

# Centre Wellington Scoped Tier 3 Water Budget and Local Area Risk Assessment Study

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## Community Liaison Group

### TERMS OF REFERENCE

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#### 1. Project Overview

The Grand River Conservation Authority (GRCA), with funding provided by the Ministry of Environment and Climate Change (MOECC), is managing a Scoped Tier 3 Water Budget Study and Local Area Risk Assessment (herein referred to as the 'Tier 3' water budget) for the Fergus Elora municipal drinking water systems on behalf of the Township of Centre Wellington.

The Grand River Conservation Authority is a partnership of municipalities that manages water and resources on a watershed basis using sound science and technical information. The GRCA is also the lead authority in the Lake Erie Source Protection Region, responsible for the administration of the Source Protection Program under the *Clean Water Act, 2006*.

A Tier 3 Water Budget is a detailed scientific technical study aimed at assessing the risk to current and future municipal drinking water sources under a variety of scenarios, such as land use changes due to development, and future increased municipal and non-municipal water takings. The water budget study evaluates the safe additional available drawdown at each of the municipal wells in the study, and uses water budget tools to evaluate how water levels will change within the municipal wells under various current and future scenarios. In addition, as part of the study, quantity-related Wellhead Protection Areas are delineated using technical guidelines set out by the Province.

Generally, these studies require information related to both growth plans and Long Term Water Supply Master Plans to assess potential risk to the municipal drinking water supplies. For the Township of Centre Wellington, a Long Term Water Supply Master Plan has yet to be completed, and the Township's Growth Management Strategy is on track to be completed in early 2017. Given growth and water use pressures in the Township, the Tier 3 Water Budget for Centre Wellington is moving ahead as a 'scoped' study, as it will be lacking the data required from the Long Term Water Supply Master Plan. Scenarios requiring this information will be approximated using technical and professional expertise in consultation with the Tier 3 Water Budget Project Team (GRCA, Township of Centre Wellington, project consultant) and the Province. The information developed in this project will provide the Township with a detailed water budget tool, in particular a science-based groundwater flow model, that will be applied to assess the long-term sustainability of the Township's drinking water sources. The model can be

revisited and updated as the Long Term Water Supply Master Plan and other water taking data become available.

All Tier 3 Water Budget studies are peer reviewed on behalf of the province by a team of highly qualified third party technical experts working in both academia and private consulting. The provincial peer review team meets with the Project Team and consultants a minimum of three times throughout the project life-cycle; their goal is to peer review and ensure the technical merits of the study.

## 2. Project Scope

The goal of the Centre Wellington Scoped Tier 3 Water Budget and Local Area Risk Assessment is to provide a quantitative assessment of current and future risk to the Fergus Elora municipal drinking water sources when considering changes in groundwater recharge due to land development, future water takings and climatic variability.

The scope of the Tier 3 project is defined by the completion of a set of tasks or project deliverables. The same deliverables are required for all Tier 3 water budgets and local area risk assessments completed across the province. The following paragraph outlines the Source Protection water budget framework, which begins with a Tier 1 or 2 Assessment, and where warranted, advances into the more detailed Tier 3 Assessment level. Subsequent paragraphs identify the scope of work for the Centre Wellington Tier 3 Assessment.

Under the *Clean Water Act, 2006* all Source Protection Areas are required to complete a water budget study at the watershed scale. Information about Source Protection Areas can be found at: <https://www.ontario.ca/page/source-protection>. A water budget looks at how much water enters a watershed, is stored and leaves the watershed. This information helps determine the amount of water available for human uses, while ensuring there is still enough left for natural processes (e.g. there has to be enough water in a watershed to keep streams, rivers and lakes healthy). Water budgets completed through the Source Protection program are tiered according to their complexity. All Source Protection Areas initially completed either a Tier 1 (simple) or a Tier 2 (increased complexity) water budget for the entire watershed. For the Grand River watershed, the Tier 2 water budget was completed in 2009. Results of the Tier 2 water budget identified surface water-based and groundwater-based subwatersheds, and classified them by their potential for hydrologic stress as low, moderate, or significant under average and drought climatic conditions for the current and future water takings.

Subwatersheds identified as having a significant or moderate potential for hydrologic stress were identified as needing a Tier 3 water budget. Tier 3 projects are detailed studies that aim to quantify current and future water availability at the municipal scale.

The Tier 2 assessment for the Irvine Creek subwatershed, which includes the Fergus and Elora drinking water system, was classified with a moderate potential for stress during the uncertainty assessment for future water use. This classification triggered the Tier 3 process for the Township of Centre Wellington.

The Centre Wellington Tier 3 project begins with the collection of all readily available data such as water levels in monitoring and pumping wells, geological data, and hydrogeological data in the study area. This data is then reviewed by the project consultants, who put the information together to form a **conceptual model**. This model is a 3-dimensional understanding of the geology, hydrogeology and hydrology of the study area based on the best available data. It includes an understanding of the geology of the area, how and where groundwater enters the ground, flows through it, and discharges to surface water feature such as streams and rivers. Project consultants produce a **physical characterization report** which details the conceptual model with a focus on the geological and hydrogeological understanding of the area. This report is reviewed by the provincial peer review team, and will require sign-off by the team.

Next, a **numerical groundwater model and water budget** is developed based on the physical characterization report. A groundwater model is a computer-based representation of the physical system. Groundwater flow is calculated using complex mathematical calculations. The groundwater model is used to calculate portions of the water budget. A water budget is a balance of all the water coming into and leaving the study area, and incorporates components such as precipitation and water takings. A **model calibration and water budget report** is developed to document all aspects of the model development and water budget elements estimated using the groundwater model. This report is also reviewed and signed off by the provincial peer review team.

Following completion of the numerical groundwater model and water budget elements, the project consultants uses the groundwater model to complete a **local area risk assessment** for the municipal supply wells in Fergus and Elora. The first component of the local area risk assessment is to **delineate vulnerable areas**. These include quantity related **Wellhead Protection Areas** for the municipal wells, also referred to as WHPA-Q1 and WHPA-Q2. These are areas that are projections to ground surface around municipal wells that are calculated by evaluating the cone of influence of the municipal and non-municipal pumping wells when they are pumped at their future estimated rates. A **Local Area** is also be defined, and in the vast majority of Tier 3 assessments, the Local Area is equivalent to the WHPA-Q2 area.

Next in the process is the development of **risk assessment scenarios**. These scenarios use existing, permitted, and planned municipal well pumping data to develop scenarios that evaluate the impact of drought and land use change, on water levels at municipal wells and changes to groundwater discharge. Ten Risk Assessment scenarios are defined by the Province as noted in Table 4B at: <https://www.ontario.ca/page/technical-rules-assessment-report#section-8>. A number of these scenarios require data from the **Long Term Water Supply Master Plan**, which is currently not completed for the Township of Centre Wellington. These values however, will be estimated using information contained in the Township's Growth Management Strategy. The Township of Centre Wellington will provide the growth scenarios to the Tier 3 Water Budget Project Team.

The Local Area is then assigned a **risk level** based on the results of the Risk Assessment scenarios. The water quantity risk is evaluated as low, moderate, or significant based on the set of circumstances outlined below:

Risk Level	Circumstances
Significant Risk	<ul style="list-style-type: none"> <li>• Municipal wells or intakes cannot meet their allocated pumping rates under existing, drought, or planned land use conditions.</li> <li>• Impacts to other uses from municipal pumping violate existing permits or regulations.</li> <li>• Allocated pumping rates in planned wells that exceed their permitted rates reduce streamflow within coldwater fisheries by more than 20% of existing baseflow.</li> <li>• The tolerance of the existing system is low (ie. the existing system cannot meet peak water demands).</li> </ul>
Moderate Risk	<ul style="list-style-type: none"> <li>• Municipal wells or intakes can meet their allocated pumping rates under all scenarios; however, there is a measurable impact to other uses and there is a potential that this impact is harmful. For coldwater fisheries, this impact corresponds to a reduction of groundwater discharge greater than 10% of existing baseflow conditions.</li> </ul>
Low Risk	<ul style="list-style-type: none"> <li>• Municipal wells or intakes can meet their allocated pumping rates with no expected impact on other water uses.</li> </ul>

The assignment of risk level and a **risk level uncertainty assessment** complete the Tier 3 study. If any Local Areas are categorized as having a moderate or significant risk level, water quantity policies will need to be developed (outside the Tier 3 study) for inclusion in the Grand River Source Protection Plan. Local Areas with a moderate or significant risk level require further technical study called the **Risk Management Measures and Evaluation Process (RMMEP)** which is completed following the Tier 3 water budget. The results of the RMMEP study help inform the policy development process.

The entire water budget process is overseen by the Lake Erie Region Source Protection Committee. Information regarding the Committee can be found at:

<https://www.sourcewater.ca/en/who-we-are/Source-Protection-Committee.aspx>.

Completed Tier 3 water budget reports are accepted by the Source Protection Committee and results are incorporated into the Grand River Assessment Report and Source Protection Plan. The Plan is submitted to the Province for approval by the Ministry of Environment and Climate Change following a public consultation process.

### 3. Key Tier 3 Water Budget Participants

The following is a list of the key participants in the Tier 3 Water Budget:

Tier 3 Water Budget Project Team:	The Project Team leads the Tier 3 Water Budget and is responsible for all decisions related to this project. Members of the GRCA, Township of Centre Wellington, Wellington Source Water Protection, and supporting project consultants form the Project Team.
Provincial Peer Review Team:	The Provincial Peer Review Team provides an external, independent, third party peer review of the technical findings of the Tier 3 Water Budget at each major milestone. The purpose of the review is to ensure the technical merits of the study. Independent experts from academia, government, and consulting form the Provincial Peer Review Team.
Project Consultant Team:	The Project Consultant Team is responsible for conducting the Tier 3 Water Budget with direction from the Tier 3 Water Budget Project Team. Matrix Solutions Inc. has been selected as the project consultant following the GRCA's procurement policies.
Community Liaison Group:	The Community Liaison Group (CLG) provides a forum for the community to be informed about the project and provide input on the Tier 3 Water Budget and its progress.
Third Party Facilitator:	The Third Party Facilitator chairs the CLG meetings and provides facilitation and secretariat services. The GRCA has hired LURA Consulting to provide this service.
General Public:	The Project Team will be hosting at least one public session for the general public to be informed about and able to provide feedback on the Tier 3 Water Budget.

### 4. Purpose of the Community Liaison Group (CLG)

The following sections outline the role of the Community Liaison Group (CLG) within the Tier 3 Water Budget process and includes guidelines for how the CLG will operate during the course of the project.

The CLG provides a forum for a diverse range of Tier 3 stakeholders and Centre Wellington residents to communicate their perspectives and observations on the technical components of the project to the Tier 3 Project Team and consultants. Further, it enables the Project Team to keep the community informed about the project and its progress, and communicate challenges, concerns, or other relevant information to the broader community.

The role of the CLG is to provide feedback and observations within the scope of the Tier 3 study (see Section 2). The CLG is not a forum for the discussion on items such as the ethics of water bottling, current provincial policy on Permits to Take Water, or other issues outside the scope of the Tier 3 study.

## 5. Mandate

The mandate of the CLG is to provide a forum for feedback and advice to the Project Team at key points during the Tier 3 study. The CLG is a non-political advisory body. CLG members are guided by these Terms of Reference and participate on the CLG at the discretion of the GRCA and Township of Centre Wellington. Specifically, the role of the CLG is to:

- Provide a sense of the broader community's reactions and concerns and how these might be addressed within the scope of the Tier 3 study;
- Provide a forum for two-way communication between the members and their organizations and the Project Team; and
- Provide feedback on any other relevant matters that the Project Team refers to the CLG for comment.

## 6. Membership

CLG membership is comprised of representatives from interested and potentially affected stakeholder organizations. The CLG provides a multi-stakeholder forum for discussion of approaches, concepts and alternatives as a part of the water budget process. The CLG does not address specific property ownership issues or concerns outside the scope of the water budget process.

The CLG is composed of representatives from stakeholder organisations in the following sectors:

- Business
- Industrial water users
- Commercial / Communal water users
- Agriculture
- Environment
- Conservation
- General public

Each sector has two seats on the CLG. Stakeholder organisations in each sector propose the two members on the CLG for their sector. To engage stakeholders in participating in the CLG, letters of interest are sent to stakeholder organisations. The selection process for the general public seats is carried out through an application process. Public members are expected not to be affiliated with any group or organization.

A Township of Centre Wellington youth is invited to participate in the CLG in an effort to engage the community's youth in the management of water resources and it's value in the watershed.

The Project Team confirms the actual number of members based on the level of interest among prospective participating organizations, while striving to achieve the balance of sectoral interests outlined above.

The following are the key terms and conditions of CLG membership:

- Membership is voluntary and uncompensated.
- Members understand, accept, and agree to abide by these Terms of Reference.
- Members are willing to commit to participate on the CLG throughout the duration of the water budget process (a minimum of 4 meetings between 2016-2018).
- Members agree to attend as many CLG meetings as possible, and identify and brief an alternate from their organization in the event that attendance is not possible.
- Through their participation on the CLG, members agree to ensure a two-way flow of information between the organizations they represent and the Project Team.

## 7. Term of Membership

Membership in the CLG is for the duration of the project; approximately 24 months.

## 8. Decision Making

The CLG acts in an advisory capacity to the Project Team and is not responsible for making decisions regarding the Tier 3 Water Budget. Decisions regarding the Tier 3 Water Budget are the responsibility of the Tier 3 Water Budget Project Team, and Provincial Peer Review team. **In the event of a conflict based on technical data and interpretation, it is the role of the Provincial Peer Review team to make final decisions based on their expertise and best available science.**

Completed Tier 3 water budget reports are accepted by the Source Protection Committee and the results included in the Grand River Assessment Report and Source Protection Plan. The Plan is submitted to the Province for approval by the Ministry of Environment and Climate Change following a public consultation process.

## 9. Roles and Responsibilities

The CLG reports its comments and recommendations to the Project Team with the assistance of an independent facilitator. The following are the roles and responsibilities for each:

CLG members will:

- Advise the Project Team of their organization's/community's perspectives relating to this project;
- Provide feedback and perspectives on presentations or reports tabled by the Project Team, CLG members, or others;

- Help the CLG operate effectively by offering suggestions and alternatives to issues, concerns, and problems;
- Review all relevant project materials and provide feedback, advice, and perspective;
- Attend CLG meetings or brief alternates if attendance is not possible; and
- Review the results of CLG discussions to ensure the meetings are accurately recorded in the meeting minutes.

Project Team members will:

- Strive to provide accurate, understandable information to CLG members, such that they can contribute informed advice and recommendations;
- Help the CLG function effectively by providing information, suggestions and alternatives to issues, concerns, and problems being discussed;
- Ensure that appropriate Project Team representatives (or other resource people) are present at discussions on specific issues or components of the process;
- Listen carefully to the advice and perspectives of members;
- Provide material for review in advance of CLG meetings where possible;
- Circulate and publicly post final CLG meeting minutes; and
- Provide project updates to adjoining municipalities, as required.

Provincial Peer Review Team members will:

- Provide independent, third party and external advice on the technical merit of the Tier 3 Water Budget to the Project Team.

The GRCA point of contact for all CLG correspondence is:

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## 10. Meetings and Logistics

### 10.1 Meeting Frequency

The Project Team has planned for a minimum of four meetings with the CLG over the course of the project. CLG meetings will take place in the evening (approximately 2 hour meetings) at a suitable location in close proximity to the study area.

## 10.2 Facilitation

Lura Consulting, under contract to the GRCA, is providing facilitation and secretariat services for CLG meetings. These services include:

- Develop meeting agendas in consultation with the Project Team and the CLG;
- Chair and facilitate CLG meetings; and
- Record keeping and preparation of minutes for CLG meetings.

## 10.3 Minutes

CLG meeting minutes are taken by a representative of Lura Consulting. Minutes are circulated to CLG members within two weeks following each meeting for review and comment, and are subject to email approval. Final minutes are posted at [www.sourcewater.ca/CW-Scoped-Tier3](http://www.sourcewater.ca/CW-Scoped-Tier3) for public access.

## 10.4 Agendas

The agenda and appended information are circulated at least one week in advance of the next meeting. Members can suggest agenda items for future CLG meetings at each CLG meeting.

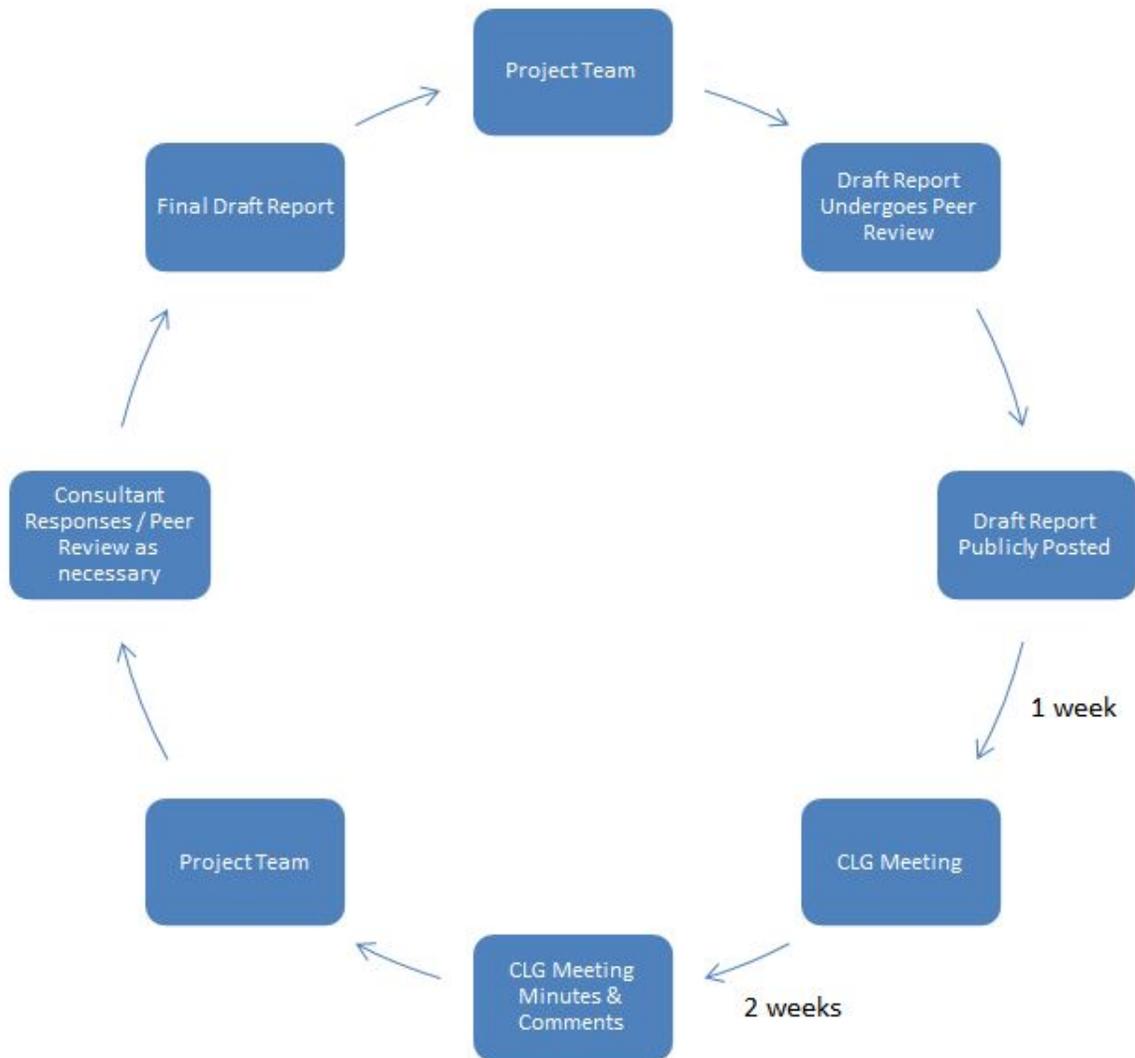
## 10.5 Public Access

CLG meetings are open to members of the public and held at locations within the community that can accommodate attendance by members of the public. Any members of the public wishing to attend CLG meetings are welcome to observe the meeting. CLG meetings do not include a question/answer period. Members of the general public in attendance to observe are not part of the CLG meeting structure. Any questions from observers are to be directed to the CLG's general public members or appropriate sector members, prior to, or following the meeting.

## 11. Reporting Relationship

The Tier 3 water budget is formed by three sequential reports, as outlined in Section 2 (Project Scope). As each draft report is completed, it is reviewed by the Provincial Peer Review Team, and then publicly posted at least one week prior to the CLG meeting. At the CLG meeting, the project consultants present the study findings of each phase to the group. Written comments are accepted for two weeks following the CLG meeting, and CLG meeting minutes are finalized and posted on [www.sourcewater.ca/CW-Scoped-Tier3](http://www.sourcewater.ca/CW-Scoped-Tier3). Written comments received are reviewed by the project consultants, who will prepare a response to each comment. If necessary, comments are reviewed by the Provincial Peer Review Team. The report is then revised to become a Final Draft Report, receives sign-off from the Provincial Peer Review Team and is posted on [www.sourcewater.ca/CW-Scoped-Tier3](http://www.sourcewater.ca/CW-Scoped-Tier3).

The following process diagram will be followed:



## 12. Freedom of Information and Protection of Privacy

Please note that all information will be used in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and the *Access to Information Act*. With the exception of personal information, all information provided through the CLG process will form part of the public record including the names of the CLG member organizations.