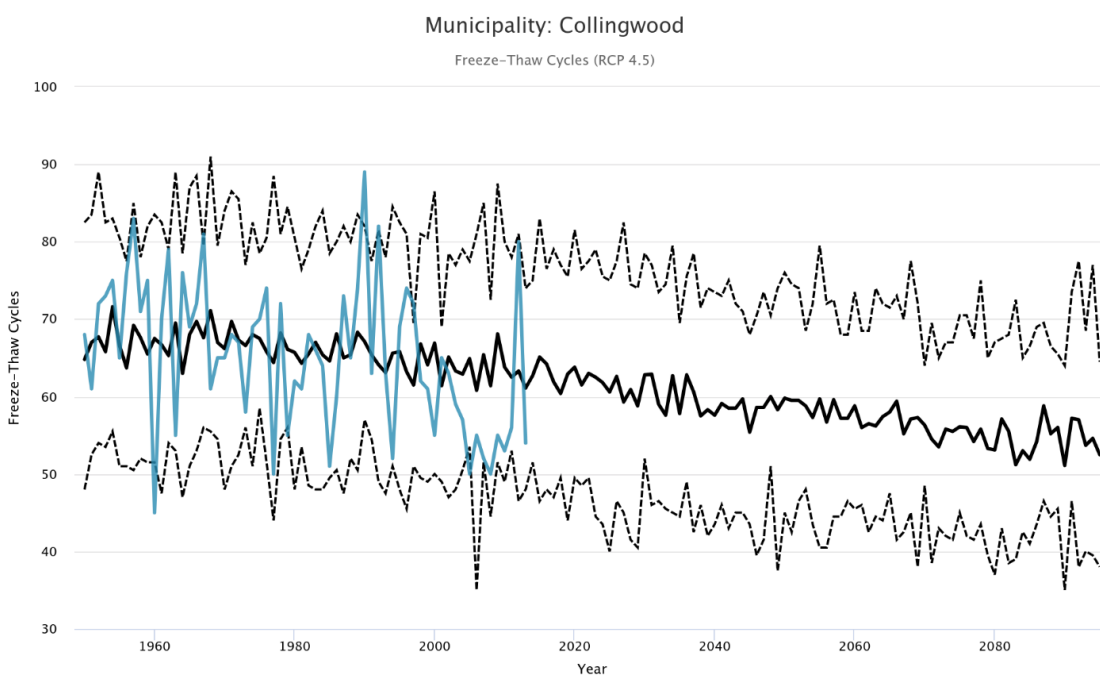


Figure C-53 Number of Freeze-Thaw Cycles (RCP4.5) – Historical and Projected (Prairie Climate Centre, 2026)

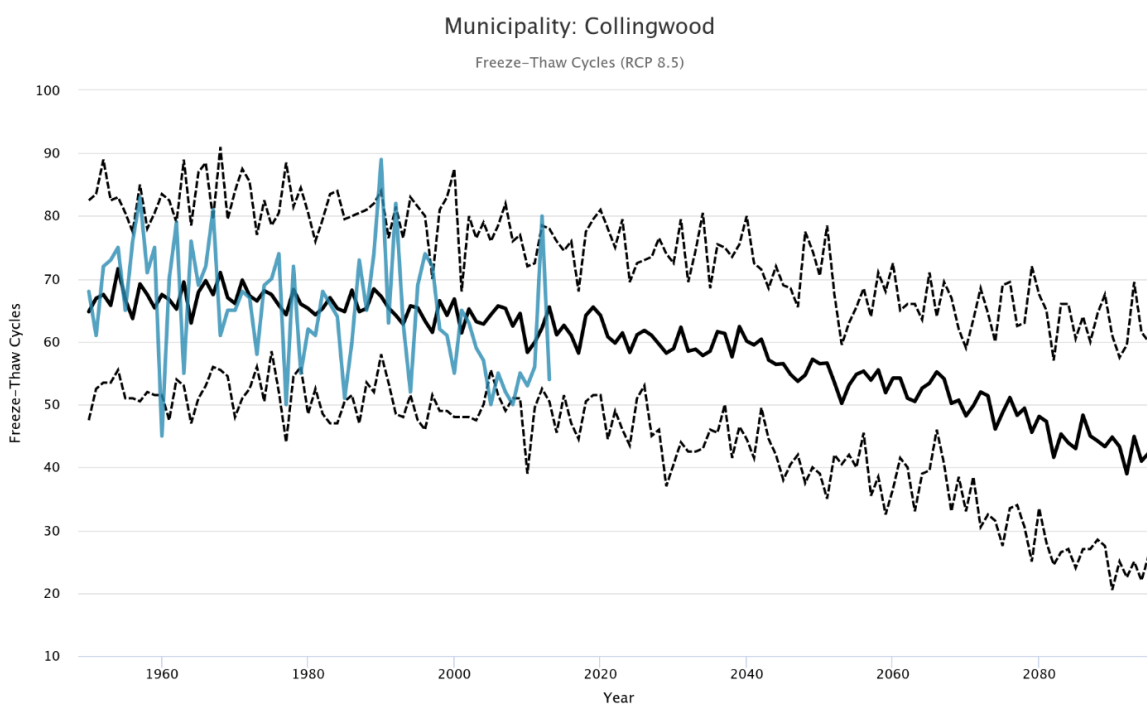


Figure C-54 Number of Freeze-Thaw Cycles (RCP8.5) – Historical and Projected (Prairie Climate Centre, 2026)



Appendix D

Engagement Summary

This plan was produced with the assistance of the Green Municipal Fund, a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the views of the author(s), and FCM and the Government of Canada accept no responsibility for them.

Purpose and Scope

This appendix summarizes engagement with the Resilient Collingwood Task Force (RCTF) across Workshop 4 (Visioning and Goals) and Workshop 5 (Evaluating Climate Adaptation Actions), the two sessions in which the RCTF developed the Plan's vision statement and populated and evaluated the adaptation actions in Section 5. It is scoped to these two workshops; RCTF Workshops 1 to 3 (systems thinking, vulnerability assessment, and risk assessment) fed the climate profile and risk and vulnerability assessment summarized in Sections 2 and 3 of the Plan and are not repeated here.

The RCTF is the Town's cross-departmental and community advisory body for this Plan, bringing together internal departments, external partners (including NVCA and the County of Simcoe), and community representatives. Its role is advisory and coordinating rather than decision-making: it provides evidence-based input that Council and Town departments then act on.

A transparency note on sources: unlike Workshops 1 to 3, which have formal meeting-minutes documents, Workshops 4 and 5 are documented through their agendas, the facilitator worksheets used in breakout groups, and, for Workshop 5 in particular, the verbatim sub-actions recorded directly into the Adaptation Action Register during the session. A precise attendance count was not logged in either format available for this summary; the composition described above is drawn from the RCTF Charter and invitation materials rather than a sign-in sheet.

Workshop: Visioning and Goals

Date: April 15, 2026

Location: Collingwood Public Library

Format: Full-RCTF facilitated discussion, followed by small-group breakouts

Agenda

- Project overview: where the RCTF is in the overall CCAP work plan, and how Workshops 4 and 5 fit together.
- Review of key findings from the Risk and Vulnerability Assessment (Workshops 1–3 output).
- Activity 1, Visioning: facilitated full-group discussion on what a successful Adaptation Plan looks like at 1 and 5 years, capturing shared priorities and values at the plan level.
- Activity 2, Goals & Priorities: breakout groups rotated through the primary climate impact briefs and posted example successful outcomes (sticky notes) against each.
- Activity 3, Preliminary Adaptation Actions: breakout groups brainstormed a wide, deliberately non-exhaustive list of possible actions for each impact area, without concern for duplication, this became the raw input list that Workshop 5 evaluated and refined.

Output: Draft Vision Statement Options

The visioning activity produced four draft options and two hybrids, carried forward to Workshop 5 for RCTF review and selection:

Option	Draft Vision Statement (Workshop 4 output, tested at Workshop 5)
Option 1	Collingwood is adapting to climate change together, as a community where everyone belongs, everyone is safe, and the benefits of a healthy environment and resilient services reach every resident, neighbourhood, and generation.
Option 2	Collingwood is preparing for the future. Through practical, accountable, and community-supported action, we will protect the people, places, and resources we value.
Option 3	Collingwood is a resilient, inclusive, and healthy community, protecting the bay, the escarpment, and each other as our climate changes.
Option 4	Collingwood is adapting to a changing climate so that our people, our natural surroundings, and the services and places we share remain healthy, safe, and thriving, today and for generations to come.
Hybrid 1	Collingwood will responsibly adapt to a changing climate together, fostering an inclusive, safe, healthy, and resilient community for generations to come.
Hybrid 2, ADOPTED	The people who live, work, and play in Collingwood will responsibly adapt to a changing climate together, fostering an inclusive, safe, healthy and resilient community for generations to come.

The preliminary, unfiltered list of adaptation actions brainstormed in Activity 3 was organized into the working A1–A18 category structure and became the starting material for Workshop 5's Activity 2 and 3.

Workshop 5: Evaluating Climate Adaptation Actions

Date: April 23, 2026

Location: Collingwood Public Library

Format: Full-RCTF discussion plus three rotating breakout tables, each populating a themed worksheet (People & Community; Services & Operations; Natural Environment), facilitated by DE, JA, and HMG/AIM respectively

Agenda

- **Activity 1**, Review of Vision Statements: Mentimeter ranked-choice voting on the six options from Workshop 4, followed by open discussion on what was missing or could be strengthened.
- **Activity 2**, Review of Preliminary Actions: the working A1–A18 category list was presented, and each breakout table populated its themed category with tangible, staff-actionable sub-actions.
- **Activity 3**, Prioritization: tables rotated to review each other's populated lists, flagged the most effective sub-actions, and identified gaps.

Vision Statement: What the Discussion Surfaced

The open-discussion and word-cloud exercise associated with Activity 1 surfaced a consistent set of terms the RCTF wanted reflected in the final language: community, protection, health,

inclusive/inclusivity, equity/equitable, resilience, sustainability, and generations. The adopted vision statement (Hybrid 2, shown above) was selected as the option that most closely carried these terms while remaining concise:

"The people who live, work, and play in Collingwood will responsibly adapt to a changing climate together, fostering an inclusive, safe, healthy and resilient community for generations to come."

Adaptation Actions: What the Breakout Tables Produced

Across the three breakout tables, 71 tangible sub-actions were captured verbatim and entered directly into the Adaptation Action Register. These are reproduced below by theme, organized under the current 18-category structure (Section 5 of the Plan), with the originating breakout table noted. Category numbering here reflects the Plan's final structure; a small number of sub-actions were recorded during the workshop under category labels that were later merged or renumbered in the June 17, 2026 resync, these have been remapped to their current category so the record lines up with Section 5.

People and Community, 19 sub-actions

Action	Sub-Action Raised (verbatim)	Notes Captured
A1: Climate Refuge Network	Reviewing availability/accessibility of public spaces in-line with growth	
A1: Climate Refuge Network	Shoreline & waterfront access	
A1: Climate Refuge Network	Access to Shade & Tree Canopy	
A1: Climate Refuge Network	Energy efficiency rebates (adopting sustainable/energy resilient technology)	
A1: Climate Refuge Network	Infrastructure & Built Assets providing multiple benefits/services (e.g. data centre with waste heat used for greenhouse)	
A1: Climate Refuge Network	Planning Policy: Requirements around heat island, hardscaping and green space coverage.	
A1: Climate Refuge Network	Water stations & Shade/cooling Centres (for outdoor workers and underserved groups)	
A1: Climate Refuge Network	Education & Outreach: Energy management in residences and buildings	Signs & symptoms of heat illness Knowing your resources: cooling centres (how to make cooling centers engaging/interesting/active, or

Action	Sub-Action Raised (verbatim)	Notes Captured
		programming during heatwaves/events to make spaces engaging)
A1: Climate Refuge Network	Enhance Awareness & Promote Programs & Resources	
A1: Climate Refuge Network	Planned Community Events during Climate Events (Heatwaves, cold snaps, etc)	Creating a resilient community space (refuge) during risk events.
A3: Flood Risk Disclosure & Home Protection Program	Emergency Plan: Resource Planning	Inflatable barricades used along roadside/risk areas to limit flooding (Bracebridge)
A3: Flood Risk Disclosure & Home Protection Program	Adaptive Green Infrastructure (on private property)	Education & outreach to support community in learning about the benefits of rainscaping & permeable surfaces in stormwater management Ability to protect/enforce infrastructure (e.g. bioswales being filled on private property)
A3: Flood Risk Disclosure & Home Protection Program	Flood Mapping & Wet Weather Flow Analysis	Mapping where basement apartments are suitable/functional
A3: Flood Risk Disclosure & Home Protection Program	Enhanced Monitoring & Maintenance of SW Drainage	Education of homeowners on role and benefits of catchment areas on private property. Dedicated program for cleaning and flushing drainage.
A3: Flood Risk Disclosure & Home Protection Program	Grant/Incentive/Rebate Program for Back-up Sump Pump	To support private residences
A4: Shoreline Public Access & Erosion Management	Trail Network Assessment (Flood Risk)	
A4: Shoreline Public Access & Erosion Management	Properties at Risk (Assessment)	Review policies around permitted areas for future construction.
A4: Shoreline Public Access & Erosion Management	Naturalized Erosion Control	
A5: Risk Event Communications Program	Climate Hazard/Risk Event Communication	Alert system for climate events, and associated tools. Community Outreach Strategies (door to door, recreation centres, etc. multi-venue strategies) (Cambridge has the voluntary community support network facilitated through the municipality) Working with Partner Organizations to get the word out (e.g. schools, community groups, etc.

Services and Operations, 34 sub-actions

Action	Sub-Action Raised (verbatim)	Notes Captured
A6: Climate-Adjusted Stormwater & Wastewater Standards	Enforcement	Stormwater going into sanitary
A6: Climate-Adjusted Stormwater & Wastewater Standards	Water balance (infiltration trenches, on site stormwater control, etc)	Stormwater rates Incentives to manage stormwater on site.
A6: Climate-Adjusted Stormwater & Wastewater Standards	Explore energy recovery options at future facilities (e.g. WWTP)	
A6: Climate-Adjusted Stormwater & Wastewater Standards	Develop and I&I strategy (downspout disconnection)	
A6: Climate-Adjusted Stormwater & Wastewater Standards	Stormwater Bylaw	
A6: Climate-Adjusted Stormwater & Wastewater Standards	Controls at Source to Manage/Pre-treat SW	Programs to build infrastructure that
A7: Asset Management Climate Integration	Review asset management standards to account for enhanced deterioration	
A7: Asset Management Climate Integration	Review service level standards for winter	
A7: Asset Management Climate Integration	Public communication for how to keep properties safe (e.g. clearing excessive snow on roofing)	Snow clearing Clearing catch basins Beach closures and water closures Green plumes
A7: Asset Management Climate Integration	Inspection of facilities and infrastructure for snow/ice loading and after extreme weather events and storms	
A8: Natural Asset Valuation & Integration	Natural Asset Valuation & Integration	Inventory the Town's natural assets (wetlands, urban forest, shoreline vegetation) using a standardized methodology.
A8: Natural Asset Valuation & Integration	Natural Asset Valuation & Integration	Adopt natural asset valuation in the Asset Management Plan and annual budget, including replacement cost for wetlands, shoreline vegetation, and urban forest, and establish a Natural Asset Reserve Fund.
A8: Natural Asset Valuation & Integration	Partnering with Community Groups (microbrewery group, 4H,	

Action	Sub-Action Raised (verbatim)	Notes Captured
A8: Natural Asset Valuation & Integration	Nature walks, foraging escapes, community cleanup programs.	
A9: Resilient Facility Retrofit & Asset Management Capacity	Proactive inspections and maintenance for faster deterioration	
A9: Resilient Facility Retrofit & Asset Management Capacity	Energy monitoring and management to identify excessive degradation	
A9: Resilient Facility Retrofit & Asset Management Capacity	Enhanced green infrastructure to reduce energy needs and infrastructure degradation	
A9: Resilient Facility Retrofit & Asset Management Capacity	Backup power and locations	
A9: Resilient Facility Retrofit & Asset Management Capacity	Increased inspections and early replacement	
A10: Emergency Management Modernisation	Communications protocols for emergency events	
A10: Emergency Management Modernisation	Insurance	
A10: Emergency Management Modernisation	Annual training for emergency management	
A10: Emergency Management Modernisation	Service continuity planning	E.g. town hall floods, where are council meetings, where is customer service
A10: Emergency Management Modernisation	Review of backup power and ensuring redundancy and backup	
A11: Green & Climate-Ready Development Standards	Integrating climate change into design standards, the official plan etc.	
A11: Green & Climate-Ready Development Standards	Regulation of resource consumption of new construction (e.g. data centres, industrial buildings etc.)	Ensuring on-site power generation and minimizing net impacts Minimizing net impacts to stormwater
A11: Green & Climate-Ready Development Standards	District energy	

Action	Sub-Action Raised (verbatim)	Notes Captured
A11: Green & Climate-Ready Development Standards	Renewable energy considerations for public and private developments	
A11: Green & Climate-Ready Development Standards	Update sewer-use by-laws to incorporate climate change considerations	
A12: Climate Resilience Financial Strategy	Adjusting timing of events to deal with the warmer weather	
A12: Climate Resilience Financial Strategy	Contingency planning for events	
A12: Climate Resilience Financial Strategy	Added resourcing for events (e.g. quench buddy, water stations)	
A12: Climate Resilience Financial Strategy	Additional insurance requirements related to events due to climate events	
A12: Climate Resilience Financial Strategy	Demand management for seasonal tourism surges.	

Natural Environment, 18 sub-actions

Action	Sub-Action Raised (verbatim)	Notes Captured
A13: Urban Forest & Canopy Expansion	Adapt species planting for future climate	Incentives Recommended trees list (consider how included in development standards versus private)
A13: Urban Forest & Canopy Expansion	Tree Maintenance Guidance & Program	How to care for the plants. Perhaps a joint program between arborists and community to provide support to the individual to try and promote health of plant [Also from HMG/AIM]: Watering Pruning What happens if there are pests
A13: Urban Forest & Canopy Expansion	Land acquisition to support forest nature trails	Program to acquire spaces for public uses and support canopy coverage. Take cash-in-lieu of the trees in high-density neighbourhoods to support growth of greenspace program. [Also from HMG/AIM]: Forest property developed (buy equivalent public lands) Study to identify priority properties and connect to trails
A13: Urban Forest & Canopy Expansion	Update development standards	% of species on each street
A13: Urban Forest & Canopy Expansion	Town planting on private property & maintain	Benefit to others Concern about trying to control private property
A13: Urban Forest & Canopy Expansion	Qualified contractor list	

Action	Sub-Action Raised (verbatim)	Notes Captured
A13: Urban Forest & Canopy Expansion	Resilient plant species	Green design standards that prioritize south Carolinian species Incentive programs to support resilient species
A13: Urban Forest & Canopy Expansion	Study to assess suitability of existing lands for addition to greenspace.	
A13: Urban Forest & Canopy Expansion	Incorporating Biodiversity for Ecosystem Stability into Planning Standards & Town Programs	Ensure there isn't more than 10% of planting of
A13: Urban Forest & Canopy Expansion	Education Program linked to the Climate Change Activity mentioned in community	Intent is to bring the good word to people about how to maintain resilient plant species, promote growth and health of plantings.
A13: Urban Forest & Canopy Expansion	A Roster for Qualified Arborists and Horticulturalists to connect SMEs and owners	
A14: Naturalization & Pollinator-Positive Public Realm	Education & Outreach	On how ot maintain, prune, and promote plant health [Also from HMG/AIM]: Pruning restrictions, firewood, tree wraps, etc. (typical tree maintenance best practices education)
A14: Naturalization & Pollinator-Positive Public Realm	Cisterns	
A14: Naturalization & Pollinator-Positive Public Realm	Road Salting Program Modernization	Barrie and Toronto perhaps are examples of this Vaughn Education Program: When is salt effective, at what temperatures, and when does it stop working effectively. [Also from HMG/AIM]: Monitoring for application rates Coordination with provincial agencies re: maintenance standards Alternative de-icing strategies Education (how much is needed; particularly targeted at private home owners)
A14: Naturalization & Pollinator-Positive Public Realm	Nature walks (community activity)	
A14: Naturalization & Pollinator-Positive Public Realm	Rainwater Storage for Plant Watering	Large cisterns to store rainwater
A16: Water Quality, Source Protection & Potable Water Availability	Business associations	-outreach to take on initiative

Action	Sub-Action Raised (verbatim)	Notes Captured
A17: Invasive Species & Ecosystem Health Program	Invasive Species Monitoring Program	To engage the community in helping to monitor More ability to enforce bylaws that help manage invasive species. [Also from HMG/AIM]: apps for tracking Bylaw enforcement (feeding) Engagement with community groups

How This Input Was Used

The vision statement adopted through this process appears in the Plan's Vision and Objectives section. The workshop-generated sub-actions above were refined by the project team, combined with precedent research and risk-assessment findings, into the 18 high-level adaptation actions (A1 to A18) presented in Section 5, with the full sub-action detail, leads, and implementation notes maintained in the Adaptation Action Register (Appendix A). Not every sub-action raised at Workshop 5 maps one-to-one onto a Section 5 bullet point; several were consolidated, generalized, or paired with precedent-based refinements during drafting. This appendix preserves the original workshop language so that RCTF members can see their own input reflected and trace it into the final Plan.



Appendix E

Ontario Municipal Precedent Reference

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Municipal References by Adaptation Action Item

A1 Warming & Cooling Centres

Lens: *People & Community.*

Scope: *Network of accessible indoor cooling centres and outdoor cool refuges (splash pads, misters, shaded canopies, solar-fan pavilions), equitable distribution, transit access, extended hours during heat events, back-up power at designated centres, expanded to also serve as climate-resilient refuges during severe winter storms, power outages, and prolonged smoke events, with refuge designation embedded in the Town's facility capital planning cycle.*

- **Priority Program: Cooling Strategy (Climate Ready Ottawa)** , Ottawa's 2026–2030 plan names a dedicated Cooling Strategy as one of seven priority programs, combining more shaded areas, water access and cooling features in parks and public buildings with targeted outreach and support to heat-vulnerable residents.
 - Source: City of Ottawa, *Climate Ready Ottawa* (2025). <https://ottawa.ca/en/city-hall/city-news/newsroom/backgrounder-climate-ready-ottawa>
- **Community hubs supplementing reception centres (Ottawa CCMP)** , The City commits to working with local partners to create community-based hubs that supplement City reception centres so vulnerable residents can access support closer to where they live. Useful framing for Collingwood's distributed-refuge model.
 - Source: City of Ottawa, *Climate Change Master Plan* (2020, amended Dec 2020). <https://pub-ottawa.escribemeetings.com/filestream.ashx?documentid=22196>
- **Heat-vulnerable buildings identified as priority risk (Ottawa CCMP)** , CCMP specifically calls out inadequate cooling in community buildings, including schools, low-income housing, and private long-term care facilities, as a priority climate risk. Direct justification for Collingwood's equitable-distribution lens on indoor centres.
 - Source: City of Ottawa, *Climate Change Master Plan* (2020). <https://pub-ottawa.escribemeetings.com/filestream.ashx?documentid=22196>
- **People-and-Health theme area (Hamilton CCIAP)** , Hamilton's CCIAP organizes heat-response actions under a People and Health theme and couples them with the Built Environment theme (shaded streets, canopy), useful cross-walk for pairing indoor/outdoor interventions under A1.
 - Source: City of Hamilton, *Climate Change Impact Adaptation Plan* (2022). <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/hamiltons-climate-1>
- **Ottawa Municipal Emergency Plan (2024)**, reception centres & all-hazard refuge model
 - Source: City of Ottawa, *Emergency Management Program Municipal Emergency Plan* (Dec 2024). https://documents.ottawa.ca/sites/default/files/documents/mep_2024_en.pdf

Density: Moderate precedent. Ottawa gives the clearest policy-programmatic anchor for a named cooling-centre network, and its Municipal Emergency Plan gives a workable model for

extending refuge designation to all-hazard use (storms, outages, smoke) rather than running a parallel plan. No Ontario plan in this set has yet articulated back-up-power-designated-refuge standards with the specificity Collingwood's all-hazard, capital-planning-integrated model requires, SMEs will need to lead the facility-criteria table (capacity, hours, back-up power, air filtration thresholds).

A2 Flood Risk Planning & Home Protection Program

Lens: *People & Community.*

Scope: *Integrate floodplain mapping into property disclosure and rental licensing; home flood protection grant/subsidy program (backflow valves, sump pumps, lot grading); basement flooding and sewer backup on private property and Town facilities.*

- **Rain Ready Ottawa**, private-property stormwater rebates , Rebates up to \$5,000 for downspout redirection, rain gardens, soakaway pits, permeable pavement, and certified landscape design in priority retrofit areas. Over 500 projects delivered, \$500K+ rebates, \$3.5M+ leveraged private investment. Directly portable program template.
 - *Source: City of Ottawa, Rain Ready Ottawa. <https://ottawa.ca/en/living-ottawa/environment-conservation-and-climate/protecting-ottawas-waterways/rain-ready-ottawa>*
- **Ottawa Residential Protective Plumbing Program, Compassionate Grant** , Named in Climate Ready Ottawa (2025) as a program to scale for flood preparedness; complements Rain Ready with sewer-backup-focused measures.
 - *Source: City of Ottawa, Compassionate Grant program. <https://ottawa.ca/en/living-ottawa/drinking-water-stormwater-and-wastewater/wastewater-and-sewers/basement-flooding/flooding-rebates-and-grant/compassionate-grant-program>*
- **Toronto Basement Flooding Protection Subsidy Program (BFPSP)** , Operating since 2007, ~59,000 applications, ~\$86M subsidies issued, ~14% of residential properties participating. Eligible work: backwater valve, sump pump, severance/capping of storm sewer or weeping tile connection. Subsidy up to \$3,400/property (proposed increase to \$6,650 in 2026). The most mature Ontario template.
 - *Source: City of Toronto, Basement Flooding Protection Subsidy Program. <https://www.toronto.ca/services-payments/water-environment/managing-rain-melted-snow/basement-flooding/basement-flooding-protection-subsidy-program/>*
- **Intact Centre catalogue of Canadian subsidy programs** , The Intact Centre on Climate Adaptation published a compiled inventory of Canadian provincial and municipal flood-protection subsidy programs, a ready-made comparator dataset for program design.
 - *Source: Intact Centre on Climate Adaptation, Canadian Provincial and Municipal Flood Protection Subsidy/Grant Programs. <https://www.intactcentreclimateadaptation.ca/wp-content/uploads/2020/01/Canadian-Municipal-Subsidy-Program-Formal-1.pdf>*

Density: Strong precedent on the subsidy/grant side (Toronto, Ottawa). Thin precedent on the disclosure-at-point-of-sale-or-rental angle, no Ontario municipal plan in this set has translated

floodplain mapping into mandatory disclosure or rental-licence conditions. SMEs will need to lead on the disclosure-integration mechanism; borrow Toronto/Ottawa directly on the grant architecture.

A3 Shoreline Public Access & Erosion Management

Lens: *People & Community.*

Scope: *Shoreline management strategy protecting public and Indigenous access; erosion; transparent criteria for allocating public dollars between residential vs commercial/tourism shoreline protection.*

- **Southern Lake Huron Coastal Adaptation Strategy (MVCA)** , 56 km of shoreline, ~900 ha, ~\$750M at risk over next 100 years. Explicit components: Transformative Development Policies review, a Planned Relocation Manual for municipalities on asset relocation, and a Littoral-Cell Technical Committee for locally informed decision-making. Launched July 8, 2025 in Goderich.
 - *Source: Maitland Valley Conservation Authority, Southern Lake Huron Coastal Adaptation Strategy. <https://mvca.on.ca/launch-of-the-coastal-adaptation-strategy-project/>*
- **MVCA Lake Huron hazard mapping with climate factored in** , Three years of updated hazard mapping that explicitly accounts for climate change impacts increasing natural-hazard risk; the technical backbone for any shoreline governance decision Collingwood makes.
 - *Source: MVCA / Huron Citizen coverage. <https://www.huroncitizen.ca/mvca-hazard-mapping-along-lake-huron-is-factoring-in-climate-change>*
- **ABCA Shoreline Management Plan** , ABCA manages 60 km of Lake Huron shoreline and runs a Shoreline Management Plan plus ongoing bluff-erosion risk communications, explicitly links freeze-thaw, lake-level, and groundwater saturation to bluff collapse.
 - *Source: Ausable Bayfield Conservation Authority, Shoreline Management Plan. <https://www.abca.ca/planning/shorelinemanagement/>*
- **ABCA bluff-erosion public caution protocols** , ABCA and MVCA jointly issue seasonal public-safety cautions for shoreline bluff areas, a communications and liability template for a municipality that will need to warn residents and visitors off hazardous public edges.
 - *Source: ABCA, public shoreline safety notice. <https://www.abca.ca/post/?ID=644>*

Density: Strong precedent on the erosion/hazard-mapping side thanks to MVCA and ABCA. Thin precedent on the public-dollars-allocation-equity question (residential vs commercial/tourism shoreline protection funding criteria). No Ontario plan in this set has published transparent allocation criteria. SMEs will lead that governance piece, CA work gives the hazard technical base; the funding-equity framework is a Collingwood original.

A4 Risk Event Communications Program

Lens: *People & Community.*

Scope: Consistent, multi-channel public communications program covering heat, smoke, flood, freezing rain, snow, and water quality, with audience segmentation and content tailored for tourists and seasonal residents in addition to permanent residents. Works in tandem with A18: Partner Coordination & Climate Risk Communications, which builds the partner infrastructure behind this delivery system.

- **Ottawa climate risk communications**, cooling outreach model (CCMP) , CCMP commits to “greater outreach and support to heat-vulnerable residents” and carries through into Climate Ready Ottawa cooling and community-preparedness programs, a year-round, multi-hazard outreach model.
 - Source: City of Ottawa, Climate Change Master Plan (2020). <https://pub-ottawa.escribemeetings.com/filestream.ashx?documentid=22196>
- **London CEAP communications and indicator reporting** , London’s 2022 Progress Report describes a communications and indicator infrastructure (100+ potential indicators, 66 baseline) that doubles as a public-facing accountability communications channel, a template for tying comms to indicator reporting.
 - Source: City of London, Climate Emergency Action Plan 2022 Progress Report. https://hdp-ca-prod-app-ldnca-getinvolved-files.s3.ca-central-1.amazonaws.com/4817/6530/8277/2022_CEAP_Progress_Report.pdf
- **ABCA / MVCA seasonal public-safety advisories** , CA-led, plain-language, multi-channel seasonal advisories (bluff collapse, lake levels, beach water quality), the closest existing Ontario model for the tourist/seasonal-reader audience, which is Collingwood’s distinguishing requirement.
 - Source: Ausable Bayfield Conservation Authority, Take precautions near shoreline. <https://www.abca.ca/post/?ID=1105>
- **Dufferin Together for Change**, emergency preparedness communications
 - Source: Dufferin County, Together for Change: Dufferin’s Climate Adaptation Strategy (2023). <http://www.dufferincounty.ca/wp-content/uploads/2024/02/Accessible-Dufferin-Climate-Adaptation-Strategy.pdf>

Density: Thin-to-moderate precedent. Ontario plans talk about communications at a high level but rarely describe the multi-channel, tourist-and-seasonal-tailored delivery Collingwood needs. CA advisories are the closest model and Dufferin gives a scale-appropriate communications commitment; SMEs will still need to lead the seasonal/tourist audience segmentation and plain-language hazard translation.

A5 Climate-Adjusted Stormwater & Wastewater Standards

Lens: Services & Operations.

Scope: Updated design criteria for stormwater and wastewater infrastructure reflecting climate-projected rainfall and meltwater volumes; inflow-and-infiltration (I&I) reduction program tied to capital and operating budgets.

- **Ontario draft LID Stormwater Management Guidance Manual (2022)** , Provincial draft guidance organized around planning, runoff volume control, groundwater, criteria for model selection, climate change considerations, O&M, and erosion/sediment control. Anchor Collingwood's design-criteria update to this manual so it is defensible against provincial direction.
 - Source: Government of Ontario, Draft LID Stormwater Management Guidance Manual (2022). <https://ero.ontario.ca/public/2022-01/Draft%20LID%20Stormwater%20Management%20Guidance%20Manual%202022.pdf>
- **City of Ottawa Adaptive Approaches in Stormwater Management** , Commissioned technical guidance addressing how to stress-test stormwater infrastructure under adjusted IDF curves and adaptive-management framing, useful methodological template.
 - Source: City of Ottawa, Adaptive Approaches in Stormwater Management. https://documents.ottawa.ca/sites/default/files/documents/stormwater_management_en.pdf
- **Climate Ready Ottawa**, Critical Infrastructure, Climate-Ready Infrastructure programs , Pairs protection of water/wastewater treatment services during extreme weather with testing new technologies, updating design standards, and adopting nature-based solutions.
 - Source: City of Ottawa, Climate Ready Ottawa backgrounder (2025). <https://ottawa.ca/en/city-hall/city-news/newsroom/backgrounder-climate-ready-ottawa>
- **Orangeville 2024 Stormwater Rate Study** , Ties stormwater capital/operating funding to long-term protection via a dedicated rate, a scale-appropriate financing template for Collingwood when the A13 review closes.
 - Source: Town of Orangeville, 2024 Stormwater Rate Study. <https://pub-orangeville.escribemeetings.com/filestream.ashx?DocumentId=16687>

Density: Moderate-to-strong precedent on stormwater; thin precedent on the explicit I&I-reduction programmatic tie to capital and operating budgets. Ontario municipalities do I&I work but it is rarely surfaced in climate plans. SMEs can borrow the design-criteria work directly and will need to lead the I&I-to-budget integration.

A6 Asset Management Climate Integration

Lens: Services & Operations.

Scope: Climate vulnerability across the full asset lifecycle (restoration, renewal, O&M, replacement, disposal). Methodology (climate-weighted renewal prioritization, risk scoring, vulnerability-adjusted lifecycle costing, demographic weighting) plus O&M resilience and AM staffing capacity.

- **Peel Enterprise Asset Management Plan, climate integration** , Peel's EAMP uses lifecycle models to forecast infrastructure condition, reinvestment needs, and asset-related risks to service; the Region is completing an assessment of the exposure of all

assets to climate hazards and the cost of the adaptation response. The most-advanced Ontario precedent.

- *Source: Region of Peel, Climate Change Master Plan; Peel Asset Management Journey writeup. <https://peelregion.ca/about/climate-change/climate-change-master-plan>*
- **Peel sectoral climate-risk framework (intermodal transportation case study)** , Peer-reviewed framework using Peel as a case study to identify and prioritize key climate risks, integrating projected weather, infrastructure damage, economic interruption, and workforce adverse impacts, portable methodology.
 - *Source: Peel sectoral risk management framework (peer-reviewed case study). <https://www.oaepublish.com/articles/cf.2023.40>*
- **Orangeville Corporate Climate Change Adaptation Plan (2021)** , Explicitly scopes the plan to “prepare for the effects of a changing climate on Town-managed infrastructure, assets, and services”, a scale-appropriate starting frame for Collingwood, particularly for asset-side integration without Peel’s enterprise AM platform.
 - *Source: Town of Orangeville, Corporate Climate Change Adaptation Plan (2021). <https://orangeville.ic12.esolq.ca/en/living-here/resources/Documents/2021-Corporate-Climate-Change-Adaptation.pdf>*
- **Hamilton CCIAP Built Environment theme** , Frames incorporation of climate into future land use, development and construction, plus reducing transportation disruption and improving travel-safety on roads, sidewalks, trails. Useful for O&M-side resilience framing.
 - *Source: City of Hamilton, CCIAP (2022). <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/hamiltons-climate-1>*

Density: Moderate precedent. Peel leads on full-lifecycle climate-integrated AM; Orangeville is the most-comparable scale reference. Demographic weighting in prioritization is an area where Collingwood will likely be ahead, SMEs will need to lead that methodology.

A7 Natural Asset Valuation & Integration

Lens: Services & Operations.

Scope: Natural asset valuation methodology so wetlands, shoreline vegetation, and the urban forest are accounted for in the AMP as infrastructure with a replacement cost. MNAI-style work.

- **MNAI / Natural Assets Initiative methodology** , MNAI developed the Canadian methodology to identify, value, and manage natural assets using cost-replacement valuation (what would it cost to replace the stormwater service a wetland provides with an engineered alternative?). Example wetland stormwater-service values ranged \$1.07M–\$2.89M.
 - *Source: Natural Assets Initiative, A game-changing approach. <https://mnai.ca/a-game-changing-approach/>*

- **Region of Peel as 2016–17 MNAI pilot** , Peel was one of five original MNAI pilot communities (with Nanaimo, Grand Forks, West Vancouver, Oakville) that tested and refined the methodology, a direct Ontario precedent at large scale.
 - Source: Natural Assets Initiative, Project Communities. <https://mnai.ca/pilot-communities/>
- **Nine Ontario municipalities in the national natural asset inventory cohort** , Greenbelt Foundation has invested \$550K+ since 2020 supporting nine Ontario municipalities in a 30-municipality national cohort doing natural asset inventories. The cohort membership is a possible peer group for Collingwood.
 - Source: Natural Assets Initiative, Nine Ontario Municipalities Part of National Cohort. <https://mnai.ca/nine-ontario-municipalities-part-of-national-cohort-under-taking-natural-asset-inventories-and-building-climate-resilience/>
- **Conservation Ontario natural asset management portal** , Conservation Ontario hosts a natural asset management page consolidating tools and CA-led projects, useful secondary entry point for Collingwood's NVCA engagement.
 - Source: Conservation Ontario, Natural Asset Management. <https://conservationontario.ca/conservation-authorities/watershed-management/natural-asset-management>

Density: Strong precedent at the methodology level (MNAI is the Canadian standard); moderate among Ontario municipalities (Peel leads; a growing cohort is catching up). SMEs can borrow MNAI methodology directly; the Collingwood-specific value add is cost-replacement figures for local wetlands, shoreline vegetation, and urban forest assets.

A8 Resilient Facility Retrofit & Asset Management Capacity

Lens: Services & Operations.

Scope: Back-up power, passive cooling, snow/ice loading, flood protection, indoor air filtration in municipal facilities, prioritizing those serving vulnerable populations and designated refugees.

Pair capital retrofits with AM staffing and lifecycle O&M capacity.

- **Ottawa Critical Infrastructure Protection program (Climate Ready Ottawa)** , Names safeguards for water/wastewater treatment, transit, and emergency services during floods, power outages, and extreme weather as a priority program in the 2026–2030 plan, the direct retrofit-priority-for-vulnerable-services framing.
 - Source: City of Ottawa, Climate Ready Ottawa backgrounder (2025). <https://ottawa.ca/en/city-hall/city-news/newsroom/backgrounder-climate-ready-ottawa>
- **Dufferin Together for Change**, passive cooling, ASHP, triple-pane, light-coloured roofs , Dufferin prioritizes building designs that reduce energy demand and increase efficiency via passive cooling, air-source heat pumps, triple-pane windows, and light-coloured roofs, the practical retrofit specification list Collingwood can adopt.
 - Source: Dufferin County, Together for Change (2023). <http://www.dufferincounty.ca/wp-content/uploads/2024/02/Accessible-Dufferin-Climate-Adaptation-Strategy.pdf>

- **Orangeville CCCAP**, scope to Town-managed assets and services , Orangeville's plan explicitly scopes to corporate facilities and services and is a scale-comparable, actionable template for Collingwood's retrofit-plus-AM-capacity pairing.
 - Source: Town of Orangeville, Corporate Climate Change Adaptation Plan (2021). <https://orangeville.ic12.esolq.ca/en/living-here/resources/Documents/2021-Corporate-Climate-Change-Adaptation.pdf>
- **Hamilton Urban Forest Strategy staffing pattern** , Hamilton's UFS added two forestry workers and ~\$100K for laser imaging detection as part of implementation, a concrete staffing-with-capital precedent Collingwood can cite when pairing A10 capital retrofits with AM O&M staffing capacity.
 - Source: City of Hamilton, Urban Forest Strategy (2023). <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/urban-forest-strategy>

Density: Moderate precedent. Ottawa gives the priority-services framing; Dufferin gives the retrofit spec list; Orangeville gives the scope template. The explicit linkage between “designated climate refuge” facilities (A1) and the facility-retrofit program is under-developed across peers, SMEs will lead that A1↔A9 crosswalk.

A9 Emergency Management Modernization

Lens: Services & Operations.

Scope: Refresh emergency plans, MOUs, mutual aid, insurance review, and communications protocols. Scenarios for cumulative/concurrent events, tourist and seasonal-population surges, and regular tabletop and live simulation exercises. Modernization collaborative with Health Unit, utility providers, fire/police/EMS, local conservation authority, EM Ontario.

- **Ottawa Municipal Emergency Plan (2024)** , Current MEP includes reception centres, wellness visits, and emergency distribution of food/water/medical batteries, operational scaffolding to layer climate scenarios onto.
 - Source: City of Ottawa, Municipal Emergency Plan (Dec 2024). https://documents.ottawa.ca/sites/default/files/documents/mep_2024_en.pdf
- **Peel ice storm / July 2013 record-rainfall experience as cumulative-event lessons** , Peel's CCMP explicitly grounds itself in the July 2013 record-breaking rainfall plus the December 2013 ice storm (widespread power outages, tree damage), the Ontario peer with the clearest articulation of concurrent/cumulative extreme weather experience.
 - Source: Region of Peel, Climate Change Master Plan (2019). <https://peelregion.ca/about/climate-change/climate-change-master-plan>
- **Windsor 2017 flood context (Degrees of Change)** , Windsor's 2020 Degrees of Change draws its EM urgency from the August 2017 flood (~6,000 homes, \$124M+ insured damages), useful scale-of-loss storytelling when arguing for EM modernization budget.

- Source: City of Windsor, *Climate Change Adaptation Plan / Degrees of Change* (2020). https://icleicanada.org/wp-content/uploads/2020/03/S-20_2020-Climate-Change-Adaptation-Plan-FINAL-Feb-19-2020.pdf
- **NVCA climate action plan**, Partnerships as top-level strategic goal , NVCA's 2022–2025 Climate Change Action Plan names Partnerships as one of five strategic goals, positioning NVCA as the partner of choice for local climate initiatives, the natural MOU/mutual-aid anchor on Collingwood's watershed side.
 - Source: Nottawasaga Valley Conservation Authority, *2022–2025 Climate Change Action Plan*. https://www.nvca.on.ca/wp-content/uploads/2023/08/2022-2025-Climate-Change-Plan_Final.pdf
- **Hamilton CCIAP People and Health theme**, Public Health coordination model
 - Source: City of Hamilton, *Climate Change Impact Adaptation Plan* (2022). <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/hamiltons-climate-1>

Density: Moderate precedent on the EM-plan side; thin precedent on the tourist/seasonal-surge scenario, no Ontario plan in this set addresses tourism-adjusted EM capacity. SMEs will lead the surge-scenario work; borrow Peel's cumulative-event language and NVCA's partnership frame for the MOU architecture. Hamilton's People and Health theme gives a workable template for the Health-Unit coordination piece specifically.

A10 Voluntary Green & Climate-Ready Development Standards

Lens: Services & Operations.

Scope: Update site plan, zoning, and development standards to require green infrastructure, low-impact development, tree preservation, and climate-ready building design (cooling rough-ins, oversizing, future-proofing).

- **Ottawa High Performance Development Standard (HPDS)** , Ottawa's HPDS is a Tier 1/Tier 2 voluntary-to-mandatory green development standard being implemented via site plan control, the peer-reviewed Ontario model for municipal green development standards.
 - Source: City of Ottawa, *High Performance Development Standard*. <https://engage.ottawa.ca/ottawa-high-performance-development-standard1>
- **Mississauga Green Development Standards Tier 2/Tier 3** , Mississauga's multi-tier GDS (low-rise; medium/high-rise) is a fully published municipal standard with implementation guidebooks, adaptable for Collingwood's scale.
 - Source: City of Mississauga, *Green Development Standards Tier 2 and Tier 3 Medium/High Guidebook*. <https://www.mississauga.ca/wp-content/uploads/2024/09/11151948/green-development-standards-med-high-guidebook-tier2-tier3.pdf>
- **Toronto Green Standard** , The longest-running Ontario GDS with the deepest track record on climate-ready building design requirements, policy and legal precedent for many of the zoning-and-site-plan levers Collingwood will need.

- Source: Toronto Green Standard (via Passive House Canada archive of the TGS framework document). https://www.passivehousecanada.com/wp-content/uploads/2017/11/Toronto-Green-StrategyMidHiRise_Standard.pdf
- **Provincial Planning Statement 2024**, green infrastructure / LID / active transportation policy direction , PPS 2024 directs planning authorities to plan to reduce GHG and prepare for climate impacts through green infrastructure, LID, and active transportation. URL not verified in this research pass, cite the PPS 2024 document directly from Ontario.ca.
 - Source: Government of Ontario, Provincial Planning Statement (2024). URL not verified, cite source document directly.

Density: Strong precedent, Ottawa, Mississauga, Toronto all have operational GDS. Caveat: Ontario's Bill 17 conversation in 2026 is actively contesting municipal enhanced development standards. SMEs should flag legal/political risk and be prepared to defend the authority for a Collingwood GDS.

A11 Climate Resilience Financial Strategy

Lens: Services & Operations.

Scope: Structured review of how Collingwood's climate adaptation costs are financed, considering mechanisms that more transparently reflect the contribution of seasonal and tourist use to infrastructure demand, including development charges, the Municipal Accommodation Tax, and a possible stormwater utility rate, while attending to equity of financial burden for permanent residents across income levels.

- **Ontario Municipal Accommodation Tax (MAT) framework** , Enabled by Bill 127 (Stronger, Healthier Ontario Act, 2017) and Transient Accommodation Regulation 435/17. Over 40 Ontario municipalities have adopted, most at 4%. Provincial rule: at least 50% of net revenue must go to an eligible tourism entity; the remaining 50% stays with the municipality for tourism-related community programs and infrastructure.
 - Source: Tourism Industry Association of Ontario, Municipal Accommodation Tax resource. <https://www.tiaontario.ca/cpages/municipalaccommodationtax>
- **MAT revenue use framing**, roads, transit, culture, parks, natural areas, recreation , Published framing names these categories as MAT-fundable where they support tourism, Collingwood can argue climate-adjusted parks, natural-area, and recreation infrastructure fits this test.
 - Source: TIAO / ORHMA MAT guidance. <https://tiaontario.ca/resource/municipal-accommodation-tax>
- **Prince Edward County MAT program** , A tourism-dominant Ontario municipality's published MAT use structure, the closest structural peer for Collingwood.
 - Source: Prince Edward County, Municipal Accommodation Tax. <https://www.thecounty.ca/government/municipal-projects/corporate-strategic-initiatives/mat/>

- **Wasaga Beach MAT consultation (Engage Wasaga)** , A directly adjacent Georgian Bay municipality consulting on MAT design, a neighbour-peer datapoint for Collingwood.
 - *Source: Town of Wasaga Beach, Municipal Accommodation Tax.*
<https://engagewasaga.ca/mat>

Density: Moderate precedent on the MAT mechanism itself; thin-to-no precedent on explicitly tying MAT revenue to climate-adaptation infrastructure as opposed to generic tourism infrastructure. SMEs will lead the argument that climate adaptation of tourism-serving infrastructure qualifies under the MAT framework, this is legal/policy interpretation work, not borrowed precedent.

A12 Urban Forest & Canopy Expansion

Lens: *Natural Environment.*

Scope: *Town-wide tree canopy target with priority to urban heat islands and underserved neighbourhoods. Strengthen the tree preservation bylaw and dedicate enforcement capacity.*

- **Hamilton Urban Forest Strategy**, 40% canopy target by 2050 , Adopted June 2023. Explicit Town-wide target; current urban canopy 17.8–20% (public lands 31.7–33%, private lands 16.2–18%), with priority to under-canopied areas like downtown. Closest Ontario large-municipality precedent with a numeric target.
 - *Source: City of Hamilton, Urban Forest Strategy (2023).* <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/urban-forest-strategy>
- **Hamilton Private Tree Bylaw review, dedicated enforcement** , Hamilton is updating Tree Protection Guidelines and Woodland Bylaws (2025–2026) with the stated goal of an “integrated, effective regulatory and implementation framework for private trees and woodlands” to hit the 40% target, directly aligned with Collingwood’s A14 scope on bylaw, enforcement capacity.
 - *Source: City of Hamilton, State of the Urban Forest Report 2026 and UFS technical report.* <https://www.hamilton.ca/sites/default/files/2026-02/urban-forest-strategy-state-forest-report-2026.pdf>
- **Hamilton hiring pattern**, two forestry workers, \$100K laser imaging , Documented staffing and tooling addition tied to the UFS, the “dedicated enforcement capacity” piece of A14 in tangible form.
 - *Source: Hamilton UFS implementation coverage.* <https://ward8hamilton.ca/hamilton-urban-forest-strategy-released/>

Density: Strong precedent. Hamilton’s UFS is the clearest Ontario template for a published canopy target plus bylaw plus staffing. SMEs can borrow the UFS structure almost wholesale; Collingwood’s adaptation is primarily downsizing to scale and integrating with A14 (naturalization) and A17 (invasive-species management).

A13 Naturalization & Pollinator-Positive Public Realm

Lens: *Natural Environment.*

Scope: *Naturalized gardens, edible streetscapes, and pollinator-supporting plantings on public land; support private-land programs through education, demonstration sites, and incentives.*

Coordinate with A17 to avoid duplication on invasive-species response.

- **Toronto Pollinator Protection Strategy (2018)** , Toronto signed the Bee City pledge in 2018 and adopted a Pollinator Protection Strategy the same year. 60,000+ native trees and shrubs, 50,000+ wildflowers and herbaceous/aquatic plants planted, the mature municipal template for public-realm pollinator work.
 - *Source: City of Toronto, Pollinator Protection Strategy. <https://www.toronto.ca/services-payments/water-environment/environmentally-friendly-city-initiatives/reports-plans-policies-research/draft-pollinator-strategy/>*
- **Richmond Hill Official Plan naturalization policies** , Richmond Hill's OP includes policy direction to increase native plants/shrubs/trees in municipal landscaping and encourage milkweed; updated mowing standards explicitly allow greater naturalization on previously-manicured municipal areas, the "how to write it into policy" model.
 - *Source: Bee City Canada profile for Richmond Hill. <https://beecitycanada.org/bee-cities/richmond-hill/>*
- **Penetanguishene naturalization program** , Severn Sound Environmental Association, Penetanguishene secured \$50,000 from the Great Lakes Local Action Fund for on-the-ground naturalization/restoration on municipally owned land, scale-appropriate peer precedent.
 - *Source: Town of Penetanguishene, Naturalization. <https://www.penetanguishene.ca/living-here/community-improvement-and-sustainability/naturalization/>*
- **Ottawa Maintenance Quality Standards recognizing naturalized areas** , Ottawa's MQS for roads, sidewalks, parks and sports fields explicitly recognizes maintaining some areas in a naturalized state to support biodiversity, a small but important operational precedent for the O&M side of A15.
 - *Source: City of Ottawa, Pollinators page. <https://ottawa.ca/en/living-ottawa/environment-conservation-and-climate/wildlife-and-plants/pollinators>*

Density: Strong precedent at the strategy level (Toronto), moderate at the scale-comparable level (Richmond Hill, Penetanguishene). Collingwood can borrow Toronto's strategy architecture, Richmond Hill's OP language, and Penetanguishene's grant-funded delivery model directly.

A14 Shoreline & Wetland Protection Program

Lens: *Natural Environment.*

Scope: *Protect and restore wetlands, riparian corridors, and shoreline vegetation for flood mitigation, water quality, habitat, and natural cooling, coordinated with the local conservation authority and MNRF/DFO. Natural-system focus; the access/erosion side of shoreline is A4.*

- **NVCA 2022–2025 Climate Change Action Plan**, Natural Heritage, Stewardship goals , NVCA’s plan names Natural Heritage (improving natural heritage systems for resilience) and Stewardship/Land Conservation (conservation, restoration, improvement of natural systems) as two of its five strategic goals, explicitly aligned to climate adaptation, Collingwood’s natural delivery partner for A16.
 - Source: Nottawasaga Valley Conservation Authority, 2022–2025 Climate Change Action Plan. https://www.nvca.on.ca/wp-content/uploads/2023/08/2022-2025-Climate-Change-Plan_Final.pdf
- **NVCA Watershed-based Resource Management Strategy** , NVCA’s watershed-scale strategy consolidates wetland and riparian-corridor protection approaches, the watershed-level wrapper for municipal A16 actions.
 - Source: Nottawasaga Valley Conservation Authority, Watershed-based Resource Management Strategy. <https://www.nvca.on.ca/public-consultation-watershed-strategy/>
- **Hamilton CCIAP Natural Environment, Agriculture and Water theme** , CCIAP carries a dedicated Natural Environment theme that pairs wetland/riparian protection with water-quality and habitat objectives, the closest municipal-scale peer precedent for an integrated A16 program.
 - Source: City of Hamilton, CCIAP (2022). <https://www.hamilton.ca/home-neighbourhood/environmental-stewardship/environmental-plans-strategies/hamiltons-climate-1>
- **WWF / NVCA Utopia wetland restoration case study** , Demonstrated NVCA-led wetland restoration project funded by the WWF Nature and Climate Grant Program, a concrete delivery case for Collingwood as proof-of-concept for a partnership model.
 - Source: WWF-Canada, Restoring Utopia. <https://wwf.ca/stories/nature-and-climate-grant-program-nottawasaga-valley-conservation-authority/>

Density: Moderate-to-strong precedent. NVCA is the natural delivery partner and has an active watershed-scale strategy. Hamilton gives the municipal-scale theme-area template. Collingwood’s value-add will be the municipal-level programmatic layer (incentives, restoration commitments, budget) sitting on top of NVCA’s watershed work.

A15 Water Quality, Source Protection & Potable Water Availability

Lens: *Natural Environment.*

Scope: *Strengthen runoff controls, stormwater quality treatment, and lake/creek monitoring to protect drinking water sources, beach access, and culturally and recreationally important water uses. Also covers drinking-water supply resilience (lake-level impacts, source-water availability during drought, drought-response conservation).*

- **Cataraqui Source Protection Plan (Kingston-area)**, approved 2015 , Kingston-area drinking-water source protection plan covering ~3,200 km² and 15 municipalities including Kingston, the Ontario template for source-protection-plan governance.

- Source: Ontario MECP approval announcement; Cataraqui Source Protection Authority. <https://www.watercanada.net/ontario-approves-plan-to-protect-kingston-area-drinking-water/>
- **Utilities Kingston multi-barrier source-to-tap approach** , Utilities Kingston structures drinking-water protection as a multi-barrier model with specialized departments working under common environmental-protection objectives, useful governance model for Collingwood's water-utility-adjacent discussions.
 - Source: Utilities Kingston, Protecting Kingston's tap water. <https://utilitieskingston.com/Water/Quality/Protectingtapwater>
- **NVCA water quality "brook to bay" program funding** , NVCA received a Province of Ontario grant to improve water quality from the watershed headwaters to Georgian Bay, the direct Collingwood-context water-quality partner.
 - Source: Nottawasaga Valley Conservation Authority, brook-to-bay grant announcement. <https://www.nvca.on.ca/nvca-receives-grant-from-province-of-ontario-to-improve-water-quality-from-brook-to-bay/>
- **ABCA beach water-quality monitoring** , ABCA monitors water quality at Lake Huron beaches as part of its shoreline-watershed responsibility, scale-comparable beach-monitoring precedent for Collingwood's Georgian Bay context.
 - Source: Ausable Bayfield Conservation Authority, Lake Huron. <https://www.abca.ca/watersheds/lake-huron>

Density: Moderate precedent. Kingston/Cataraqui and Utilities Kingston give the source-protection-plan governance model; NVCA is the local water-quality partner. Thin precedent on drought-response conservation programming specifically, SMEs will need to lead the drought-response piece (climate-triggered conservation measures, level-stage triggers).

A16 Invasive Species & Ecosystem Health Program

Lens: Natural Environment.

Scope: Early-detection and rapid-response program for climate-enabled invasive species, integrated with urban forestry and naturalization programs. Coordinate with A14 to distinguish landscape-choice work (A14) from rapid-response work (A17).

- **Ontario Invading Species Awareness Program, Hotline / EDDMapS** , Provincial infrastructure for citizen-detection reporting of invasive species (1-800-563-7711), directly portable as the reporting backbone for a Collingwood program.
 - Source: Ontario Invading Species Awareness Program. <https://www.invadingspecies.com/invaders/forest/emerald-ash-borer-2/>
- **Invasive Species Centre (Sault Ste. Marie) profiles and rapid-response materials** , Invasive Species Centre produces species-specific response profiles (EAB, others) that municipalities use as the template for municipal management plans.
 - Source: Invasive Species Centre, Emerald Ash Borer Profile. <https://www.invasivespeciescentre.ca/invasive-species/meet-the-species/invasive-insects/emerald-ash-borer-duplicate-471/>

- **NVCA Invasive Species program** , NVCA runs an active invasive-species program as part of its lands and stewardship work, Collingwood's watershed-level delivery partner on A18.
 - *Source: Nottawasaga Valley Conservation Authority, Invasive Species.*
<https://www.nvca.on.ca/lands-stewardship/invasive-species/>
- **Ontario provincial EAB program and municipal management-plan pattern** , Ontario's EAB page documents the typical municipal pattern: monitoring of all ash trees, removal of infested or high-risk trees, targeted insecticide treatment for uninfested trees, and replanting post-removal, a ready-made five-step program template.
 - *Source: Government of Ontario, Emerald Ash Borer.*
<https://www.ontario.ca/page/emerald-ash-borer>

Density: Moderate-to-strong precedent at the provincial/CA infrastructure level. Where Collingwood can add value: the integration with A13 (urban forest) and A14 (naturalization), and the "climate-enabled" framing tying expanding invasive pressure to warming winters and longer growing seasons, SMEs will need to lead that climate-enabled framing.

A17 Partner Coordination & Climate Risk Communications

Lens: *Services & Operations.*

Scope: *Establish and maintain the coordination infrastructure, MOUs, and information-sharing protocols with external partners that make the Town's risk communications programme (A5) possible, including a Collingwood Climate Adaptation Working Group and formal agreements with local conservation authority, SMDHU, utility providers, and Emergency Services on climate-event coordination, response, and communications.*

- **Peel Climate Change Partnership** , An explicit multi-agency climate partnership in Peel Region coordinating across public health, conservation, utility, and municipal functions, the clearest Ontario municipal precedent for a formalized partner-coordination governance body.
 - *Source: Region of Peel, The Peel Climate Change Partnership.*
<https://peelregion.ca/about/climate-change/peel-climate-change-partnership>
- **NVCA "partner of choice" positioning** , NVCA's 2022–2025 Climate Change Action Plan explicitly positions NVCA as the partner of choice for local climate initiatives and names Partnerships as a top-level strategic goal, the anchor partner on Collingwood's watershed side.
 - *Source: Nottawasaga Valley Conservation Authority, 2022–2025 Climate Change Action Plan.* https://www.nvca.on.ca/wp-content/uploads/2023/08/2022-2025-Climate-Change-Plan_Final.pdf
- **Dufferin Climate Adaptation Working Group** , Dufferin's strategy was developed through a Climate Adaptation Working Group comprising local representatives across rural and urban communities, a scale-appropriate governance precedent for the coordinating body Collingwood will need to stand up.

- Source: Dufferin County, *Together for Change* (2023). <http://www.dufferincounty.ca/wp-content/uploads/2024/02/Accessible-Dufferin-Climate-Adaptation-Strategy.pdf>
- **Climate Ready Ottawa**, partner-coordination framing across seven priority programs , Ottawa's 2025 strategy consistently names external partners (Conservation Authorities for riverine flood mapping, utilities for critical infrastructure, community partners for preparedness hubs) and wraps them into a single communications-and-coordination structure.
 - Source: City of Ottawa, *Climate Ready Ottawa backgrounder* (2025). <https://ottawa.ca/en/city-hall/city-news/newsroom/backgrounder-climate-ready-ottawa>

Density: Moderate precedent. Peel is the clearest partnership-body model; NVCA provides the watershed side for Collingwood directly; Dufferin provides scale-appropriate governance. Thin precedent on formal MOU templates, SMEs will need to lead the actual MOU architecture (not just the working-group convening layer).

Summary of Precedent Density

Strong precedent, SMEs can borrow heavily

- A2 Flood Risk Disclosure & Home Protection Program (subsidy/grant side), Toronto BFPSP, Ottawa Rain Ready, Compassionate Grant are portable.
- A3 Shoreline Public Access & Erosion Management (erosion/hazard-mapping side), MVCA and ABCA carry this; strong Great Lakes precedent.
- A7 Natural Asset Valuation & Integration, MNAI is the Canadian methodology standard; Peel is the Ontario exemplar.
- A10 Green & Climate-Ready Development Standards, Ottawa HPDS, Mississauga GDS, Toronto Green Standard (watch Bill 17 risk).
- A12 Urban Forest & Canopy Expansion, Hamilton UFS is the clearest target, bylaw, staffing template.
- A13 Naturalization & Pollinator-Positive Public Realm, Toronto's Pollinator Protection Strategy is the mature template.

Moderate precedent, usable but needs tailoring

- A1 Warming & Cooling Centres, Ottawa is the clearest anchor for the heat-refuge core, and its Municipal Emergency Plan supports the all-hazard refuge expansion; back-up-power refuge standards remain under-developed across peers.
- A5 Climate-Adjusted Stormwater & Wastewater Standards, Provincial LID manual and Ottawa adaptive approaches cover stormwater; I&I-to-budget linkage thin.
- A6 Asset Management Climate Integration, Peel leads; Orangeville scale-comparable; demographic weighting is Collingwood's lead.
- A8 Resilient Facility Retrofit & AM Capacity, Ottawa, Dufferin, Hamilton give pieces.

- A9 Emergency Management Modernisation, Ottawa MEP, Peel cumulative-event framing, Hamilton's Health-Unit coordination model; tourist/seasonal surge scenario is Collingwood's lead.
- A14 Shoreline & Wetland Protection Program, NVCA, Hamilton provide frame; municipal programmatic layer is Collingwood's value-add.
- A15 Water Quality, Source Protection & Potable Water, Cataraqui/Utilities Kingston, NVCA; drought-response conservation thin.
- A16 Invasive Species & Ecosystem Health Program, Province, ISC, NVCA infrastructure; climate-enabled framing is Collingwood's lead.
- A17 Partner Coordination & Climate Risk Communications, Peel Climate Change Partnership, NVCA, Dufferin; MOU architecture thin.

Thin precedent, Collingwood likely ahead of peers, expect to lead

- A4 Risk Event Communications Program, Tourist-and-seasonal-tailored multi-channel comms is largely unprecedented in Ontario plans; Dufferin gives a scale-appropriate communications commitment but not the full model.
- A11 Climate Resilience Financial Strategy, MAT mechanism is established; explicitly tying MAT to climate-adaptation infrastructure is not.

Cross-category flags

- Bill 17 risk on A11, 2026 provincial conversation is actively being engaged and developed, flexibility in corresponding actions is required to adapt to changes in final Bill structure.
- Tourist and seasonal-population overlay spans A1, A4, A9, SMEs should carry the overlay consistently across these three categories.
- MNAI, Peel anchor pair for A7, reference in the methodology section of any deliverable.
- NVCA primary watershed partner; ABCA, MVCA relevant for shoreline methodology. MVCA Southern Lake Huron Coastal Adaptation Strategy (\$750M-at-risk) is unusually useful as a scale analog for Georgian Bay shoreline discussions.



Appendix F

Monitoring Indicator Tables

This plan was produced with the assistance of the Green Municipal Fund, a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the views of the author(s), and FCM and the Government of Canada accept no responsibility for them.

Purpose of This Appendix

Indicators below are drafted from the specific implementation activities described for each action in Section 5 (“What This Will Look Like”), they are not generic placeholders. They have not yet been tested against data availability, baseline values, or target-setting; that work is the next step, to be carried by the lead departments named in Section 5 as each action moves into its near-term implementation window. Most indicators can be tracked using data the Town already collects (permits, work orders, 311/complaint logs, capital program records); a smaller number (e.g., resident/visitor awareness surveys, partner satisfaction ratings) would require a new, lightweight data-collection step.

Per Section 8.3, this indicator set is intended to be maintained and refined in the Adaptation Action Register alongside the annual and three-year review cycles described there. This appendix is a starting proposal, not a finalized target-setting exercise, baselines, targets, and reporting frequency should be confirmed with each lead department before the first reporting cycle.

Theme 1: People and Community

Action	Process Indicators	Outcome Indicators
A1: Warming & Cooling Centres	■ Number/% of publicly accessible cooling and refuge locations audited against back-up power, air filtration, transit access, and accessibility criteria. ■ Number of facilities formally designated as climate-resilient refuges, embedded in the facility capital planning cycle.	■ Share of heat-vulnerable neighbourhoods within an equitable travel time of a designated refuge. ■ Number of refuge activations during heat, cold, and smoke events, and resident/visitor awareness of refuge locations (survey).
A2: Flood Risk Planning and Home Protection Program	■ Completion of flood mapping and wet-weather-flow analysis; integration into property disclosure/rental licensing. ■ Number of grant/rebate applications received and approved.	■ Number and value of flood-protection retrofits completed (backflow valves, sump pumps, lot grading). ■ Trend in basement-flooding 311 calls/insurance claims in retrofit-program areas.
A3: Shoreline Public Access and Erosion Management	■ Completion of shoreline/waterfront trail risk assessment. ■ Number of naturalized erosion-control projects implemented; funding-allocation principles adopted (Y/N).	■ % of shoreline trail network maintaining reliable, uninterrupted public access. ■ Number of unplanned closures per year due to erosion or lake-level events.
A4: Risk Event Communications Program	■ Completion of audience segmentation for tourist and seasonal-resident populations.	■ Resident and visitor awareness of hazard communications (survey).

Action	Process Indicators	Outcome Indicators
	Public climate-indicator reporting channel launched (Y/N); number of communication channels/partners activated.	Time elapsed from hazard forecast/warning to public notification, by hazard type.

Theme 2: Services and Operations

Action	Process Indicators	Outcome Indicators
A5: Climate-Adjusted Stormwater and Wastewater Standards	- Design standards updated to reflect climate-projected rainfall intensities (Y/N). - Inflow-and-infiltration program milestones met (sewer inspections, rehabilitations, downspout disconnections completed).	- Trend in wet-weather treatment bypass events. - Trend in basement-flooding and sewer-backup incidents Town-wide.
A6: Asset Management Climate Integration	- Climate-weighted renewal prioritization and lifecycle-costing framework adopted (Y/N). - Number of staff trained in climate-integrated asset management methodology.	% of annual capital program allocated using climate-weighted prioritization. - Trend in unplanned asset failures attributable to climate stress.
A7: Natural Asset Valuation and Integration	% of natural asset types (wetlands, urban forest, shoreline vegetation) inventoried. - Valuation methodology adopted and applied (Y/N).	- Dollar value of natural assets formally incorporated into the Asset Management Plan. - Number of capital/investment decisions citing natural-asset valuation evidence.
A8: Resilient Facility Retrofit and Asset Management Capacity	- Facility retrofit investment plan completed and prioritized. - Number of priority facilities with back-up power installed.	% of climate-refuge and vulnerable-population-serving facilities meeting resilience criteria (back-up power, passive cooling, flood protection, air filtration).
A9: Emergency Management Modernization	- Emergency plans updated with compound/concurrent-event and seasonal-surge scenarios (Y/N). - Number of MOUs signed with fire, police, EMS, and the Health Unit; number of tabletop/live exercises held per year.	- Service-continuity performance during declared climate events (e.g., time to restore core services). - Staff and partner-agency confidence rating following exercises (post-exercise survey).
A10: Voluntary Green and Climate-Ready Development Standards	- Site plan, zoning, and design-guideline updates adopted (Y/N). - Number of development approvals incorporating climate-ready requirements.	% of new development approvals meeting green infrastructure/LID and tree-preservation requirements. - Tree-canopy retention rate on redeveloped sites.
A11: Climate Resilience	Financing review completed (Y/N).	Share of climate-adaptation capital costs funded through

Action	Process Indicators	Outcome Indicators
Financial Strategy	Status of new mechanisms explored (development charges, MAT allocation, stormwater utility rate).	tourism/seasonal-linked mechanisms. Completion and disposition of the equity impact analysis for permanent residents across income levels.

Theme 3: Natural Environment

Action	Process Indicators	Outcome Indicators
A12: Urban Forest and Canopy Expansion	- Tree maintenance guidance program established, with arborist/contractor roster in place - Number of climate-adapted trees planted per year, by priority neighbourhood.	- Town-wide tree canopy cover (%), tracked over time. - Canopy cover (%) in priority heat-island and underserved neighbourhoods specifically, tracked over time.
A13: Naturalization and Pollinator-Positive Public Realm	- Area (m²) or number of sites of naturalized public plantings established. - Number of education/demonstration events delivered to support private-land naturalization.	- Total area of naturalized public land, tracked over time. - Participation rate in private-land naturalization incentive/demonstration programs.
A14: Shoreline and Wetland Protection Program	- Number/area of high-value wetlands identified and designated for enhanced protection. - Number of bioengineered or living-shoreline erosion-control projects implemented.	- Area (ha) of wetland and riparian habitat protected or restored. - Shoreline erosion rate at monitored sites, tracked over time.
A15: Water Quality, Source Protection and Potable Water Availability	- Formal alignment with the Nottawasaga Valley Source Protection Plan completed (Y/N). - Beach Water Quality Monitoring Program launched, with public reporting.	- Number of beach postings/water-quality advisories per season, tracked over time. - Drought-response trigger activations and outcomes relative to lake-level/source-water conditions.
A16: Invasive Species and Ecosystem Health Program	- Invasive-species monitoring program established for priority urban, natural, and shoreline areas. - Municipal Emerald Ash Borer (and other priority species) Management Plan implemented.	% of new invasive-species detections responded to within the target timeframe. - Area affected by priority invasive species, tracked over time.

Cross-Cutting Actions

Action	Process indicators	Outcome Indicators
A17: Partner Coordination and Climate Risk Communications	■ Collingwood Climate Adaptation Working Group established (Y/N). ■ Number of partner MOUs signed (Conservation Authority, Health Unit, utility providers, Emergency Services).	■ Partner-reported satisfaction with coordination effectiveness (periodic survey). ■ Timeliness of partner-shared hazard information reaching the public communications program under A5.
A18: Tracking Climate Events Leading to Event and Programming Cancellations	■ Tracking logs updated at a consistent frequency. ■ Data entered at regular intervals, or within specified windows following an event leading to a cancellation.	■ Internal reporting on trends at a regular frequency. ■ Ability to identify trends between climate events leading to changes in event cancellations, or identifying a relationship between climate event type and specific programming/activity/event cancellation (such as increased drought events leading to reduced waterfront events).



Appendix G

BARC Milestone Traceability

This plan was produced with the assistance of the Green Municipal Fund, a fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities (FCM). Notwithstanding this support, the views expressed are the views of the author(s), and FCM and the Government of Canada accept no responsibility for them.

Purpose and Scope

Collingwood's Climate Change Adaptation Plan is developed under the ICLEI Canada BARC (Building Adaptive and Resilient Communities) framework, which structures municipal adaptation planning into five milestones: Initiate, Assess, Plan, Implement, and Monitor. This Plan is the primary deliverable of BARC Milestone Three ("Plan"); Milestones One and Two (climate profile, risk and vulnerability assessment) were completed as prior deliverables and are summarized in Sections 2 and 3 of the Plan.

This appendix traces the Plan against the BARC Guide's five Milestone Three activities and, within Activity 3.5 (Finalizing the Plan), against the specific list of elements the BARC Guide identifies as belonging in a finalized adaptation plan. The purpose is to give the project team and Council a clear, evidence-based record of where the Plan satisfies BARC's Milestone Three requirements and where gaps remain to be closed before the Plan is finalized. This traceability exercise covers Milestone Three only, since that is the milestone this Plan delivers; it does not re-verify Milestone One/Two deliverables or look ahead to Milestone Four/Five implementation and monitoring activities, which begin once this Plan is adopted.

Milestone Three Activity Traceability

BARC Activity & Outcome	Plan Location / Status	Evidence
3.1 Developing Plan Vision and Objectives <i>Outcome: Vision statement and plan objectives</i>	Section: Vision and Objectives; Section: Adaptation Objectives (Themes 1–3) Status: Complete	Vision statement developed through the Workshop 4 visioning exercise (four draft options plus two hybrids) and validated through Mentimeter polling and open discussion at Workshop 5; the adopted statement ("The people who live, work, and play in Collingwood will responsibly adapt to a changing climate together, fostering an inclusive, safe, healthy and resilient community for generations to come") reflects the top terms from the Workshop 5 word-cloud exercise (community, protection, health, inclusive, resilience). Adaptation Objectives are organized under the same three themes carried through the rest of the plan.
3.2 Identifying and Shortlisting Actions <i>Outcome: Shortlisted actions, organized by theme</i>	Section: Adaptation Actions (A1–A18, Themes 1–3) Status: Complete	18 actions organized under People and Community, Services and Operations, and Natural Environment, each with a rationale, sub-actions ("What This Will Look Like"), hazards addressed, timeframe, and lead/partners. Actions were shortlisted from a broader brainstormed list generated at Workshop 4 and evaluated, populated with tangible sub-actions, and prioritized at Workshop 5 (71 sub-actions captured verbatim from workshop breakout groups).
3.3 Creating an Implementation Schedule <i>Outcome: Implementation schedule</i>	Section: Implementation Schedule (Principles, Summary Table, Near-Term Priorities,	Each action in Section 5 already carries the core BARC Table 3.3A elements, action description, lead department, supporting partners, related climate hazard(s), and timeframe, and these are consolidated into the Implementation Summary Table. Level-of-

BARC Activity & Outcome	Plan Location / Status	Evidence
	Medium/Long-Term Priorities, Financing and Funding) Status: Complete	effort and cost-band scoring are maintained in the Adaptation Action Register (Appendix A).
3.4 Developing a Monitoring and Evaluation Plan <i>Outcome: Monitoring strategy</i>	Section: Monitoring and Evaluation Plan (Principles, Indicators Framework, Review Cycle and Reporting, Plan Update Trigger Criteria) Status: Partially complete	The plan sets out monitoring principles, a review cycle (annual + triennial), and a process/outcome indicator framework consistent with BARC Table 3.4B. At the time of this review, however, the plan text states a full indicator set is "maintained in the Adaptation Action Register," but no such indicator set yet existed in the working files. Appendix D (Monitoring Indicator Tables) now provides a first draft of process and outcome indicators per action; baseline data, specific data sources, and reporting roles per BARC Table 3.4A still need to be confirmed with lead departments before the first reporting cycle.

Activity 3.5 Finalizing the Plan: Required Elements Checklist

The BARC Guide lists the following as key elements of a finalized adaptation plan. The table below checks the current draft against that list.

Required Element (BARC Activity 3.5)	Present?	Notes
Acknowledgements	No	No dedicated acknowledgements section found in the current draft. Intent is to develop in collaboration with Town.
Land Acknowledgement and/or Organizational Commitment to Reconciliation	No	Not present. BARC lists this as a key element of the finalized plan; This will be developed in collaboration with the Town, based on typical framing in comparable reports.
Mayor/Council/Leadership Commitment	No	No foreword or leadership commitment statement at this time. To be incorporated once engagement is completed.
Executive Summary	Yes	Present and completed.
Glossary	Yes	Present and comprehensive (~30 defined terms, including BARC-specific terminology).
Introduction	Yes	Present.
Background and Context	Yes	Present (Community Profile, Policy and Planning Context, Climate Projects for Collingwood).
Impacts & Issues	Yes	Present (Climate Hazards and Impact Statements, Vulnerability Assessment, Risk Assessment and Priority Impacts).
Vision Statement	Yes	Present.
Objectives	Yes	Present.
Actions	Yes	Present, 18 actions.

Required Element (BARC Activity 3.5)	Present?	Notes
Implementation Schedule	Yes	Present.
Monitoring and Evaluation Plan	Yes	Present; see indicator-set caveat above.

Three of the thirteen elements, Acknowledgements, a Land Acknowledgement/Reconciliation Commitment, and a Mayor/Council/Leadership Commitment, are not present in the current draft. None of these are unusual to add late in drafting, but they are worth flagging directly now, before the Plan moves toward Council adoption, since BARC identifies all four as expected components of a finalized plan.