MUNICIPALITY OF KINCARDINE

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR EXPANSION OF THE TIVERTON WATER SUPPLY SYSTEM

ENVIRONMENTAL SCREENING REPORT

BMROSS
engineering better communities

MUNICIPALITY OF KINCARDINE

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ENVIRONMENTAL SCREENING REPORT

February 10, 2024

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File No. 24014

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

List of Acronyms

ANSI	Area of Natural and Scientific Interest
ATRIS	Aboriginal and Treaty Rights Information System
BMROSS	B.M. Ross and Associates Limited
BPS	Booster Pumping Station
CHER	Cultural Heritage Evaluation Report
CWA	Clean Water Act
DWS	Drinking Water System
DWWP	Drinking Water Works Permit
DWQS	Drinking Water Quality Standards
EA Act	Environmental Assessment Act of Ontario
EASR	Environmental Activity and Sector Registry
ECA	Environmental Compliance Approvals
ERU	Equivalent Residential Unit
ESA	Endangered Species Act
ESR	Environmental Screening Report
GUDI	Groundwater under the Direct Influence of Surface Water
IPP	Inverhuron Provincial Park
KDWS	Kincardine Drinking Water System
MCEA	Municipal Class Environmental Assessment
MCM	Ministry of Citizenship and Multiculturalism
MAC	Maximum Acceptable Concentrate
MDWL	Municipal Drinking Water License
MECP	Ministry of Environment, Conservation and Parks
MNR	Ministry of Natural Resources
NHIC	Natural Heritage Information Centre
OP	Official Plan
PIC	Public Information Centre
PPS	Provincial Policy Statement
PTTW	Permit to Take Water
SARA	Species at Risk Act
SON	Saugeen Ojibway Nation
SVCA	Saugeen Valley Conservation
TDWS	Tiverton Drinking Water System
WHPA	Wellhead Protection Area
ZBL	Zoning By-law

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MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT FOR EXPANSION OF TIVERTON DRINKING WATER SYSTEM

ENVIRONMENTAL SCREENING REPORT

1.0 INTRODUCTION

1.1 Introduction

The Municipality of Kincardine (The Municipality) initiated a Municipal Class Environmental Assessment (MCEA) in February of 2024 to investigate potential water supply needs within the Village of Tiverton. The study process followed the procedures set out in the MCEA document (MCEA), dated March 2023, as amended in 2007, 2011, 2015, and 2023 (Municipal Engineers Association, 2023). B. M. Ross and Associates Limited (BMROSS) was engaged to conduct the MCEA investigation on behalf of the Municipality.

The Tiverton Drinking Water System (TDWS) services 372 connections from a groundwater supply. The Municipality completed a Water & Wastewater Servicing Master Plan Update in June 2023, which identified that an expansion of the existing TDWS is required to accommodate future development within the urban settlement area. This MCEA investigated options for increasing the existing drinking water supply. The purpose of this report is to document the MCEA planning, and design process followed for this project. The report includes the following major components:

- An overview of the general project area.
- A review of the existing system and anticipated future needs
- A description of the alternative solutions considered for resolving the defined problem(s).
- A synopsis of the decision-making process conducted to select a preferred alternative.
- A detailed description of the preferred alternative.

1.2 Municipal Class Environmental Assessment (MCEA) Process

Municipalities must adhere to the Environmental Assessment Act of Ontario (EA Act) when completing road, sewer, or waterworks activities. The EA Act allows the use of the MCEA process for most types of municipal infrastructure projects. The MCEA is an approved planning document which describes the process that proponents must follow in order to meet the requirements of the EA Act. The MCEA approach allows for the evaluation of alternatives to a project, and alternative methods of carrying out a project, and identifies potential environmental impacts. The process involves mandatory requirements for consultation. MCEA studies are a method of dealing with projects that include the following common characteristics:

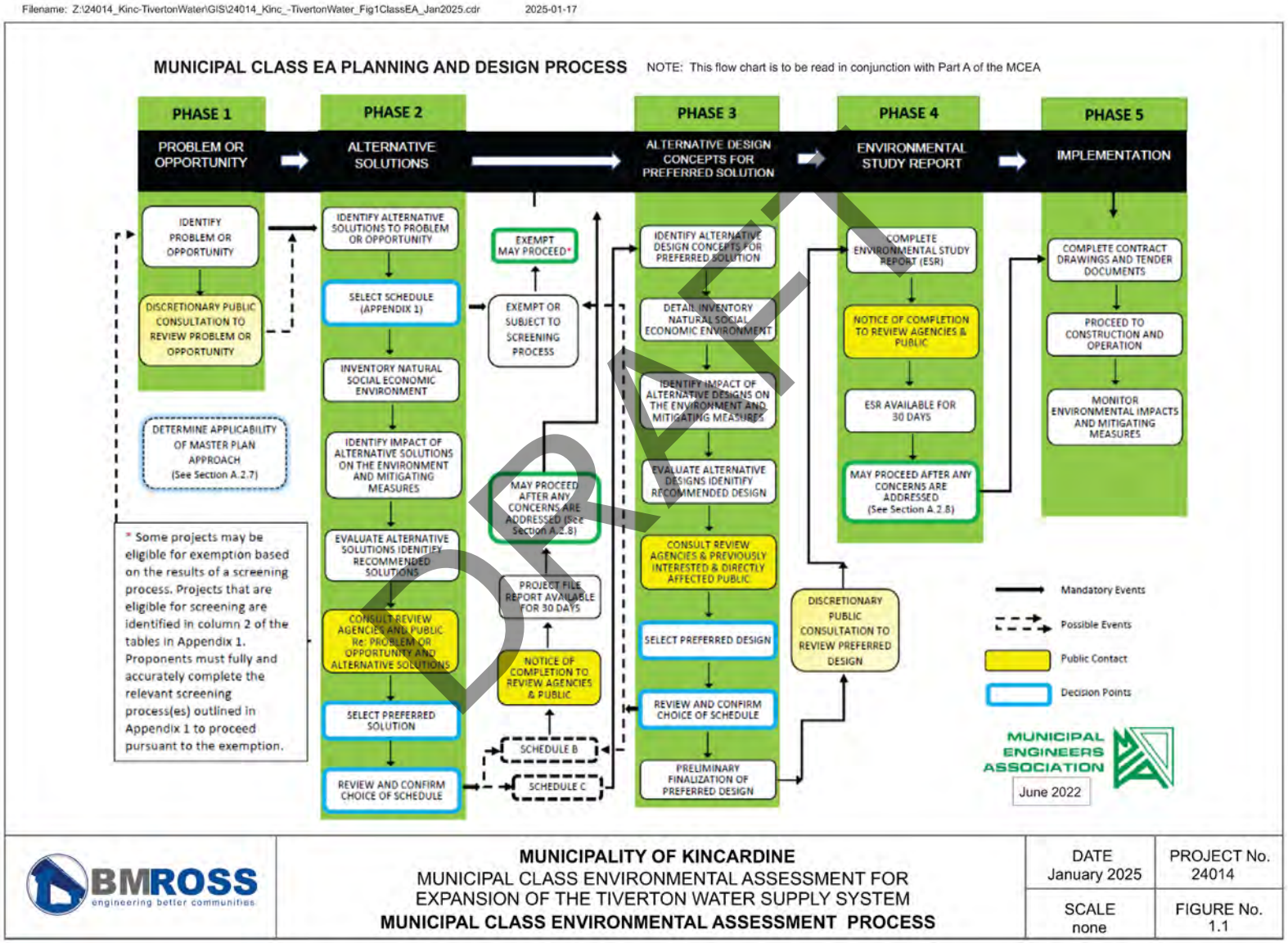
- They are recurring.
- They are usually similar in nature.
- They are usually limited in scale.
- They have a predictable range of environmental effects.
- They are responsive to mitigating measures.

If a MCEA planning process is followed, a proponent does not have to apply for formal approval under the EA Act. The development of this investigation has followed the procedures set out in the MCEA. Figure 1.1 presents a graphical outline of the procedures. The MCEA planning process is divided into the following phases:

- Phase 1 – Problem identification.
- Phase 2 – Evaluation of alternative solutions to the defined problems and selection of the preferred solution.
- Phase 3 – Identification and evaluation of alternative design concepts and selection of a preferred design concept.
- Phase 4 – Preparation and submission of an Environmental Study Report (ESR) for public and government agency review.
- Phase 5 – Implementation of the preferred alternative and monitoring of any impacts.

Throughout the MCEA process, proponents are responsible for having regard for these principles of environmental planning:

Figure 1.1 Municipal Class Environmental Assessment Process



- Consultation with affected parties throughout the process.
- Examination of a reasonable range of alternatives.
- Consideration of effects on all aspects of the environment.
- Application of a systematic methodology for evaluating alternatives.
- Clear documentation of the decision-making process to permit traceability.

1.3 Classification of Project Schedules

Projects are classified into different project schedules according to the potential complexity and the degree of environmental impacts that could be associated with the project. The following schedules are included in the MCEA process:

- Exempt and exempt following completion of the archaeological potential screening and/or collector road screening.
- Schedule B – Projects that are approved following the completion of a screening process that incorporates Phases 1 and 2 of the MCEA process as a minimum.
- Schedule C – Projects that are approved subject to following the full MCEA process.

The MCEA process is self-regulating, and municipalities are expected to identify the appropriate level of environmental assessment based on the project and the alternatives they are considering.

1.4 Mechanism to Request a Higher Level of Environmental Assessment

Under the terms of the MCEA, the requirements to prepare an Individual Environmental Assessment for approval are waived. However, if it is found that a project going through the MCEA process has associated with it significant environmental impacts, a person/party may request that the proponent voluntarily elevate the project to a higher level of environmental assessment. A request may be made to the Ministry of Environment, Conservation and Parks (MECP) for an order requiring a higher level of study, or that a condition be imposed on the grounds that the requested order may prevent, mitigate, or remedy adverse impacts on Aboriginal and treaty rights. Requests made to the Ministry on other grounds will not be considered.

2.0 BACKGROUND REVIEW

2.1 Methodology

A background review was carried out to obtain a general characterization of the project study area and to identify factors that could influence the selection of alternative solutions to the defined problem.

The background review for this MCEA process incorporated the following activities:

- Assembly of information on the existing infrastructure and the environmental setting.
- Identification of infrastructure deficiencies within the system.
- Preliminary assessment of the defined deficiencies and potential remediation.

A desktop analysis of the project setting was completed as part of the background review process. The following represents the key sources of information for this analysis:

- Bruce County GIS Mapping Services (Bruce County GIS, 2024).
- Government of Canada, Species at Risk Public Registry website (Government of Canada, 2017).
- Ministry of Natural Resources and Forestry, Natural Heritage Information Centre website (Ministry of Natural Resources and Forestry, 2021).
- Atlas of Breeding Birds of Ontario website (Bird Studies Canada, 2009).
- Saugeen Valley Source Protection Area, Saugeen Valley Source Protection Area Assessment Report (Saugeen Valley Source Protection Area, 2015).
- County of Bruce, Official Plan (OP) and Zoning By-Law (County Of Bruce, 2024).
- Municipality of Kincardine, Official Plan (OP) (Municipality of Kincardine, 2021)and Zoning By-Law (Municipality of Kincardine, 2012).

2.2 EA Framework

2.2.1 General MCEA Approach

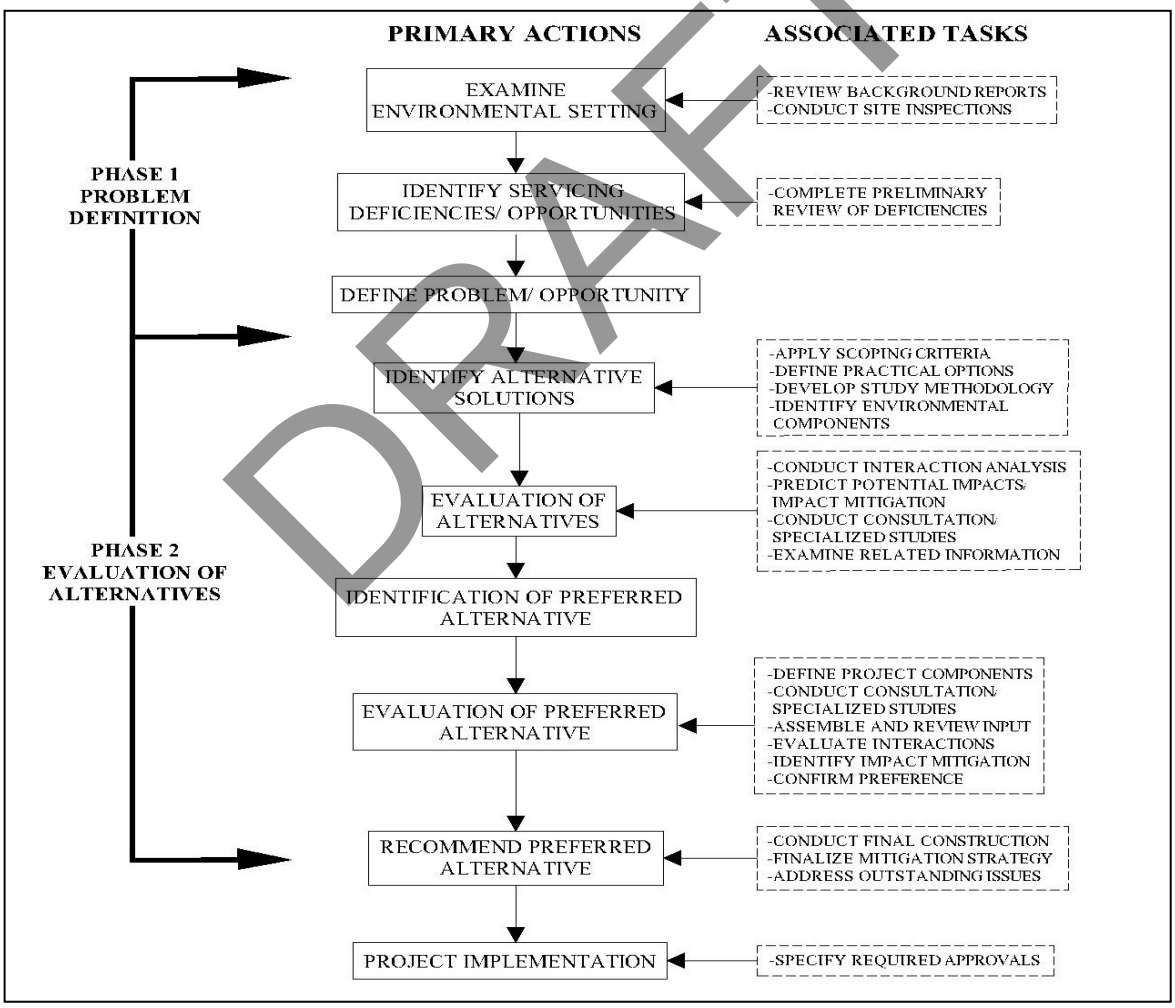
The Municipality of Kincardine initiated a formal MCEA process in May 2024 to investigate the water supply deficiencies within the village of Tiverton. It was identified at the outset of the MCEA process that the proposed project may include components that would categorize the work as a Schedule B activity (i.e., establish a well at a new municipal well site, install new wells or deepen existing wells or increase pump capacity of existing wells at an existing municipal well site where the existing rated yield will be exceeded, or construct a new booster pumping station at a new site). The assessment followed the environmental screening process prescribed for Schedule B projects in the

MCEA document. The Schedule B screening process incorporates the following primary components:

- Background review.
- Problem/opportunity definition.
- Identification of practical solutions.
- Evaluation of alternative solutions.
- Selection of a preferred alternative solution and implementation.

Figure 2.1 illustrates the general tasks associated with the screening process. The following section of this report documents the findings associated with each stage of the assessment.

Figure 2.1 MCEA Process and Tasks for Schedule B Activities



2.3 General Description of the Study Area

The Municipality of Kincardine is located within the central-western portion of the County of Bruce. The Municipality shares a boundary with the Township of Huron-Kinloss to the south, the Town of Saugeen Shores to the north, and the Municipality of Brockton to the east. West of the Municipality is Lake Huron. The Municipality is comprised mainly of agricultural land, with Kincardine serving as its main urban center. It also features several small villages and hamlets, including Tiverton, Inverhuron, and Underwood. In 2021, the population of the Municipality was 12,268 people (Statistics Canada, 2021). The village of Tiverton is located north of the town of Kincardine and south of Port Elgin, along Highway 21.

Figure 2.2 illustrates the location of the Municipality of Kincardine and Tiverton.

2.4 Project Study Area Description

The community of Tiverton is situated at the intersection of Bruce Road 15 (Main Street), and Highway 21 (King Street). Highway 21 provides the main entry and exit points to the community. The streets within the community follow a grid street plan creating a rectangular-shaped community. There is a small commercial core area along Highway 21 (King Street) and the village is primarily comprised of residential dwellings. The residential neighborhoods are low-density, primarily consisting of single detached homes.

Tiverton is serviced by the TDWS, which consists of three municipal groundwater supply wells, treatment facilities, a distribution system, and a standpipe for storage. It serves a population of 743 people.

For the purpose of this study, there are two study areas: the community of Tiverton and the potential site of a connection point to the existing Kincardine Drinking Water System (KDWS) and new Booster Pumping Station (BPS). The study areas are shown in Figure 2.3. The connection point to the KDWS is situated at the intersection of Albert Street and Bruce Road 15.

The potential site for a BPS is 3194 Bruce Road 15 or MacIntyre Park East. The Municipally owned land includes a small playground on the eastern side, a small former ball diamond, mowed open parkland, and driveway access from Bruce Road 15. The northern portion of the property is forested, featuring a mix of paper birch, poplar, cedar, silver birch, dogwood and sugar maple. Other vegetation observed at the site include chicory, Queen Anne's lace, and poison ivy. Photographs showing 3194 Bruce Road 15 are included as Figure 2.4. The property is within the urban boundary of Lakeshore Settlement Area.

Figure 2.2 Location of Tiverton, Municipality of Kincardine

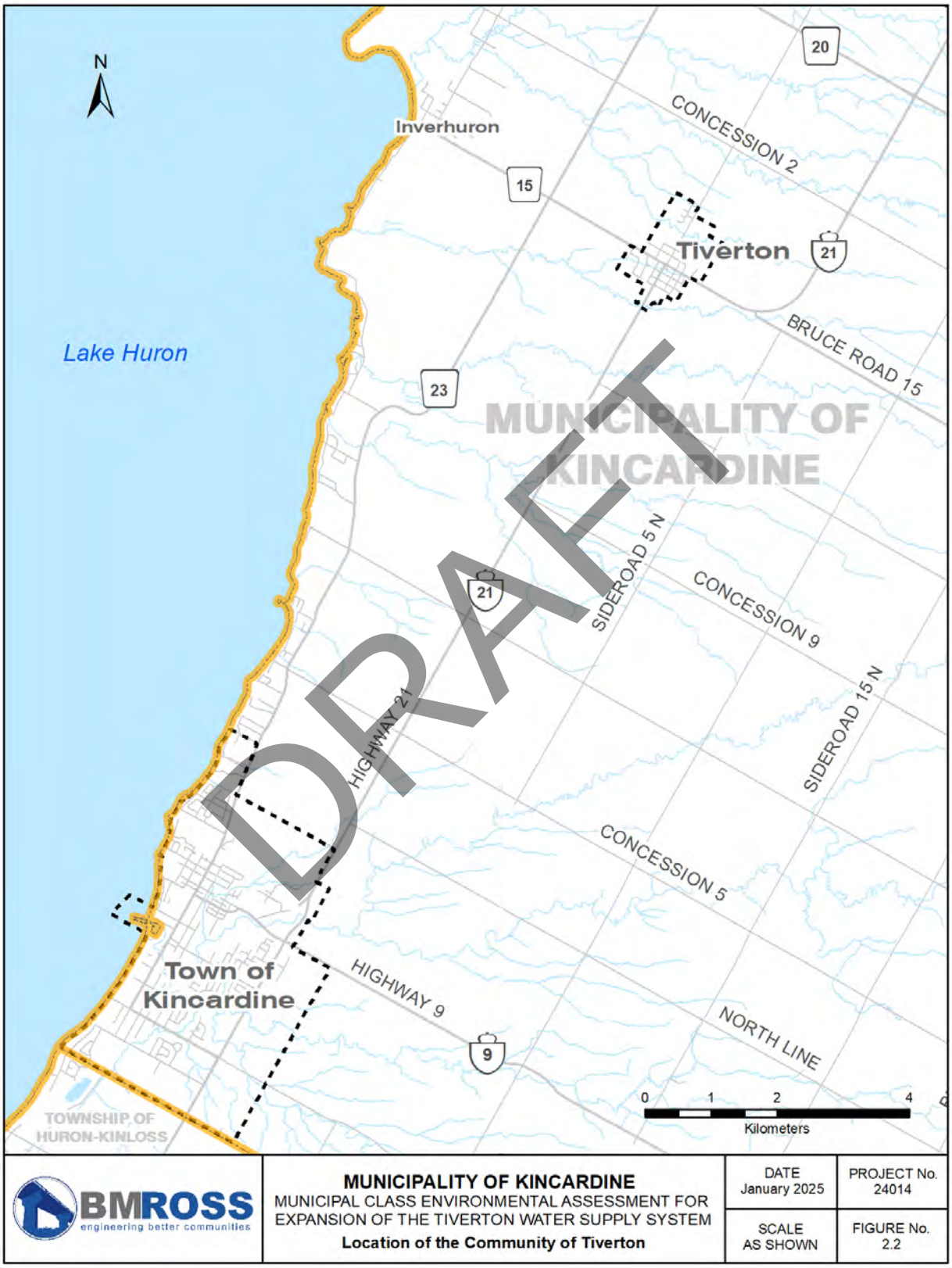


Figure 2.3 Project Study Area

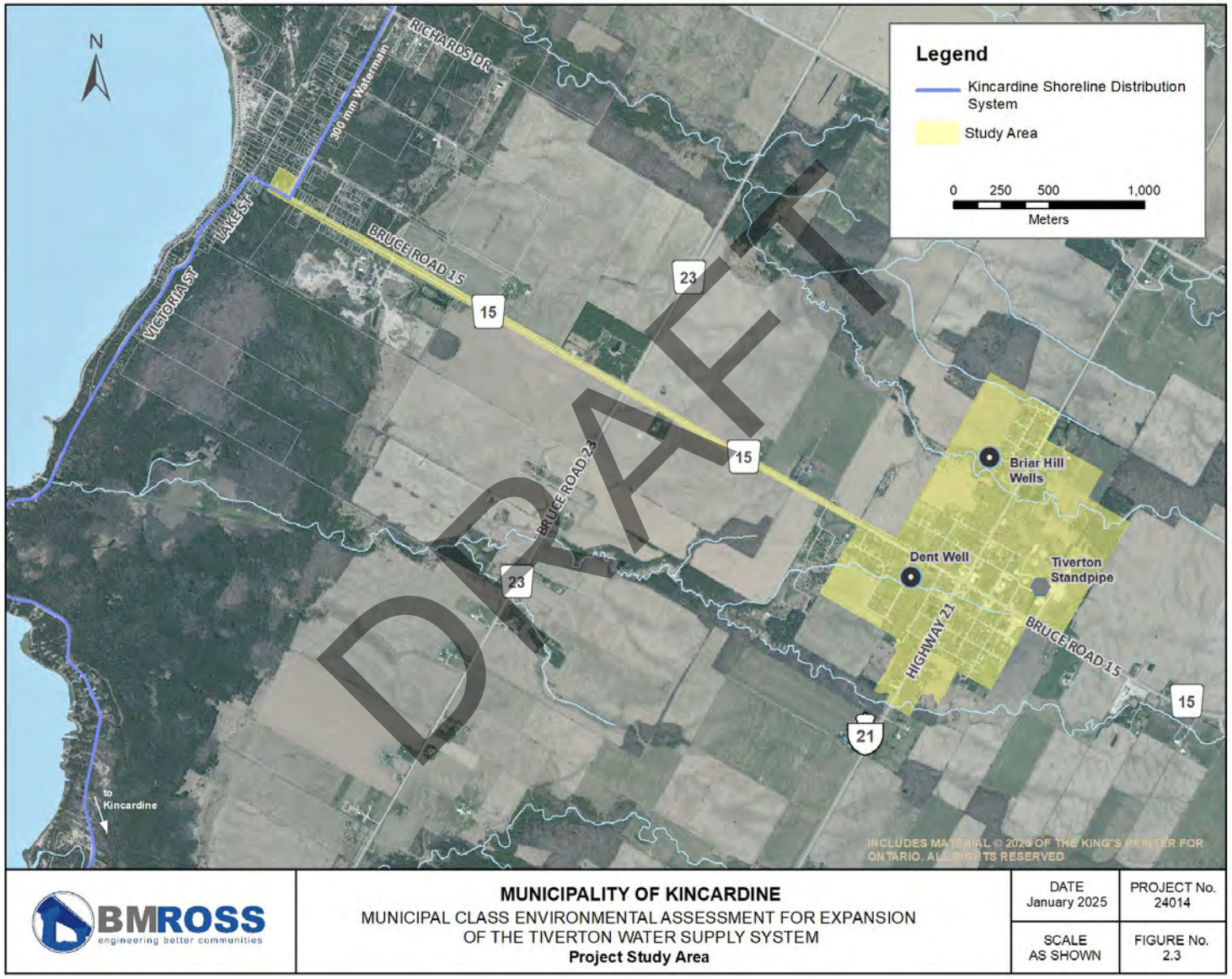


Figure 2.4 Photos of 3194 Bruce Road 15, Looking East and West

2.5 Environmental Setting

2.5.1 Significant Natural Areas

The study areas include the urban areas of Tiverton and a site within Inverhuron. A review of sensitive natural heritage features in the vicinity of the project areas was carried out through the course of the MCEA process. The Ontario Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) database was consulted to identify significant features in the general vicinity of the study area.

From this database, the Inverhuron Provincial Park (IPP) was identified as a significant natural area within the general vicinity of the study area. The Park is located approximately 6 km northwest of the potential BPS site in Inverhuron. The park is a seasonal campground, owned and operated by Ontario (Ontario Parks, 2025). Potable water in the park is supplied by the KDWS (BMROSS, 2023). Figure 2.5 illustrates the natural features located within the vicinity of the site.

2.5.2 Areas of Natural and Scientific Interest (ANSI)

The MCEA process considered the presence of areas of natural or scientific interest within or near the study area. ANSIs are provincially or regionally significant landscapes that contain unique geological, ecological, or biological features. These areas represent critical habitats, rare ecosystems, or scientific research opportunities and are protected under provincial policies to ensure their conservation (Government of Ontario, 2024). There are two ANSI features located within 15 km of the site including:

- Glammis Bog is a provincially significant Life Science ANSI located 14.5 kilometers east of the study area. The Glammis Bog contains diverse wildlife species and is a Class 3 Wetland including Mixed Wader Nesting Colony and provides habitat to aquatic and terrestrial life.
- Scott's Point is a provincially significant life science ANSI located 12.4 kilometres northwest of the study area.

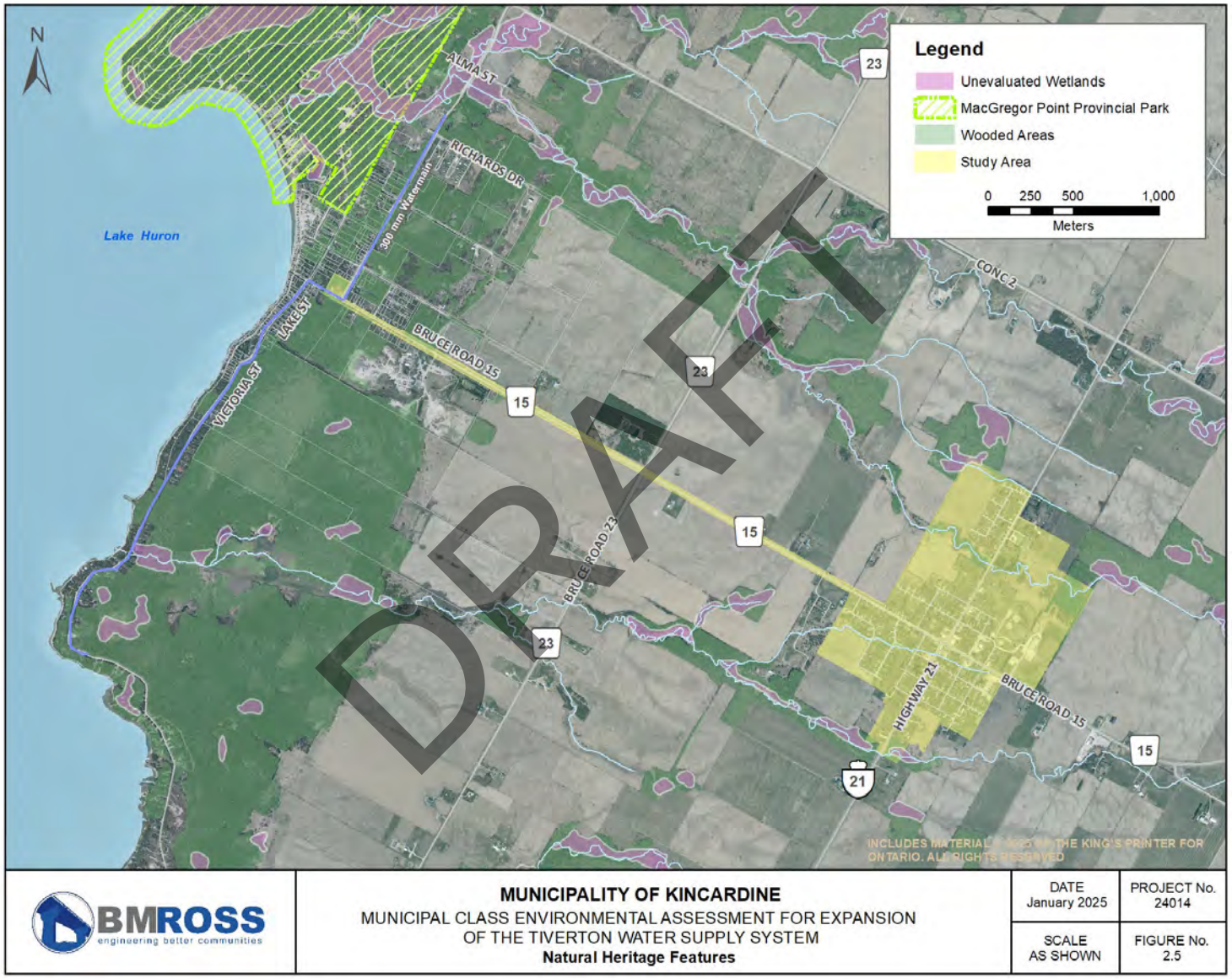
Given the distance from the project study area to these features, impacts on the above-listed ANSI are not anticipated.

2.5.3 Aquatic Habitat

The project area is located within the management area regulated by the Saugeen Valley Conservation Authority (SVCA) (Saugeen Valley Conservation Authority, 2018).

The Tiverton Creek is located south of the community, flowing from east Tiverton to the southwest draining into Lake Huron at the southern end of Inverhuron. The creek is a cold-water stream. There are several unnamed branches associated with Tiverton Creek, one of which intersects the southern portion of the village community. There are a variety

Figure 2.5 Natural Heritage Features



of fish species present in the watercourse including but not limited to Rainbow Trout, Common Shiner, Northern Redbelly Dace, and Brown Trout

In the northern portion of Tiverton, there is an unnamed tributary of the Little Sauble River. This creek is a cold-water stream. It has been documented as being a habitat for a wide variety of fish species, including but not limited to Rainbow Darter, Creek Chub, and White Sucker.

The proposed BPS site at 3194 Bruce Road 15 does not have any aquatic habitat within the project lands. The closest aquatic habitat is the Little Sauble River which is located over 550 metres away. Given the distance from the property to the Little Sauble River there are no anticipated impacts to the aquatic habitat.

2.6 Species at Risk

A desktop evaluation of the presence of significant species and their associated habitats within the area of the intersection has been incorporated into the project planning process. The protection for species at risk and their associated habitats is directed by the following federal and provincial legislation:

- The Federal Species at Risk Act, 2002 (SARA) provides for the recovery and legal protection of listed wildlife species and associated critical habitats that are extirpated, endangered, threatened or of special concern and secures the necessary actions for their recovery on lands that are federally owned. Only aquatic species and bird species included in the Migratory Bird Convention Act (1994) are legally protected on lands not federally owned; and
- The provincial Endangered Species Act, 2007 (ESA) provides legal protection of endangered and threatened species and their associated habitat in Ontario. Under this legislation, measures to support their recovery are also defined.

A number of sources were consulted for information related to the occurrence of species at risk and their associated habitats. The sources are listed below. A summary of federally and provincially recognized species with the potential to be present within the project study area is listed in Table 2.1.

- Ministry of Natural Resources and Forestry, Species at Risk by Area.
- Natural Heritage Information Centre, Make a Natural Heritage Map.
    - The 1 km NHIC squares corresponding with the study area in Tiverton are 17MK5702, 17MK5701,17MK5601, and 17MK5602
    - The 1 km NHIC squares corresponding with the study area in Inverhuron are17MK5303
- Environment Canada, Species at Risk Public Registry. SARA Schedule 1 Species List (Government of Canada, 2017).
- Ontario Reptiles and Amphibian Atlas (Ontario Nature, 2020).

    - The 10 km square corresponding with the study area is Square 17MK50.
- Ontario Breeding Bird Atlas (Birds Canada, 2001-2005).
    - The 10 km square corresponding with the study area is Square 17MK50.
- Ontario Butterfly Atlas (Toronto Entomologist Associate, 2018).
    - The 10 km square corresponding with the study area is Square 17MK50.
- Atlas of the Mammals of Ontario (Federation of Ontario Naturalists, 1994).
- iNaturalist
    - Observations in the Tiverton Area

Table 2.1 Species at Risk Within General Study Area

Type	Species Common Name	Species Scientific Name	Federal Status	Provincial Status	Likelihood of Presence or Impact to Habitat
Bird	Bank Swallow	*Riparia riparia*	Threatened	Threatened	Low
Bird	Barn Swallow	*Hirundo rustica*	Threatened	Threatened	Low
Bird	Bobolink	*Dolichonyx oryzivorus*	Threatened	Threatened	Low
Bird	Canada Warbler	*Cardellina canadensis*	Threatened	Special Concern	Potential
Bird	Chimney Swift	*Chaetura pelagica*	Threatened	Threatened	Low
Bird	Common Nighthawk	*Chordeiles minor*	Threatened	Special Concern	Low
Bird	Eastern Meadowlark	*Sturnella magna*	Threatened	Threatened	Potential
Bird	Eastern Wood-Pewee	*Contopus virens*	Special Concern	Special Concern	Potential
Bird	Eastern Whip-poor-will	*Antrostomus vociferus*	Threatened	Threatened	Potential
Bird	Grasshopper Sparrow	*Ammodramus savannarum pratensis*	Special Concern	Special Concern	Low

Type	Species Common Name	Species Scientific Name	Federal Status	Provincial Status	Likelihood of Presence or Impact to Habitat
Bird	Least bittern	*Lxobrychus exilis*	Special Concern	Special Concern	Potential
Bird	Olive-sided flycatcher	*Contopus cooperi*	Special Concern	Special Concern	Low
Bird	Wood Thrush	*Hylocichla mustelina*	Threatened	Special Concern	Potential
Insect	Monarch	*Danaus plexippus*	Endangered	Special Concern	Low
Mammal	Eastern Small-footed Myotis	*Myotis leibii*	-	Endangered	Low
Mammal	Little Brown Myotis	*Myotis lucifugus*	Endangered	Endangered	Low
Mammal	Northern Myotis	*Myotis septentrionalis*	Endangered	Endangered	Low
Mammal	Tri-coloured Bat	*Perimyotis subflavus*	Endangered	Endangered	Low
Plant	Black Ash	Fraxinus nigra	Not on Schedule 1	Endangered	Potential
Plant	Dwarf Lake Iris	*Iris lacustris*	Special Concern	Special Concern	Potential
Reptile	Eastern Milksnake	*Lampropeltis triangulum*	-	Special Concern	Low
Reptile	Eastern Ribbonsnake	*Thamnophis sauritus*	Special Concern	Special Concern	Low
Reptile	Midland Painted Turtle	*Chrysemys picta marginata*	-	Special Concern	Potential
Reptile	Northern Map Turtle	*Graptemys geographica*	Special Concern	Special Concern	Low
Reptile	Queensnake	*Regina septemvittata*	Endangered	Endangered	Low

Type	Species Common Name	Species Scientific Name	Federal Status	Provincial Status	Likelihood of Presence or Impact to Habitat
Reptile	Snapping Turtle	*Chelydra serpentina*	Special Concern	Special Concern	Potential

The above table is based on potential habitats and occurrences throughout the general study area. This large area includes a wide variety of environs that include terrestrial and aquatic habitats. Vegetation removal within forested or open areas and along watercourses could potentially impact species. Impacts on the natural environment will be assessed later during the evaluation of alternatives on a site-specific basis. Depending on the selected option, mitigation measures to avoid or minimize harm may need to be implemented to avoid impacts to the listed species.

A site visit at 3194 Bruce Road 15 was conducted on May 21, 2024. The majority of the site is currently utilized for parkland and is regularly mowed. The northern portion of the site is treed, primarily consisting of poplar, cedar, sugar maple, dogwood, paper birch and silver birch. There were no were species at risk observed during the site visit.

2.7 Breeding Birds

The Atlas of Breeding Birds of Ontario (2001-2005) was consulted to identify the bird species with confirmed, probable, and possible breeding habitats in proximity to the study area. The study area of both Tiverton and Inverhuron is located within the 100 km^2 area covered in the Atlas as Square 17MK50, in Region 8: Bruce. Within the square, a total of 32 birds are confirmed to be breeding within the area, including species at risk such as Canada Warbler, Bank Swallow, Chimney Swift, and Barn Swallow. An additional 49 species were categorized as having probable breeding status and 11 are considered to have possible breeding status in the area (Bird Studies Canada, 2009).

The survey area includes key habitats for identified species, such as forests (in all stages of growth), riverine areas, and agricultural areas, The project area forms a very small portion of this region and includes urban areas with significant disturbance.

2.8 Source Water Protection

The intent of the Clean Water Act (CWA), 2006, is to "*protect existing and future drinking water*" sources in Ontario. The Act established source protection areas and regions, giving conservation authorities the duties and powers of a drinking water source protection authority. Focus on the development, implementation, monitoring, and enforcement of documentation, information, and policies related to source water protection is highlighted within this duty.

The Saugeen Valley Source Protection Assessment Report was consulted to determine if any areas of the study area have been identified as vulnerable or susceptible to

groundwater threats and issues. The study area falls within the Saugeen Valley Conservation Authority administrative boundary.

The Tiverton well supply consists of three bedrock wells known as Dent Well, Briar Hill Well No. 1, and No. 2. The Briar Well No. 2 was constructed in 2006 and is used in conjunction with Briar Well No.1, which was constructed in 1971v (Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region, 2015). The Briar Well system is located at the west end of Conquergood Ave and Main. The Dent Well was constructed in 2003 and is located on Smith Street south of Main Street. All the wells within Tiverton are non-ground water under direct influence (non-GUDI). The raw water in Tiverton wells has naturally occurring fluoride, iron, and arsenic. The Well Head Protection Areas (WHPA) for the Dent and Briar Hill wells extend east through Tiverton into the agricultural lands (see Figure 2.6). Vulnerability scores range from 2 to 10 within the urban area of Tiverton. There are no significant drinking water threats within the Briar and Dent WHPAs A-D (Saugeen Valley Source Protection Area, 2015).

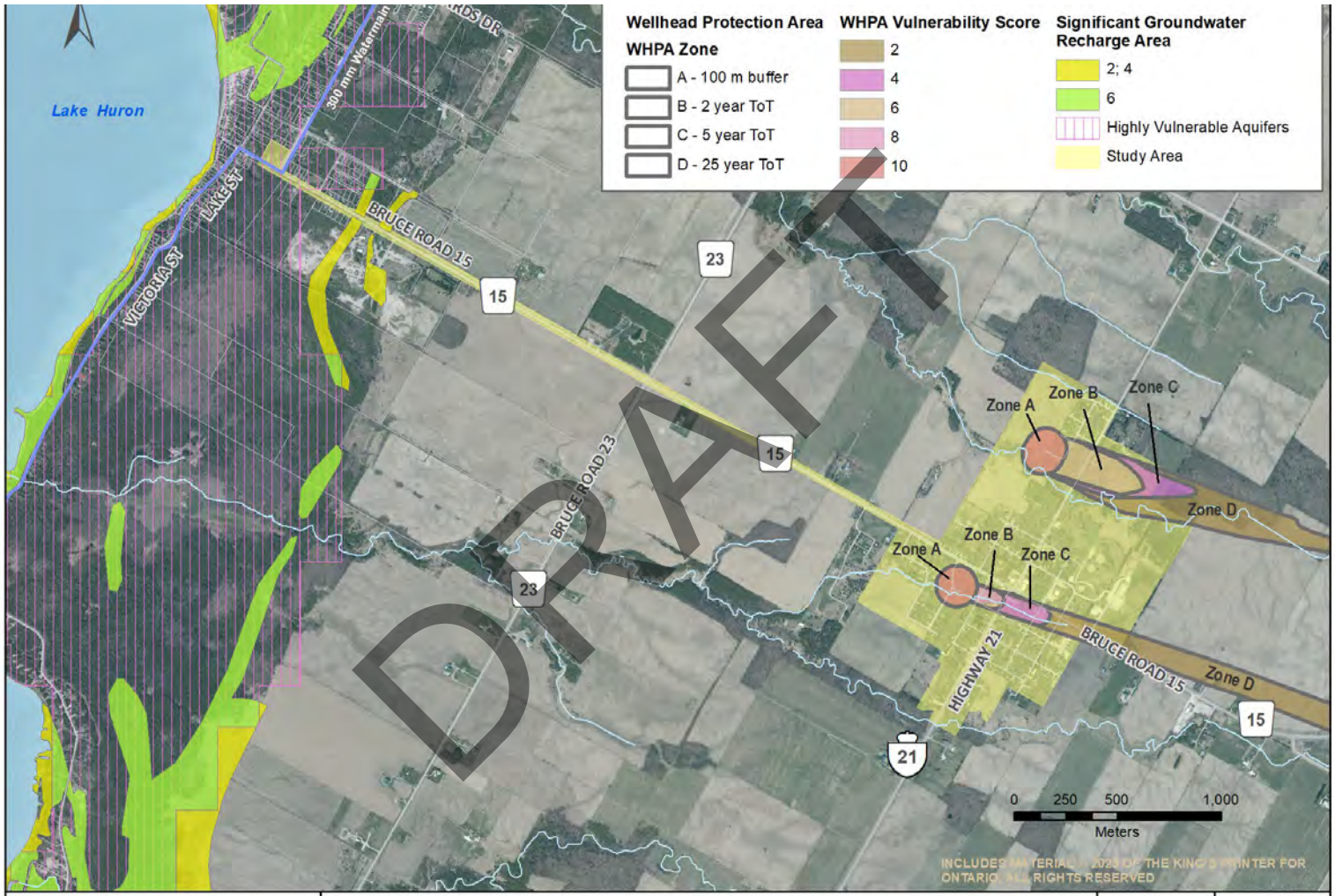
The Inverhuron BPS site of 3194 Bruce Road 15 is not located within any Intake Protection Zones or WHPA. The site is located within a Highly Vulnerable Aquifer.

2.9 Climate Change

As part of the MCEA process, the impacts associated with climate change need to be evaluated. Some of the phenomena associated with climate change that will need to be considered include:

- Changes in frequency, intensity, and duration of precipitation, wind, and heat events.
- Changes in soil moisture.
- Changes in sea/lake levels.
- Shifts in plant growth and growing seasons.
- Changes in the geographic extent of species ranges and habitats.

Figure 2.6 Source Water Protection Areas in Vicinity of Study Area



There are two approaches that can be utilized to address climate change in project planning. These are as follows:

I. Climate Change Mitigation – reducing a project's impact on climate change. Strategies may include:
    a. Reducing the impact of greenhouse gas emissions related to the project.
    b. Alternative method to completing the project that would reduce adverse contributions to climate change.

II. Climate Change Adaption – increasing the projects and local ecosystems' resilience to climate change. Strategies may include:
    a. Reducing vulnerability to climate-related severe weather events.
    b. Alternative methods of carrying out the project that would reduce negative impacts associated with climate change.

Through the evaluation of alternatives to the MCEA process, a consideration of each of these approaches is included and considered in the final determination of the preferred approach to completing a project.

2.10 Adjacent Land Uses

Adjacent land uses to the study area within Tiverton include primarily residential properties. The Dent well is located within a residential area south of Main Street. The Briar Hill wells is surrounded by residential and future development lands. The potential BPS site at 3194 Bruce Road 15 is adjacent to residential, with forest land designated as significant woodland located south across Bruce Road 15. The lands adjacent to Bruce Road 15 are primarily residential within Inverhuron, and agricultural east to Tiverton.

2.11 Planning Policies

2.11.1 Provincial Planning Policy

The Provincial Policy Statement, 2024 (PPS) provides policy direction for land use planning and development across the province. Local planning policies and land use decisions must conform with the policies of the PPS. The PPS intends to promote long-term prosperity, environmental health, public safety, and social well-being through efficient land use and development patterns (Ministry of Munical Affairs and Housing, 2024).

With respect to municipal infrastructure projects, there are a number of policies within the PPS that need to be considered. The first section of the PPS identifies policies directing land use to achieve efficient and resilient development and land use patterns.

The 2024 PPS provides planning for people and homes, stating creation of a new official plan (OP) and updating of subsequent versions of OP, sufficient land shall be made

available to accommodate an appropriate range and mix of land uses to meet project needs for at least a 20-year planning horizon and a maximum of 30 years.

The PPS emphasizes the importance of ensuring an adequate and diverse housing supply to meet the needs of current and future residents in a regional market area. This involves two key components.

- 15-Year Residential Growth Capacity- municipalities must maintain sufficient lands that are designated and available for residential growth for at least 15 years. This includes ensuring that these lands are appropriately planned for new development, such as through official plans and zoning
- 3-Year Immediate Supply- A minimum three-year supply of residential units must also be ensured. These units are to be appropriately zoned and served (or capable of being serviced) and part of draft-approved or registered plans of subdivision to facilitate prompt development

This approach ensures that housing needs are met not only in the long term but also in the short term, supporting population growth, market demand, and economic sustainability. It also aligns with the broader objectives of the PPS to promote efficient land use and well-managed growth. Growth is to be concentrated in the settlement areas, and where applicable strategic growth areas, including major transit stations. Land use patterns within settlement areas should be based on densities and mix of land uses which efficiently use land and resources; optimize existing and planned infrastructure and public service facilities; support active transportation; transit and freight supportive

Section 3.1 of the PPS is dedicated to infrastructure and public services facilities. The policies in this section of the PPS promote the efficient provision of public infrastructure and service facilities to accommodate forecasted growth promptly, promote water and energy conservation, and accommodate future needs (3.6.1.a & 3.6.1.b). Planned infrastructure is to be financially viable over its life cycle and sufficient to meet existing and future needs. Additionally, infrastructure should support the effective and efficient delivery of emergency services and ensure public health and safety protection.

2.11.2 Land Use Planning

The Municipality of Kincardine Official Plan (OP) and Zoning By-Law (ZBL) were consulted to determine land use designations within the project study area and related planning policies.

The Kincardine OP aims to ensure adequate and efficient water supply systems for all areas of development within the municipality. To achieve this all redevelopment and new development in Tiverton will be required to connect to full municipal services.

Land use designations within the Tiverton study area include Residential, Natural Environment, Open Space, Institutional, Core Commercial, and Highway Commercial. The potential BPS in Inverhuron is designated as Shoreline Development.

In the Municipality of Kincardine ZBL, it is stated that public services and utilities such as pump stations and watermains can be installed in all zones. The zoning designations in Tiverton include Residential 1, Open Space, Institutional, Commercial, Planned Development, and Travel Trailer Park and Campground. The location of the proposed BPS at 3194 Bruce Road 15 is zoned Open Space.

2.12 Built Heritage Resources & Cultural Heritage Landscapes

An assessment of potential impacts on heritage resources, and cultural heritage landscapes must be undertaken in conjunction with the MCEA process. To aid in the determination of the potential for cultural heritage landscapes and built heritage resources, the Ministry of Citizenship and Multiculturism (MCM) provides a screening checklist. The checklist was completed, and it found low potential for built heritage or cultural heritage. Copies of the completed checklist are included in Appendix A.

2.13 Archaeological Resources

A Stage 1-2 Archaeological Assessment was conducted for the potential site of the BPS at 3194 Bruce Road 15, given its proximity to a water source (Lake Huron) and historic settlement area.

The Stage 1-2 assessment identified a potential for archeological resources due to the site's proximity (300m) to previously registered archeological sites (BbHj-4 and BbHj-44), historic mapping of thoroughfares (Bruce Road 15, Albert Road, Victoria Street, and John Street) and proximity to a primary water source (Lake Huron). The BPS site was surveyed utilizing standard test pit surveys at 5 m transect intervals. No archeological materials or sites were identified during the Stage 2 assessment and no further investigations were recommended.

Stage 1-2 Archaeological Assessment is included in the Appendix A

2.14 Air Quality, Dust and Noise

The study area includes residential properties, which are classified as sensitive receptors. The existing well sites, situated within residential neighborhoods, are not significant sources of noise.

For Inverhuron residents near the BPS connection site at 3194 Bruce Road 15, pumping operations may produce low-frequency sounds but it is anticipated such sounds will be non-significant as equipment would be housed inside the BPS building and the building will be setback from existing adjacent residences. A backup generator may produce noise occasionally during operation, but will be provided with an acoustical enclosure for sound attenuation to acceptable levels. Generator operation occurs infrequently and does not impact the surrounding area often or for prolonged periods.

2.15 Contaminated Sites

There are no known contaminated sites or former landfill sites located within or in close proximity to the study area.

2.16 Servicing, Utilities and Facilities

In the Tiverton, water is provided by the TDWS. Sewage servicing is provided by the municipal sewage system. Within the study area, electrical service is provided utilizing overhead lines. Telecommunication services are located within the road allowances in the study area. Natural gas utilities are also located within the road allowances.

At the BPS site of 3194 Bruce Road 15, water is provided by the KDWS. Sewage servicing in the Inverhuron area includes municipal sewage services and private septic systems. There is a sanitary forcemain within the Bruce Road 15 road allowance from Tiverton to Lake and Albert Streets. Within the BPS site, electrical service is provided utilizing overhead lines. Telecommunication services are located within the road allowances in the study area. Natural gas utilities are also available in the area.

3.0 TECHNICAL REVIEW

3.1 Existing Tiverton Drinking Water System

The TDWS consists of three, drilled, non-GUDI groundwater supply wells. The Briar Hill Well Site is located at 36 Conquergood Avenue and has two wells. The Dent well site is located at 6 Smith Street and has one well. The pumphouses for the wells include sodium hypochlorite disinfection systems, iron and manganese sequestering equipment, and standby generators. Briar Hill Well #2 is the newest well of the three, constructed in 2007. The rated capacity of the TDWS is limited by the Permit To Take Water (PTTW) value of approximately 775 m^3/day.

Briar Hill Well #1 is 150 mm in diameter, 93 m deep, and is rated at 6.1 L/s or 524.16 m^3/d. Briar Hill Well #2 is 220 mm in diameter, 93 m deep, and has a maximum water taking of 8.3 L/s or 720 m^3/day. The Dent Well (Dent Well #2) is 200 mm in diameter, 87 m deep, and is rated 4.6 L/s or 250 m^3/d. The system also includes approximately 8 km of watermain and a standpipe, servicing approximately 372 customers. The system is shown in Figure 3.1.

Raw water from all the wells exceeds the Ontario Drinking Water Quality Standard (ODWQS) for fluoride (1.5 mg/L) and the notification criteria for the local Medical Officer of Health for sodium (20 mg/L). At the Dent Well, arsenic levels are tested quarterly as concentrations have exceeded half of the Maximum Acceptable Concentration (MAC) of 0.01 mg/L. The raw water is also considered mineralized, with total dissolved solids exceeding 500 mg/L. Figure 3.2 shows the average arsenic, sodium and fluoride concentrations between 2014 and 2023 at Dent Well #2.

There is concern that if the MAC for arsenic is further decreased, or if arsenic levels rise, the levels at Dent will be in exceedance and require the installation of arsenic treatment equipment.

Recent examinations of the Briar Hill well casings have raised concerns regarding the condition of Briar Hill Well #2. The casing of the well is deteriorating and is at risk of failure. Additionally, the mechanical and electrical equipment (e.g., process piping and valves, MCC and instrumentation) at the site is reaching the end of its useful life.

Figure 3.1 Tiverton Drinking Water System

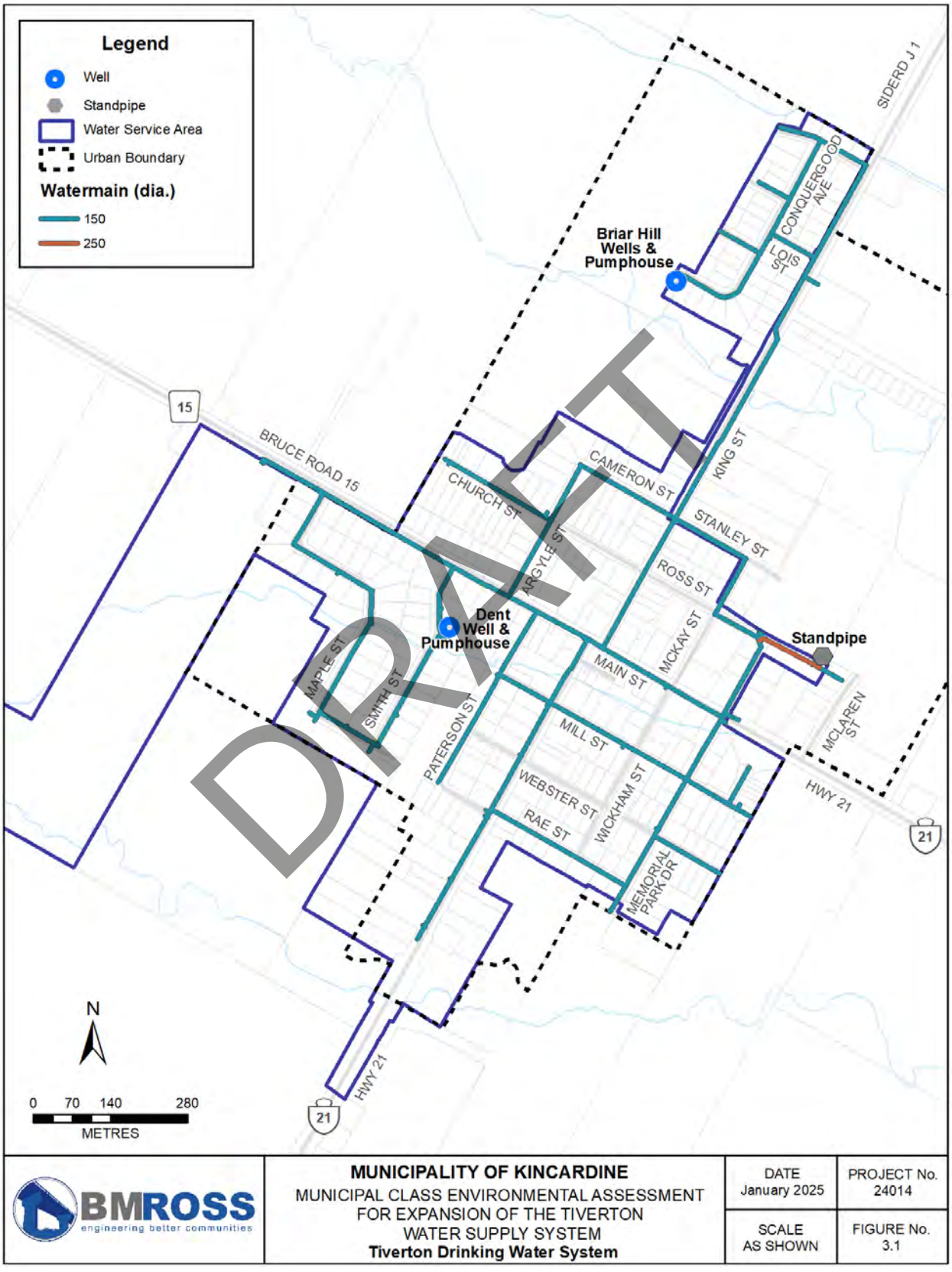
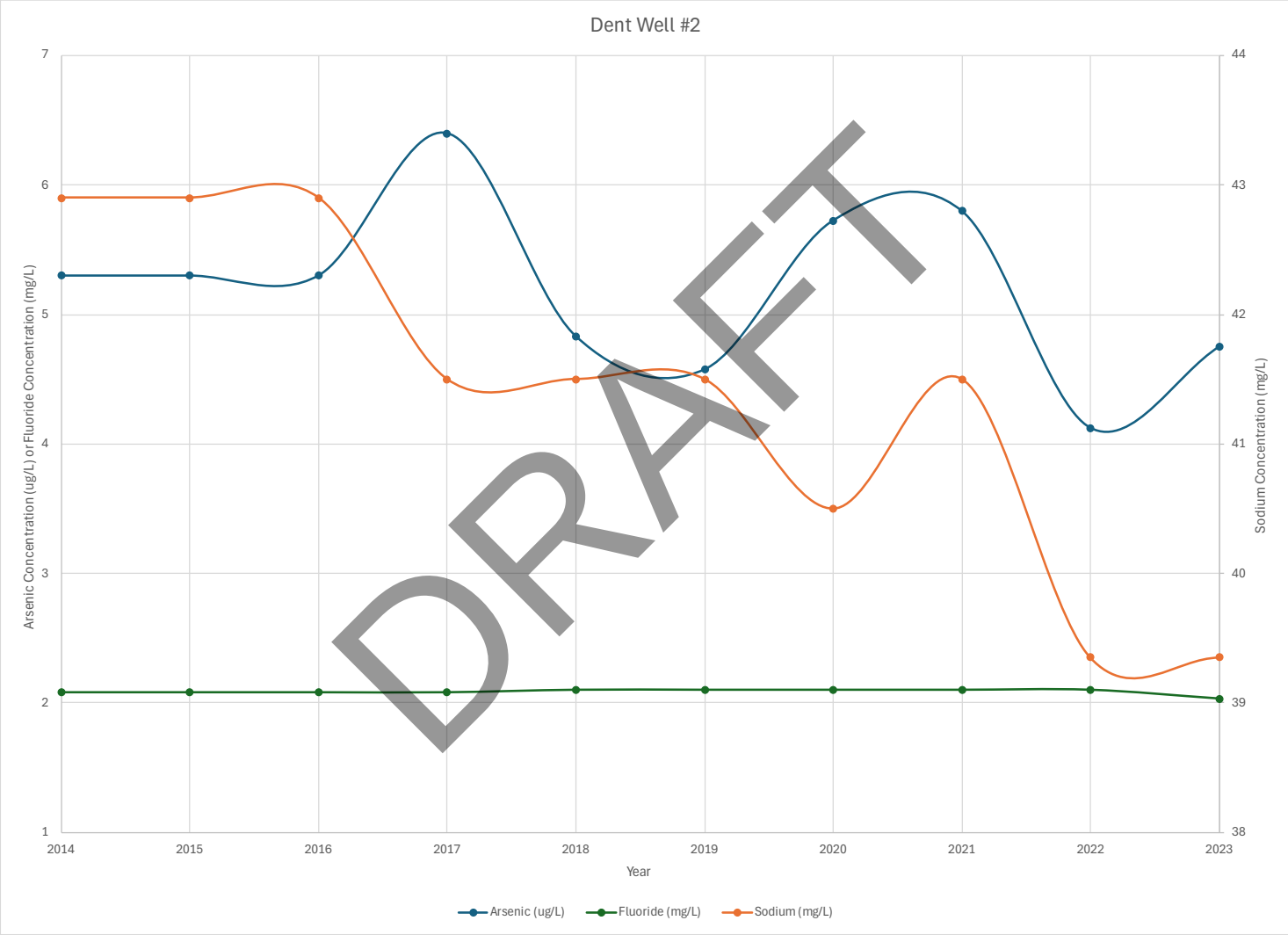


Figure 3.2 Arsenic, Sodium and Fluoride Concentrations at Dent Well #2



3.2 2023 Kincardine Water and Wastewater Servicing Master Plan

The 2023 Kincardine Water and Wastewater Servicing Master Plan examined the existing and future water demands for the TDWS. The Maximum Demand is currently 616 m^3/day and the total reserve capacity was 159 m^3/day with an maximum day usage of 1.66 m^3/day per Equivalent Residential Unit (ERU), meaning the demand from a typical single detached dwelling.

The Master Plan noted that for the Dent Well, water level data suggests that low water levels under maximum water taking are below the bottom of the well casing and likely below the upper water bearing zone. Generally, the water level in a bedrock well should not be maintained below the uppermost water bearing zone and preferably not below the base of the casing. Given this, it was suggested there is no additional capacity available from this well. Water level data for Briar Hill Well #2 suggested that the water level may also be below the base of the casing. The water level data for Briar Hill Well #1, which is used less frequently than Briar Hill Well #2, indicates interference occurs between the wells.

General comments regarding the TDWS from the Master Plan include:

- Indications are that Dent Well #2 is at capacity, but operating as expected.
- If the water level data after 2016 and the water taking data is accurate, the well efficiency of Briar Hill Well #2 has dropped significantly since 2006.

The Master Plan examined growth scenarios to project water demands over 20 years. It was noted that the current development commitments exceed the current capacity of the TDWS. Commitment demands equate to 424 m^3/day for 256 ERUs. Given the current capacity and demands, the system has an uncommitted reserve of - 265 m^3/day, or an over-commitment of approximately 160 ERUs. The Master Plan recommended an MCEA to evaluate alternatives to increase system capacity.

3.3 2024 Hydrogeological Review

In conjunction with the MCEA process, a review of the hydrogeological information for the wells was conducted by Wilson Associates. The study consisted of a review of existing wells and provision of an opinion on future groundwater yields for the community of Tiverton. A copy of the report is included in Appendix B.

The work included a review of the existing wells and local well records within the vicinity of the community. There are records of 74 water wells within approximately 2 km of Tiverton. On average, the wells are 60 m deep, with average yields of 95 L/min. Groundwater from the bedrock aquifer in the vicinity of Tiverton can be expected to be mineralized, with elevated total suspended solids, sulphate, iron and sodium.

Pumping data from these wells was used to determine theoretical yields within the area. The greatest potential for high yielding wells (i.e. greater than 454 L/min) was within the community of Tiverton and to the south and west. The potential for higher-yielding wells decreased north and northeast of the community. The majority of the wells theoretically capable of greater yields were within the upper 20 m of the bedrock. The data did not suggest greater yield with deeper drilling. The data suggests a 54% chance of achieving the required yield (greater than 200 L/min) needed to increase the overall Tiverton raw water supply to future projected needs. It may require two separate well field sites to achieve the desired yield.

The 2020 monitoring data for the Tiverton wells was assessed. The low water data for all three wells indicated that at times, the wells appear to be using most of the available drawdown. From this analysis and previous testing results, it indicates the likelihood of increasing the permitted withdrawal rates from the existing wells is low.

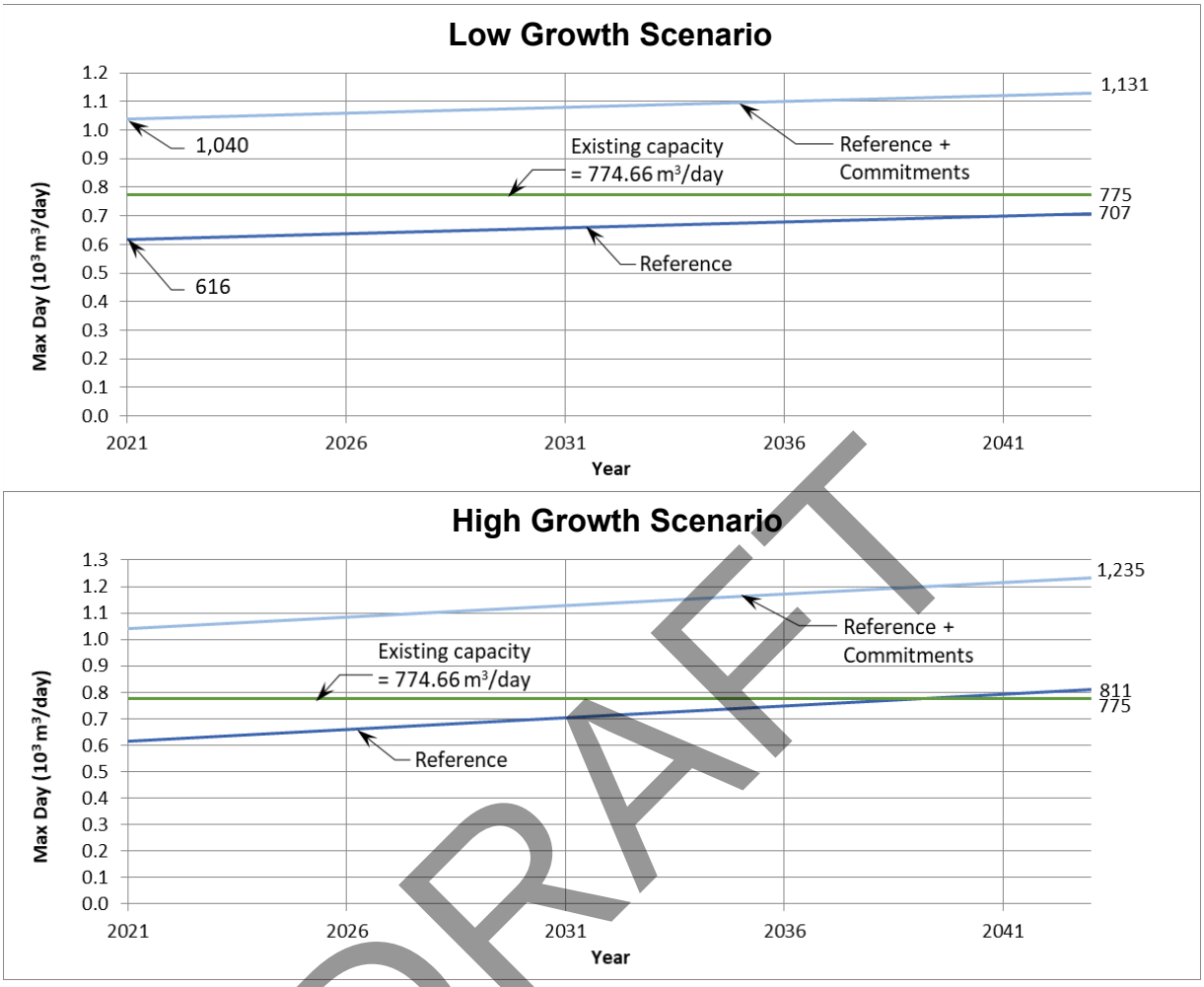
Data from previous pumping tests at the wells was also reviewed to provide a technical analysis on the potential for interference from additional wells. From data collected from well tests in 2003 and 2006, it was recommended that a higher yield well, such as a municipal well, be spaced approximately 700 m from existing municipal wells. It also recommended a minimum separation distance of 350 m from any domestic wells to avoid interference.

3.4 Future Demand

The 2023 Water and Wastewater Servicing Master Plan assessed development commitments and proposals in Tiverton and growth forecasts against the available capacity. There were 256 ERU of development commitments identified in the Master Plan, with additional lands available for future development. The reserve capacity calculations completed as part of the Master Plan for the TDWS identified a deficit in the uncommitted reserve capacity of – 265 m^3/day, equivalent to an overcommitment of 160 ERUs at 1.66 m^3/day per ERU. Additional supply will be required to support the committed developments, as well as any further development beyond such commitments.

The Master Plan also examined annual growth scenarios and forecasted water demands over time. Under the low growth scenario, though the supply is overcommitted as a result of approved development, the annual growth rate projects that actual demand would not exceed current supply capacity until several years beyond 2041. Under the high growth scenario, actual demand is projected to equal current supply capacity around 2039. Figure 3.2 shows the forecasted low and high growth scenarios, with commitments against the current capacity. It is important to note that increases in actual system demand will be a function by actual growth and development rates, which are expected to vary from year to year.

Figure 3.3 High and Low Growth Scenarios and Forecasted Annual Maximum Day Demand, Tiverton



4.0 MCEA PHASE 1 IDENTIFICATION OF PROBLEM

4.1 Phase 1 - Identification of the Problem/Opportunity

The first phase of the MCEA process is the identification and definition of the problem or opportunity to be addressed. The problem/opportunity statement is the framework for identifying practical and feasible alternative solutions.

The TDWS, as identified in the 2023 Water and Wastewater Master Plan, lacks adequate reserve capacity in terms of raw water supply for the proposed developments in Tiverton. The population of Tiverton is expected to increase over the next 20 years, with growth driven by the development the Bruce C site at Bruce Power. Furthermore, the condition of the well casing, electrical and mechanical equipment at the Briar Hill site is approaching the end of its life. The Master Plan recommended the Municipality undertake a Municipal Class Environmental Assessment to evaluate options for expanding the supply capacity of the TDWS.

For the purposes of this MCEA, the following problem statement has been identified based on the above-noted needs.

The 2023 Water and Wastewater Master Plan identified the Tiverton Drinking Water System is overcommitted and additional supply capacity is required to support future growth.

5.0 MCEA PHASE 2 – IDENTIFICATION OF ALTERNATIVES

5.1 Identification of Alternatives

The second phase of the MCEA process involves the identification and evaluation of feasible and practical alternative solutions to the defined problem. Once the feasible and practical alternatives are identified, the technical, economic, and environmental impacts associated with each implementation are evaluated. Mitigation measures that could lessen environmental impacts are also defined. A preferred solution or solutions is then selected.

5.2 Initial List of Alternative Solutions

Initially, a list of alternatives is generated as part of Phase 2 of the MCEA process. These alternatives are evaluated in terms of practicality and feasibility to produce a short list of practical alternatives for a more detailed evaluation and review. The long list of alternatives and their evaluation is summarized in Table 5.1.

Table 5.1 Long List of Alternative Solutions

Alternative	Initial Evaluation	Carried Forward for Further Evaluation (Yes or No)
1 – Expand existing or construct new groundwater wells	• May need to consider multiple well sites to achieve needed yields. • Potential to secure sufficient water supply for current and future needs. • Can connect new wells to existing water distribution system. • Will require drilling of a test well(s). • Potential for significant capital costs if multiple wells are required. • New wells will add new Source Water Protection areas. • Potential for highly mineralized raw water quality.	Yes – carry forward for further evaluation.
2 – Construct a BPS to connect to the Kincardine Drinking Water System at Inverhuron	• Sufficient supply capacity available in the KDWS to accommodate existing and future growth in Tiverton. • Would have significant capital costs. • Would require a BPS in Inverhuron and watermain to extend east on Bruce Road 15.	Yes – carry forward for further evaluation.

Alternative	Initial Evaluation	Carried Forward for Further Evaluation (Yes or No)
3 – Reduce demands/ limit community growth	• Would require a significant decrease in current water usage to provide enough capacity for committed development. • Would limit future growth opportunities in Tiverton. • Does not address the need for additional supply.	No – not considered practical or feasible given the current demand commitments.
4 - Do Nothing	• Considered if the impacts of other alternatives are too great or cannot be mitigated. • Does not address the need for additional supply. • Limits future growth opportunities. • Will be used as the benchmark for comparison of other alternatives.	Yes – must always be considered – Carry forward as Alternative 4.

From the preliminary analysis of the long list of alternatives, there are three alternatives carried forward for further evaluation:

- Alternative 1 – Expand existing or construct new groundwater supply
- Alternative 2 – Construct a connection to the Kincardine Drinking Water System at Inverhuron
- Alternative 4 - Do Nothing

Alternative 3 is not being carried forward for further investigation. This is because this alternative is not practical or feasible to implement. It is highly unlikely existing water demands and usage could be reduced enough to provide sufficient capacity for the committed development. Further, limiting community growth is not considered practical approach given provincial and local policies directing future growth to settlement areas, like Tiverton, that have full municipal servicing.

5.3 Alternative Solutions

5.3.1 Alternative #1 - Expand Existing or Construct a New Groundwater Supply

This alternative requires the expansion of the existing groundwater wells or construction of new municipal supply wells, or a combination of the aforementioned. The target additional future yield is 460 m^3/day.

From the hydrogeological study completed by Wilson Associates (see Section 3.3), it was identified that from historic testing results and monitoring data, there is limited potential for expanding the existing Tiverton municipal wells to achieve the needed capacity.

The hydrogeological study indicated that two additional wells may be required to achieve the desired yield to service future growth. Each well site would require a pumphouse building equipped with treatment facilities and related mechanical and electrical components, including a backup generator. It is likely that the Municipality will need to acquire land for siting new wells.

Further, from the information available, there was a 54% chance of achieving a yield over 200 L/min from a single well constructed in the bedrock aquifer in the vicinity of Tiverton. This may result in the need for multiple test drilling sites. The hydrogeological study recommended spacing new municipal wells a minimum of 700 m apart, and 350 m from any domestic wells to avoid interference. Figure 5.1 shows a 350 m setback from a small number of existing wells within the vicinity of Tiverton. From this preliminary examination of existing wells and the setbacks, any new wells will likely need to be located outside of the existing settlement area of Tiverton. This will require further extensions of watermain to connect to the existing distribution system.

Figure 5.1 Conceptual setback from sample of existing wells, Tiverton.

The raw water quality from new wells is also expected to be mineralized with elevated total dissolved solids, sulphate, iron and sodium, per the hydrogeological report.

New municipal wells will result in new WHPA policy areas. A hydrogeological study for each well will be required to determine the extent and vulnerability scores of the WHPAs. Source Water Protection policies may restrict future development within vulnerable areas around the wells.

Under this alternative, rehabilitation of the Briar Hill Wellhouse is required to remediate existing mechanical and electrical deficiencies. This also includes replacing Briar Hill Well #1 due to the deterioration of the casing. This may be avoided if the new wells achieve enough yield to replace the Briar Hill wells. The estimated cost for replacing the Briar Hill well and reconstructing the wellhouse is $3,600,000 + HST (2024$). This cost is based on other similar capacity wells and treatment buildings in other southwestern Ontario communities in recent years.

The capital costs to construct a singular new well site will be similar in range to the Briar Hill reconstruction and estimated at $3,600,000+ HST (2024$). These costs do not include land acquisition and additional watermain needed to connect to the system. Given the potential that two well sites will likely be required, the capital costs associated with this alternative may be in excess of $7,000,000 + HST (2024$) for the new wells. In the case of two well sites, they would not necessarily need to be constructed at the same time, and costs for the second site could be deferred until actual community growth requires further supply.

5.3.2 Alternative # 2 Construct a BPS to Connect to the Kincardine DWS

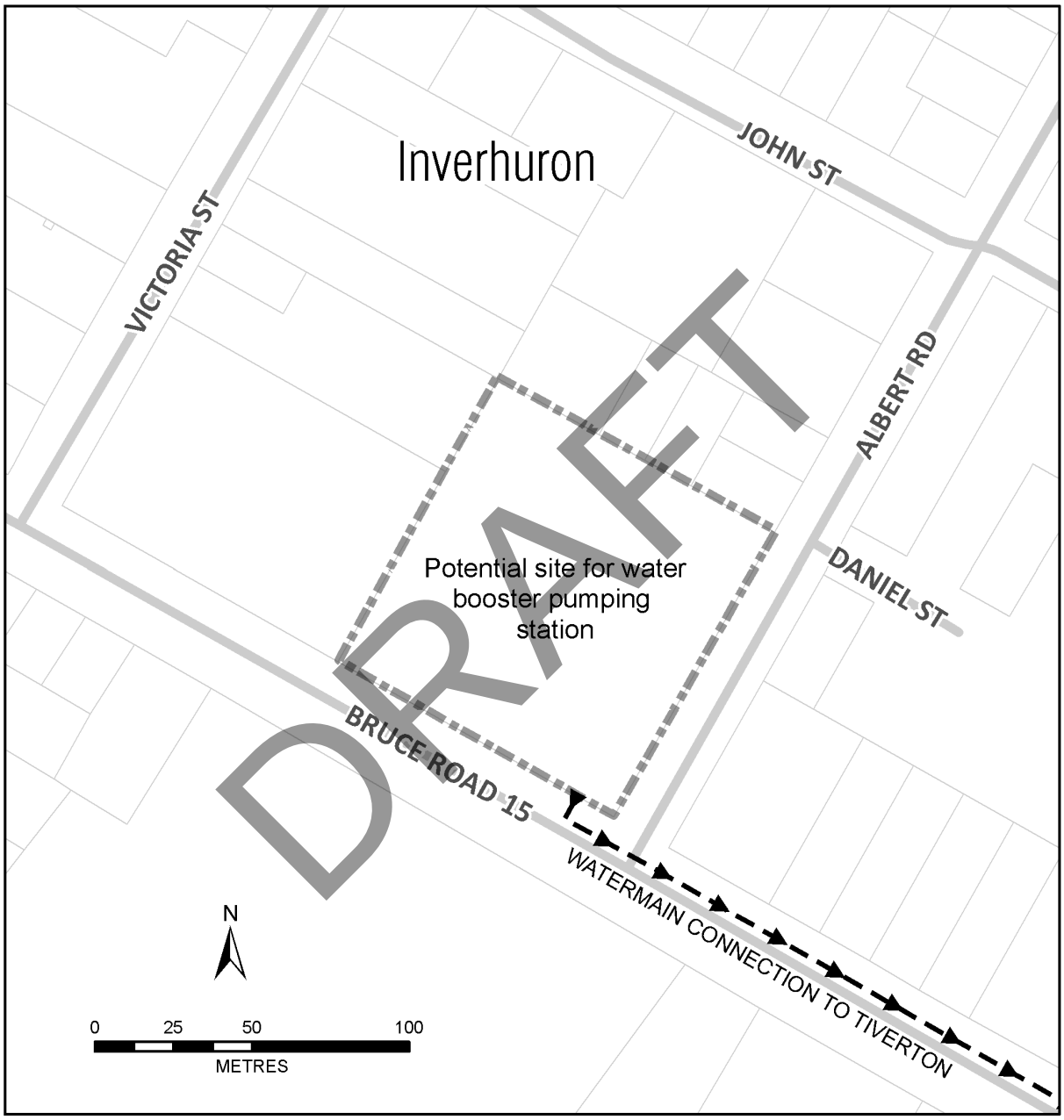
The second alternative solution is to connect to the KDWS from a connection point in Inverhuron, based on the assumption that the connection point would selected at a location that minimizes distance between the KDWS and TDWS. This would require construction of a BPS in Inverhuron and a trunk watermain along Bruce Road 15 to connect to the existing water distribution infrastructure in Tiverton. The proposed location for the BPS is 3194 Bruce Road 15, which is at the northwest corner of the intersection of Bruce Road 15 and Albert Street. The site is currently utilized as parkland space, with the north and western portion of the lot wooded. Figure 5.2 shows the location of the potential BPS site.

In 2003, an MCEA was completed to provide municipal water from Kincardine to the lakeshore area north of Kincardine, including Inverhuron and IPP. At that time, the watermain from Kincardine to Inverhuron was designed with an allowance of 1,000 m^3/day for future supply to Tiverton.

In 2023, the Municipality had an MCEA completed that related to expansion of the Kincardine Water Treatment Plant (WTP) and construction of a new BPS, both of which activities were identified as preferred alternatives to provide municipal water servicing to Bruce Power. The project would also require an extension of the KDWS Lakeshore

watermain from Inverhuron to the Bruce Power site. The MCEA included preservation of the future allocation for Tiverton that was considered in the 2003 MCEA

Figure 5.2 Location of Potential Site for BPS, Inverhuron



The design of the BPS and connecting watermain will need to consider pressure implications across the TDWS. Due to elevation rise from Inverhuron to Tiverton, and given the need to be able to fill the existing Tiverton standpipe, a pressure starting at approximately 1,000 kPa at the BPS would be required. MECP Design Guidelines for Drinking Water Systems – 2008, recommend that distribution system maximum pressure

not 700 kPa, and when the do, pressure reducing devices be provided on mains or service connections. High pressure will therefore need to be considered in the design of the watermain and for any service connections within the first approximately two kilometres downstream of the BPS.

This alternative will provide sufficient supply for the existing and projected growth in Tiverton. It would eliminate the need for the replacement of Briar Hill Well #1 and rehabilitation of the electrical and mechanical equipment at that site. It would also reduce concerns related to water quality, specifically arsenic, associated with the groundwater supply.

The BPS at 3194 Bruce Road 15 would utilize the existing driveway and a portion of the parkland on site. The BPS could be located in the western portion of the site to minimize parkland disruption and minimize impacts to the adjacent wooded area. See Figures 5.3 and 5.4 for potential configurations of the BPS footprint.

There are significant capital costs associated with the construction of the BPS and watermain extension. The probable costs (2024$) associated with this alternative are summarized in Table 5.2.

Table 5.2 Alternative 2 Probable Project Costs

Project Component	Estimated Cost
Booster Pumping Station	$2,200,000
Trunk Watermain	$2,600,000
Design and Approvals	$275,000
Contract Administration	$335,000
Total Estimated Cost (2024)	**$5,410,000**

5.3.3 Alternative #4 - Do Nothing

Under the Do Nothing alternative, there would be no expansion of water supply capacity for the TDWS. Existing customers would be supplied by the existing groundwater wells and growth would be limited to remaining capacity in the system. Under this scenario, the Municipality would not be able to supply all the current development commitments in Tiverton, nor commit to any further development proposals.

This option would still require the Municipality to replace Briar Hill Well #1 and the mechanical and electrical equipment at the end of its life to maintain the supply to existing customers. The Municipality can expect capital costs of $3,600,000 + HST (2024$) to Well #1.

This alternative is carried forward through the MCEA process as it may be implemented should the other alternatives have impacts that are determined to be too significant (e.g., capital costs) or cannot be sufficiently mitigated.

Figure 5.3 Potential BPS Site Configuration 1

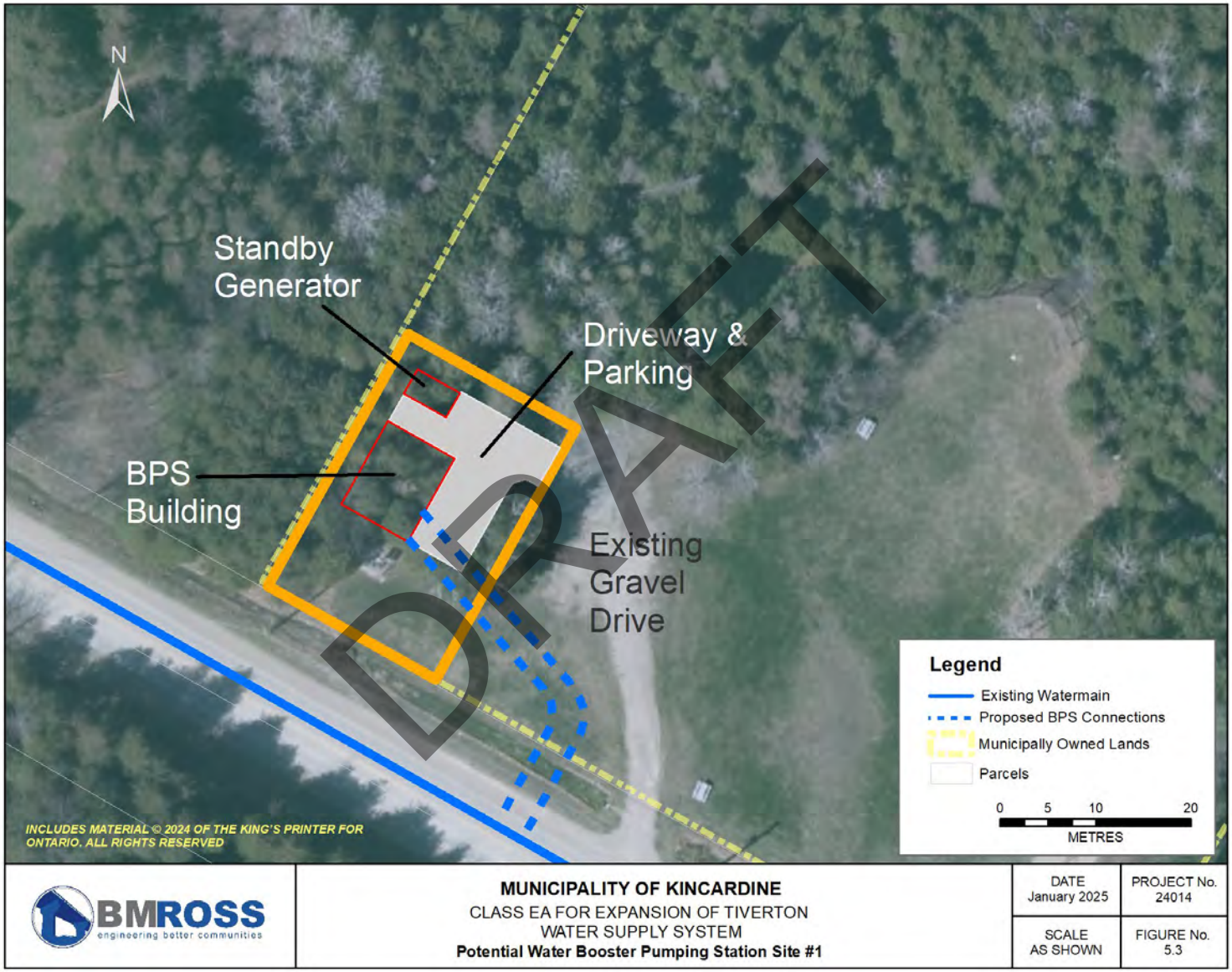
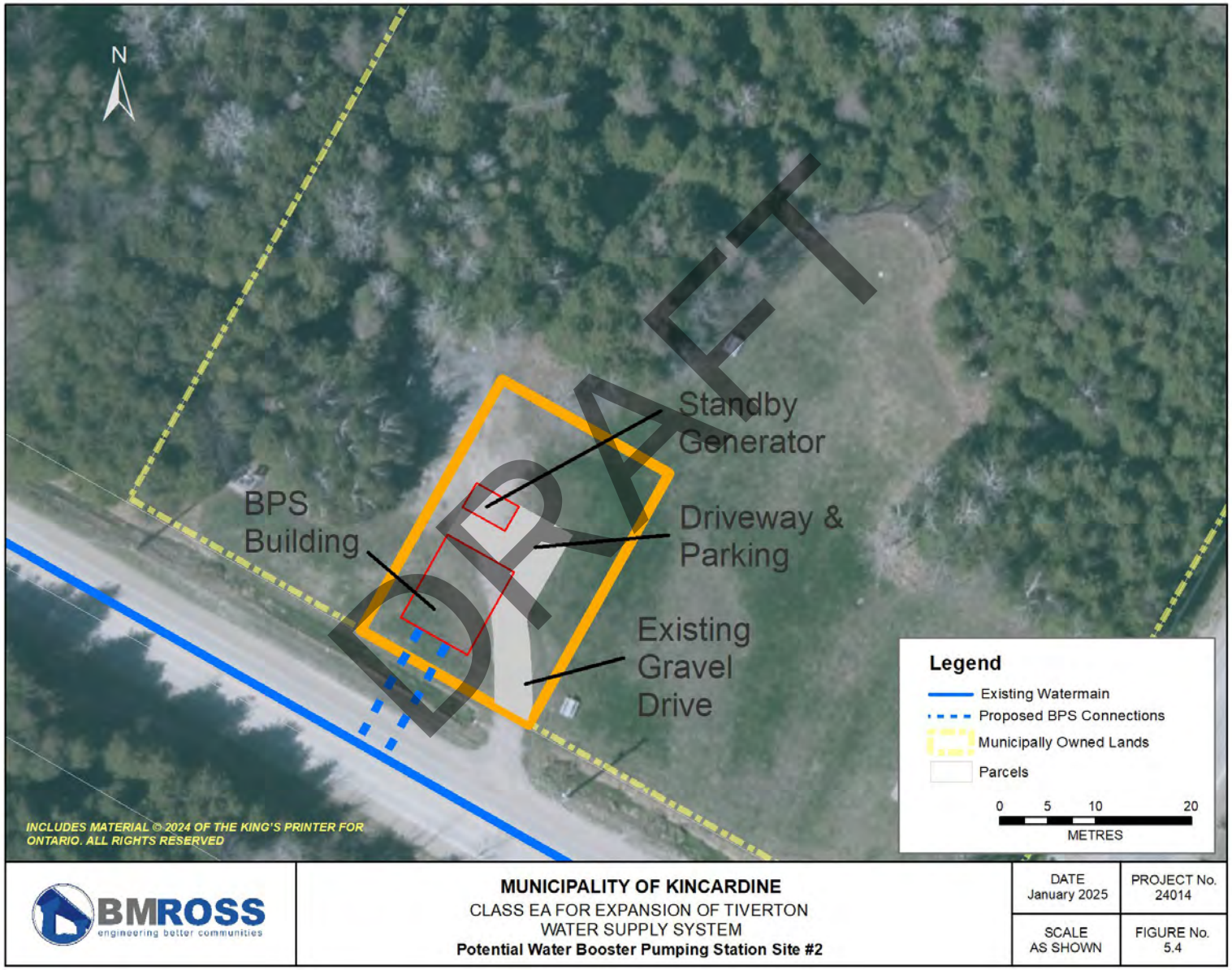


Figure 5.4 Potential BPS Site Configuration 2



5.4 Evaluation of Alternatives

Following the identification of practical and feasible alternative solutions, the alternatives are evaluated. The purpose of this is to examine the potential environmental impacts associated with the proposed works and to examine potential mitigation measures for any identified impacts. The evaluation stage generally involved the following activities:

- Evaluation of environmental impacts.
- Preliminary selection of a preferred alternative.
- Consultation with the general public and review agencies.
- Final selection of the preferred alternative.

5.4.1 Evaluation Methodology and Procedure

The evaluation of alternatives was carried out using a comparative assessment methodology, designed to predict the nature and magnitude of environmental impacts resulting from each defined option and to assess the relative merits of the alternative solutions. The evaluation methodology involved the following principal tasks:

- Identification of existing environmental conditions (baseline conditions, inventories).
- Assessment of existing land use activities, infrastructure, natural features, and socioeconomic characteristics.
- Review of proposed alternatives and related works.
- Determination of the level of complexity required to complete the impact assessment.
- Identification of environmental components and subcomponents that may be affected by the defined alternative (i.e., define evaluation criteria).
- Prediction of the environmental impacts (positive, negative) resulting from the construction and operation of the defined options.
- Identification and evaluation of measures to mitigate adverse effects.

Selection of a preferred alternative following a comparative analysis of the relative merits of each option.

5.4.2 Environmental Evaluation Methodology

The second phase of the MCEA process includes the evaluation of impacts associated with the alternative solutions. During the evaluation process, it is necessary to determine what effect or impact the practical alternatives will have on the environment and what measures can be taken to mitigate the impact. The intent of this exercise is to:

- Minimize or avoid adverse environmental effects associated with the project.
- Incorporate environmental factors into the decision-making process.

Under the terms of the EA Act, the environment is divided into five general components:

- Natural environment.
- Social environment.
- Cultural environment.
- Economic environment.
- Technical environment.

Each environmental component can be further subdivided into specific elements that have the potential to be affected by the implementation of a solution. Table 5.3 provides an overview of the preliminary environmental components being considered as part of this investigation.

The environmental effects of each alternative on the specific components are generally determined through an assessment of various impact predictors (i.e., impact criteria). Given the works associated with the alternative solutions, the following key impact criteria were examined during the course of the assessment:

- Nature (direct, indirect or cumulative).
- Magnitude (including the scale, intensity, geographic scope, frequency and duration of potential impacts).
- Technical complexity.
- Mitigation potential (which considers avoidance, compensation and degree of reversibility).
- Public perception.
- Scarcity and uniqueness of affected components.
- Compliance with the applicable regulations and public policy objectives.

Table 5.3 Environmental Components Being Evaluated

Environmental Component	Sub-Component
Natural Environment	• Significant natural features • Species at Risk • Wildlife • Vegetation • Surface water quality and quantity • Groundwater resources

Environmental Component	Sub-Component
	• Air quality, dust and noise • Physiographic features and soils • Drainage characteristics • Climate change • Excess soil
Social	• Adjacent Land Uses • Visual Impacts and Aesthetics • Source Water Protection • Local disruptions • Noise • Health and safety • Construction impacts • Future development
Cultural	• Archaeological and cultural heritage resources
Economic	• Capital and operating costs • Property acquisition • Lifecycle costs
Technical	• Water quality and quantity • Impacts on existing infrastructure • Source Water Protection

Using the above criteria, the potential impacts of each practical alternative were systematically evaluated. The significance of the potential impacts posed by each alternative was evaluated, considering the anticipated severity of the following:

- Direct changes occurring at the time of project completion.
- Indirect effects following project completion.
- Induced changes resulting from the project.

For the purposes of this MCEA, impact determination criteria developed by Natural Resources Canada have been applied to predict the magnitude of environmental effects resulting from the implementation of the project. Table 5.4 summarizes the impact criteria.

Table 5.4 Level of Impact Effects and Criteria

Level of Effect	General Criteria
High	Implementation of the project could threaten the sustainability of the feature and should be considered a management concern. Additional remediation, monitoring, and research may be required to reduce impact potential.
Moderate	Implementation of the project could result in a resource decline below baseline, but impact levels should stabilize following project completion

Level of Effect	General Criteria
	and into the foreseeable future. Additional management actions may be required for mitigation purposes.
Low	Implementation of the project could have a limited impact upon the resource during the lifespan of the project. Research, monitoring and/or recovery initiatives may be required for mitigation purposes.
Minimal	Implementation of the project could impact the resources during the construction phase of the project but would have a negligible impact on the resources during the operation phase.

Given the criteria defined above, the significance of adverse effects is predicated on the following assumptions:

- Impacts from a proposed alternative assessed as having a Moderate or High level of effect on a given feature would be considered significant and;
- Impacts from a proposed alternative assessed as having a Minimal to Low level of effect on a given feature would not be considered significant.

5.4.3 Environmental Evaluation

The potential interactions between the identified alternatives and environmental features are examined as part of the second phase of the MCEA process. The purpose of this analysis is to determine, in relative terms, the environmental effects of constructing and operating each identified option on the defined environmental component and subcomponents. Table 5.6 summarizes the preliminary evaluation of alternatives. The following symbols are used to indicate:

○ Minimal Impact

◔ Low Impact

◑ Moderate Impact

● High Impact

Table 5.5 Evaluation of Alternative Solutions

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Significant Natural features	○ No significant natural features within the vicinity of or adjacent to the existing wells ◔ New well sites may have the potential to impact a significant natural feature as they will likely be located outside of the community of Tiverton. ◔ Low level of impact.	○No significant natural features within the vicinity of or adjacent to the proposed BPS site and road allowance. ○ Minimal level of impact.	○ No significant natural features within the vicinity of or adjacent to the existing wells. ○ Minimal level of impact.
Natural – Species at risk	◔ New well sites may have the potential to impact species at risk. ◔ Low level of impact.	◔ The BPS has a small footprint and could be placed in previously disturbed areas (cleared for parkland). No species at risk are present at the site. ◔ Operation of BPS and watermain extension is not expected to impact any species at risk or their habitat. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.
Natural – Wildlife	◔ New well sites may have the potential to impact wildlife and their habitat. ○ Operation of the well is not expected to impact any wildlife or their habitat. ○ Low level of impact.	◔ The BPS has a small footprint within a previously disturbed area (cleared for parkland). ○ Operation of BPS is not expected to impact any wildlife or their habitat. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Vegetation	◔ New well sites may require clearing of vegetation for wellhouses ◔ Low level of impact.	◔ BPS can be sited to avoid treed areas of site. ◔ Vegetation removal will occur during construction of BPS. Grass is the primary type of vegetation that will be removed ○ Operation or construction of the BPS is not expected to impact trees or vegetation adjacent to the well site. ◔ Low level of impact.	○ No change in impacts. ○ Minimal level of impact.
Natural – Surface water quantity and quality	◑ Test wells will be drilled to conduct pumping test. Water from pumping tests will be directed to local stormwater infrastructure, if available, or discharged to ditch or overland. ◑ Potential for impacts to local surface water quantity and quality from pumping tests. ◑ Moderate level of impact.	○ The only surface water area feature in the immediate vicinity is the existing ditches along Bruce Road 15. ◔ Potential for impacts to surface water during construction, related to construction activities. ○ Sediment and erosion impacts on surface water are expected to be minor and can be minimized with standard construction mitigation measures. ◔ Low level of impact.	◑ Replacement of Briar Hill Well 1 still required under this alternative. Drilling and testing of new well may impact local surface water quantity and quality. ◑ Moderate level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Groundwater quantity and quality	◑ Drilling of wells has the potential to impact water levels in local wells utilizing the same aquifer. ◑ Construction of additional wells creates additional transport pathways to groundwater aquifers. ◔ Long-term operation of the well is not expected to impact local aquifer quantity as the pumping test and assessment showed acceptable water level recovery and a 10-year water level above the upper water-bearing zone. ◑ Moderate level of impact.	○ Would allow for all or some of the existing municipal wells to be decommissioned, reducing the number of transport pathways to the aquifer. ○ Reduces dependence on groundwater aquifers. ○ Minimal level of impact.	◑ Replacement of Briar Hill Well #1 still required under this alternative. Drilling and testing of new well may impact local groundwater levels. ◑ Moderate level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Air quality, dust and noise	◔ Drilling of wells will increase noise locally during drilling activities. ◔ Normal operation of well is not expected to create additional noise, dust, or air quality impacts. ◔ A diesel generator will be installed at the site for emergency power outages. ◔ Low level of impact.	◔ Construction of the Watermain connection will increase noise locally during construction activities. ◔ Normal operation of the BPS and watermain is not expected to create additional noise, dust, or air quality impacts. ◔ A diesel generator will be installed at the site for use in emergency power outages. Adjacent residents will experienced elevated noise levels during operation of the generator. Noises will be mitigated by acoustical enclosure of generator and existing tree buffer to north, west and east of the site. ◔ Low level of impact.	◔ Replacement of Briar Hill Well #1 will increase noise locally during drilling activities. ◔ Low level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural - Physiographic features and soils	◔ Soil and materials excavated during drilling will be disposed of appropriately. ◔ Operation of the well is not expected to have any impacts on physiographic features or soil conditions. ◔ Low level of impact.	◔ Soil and materials will be graded and excavated during the construction of the BPS building and watermain, excess soil will be disposed of appropriately. ◔ Operation of the watermain and BPS is not expected to have any impacts on physiographic features or soil conditions. ◔ Low level of impact.	◔ Soil and materials will be excavated for replacement of Briar Hill Well #1. ◔ Low level of impact.
Natural – Drainage characteristics	○ Not expected to impact or change local drainage characteristics. ○ Minimal level of impact	○ Not expected to impact or change local drainage characteristics. ○ Minimal level of impact	○ No change in current conditions. ○ Minimal level of impact.
Natural – Climate change	◔ Construction will require heavy equipment that will release Greenhouse Gases (GHG) as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ A backup diesel generator will be utilized during emergency power outages. ◔ Low level of impact.	◔ Construction will require heavy equipment that will release GHG as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ Operation of BPS will require electricity. Design of the BPS will consider energy efficiency. ◔ A backup diesel generator will be utilized during emergency power outages. ◔ Low level of impact	◔ Construction of replacement of Briar Hill well will require heavy equipment that will release GHGs as emissions. Impacts related to construction may be reduced through equipment and materials selection. ◔ Low level of impact

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Natural – Excess soil	◔ Excess soil from the construction of the well and treatment building will be disposed of in accordance with O. Reg 406/19. Excess soil is not expected to be contaminated. ◔ Low level of impact.	◔ Excess soil from construction of BPS and watermain extension will be disposed of in accordance with O. Reg 406/19. Excess soil is not expected to be contaminated. ◔ Low level of impact.	◔ Excess soil from replacement of Briar Hill Well #1 will be disposed of in accordance with O. Reg 406/19. Excess soil is not expected to be contaminated. ◔ Low level of impact.
Social – Adjacent Land Uses	◔ Drilling of test wells and construction of wellhouses may impact adjacent properties. ◔ Impacts will vary depending on potential sites identified. ◔ Low level of impact.	◔ Adjacent land uses may be impacted temporarily during construction activities. ◔ Operation of the BPS and watermain extension is not expected to impact adjacent land uses. ◔ Low level of impact.	○ No change from current conditions. ○ Minimal level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Social – Source Water Protection	◑ Any new wells will create new WHPA areas. ◑ Residents within WHPA A or WHPA B with a vulnerability score of 10 will be required to have their septic systems inspected on a 5-year basis. ◑ No new lots serviced by septic systems will be permitted within the highly vulnerable area around the well. ◑ Residents will be impacted by Source Protection policies in WHPAs around new well. ◑ Moderate level of impact.	○ Potential to reduce WHPAs within Tiverton if wells are decommissioned. ○ Minimal level of impact	○ No change from current conditions. ○ Minimal level of impact.
Social – local disruptions	◑ Construction of well housing and drilling will result in temporary noise and construction disruptions for adjacent property owners. ◑ If extension of water distribution is required to connect to new wells, there is a potential for local road closures. ◑ Moderate level of impact.	◑ Construction of BPS and watermain extension will result in temporary noise and construction disruptions for adjacent property owners. ◑ Public access to the park will be restricted during the construction of the BPS. ◑ Will result in a loss of a portion of the existing parkland. ◑ Traffic along Bruce Road 15 can expect delays during the construction of the watermain extension. ◑ Moderate level of impact.	◑ May have service interruptions during replacement of Briar Hill Well #1. ○ Moderate level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Social – health and safety	◑ Water supply from new wells is expected to be mineralized with elevated levels of total suspended solids, iron, fluoride and sulphates. ◑ May have service interruptions during replacement of Briar Hill Well #1. ● May need future arsenic treatment at Dent Well. ● High level of impact.	◔ Water supplied by KDWS has lower iron, fluoride and sulphate levels. ◑ Residents will notice difference in the taste of water supplied from KDWS as it is less mineralized. ◑ Moderate level of impact.	◑ Water quality will continue to have elevated levels of total suspended solids, iron, fluoride and sulphates. ◑ May have service interruptions during replacement of Briar Hill Well #1. ● May need future arsenic treatment at Dent Well. ● High level of impact.
Social – Construction Impacts	◔ New wells likely to be sited outside of the current community which may minimize construction impacts to adjacent properties. ◑ Replacement of Briar Hill Well would result in localized noise and traffic increases which may impact adjacent properties. ◑ Moderate level of impact.	◑ Construction of BPS at the proposed site will limit public access to a portion of the park. ◑ Adjacent properties will experience an increase in localized noise and traffic during construction. ◑ Construction of the watermain extension has the potential to interrupt traffic along Bruce Road 15. ◑ Moderate level of impact.	◑ Replacement of Briar Hill Well would result in localized noise and traffic increases which may impact adjacent properties. ◑ Moderate level of impact.
Social – future development	◑ Potential to secure sufficient capacity to support future growth. May require multiple new well sites. ◑ Water quality similar to the existing well. ◑ Moderate level of impact.	○ Sufficient supply capacity from the KDWS. ○ Sufficient capacity within distribution watermain from KDWS. ○ Minimal level of impact.	● Opportunity for future development will be restricted under this scenario due to limited capacity in existing wells. ● High level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Cultural – Archaeological and cultural heritage resources	◑ Potential for impacts to built heritage resources, cultural heritage landscape and archaeological resources depending on the location of new well sites. ◑ Archaeological and cultural heritage studies could be required. ◑ Moderate level of impact.	◔ Stage 1-2 Archeological Assessment completed for BPS site and found low potential for archaeological resources. ◔ Checklist for built heritage resources and cultural heritage landscapes identified low potential for impacts. ◔ Low level of impact.	○ No change from current conditions. ○ Minimal level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Economic – capital cost and operating costs (costs shown are 2024$ and exclusive of HST)	◑ Will likely require acquiring additional land for new well sites. ● The preliminary probable cost for reconstruction of the existing well and pumphouse is: $3,600,000. ● The preliminary probable cost for a new well and pumphouse is $3,600,000. There will be additional costs associated with land acquisition and additional watermain needed to connect to the system from new well sites. ◑ May require additional treatment processes for arsenic in the future. ◑ Opportunity to defer costs associated with expansion (i.e. initially constructing one additional well site, waiting to construct a second) ◑ Expected to be paid through existing rates, reserves, and development charges. ● Additional operating costs will be incurred with additional wells. ● High level of impact.	○ No additional land acquisition required. ● Preliminary probable cost for the new BPS and watermain extension: $5,410,000. ◑ Expected to be paid through existing rates, reserves, and development charges. Minimal costs are expected to be attributed to existing residents. ◑ Will have operating expenses associated with new BPS and trunk watermain. ● No ability to phase or defer costs. ● High level of impact.	◑ Cost for reconstruction of the existing well and pumphouse is: $3,600,00 to maintain existing water commitments. ◑ May require additional treatment processes for arsenic in the future. ◑ Moderate level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Economic – Property Acquisition	◑ Will likely require acquiring additional land for new well sites. ◑ Property costs are in addition to those noted above. ◑ Moderate level of impact.	○ No additional land acquisition required. ○ Minimal level of impact.	○ No additional land acquisition required. ○ Minimal level of impact.
Economic – life cycle costs	◑ Additional lifecycle costs will be associated with new wells and associated treatment facilities. ◑ Mineralized raw water quality shortens the expected life of well equipment. ◑ Moderate level of impact.	◑ The addition of the BPS and watermain extension are additional assets that will require eventual replacement. ○ Will allow the Municipality to decommission some or all of the groundwater wells and associated aged assets. ◑ Moderate level of impact.	◑ Requires the replacement of Briar Hill Well #1. ◑ No additional lifecycle costs, but mineralized water will continue to shorten the expected life of well equipment in Tiverton. ◑ Minimal level of impact.
Technical – water quality and quantity	● Water quality from new wells is expected to be mineralized, with elevated total suspended solids, fluoride, sodium, iron and sulphates. ● Multiple wells will be likely be required to achieve required quantity. ◑ May require arsenic treatment at Dent Well site in the future. ● High level of impact.	◔ Water supplied from KDWS is not mineralized. Will have less impact on equipment/ distribution system. ◔ Sufficient supply and distribution capacity within KDWS. ◔ Low level of impacts.	● Water will continue to have elevated total suspended solids, fluoride, sodium, iron and sulphate. ◑ May require arsenic treatment at Dent Well site in the future. ● Insufficient supply to support committed future development. ● High level of impact.

Component	Alternative 1 – Expand the Existing or Construct a New Groundwater Supply	Alternative 2 – Construct a Connection to the Kincardine DWS	Alternative 4 – Do Nothing
Technical – impacts to existing infrastructure	◑ Requires replacement of Briar Hill Well #1 and replacement of end of life mechanical and electrical equipment. ◑ Limited potential to expand existing wells. ◑ Requires maintenance of Dent well and building ◑ Limited potential for a new well site within existing municipal lands and urban boundary – likely to require extension of distribution watermain. ◑ Moderate level of impact.	◔ An existing well could be maintained for backup supply if additional redundancy beyond existing storage is required. ◑ Design will have to consider pressure impacts to service connections near the BPS. May require reducers. ◑ Moderate level of impact.	◑ Existing infrastructure will require ongoing maintenance to ensure continued operation. ◑ Requires replacement of Briar Hill 1 Well and replacement of end of life mechanical and electrical equipment. ◑ Moderate level of impact.
Technical – Source Water Protection	◑ Requires modeling of new WHPAs and determination of vulnerability scores. ◑ Moderate level of impact.	○ If wells are decommissioned, this will eliminate the associated Source Water Protection WHPAs. ○ Minimal level of impact.	○ No change from current conditions. ○ Minimal level of impact.

5.5 Evaluation Summary

The evaluation completed in the previous section identified the potential impacts associated with the three alternative solutions. The evaluation process included consideration of natural, social, economic, cultural, and technical criteria.

The Do Nothing alternative (Alternative 4) has minimal impacts associated with the natural environment as it results in little change from the current conditions; however it is not without other impacts. Implementation of Alternative 4 would still require the replacement of Briar Hill Well #1 to address the deterioration of the well casing, and reconstruction of the pumphouse to address mechanical and electrical components at the end of their life. The estimated cost of replacing this infrastructure is approximately $3,600,000 + HST. Doing nothing will also have long term implications as growth will be limited to the existing supply capacity of the existing wells. There may also be additional capital and operating costs if arsenic treatment is required at the Dent Well. Given that this alternative does not address the identified problem, it should only be considered if the other alternatives are deemed unfeasible.

From the review of hydrogeological conditions, for Alternative 1 it appears unlikely that the existing wells can be expanded and new well sites would be required to supply additional capacity for growth. Under this alternative, the deteriorating Briar Hill Well #1 would also still need to be replaced as well as the end of life mechanical and electrical equipment. The estimated cost of the replacement of the Briar Hill Well and pumphouse is $3,600,000 + HST. It is estimated the cost for a new well and treatment and pumphouse building at each new well site would be comparable to the cost of similar new infrastructure at Briar Hill, resulting in significant economic impacts related to the capital costs. Siting new supply wells may also be challenging, given the recommended setbacks of a minimum of 350 m from existing domestic wells and 700 m to the municipal supply wells. While this alternative has the potential to provide a sufficient supply of water for existing and future growth within Tiverton, there are also concerns the water quality of any new wells will be similar to the existing wells, with elevated levels of total suspended solids, fluoride, sodium, sulphates and iron. If this alternative is implemented, it is noted there may someday be a need for arsenic treatment at the Dent Well if concentrations increase and/or regulation imposes tighter criteria.

The construction of a connection to the KDWS (Alternative 2), utilizing a BPS sited at 3194 Bruce Road 15 and watermain extension along Bruce Road 15 will provide sufficient supply capacity for the existing and future population of Tiverton. The treatment plant in Kincardine has sufficient capacity as does the watermain that will supply the water via Inverhuron. The proposed site of the BPS is owned by the Municipality and is currently utilized for parkland/open space. A Stage 1-2 Archaeological Assessment was completed on the site and no archaeological resources were found. A trunk watermain would be installed within the road allowance of Bruce Road 15 to connect to the TDWS. Under this alternative, the existing groundwater wells could be decommissioned or retained for redundancy. This alternative eliminates the need to replace Briar Hill Well #1.

If the Dent Well is also decommissioned, it will eliminate the potential need for arsenic treatment facilities.

Residents can expect temporarily increased noise, dust, and traffic/access disruptions during the construction of the BPS and watermain extension. Operation of the BPS is expected to have minimal impacts on adjacent residences but would result in a slight loss of parkland in Inverhuron. A backup generator will be sited with the BPS and residences will experience increased local noise levels when the generator is operating during emergency situations.

This alternative will result in a change to water taste and chemistry compared to the existing groundwater supply.

There are significant capital costs associated with the construction of the BPS building, generator, and watermain extension, and are estimated to be in the order of $ 5,410,000 + HST. Costs could be paid through existing rates, reserves, and development charges. Ongoing operating and maintenance costs for the BPS and watermain are expected to be lower than the current, multiple well sites.

5.6 Selection of Preferred Alternative

Following the evaluation of alternatives a preferred solution was identified. **The preferred solution is Alternative 2 – connection to the KDWS through construction of a BPS and watermain.** This alternative addresses the problem statement through the provision of a sufficient supply of water to address existing and future development commitments in Tiverton.

The installation of a new BPS 3194 Bruce Road 15 makes use of an existing municipally owned site with access to the existing water distribution system. It is expected to have minimal impacts on adjacent properties but will reduce the amount of parkland in Inverhuron.

Connecting to the KDWS eliminates the need to replace the deteriorating Briar Hill Well #1 and pumphouse. It will also eliminate the potential future need for arsenic treatment equipment at the Dent Well. Over time, it is expected that operating and maintenance costs for the BPS and trunk watermain will be lesser than continued operation of a groundwater well based system.

The ability to expand or rerate the existing wells is considered limited (see Section 3.3), so new groundwater supply wells would be required. This option was evaluated as Alternative 1. Given the capacity needed, it is assumed that two new wells would ultimately be required in addition to replacing the deteriorating Briar Hill Well #1. This option is less preferred, given the capital costs associated with constructing two new wells, potentially limited supply capacity of the local aquifer, potential for raw water high in fluoride, total suspended solids, sodium and sulphates. Over the long term, this alternative is expected to have greater maintenance costs, given the age of the assets and impact of the mineralized water on treatment and distribution equipment.

6.0 CONSULTATION PROGRAM

6.1 General

Consultation is an integral component of the MCEA process. Consultation allows for an exchange of information which assists the proponent in making informed decisions during the evaluation of alternative solutions. During Phases 1 and 2 of the study process, consultation was undertaken to obtain input from the general public, review agencies, and stakeholders who might have an interest in the project.

The components of the consultation program employed during the initial MCEA study are summarized in this section of the Screening Report and documented in Appendix C.

6.2 Initial Notice

Contents:	General study area description, summary of proposed works
Issued:	May 3rd, 2024
Placed in:	Municipality of Kincardine Website
Circulated to:	6 review agencies, and 6 Indigenous communities
Input period:	May 24th, 2024, and June 17th, 2024

There were no comments received from the public following the publication of the initial notice. A copy of the initial notice is included in Appendix C.

6.3 Government Review Agencies

Input into the MCEA process was solicited from government review agencies and identified stakeholders by way of email correspondence. Agencies and organizations that might have an interest in the project were sent an information package detailing the nature of the proposed works, an outline of the assessment process, and a general location plan of the project site. The information was circulated to six review agencies on May 2, 2024. The organizations were asked to comment on the project on or before May 24th, 2024. A copy of the agency letter and list of agencies contacted is included in Appendix C.

Table 6.1 summarizes the comments received from review agencies following the initial circulation letter.

Table 6.1 Summary of Review Agency Comments

Review Agency	Comments	Action Taken
Monika Macki Environmental Resource Planner /Environmental Assessment Coordinator, MECP Received May 7, 2024 via email	- Provided updated "Areas of Interest" regarding ministry's interests with respect to the MCEA process. - MECP is delegating procedural aspects of consultation with the following Indigenous communities: Saugeen First Nation, Chippewas of Nawash Unceded First Nation, Metis Nation of Ontario and Georgian Bay Metis Council. - Please ensure a copy of the Notice of Completion is sent to the EA notification email account.	Identified Indigenous communities contacted as part of consultation plan.
Michael Oberle Environmental Planning Coordinator, Saugeen Valley Conservation Authority Received May 6, 2024 via email	- The SVCA does not have any specific comments at this time. The SVCA looks forward to working together with our municipal partners, where required, as this proposal progresses.	None required
Joseph Harvey, Heritage Planner, Ministry of Citizenship and Multiculturalism Received May 27, 2024	- Under the EA process, the proponent is required to determine a project's potential impact on known and potential cultural heritage resources. - Noted screening process for archaeological and built heritage and cultural heritage landscapes. - Recommended a Cultural Heritage Report given the project study area covers a large area. - Please advise MCM if any technical cultural heritage studies will be completed for this EA project and provide them prior to issuing a Notice of Completion. - Include completed checklists and documentation in EA report or file.	The Stage 1-2 Archaeological Assessment was provided to MCM. A cultural heritage study was not undertaken following the completion of the screening checklist for built heritage and cultural heritage landscapes.

6.4 Aboriginal Consultation

6.4.1 Aboriginal Consultation Process

The Crown has a duty to consult with First Nation and Métis communities if there is a potential to impact Aboriginal or treaty rights. This requirement is delegated to project proponents as part of the MCEA process, therefore the project proponent has a responsibility to conduct an adequate and thorough consultation with Aboriginal communities as part of the MCEA consultation process. The information was circulated to six Aboriginal communities on May 3rd, 2024. They were asked to comment on the project on or before June 17th, 2024

6.4.2 Background Review

In order to identify Aboriginal Communities potentially impacted by the project the Aboriginal and Treaty Rights Information System (ATRIS) was consulted. A search was conducted for Aboriginal Communities, including their traditional territories that would lie within a 50 km radius of the project study area. Utilizing this process and feedback received from the MECP, seven aboriginal communities/organizations were identified in conjunction with this project including:

- Chippewas of Nawash Unceded First Nation,
- Chippewas of Saugeen First Nation,
- Saugeen Ojibway Nation (SON),
- Métis Nation of Ontario,
- Great Lakes Métis Council, and
- Historic Saugeen Métis.

Correspondence was subsequently forwarded to each community/ organization detailing the proposed project and asking for input.

6.4.3 Aboriginal Consultation Log

The consultation with local Indigenous communities is summarized in Table 6.2.

Table 6.2 Summary of First Nation and Métis Community Comments

Log No.	To	From	Comments	Action Taken/Response
1	Chippewas of Nawash Unceded First Nation (via email) – Chief Gregory Nadjiwon, May 2, 2024	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
2	Chippewas of Saugeen First Nation Chief Lester Anoquot, (via email), May 2nd, 2024,	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
3	Saugeen Ojibway Nation (SON)- (via email)- Charlene Leonard, May 2nd, 2024	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
4	Historic Saugeen Metis (via email)- Georgia McLay, May 2nd, 2024	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
5	Metis Nation of Ontario (via email)- Consultation Email, May 2nd, 2024	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
6	Great Lakes Metis Council (via email)- Consultation Email, May 2nd, 2024	BMROSS	• Provided letter outlining project scope and map of project area.	• No response received
7	SON Environmental Office – Charlene Leonard and Amber Debassige via email May 29, 2024	BMROSS	• Email informing SON that a Stage 1-2 Archaeological Assessment was going to be undertaken at 3194 Bruce Road 15. Invited SON to participate in field work.	• Response received May 29, 2024 (see Log No. 8)
8	BMROSS via email May 29, 2024	Saugeen Ojibway Nation (SON)- (via email)- Amber Debassige	• Provided Consultation Application Form	• Consultation form returned to SON on May 31, 2024

Log No.	To	From	Comments	Action Taken/Response
9	BMROSS via email June 13, 2024	SON Archaeology, Kove Sartor	• Asked how many days fieldwork for the Stage 1-2 Archaeology Assessment	• Timmins Martelle responded (June 13, 2024) indicated two field days, scheduled for June 17-18
10	Timmins Martelle via email June 17, 2024	SON Archaeology, Natalie Kuipers	• Provided dates available for fieldwork	• Timmins Martelle confirmed field dates of June 19 and 20 via email on June 17, 2024
11	Timmins Martelle via email June 17, 2024	SON Archaeology, Natalie Kuipers	• Confirmed participation in fieldwork	• None required.
12	Timmins Martelle via email June 19, 2024	SON Archaeology, Kove Sartor	• Asked for workplan	• Forwarded to BMROSS
13	SON Archaeology via email June 19, 2024	BMROSS	• Provided preliminary site plan for BPS site. Noted the BPS, if identified as the preferred solution, would be sited close to the road and existing watermain. Provided picture of a similar style BPS.	• No response.
14	SON Archaeology via email July 24, 2024	SON Archaeology, Kove Sartor	• Provided copy of draft Stage 1-2 Archaeological Assessment. Asked for comments by August 23, 2024	• No response received.
15	BMROSS via email July 25, 2024	HSM, Georgian Lumley	• Confirmed the HSM has no comments or concerns regarding the project. HSM wishes to be kept informed of any future updates on the project.	• BMROSS provided a copy of the Stage 1-2 Archaeology Assessment via email on August 6, 2024

Log No.	To	From	Comments	Action Taken/Response
16	HSM via email August 6, 2024	BMROSS	• Provided a copy of the draft Stage 1-2 Archaeological Assessment.	• HSM confirmed receipt via email on August 12, 2024
17	SON Archaeology via email September 4, 2024	Timmins Martelle	• Asked if there were any questions or comments on the draft Stage 1-2 Archaeological Assessment	• Responded on September 4, 2024
18	Timmins Martelle via email September 4, 2024	SON Archaeology, Kove Sartor	• SON has received the report and has no concerns	• None required.

6.5 Public Information Centre

A Public Information Centre (PIC) was held on October 30th, 2024 at the Underwood Community Centre from 3:00 pm -8:00 PM. A Notice of Public Information Centre was placed in the Kincardine News and Kincardine Independent in the October 16 and 23 editions. It was also placed on the Municipality's website.

The format of the meeting included two sessions, one in the afternoon and a second in the evening. Each session consisted of an open house component with display boards with a formal presentation with a question and answer period. Representatives from BMROSS and the Municipality were in attendance. The meeting was arranged to serve several purposes:

- Provide local residents and other stakeholders with additional details on the MCEA process and a forum to express their views.
- Provide area residents with an overview of the alternatives being considered and potential impacts associated with each.
- Provide residents with an opportunity to ask questions.
- Identify the preliminary preferred alternative.

There were approximately 15 residents in attendance. A copy of the presentation materials is included in Appendix C. The questions and comments received during and following the PIC are summarized in Table 6.3.

Table 6.3 Comments and Questions from PIC

Question/Comment	Response
Is there capacity at the Kincardine Water Treatment Plant to supply Tiverton?	Yes, there is sufficient supply at the Water Treatment Plant and in the lakeshore watermain to accommodate Tiverton.
Could an existing well be used or could new wells be drilled at the existing well sites?	The hydrogeologist consulted indicated the ability to utilize the existing wells and sites is limited. It is unlikely we would secure the supply of water needed.
What will the financial impact be on existing residents?	It is expected the costs attributable to the existing population of Tiverton will be recovered through rates and reserves. The Municipality is also actively pursuing grant opportunities. The costs attributable to future growth could be recovered through development charges.
Will this fix pressure issues?	Will be able to supply water to the distribution system at the same pressure, but it is difficult to say if it will address localized issues.

Question/Comment	Response
Should we be concerned about the existing well water quality?	Elevated fluoride and sodium and mineral levels are not uncommon in the groundwater locally. The sodium levels are above the level that requires notification of the local medical officer of health for people who may be on a reduced sodium diet. The current drinking water is considered safe to consume.
What are the long-term impacts financially?	The existing wells, specifically Briar Hill Well #1, require rehabilitation. It is likely a new Briar Hill Well will be needed to replace Well #1, as well as replacement of some of the electrical and mechanical equipment. In the future, the other wells will also rehabilitation. There will be ongoing financial costs associated with maintaining the existing wells. The BPS is another asset that will need to be maintained over the long term, but it is expected to have a relatively long life with less maintenance requirements than the existing wells.
Can the BPS be sited to minimize impacts to the park?	Yes, exact placement of the BPS will determined during the design phase, but shifting the BPS towards the road or west side of the property could be considered.
There is a group interest in redevelopment of the park at Inverhuron and have been working with the Municipality. Interested in the placement of the BPS.	Noted and will work with the group through the Municipality.

Following the PIC, a copy of the presentation with narrations was posted on the Municipality's website. A subsequent municipal newsletter identified where residents could view the video.

7.0 IDENTIFICATION OF POTENTIAL IMPACTS AND MITIGATION MEASURES

7.1 Framework of Analysis

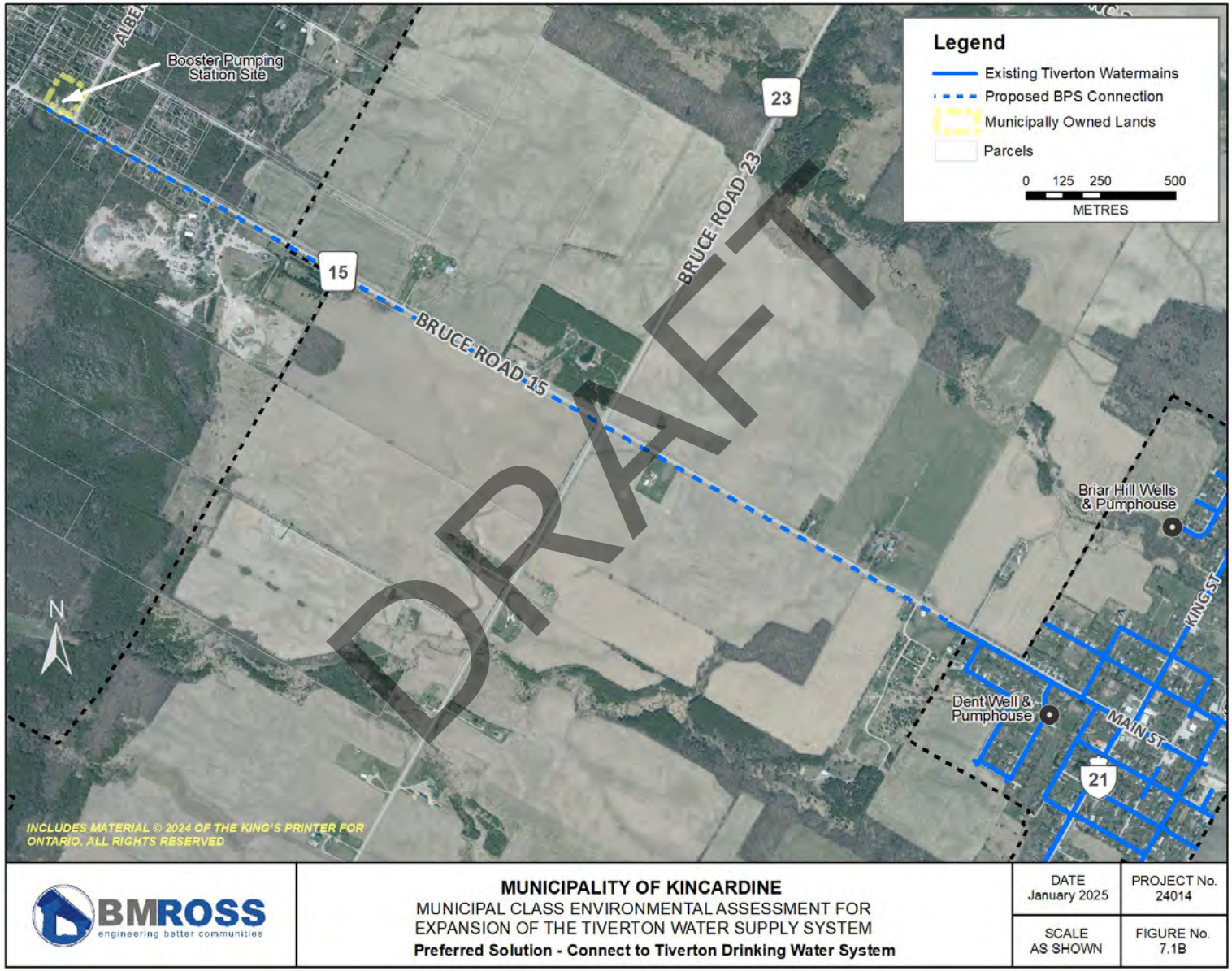
Following the selection of Alternative 2 as the preliminary preferred solution, a study framework was developed to further evaluate the potential impacts of implementing this project. For reference, Figures 7.1A and 7.1B illustrates the preferred solution. The purpose of this review was to assess the environmental interactions resulting from the construction and operation of the proposed works, and to determine if the identified interactions that would generate potential environmental impacts.

The assessment of the preferred alternative incorporated these activities:

- Preliminary assessment of potential design options.
- Assessment of the construction and operational requirements of the proposed works.
- Consultation with the public, stakeholder groups, and government agencies.
- Reviewing engineering methodologies associated with the construction of a new well and associated facilities.
- Prediction of the environmental interactions between the proposed works and the identified environmental components.
- Evaluation of the potential impacts of the project on the environmental features, including residual effects following mitigation.

Figure 7.1A Preferred Solution – Construct BPS to Connect to the KDWS

Figure 7.1B – Preferred Solution -Connection to TDWS



7.2 General Project Scope

The works summarized below and illustrated conceptually in Figures 7.1A and 7.1B represent the scope of construction planned for this project. It is expected that the connection to Inverhuron will be the primary water supply source. The project is expected to involve the following general components:

- Municipality applies for Drinking Water Works Permit (DWWP) amendment and update of the PTTW.
- Contractor mobilization to the site.
- Construction of a masonry block building.
- Installation of all pumps, pressure tanks, controls, and related mechanical and electrical equipment.
- Installation of an outdoor, weather/ acoustic enclosed standby diesel generator set.
- Construction of the new watermain within the Bruce Road 15 road allowance and connection to existing water distribution system.
- Decommissioning of the existing groundwater well facilities.
- Restoration work (seeding/ topsoil) and
- Demobilization

7.3 Impact Assessment and Mitigation Measures

7.3.1 Assessment of Impacts

In reviewing the various criteria identified in Section 5.4 of this report and additional comments received during the consultation program, a number of specific environmental elements were identified which could be adversely affected by the implementation of the preferred alternative. The potential impacts are associated with the following environmental or project components:

- Local disruptions
- Construction related impacts
- Capital and operating costs
- Lifecycle costs
- Impacts on existing infrastructure

7.4 Discussion of Potential Impacts and Mitigation

7.4.1 Local Disruptions

Construction of the BPS and associated watermain connection to the TDWS, is expected to result in local disruptions. During construction, public access to the park will be restricted. The final site of the BPS on the site and contractor needs for laydown and material storage will determine the specific area of the park that will be inaccessible. At this time, the preferred location of the BPS is at the western end of the park. It may be possible to retain access to the play equipment located on the east side of the park. The portion of the park utilized during the construction will be fenced off. This may impact the use of the park for larger community gatherings during the length of construction. This impact will be limited to the period of construction.

Local residents will experience increased activity at the site associated with the construction of the BPS. Construction will result in localized increases in noise and traffic. These impacts may be mitigated by the existing tree buffer between the park and surrounding residences. Siting of the BPS will consider how to minimize any tree removal to ensure the buffer remains intact.

The construction of the watermain connecting the BPS to the TDWS is expected to occur within the road allowance of Bruce Road 15. The construction activities may result in temporary lane reductions along Bruce Road 15. There also may be times when access to driveways is temporarily restricted. Construction notices will provide local residents with information on the planned activities and potential impacts.

There may be temporary water service interruptions when the BPS is connected to the KDWS. Any interruptions are expected to limited in length and as much notice will be given to local residents as possible. Similarly, there may be an interruption to water supply in Tiverton when the system is connected to the new watermain. Notice will be provided to residents ahead of the switch over.

Operation of the BPS is expected to have minimal impacts on the use of the park and adjacent residences. The BPS will not generate significant noise during operation and can be sited to maintain a significant portion of the existing open space in the park. During the design of the BPS, consideration can be given to the façade of the building and features such as fencing. There will be an emergency backup generator located at the site. The generator will run during power outages and be tested monthly. During operation of the generator, there will be localized noise impacts. The existing trees surrounding the site are expected to function as a noise barrier.

Through the public consultation, it was identified there is a local group interested in the redevelopment of the park. The group has initiated discussions with the Municipality and is working towards a lease agreement. The BPS will reduce the area available for the group to redevelop, but siting of the building may minimize overall impacts.

7.4.2 Health and Safety

The preferred alternative will result in a safe and secure supply of water for existing and future residents of Tiverton. Existing residents will notice a change in the taste and potentially aesthetic quality of the water supply from the KDWS compared to the water supplied from the groundwater wells. Water supplied from KDWS has lower total suspended solids, sulphates, iron and fluoride levels and that change in chemical composition will give the water a different taste. The change in water supply will also eliminate the need for in-home water softeners and residents can chose to remove or not replace softeners at the end of their life.

New service connections along Bruce Road 15 may require a pressure reducer.

The planned works involve construction work that has the potential to adversely impact the health and safety of the workers and the public. A series of measures will be set out in the construction contract documentation to minimize the risk posed by construction in a manner consistent with health and safety regulations. These specifications may need to be altered depending on the nature of the construction activity and the requirements of regulatory agencies.

7.4.3 Construction-Related Impacts

Construction-related activities associated with project implementation have the potential to impact existing environmental features, the general public, and construction workers. The Contractor will therefore be responsible for carrying out these activities in accordance with industry safety standards and all applicable legislation. Mitigation measures will also be incorporated into the construction specifications to ensure that operations are conducted in a manner that limits detrimental effects to the environment.

Table 7.1 outlines a series of mitigation measures that are typically incorporated into construction specifications. For this project, contract specifications may need to be modified depending on the nature of the construction activities and any additional requirements of the regulatory agencies.

Table 7.1 Summary of Mitigation Measures for Construction Activities

Construction Activity	Planned Mitigation
Refueling and Maintenance	• Identify suitable locations for designated refueling and maintenance areas outside of any vulnerable areas. • Restrict refueling or maintaining equipment near watercourses and ditches. • Avoid cleaning equipment in watercourses and in locations where debris can gain access to sewers or watercourses. • Prepare to intercept, clean up, and dispose of any spillage that may occur (whether on land or water).

Construction Activity	Planned Mitigation
Traffic Control	• The Contractor shall prepare and submit a traffic plan to the Project Engineer for review and acceptance. If it is necessary to detour traffic, the Contractor will co-ordinate the routing and provide adequate signage and barricades. • Traffic flow for private access should generally be maintained at all times during construction. If access to a private driveway has to be restricted for a period of time the property owner will be notified and access would be restored by the end of each working day. • A minimum of one lane of traffic, controlled by barricades, delineators, etc. shall be maintained for emergency vehicles to access the road. • Provide adequate signage and barricades.
Disposal	• Dispose of all construction debris in approved locations. • Avoid emptying fuel, lubricants or pesticides into sewers or watercourses.
Silt Control	• Silt fences shall be installed and maintained downslope from any stockpile locations.
Work in Sensitive Areas	• All work will occur in dry conditions. • Any slopes disturbed by the construction will be stabilized upon completion of the work
Drainage and Water Control	• All portions of the work should be properly and efficiently drained during construction. • Provide temporary drainage and pumping to keep excavation and site free from water. • Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with approval agency requirements. • Provide settling ponds and sediment basins as required. • Do not direct water flow over pavements, except through approved pipes/troughs. • Provide splash pads where water is discharged to a watercourse.
Dust Control	• Cover or wet down dry materials and rubbish to prevent blowing dust or debris. • Avoid the use of chemical dust control products.
Site Clearing	• Protective measures shall be taken to safeguard trees from construction operations. • Equipment or vehicles shall not be parked, repaired or refueled near the dripline area of any tree not designated for removal. • Minimize stripping of topsoil and vegetation. • Soils excavated from the site are to be re-used on site if possible or disposed of in accordance with Excess Soil regulations. • Restrict tree removal to areas designated by the Contract Administrator.

Construction Activity	Planned Mitigation
Sedimentation and Erosion Control	• Erect sediment fencing to control excess sediment loss during the construction period. • Minimize the removal of vegetation from slopes. • Protect ditches from sediment intrusion. • Complete restoration works following construction.
Noise Control	• Site procedures should be established to minimize noise levels in accordance with local bylaws. • Employ devices to minimize noise levels in the construction area (as practical). • Nighttime or Sunday work shall not be permitted, except in emergency situations.

7.4.4 Capital and Operating Costs

The capital costs associated with the preferred alternative are considered a significant impact. The estimated capital costs are summarized in Table 7.2, below.

Table 7.2 Capital Costs Associated with the Preferred Alternative (Construct a BPS)

Project Component	Estimated Cost
Booster Pumping Station	$2,200,000
Trunk Watermain	$2,600,000
Design and Approvals	$275,000
Contract Administration	$335,000
Total Estimated Cost (2024$)	**$5,410,000 + HST**

The Municipality has indicated it will be pursuing grant opportunities to reduce the economic impacts of this project on existing and future residents. It is expected that the portion of project costs benefiting future growth will be collected through development charges. The portion of project costs attributed to the existing population of Tiverton is expected to be recovered through rates and reserves.

The existing customer demand in Tiverton is 616 m^3/day. The proposed capacity of the new BPS will be approximately 1,235 m^3/day. Given this, approximately 50% of the costs of the project are attributable to the existing customers and 50% to future growth (committed and uncommitted). This equates to $2,705,000 + HST to be funded through rates and reserves. This amount could be reduced if grant funding is received.

7.4.5 Life Cycle Costs

The preferred alternative will add an additional BPS and watermain assets to the Municipality's inventory. The BPS is expected to have an estimated service life of greater than 50 years. Pumps and mechanical equipment are expected to have service lives of

25 years. Regular maintenance is an important component in maximizing the service life of municipal infrastructure.

7.4.6 Operational Phase

Upon completion of the planned construction, the Municipality will assume and maintain the BPS in accordance with regular Municipal practices. In this regard, the new infrastructure would be subjected to maintenance activities in the future, including the replacement of pumps and associated equipment, and will be added to the works department maintenance schedule and budget allocation, as determined by the Municipality.

8.0 APPROVALS AND ENVIRONMENTAL COMMITMENTS

8.1 General

Implementation of the recommended solution is subject to the receipt of all necessary approvals. Following a review of the existing framework of legislation, it was determined a number of approvals are required prior to implementation of the preferred solution. This section of the report identifies the applicable legislation and summarizes the intent of the associated approvals process.

8.2 Environmental Assessment Act

The recommended solution is considered a Schedule B project under the terms of the MCEA document, as the project involves the construction of a new booster pumping station at a new municipal site. This project is considered approved under the requirements of the MCEA and Environmental Assessment Act following the completion of an environmental screening process.

The following activities are required in order to complete the formal MCEA screening process:

- Complete the 30-day review period, defined in the Notice of Completion.
- Address any outstanding issues.
- Finalize the Screening Report.
- Advise the Municipality and MECP when the MCEA study process is complete.

8.3 Safe Drinking Water Act

The construction of a new BPS and watermain extension will require an amendment to the Municipal DWWP and Municipal Drinking Water License (MDWL) issued under the Safe Drinking Water Act. Additionally, the watermain will be incorporated with such amendment.

8.4 Ontario Heritage Act

If archaeological resources are impacted by EA project work, MCM must be notified at archaeology@ontario.ca. All activities impacting archaeological resources must cease immediately, and a licensed archaeologist must carry out an archaeological assessment in accordance with the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists.

If human remains are encountered, all activities must cease immediately, and the local police and coroner notified. In situations where human remains are associated with archaeological resources, MCM should also be notified to ensure that the site is not subject to unlicensed alterations which would be a contravention of the Ontario Heritage Act.

8.5 Ontario Water Resources Act

If dewatering is required, and if the dewatering is over 50,000 L/day, but less than 400,000 L/day; the Contractor will be required to register the water-taking activity with the Environmental Activity and Sector Registry (EASR). A PTTW would be required for water-takings over 400,000 L/day under section 34.1 of the Ontario Water Resources Act is required. Should a PTTW be required, the Municipality will apply for the permit and not undertake dewatering activities until the required permit is received.

8.6 County of Bruce

The construction of the watermain from the BPS to Tiverton will take place in the Bruce Road 15 road allowance, which is under the jurisdiction of the County of Bruce. The Municipality will be required to seek approval/permission from the County to undertake construction within their road allowance.

8.7 Ontario Regulation 406/19 – Excess Soil Management

Management of excess soils will be completed in conformity with the guidelines and regulations issued under Ontario Regulation 406/19 – On-Site and Excess Soil Management regulation.

8.8 Migratory Birds Convention Act

The Migratory Birds Convention Act protects migratory birds and their nests from destruction. Should any tree removal be required in conjunction with this project, tree removal will be take place September to April 1 of a given year, outside of active nesting periods. Should tree removal be required within nesting periods, a biologist will be required to attend the site and make a determination on the presence of active nests.

8.9 Environmental Commitments

As an outcome of the MCEA process, the Municipality is committed to carrying out the following measures to mitigate potential environmental impacts related to project implementation:

- Implementation of standard construction mitigation measures (e.g., sediment and erosion control, site restoration) as presented in Table 7.1, where appropriate, during the construction phase of the project to minimize constructed-related impacts to the natural and social environments.
- Construction area should be fenced to prevent wildlife from entering the disturbed area. The active construction area should be inspected for wildlife before heavy equipment is moved within the project area. The Contract will include provisions requiring the Contractor not to harm, feed or unnecessarily harass wildlife.

- Wildlife encountered during construction activities should be allowed to exit the site on their own, via safe routes. Removal of wildlife should be done by a qualified wildlife service provider.
- Any tree removal should take place between September 1 and April 1. Outside of this period, a qualified biologist should be engaged to check for any active bird nests.
- Any activities occurring as a result of the construction that result in the management of excess soil will be completed in accordance with Ontario Regulation 406/19, On-Site and Excess Soil Management, and current guidance documents entitled Management of Excess Soil – A Guide for Best Management Practices.
- Submission of relevant applications for required approvals, as well as implementation of all conditions issued in association with the subsequent approvals.
- Adjacent property owners will be advised in advance of the construction.
- Property owners in Tiverton and Inverhuron will be advised, with as much notice of possible, of any planned service interruptions.

9.0 CONCLUSIONS AND PROJECT IMPLEMENTATION

9.1 Selection of a Preferred Alternative

Given the foregoing, **Alternative 2 – Construct a BPS to connect to the Kincardine Drinking Water System** is identified as the preferred solution to the identified problem. Figure 7.1 illustrates the location of the preferred solution.

9.2 Impact Mitigation

Based upon a review of the current environmental setting, there were no significant impacts associated with the implementation of the preferred alternative that could not be mitigated. Therefore, the implementation of the proposed preferred alternative is appropriate for the identified problem and is not expected to result in any significant impacts to the natural, social, economic, cultural, or technical environment. The merits of this option were also seen to substantially outweigh those identified for the other alternative solution considered in this process.

9.3 Final Public Consultation

A Notice of Completion will be circulated to local residents, stakeholders, government review agencies and Indigenous communities. The Notice will identify the preferred alternative and provide the process for providing comments and submitting a Section 16 Order request to the Minister of Environment, Conservation, and Parks.

The following summarizes the distribution of the Notice.

Contents: Identification of the preferred solution, key project components, key plan

Issued:

Placed In:

Distributed to

Review Period:

9.4 MCEA Schedule

The recommended solution has been evaluated as a Schedule B activity under the terms of the MCEA document, as the project involves the construction of a new water pumping station at a new municipal site. The project is approved following the completion of an environmental screening process.

9.5 Section 16 Order

Under Section 16 of the EA Act, the Ministry of Environment, Conservation and Parks may order a proponent to undertake an Individual EA or impose conditions on the project. A person may request an order under Section 16 if there is a concern that potential adverse impacts to Aboriginal or treaty rights have not been addressed through the

MCEA process. A request can only be made on the grounds that the order may prevent, mitigate or remedy adverse impacts on Constitutionally protected Aboriginal or treaty rights. Requests on other grounds will not be considered. If a Section 16 Order is submitted, the project may not proceed until direction is provided by the Minister.

A Section 16 Order must be made within the 30 day public comment period. A Section 16 order request must include:

- Name, address and email address of the submitter
- Project name
- Proponent name
- Type of order being request (i.e. a request for additional conditions or request for an individual environmental assessment)
- Details about concerns on impacts to constitutionally protected Aboriginal or treaty rights and how an Order may prevent, mitigate or remedy the impacts
- Information on any efforts to discuss or resolve concerns with the proponent
- Any other information to support your request.

10.0 SUMMARY

This report documents the Municipal Class Environmental Assessment process conducted to investigate options to increase the supply capacity of the Tiverton Drinking Water System. A recent Water and Wastewater Master Plan completed for the Municipality identified that the Tiverton Drinking Water System is overcommitted. Additional supply is required to accommodate approved future residential growth within Tiverton. It was also noted that the casing of Briar Hill Well #1 is deteriorating and the well will likely require replacement in the near future. Furthermore, there is mechanical and electrical equipment that have reached the end of their life and also need replaced.

Initially, a background review was carried out to characterize the project study area and identify factors influencing the selection of alternative solutions. The background review included investigations of the natural heritage and cultural landscape, species at risk, and an examination of the existing water supply infrastructure within the community of Tiverton. The background review found no natural heritage or cultural resources, Areas of Natural and Scientific Interest are within the study area and there is limited habitat opportunity for Species at Risk within the proposed sites.

The MCEA process considered several options to address the identified problem –

The 2023 Water and Wastewater Master Plan identified the Tiverton Drinking Water System is overcommitted and additional supply capacity is required to support future growth

To address the identified problem the following alternative solutions were identified

- Alternative 1 - Expand existing or construct a new groundwater supply
- Alternative 2 - Construct a BPS to connect to the Kincardine Drinking Water System
- Alternative 3 - Reduce demands/limit community growth
- Alternative 4 - Do Nothing

Through the initial review of alternatives, it was determined that Alternative 3 is not practical or feasible to implement. It is not possible to reduce existing demands to provide sufficient capacity for the forecasted future growth. Further, local and provincial planning policies direct growth to settlement areas like Tiverton where there are full municipal services. For these reasons, this alternative was not evaluated any further.

The potential impacts on the natural, social, cultural, economic, and technical environments of the other alternatives were evaluated. Alternative 1: Expanding existing or constructing a new groundwater supply, is anticipated to require implementing an additional two wells to meet future development commitment needs. This alternative also requires replacing Briar Hill Well #1 and its pumphouse to have sufficient capacity for existing residents and future growth.

Alternative 4: Do Nothing would require the municipality to limit future growth and still repair the deficiencies of Briar Hill Well #1 to supply existing connections within the community of Tiverton. Alternative 3 does not address the issues of water supply within the community of Tiverton.

The result of the evaluation is a preference for implementation of **Alternative 2 – Construct a connection to the Kincardine Drinking Water System.** The following are the key attributes associated with this alternative that justify its selection as the preferred option:

- It addresses the identified problem statement.
- There is sufficient capacity in the KDWS to supply the existing residents and future development commitments in Tiverton.
- Municipally owned land is available at 3194 Bruce Road 15 to site a BPS.
- It is compatible with existing and future infrastructure services in the area.
- In the short term it removes the need to replace Briar Hill Well #1 and potential need for arsenic treatment equipment at the Dent Hill Well.
- In the long term is expected to have lower maintenance and operating costs compared to the current groundwater system.
- Will allow for future growth and development within the community of Tiverton.

The proposed project is a Schedule B activity under the terms of the MCEA document. The project is considered approved subject to the completion of this screening process. It is expected that following completion and approval of this EA, the Municipality will proceed to detail design, followed by construction.

All of which is respectfully submitted.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____

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Per _____

Andrew Garland, P. Eng.

Senior Engineer

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