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Project File Report

Dunnville Master Servicing Plan

Haldimand County

J.L.Richards
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Value through **service** and **commitment**

Table of Contents

List of Figures

List of Tables

List of Appendices

Haldimand County Land Acknowledgement Statement

We humbly acknowledge that Haldimand County sits on the ancestral land of many generations of Indigenous nations, who have been here since time immemorial.

Today, this land continues to be home to many Indigenous peoples, including the Six Nations of the Grand River and the Mississaugas of the Credit First Nation, as well as non-Indigenous settlers from a variety of backgrounds. As a community, we have a shared responsibility for stewardship of the land on which we live and work. We are grateful for the opportunity to work together and to share the land we all call home.

Acknowledging reminds us that our living conditions are directly related to the abundant resources of the Indigenous peoples. We commit to continue learning, reflecting on our past, and working in allyship with Indigenous communities, toward respective community goals and objectives, in peace, respect, and friendship.

1.0 Introduction

1.1 Project Overview

Haldimand County (Haldimand) completes Master Servicing Plan (MSP) updates for water, wastewater, stormwater, and transportation servicing for six different communities/service areas within Haldimand: Caledonia, Hagersville, Jarvis, Cayuga, Dunnville, and Lake Erie Industrial Park. Each of these MSPs are updated approximately every five to ten years. The purpose of these updates is to identify existing servicing conditions and future servicing needs for the four servicing components (water, wastewater, stormwater, and transportation) of the MSP.

Haldimand has retained J.L. Richards & Associates Limited (JLR) and CIMA+ to prepare an MSP Update for Dunnville that fulfills the Phase 1 and Phase 2 requirements of a Municipal Class Environmental Assessment (MCEA). Previously, in 2009, the Dunnville MSP for Water, Wastewater, Stormwater, and Transportation was completed by Stantec Consulting Ltd. (Stantec).

1.1.1 Objectives of the Master Servicing Plan

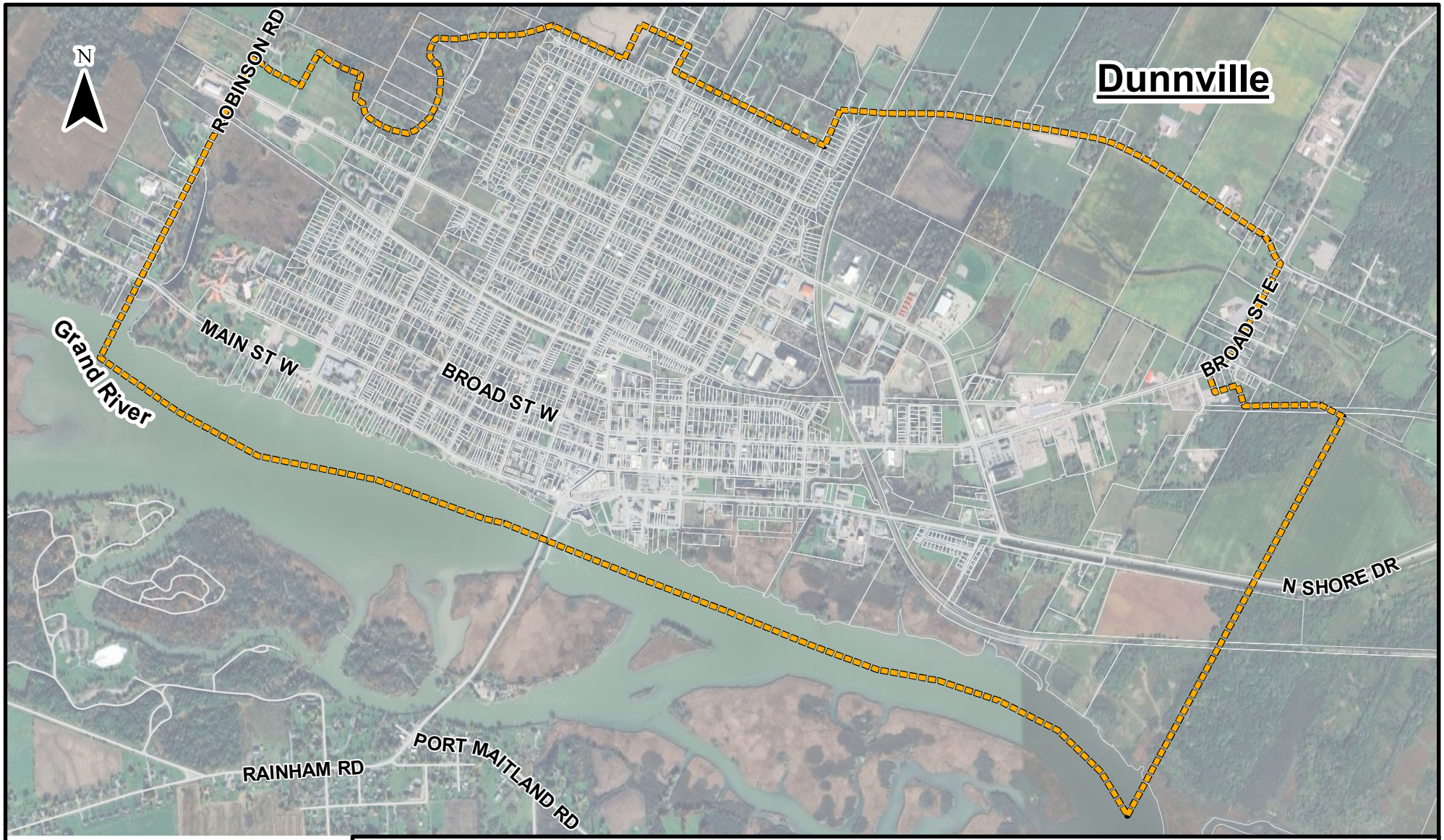
This Project File Report summarizes the findings of the 2025 MSP Update. The purpose of the MSP is to identify the individual water, wastewater, stormwater, and transportation infrastructure improvements based on future servicing requirements, and develop an implementation plan for these upgrades. This work has been carried under four separate work packages:

- Work Package 1: Water Servicing
- Work Package 2: Wastewater Servicing
- Work Package 3: Stormwater Servicing
- Work Package 4: Transportation Servicing

This Project File Report summarizes the findings of each work package in Section 5.0. Work packages have been appended to the Project File Report (refer to Appendices B through E). The Profile File Report also summarizes all planning and policy considerations, population and employment growth forecasts, environmental and land use considerations, and stakeholder and rightsholder consultation activities that have informed the findings of this MSP.

1.1.2 Study Area Overview

The community of Dunnville is located on the Grand River, east of the intersection of County Road 15 (Robinson Road) and Highway 3 (Main Street West). The community has a population of approximately 5,900 residents based on the 2021 census (Statistics Canada, 2021) and new development is predominantly residential. Figure 1 illustrates the study area boundary, which encompasses the urban boundary of Dunnville. Municipal infrastructure in Dunnville includes a municipal water and wastewater system, stormwater infrastructure, and a transportation network.



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PROJECT:

DUNNVILLE MASTER SERVICING PLAN

DUNNVILLE, ONTARIO

DRAWING:

STUDY AREA

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FIGURE 1

1.1.3 Previous Related Studies

2009 MSP (Stantec)

In 2009, the MSP for Dunnville was prepared (Stantec, 2009) to help guide the development of water, wastewater, stormwater, and transportation services. For this study, estimates of population and household growth up to 2026 were considered. The study recommendations generally included the following infrastructure upgrades:

- **Water Servicing:** General pumping station upgrades, existing reservoir upgrades, construction of new storage tank, and construction of additional watermains.
- **Wastewater Servicing:** Various sewermain and forcemain upgrades, general pumping station upgrades, and upgrades to the Water Pollution Control Plant (WPCP.
- **Stormwater Servicing:** Three (3) new stormwater management facilities and storm sewer improvement works.
- **Transportation Servicing:** Five (5) new 2-lane urban collectors, two (2) new auxiliary lanes, additional of multiple new sidewalks, and various improvements to intersections and streetscapes.

Refer to the individual water, wastewater, stormwater, and transportation work packages for additional details on the 2009 MSP recommendations.

2021 Water and Wastewater Model Updates

In preparation for the Dunnville MSP update, Haldimand retained JLR in association with C3 Water (now CIMA+) to carry out an update of the existing water and wastewater models for the Dunnville community to existing (2021) conditions. The objective of the model update was to assess the performance of the water and sanitary systems under the current conditions, both from an infrastructure and demand/flow perspective. Additional details on the 2021 Water and Wastewater Model Updates are included in Appendix B (Work Package 1 – Water Servicing) and Appendix C (Work Package 2 – Wastewater Servicing).

2022 Frank Marshall Business Park Floodplain Analysis and SMSP

Haldimand retained JLR in 2021 to prepare a Floodplain analysis and Scoped Master Servicing Plan (SMSP) for the Frank Marshall Business Park (FMBP) in the community of Dunnville. The objective of the Floodplain Analysis was to determine if and where a two-zone concept for the floodplain can be applied within the FMBP with the goal of permitting development within the flood fringe. The SMSP aimed to provide recommendations on water, sanitary, stormwater, and road infrastructure to develop the FMBP into a mixed-use neighbourhood.

The Floodplain Analysis and SMSP recommended that if a two-zone approach is implemented, the land uses and proposed two-zone policies and mapping within the FMBP should be considered in Haldimand Official Plan and Zoning By-Law. The two-zone approach was approved by the Town's council and will be incorporated into the current MSP update. Additional details on the 2022 Frank Marshall Business Park Floodplain Analysis and SMSP are included in Appendix D (Work Package 3 – Stormwater Servicing).

1.2 Class Environmental Assessment and Master Planning Process

The Ontario Environmental Assessment Act (Act) sets out a planning and decision-making process to consider potential environmental effects before a project begins. The purpose of the Act is to provide for the protection and conservation of the natural environment (R.S.O. 1990, c.E.18, s.2). The MCEA process is followed for common types of projects to streamline the review process while ensuring that the project meets the requirements of the Act. In 1987, the first MCEA document prepared by the Municipal Engineers Association (MEA) on behalf of Ontario Municipalities was approved under the Act. Updates and amendments were subsequently made in 1993, 2000, 2007, 2011, 2015, 2023, and 2024.

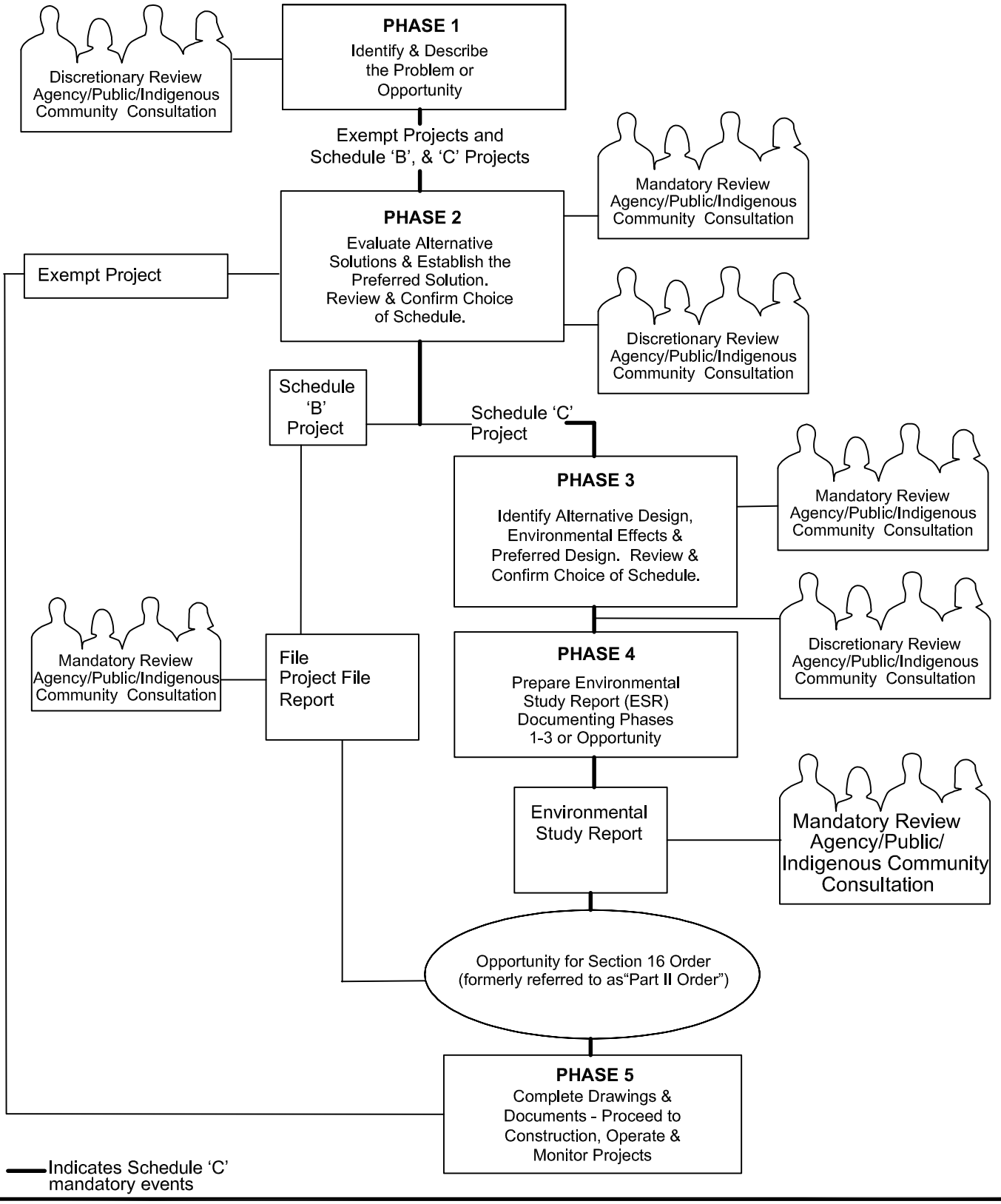
The MCEA process includes the following stages:

- Phase 1: Problem and/or opportunity identification.
- Phase 2: Identification and evaluation of alternative solutions.
- Phase 3: Identification and evaluation of design concepts.
- Phase 4: Complete and place Environmental Study Report on public record.
- Phase 5: Implementation and monitoring.

A Master Plan is conducted under the framework of the MEA MCEA process. It is a planning tool that identifies infrastructure requirements for existing and future land use through the application of environmental assessment principles and is intended to satisfy Phases 1 and 2 of the MCEA process.

Various approaches can be used to conduct Master Plans, given their broad scope. This Master Plan is being completed with sufficient detail to fulfill the requirements for Schedule ‘B’ projects (Approach 2). Projects categorized as Schedule B undertakings have the potential for significant environmental impacts and are required to follow specific phases under the MCEA. This includes consultation with all parties that may potentially be affected by the project and the preparation of a MCEA Project File Report that documents the MCEA process.

For this Master Plan, a Project File Report will be made available for public, agency, and Indigenous community review at the completion of the MCEA process for a mandatory 30-day period. This period is followed by a 30-day waiting period to allow the Ministry of the Environment, Conservation and Parks (MECP) to request or notify proponents of a ‘Section 16 Order’ (formerly known as a ‘Part II Order’). Following the 30-day waiting period, if there are no requests received from the MECP for a ‘Section 16 Order’, then proposed Schedule ‘B’ projects and projects exempt from Environmental Assessment Act (EAA) requirements can proceed to implementation (Phase 5). At this point, any Schedule ‘C’ projects would be identified for further study. The MCEA process is documented in Figure 2.



PROJECT:

DUNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

CLASS ENVIRONMENTAL ASSESSMENT PROCESS

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FIGURE 2

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2.0 Problem and Opportunity Statement

To support existing and planned growth in Dunnville identified in Haldimand's Official Plan, Haldimand County is undertaking an engineering study to update the 2009 Master Servicing Plan for Dunnville. The purpose of the Master Servicing Plan Update is to evaluate Dunnville's long-term water, wastewater, stormwater, and transportation infrastructure needs and identified preferred infrastructure solutions to be implemented to match the growth in Dunnville during the Master Plan planning horizon.

Through consultation with participating stakeholders and rightsholders, including residents, government review agencies, developers, and Indigenous communities, the MCEA framework will enable the consideration of options and identify preferred infrastructure solutions that are environmentally, socially, and financially responsible and sustainable.

3.0 Planning and Growth

3.1 Planning and Policy Considerations

3.1.1 Provincial Planning and Regional Conservation Plans

The study area is currently subject to the 2024 Provincial Planning Statement (PPS)(Government of Ontario, 2024). The PPS is a streamlined framework that builds upon housing-supportive policies from the Provincial Policy Statement and the Growth Plan for the Greater Golden Horseshoe. The PPS was issued under section 3 of the *Planning Act*, and recognizes the complex relationships between the environmental, economic, health, and social factors in land use planning and supports a comprehensive, integrated and long-term approach to planning, recognizing linkages among policy areas. Alternatives in this MCEA will be assessed based on conformance with the 2024 Provincial Planning Statement.

The study area is not subject to the Oak Ridges Moraine Conservation Plan, Niagara Escarpment Plan, Greenbelt Plan, and Lake Simcoe Protection Plan.

3.1.2 Haldimand County Official Plan

The Official Plan for Haldimand County has its basis in the Planning Act, the Provincial Policy Statement, and the Growth Plan for the Greater Golden Horseshoe. The Haldimand County Official Plan was adopted in 2006 and the most recent amendments were approved by the Ministry of Municipal Affairs and Housing in 2021 (Phase 1 Official Plan Update). The Official Plan has been developed to guide growth and development to 2046.

The Official Plan permits municipal services and utilities in all land use designations in Haldimand, subject to certain conditions. Section 5.E.1 of the Official Plan states:

> *5.E.1. Utilities and services necessary for the provision of municipal water and sanitary sewage, storm services, public roads, railway lines, hydro, gas, and facilities for the detention, retention, or discharge of storm water are permitted in all land use designations provided that such development satisfies the provisions of the Environmental Assessment Act, the Environmental Protection Act, and any other relevant legislations except where any of these facilities would promote a development pattern that is contrary to the Official Plan.*

Haldimand is currently undergoing a second update (Phase 2 Official Plan Update), which will include general official plan updates, including policy amendments for natural heritage systems, community building, health and social services, and agriculture, commercial, industrial, lakeshore, and hamlet areas. Haldimand County adopted the Phase 2 Official Plan Update on August 29, 2022 through the Official Plan Amendment 69 (By-law 1320-HC/22). Official Plan Amendment 69 is now before the Ministry of Municipal Affairs and Housing for a decision.

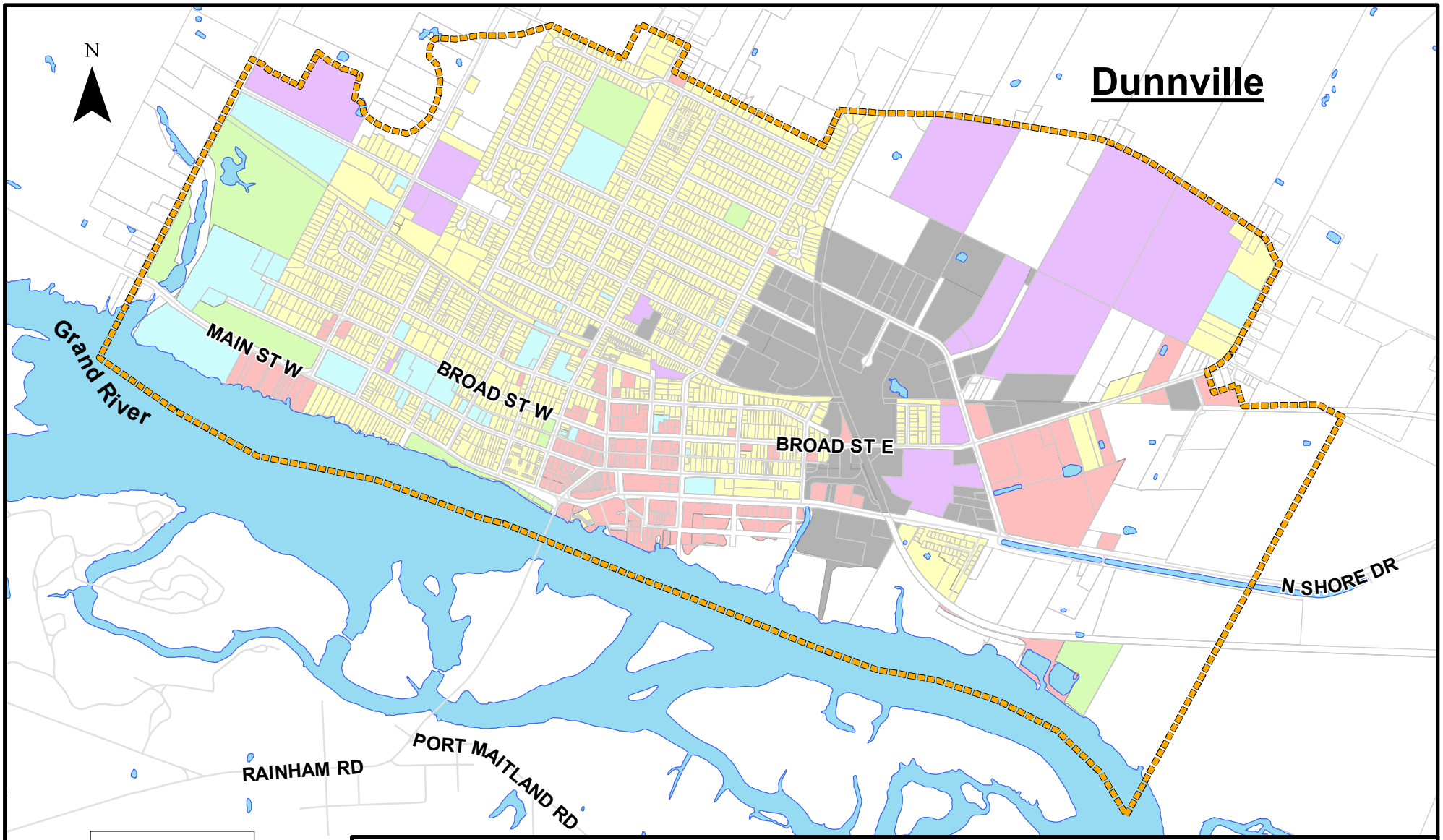
3.1.3 Land Use and Existing Development

Existing land use in Dunnville consists of residential, institutional, commercial, and industrial uses. The distribution of existing development is provided in Figure 3 based on Haldimand County's current zoning by-law (HC 1-2020).

As part of the 2021 existing conditions model updates for Dunnville, the existing residential and equivalent industrial, commercial and institutional (ICI) population was determined and is summarized in Table 1. Equivalent units were converted into equivalent population based on the average persons per unit of 2.47 from the Haldimand County Revised Growth Analysis to 2051 reported by Watson & Associates (2019, 2020).

Table 1 Dunnville Existing Equivalent Residential and Employment Population

Land Use	Equivalent Units	Equivalent Population
Residential	2158	5,330
Industrial	1263	3,118
Commercial	1730	4,272
Grandview Lodge	52	128
Institutional	219	541
Total	**5,422**	**13,389**



PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

LAND USE (HC 1-2020)

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FIGURE 3

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3.2 Population and Employment Growth Forecast

3.2.1 Residential Growth Projections

A future household forecast to 2051 was provided in the Haldimand County Revised Growth Analysis to 2051 (Watson, 2020). The population projections for 2026, 2046, and 2051 are summarized in Table 2.

Table 2. Dunnville Existing and Future Population (Watson, 2020)

Year(s)	Population	Units
2026(1)	6,500	2,860
2046(1)	7,700	3,330
2051(1)	8,200	3,540
Residential Growth 2026 - 2051	1,700	680
Table Notes: (1) Source: Watson & Associates Economists Ltd., Haldimand County Revised Growth Analysis to 2051.		

In September 2024, Haldimand provided a breakdown of residential unit growth based on approved and planned residential developments over Haldimand's future planning horizon. Table 3 summarizes the growth projections for future residential areas provided by Haldimand.

Table 3. Dunnville Residential Growth Projections by Subdivision

Development	Type (Residential, Commercial, Industrial)	Units 2026- 2036	Units 2036 - 2051	Units >2051	Total Future Units	Total Area (ha)
Tamarac Street Subdivision	Residential	9	0	0	9	0.43
Meritage Landing	Residential	61	0	0	61	2.17
1114 Cross Street East	Residential	39	0	0	39	0.60
726 Broad Street East	Residential	111	0	0	111	5.25
Ramsay and Jim Gregory Drive(1)	Mixed (Residential, Commercial)	56	0	0	56	0.60
Edgewater Gardens	Residential	104	0	0	104	0.17
Cross Street	Residential	0	288	0	288	7.12
Cross Street and George Street	Residential	0	113	0	113	2.79
Logan Road – West(1)	Residential	0	0	474	474	11.71
Gregory Drive – West	Residential	0	152	0	152	3.74
Gregory Drive – East	Residential	0	441	0	441	10.88
Logan Road – East(1)	Residential	0	0	1,247	1,247	30.80
Total		**448**	**993**	**1,721**	**3,162**	**77.5**
Table Notes: (1) The total number of units will be revised during design of these developments to avoid construction in the floodplain. Consultation with GRCA will be required for these areas.						

Haldimand projections for residential growth extend beyond the 2051 household forecast in the Haldimand County Revised Growth Analysis to 2051 (Watson, 2020). It was confirmed in the consultation with Haldimand that the Master Plan should be based on Haldimand's residential growth projections, and the Master Plan planning horizon should match that of Haldimand's planning horizon used in the development of these projections. The distribution of future residential growth used in the MSP is shown in Figure 4.

Note that Figure 4 also includes parcels of land labeled as having 'Development Potential' as identified by Haldimand County. It is important to note that servicing for these parcels was not considered as part of this Master Servicing Plan Update. Additional information is available in Work Packages 1-4. Specifically, the evaluation of water, wastewater, stormwater and transportation servicing does not include capacity or servicing requirements for these lands. These considerations will be addressed in future planning studies as development occurs.

3.2.2 Employment Growth Projections

A summary of job growth projections was provided by Watson in the Haldimand County Revised Growth Analysis to 2051 (Watson, 2020). The total number of jobs in Dunnville, including employment area jobs, community area jobs, and total number jobs are summarized in Table 4.

Table 4. Dunnville Existing and Future Jobs (Watson, 2020)

Year(s)	Employment Area Jobs	Community Area Jobs	Total Jobs
2016	1,170	2,320	3,490
2051	2,620	1,680	4,300
Job Growth 2016 - 2051	1,530	640	810

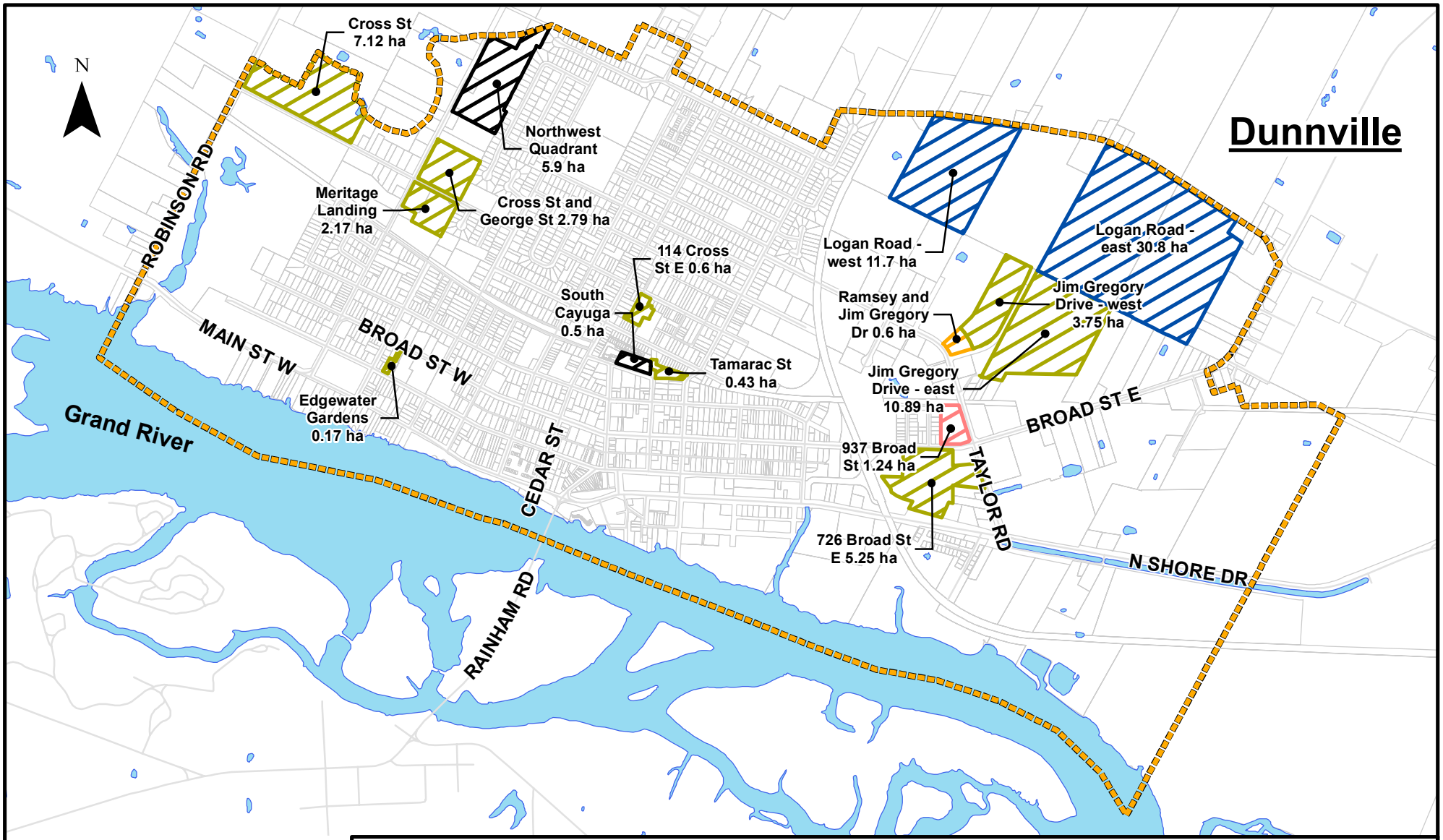
In September 2024, Haldimand provided a breakdown of the land available for employment area over the Master Plan planning horizon. The number of future jobs was then calculated based on an employment area density of 90 persons per hectare. Table 5 summarizes the employment growth projections provided by Haldimand.

Table 5. Dunnville Future Jobs

Development	Type (Residential, Commercial, Industrial)	Total Area (ha)	Existing Jobs 2024	Future Jobs 2026 - 2036	Future Jobs 2036 -2051	Future Jobs > 2051	Total Jobs 2026 – MSP Horizon
937 Broad Street East	Commercial	1.24	0	112	0	0	112
Ramsay Drive and Jim Greogry Drive	Mixed (Residential, Commercial)	0.05	0	5	0	0	5
Total		**1.29**	**0**	**117**	**0**	**0**	**117**

Haldimand assumed a lower amount of employment growth compared to the job projections in the Haldimand County Revised Growth Analysis to 2051 (Watson, 2020). It was confirmed in consultation with Haldimand that the MSP should be based on Haldimand's employment projections over the Master Plan planning horizon. The distribution of future employment growth used in the MSP is shown in Figure 4.

Note that Figure 4 also includes parcels of land labeled as having 'Development Potential' as identified by Haldimand County. It is important to note that servicing for these parcels was not considered as part of this Master Servicing Plan Update. Additional information is available in Work Packages 1-4. Specifically, the evaluation of water, wastewater, stormwater and transportation servicing does not include capacity or servicing requirements for these lands. These considerations will be addressed in future planning studies as development occurs.



Urban Area

Future Development

- Commercial
- Mixed
- Residential
- Future Development
- Development Potential

PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

FUTURE DEVELOPMENTS

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FIGURE 4

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3.2.3 Equivalent Population

Equivalent residential population was calculated by converting residential units to persons using a household density of 2.47 persons per unit (Watson, 2020). Future employment area, community area, and institutional equivalent population was based on design criteria presented in Work Package 2: Wastewater Servicing. A summary of existing and future equivalent population is provided in Table 6.

Table 6. Equivalent Population

Year(s)	Total Equivalent Units	Total Equivalent Population
Existing (2024)	5,421	13,389
Future		
2026 – 2036 (Near Term, 10-Year)	429	1,059
2036 – 2051 (Long-Term, 25-Year)	993	2,454
Beyond 2051 (Future, Beyond 25-Year)	1,721	4,252
Total Future	**3,143**	**7,765**
Total (Existing + Future Growth)	**8,564**	**21,154**

4.0 Environmental and Land Use Considerations

4.1 Natural Environment

4.1.1 Vegetation Communities and Significant Wildlife Habitat

An Ecological Land Classification (ELC) survey was completed as part of the 2009 Dunnville MSP. This survey identified several woodlots and wetlands in the study area, as well as additional wetlands and woodlots within the urban boundary which are potential constraints to development. The urban boundary also contains Class 4 agricultural soils. These soils have a restricted range of crops that can be cultivated, and/or require special conservation practices.

As part of this MSP Update, a cursory review of current aerial imagery was completed for sites where infrastructure is recommended, confirming that areas remain vegetated with no observable changes since the previous MSP in 2009; as such, no or only minor impacts to the existing ELC classifications are anticipated.

Potential impacts may be anticipated from the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand's Site Plan Approval and or Plan of Subdivision under the Planning Act. If required, updated ELC surveys for these project sites should be conducted as part of the planning approvals process under the Planning Act.

4.1.2 Aquatic Habitat

A fisheries habitat and community inventory survey was completed as part of the 2009 MSP. Eleven municipal drains and/or watercourses were identified: the Grand River, Sunfish Creek, Thompson Creek, Barker Award Drain, Pat Warren Drain, Van Kuren and Sundy Drain, Byers

Drain, Dunnville Branch Drain, Maple Creek Drain, Dent Drain, and the Old Welland Feeder Canal. Based on a review of Ministry of Natural Resources (MNR) stream classification data and observed conditions during field visits, the Grand River, Sunfish Creek, Maple Creek Drain, Dunnville Branch Drain, Thompson Creek, and the Old Welland Feeder Canal are all to be considered warmwater habitats.

Additionally, based their drain classification system, the Department of Fisheries and Oceans Canada (DFO) have identified the Dunnville Branch Drain as a Type “A” classification (cool/cold water habitat with no top predators present) and the Maple Creek Drain as Type “D” classification (cool/cold water habitat supporting top predators). At the time of the survey, the remaining watercourses/drains, including Barker Award Drain, Pat Warren Drain, Van Kuren and Sundy Drain, Byers Drain and the Dunnville Branch Drain were all dry and likely intermittent in nature.

In addition to the fisheries habitat and community inventory survey, a search of historical catch records in the community was conducted. For the purpose of the 2009 MSP, the Grand River was not included in the survey or historical data searches. The historical and current fish collection results indicated the presence of typical warm water species assemblages and top predators in Sunfish Creek, Maple Creek Drain, and Thompson Creek, supporting the MNR warmwater classifications of these watercourses/drains. No additional historical catch records were available.

As part of this MSP Update, a cursory review of drain classifications using AgMaps was completed for Dunnville, to confirm the accuracy of the fisheries habitat and community inventory survey results from the previous master plan. The previous MSP identified the Dunnville Branch Drain as Class ‘A’ (cool/cold water habitat with no top predators present) while the Maple Creek Drain was classified as Class ‘D’ (cool/cold water habitat supporting top predators). However, both creeks are now shown as class ‘E’ by DFO (warm water, top predators present, no channelization within 10 years), with Maple Creek transitioning to a Class ‘D’ as it approaches the Grand River south of Canal Road. These updated classifications reflect significant changes in the ecological function and sensitivity of the watercourse, and potential impacts will depend on the final design and construction approach.

An updated fisheries habitat and community inventory survey was not conducted as part of this MSP update, and changes may have occurred since the 2009 MSP. An updated desktop survey of potential aquatic Species at Risk in the study area was completed as is detailed in Section 4.1.4 of this report. Updated aquatic habitat field surveys are recommended to be completed for proposed sites where there is potential for aquatic habitat. Potential impacts may be anticipated from the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand’s Site Plan Approval and or Plan of Subdivision under the Planning Act. A cursory review of these sites was completed using aerial photos of the site and land-use designation and natural environment mapping. This review did not identify potential for aquatic habitat; however a more detailed review should be conducted as part of the planning approvals process to determine if updated aquatic habitat surveys are required for these sites

4.1.3 Breeding Amphibians and Birds

The original 2009 MSP did not consider breeding amphibians and birds.

The potential for disruption to breeding amphibians and birds is dependent on the preferred alternatives. Details regarding the preferred alternatives for each servicing component are

provided in Work Packages 1 through 4 (Appendices B through E). Many preferred projects are recommended along already disturbed infrastructure corridors and roadways. Impacts on breeding amphibians and birds may be anticipated from the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand's Site Plan Approval and or Plan of Subdivision under the Planning Act. If required, amphibian and bird breeding surveys for these project sites should be conducted as part of the planning approvals process under the Planning Act. Additional details regarding amphibian and bird Species at Risk are provided in section 4.1.4.

4.1.4 Species at Risk and Species of Conservation Concern

The Ontario *Endangered Species Act* was updated in 2007 and is intended to provide tools and direction on how to protect and recover vulnerable species and their habitat. The Committee on the Status of Species at Risk in Ontario (COSSARO) considers which species should be listed as at risk and provides an annual report to MECP communicating their decisions. The Species at Risk in Ontario (SARO) list is updated approximately annually under O.Reg 230/08. As part of this MSP update, JLR conducted a desktop review of Natural Heritage Information Centre (NHIC). The NHIC database has information on historical observations of occurrences of species at risk and/or area important to the conservation of the species (e.g., the courtship, nesting, rearing, and feeding areas). From this review, 35 potential Species at Risk were identified within the Dunnville MSP study area:

- Fawnsfoot (*Truncilla donaciformis)*
- Lilliput (*Toxolasma parvum*)
- Kidneyshell (*Ptychobranchus fasciolaris*)
- Round Pigtoe (*Pleurobema sintoxia*)
- Broad Beech Fern (*Phegopteris hexagonoptera*)
- Snapping Turtle (*Chelydra serpentina*)
- Mixed Wader Nesting Colony (*Colonial Wading Bird Colony*)
- Grass Pickerel (*Esox americanus*)
- Blue-winged Teal (*Spatula discors*)
- Eastern Wood-pewee (*Contopus virens*)
- Eastern Meadowlark (*Sturnella magna*)
- Hickorynut (*Obovaria olivaria*)
- Mapleleaf Mussel (*Quadrula quadrula*)
- Eastern Pondmussel (*Ligumia nasuta*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Black Redhorse (*Moxostoma carinatum*)
- Least Bittern (*Ixobrychus exilis*)
- Eastern Ribbonsnake (*Thamnophis saurita*)
- Common Gallinule (*Gallinula galeata*)
- Transverse Lady Beetle (*Coccinella transversoguttata*)
- Midland Painted Turtle (*Chrysemys picta marginata*)
- Northern Map Turtle *(Graptemys geographica*)
- Greater Redhorse (*Moxostoma valenciennesi*)
- Lake Sturgeon (Great Lakes - Upper St. Lawrence River population) (*Acipenser fulvescens pop. 3*)
- American Bumble Bee (*Bombus pensylvanicus*)

- King Rail (*Rallus elegans*)
- American Coot (*Fulica americana*)
- Purple Martin (*Progne subis*)
- Buttonbush Dodder (*Cuscuta cephalanthi*)
- Blanding's Turtle (*Emydoidea blandingii)*
- Wood Thrush (*Hylocichla mustelina*)
- Bobolink (*Dolichonyx oryzivorus*)
- Silver Shiner (*Notropis photogenis*)
- Eastern Sand Darter (Ammocrypta pellucida)
- River Redhorse (Moxostoma carinatum)

Consideration of these threatened species will be given during the evaluation of the proposed infrastructure alternatives and potential project sites. The NHIC provides details on occurrences within a 1 km x 1 km grid and cannot be used to determine if there is potential for Species at Risk on specific parcels.

The Department of Fisheries and Oceans (DFO) has prepared mapping on habitat and distribution data for aquatic Species at Risk. A review of this mapping database was conducted as part of this MSP update. Based on this review, 15 potential Species at Risk were identified within the Dunnville MSP study area, including five (5) Endangered Species, four (4) Threatened Species, and six (6) Species of Special Concern:

- Fawnsfoot (*Truncilla donaciformis)* – Endangered
- Hickorynut (*Obovaria olivaria*) – Endangered
- Lilliput (*Toxolasma parvum*) – Endangered
- Kidneyshell (*Ptychobranchus fasciolaris*) – Endangered
- Round Pigtoe (*Pleurobema sintoxia*) – Endangered
- Treehorn Wartyback (*Obliquaria reflexa*) – Threatened
- Black Redhorse (*Moxostoma carinatum*) – Threatened
- Eastern Sand Darter (*Ammocrypta pellucida*) – Threatened
- Silver Shiner (*Notropis photogenis*) – Threatened
- Mapleleaf (*Quadrula quadrula*) – Special Concern
- River Redhorse (*Moxostoma carinatum*) – Special Concern
- Northern Sunfish (*Lepomis peltastes*) – Special Concern
- Rainbow (*Villosa iris*) – Special Concern
- Wavy-rayed Lampmussel (*Lampsilis fasciola*) – Special Concern
- Grass Pickerel (*Esox americanus vermiculatus)* – Special Concern

Additionally, critical habitat for Fawnsfoot, Treehorn Wartyback, and Lilliput have been found within the Dunnville study area. Consideration of these threatened species will be given during the evaluation of the proposed infrastructure alternatives and potential project sites.

In order to identify if there is potential for identified Species at Risk on parcels where projects have been recommended, field surveys by a qualified professional are recommended to be completed before construction. Specifically, additional field surveys should be completed for the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand's Site Plan Approval and or Plan of Subdivision under the Planning Act. These field surveys should be conducted as part of the planning approvals process under the Planning Act.

4.1.5 Geology and Hydrogeology

No geological or hydrogeological investigations were completed as part of the 2009 MSP. The community of Dunnville is generally underlain by clay and silt soils over bedrock, with some areas of sand and gravel. Groundwater is present in shallow and deep aquifers; however, movement is typically limited due to the fine-grained soils. Investigations should be completed before construction of preferred infrastructure projects to verify site specific conditions.

4.1.6 Natural Environment Areas

Figure 5 shows the natural hazard lands in Dunnville, regulated through the Grand River Conservation Authority (GRCA). Based on information provided by the GRCA, it is understood that Dunnville contains the Grand River and its associated floodplain. Additionally, it was noted that Dunnville has the Lake Erie flooding hazard, Thomspson Creek, Maple Creek and Sunfish Creek and their associated floodplains, as well as a number of wetlands.

4.2 Ground and Surface Water

4.2.1 Source Water Protection

Ontario's Clean Water Act provides the mandate for a provincial drinking water source protection program in Ontario. Its focus is on the protection of water sources for municipal drinking water systems, with additional attention to surface water and groundwater sources on the broader landscape.

Dunnville falls within the jurisdiction of the GRCA. The GRCA updated the Grand River Source Protection Plan (GR SPP) in February 2022. The Grand River Assessment Report provides the technical basis for the GR SPP and was published in February 2022.

The Clean Water Act, 2006 (CWA) aims to protect existing and future sources of drinking water. To achieve this, several types of vulnerable areas are delineated around surface water intakes and wellheads for every municipal residential drinking water system that is located in a source protection area. These vulnerable areas are known as a Wellhead Protection Areas (WHPAs), and surface water Intake Protection Zones (IPZs).

Other vulnerable areas that can be delineated under the CWA for municipal drinking water systems include Significant Groundwater Recharge Areas (SGRAs) and Highly Vulnerable Aquifers (HVAs). While SGRAs and HVAs are not associated with any policies in the Grand River Source Protection Plan, they are vulnerable areas that are present across the Grand River Source Protection Area. As per GRCA's GIS data catalogue, there are no SGRAs or HVAs in Dunnville.

Consultation with the GRCA will be undertaken prior to project implementation to ensure the proposed projects do not negatively impact water supplies within the area.

4.2.2 Groundwater

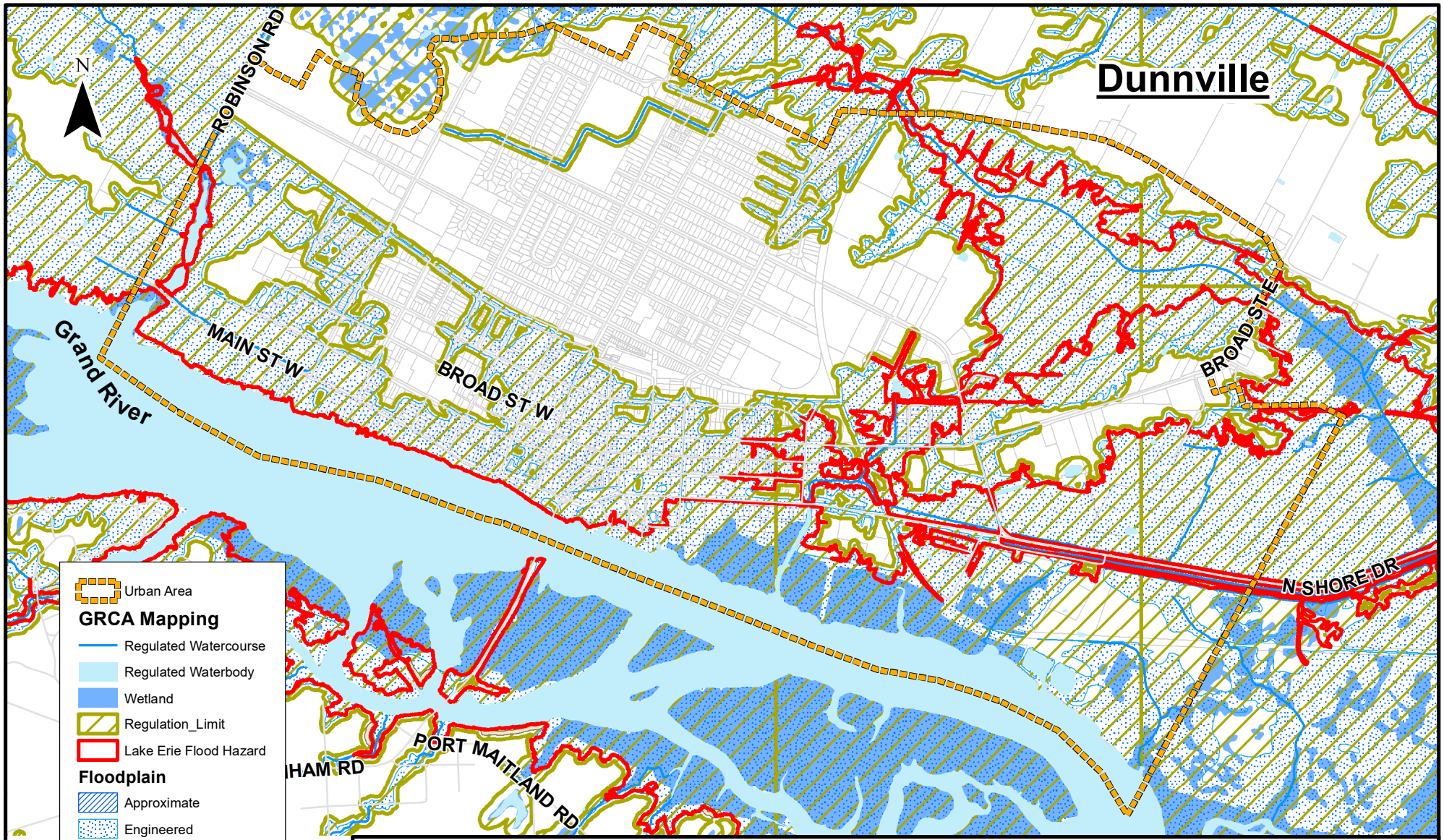
There are no Permits to Take Water (PPTW) for groundwater in Dunnville, and no wellhead protection areas established by the GRCA.

4.2.3 Surface Water

There is one Permit to Take Water (PPTW) in Dunnville in the southern central part of the study area at the intersection of Main Street East and Cedar Street, on the border of the Grand River watershed. It is used by Haldimand as an intake to the Water Treatment Plant (WTP), taking water from both the Grand River and Lake Erie, with a maximum allowance of 4,500 m^3/day and 26,000 m^3/day, respectively, and expires May 31, 2033.

There are three designated Intake Protection Zones (IPZ) in Dunnville established by the GRCA in the GR SPP to protect the quality of surface water from the Grand River, which acts as an emergency intake for the WTP. Intake Protection Zone 1 (IPZ-1) is the most critical zone, located immediately around the water intake in the Grand River, just south of downtown Dunnville. With a vulnerability score of 10, this zone is given the highest level of protection due to its direct proximity to the intake, ensuring that any potential contaminants in this area are closely monitored and managed. Intake Protection Zone 2 (IPZ-2) extends further upstream along the Grand River, encompassing areas where pollutants could reach the intake within a two-hour travel time under typical flow conditions. This zone, which includes portions of the river both upstream of the intake and along the southern border of Dunnville, has a vulnerability score of 8, indicating a moderate risk to water quality that requires significant protective measures. Intake Protection Zone 3 (IPZ-3) covers a broader area, including land and tributaries within the Grand River watershed that have a hydrological connection to the intake but are further from the town center. With a vulnerability score of 6, this zone considers potential long-term risks for more distant sources that could impact the river and ultimately reach the intake over extended periods.

Figure 6 shows the intake protection zones in Dunnville established in the GR SPP.



PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

NATURAL ENVIRONMENT AREAS (GRAND RIVER INFORMATION NETWORK, GRCA)

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DRAWN:	TB
CHECKED:	GP/JW
JLR #:	31196-019

DRAWING #:

FIGURE 5

File Location: P:\31000\31196-019 - Dunnville and Cayuga MSPs\03-Production\01-Civil\GIS\31196-019 Figure5_DunnvilleNaturalEnvironment.mxd

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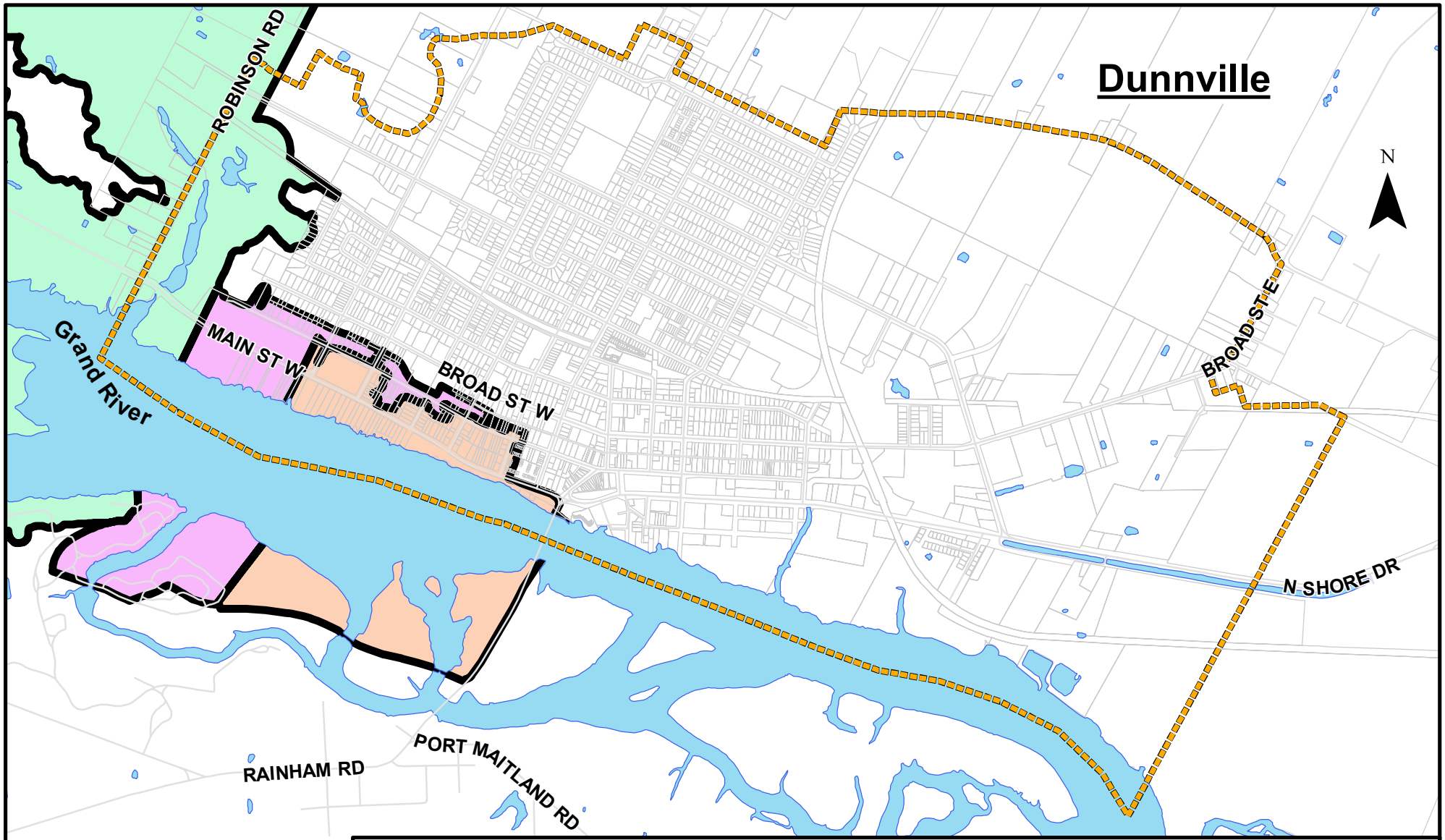

PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

INTAKE PROTECTION ZONES

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FIGURE 6

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4.3 Cultural Heritage Resources

Cultural heritage resources include archaeological resources, built heritage resources and cultural heritage landscapes.

4.3.1 Archaeological Resources

No archaeological studies were completed as part of the 2009 MSP. As part of this MSP update, the Ministry of Citizenship and Multiculturalism (MCM) was consulted to determine if there are any known archaeological sites within the study area. The MCM recommended that the Ministry's *Criteria for Evaluating Archaeological Potential and Criteria for Evaluating Marine Archaeological Potential* screening checklists be completed for Schedule B undertakings, if required.

Archaeological studies may be required for the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand's Site Plan Approval and or Plan of Subdivision under the Planning Act. While there is no or low potential for archaeological resources anticipated with these projects, this will be reviewed in further detail during the planning approvals process under the Planning Act. If potential for archaeological resources is found, technical archaeological studies may be required to mitigate potential impacts to these resources.

4.3.2 Built Heritage Resources and Cultural Heritage Landscapes

No cultural heritage studies were completed as part of the 2009 MSP. Haldimand maintains a database of designated heritage sites and potential heritage properties within Haldimand. There are three designated heritage locations within the Dunnville study area. A list of heritage designated properties is available on Haldimand County's web page. Additionally, there are 35 structures or properties in Dunnville have been identified as having potential cultural heritage based on Haldimand's 2023 Potential Heritage Properties List (Appendix A).

The MCM recommended that the description of existing conditions as it relates to built heritage resources and cultural heritage landscapes be based on the Ministry's Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes screening checklists for Schedule B undertakings, if required.

Cultural and built heritage studies may be required for the construction of servicing infrastructure within future development lands in the Northwest Quadrant (NWQ) of Dunnville and the Frank Marshall Business Park (FMBP). These projects will be subject to Haldimand's Site Plan Approval and or Plan of Subdivision under the Planning Act. While there is no or low potential for cultural or built heritage resources anticipated with these projects, this will be reviewed in further detail during the planning approvals process under the Planning Act. If potential for cultural or built resources is found, a Cultural heritage Assessment Report (CHAR) may be required to mitigate potential impacts to these resources.

4.4 Climate Change

The original MSP completed in 2009 did not consider the impacts of climate change. The MECP has since published the Considering Climate Change in the Environmental Assessment Process Guide (2017) which sets out the Ministry's expectation for considering climate change in the preparation, execution and documentation of environmental assessment studies and processes. To fulfill the requirements of the current MECP Guide to consider both climate change mitigation

and resiliency to client related events, a high-level assessment of these items will be completed once proposed infrastructure alternatives and project sites have been identified.

Climate change mitigation refers to measures implemented to reduce the project's expected production of greenhouse gas (GHG) emissions and impacts on carbon sinks. The project's GHG emissions can be categorized as operating carbon (emitted during the operation phase) or embodied carbon (emitted during the manufacturing and construction phase). As part of the evaluation of proposed infrastructure alternatives, consideration will be given to GHG emissions and the impacts of carbon sinks in each alternative. Potential ways of reducing both direct and indirect emissions from water, wastewater, stormwater, and transportation infrastructure will be identified to be considered further in subsequent design or MCEA stages.

Climate change adaptation refers to the resilience or vulnerability of the infrastructure to changing climatic conditions. Impacts on climate change on municipal infrastructure projects include property-specific concerns such as flooding and system-wide impacts on water demand and electricity consumption. A review potential adaptation measures that can be incorporated into the design and construction of the new infrastructure should be considered throughout the subsequent design processes.

5.0 Summary of Preferred Servicing Alternatives

Four work packages have been prepared in support of this Master Plan Update. A summary of the total cost of the proposed upgrades to meet projected demands of the Master Plan planning horizon are provided in Table 7.

Table 7. Cost Estimate of Preferred Servicing Alternatives

Servicing Component	Cost Estimate (2025 $)[1][2]
Water Servicing	$9,500,000
Wastewater Servicing	$6,700,000[3]
Stormwater Servicing	All Developer Led
Transportation Servicing	$5,350,000

Table Notes:
(1) Costs include a 12% allowance for engineering and a 30% contingency where applicable.
(2) Costs exclude developer led projects.
(3) Includes costs of projects that are pending completion of a Feasibility Study to confirm. Excludes cost of slope revision projects which are to be further investigated to confirm the need and timing of these projects.

These cost estimates were developed based on past experience on similar projects, professional judgement, and equipment costs provided by suppliers. Design completed as part of this MSP is conceptual in nature for the purpose of obtaining cost estimates. All design parameters should be confirmed through further studies (planning approvals process) or detailed design. Any provided estimate of costs is based on historic construction data and does not include labour, material, equipment, manufacturing, supply, transportation, or any other cost impacts. JLR shall not be responsible for any variation in the estimate caused by the foregoing factors, but will notify the Client of any conditions which JLR believes may cause such variation upon delivery of the estimate. The following sections summarize the key findings of each work package.

5.1 Work Package 1: Water Alternatives

CIMA+ completed the 2024 Water Servicing Review and Update (Work Package 1). This included a review of future growth conditions, confirmation of water servicing alternatives, selection of the preferred servicing alternative, and the creation of an implementation plan for the preferred water servicing alternative. A summary of the preferred projects and costs is provided in Figure 7, Figure 8 and Table 8. The total cost of the proposed upgrades to meet the demands in the Master Plan planning horizon is approximately $9,500,000.

Refer to Appendix B for the full work package.

Figure 7. Preferred Water Servicing Alternative – Proposed Upgrades

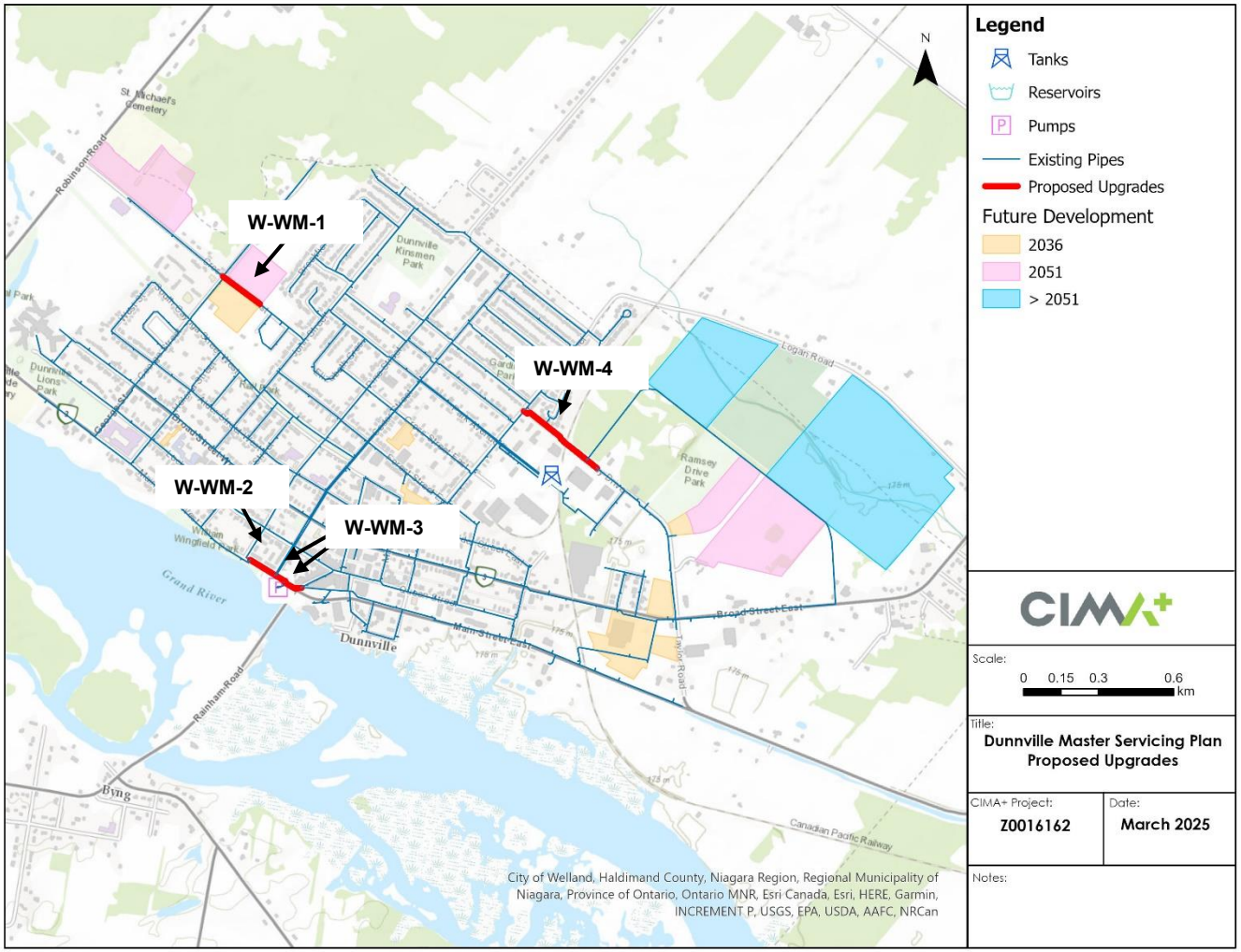


Figure 8. Preferred Water Servicing Alternative – Minor Improvements

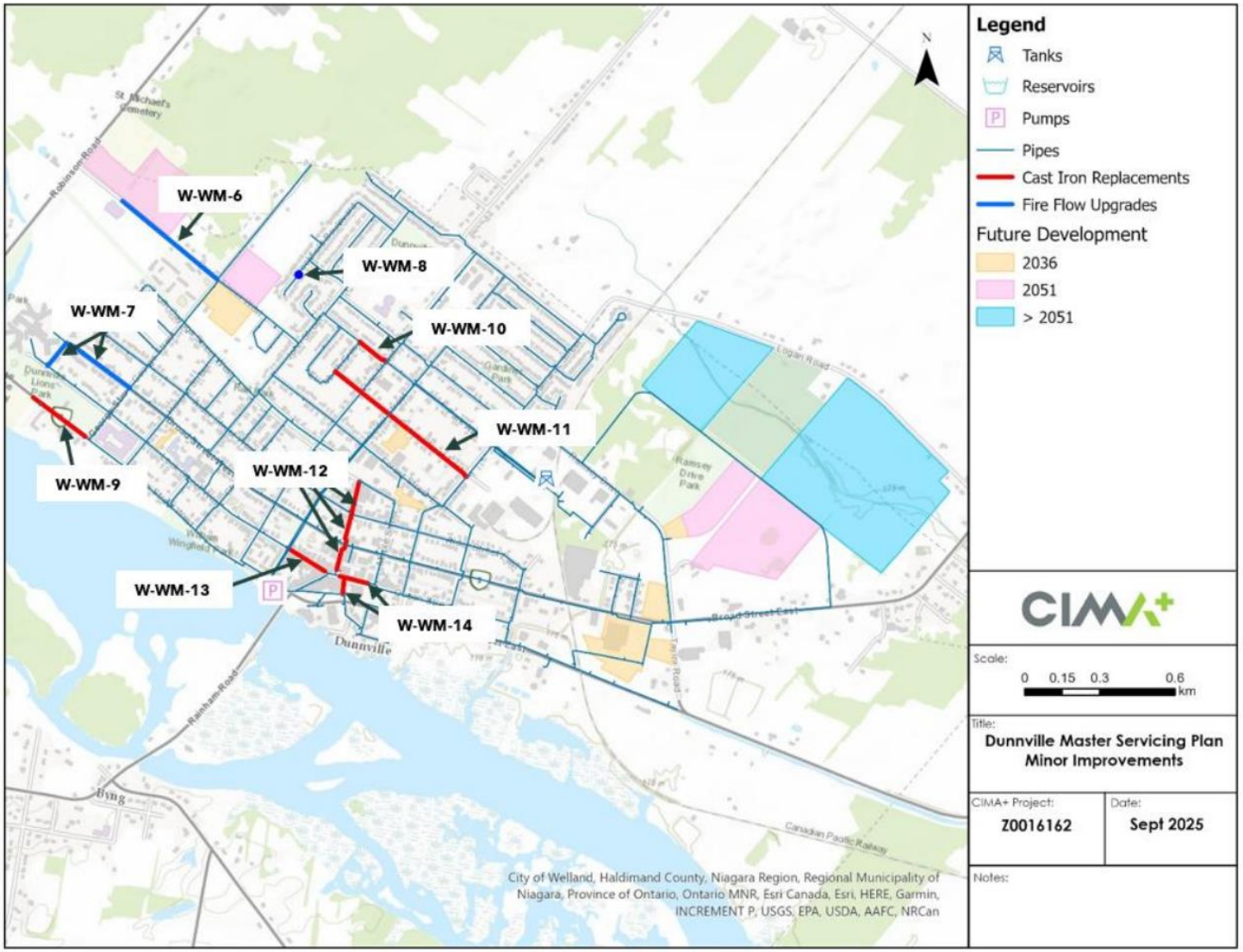


Table 8. Cost Estimates and Timing of Preferred Water Servicing Alternatives

MSP System Component	Description	Cost Estimate (2025$)[1]	Funding			Estimated Timing	Trigger	EA Schedule	Funding Rationale
			County	Developer	DC				
Watermains									
W-WM-1	New 250 mm Watermain Extension on Cross Street from Robin Heights to George Street	Developer Led Project	0%	100%	0%	Near-Term	Fire Flow Conditions for Meritage Landing (Near-Term), Cross Street (Long-Term) and Cross Street and George Street (Long-Term)	Exempt	New external underground service required to service development.
W-WM-2	Pipe upsizing from 300 mm to 400 mm on Main Street from Pine Street to Cedar Street	$250,000	25%	0%	75%	Near-Term	Headloss Conditions under Existing Conditions	Exempt	Upsizing external underground service involving trunk infrastructure.
W-WM-3	Pipe upsizing from 300 mm to 500 mm on Main Street from Cedar Street to the Dunnville WTP. Pipe upsizing from 250 mm to 400 mm on Main Street from the WTP to Queen St.	$330,000	25%	0%	75%	Near-Term	Headloss Conditions under Existing Conditions	Exempt	Upsizing external underground service involving trunk infrastructure.
W-WM-4	Pipe upsizing from 200 mm to 300 mm on Ramsey Drive from Property #225 to Tamarac Street	$620,000	25%	75%	0%	Future	Logan Road – East (Future) and Logan Road – West (Future)	Exempt	Upsize existing external underground service required to service development.
W-WM-5A	New 400 mm Watermain Twin on Cedar Street from Main Street to Alder Street	$830,000	0%	0%	100%	Near-Term	Headloss Conditions due to 430 additional units	Exempt	New external underground service involving trunk infrastructure.
W-WM-5B	New 400 mm Watermain Twin on Park Avenue from Cedar Street to the Standpipe	$1,350,000	0%	0%	100%	Near-Term	Headloss Conditions due to 430 additional units	Exempt	New external underground service involving trunk infrastructure.
W-WM-5C	New 400 mm Watermain twin on Cedar Street from Alder Street to Park Avenue	$1,210,000	0%	0%	100%	Near-Term	Headloss Conditions due to 2110 additional units	Exempt	New external underground service involving trunk infrastructure.
W-WM-6	Pipe upsizing from 200 mm to 250 mm on Cross Street from George Street to Thompson Creek Elementary School	$630,000	100%	0%	0%	Long-Term	Fire Flow Conditions. Prioritize through cast iron watermain replacement program.	Exempt	Cast iron watermain replacement.
W-WM-7	Pipe upsizing from 150 mm to 200 mm on Broad Street from George Street to Grandview Lodge, including the watermain in front of Grandview Lodge connecting Broad Street to Lock Street.	$480,000	100%	0%	0%	Near-Term	Fire Flow Conditions	Exempt	Upgrading infrastructure to address existing conditions.
W-WM-8	Intermediate hydrant along Brookfield Boulevard between Cowan Avenue and cul-de-sac	$20,000	100%	0%	0%	Long-Term	Fire Flow Conditions	Exempt	Upgrading infrastructure to address existing conditions.
W-WM-9	Replace 200 mm cast iron pipe on Main Street from Dunnville Lions Park to George Street	$240,000	100%	0%	0%	Near-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.
W-WM-10	Replace 150 mm cast iron pipe on Park Avenue from Elizabeth Crescent to Pine Street	$130,000	100%	0%	0%	Long-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.
W-WM-11	Replace 150 mm cast iron pipe on Cross Street from Elizabeth Crescent to Tamarac Street	$630,000	100%	0%	0%	Near-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.
W-WM-12	Chestnut Street cast iron watermain replacements: • Replace 150 mm cast iron pipe from South Cayuga Street to Alder Street • Replace 200 mm cast iron pipe from Alder Street to Queen Street	$390,000	100%	0%	0%	Near-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.

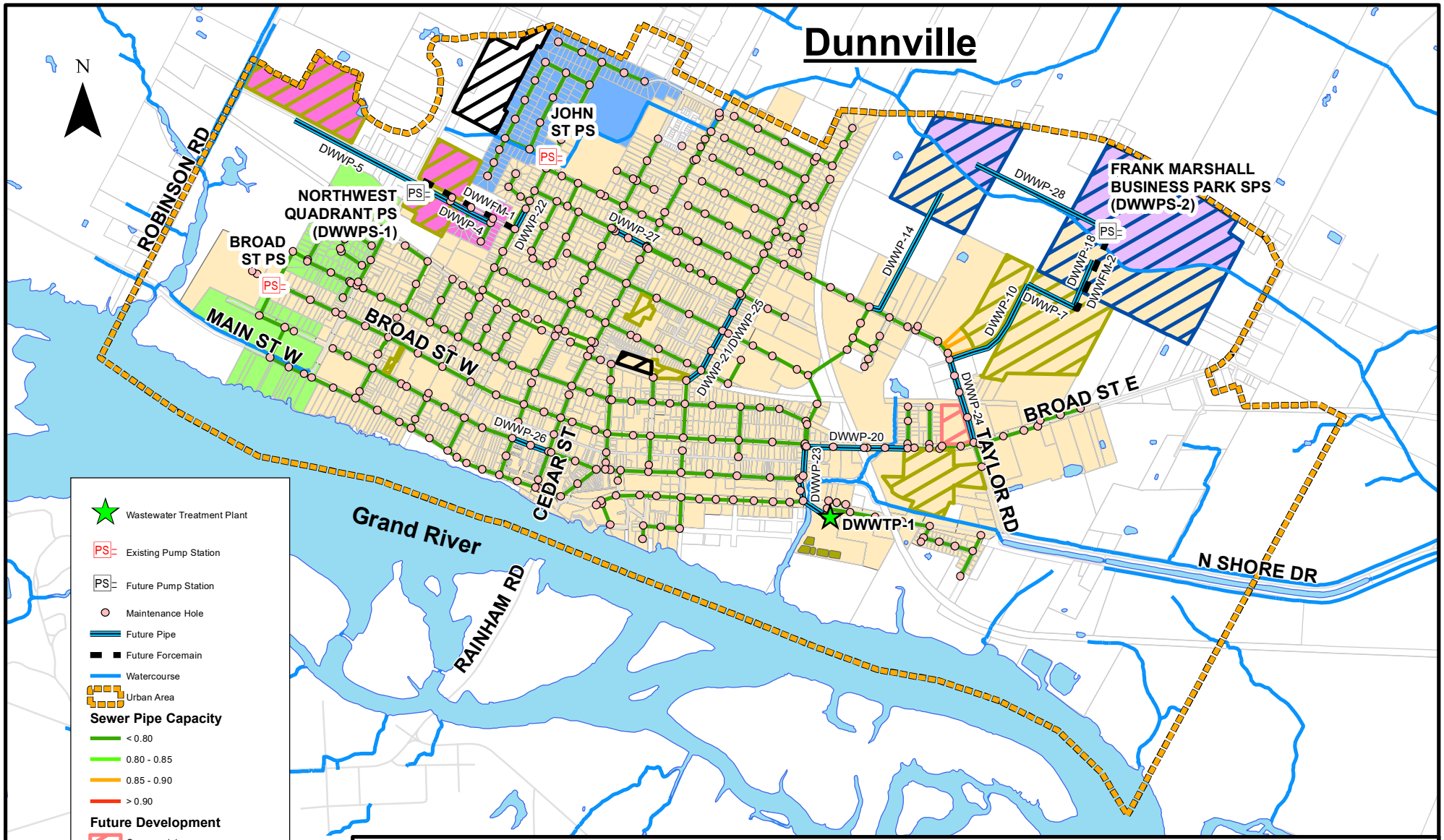
W-WM-13	Replace 150 mm cast iron pipe on Lock Street from Cedar Street to Queen Street	$160,000	100%	0%	0%	Near-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.
W-WM-14	Queen and Bridge Street cast iron watermain replacements: • Pipe upsizing from 150 mm to 200 mm on Queen Street from Chestnut Street to Maple Street • Replace 150 mm cast iron pipe on Bridge Street from Queen Street to Main Street	$230,000	100%	0%	0%	Near-Term	Prioritize through cast iron watermain replacement program	Exempt	Cast iron watermain replacement.
Total Watermain Cost		**$7,500,000 (Excluding developer led projects)**							
Water Treatment Plant									
W-WTP-1	Dunnville WTP Disinfection Upgrades: New UV Treatment and Increased Chlorine Treatment	$2,000,000	50%	0%	50%	Near-Term	Disinfection enhancements to improve system robustness and increase capacity	Exempt	Upstream treatment and capacity improvement.
Total Water Cost		**$9,500,000 (Excluding developer led projects)**							

Table Notes:
(1) All watermain costs include a 12% allowance for engineering and a 30% contingency.

5.2 Work Package 2: Wastewater Servicing

JLR completed the 2024 Wastewater Servicing Review and Update (Work Package 2). This included a review of future growth conditions, confirmation of wastewater servicing alternatives, selection of the preferred servicing alternative, and the creation of an implementation plan for the preferred wastewater servicing alternative. A summary of the preferred projects and costs is provided in Figure 9 and Table 9. The total cost of the proposed upgrades to meet the demands in the Master Plan planning horizon is approximately $6,700,000, excluding developer led projects as well as slope revision projects which were flagged by hydraulic modeling and are to be further investigated (see Table 10).

Refer to Appendix C for the full work package.



PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

RECOMMENDED WASTEWATER SERVICING ALTERNATIVES

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JLR #:	31196-019

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FIGURE 9

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Table 9. Cost Estimates and Timing of Preferred Wastewater Servicing Alternatives

MSP System Component[1]	Description	Cost Estimate (2025$)[2]	Funding			Estimated Timing	Trigger	EA Schedule	Funding Rationale
			County	Developer	DC				
Pumping (Sewage Pumping Stations) and Forcemains									
DWWPS-1, DWWFM-1	Future Northwest Quadrant SPS and Forcemain	Developer Led Project	0%	100%	0%	Near-Term	Meritage Landing (Near-Term), Cross Street (Long-Term) and Cross Street and Goerge Street (Long-Term) Developments	Exempt through planning approvals process	New sanitary pump station to service Meritage Landing, Cross Street, and Cross and George Street Developments.
DWWPS-2, DWWFM-2	Future Frank Marshall Business Park SPS and Forcemain	Developer Led Project	0%	100%	0%	Future	Frank Marshall Business Park (development of lands north of Maple Creek in Logan Road – West and Logan Road – East)	Exempt through planning approvals process	New sanitary pump station to service lands north of Maple Creek in Logan Road – West and Logan Road – East developments.
Pumping and Forcemains Subtotal		**$0 (excluding developer led projects)**							
Sanitary Mains									
DWWP-10	**New Pipe Network:** Jim Gregory Drive – West and East Developments in Frank Marshall Business Park (375 mm ∅)	$900,000	0%	100%	0%	Near-Term	Pipe sizing to be confirmed during detailed design	Exempt	New service extension from existing, triggered by servicing new development.
DWWP-20	**Pipe Upgrade and Slope Revision:** Broad Street East from Brant Street to Niagara Street (450 mm to 525 mm∅).	$800,000	0%	0%	100%	Long-Term; TBD pending development of dynamic model.	Frank Marshall Business Park; Logan Road – West and East (Future)	Exempt	Under existing conditions, section of pipe within DWWP-23 along Niagara Street (107 m) is over capacity due to slope of pipe. No existing constraints observed by Operations in that section, all other upgrades required to accommodate future development.
DWWP-23	**Slope Revision:** Niagara Street from Broad Street East to the WWTP.	$1,000,000	0%	0%	100%	Near-Term			
DWWP-5	**New Pipe Network:** Cross Street Development (300 mm ∅)	Developer Led Project	0%	100%	0%	Long-Term	Cross Street Development (Long-Term)	Exempt	New service extension from existing, triggered by servicing new development.
DWWP-14; DWWP-7 / DWWP-18 / DWWP-28	**New Pipe Network:** Logan Road – West and East Developments (300 mm ∅).	Developer Led Project	0%	100%	0%	Future	Frank Marshall Business Park; Logan Road – West and East (Future)	Exempt	New service extension from existing, triggered by servicing new development. Project also includes new sanitary pumping station above (DWWPS-2).
Sanitary Mains Subtotal		**$2,700,000 (excluding developer led projects)**							
Wastewater Treatment Plant									
DWWTP-1	Increase aerobic digester capacity	$4,000,000	0%	0%	100%	Long-Term; pending ongoing operational performance assessment.			
Total Wastewater Cost		**$6,700,000 (excluding developer led projects)**							

Table Notes:
(1) Where applicable, project numbers match with project numbers provided in the 2009 MSP.
(2) Costs include a 12% allowance for engineering and a 30% contingency.

Table 10. Cost Estimates and Timing of Preferred Wastewater Servicing Alternatives - Pending Feasibility Study

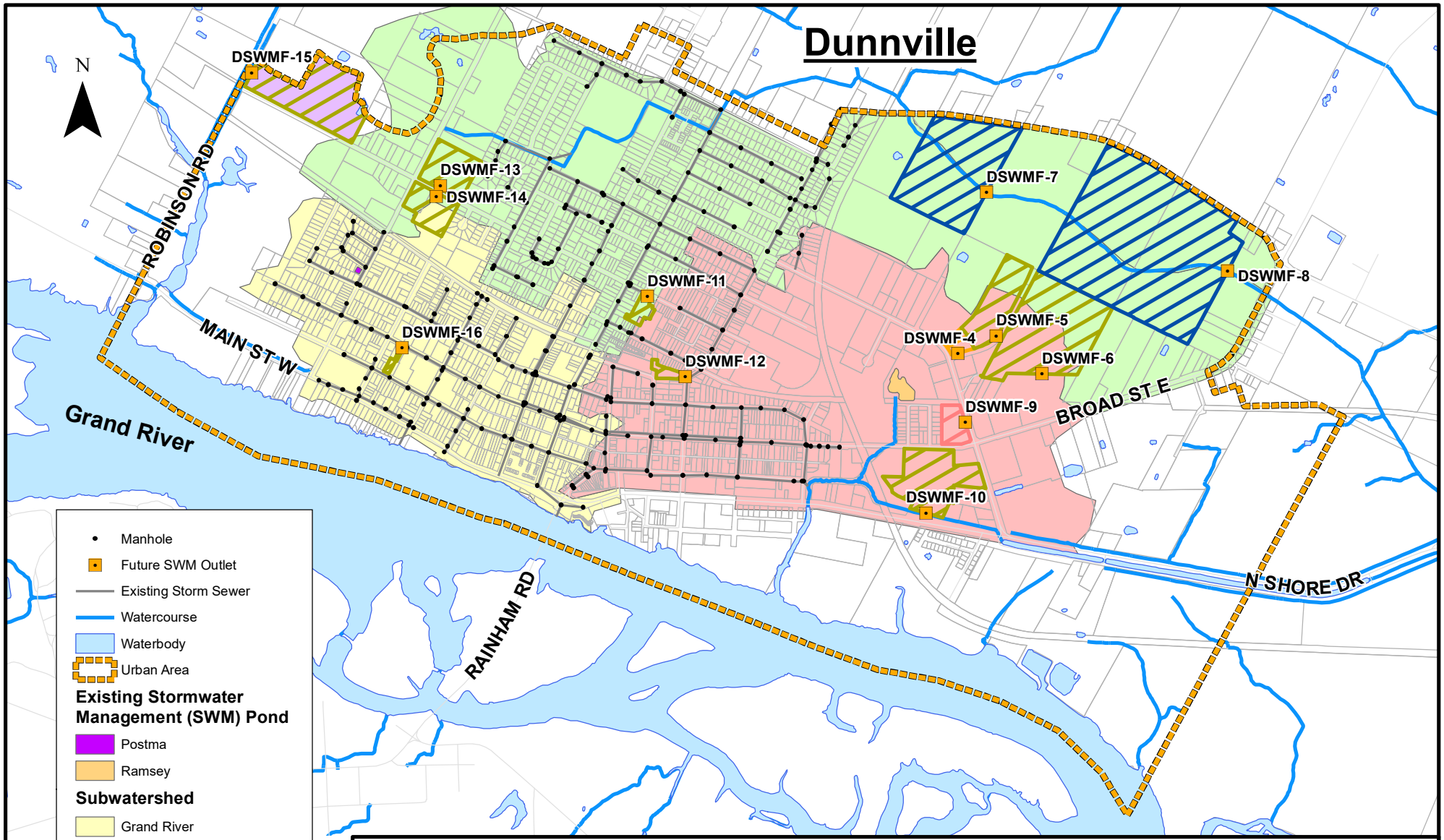
MSP System Component[1]	Description	Cost Estimate (2025$)[2]	Funding			Estimated Timing	Trigger	EA Schedule	Funding Rationale
			County	Developer	DC				
Sanitary Mains									
DWWP-24[3]	**Pipe Upgrade and Slope Revision:** Ramsay Drive from Jim Gregory Drive to Broad Street East (300 mm to 375 mm∅).	$800,000	0%	100%	0%	Long-Term; TBC during design	Frank Marshall Business Park; Logan Road – West and East (Future)	Exempt	Upgrade to existing underground service, triggered by servicing new development.
DWWP-21 / DWWP-25[3]	**Slope Revision:** Slope revision along Tamarac Street between Park Avenue and Alder Street West.	$800,000	50%	0%	50%	Long-Term; To be coordinated with other corridor projects.	Meritage Landing (Near-Term), Cross Street (Long-Term), Cross Street and George Street (Long-Term) Developments	Exempt	Address existing system deficiency (Park Avenue to Forest Street West) and upgrade of existing underground trunk, to accommodate near-term and long-term developments.
DWWP-22[3]	**Slope Revision:** John Street from Cross Street West to Pine Meadow Court. Pipe slope set to minimum industry standard.	$300,000	0%	100%	0%	Long-Term	Cross Street (Long-Term) and Cross Street and George Street (Long-Term) Developments	Exempt	No constraints under existing conditions. Upgrade of existing underground service external to development, triggered by servicing new development. Recommend monitoring low slope section to confirm timing of project.
DWWP-26[3]	**Slope Revision:** Lock Street West between Pine Street and Cedar Street. Pipe slope set to minimum industry standard.	$300,000	50%	0%	50%	Long-Term; To be coordinated with other corridor projects.	Edgewater Gardens Development (Near-Term)	Exempt	Under existing conditions, pipe is over capacity due to slope of pipe. No existing constraints observed by operations in that section, upgrade triggered by servicing new development. Recommend monitoring low slope section to confirm timing of project.
DWWP-27[3]	**Slope Revision:** Park Avenue West from John Street to Pine Street. Pipe slope set to minimum industry standard.	$400,000	0%	0%	100%	Long-Term	Cross Street (Long-Term) and Cross and George Street (Long-Term) Developments	Exempt	Under existing conditions, small section of pipe (7 m) is over capacity due to slope of pipe. No existing constraints observed by Operations in that section. Recommend monitoring low slope section to confirm timing of project.
	Total Wastewater Cost (Slope Revisions)	**$2,600,000**							

Table Notes:
(1) Where applicable, project numbers match with project numbers provided in the 2009 MSP.
(2) Costs include a 12% allowance for engineering and a 30% contingency.
(3) For these pipes requiring slope revisions, upsizing has previously been investigated as part of the current MSP update and is expected to be technically feasible. However, upsizing is generally not considered best practice where downstream sewers are smaller in diameter, unless other mitigation measures (e.g. slope adjustments, local improvements, or flow management) cannot adequately address the issue, as this can transfer capacity constraints further downstream. It is therefore recommended the detailed design for these sewers be revisited at the time the project is required, at which time the feasibility of upsizing rather than revising slopes can be confirmed.
Additionally, where the sanitary sewer is not causing basement flooding or surcharging issues, it is recommended that no upgrades or slope revisions be undertaken and that a more detailed investigation be undertaken to clearly identify critical sections of the system to better prioritize upgrades and ensure that only the necessary upgrades are being implemented.

5.3 Work Package 3: Stormwater Servicing

JLR completed the 2024 Stormwater Servicing Review and Update (Work Package 3). This included a review of future growth conditions, confirmation of stormwater servicing alternatives, selection of the preferred servicing alternative, and the creation of an implementation plan for the preferred stormwater servicing alternative. A summary of the preferred projects and costs is provided in Figure 10 and Table 11. As discussed in Work Package 3, due to the wide range of site-specific constraints and development design solutions to address the CLI ECA requirements for stormwater servicing, costs are unable to be estimated for stormwater management on a development basis.

Refer to Appendix D for the full work package.



PROJECT:

DUNNVILLE MASTER SERVICING PLAN

HALDIMAND COUNTY, ONTARIO

DRAWING:

RECOMMENDED STORM SERVICING ALTERNATIVES

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FIGURE 10

File Location: P:\31000\31196-019 - Dunnville and Cayuga MSPs\03-Production\01-Civil\GIS\31196-019 Figure6_DunnvilleProposedStorm.mxd

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Table 11. Cost Estimates and Timing of Preferred Stormwater Servicing Alternatives

MSP System Component[(1)]	Description	Cost Estimate (2025$)	Funding			Estimated Timing	Trigger	EA Schedule	Funding Rationale
			County	Developer	DC				
Stormwater Management									
DSWMF-4 through DSWMF-16	Stormwater management for all proposed future developments (see Table 3).	Due to the wide range of site-specific constraints and development design solutions to address the regulatory requirements (i.e., CLI ECA requirements), costs are unable to be estimated for stormwater management on a development basis. Project timing will be driven by respective development.							
Stormwater Mains									
DSS-1 to DSS-4	**New Pipe Network:** New sewers to service Frank A. Marshall Business Park	Due to the wide range of site-specific constraints and development design solutions to address the regulatory requirements (i.e., CLI ECA requirements), costs are unable to be estimated for stormwater management on a development basis. Project timing will be driven by respective development.							
Total Stormwater Cost		**$0 (excluding developer led projects)**							

Table Notes:

(1) Where applicable, project numbers match with project numbers provided in the 2009 MSP.

5.4 Work Package 4: Transportation Servicing

JLR completed the 2024 Transportation Servicing Review and Update (Work Package 4). This included a review of future growth conditions, confirmation of transportation servicing alternatives, selection of the preferred servicing alternative, and the creation of an implementation plan for the preferred transportation servicing alternative. A summary of the preferred projects and costs is provided in Figure 11 and Table 12. The total cost of the proposed upgrades to meet the projected demands in the Master Plan planning horizon is $5,350,000.

Refer to Appendix E for the full work package.

Figure 11. Preferred Transportation Servicing Alternative

Table 12. Cost Estimates and Timing of Preferred Transportation Alternatives

MSP System Component	Description	Cost Estimate (2025$)[1]	Funding			Estimated Timing	Trigger	EA Schedule	Funding Rationale
			County	Developer	DC				
DTR-1	Main/Queen-Rainham: Signal timing optimization.	$0	90%	0%	10%	Near-term	Background traffic growth	Exempt	Addresses future system deficiency
DTR-2	Main/Taylor-Feeder: Implementation of a signalized intersection and new auxiliary eastbound left-turn lane	$1,400,000	90%	0%	10%	Future	Background traffic growth	Exempt	Addresses future system deficiency
DTR-3	Broad/Chestnut: Signal timing optimization and new auxiliary westbound and eastbound left-turn lanes	$150,000	90%	0%	10%	Future	Background traffic growth	Exempt	Addresses future system deficiency
DTR-4	Broad/Tamarac: Implementation of a signalized intersection	$1,200,000	75%	0%	25%	Future	Background traffic growth	Exempt	Addresses future system deficiency
DTR-5	Broad/Ramsey-Taylor: Signal timing optimization	$0	90%	0%	10%	Future	Background traffic growth	Exempt	Addresses future system deficiency
DTR-6	George Street: Reduce the cross section to one lane per direction between Broad Street and Main Street.	$650,000	100%	0%	0%	Future	County initiative	Exempt	Corridor improvement and encouraging active transportation modes
DTR-7	Main Street: Construction of sidewalk on both sides of the road from Tamarac Street to Tayor. (Carried forward from the 2009 MSP)	$1,100,000	100%	0%	0%	Near-term	Haldimand County Design Criteria - Section G – Roadways	Exempt	Addresses safety, connectivity and existing system deficiency
DTR-8	Taylor Road: Construction of sidewalk on both sides of the road from Main Street-North Shore Drive to Broad Street. (Carried forward from the 2009 MSP)	$480,000	70%	30%[2]	0%	Near-term	Haldimand County Design Criteria - Section G – Roadway, Development 4 construction.	Exempt	Addresses existing system deficiency
DTR-9	George Street: Construction of missing 30 m section on the west side of the road, south of South Cayuga Street	$20,000	100%	0%	0%	Near-term	Haldimand County Design Criteria - Section G – Roadway, Deficiency in pedestrian facilities, Accessibility deficiency.	Exempt	Addresses safety, connectivity and existing system deficiency
DTR-10	Ramsey Drive: Construction of sidewalk on north side of Ramsey Drive from Broad Street to Tamarac Street.	$350,000	90%	10%[2]	0%	Near-term	Haldimand County Design Criteria - Section G – Roadway, Development 6 construction.	Exempt	Addresses existing system deficiency
Total Transportation Cost:		**$5,350,000**							

Table Notes:

(1) Costs include a 12% allowance for engineering and a 30% contingency where applicable.
(2) Based on property frontage.

6.0 Potential Construction Impacts and Mitigation Measures

The proposed works described in Section 5.0 may lead to potential impacts to the environment during construction activities. Background information on environment and land use considerations is provided in Section 4.0. Table 13 presents potential impacts to these resources along with mitigation measures. It is recommended that impacts and mitigation measures be further reviewed and updated during the planning approvals process for the new SPSs.

Table 13. Environmental Land Use Considerations of Proposed Projects

Impact	Description / Mitigation Measure
Ecosystem Protection and Restoration	In general, any construction activities that may impact ecosystem form and function must be avoided where possible. Existing natural environmental features within the MSP study area detailed in Section 4.1. Additional field studies have been recommended in Section 4.0 to be conducted during the planning approvals process for the future subdivisions to further understand the natural environmental features of the study area. Consultation with MNR and GRCA should be conducted during the planning approvals process to determine if special measures will be necessary to preserve and protect sensitive features within the project areas.
Species at Risk	Thirty-five (35) potential species at risk were identified in the project study area (refer to Section 4.1). Field studies at the proposed project sites are recommended to be completed during planning approvals process for the future subdivisions to identify is there is potential for identified Species at Risk on parcels where projects have been recommended. Once potential species at risk on the proposed project areas have been identified, mitigation measures should be embedded in the design and implemented during project construction. For example, construction activities can be maintained within the existing site boundary or right-of-way to minimize disruption to wildlife habitat and/or work can be staged to avoid spawning and breeding periods. MNR's guidelines for best management practices should be followed, where applicable, for guidance. For example, for the aquatic species at risk, MNR's "Best Management Practices for Mitigating Effects of In-water Works on Fish and Mussel Species at Risk" should be referred. If the proposed activities cannot avoid impacting protected species and their habitats, authorization under the ESA, 2007 may need to be obtained.
Source Protection	As described in Section 4.2, the MSP study area is located within three GRCA regulated Intake Protection Zones (IPZ), where potential impacts include the risk of contaminant release to the municipal drinking water source during construction. To mitigate these risks, project-specific assessments, such as a

	Section 59 Notice under the *Clean Water Act,* 2006, S.O. 2006, c. 22 should be completed to identify if proposed SPS projects pose a significant threat to municipal drinking water sources. Where required, a Risk Management Plan should be developed. Once these threats are identified, appropriate mitigation measures should be incorporated into the project design and implemented during construction. For example, design measures may include secure containment and storage of fuels and chemicals to prevent accidental releases, while construction-phase controls could involve spill prevention and response protocols, proper handling of hazardous materials on-site, and adherence to best management practices to protect source water quality.
Surface Water	Details on the location of surface waters/streams are detailed in Figures 6 and 7. Measures should be included in the planning and design process to ensure that any impacts to watercourses from construction or operation activities (e.g., spills, erosion, pollution) are mitigated as part of the proposed undertakings. For instance, a stormwater management plan should be developed during the detailed design and implementation stage and sedimentation and erosion control should be implemented during construction. Additionally, servicing strategies for areas adjacent to floodways, for example in the FMBP, should incorporate measures that avoid or minimize development within GRCA regulated floodways. Additional review of potential impacts to surface water streams within the study area will be conducted as part of the planning approvals process for the future subdivisions and through the design phase of the proposed works.
Groundwater	At this time there are no groundwater wells within the study area. The potential for impacts related to groundwater conditions will be assessed through geotechnical/hydrogeotechnical studies during the planning approvals process for the future subdivisions to and/or through the design phase of the proposed works.
Excess Material Management	Project activities involving the management of excess soils should be completed in accordance with *O. Reg. 406/19* and the MECP's current guidance document titles "Management of Excess Soil – A Guide for Best Management Practices" (2014). All waste generated during construction must be disposed of in accordance with Ministry requirements.
Air, Quality, Dust, and Noise	Increased dust and noise can be anticipated from the various construction works of the proposed projects; impacts to air quality may occur during proposed sewage pumping station or sanitary sewer upgrade projects. The potential for impacts related to air quality, dust, and noise will be assessed during the planning approvals process for the future subdivisions and/or design phase for the proposed works.

	Dust and noise control mitigation measures should be addressed and included in the construction plans to ensure that nearby residential and other sensitive land uses within the project area are not adversely affected during construction activities.
Archaeological Resources	Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act.* The proponent or person discovering the archaeological resources must case alteration of the site immediately and engage a licensed consultant archaeology to carry out an archaeological assessment, in compliance with Section 48(1) of the *Ontario Heritage Act.* The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 requires that any person discovering human remains must cease all activities immediately and notify the police or coroner. If the coroner does not suspect foul play in the disposition of the remains, in accordance with Ontario Regulation 30/11 the coroner shall notify the Registrar, Ontario Ministry of Public and Business Service Delivery, which administers provisions of that Act related to burial sites. In situations where human remains are associated with archaeological resources, the MCM should also be notified (at archaeology@ontario.ca) to ensure that the archaeological site is not subject to unlicensed alterations which could be a contravention of the *Ontario Heritage Act.*
Natural Environment	In general, any construction activities that may impact ecosystem form and function must be avoided where possible. Existing natural environmental features within the MSP study area detailed in Section 4.1. Additional field studies have been recommended in Section 4.0 to be conducted during planning approvals process for the future subdivisions to further understand the natural environmental features of the study area. Consultation with MNR and GRCA should be conducted during the planning approvals process to determine if special measures will be necessary to preserve and protect sensitive features within the project areas.

7.0 Stakeholder and First Nation Consultation

7.1 Notice of Study Commencement

A notice of study commencement was prepared by the consulting team. A project mailing list was developed identifying developer, review agency, and Indigenous community stakeholders and rightsholders. A copy of the mailing list is provided in Appendix F.

The Notice of Study Commencement was:

- Mailed and/or e-mailed to developers, review agencies, and Indigenous communities the week of August 12, 2024.
- Placed on the Town's website the week of August 12, 2024
- Placed in two (2) issues of the local newspaper, Haldimand Press, which ran on August 15th, 2024, and August 22nd, 2024.

A copy of the Notice of Commencement is included in Appendix G. Responses received to the Notice of Commencement are included in the following sections.

7.2 Public Open Houses

7.2.1 Public Open House No. 1

The first Public Open House for the Dunnville Master Servicing Plan (MSP) was held at the Dunnville Community Lifespan Centre on December 11th, 2024, from 4 p.m. to 6 p.m. The purpose of the Open House was to present existing conditions that have been identified for Dunnville's water, wastewater, stormwater, and transportation servicing. A Summary Memorandum was prepared to summarize comments received during Public Open House No. 1. All materials from Public Open House No. 1 can be found in Appendix H.

7.2.2 Public Open House No. 2

A second Public Open House for the Dunnville MSP was held on May 14th, 2025, from 4 p.m. to 6 p.m. The purpose of the Open House was to present future conditions and recommended servicing alternatives, and gather input from stakeholders, rightsholders, and residents. A Summary Memorandum was prepared to summarize comments received during Public Open House No. 2. All materials from Public Open House No. 2 can be found in Appendix H.

7.3 Public Stakeholder Consultation

Table 14 below provides a summary of public comments received to date regarding the MSP update. Refer to Appendix I for a copy of meeting minutes and written correspondence.

Table 14. Public Stakeholder Comments and Consultation

Stakeholder	Comment	Action
Public Member 1	A member of the public contacted the project team to express concerns regarding the traffic lights and signal timing at the intersection at Broad Street and Ramsay Drive/Taylor Road. The attendee noted that he is often waiting an extended period of time at the lights going westbound on Broad Street, when there is no traffic travelling north/south bound on Taylor Road/Ramsay Drive.	The project team noted the comments and discussed the possibility of completing signal and timing review at the intersection. The member of the public also attended the first Public Open House where discussions continued regarding the concerns (see Appendix H). Generally, the project team noted that Haldimand has applied for funding the replace the hardware for the traffic sensors and that a plan is in place for 2025 to optimize signal timings.

7.4 First Nation Communities Consultation

7.4.1 Mississaugas of the Credit First Nation (MCFN)

Table 15 provides a summary of comments from the Mississaugas of the Credit First Nation (MCFN) regarding this MSP update. Refer to Appendix J.1 for a copy of meeting minutes and written correspondence.

Table 15. MCFN Comments and Consultation

Comment	Action
	A copy of the Notice of Commencement was provided to MCFN on August 16, 2024.
	A copy of the Notice of Public Open House No. 1 was provided to MCFN on November 22, 2024 along with an invitation to meet to discuss the project.
In response to the Notice of Public Open House No. 1, MCFN requested to meet to discuss Phase 1.	The project team followed up on the invitation to meet on February 28, 2025, providing proposed times.
	A meeting was scheduled for March 21, 2025.
Comments from meeting (March 21, 2025): • MCFN requested any notable comments from the Public Open Houses. • MCFN noted that the Grand River has a high potential for archaeological and cultural significance.	The Project team met with SNGR on March 21, 2025 to provide an update on the status of the Dunnville and Cayuga MSP's and allow for open and transparent dialogue on interests and project direction. The project team noted that Haldimand County is undertaking an Archeological Management Plan and to relay critical information between project teams. JLR provided copies of the consultation summaries from the events.
	A copy of the Notice of Public Open House No. 2 was provided to MCFN on April 28, 2025.
In response to the Notice of Public Open House No. 2, MCFN requested to meet to discuss Phase 2.	A meeting was booked for June 17, 2025.
Meeting notes:	The Project team met with SNGR on June 17, 2025, to provide an update on the status of the Dunnville and Cayuga MSP's and

• A copy of the project file report was requested.	allow for open and transparent dialogue on interests and project direction. The project team noted that a copy of the project file report would be provided once finalized.

7.4.2 Six Nations of the Grand River

Table 15 provides a summary of comments from the Six Nations of the Grand River (SNGR) regarding this MSP update. Refer to Appendix J.2 for a copy of meeting minutes and written correspondence.

Table 16. SNGR Comments and Consultation

Comment	Action
No comments received to date.	A copy of the Notice of Commencement was provided to SNGR on August 16, 2024. A copy of the Notice of Public Open House No. 1 was provided to SNGR on November 22, 2024. A copy of the Notice of Public Open House No. 2 was provided to SNGR on April 28, 2025.

7.5 Developer Consultation

Table 17 provides a summary of developer comments received to date regarding the MSP update. Refer to Appendix K for a copy of the written correspondence received from developers.

Table 17. Developer Comments and Consultation

Stakeholder	Comment	Action
Developer 1	A developer contacted the project team following the first Public Open House to provide input on storm water servicing and future development in the community. Comments included suggestions for lands to be considered for future development as well as concerns regarding flooding of Maple Creek.	The comments were noted by County planning staff. These developments will not be considered in the growth projections for the Master Planning horizon; however, they have been recognized as vacant lands for potential future development and added to Haldimand's development lands mapping.

7.6 Adjacent Municipality Consultation

Table 18 provides a summary of comments received from adjacent municipalities regarding the MSP update.

Table 18. Adjacent Municipalities Comments and Consultation

Stakeholder	Comment	Action
No Adjacent Municipality comments received to date.		

7.7 Review Agency Consultation

Table 19 provides a summary of review agency comments received to date regarding the MSP update. Copies of all project notices, including the Notice of Commencement, Notices of Public Open Houses, and Notice of Completion were circulated to all contacts on the project mailing list, including the review agencies below. Refer to Appendix L for a copy of the written correspondence receive from review agencies.

Table 19. Review Agency Comments and Consultation

Stakeholder	Comment	Action
Bell Canada	August 16, 2024 – Bell noted that they will follow up regarding any input to be considered on the project if required, regarding telecommunications infrastructure, depending on the project type.	Bell will remain on the project mailing list.
Ministry of Natural Resources (MNR)	August 21, 2024 – The MNR provided information, tools, and relevant policies and legislation to guide the identification of natural features and resources in the area.	The comments were noted by the project team.
Hydro One Networks (Hydro One)	August 28, 2024 – Hydro One requested to be consulted during all stages of the project.	Hydro One will remain on the project mailing list.
Grand River Conservation Authority (GRCA)	September 6, 2024 – The GRCA noted that the Dunnville study area contains the Grand River and its associated floodplain, among other environmental features. The GRCA requested to be apprised through the EA process. December 28, 2024 – In response to the Notice of Public Open House, GRCA requested copies of the Public Open House boards and requested to update their contact information. GRCA noted they had no comments regarding the Public Open House boards, and that they would provide input and comment on matters in GRCA-regulated areas once potential/preferred solutions are presented.	These comments were added to Section 4.1.6. The GRCA will remain on the project mailing list. Copies of the boards from the first Public Open House were circulated to GRCA, and contact information was updated on the Project Mailing List.

	July 9, 2025 – A planner at the GRCA reached out to the project team with comments relating to Public Open House No. 2. They provided a copy of GRCA's floodplain mapping, noting that several sites within the MBP are almost entirely within the floodway of the two-zone floodplain policy area and that other parcels contain wetlands. It was emphasized that generally no new development is permitted within the floodway and recommended that proposals to service the areas outside of the floodway should consider options that avoid development through the floodway.	Comments were noted by the project team and mitigation measures have been documented in the report. A Haldimand staff member provided additional information and resources regarding the 2-zone floodplain concept integrated into policy through Haldimand's Official Plan Review. GRCA should continue to be kept informed on any plans and details regarding infrastructure upgrades within the future Frank Marshall Business Park.
Ministry of Citizenship and Multiculturalism (MCM)	September 11, 2024 – The MCM indicated that a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment should be undertaken during the planning phase and summarized in the report. In addition, for Schedule B projects, the MCM indicated a Cultural Heritage Evaluation Report (CHER) may be required for impacted built heritage resources or cultural heritage landscapes that have not been evaluated for Cultural Heritage Value or Interest (CHVI). If a resource with CHVI is identified, a Heritage Impact Assessment (HIA) will be required.	Once the preferred servicing alternatives have been developed as part of Work Package 3, the proposed projects will be screened using the MCM's Criteria for Evaluating Archeological Potential and Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes. Required heritage and/or archaeological studies will be determined following the completion of these studies.
Ministry of Environment, Conservation, and Parks (MECP)	September 18, 2024 – The MECP requested that all Notices and Class EA documentation identify the Master Plan approach that is being followed for this project. The MECP provided a list of Aboriginal communities that require consultation and outlined steps that must be followed in relation to Aboriginal consultation. The MECP	A Notice of Commencement and completed project information form for the project was sent to MECP All future notices and Class EA documentation will identify the Master Plan approach for this project.

	noted that Haldimand must consider the impacts to source protection, climate change adaptation and mitigation, and impact to species at risk and their habitats, in addition to other areas of interest.	Aboriginal communities were contacted prior to the first Public Open House. Additional information on consultation with SNGR and MNCFN is provided in Section 7.4.

8.0 Cumulative Effects and Potential Impacts to Treaty Rights

An analysis of the MSP's cumulative effects and impacts on treaty rights and the inherent rights of Indigenous Peoples in the project study area and surrounding areas was conducted. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), was used as the reference to determine the potential impacts to the rights of Indigenous Peoples. The following table summarizes the potential rights impacts of the Dunnville MSP.

Table 20. Cumulative Effects and Potential Impacts to Project Rights

UNDRIP Act Article	Impact Considerations	Impact Mitigation
Rights Relating to Culture, Traditions, Customs, and Spirituality		
Article 11.1: Indigenous peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artefacts, designs, ceremonies, technologies and visual and performing arts and literature. **Article 12.1:** Indigenous peoples have the right to manifest, practise, develop and teach their spiritual and religious traditions, customs and ceremonies; the right to maintain, protect, and have access in privacy to their religious and cultural sites; the right to the use and control of their ceremonial objects; and the right to the repatriation of their human remains. **Article 15.1:** Indigenous peoples have the right to the dignity and diversity of their cultures, traditions, histories and aspirations which shall be appropriately reflected in education and public information. **Article 24.1:** Indigenous peoples have the right to their traditional medicines and to maintain their health practices, including the conservation of their vital medicinal plants, animals and minerals. Indigenous individuals also have the	• There are several registered Archaeological Sites within the Dunnville Study Area. Given the number of registered Archaeological Sites in the area, there is likely significant archaeological and Indigenous presence in the area of the identified project sites. • There are 3 registered cultural heritage sites, and an additional 35 properties within the Dunnville Study Site that have potential for cultural heritage. • Woodlots have been identified in Dunnville. Historic Indigenous community settlement areas were influenced by the location of hardwood trees, as they were a primary source of fuel and nutrition (ash from hardwood trees was, and continues to be used, in food preparation, as well as a cleaner) • Wetlands have been identified in Dunnville. Indigenous communities have historically settled near wetlands, as wetland animal and plant species provide essential resources for food and medicine. • Warmwater species and apex predator fish have been identified across Dunnville's main watercourses. Fish species historically hold profound importance for Indigenous communities, providing vital	• A walk through of the proposed project sites could be conducted with the affected Indigenous Community for further investigation; discussions could be held to determine specific significance and concerns held by the Indigenous Community at and around the proposed project sites • During the walkthrough, species of interest could be identified for harvest and transplant if appropriate. Protection of these species may be integral to continued cultural practice. • The knowledge learned from these site walkthroughs could be incorporated into the project, evaluation, and future project information. • Native vegetation can be harvested and replanted along watercourses for protection. Discussions can be held with the affected Indigenous Community regarding erosion control and water quality concerns, ensuring that traditional Indigenous ecological knowledge and practices are well-integrated into the construction plan. • Future field studies and assessments required for future subdivisions will include indigenous consultation to ensure respect

right to access, without any discrimination, to all social and health services. **Article 25:** Indigenous peoples have the right to maintain and strengthen their distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas and other resources and to uphold their responsibilities to future generations in this regard. **Article 31.1:** Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.	food sources, cultural significance, and economic stability. • Preferred sites may contain medicinal plants, animals, and minerals that are vital to traditional medicines and health practices of Indigenous communities. • Preferred project sites may hold specific significance to Indigenous communities, which should be appropriately reflected in the project evaluation and project information • Once the site for future recommended projects are known, they will be evaluated for archaeological and cultural heritage significance. • Construction activities should ensure minimal disturbance and consider habitat restoration efforts post-construction.	for and protection of cultural, traditional, and spiritual values.
Rights Relating to Decision Making and Participation in Projects		
Article 13.2: States shall take effective measures to ensure that this right is protected and also to ensure that indigenous peoples can understand and be understood in political, legal and administrative proceedings, where necessary through the provision of interpretation or by other appropriate means.	• Several types of project information, including notices, reports, and presentations, are used as part of the consultation process to inform interested stakeholders and rightsholders of the project.	• This MSP is being conducted according to the requirements of Phases 1 and 2 of the MCEA process. By following this process, the study will meet the intention of meaningful consultation with Indigenous communities, including ensuring all provided project information can be

	There may be interested persons who are unable to understand the provided project information	understood by interested Indigenous peoples.
Article 18: Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own indigenous decision-making institutions.	• There are some rights that have the potential of being affected by this MSP if impact mitigation measures are not implemented, therefore Indigenous peoples have the right to participate in decision-making for matters that affect their rights.	• This MSP is being conducted according to the requirements of Phases 1 and 2 of the MCEA process. By following this process, the study will meet the intention of meaningful consultation with Indigenous communities • Through meaningful consultation, Indigenous peoples can participate in the evaluation and decision-making process of the MCEA by providing comments and discussing concerns with preferred projects and sites
Rights Relating to Development and Economic and Social Conditions		
Article 21.1: Indigenous peoples have the right, without discrimination, to the improvement of their economic and social conditions, including, inter alia, in the areas of education, employment, vocational training and retraining, housing, sanitation, health and social security. **Article 23:** Indigenous peoples have the right to determine and develop priorities and strategies for exercising their right to development. In particular, indigenous peoples have the right to be actively involved in developing and determining health, housing and other economic and social programmes affecting them and, as far as possible, to administer such programmes through their own institutions.	• Indigenous peoples living in Dunnville have the right to the improvement of their municipal services (water, wastewater, stormwater, and transportation), without discrimination, and may be interested in the development of municipal services that impact them.	• This MSP is being conducted according to the requirements of Phases 1 and 2 of the MCEA process. By following this process, areas of Dunnville requiring municipal service improvement will be identified, without discrimination against Indigenous communities • Through meaningful consultation, particular areas or conditions of concern held by Indigenous communities can be discussed and incorporated into the MSP as needed
Article 21.2: States shall take effective measures and, where appropriate, special	• There may be members of the Indigenous communities with special needs living in	• Any preferred projects will follow appropriate provincial guidelines (e.g.,

measures to ensure continuing improvement of their economic and social conditions. Particular attention shall be paid to the rights and special needs of indigenous elders, women, youth, children and persons with disabilities.	Dunnville (e.g., elders, youth, women, persons with disabilities). These members may be more vulnerable to municipal services (water, wastewater, stormwater, and transportation) in poor condition, and special measures should be taken to ensure the improvement of these municipal services	Design Guidelines for Drinking Water Treatment, Ontario Drinking Water Standards, Design Guidelines for Sewage Works, etc.). By following these guidelines, members of Indigenous communities, including vulnerable members of the population, will be protected.
Rights Relating to the Environment and Conservation		
Article 29.1: Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for indigenous peoples for such conservation and protection, without discrimination. **Article 29.2:** States shall take effective measures to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent.	• Development of municipal services will be proposed as part of this MSP. • During construction of preferred projects, hazardous materials may be used or identified on site.	• This MSP is being conducted according to the requirements of Phases 1 and 2 of the MCEA process. By following this process, potential projects will undergo an evaluation process that considers the protection and conservation of the environment. • Additionally, measures to protect and conserve the environment within Dunnville will be identified and recommended for projects that have the potential for impacts to the environment. • Through meaningful consultation, particular areas or conditions of concern held by Indigenous communities can be discussed and incorporated into the MSP as needed. • Hazardous materials used or found during construction of preferred projects will not be stored or disposed of on the lands or territories of Indigenous peoples without their free, prior, and informed consent.

9.0 Limitations

This report has been prepared by J.L. Richards & Associates Limited for Haldimand County's exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

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