Project File Report

Heidelberg Water Supply System Municipal Class Environmental Assessment (EA)

Prepared for:
Region of Waterloo

Prepared by:
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Waterloo, ON

December 2022
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<th>Revision</th>
<th>Description</th>
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1.0 Introduction and Background

The Region of Waterloo (Region) retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (Class EA) Study to establish a long-term water servicing solution for the community of Heidelberg, Ontario. Some components in the existing water treatment plant (WTP) have reached the end of their service life. The purpose of this study was to develop a preferred alternative for long term water supply for the Heidelberg community.

The objectives of the Heidelberg Water Supply System Schedule B Class EA were to:

- Complete Phases 1 and 2 of the Municipal Class EA, which includes identification of the project and opportunity statement (phase 1), and to develop and evaluate alternative solutions to select a preferred alternative (phase 2)
- Allow for public, agency, stakeholder consultation and First Nation and Indigenous community engagement to satisfy the Municipal Class EA process
- Document upgrades and associated costs (budgetary estimates) required to maintain the Heidelberg WTP at an adequate operating condition over the next 5-year period pending implementation of the preferred EA alternative

This Project File Report documents the Class EA process, including the development of the problem/opportunity statement, inventory of the natural, social, and cultural environment, and the evaluation of alternative solutions. The report also documents the consultation undertaken which occurred throughout the project. The preferred alternative solution is documented based on input received from agencies, the public, stakeholders, First Nations and Indigenous communities.

An EA process overview is identified in Section 2.1.

1.1 Background and Previous Studies

This section provides a summary of previous studies undertaken regarding the Heidelberg Water Supply System (WSS) which includes the water distribution network (water pipes) that services the community, as well as the Heidelberg WTP.

A 2018 Condition Assessment was conducted for the Heidelberg WTP in 2018 (C3 Water, et. al, 2019) which provided information regarding the existing plant components and identified that replacement of certain components would be required. Further details on the condition of the existing system are provided in Section 4.1.
The Alternatives Assessment and Design Concept Report (Jacobs, 2020) was prepared by the Region of Waterloo as a high-level assessment to address potential infrastructure needs in the event that a new Health Canada guideline for a Maximum Allowable Concentration for strontium in the water supply was adopted by the Province of Ontario. The report also examined the Heidelberg Water Supply System and the nearby St. Clements Water Supply System and identified there is the potential for sufficient treatment and storage capacity at the St. Clements WTP to satisfy the long term (2031) demands of both systems.

The report included a preliminary assessment of alternative solutions to address the water supply alternatives for the Heidelberg WTP including Do Nothing, Supply Water from a nearby Water System, Develop New Water Sources, and On-site Treatment Upgrades. “Supply Water from a Nearby Water System” was identified as the most promising servicing option.

Additional studies were recommended to consider potential connection options as well as hydraulic modelling. It was noted that a Schedule B Municipal Class Environmental Assessment would be required to evaluate the alternatives.

Results of the background review were incorporated into the review of existing water infrastructure (Section 4.1) and the identification of alternative solutions (Section 6.0).

1.2 Study Area

The Study Area, shown in Figure 1, is located in the Township of Wellesley and the Township of Woolwich. The Study Area includes the communities of Heidelberg and St. Clements, including their respective Water Treatment Plants (WTP). St. Clements was included in the Study Area due to the potential for interconnection of the two water networks.

The St. Clements WTP is located on Expo Drive. The Heidelberg WTP is located on Bavarian Drive east of Kressler Road. Both are shown in Figure 1.
Figure 1: Study Area Map
2.0 Planning Process

2.1 Municipal Class EA Process

All municipalities in Ontario are subject to the provisions of the Environmental Assessment Act (EA Act), which mandates the completion of an EA before constructing municipal infrastructure projects. The environments included under the EA Act encompass social, cultural, natural, and economic aspects of Ontario. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administration of the EA Act.

The Municipal Engineers Association (MEA) Municipal Class Environmental Assessment document (October 2000, as amended in 2007, 2011, & 2015), provides guidelines approved under the EA Act which protect the environment during the completion of municipal road, sewage and water infrastructure projects. The undertakings are considered pre-approved provided the mandatory environmental planning process as set out in the Class EA document is completed. The MEA Class EA document provides municipalities with a five-phase planning process approved under the EA Act to plan and undertake all municipal infrastructure projects in a manner that protects the environment.

Key components of the Class EA planning process include:

- Consultation with potentially affected parties early and throughout the process;
- Consideration of a reasonable range of alternative solutions;
- Systematic evaluation of alternatives;
- Clear and transparent documentation; and
- Traceable decision-making.

The MEA Class EA document provides a framework by which projects are classified as Schedule A, A+, B, or C based on a variety of factors including the general complexity of the project, level of investigation required, and the potential impacts on the natural, social, cultural, and economic environments that may occur. Each schedule classification requires a different level of documentation and review to be compliant with the EA Act and satisfy the requirements of the Class EA. The proponent is responsible for identifying the appropriate schedule for any given project and reviewing the applicability of the schedule at multiple stages throughout the project.

Schedule A projects are limited in scale with minimal anticipated environmental impacts. They are pre-approved and may be implemented without undertaking public consultation or following the planning process as outlined in the Class EA. Examples of
Schedule A projects include on-going maintenance activities, normal operation of sewage treatment plants, and increasing pumping station capacity by adding or replacing equipment where new equipment is located within an existing building or structure.

**Schedule A+** projects are similarly pre-approved but require that proponents notify potentially affected parties prior to implementation. An example of a Schedule A+ project includes retiring a water infrastructure facility or retrofitting a facility for improvements.

**Schedule B** projects have the potential for some adverse environmental and social impacts. Proponents are thus required to undertake a screening process involving mandatory contact with potentially affected members of the public, Indigenous communities, and relevant review agencies to ensure that they are aware of the project and that their concerns are addressed. Schedule B projects require the completion of Phases 1 and 2 of the Class EA planning process, which is documented in a Project File and submitted for a mandatory 30-day comment period.

**Schedule C** projects have the potential for significant environmental impacts and must follow the full planning process specified in the Class EA document, including Phases 1 through 4. The project is documented in an Environmental Study Report (ESR), which is then filed for public, agency, and Indigenous community comment. Projects generally include the construction of new facilities, and major expansions to existing facilities.

**Figure 2** illustrates the five-phase planning process and identifies the steps considered mandatory for compliance with the requirements of the EA Act.
Figure 2: Municipal Class Environmental Assessment Process
2.1.1 Determining the Project Schedule

The project was initiated to determine the preferred long term water supply approach for the Heidelberg community. Since potential alternatives could include the need for additional property for water treatment plant site expansion, Stantec completed this Class EA study as a Schedule B project following Phases 1 and 2 of the EA process.

2.1.2 Project File Comment Process

Interested persons may provide written comments to the Region of Waterloo for a response using the following contact information:

Ayman Khedr, P.Eng.
Engineer, Engineering and Planning
Region of Waterloo
Water Services
Phone: 519-575-4400, ext. 4412
Email: AKhedr@regionofwaterloo.ca

In addition, following the filing of the Notice of Completion, a request may be made to the Ministry of the Environment, Conservation and Parks under section 16 of the Environmental Assessment Act requiring a higher level of study (i.e., requiring an individual/comprehensive EA approval before being able to proceed), or that conditions be imposed (e.g., require further studies), only on the grounds that the requested order may prevent, mitigate or remedy adverse impacts on constitutionally protected Aboriginal and treaty rights. Requests on other grounds will not be considered. Requests should include the requester contact information and full name for the ministry.

Requests should specify what kind of order is being requested (request for additional conditions or a request for an individual/comprehensive environmental assessment), how an order may prevent, mitigate or remedy those potential adverse impacts, and any information in support of the statements in the request. This will ensure that the ministry is able to efficiently begin reviewing the request.

The request should be sent in writing by mail or by email to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and
HEIDELBERG WATER SUPPLY SYSTEM MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (EA)

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to the Region of Waterloo.
3.0 Consultation

This section provides a summary of the project consultation and communications.

3.1.1 Project Contact List

A project contact list was prepared for this project and maintained throughout the project. The list included agencies, stakeholders, Indigenous communities, and those that expressed an interest in the study through consultation with the Region. The list was updated throughout the project as requests from the public were received.

The project contact list is included in Appendix A.

3.1.2 Study Notifications and Public Consultation Centres

The Region of Waterloo included notification materials on its dedicated webpage for public information and comments: https://www.regionofwaterloo.ca/en/living-here/current-projects.aspx

The materials were posted virtually due to the COVID-19 restrictions. The posting of key project information such as notifications and Public Consultation Centre (PCC) materials (i.e., guided PowerPoint presentation, transcript, video) on the Region's website and YouTube channel.

- Combined Notice of Study Commencement/PCC # 1:
  - Mailed to the project contact list on May 18, 2021 for distribution to agencies, stakeholders, and Indigenous communities
  - MECP Project Information Form (PIF) sent May 18, 2021
  - Published in the Woolwich Observer on May 27, 2021 and June 3, 2021
  - Notice mailed to residents in St. Clements and Heidelberg May 27, 2021

PCC #1 was held virtually through the Region’s YouTube Channel to review background information for the study. The PCC materials were available starting on June 1, 2021. Comments were requested by June 30, 2021, using the contract information provided in the notice.

- Notice of PCC #2:
  - Mailed to the project mailing list on June 1, 2022
Notice mailed to residents in St. Clements and Heidelberg on June 1, 2022. Published in the *New Hamburg Independent* (June 1 and June 8, 2022) and *Woolwich Observer* (June 2 and June 9, 2022)

PCC #2 was held online through the Region’s YouTube channel to provide an update on the project and present the evaluation of alternatives and the preliminary preferred alternative. The PCC #2 materials were available starting on June 7, 2022. Comments were requested by July 7, 2022, using the contact information provided in the notice.

Public notification materials are provided in Appendix A. Public consultation presentation materials, as provided in the YouTube videos are in Appendix B.

At the conclusion of this study, the Notice of Study Completion will be prepared and circulated to the project contact list and published in the newspapers identified above. The Notice of Study Completion will indicate the start of the minimum 30-day public review period.

### 3.1.3 Agency Consultation

Agencies were sent the combined Notice of Study Commencement and Notice of PCC#1 on May 18, 2021. MECP was sent the Notice and the completed Project Information Form (PIF) on May 18, 2021. Notification to agencies and groups was provided in advance of the Notice of PCC#2 on June 1, 2022. Agencies, utilities, and other stakeholder groups were invited to comment on the display materials posted.

The Townships of Woolwich and Wellesley were engaged throughout the project through notices and project meetings to provide regular status updates.

Agency communication was received from the Ministry of Citizenship and Multiculturalism (MCM), formerly the Ministry of Tourism, Culture and Sport (MTCS), as well as MECP which provided general EA guidance information regarding the project. The MECP communication included a list of Indigenous communities to engage for this project.

Other communication occurred with the Grand River Conservation Authority (GRCA), including communication on June 22, 2022 which identified that GRCA has no significant concerns with the project as described in the PCC#2 materials as long as existing grades within the floodplain are restored, and adequate erosion and sediment controls are implemented during construction.

A summary of agency correspondence received during the project is included in Appendix C.
3.1.4 First Nation and Indigenous Community Consultation

In response to the Notice of Commencement, a written response from the MECP was received on July 9, 2021, identifying potentially interested Indigenous communities to be engaged as part of this study, including:

- Six Nations of the Grand River (SNGR)
- Haudenosaunee Confederacy Chiefs Council (HCCC)
- Mississaugas of the Credit First Nation (MCFN)

All public material has been forwarded to the above communities. Communities were notified and invited to all PCCs and given the opportunity to provide feedback through an invitation to meet. Letters to Indigenous communities for PCC1 sent May 18, 2021 and PCC2 sent June 1, 2022. The communities will also be provided with a notice and link to the Project File report indicating when the report is available for 30 day review.

Indigenous community engagement correspondence is provided in Appendix C.

A summary of the comments is included below:

3.1.4.1 Mississaugas of the Credit First Nation

MCFN was circulated a letter and notice on May 18, 2021 and June 1, 2022 as indicated above. The letters indicated opportunities for engagement and also provided a link to PCC materials.

MCFN provided a letter on April 12, 2021, identifying their Indigenous interests and requested information about archaeological assessment plans. A response was provided April 27, 2021, thanking the community for their interest, and identifying that the Stage 1 Archaeological Assessment was planned as part of the background review, and it would be circulated to the community once completed. A draft copy of the Stage 1 Archaeological Assessment was sent to the community on August 9, 2022. MCFN replied on August 10, 2022 and did not have any questions or express any concerns with the report or its findings.

Correspondence with MCFN is included in Appendix C.

3.1.4.2 Six Nations of the Grand River

The SNGR elected council was circulated a letter and notice on May 18, 2021 and June 1, 2022 as indicated above. The letters indicated opportunities for engagement and also provided a link to PCC materials. No responses were provided by the community as part of this project. The community will be provided with a Notice of Completion indicating where the community can view the Project File Report during the review period.
3.1.4.3 Haudenosaunee Confederacy Chiefs Council

The HCCC was circulated a letter and notice on May 18, 2021 and June 1, 2022 as indicated above. The letters indicated opportunities for engagement and also provided a link to PCC materials. No responses were provided by the community as part of this project. The community will be provided with a Notice of Completion indicating where the community can view the Project File Report during the review period.

Notification letters to the HCCC are included in Appendix C.

3.1.5 Public Consultation

A key component of the MCEA process is public consultation. For this study, the main points of public consultation are:

- Notifying the public that the study was commencing;
- Receiving public input regarding the Heidelberg Water Supply System including the evaluation criteria, environmental considerations, and evaluation of alternatives;
- To review and receive feedback on the preliminary preferred alternative including proposed mitigation measures; and
- To review the Project File Report during the 30-day comment period.

A summary of PCC#1 comments is provided in Table 1.

Table 1: Comment Summary Public Consultation Centre #1

<table>
<thead>
<tr>
<th>Comment Summary</th>
<th>Consideration in the EA</th>
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| Comments were received about the existing Heidelberg WTP and concerns about local property maintenance and sounds related to the existing or a future WTP. | • Response indicated the components that are reaching the end of their lifespan. The 2018 condition assessment identified a number of assets including electrical, instrumentation and control equipment, process piping and pumps that will be due for replacement in the near future.  
  • Local short-term and long-term impacts on residents and businesses were included in the evaluation criteria. |
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<tr>
<th>Comment Summary</th>
<th>Consideration in the EA</th>
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<tbody>
<tr>
<td>Sources of contamination should be considered, such as potential for impacts from agricultural fields or contamination from a former gas station in Heidelberg.</td>
<td>• Groundwater and source water protection areas (Wellhead Protection Areas) were considered as part of the evaluation of alternatives.</td>
</tr>
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</table>
| Questions were raised about water quality such as aesthetics (taste/smell), silt, iron content, and hardness coming from St. Clements. | • Water quality in both systems are from groundwater sources and meet Region standards for water quality.  
• Water quality, including aesthetics of the water were added to the evaluation of alternatives. |
| System resiliency and the need for power supply and backup systems should be considered. An individual suggested using natural gas rather than diesel for any backups, if needed. | • Considerations for backup supply provisions and backup generators were considered in the evaluation. |
| Promoting effective and efficient water treatment, minimizing disruptions, and minimizing/avoiding property impacts were indicated as important factors in the evaluation. | • Included in the evaluation of alternatives. |
| Site selection of infrastructure should consider the impact to the external size of a WTP, sound and zoning changes. | • Included in the evaluation of alternatives.  
• There is no change to the existing size of the Heidelberg or St. Clements WTP. No zoning changes are required as part of this project. |
| Individuals asked about what the alternatives would be for the project. | • Responses indicated that alternatives would be identified during a future phase of the project and presented at the second Public Consultation Centre. |
## Comment Summary

<table>
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<tr>
<td>Limitations in planning growth identified for communities based on Region of Waterloo estimates.</td>
</tr>
<tr>
<td>The St. Clements WTP was determined to have sufficient capacity to service the current and future water supply needs of both communities.</td>
</tr>
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## Impacts on Future Development in Heidelberg and St. Clements

- Limited planned growth was identified for the communities based on Region of Waterloo estimates.
- The St. Clements WTP was determined to have sufficient capacity to service the current and future water supply needs of both communities.

## Cost and Impact on Taxes

- There will be no levy or surcharge to Heidelberg property owners if the Heidelberg water supply source is changed to the St. Clements water treatment plant.

A summary of Public Consultation Centre #2 comments is provided in Table 2.

### Table 2: Comment Summary Public Consultation Centre #2

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<th>Comment Summary</th>
<th>Consideration in the EA</th>
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<tr>
<td>Groundwater availability/ability to meet existing and future growth of St. Clements and Heidelberg</td>
<td>Should the two distribution systems be combined and supplied from the St. Clements WTP, it would still operate well below its maximum capacity.</td>
</tr>
<tr>
<td></td>
<td>- St. Clements water treatment plant (WTP) currently has a capacity of 1,770 cubic meters per day and the current maximum day demand is 544 cubic meters per day.</td>
</tr>
<tr>
<td></td>
<td>- The maximum day demand at the Heidelberg water treatment facility is 298 cubic meters.</td>
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<td></td>
<td>Supplying water to Heidelberg from St. Clements will result in an increase in pumping from the St. Clements wells but flows will remain within the allowable water taking approved by the province in the Region’s Permit to Take Water (PTTW).</td>
</tr>
<tr>
<td></td>
<td>Pump tests completed as part of the PTTW application for the wells indicate there would be no long-term impacts on the local aquifer as a result of operating the wells up to the permitted capacity.</td>
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<tr>
<td></td>
<td>The Region will monitor water levels before, during, and after any potential changes to the well pumping rates to ensure the wells are operated in a sustainable manner.</td>
</tr>
<tr>
<td>Comment Summary</td>
<td>Consideration in the EA</td>
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<td>Kressler Road impacts should be avoided since watermains there were recently replaced and due to local traffic impacts</td>
<td>• Noted by the project team.</td>
</tr>
<tr>
<td>Need for operational redundancy for system failures or power outages</td>
<td>• The St. Clements Water Treatment Plant is equipped with a back-up power generator in the event of loss of power.</td>
</tr>
<tr>
<td></td>
<td>• The feasibility of retaining both systems was reviewed, however it was not viable from a cost, operational, or regulatory perspective to maintain both systems.</td>
</tr>
<tr>
<td></td>
<td>• The Region will continue to ensure the water supply system remains robust against emergencies and climate change under any future alternative.</td>
</tr>
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<td></td>
<td>• Each of the Region’s water facilities, including St. Clements, is designed to be able to provide full operational redundancy. This includes back up power generation, having two supply wells (one as a standby), additional redundant equipment such as pumps and chemical systems, a robust asset management program to keep equipment in good operational condition, and communicating with local municipal operations staff in case of emergencies.</td>
</tr>
<tr>
<td>Water quality</td>
<td>• It is anticipated that the water quality will be similar if the two systems are combined. This will be confirmed through routine water quality sampling.</td>
</tr>
<tr>
<td>Disruption and impacts on property taxes or whether this project is initiated to support a developer’s plans.</td>
<td>• This project is reviewing the best way to supply drinking water to the existing residents of Heidelberg. There are no new development areas identified for the community of Heidelberg. Individuals were invited to comment on the Regional Official Plan (ROP) that is currently being updated for any questions related to growth in the Region of Waterloo.</td>
</tr>
<tr>
<td>Comment Summary</td>
<td>Consideration in the EA</td>
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<tr>
<td><strong>Hydrant installation</strong></td>
<td>• This possibility was considered; however, larger distribution system pipes would be required and could impact residual chlorine in the distribution system or other adverse water quality affects. Hydrant installation is not recommended as part of the preferred solution.</td>
</tr>
</tbody>
</table>
| **Property contamination**                                                    | • The Region monitors the raw and treated water from all municipal production wells.  
• The water supply at Heidelberg has not shown any evidence of influence from the contamination at the identified location. |
| Groundwater remediation work is ongoing for many years at the NE corner of Lobsinger Line and Kressler Road |                                                                                                                                                                                                                        |
| **Decommissioning of the Heidelberg Water Treatment Plant**                   | • To be confirmed during the future detailed design phase of the project.                                                                                                                                                 |
| **Possible connection to the Region of Waterloo’s Integrated urban system**   | • This was not included as an alternative solution due to: significantly higher costs to connect with the larger urban system; increased water age and water quality due to longer pipes; differences (incompatibility) in the form of residual disinfection between the urban system and both the Heidelberg and St. Clements systems. |
| **Water pressure considerations**                                            | • Regional design guidelines stipulate that average pressures for distribution systems should fall within 50 and 80 PSI. Modelling indicates that proposed changes throughout the Heidelberg system will remain similar to existing conditions. |
4.0 Existing Conditions

Phase 2 of the Municipal Class Environmental Assessment study includes preparing an inventory of the existing natural, social and cultural environment for the study area. Alternative Solutions are then identified and evaluated, based on the available information.

Official Plan mapping was consulted as part of this project to identify existing land use policies and natural heritage features within the study area. Official Plan mapping is located in Appendix D.

A natural heritage background review was also completed to identify potential environmental constraints and to consult relevant databases for vegetation, wildlife and Species at Risk. The Natural heritage memorandum is included in Appendix E. Results of the environmental background review were also summarized in Technical Memorandum #2 in Appendix F.

4.1 Technical Environment

4.1.1 Existing Heidelberg Water Supply System

The Heidelberg WSS is located in the Township of Woolwich at 7 Bavarian Dr., Heidelberg, Ontario. The system serves the 1,103 residents within Heidelberg. The Heidelberg WSS receives raw water from two (2) wells. The water treatment process comprises one (1) pressure filter for iron and manganese removal with upstream chlorine addition for metals precipitation and disinfection, an in-ground 489 m³ reservoir, and pumps to provide pressurized treated water to the local distribution system. The treatment plant rated capacity is 1,374 m³/day, in comparison to the Heidelberg existing (2019) measured Maximum Day Demand of 298 m³/day. Based on the Region’s current planning numbers, the future projected population growth for Heidelberg is negligible. There is no storage in the Heidelberg distribution system.

The Heidelberg WTP has several components of the system that are reaching the end of their lifecycle as detailed in a 2018 Condition Assessment Report (C3W) and these components will require replacement over the next five (5) years to ensure security of supply if the WTP is to remain operational as summarized in TM#2 – Background Review in Appendix F.

4.1.2 Existing St. Clements Water Supply System

The St. Clements WSS is located in the Township of Wellesley at 14 Expo Dr., St. Clements, Ontario. The system serves the 1,261 residents within St. Clements. The St. Clements WSS receives raw water from three wells. The water treatment system
comprises two (2) gravity filters for iron removal with upstream chlorine addition for metals precipitation and disinfection, an in-ground 1,372 m³ reservoir, and pumps to provide pressurized treated water to the local distribution system. The treatment plant rated capacity is 1,770 m³/d, in comparison to the current (2019) St. Clements measured Maximum Day Demand of 544 m³/d.¹ Based on the Region’s current planning numbers the future projected population increase for St. Clements is 62 people² by 2031 and the Region’s associated projected future (2031) Maximum Day Demand is 471 m³/day. Based on the Region’s projections the remaining capacity in 2031 is therefore 1299 m³/d.³ There is no current storage in the St. Clements distribution system.

The St. Clements WTP is generally in good condition and is equipped with standby power as summarized in TM#2 – Background Review in Appendix F.

4.1.3 Transportation/Traffic

Heidelberg and St. Clements are situated on Lobsinger Line (Regional Road 15) which is an east-west Regional Road that joins the two communities. Heidelberg is located at the intersection of Kressler Road (Regional Road 16) and Lobsinger Line, while St. Clements is located on Herrgott Road (Regional Road 10). Each of the Regional Roads have one lane in each direction. The St. Clements water system is located at a facility on Expo Drive in a residential neighbourhood. The Heidelberg WTP is located on Bavarian Drive in a residential neighbourhood to the east of Kressler Road.

4.1.4 Hydraulic Model

A hydraulic model was developed for the project for the St. Clements and Heidelberg WSS. The hydraulic model was used to review fire flows for St. Clements and overall system pressures under each alternative servicing scenario. The existing Heidelberg water system does not provide fire flows. Fire protection for Heidelberg was considered however, larger distribution system pipes would be required and could impact residual chlorine in the distribution system or result in other adverse water quality affects. Fire flow recommendations, as defined in Table 8-1 of the MECP guidelines, for a population equivalent to St. Clements’ (approximately 1,300) should be between 64 to 79 L/s.

Overall, the St. Clements hydraulic grade line (HGL) (417.05 m minimum) is slightly higher than the Heidelberg HGL (416.22 m minimum). Simulations were also conducted for water age based on the alternatives. The hydraulic assessment is referenced in TM#4 in Appendix F.

¹ Source: Water and Wastewater Monitoring Report June 2020, Region of Waterloo
² Current (2021) Plans of Subdivision and Lots of Record data
³ applying the 2019 measured MDD value of 544 m³/d (which is notably higher than the historical average) the projected remaining capacity would be 1,226 m³/d.
4.2 Socio-Economic Environment

4.2.1 Existing Land Use

The study area includes the communities of St. Clements and Heidelberg. The communities are predominately surrounded by agricultural and natural areas. The communities are connected by Lobsinger Line which is a Regional Road. Land use designations are not expected to change as a result of this project. All improvement activities have been identified to occur within existing Region of Waterloo transportation right-of-way, and there will be no temporary or permanent property impacts.

The Region of Waterloo Official Plan (2015), as well as the local Township of Wellesley (August 2015 consolidation) and Township of Woolwich Official Plan (2000, 2012 consolidation) documents were reviewed for this project. A summary of the Official Plan policies is included in *TM#2 – Background Review* in Appendix F.

4.2.2 Provincial Policy Statement

The *Provincial Policy Statement* (PPS) is issued under Section 3 of the Planning Act and came into effect on May 1, 2020. Section 3 of the Planning Act states decisions affected planning matters “shall be consistent with” the PSS. The consistency of the proposed improvements (defined as “infrastructure” in the PPS) with the relevant Infrastructure and Public Service Facilities policies included in Section 1.6.6. of the PPS is summarized below:

Planning for sewage and water services shall:

a) accommodate forecasted growth in a manner that promotes the efficient use and optimization of existing:

1. municipal sewage services and municipal water services; and
2. private communal sewage services and private communal water services, where municipal sewage services and municipal water services are not available or feasible;

b) ensure that these systems are provided in a manner that:

1. can be sustained by the water resources upon which such services rely;
2. prepares for the impacts of a changing climate;
3. is feasible and financially viable over their lifecycle; and 4. protects human health and safety, and the natural environment;
c) promote water conservation and water use efficiency;

d) integrate servicing and land use considerations at all stages of the planning process;

and

e) be in accordance with the servicing hierarchy outlined through policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5. For clarity, where municipal sewage services and municipal water services are not available, planned or feasible, planning authorities have the ability to consider the use of the servicing options set out through policies 1.6.6.3, 1.6.6.4, and 1.6.6.5 provided that the specified conditions are met.

The PPS requires that Proponents consider the significant resources protected by Section 2 of the PPS, when planning for corridors and rights-of-way. Significant resources potentially affected by the proposed improvements may include significant wildlife habitat, groundwater and archaeological or cultural resources.

4.2.3 Other Provincial Land Use Policies

The study area is located in the Greater Golden Horseshoe (GGH) where land use must also adhere to Provincial-level land use policy documents under the Places to Grow Act. These policies include A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020 (the “Growth Plan”).

The project adheres to the direction of the Growth Plan as it upholds the protection of lands within or adjacent to key hydrologic, key hydraulic areas, and key natural heritage features.

The Growth Plan also includes policies in Section 3.2.6 “Water and Waste Water Systems” which encourage municipalities to consider opportunities to optimize and improve efficiency in existing systems supported by strategies for energy and water conservation and demand management. The system should also be planned to serve growth to achieve minimum intensification and density targets. The plan promotes the use of comprehensive water or wastewater master planning to:

i. demonstrate that the effluent discharges and water takings associated with the system will not negatively impact the quality and quantity of water;

ii. identify the preferred option for servicing growth and development, subject to the hierarchy of services provided in policies 1.6.6.2, 1.6.6.3, 1.6.6.4 and 1.6.6.5 of the PPS, 2020, which must not exceed the assimilative capacity of the effluent receivers and sustainable water supply for servicing, ecological, and other needs; and

iii. identify the full life cycle costs of the system and develop options to pay for these costs over the long-term.
The Growth Plan also requires that municipalities sharing water resources will coordinate their planning based on watershed planning or equivalent to ensure that the quality and quantity of water is protected, improved or restored.

The current project adheres to these policies by undertaking an environmental assessment to consider potential opportunities to optimize the existing system and encourage planning across jurisdictions.

The study area includes lands that are within 120 m of the Growth Plan’s Natural Heritage System, consisting of the Martin Creek Headwaters Provincially Significant Wetland (PSW) Complex in the Study Area south of St. Clements. No project work is anticipated to affect these features.

### 4.2.4 Region of Waterloo Official Plan

The Region of Waterloo is an upper-tier municipality, which encompasses seven local municipalities. The *Regional Official Plan* (ROP, Region of Waterloo, 2015) is the guiding document for directing growth and change throughout the Region for the next 20 years. The plan also implements the main growth goals identified by the Regional Growth Management Strategy and sets out actions to achieve a sustainable and livable Waterloo Region. It also provides policies to address local issues, unique characteristics, and objectives and goals. Policies related to the study area are discussed below.

St. Clements and Heidelberg are surrounded by lands designated as “Protected Countryside” and “Prime Agricultural Area” (ROP, Map 7). Protected Countryside represents a continuous band of environmental features and agricultural lands surrounding the north, west and south sides of the Urban Area designation that is to be permanently protected. Prime Agricultural Areas are lands that include Specialty Crop Areas and/or Canada Land Inventory Classes 1, 2, and 3 soils, in this order of priority for protection. The overall goal is to “protect the rural character of the countryside, while supporting the development of strong and prosperous rural communities” (ROP, Chapter 6).

Lands surrounding the existing wells in Heidelberg and St. Clements are designated as “Wellhead Protection Sensitivity Areas” (ROP, Chapter 8, and Maps 6b and 6d). A “Regional Recharge Area” is identified between Lobsinger Line and Hawkesville Road which includes much of the study area between St. Clements and Heidelberg (ROP, Map 4 and Map 6g).

The ROP includes mapping and descriptions of natural heritage system areas. These are defined as “Landscape Level Systems”, “Core Environmental Features” and “Supporting Environmental Features”, and the linkages between them as components of the Greenland Network. (ROP, Chapter 7 and Map 4). The Regional Recharge area is
identified as a Landscape Level System while Core Environmental Features are identified in more detail in later sections of this Technical Memorandum.

### 4.2.5 Township of Wellesley Official Plan

The Township of Wellesley is one of the seven local municipalities within the Region of Waterloo. Lands within the western portion of the Study Area are subject to the Township of Wellesley Official Plan policies (August 2015 consolidation). The Official Plan must adhere to ROP policies, but also includes local considerations which are described below pertaining to the Township. The portion of Heidelberg that resides within the Township of Wellesley boundary – which is primarily residential and commercial land use - is included in this Official Plan.

The St. Clements Settlement Area includes residential, institutional, and a “settlement core” area surrounding the Lobsinger Line and Herrgott Road area intersection. The area surrounding the St. Clements Settlement Area is designated as “Protected Countryside” and “Prime Agricultural” on Map 10 of the Township of Wellesley Official Plan. An environmental constraint area crosses Lobsinger Line in the southeast of the St. Clements Settlement Area noted as a flooding hazard on Map 3 of the Official Plan.

Lands surrounding the existing wells in Heidelberg and St. Clements are designated as “Wellhead Protection Sensitivity Areas”. A “Regional Recharge Area” is identified between Lobsinger Line and Hawkesville Road which includes much of the study area between St. Clements and Heidelberg.

### 4.2.6 Township of Woolwich Official Plan

The Township of Woolwich is one of the seven local municipalities within the Region of Waterloo. Lands within the eastern portion of the Study Area are subject to the Township of Woolwich Official Plan policies (2000, 2012 consolidation). The majority of the Study Area consists of the Heidelberg Settlement Area (Urban) which includes “Residential”, “Institutional”, and a “Settlement Core” area surrounding the Lobsinger Line and Kressler Road area intersection. The area surrounding the Heidelberg Settlement Area is “Protected Countryside.”

### 4.2.7 Grand River Conservation Authority

The study area is located within the Grand River Conservation Authority (GRCA) jurisdiction and some lands within the study area are subject to its regulation policies, particularly associated with watercourses which cross under Lobsinger Line which are part of the GRCA Regulatory Area. To ensure that regulatory policies associated with the Regulatory Area are complied with, the Region will continuously consult GRCA throughout the timeline of this project.
4.3 Natural Environment

A Natural Heritage Background Review was completed, which included a review of natural heritage features (terrestrial and aquatic ecosystems) that are within the study area. Due to the size of the area including Heidelberg, St. Clements and agricultural areas between these communities, there were many areas that could be potential habitat for wildlife, including Species at Risk.

The following natural features were identified as part of the background review:

- Martin Creek Headwaters Provincially Significant Wetland (PSW) Complex in the Study area is south of St. Clements;
- St. Clements North Wetland Complex at the Heidelberg Northwest Wetland Complex (not a PSW);
- Core Environmental Features, including wooded areas;
- GRCA Regulation Limit associated with wetlands and watercourses;
- Warmwater watercourses (may or may not provide fish habitat);
- Potential suitable habitat for Species at Risk and Species of Conservation Concern may be present, although it must be confirmed through field investigations only;
- Fish habitat may be present in mapped watercourses in the Study Area.

The results of the background review were included in Technical Memorandum #2 in Appendix F and results were carried into the evaluation of Alternative Solutions.

Site-specific field investigations were recommended as part of the background review, based on the preferred alternative design and the proposed impact areas.

4.4 Sourcewater Protection

In accordance with Ontario’s Clean Water Act (CWA), the Region of Waterloo has enacted policies through the Grand River Source Protection Plan (SPP) to protect groundwater sources within the Region. An update of the Grand River SPP came into effect February 3, 2021. The SPP policies work to reduce risk by regulating proposed and existing activities which have been identified as posing significant threats to drinking water safety. Depending on the hydrology and geology of an area, as well as potential risks posed by activities onsite, different policies under the SPP may apply to the Study Area.
The plan mapping identifies two Wellhead Protection Areas (WHPAs) located in the areas surrounding the existing wells in St. Clements and Heidelberg. Areas immediately surrounding the wells are identified as WHPA 10, followed by WHPA 8, WHPA 6, WHPA 4, and WHPA 2. In St. Clements, the subsequent levels of WHPA are oriented towards the south, the furthest extent identified as WHPA 2 near “Industrial Crescent.” In Heidelberg, the WHPA is oriented towards the west, with the maximum extent identified as WHPA 2 in the rural area between St. Clements and Heidelberg.

4.5 Cultural Environment

4.5.1 Cultural Heritage Resources

A preliminary background review was conducted for potential built heritage resources and potential cultural heritage landscapes for the study area including St. Clements and Heidelberg, which included a review of historic and topographic mapping and databases. Results for the study area indicated that there is one Designated Heritage Property under the Ontario Heritage Act (70 Arthur Road) and watercourses that are within the watershed of a Canadian Heritage River (Grand River). There were also many properties over 40 years old which many have potential for cultural heritage impacts.

Once the list of alternative solutions was confirmed, the MCM Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes checklist was completed with a focus on the proposed routes for a watermain connection between the communities. The checklist is included in Appendix E.

Results of the checklist indicated the presence of potential built heritage resources, and it was recommended that further evaluation should be completed.

A Cultural Heritage Report: Existing Conditions and Impact Assessment was completed and is described in Section 7.0.

4.5.2 Archaeological Resources

A Stage 1 Archaeological Assessment (Stantec, 2022) was completed for this project. The requirement for a Stage 1 archaeological assessment was identified during the evaluation of alternative solutions to consider whether areas of archaeological potential may be impacted. A property inspection was conducted on April 30, 2022.

The investigation area for the assessment was focused on the preferred route for the transmission watermain along Lobsinger Line, between St. Clements and Heidelberg. The study area includes extensive disturbances such as a municipal right-of-way, gravel shoulders, drainage ditches, gravel and asphalt laneways, and residential areas.
The report determined that the Stage 1 archaeological assessment study area retains low to no archaeological potential for the identification or recovery of archaeological resources due to extensive disturbance. A Stage 2 archaeological assessment is not recommended for any portion of the project’s anticipated construction area.

The Stage 1 archaeological report is included in Appendix E.

5.0 Problem and Opportunity Statement

Water supply to the Heidelberg community is provided by the Heidelberg Water Supply System (WSS) which includes the Heidelberg Water Treatment Plant (WTP) and distribution system (DS). A 2018 condition assessment (C3 Water) identified that much of the Heidelberg WTP process equipment is nearing the end of its useful life and major capital investment will be required to maintain this facility moving forward. Additionally, the current Heidelberg WTP process is considered oversized for the current and projected system demands.

The intent of this Class EA Study is to establish a long-term water servicing solution for the community of Heidelberg that is safe, efficient, cost-effective, and environmentally sustainable. This includes assessing the current system as well as alternative water supply options.
6.0 Alternative Solutions

As part of Phase 2 of the Municipal Class EA process, Alternative Solutions are identified and evaluated against the Problem/Opportunity Statement. The following Alternative Solutions were developed and assessed:

- **Alternative 1 - Do Nothing.** This alternative assumes no pre-emptive upgrades to the Heidelberg WSS. Based on a previous Condition Assessment, several components of the Heidelberg WTP system require replacement within the next 5 years. There is therefore a risk of potential failure of WTP components identified for replacement or upgrade.

- **Alternative 2 - Upgrade Heidelberg WTP.** This alternative involves completion of all upgrades identified in the 2018 Heidelberg WTP Condition Assessment. No change is required to operating pressures, fire flow or water age.

- **Alternative 3 - Supply Water from St. Clements to Heidelberg with New Transmission Watermain, Decommission Heidelberg WTP.** This alternative would involve construction of a new transmission main along Lobsinger Line. Hydraulic modeling for Alternative 3 confirmed that the differential in HGL between the two systems is minimal and therefore an opportunity is available to interconnect the two systems without the need for dedicated pumps.

- **Alternative 4- Supply Water from St. Clements to Heidelberg with New Transmission Watermain to Fill Heidelberg Clearwell and Use Existing Heidelberg High-lift Pumps.** This alternative would supply the existing Heidelberg clearwell (chlorinated water reservoir) from the St. Clements distribution system. This would require a connection along Lobsinger Line to travel through Heidelberg to the existing Heidelberg WTP site. Alternative 4 hydraulic modeling results found that this option has limited impacts to routine operating pressure but does introduce higher water age in Heidelberg, potentially necessitating the need to maintain the existing Heidelberg chlorine dosing equipment to boost disinfectant residuals at the discharge header.

The description of Alternative Solutions, and the hydraulic assessment are in TM#4 in Appendix F.
6.1 Assessment of Alternative Solutions

A number of factors and criteria were identified to evaluate the impacts of the project and alternatives:
HEIDELBERG WATER SUPPLY SYSTEM MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (EA)

- Environmental: Component having regard for protecting significant natural and physical elements of the environment (i.e., air, land, water, and biota), including natural heritage and environmental features and functions.

- Social/ Cultural: Component that evaluates potential effects on residents, neighbourhoods, businesses, community character, social cohesion, community features, and historical/archaeological and heritage components.

- Technical: Component that considers technical suitability and other engineering aspects of the servicing options.

- Financial: Considers the potential land requirements and compliance with legislated regulation and planning policies.

A qualitative assessment was conducted based on alignment with the criteria provided.

The legend for evaluation scoring is identified in Table 3. The full evaluation is available in Table 4. The summary of the results is included in Table 5.
Table 3: Scoring Legend

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<tr>
<th>Graphic</th>
<th>Rating/Description</th>
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<tr>
<td><img src="image" alt="Graphic" /></td>
<td>5 – Very well aligned with criteria</td>
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<td><img src="image" alt="Graphic" /></td>
<td>4 – Well aligned with criteria</td>
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<td><img src="image" alt="Graphic" /></td>
<td>3 – Somewhat aligned with criteria</td>
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<tr>
<td><img src="image" alt="Graphic" /></td>
<td>2 – Not well aligned with criteria</td>
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<td><img src="image" alt="Graphic" /></td>
<td>1 – Low alignment with criteria</td>
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<tr>
<td>Social</td>
<td>Minimizes impacts to existing residences, businesses and community features in short-term</td>
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<tr>
<td>Social</td>
<td>Minimizes impacts to existing residences, businesses and community features in long-term</td>
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<tr>
<td>Potential effect on approved/planned land uses</td>
<td>Compliance with Official Plan and municipal/regional policies</td>
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| Protects cultural heritage resources   | Conserves built heritage resources and/or cultural heritage landscapes     | • No anticipated impact on cultural heritage resources.                                                                                           | • No anticipated impact on cultural heritage resources.                                   | • No listed or designated properties within or adjacent to Lobsinger Line within 50 m of the transmission connection route.  
  • The proposed connection route passes near many properties and structures >40 years old.  
  • Within the watershed Transmission main connection construction occurs in less built-up areas compared to Alternative 4.  
  • A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment is required to determine potential impacts. |                                                                                                                               | • Designated property under Part IV of the Ontario Heritage Act – 70 Arthur Road.  
  • The proposed connection route passes near more properties and structures >40 years old, as compared to Alternative 3(A).  
  • Transmission main connection would require more construction in built-up areas of Heidelberg.  
  • A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment is required to determine potential impacts. |                                                                                                                               |
| Protects archaeological resources      | Conserves archaeological resources                                         | • No anticipated impact on archaeological resources.                                                                                             | • No anticipated impact on archaeological resources.                                     | • The majority of the study area likely retains archaeological potential.  
  • Additional studies are required, including a Stage 1 archaeological assessment, to confirm areas of archaeological potential.  
  • Further studies, such as a Stage 2 archaeological assessment, may be required in later detailed design stage (i.e. beyond the scope of this EA) for any areas of archaeological potential that cannot be avoided by project activities. |                                                                                                                               | • The majority of the study area likely retains archaeological potential.  
  • Additional studies are required, including a Stage 1 archaeological assessment, to confirm areas of archaeological potential.  
  • Further studies, such as a Stage 2 archaeological assessment, may be required in detailed design (i.e. beyond the scope of this EA) for any areas of archaeological potential that cannot be avoided by project activities. |
|----------|----------|----------------|---------------------------|-------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Protects health and safety | Potential to affect the water quality and safety of the Heidelberg water supply system due to either risk of treatment failure or excessive travel time in the pipes (“water age”) | Ability to meet applicable water quality and taste/aesthetic standards for well water | • No significant difference between alternatives with regards to water quality and safety to Heidelberg WSS.  
• Potential for treatment failures / loss of supply for Heidelberg with aging infrastructure (e.g., operator safety). | • No significant difference between alternatives with regards to water quality and safety to Heidelberg WSS. | • No significant difference between alternatives with regards to water quality and safety to Heidelberg WSS. | • No significant difference between alternatives with regards to water quality and safety to Heidelberg WSS. |
| Protects environmental features | Potential effects to environmental features, including:  
• Significant woodlands  
• Significant wetlands  
• Environmentally sensitive areas  
• Environmental protection areas  
• Environmental conservation areas  
• Steep slopes/ hazard areas  
Removal or disturbance of significant trees and/or ground flora  
Changes in vegetation composition | | • No anticipated impacts to environmental features. | • No anticipated impacts to environmental features. | • There are no significant natural environmental features identified based on desktop review.  
• No significant difference between Alternatives 3 and 4 with regards to removal or disturbance of vegetation along the proposed connection route.  
• Environmental constraint: crosses Lobsinger Line in SE end of St Clements settlement Area noted as flooding hazard of the Official Plan. | • There are no significant natural environmental features identified based on desktop review.  
• No significant difference between Alternatives 3 and 4 with regards to removal or disturbance of vegetation along the proposed connection route.  
• Environmental constraint: crosses Lobsinger Line in SE end of St Clements settlement Area noted as flooding hazard of the Official Plan. |

Environmental
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<tr>
<td>Protects wildlife and Species at Risk (SAR)</td>
<td>Reduction or deterioration of wildlife and Species at Risk habitat</td>
<td>• No impacts to wildlife and SAR are anticipated.</td>
<td>• No impacts to the wildlife and SAR are anticipated.</td>
<td>• Potential impacts to wildlife habitat and/or Species at Risk (SAR) along Lobsinger Line can be avoided/mitigated if proposed route is kept within the existing right-of-way. Should this Alternative be carried forward as the Preliminary Preferred Alternative, wildlife or SAR impacts and mitigation measures associated with finalized watermain alignment will be reviewed during the Conceptual Design stage of this EA process. • Vegetation removal shall occur outside of the breeding bird window (April 1 to August 31). • Construction, including potential in-water works, shall be completed in accordance with applicable environmental approvals/permits.²</td>
<td>• Potential impacts to wildlife habitat and/or Species at Risk (SAR) along Lobsinger Line can be avoided/mitigated if proposed route is kept within the existing right-of-way. Should this Alternative be carried forward as the Preliminary Preferred Alternative, wildlife or SAR impacts and mitigation measures associated with finalized watermain alignment will be reviewed during the Conceptual Design stage of this EA process. • Vegetation removal shall occur outside of the breeding bird window (April 1 to August 31). • Construction, including potential in-water works, shall be completed in accordance with applicable environmental approvals/permits.¹</td>
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<td></td>
<td>Effects of timing of construction on nesting/ breeding periods</td>
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² Permitting requirements will be confirmed during detailed design, in consultation with MECP, MNDMNRF, GRCA, and DFO, as required to confirm authorization requirements under Endangered Species Act (ESA) or Species at Risk Act (SARA) and work near regulated watercourses.
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<tbody>
<tr>
<td>Protects groundwater, streams and rivers</td>
<td>Reduction or deterioration of fish and fish habitat Effects of construction timing on spawning periods Changes or impacts to groundwater quality Impacts to GRCA regulated areas should be minimized Aligns with Clean Water Act requirements</td>
<td>• No anticipated impact on groundwater, streams, and rivers.</td>
<td>• No anticipated impact on groundwater, streams, and rivers.</td>
<td>• The transmission main for Alternative 3 and 4 along Lobsinger Line crosses the Tributary to Martin Creek (No. 11 drain) and may contain fish and fish habitat. • Tributary to Martin Creek is part of a GRCA regulated area and a permit may be required. • Should this Alternative be carried forward as the Preliminary Preferred Alternative, a Fish and Fish Habitat assessment shall be completed during the Conceptual Design stage of this EA process to determine potential impacts to fish and fish habitat due to transmission main construction. • Construction, including potential in-water works, would be completed in accordance with applicable environmental approvals/permits. ¹</td>
<td>• The transmission main for Alternative 3 and 4 along Lobsinger Line crosses the Tributary to Martin Creek (No. 11 drain) and may contain fish and fish habitat. The watercourse is also part of a GRCA regulated area and a permit may be required. • Should this Alternative be carried forward as the Preliminary Preferred Alternative, a Fish and Fish Habitat assessment shall be completed during the Conceptual Design stage of this EA process to determine potential impacts to fish and fish habitat due to transmission main construction. • Construction, including potential in-water works, would be completed in accordance with applicable environmental approvals/permits. ¹</td>
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<tr>
<td>Minimizes climate change impacts</td>
<td>Minimizes greenhouse gas emissions.</td>
<td>• Long-term operation of oversized Heidelberg WTP would result in a net higher greenhouse gas emissions relative to alternatives 3.</td>
<td>• Long-term operation of oversized Heidelberg WTP would result in a net higher greenhouse emissions relative to alternatives 3.</td>
<td>• Minimized greenhouse gas emissions associated with the maintenance and operation of one (1) treatment plant for two (2) communities; and decommissioning of oversized treatment processes at Heidelberg WTP. • Eliminates visits to Heidelberg WTP for routine compliance testing, inspections, and maintenance. • Potential to minimize energy use / greenhouse gas emissions with more efficient pump operation at St. Clements.</td>
<td>• Additional greenhouse gas emissions relative to Alternative 3, due to the pumping of water to Heidelberg clearwell and additional operation of HL pumps at Heidelberg WTP. • Potential loss of energy efficiency associated with an increase in system flushing to manage water age.</td>
<td></td>
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<tr>
<td>Technical</td>
<td>Minimizes land requirements</td>
<td>Number and type of properties required. Amount of land required, including temporary/permanent easements</td>
<td>• No additional property or land required for continued use of Heidelberg WTP site.</td>
<td>• No additional property or land required for continued use of at Heidelberg WTP site.</td>
<td>• Requires decommission of Heidelberg WTP, reducing land used for water supply in study area. • Addition of transmission main anticipated within Region of Waterloo right-of-way (Lobsinger Line) to avoid property acquisition.</td>
<td>• No additional property or land required for continued use of Heidelberg WTP site. • Addition of transmission main anticipated within Region of Waterloo right-of-way (Lobsinger Line) to reduce property acquisition. • Use of Township right-of-way is required to connect transmission main to Heidelberg water system and clearwell.</td>
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<td></td>
<td>Provides reliable service</td>
<td>Ability to provide a safe and reliable water supply system for the Heidelberg community</td>
<td>• Potential for treatment interruption due to aging infrastructure.</td>
<td>• Reliable service expected. • Backup generator installation is more accessible / reliable at St. Clements and Heidelberg is supplied by fewer wells than St. Clements.</td>
<td>• Greater source and backup power redundancy for Heidelberg system. St. Clements WSS is supplied by three (3) wells whereas Heidelberg WSS is supplied by two (2) wells. • St. Clements WSS has substantial additional capacity to supply Heidelberg for long-term. • Low complexity for operation. • Potential for trucked water connection to improve reliable service in event of disruption. • St. Clements has reliable and permanent backup power supply.</td>
<td>• Reliable service expected; existing clearwell storage maintained. • St. Clements WSS has substantial additional capacity to supply Heidelberg for long-term. • Greater source redundancy for Heidelberg system (St. Clements WSS is supplied by three (3) wells whereas Heidelberg WSS is supplied by two (2) wells). • Potential for trucked water connection to improve reliable service in event of disruption. • Requires second stage of pumping therefore potentially less reliable due to additional system components required to maintain supply (additional risk of failure).</td>
</tr>
<tr>
<td></td>
<td>Resilient service</td>
<td>Ability to adapt to more extreme climate conditions.</td>
<td>• No change to the existing system, i.e. no planned implementation of future climate change adaptation measures if required</td>
<td>• No change to the existing system. • Potentially higher cost of implementation measures due to two (2) WTPs to upgrade and maintain with respect to potential climate adaptation measures in long-term if required.</td>
<td>• No significant impact on resilience of service. • Cost of implementation of resilience measures less than other alternatives due to one (1) WTP to upgrade and maintain with respect to potential climate adaptation measures in long-term, if adaptation upgrades are required.</td>
<td>• Potentially higher cost of implementation measures due to two (2) WTPs to upgrade and maintain with respect to potential climate adaptation measures in long-term, if required. • Additional risk to additional point-of-entry infrastructure.</td>
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</table>

- Provides reliable service
- Resilient service

- No change to the existing system, i.e. no planned implementation of future climate change adaptation measures if required
- No change to the existing system. • Potentially higher cost of implementation measures due to two (2) WTPs to upgrade and maintain with respect to potential climate adaptation measures in long-term if required.
- No significant impact on resilience of service. • Cost of implementation of resilience measures less than other alternatives due to one (1) WTP to upgrade and maintain with respect to potential climate adaptation measures in long-term, if adaptation upgrades are required.
- Potentially higher cost of implementation measures due to two (2) WTPs to upgrade and maintain with respect to potential climate adaptation measures in long-term, if required. • Additional risk to additional point-of-entry infrastructure.
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<tbody>
<tr>
<td>Ability to meet the present and future water supply needs of Heidelberg.</td>
<td>Ability to provide water supply servicing for the current and projected population of Heidelberg and other potentially impacted communities (e.g., St. Clements)</td>
<td>• WTP is not fit for purpose for future supply needs due to condition assessment results and oversized for community. • No change to existing disinfectant residual profiles.</td>
<td>• Meets existing and future needs; though not fit for purpose of future supply needs as oversized for community. • No change to existing disinfectant residual profiles.</td>
<td>• Meets existing and future needs. • Optimal disinfectant residuals can be maintained through the use of auto-flushers.</td>
<td>• Meets existing and future needs. • Optimal disinfectant residuals can be maintained through the use of auto-flushers or through the use of existing disinfection equipment at Heidelberg WTP.</td>
<td></td>
</tr>
<tr>
<td>Ease of compliance and legislative approval</td>
<td>Aligns with approval and permitting process</td>
<td>• Potential for regulatory compliance issue due to condition assessment of existing system.</td>
<td>• No change to approval and permitting process.</td>
<td></td>
<td>• No significant change to approval and permitting process for water supply. • Permitting required for decommissioning Heidelberg WTP and updating St. Clements DWWP to stipulate additional supply community. • Construction, including potential in-water works, would be completed in accordance with applicable environmental approvals/permits.</td>
<td>• No significant change to approval and permitting process for water supply. • Permitting required for decommissioning elements of the Heidelberg WTP process and updating St. Clements DWWP to stipulate additional supply community. • Construction, including potential in-water works, would be completed in accordance with applicable environmental approvals/permits. • Potential for additional Township of Woolwich approvals for transmission main through Heidelberg community.</td>
</tr>
<tr>
<td>Aligns with existing and planned infrastructure improvements</td>
<td>Ability to coordinate with existing and planned Region of Waterloo and Township water, wastewater and transportation infrastructure improvements</td>
<td>• Low potential to coordinate with existing and planned infrastructure improvements as WTP unable to reliably meet future supply needs.</td>
<td>• High potential to coordinate with existing and planned infrastructure improvements; Region has accounted for recommended</td>
<td>• Moderate potential to coordinate with existing and planned infrastructure improvements; addition of transmission main to be coordinated with other Region and Township infrastructure improvements.</td>
<td>• Low ability to coordinate with existing and planned infrastructure improvements; Region could defer select upgrades to Heidelberg WTP upstream of clearwell. • Addition of transmission main to be coordinated with other</td>
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<td>Region and Township infrastructure improvements.</td>
<td></td>
</tr>
<tr>
<td>Operability</td>
<td>Ability to provide a system with low operational intervention and maintenance requirements. Ease of access to equipment for maintenance, upgrades and inspections. Maintenance of disinfectant residual</td>
<td>• High operation and maintenance requirements anticipated due to aging infrastructure and long-term operation and maintenance of two (2) WTPs for the two communities • No anticipated change to access to equipment or disinfectant residual</td>
<td>• Moderate operation and maintenance requirements anticipated due to long-term operation and maintenance of two (2) WTPs for both communities • Higher compliance related elements for operations to address • No anticipated change to access to equipment or disinfectant residual</td>
<td>• Lower operation and maintenance requirements than other alternatives due to operating one (1) WTP for both communities; and decommissioning Heidelberg WTP • No anticipated change to access to equipment</td>
<td>• Moderate to high operation and maintenance requirements anticipated due to maintaining some processes and infrastructure at Heidelberg WTP • Reduced regulatory requirements • No anticipated change to access to equipment</td>
<td></td>
</tr>
<tr>
<td>Constructability</td>
<td>Technical considerations for location, depth of excavation, soil conditions, rock removal, groundwater control, construction duration Effect on existing utilities and infrastructure (number and type of potential conflicts)</td>
<td>• Potential for unplanned and lengthy construction if upgrades are deferred.</td>
<td>• No issues with technical constructability.</td>
<td>• Low complexity for upgrades • Requires a metering chamber to be constructed along Lobsinger Line to enable flow monitoring prior to the point of entry to the Heidelberg DS • Addition of a trucked water connection is feasible.</td>
<td>• Moderate to High relative complexity for upgrades; though additional consideration required for connecting transmission main from Lobsinger Line to Heidelberg WTP. • Requires a metering chamber to be constructed along Lobsinger Line to enable flow monitoring prior to the point of entry to the Heidelberg water system. • Addition of a trucked water connection is feasible.</td>
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<tbody>
<tr>
<td>Financial</td>
<td>Life Cycle Cost</td>
<td>Provides low life cycle cost</td>
<td>• Low short-term costs.</td>
<td>• High life-cycle costs based on insignificant population growth, size of facility, and required upgrades / capital costs.</td>
<td>• Low life-cycle costs.</td>
<td>• Medium to high life cycle costs for maintaining both sites and additional clearwell / pumps at Heidelberg WSS.</td>
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<td></td>
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<td></td>
<td>• Potential high cost for ad hoc repairs and maintenance.</td>
<td>• Low-medium short-term costs ($105K to 2025) and long-term costs ($563K to 2042).</td>
<td>• Low capital and operating costs.</td>
<td>• Ongoing annual operational costs to maintain the Heidelberg WSS facility, and similar capital costs to maintain the building (per 2018 Condition Assessment) without upgrades to well pumps, filter equipment, and potentially chlorination equipment.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>• High maintenance costs relative to the size of service community.</td>
<td>• Ongoing annual operational costs for Heidelberg WSS.</td>
<td>• Potential for sale of Heidelberg WTP land.</td>
<td>• High maintenance costs relative to the size of service community.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Need to retain land for Heidelberg WTP</td>
<td>• High maintenance costs relative to the size of service community.</td>
<td>• Estimated 25-year lifecycle cost of $3.1M.</td>
<td>• Need to retain land for Heidelberg WTP</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>• Estimated 25-year lifecycle cost of $3.9M.</td>
<td>• Need to retain land for Heidelberg WTP</td>
<td></td>
<td>• Estimated 25-year lifecycle cost of $6.2.</td>
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</table>
Table 5: Summary of Evaluation of Alternative Water Supply Solutions

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<tbody>
<tr>
<td>Social/Cultural</td>
<td><img src="image1" alt="Diagram" /></td>
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<tr>
<td>Environmental</td>
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<tr>
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<td><img src="image11" alt="Diagram" /></td>
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<tr>
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<td><img src="image14" alt="Diagram" /></td>
<td><img src="image15" alt="Diagram" /></td>
<td><img src="image16" alt="Diagram" /></td>
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<tr>
<td>Overall Score</td>
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<td><img src="image18" alt="Diagram" /></td>
<td><img src="image19" alt="Diagram" /></td>
<td><img src="image20" alt="Diagram" /></td>
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6.2 Preferred Solution

Based on the assessment of alternatives, Alternative 3 – a new transmission watermain connection between the St. Clements and Heidelberg distribution systems – is the Preferred Solution.

Alternative 3 was identified as the Preferred Solution for the following reasons:
HEIDELBERG WATER SUPPLY SYSTEM MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT (EA)

- No significant natural environmental features identified based on the desktop review;
- Relatively lower operational and maintenance costs since only one plant is needed;
- Minimized greenhouse gas emissions associated with the maintenance and operation of one (1) treatment plant for two (2) communities; and decommissioning of oversized treatment processes at Heidelberg WTP;
- St. Clements has enough capacity to provide the water supply for both communities;
- Shorter transmission watermain results in a smaller disturbance footprint.

This Preferred Alternative Solution includes:

- Interconnecting of the existing St. Clements distribution system to the existing Heidelberg distribution system via a new approximately 1.1 km transmission watermain along Lobsinger Line;
- Construction of a metering chamber on Lobsinger Line;
- Decommissioning the existing Heidelberg WTP.

The design of the new transmission watermain will be completed in the next phase of the project. Generally, the project will connect the existing Heidelberg and St. Clements water distribution systems such that they become a single combined water distribution system. The source of water will be the St. Clements WTP. No property acquisition is required for the project.

The new transmission watermain on Lobsinger Line that will connect the Heidelberg and St. Clements water systems will be situated in an existing Region of Waterloo transportation right-of-way and is anticipated to be located primarily in the gravel shoulder. The previously disturbed vegetated ditch areas on the north side Lobsinger Line have been considered; however, the boulevard cross-section at some locations may require a wider footprint for installation of the watermain impacting the ditchline feeding into Martin Creek. The footprint within the ROW will be confirmed in detailed design.

An existing concrete culvert structure conveys Martin Creek across Lobsinger line near the easterly edge of St. Clements. The watermain design will consider the feasibility of installing the watermain over the culvert as well as the potential to utilize trenchless techniques to limit or avoid impacts to riparian vegetation and potential fish habitat if installation over the culvert is not feasible.
A Conceptual Design Report will be prepared following the Class EA to identify key design components for the Preferred Alternative. Detailed Design is anticipated to occur in 2023. Construction is anticipated to occur in 2024, although this is subject to available funding and obtaining necessary permitting and approvals.

The new transmission watermain connection route is shown in Figure 4.
7.0 Potential Environmental Impacts and Proposed Mitigation

The potential impacts to natural features that might reasonably be expected to occur as a result of the proposed transmission watermain construction are identified.

As part of the Class EA process, measures should be identified to offset potential environmental impacts of the proposed undertaking. These measures have been identified based on the scope of work undertaken for this study in relation to the inventory of environmental conditions and should be consulted and updated during Detailed Design based on updated site-specific information.

The study recommendations were developed to minimize negative impacts to the natural environment and significant features identified within the study area; however, during any construction project the potential exists for some environmental impacts. Best Management Practices with respect to design and construction should be employed to minimize the potential for short-term and long-term impacts, as well as direct and indirect impacts of projects associated with the study recommendations. The measures identified below should be consulted and updated during design and construction to reflect site-specific information.

7.1 Natural Environment

7.1.1 Terrestrial Environment

The transmission watermain construction has the potential to impact roadside habitats, such as gravel utilized for turtle nesting, or roadside meadow habitat for various species along ditching or embankments. It is anticipated that the project will avoid agricultural areas outside of the right of way.

General mitigation measures for the terrestrial environment include:

- Work will involve the use of construction barrier/sediment fencing to delineate work areas until areas are revegetated.
- All disturbed areas will be revegetated using suitable seed following construction.
- Tree removal will be avoided during the typical migratory bird window (i.e., April 1 to August 31). Timing windows should be confirmed in Detailed Design.
- Where migratory birds are present, standard timing windows must be implemented for work such as vegetation clearing to comply with the Migratory Birds Convention Act (MBCA).
Mitigation measures must be implemented to prevent the disturbance, destruction or taking of a nest, egg, or nest shelter of a migratory bird.

Disturbance to nests of protected bird species should be performed outside of the primary nesting period unless an avian biologist is retained to conduct nest sweeps of the Project Location a maximum of seven (7) days prior to works.

Site-specific terrestrial ecosystems investigations are recommended in Detailed Design. The investigations will identify the vegetation and wildlife present, including whether migratory birds or Species at Risk are present. An avian biologist will be retained to complete comprehensive breeding bird surveys if vegetation clearing is required during the breeding bird window.

### 7.1.2 Aquatic Environment

The background review identified that one aquatic Species at Risk (Silver Shiner) has the potential to be present in the study area within the tributary of the Conestoga River. The species is protected by the federal *Species at Risk Act* (SARA). The preferred alternative is not located in the tributary of the Conestoga River, and no work will be required in this area. No impacts are anticipated under the *Species at Risk Act* associated with this species.

The transmission watermain construction has the potential to impact aquatic and riparian habitat for water crossings along Lobsinger Line. The water crossings are tributaries of Martin Creek, and are identified as having a warmwater thermal regime. Watercourse crossing methodology will be determined during detailed design but should consider the feasibility of installing the watermain over the culvert as well as the potential to utilize trenchless methods to mitigate impacts where appropriate.

A permit from the Grand River Conservation Authority under Ontario Regulation 150/06 of the *Conservation Authority Act* is anticipated to be required for development or interference with wetlands and alterations to shorelines and watercourses such as work in the floodplain of Martin Creek. GRCA indicated (June 22, 2022) that it had no significant concerns as long as existing grades within the floodplain are restored, and adequate erosion and sediment controls are implemented during construction.

If in-water work is required and cannot be avoided, an aquatic site-specific investigation will be required at water crossings to determine impacts on fish and fish habitat. Timing windows or other mitigation measures may be confirmed at that time based on the species and conditions present. If work is below the normal high-water level and fish habitat is present, a Request for Review to DFO shall be submitted per the * Fisheries Act* and for screening under the *Species at Risk Act*. 
7.1.3 Species at Risk and Species of Conservation Concern

Potential habitat for SAR and SOCC was identified within the study area based on the background review and were included in the Natural heritage memorandum in Appendix E.

Possible habitat along Lobsinger Line is present which includes: wetlands, watercourses, drainage features and open gravelly soils (reptiles); structures, meadows, agriculture and pastures, woodlands and hedgerows (birds); and roadside habitat (monarch).

SAR species are not to be killed, harmed, or harassed, and their habitat shall not be damaged or destroyed through the proposed activities to be carried out on the site. Site-specific terrestrial ecosystems investigations are recommended in Detailed Design for this project. The investigations will identify the vegetation and wildlife habitat present, including any observations of SAR species and applicable mitigation measures.

If a Species at Risk is found and the proposed activities are going to have an impact or if a proponent is uncertain about the impacts on a species, authorization requirements under the Endangered Species Act, 2007 will be determined in consultation with the MECP via submission of an Information Gathering Form (IGF). Contact with MECP may be made via SAROntario@Ontario.ca to undergo a formal review under the ESA. Mitigation strategies will be identified based on the area of disturbance and habitat in consultation with MECP. MECP requires that if the proposed activities cannot avoid impacting protected SAR species and their habitats, then an application for authorization will need to be submitted under the ESA.

Where Barn Swallow, Bobolink, Eastern Meadowlark or Butternut trees are present, a Notice of Activity and mitigation plan may be required in accordance with Ontario Regulation 830/21 “Exemptions – Barn Swallow, Bobolink, Eastern Meadowlark and Butternut”.

7.2 Cultural Environment

7.2.1 Archaeological Resources

A Stage 1 Archaeological Assessment was conducted for the preferred alternative, which extended for 1.1 km along Lobsinger Line. The report concluded that low to no archaeological potential exists along the Lobsinger Line Right of Way. No further archaeological assessment is required. The Stage 1 Archaeological Assessment report was submitted to MTCS, now known as MCM, on August 25, 2022.
7.2.2 Cultural Heritage Resources

A Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was completed for the preferred alternative. Potential direct impacts were identified for one previously identified potential built heritage resource:

- Lobsinger Line Culvert (BHR-3)

The preferred option to avoid potential direct impacts would be to locate the proposed watermain to the north or south of Lobsinger Line Culvert (BHR-3). This route would not directly impact other identified potential built heritage resources or potential cultural heritage landscapes within the Study Area. A Heritage Impact Assessment (HIA) is recommended if the preferred option is not feasible. The HIA would evaluate the Cultural Heritage Value or Interest (CHVI), assess potential project impacts, and recommend mitigation measures.

Indirect impacts were identified for three potential built heritage resources situated within 50 m of planned construction activity and at risk for potential indirect vibration impacts:

- 3426 Lobsinger Line (BHR-1)
- 3382 Lobsinger Line (BHR-2)
- Lobsinger Line Culvert (BHR-3)

The preferred option is to avoid BHR-1, BHR-2, and BHR-3 by establishing a buffer zone around the potential built heritage resources to avoid construction activity within 50 m. Where this is not possible, the report identifies an alternative strategy which may require condition surveys.

The Cultural Heritage Report recommends amending the report in Detailed Design when information on the proposed construction activity is finalized.

The Cultural Heritage Report is provided in Appendix E.

7.3 Noise and Air Quality

Any construction activities have the potential for short-term temporary impacts due to noise and air quality (dust). Best management practices should be utilized by the Contractor to avoid or minimize impacts to local residents, businesses and community uses from these construction-related effects. These best practices are anticipated to include, but are not limited to, the following:

- Construction to occur during daytime hours, where possible.
Low noise equipment will be used during construction where possible.

Construction activities to adhere to local Township of Wellesley and Township of Woolwich Noise By-Laws. Where not possible, a Noise By-law exemption may need to be requested from the municipalities.

Best management practices to mitigate any air quality impacts caused by dust should be applied during construction.

MECP recommended that non-chloride dust suppressants be applied during construction.

Where complaints arise, the Contractor should work with the individual to identify the source and consider opportunities to reduce or avoid the issue, where possible to do so.

7.4 Traffic Management and Access

The project will require work along the shoulder of Lobsinger Line to construct the new transmission watermain. This work may have the potential for delays for motorists or other road users within work areas.

Traffic management plans, including staging plans, will be prepared during the Detailed Design stage. Coordination will be required between the Region’s Transportation Division and local townships (Township of Wellesley and Township of Woolwich) and emergency services regarding potential for short-term road closures and detours per standard construction practices. The Region of Waterloo will engage with adjacent residents regarding decommissioning of the Heidelberg WTP if traffic or access constraints are anticipated.

Works within the Lobsinger Line Right of Way must be conducted in accordance with applicable Region of Waterloo infrastructure construction policies. A Region of Waterloo work permit will be required prior to construction. Separate approval will also be required for any portion of the study area under the jurisdiction of the Township of Wellesley or Town of Woolwich, and specifically for the proposed watercourse crossings in St. Clements.

7.5 Excess Materials Management

The project has the potential to generate excess materials through the excavation of trenching within the shoulder of Lobsinger Line. All excess construction soil and materials will be handled according to the regulation On-Site and Excess Soil Management (O. Reg 406/19) under the Environmental Protection Act, and the

### 7.6 Drainage

Drainage modifications or impacts to culverts will be determined in the Detailed Design stage and included on construction drawings. GRCA correspondence requested that the project should restore existing grades within the floodplain along the Martin Creek watercourse. The project must also ensure that adequate erosion and sediment controls are implemented during construction.

### 7.7 Erosion and Sedimentation Control

Erosion and Sedimentation Control (ESC) plans will be developed in the Detailed Design stage and incorporated into design drawings. The following are standard mitigation measures that should be incorporated into any ESC plans:

- Equipment shall be refueled 30 meters away from the waterbody to avoid potential for spills entering watercourses.
- Temporary sediment fencing must be installed to prevent entry of sediment or construction materials from entering watercourses.
- Keep an additional supply of temporary sediment fencing available on-site.
- A trenchless crossing plan should be prepared to detail the methodology and response to potential spills if this methodology is utilized.

### 7.8 Groundwater

There are no changes to current well capacity at the St. Clements WTP as part of this project. The EA determined that the existing water treatment plant has sufficient capacity to meet current and future Heidelberg and St. Clements demands.

A hydrogeological investigation will be required in Detailed Design to determine the extent of de-watering required during construction and to support application for an Environmental Activity and Sector Registry (EASR) or Permit to Take Water (PTTW) if these are required. The impact to any nearby wells or sources of potential contamination may need to be considered as part of these investigations to assess remedial actions, if any.

The Region will monitor water levels before, during and after any proposed changes in pumping patterns to document any effects on the local water table.
7.9 Utilities

Utilities may be present within work areas and should be identified and avoided during construction. Potential for utility conflicts should be determined as part of Detailed Design. If utilities cannot be avoided, the Detailed Design team shall engage with the utility companies to identify utility mitigation plans.

7.10 Municipal Water Supply System

Permits or approvals may be required under the MECP-administered *Environmental Protection Act (EPA)* or Environmental Compliance Approvals to update the existing Municipal Drinking Water Licence and Drinking Water Works Permit. Changes required should be considered as part of Detailed Design prior to construction and operation of the updated water supply system.

7.11 Climate Change

The decommissioning of the existing Heidelberg WTP will eliminate any direct or indirect emissions associated with operation of the plant.

The Detailed Design phase should consider opportunities for stormwater management during construction phases to mitigate impacts associated with the project and accommodate changes in climate parameters (i.e., increased episodes of flooding, increased flood levels, etc.).

8.0 Implementation and Detailed Design Future Commitments

Many of the environmental concerns related to this project have been mitigated through the process by which the preferred solution was selected, as described in this Project File Report. The anticipated impacts and proposed mitigation measures have been described in Section 7.0.

A Conceptual Design Report will be prepared following the Class EA to identify key design components for the Preferred Alternative. The Conceptual Design report will provide further information about the proposed implementation and construction approach. Detailed Design is anticipated to occur in 2023. Construction is anticipated to occur in 2024, although this is subject to available funding and obtaining necessary permitting and approvals.

*Table 6* provides a list of specific mitigation commitments to be carried forward to Phase 5 of the Municipal Class EA process, Implementation (detailed design and
construction) for the preferred alternative. The Region will work with GRCA, DFO, MECP and additional stakeholders as required during the detailed design and implementation phases to ensure that the proposed works are acceptable, and to obtain required permits.

Table 6: Summary of Commitments for Detailed Design

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation / Commitment</th>
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<tbody>
<tr>
<td><strong>Terrestrial Environment</strong></td>
<td>• Site-specific terrestrial ecosystems field investigations are required to identify vegetation and wildlife present, including SAR and SOCC. Site-specific mitigation measures and timing windows will be confirmed in Detailed Design.</td>
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<td></td>
<td>• An avian biologist will be retained to complete comprehensive breeding bird surveys if vegetation clearing is required during the breeding bird window.</td>
</tr>
<tr>
<td><strong>Aquatic Environment</strong></td>
<td>• Confirm watercourse crossing methodology and consider trenchless methods for watercourse crossings where appropriate.</td>
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<tr>
<td></td>
<td>• Confirm permit requirements with Grand River Conservation Authority (GRCA) during the Detailed Design for development or interference with wetlands and alterations to shorelines and watercourses.</td>
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<td></td>
<td>• Conduct an aquatic site-specific investigation at water crossings to determine impacts on fish and fish habitat and adhere to relevant in-water timing windows based on fish present.</td>
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<td></td>
<td>• If work is below the normal high-water level and fish habitat is present, a Request for Review to DFO shall be submitted per the <em>Fisheries Act</em> and for screening under the <em>Species at Risk Act</em>.</td>
</tr>
<tr>
<td><strong>Species at Risk/Species of Conservation Concern</strong></td>
<td>• Species at Risk (SAR) are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site.</td>
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<td>• Should detailed design field investigations result in potential impacts to provincially regulated SAR or their habitats, or if a SAR/SOCC species is identified, consultation with MECP is recommended to confirm authorization requirements under the <em>Endangered Species Act</em> (ESA) via submission of an Information Gathering Form (IGF).</td>
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<td>• Mitigation strategies will be identified based on the area of disturbance and habitat in consultation with MECP.</td>
</tr>
<tr>
<td>Potential Impact</td>
<td>Mitigation / Commitment</td>
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|                  | • Preparation of a Notice of Activity or consultation plan may be required, and should be determined in accordance with Ontario Regulation 830/21.  
• Although not anticipated based on the background review, should federally listed Species at Risk be identified during fieldwork, the project must adhere to the provisions of the federal Species at Risk Act (SARA) legislation. |
| Archaeological Resources | • No additional commitments for Detailed Design. |
| Cultural Heritage Resources | • Review the proposed avoidance strategies proposed in the Cultural Heritage Report during Detailed Design, to consider opportunities to avoid work within 50 m of the identified properties. Where work cannot avoid these areas, alternative mitigation strategies are provided.  
• The Cultural Heritage Report recommends amending the report in Detailed Design when information on the proposed construction activity is finalized. |
| Disturbance from Noise and Air Quality (Dust) | • Best management practices should be utilized by the Contractor to avoid or minimize construction noise/air quality impacts to local residents, businesses and community uses. |
| Traffic Management and Access | • Develop traffic management and staging plans.  
• Notify local townships and emergency services regarding detour and staging plans in Detailed Design.  
• The Region of Waterloo will engage with adjacent residents regarding decommissioning of the Heidelberg WTP if traffic or access constraints are anticipated.  
• Works within the Lobsinger Line Right of Way must be conducted in accordance with applicable Region of Waterloo infrastructure construction policies. A Region of Waterloo work permit will be required prior to construction.  
• Separate approval will also be required for any portion of the study area under the jurisdiction of the Township of Wellesley or Town of Woolwich, and specifically for the proposed watercourse crossings in St. Clements. |
<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation / Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess Materials Management</td>
<td>• The amount of excess material generated should be determined in Detailed Design to ensure compliance with current legislation.</td>
</tr>
<tr>
<td>Drainage</td>
<td>• Include drainage requirements in the Detailed Design stage and include on drawings. Restore existing grades within the floodplain along the Martin Creek watercourse. Ensures that adequate erosion and sediment controls are implemented during construction.</td>
</tr>
</tbody>
</table>
| Erosion and Sedimentation Control | • Erosion and Sedimentation Control (ESC) plans will be developed in the Detailed Design stage and incorporated into design drawings.  
• A trenchless crossing plan should be prepared to detail the methodology and response to potential spills if this methodology is utilized. |
| Groundwater | • A hydrogeological investigation will be required in Detailed Design to determine the extent of temporary de-watering required during construction, and to determine whether a PTTW or EASR may be necessary.  
• The Region will monitor water levels before, during and after any proposed changes in pumping patterns to document any effects on the local water table. |
| Utilities | • Identify potential utility conflicts and mitigation plans as part of Detailed Design. |
| Municipal Water Supply System | • Changes to the MECP-administered EPA to accommodate the municipal water works should be confirmed as part of Detailed Design in consultation with MECP. |
| Climate Change | • The Detailed Design phase should consider opportunities for stormwater management during construction phases to mitigate impacts associated with the project and accommodate changes in climate parameters (i.e., increased episodes of flooding, increased flood levels, etc.). |
9.0 Conclusion

The Region of Waterloo retained Stantec Consulting Ltd. to complete a Municipal Class Environmental Assessment (Class EA) Study to establish a long-term water servicing solution for the community of Heidelberg, Ontario. Some components in the existing water treatment plant (WTP) have reached the end of their service life. The purpose of this study was to develop a preferred alternative for long term water supply for the Heidelberg community.

The project identified a series of four Alternative Solutions that included 1) Do Nothing, 2) Upgrade the Heidelberg WTP, 3) Supply Water from St. Clements to Heidelberg with New Transmission Watermain, Decommission Heidelberg WTP, and 4) Supply Water from St. Clements to Heidelberg with New Transmission Watermain to Fill Heidelberg Clearwell and Use Existing Heidelberg High-lift Pumps.

Notification and engagement occurred with agencies, stakeholders and Indigenous communities, and a series of two PCCs were held. Based on public feedback received and the evaluation of alternatives, the Preferred Alternative Solution is a connection between the St. Clements and Heidelberg Water Systems using an approximately 1.1 km transmission watermain to be installed on Lobsinger Line. Water supply will come from the St. Clements wells and will service the two communities. The evaluation and description of the preferred solution is included in Section 6.0.

Potential environmental impacts and proposed mitigation measures were identified in Section 7.0 and potential adverse impacts are minimized by locating the infrastructure within an existing road right of way. Future commitments are documented in Section 8.0 which include investigations and requirements that should be reviewed during the completion of detailed design.

9.1 EA Documentation Filing

This Project File Report fulfills the documentation requirements for the Schedule B Class EA planning process. The filing of the Project File Report for public review completes the planning stage of the project.

This Project File Report is available for public review and comment for a period of 30 calendar days. A Notice of Completion will be published in the local newspaper to inform the general public, interested stakeholders, review agencies and Indigenous communities of the mandatory review period.

The Project File Report will be available for review online, on the Region of Waterloo website: https://www.regionofwaterloo.ca/en/living-here/current-projects.aspx
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APPENDIX A: Notification Materials
APPENDIX B:
Public Consultation Centres
APPENDIX C: Correspondence
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Official Plan Figures
APPENDIX E:
Technical Reports
APPENDIX E1: Natural Heritage Memo
APPENDIX E2:
Heritage Checklist and Cultural Heritage Report
APPENDIX E3:
Stage 1 Archaeology Report
APPENDIX F: Technical Memoranda