

## **Appendix 'A'**

### **Technical Memorandum: Stage One Work Plan**

# One River Master Plan Environmental Assessment: Stage 1 Work Plan

PREPARED FOR: Ashley Rammeloo, City of London  
COPY TO: One River EA Steering Committee  
PREPARED BY: Tom Mahood, CH2M  
Laurie Boyce, CH2M  
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## 1.0 Purpose

The purpose of this Technical Memorandum (TM) is to present the approach for completing the One River Master Plan Environmental Assessment (EA). In particular, the approach for completing Phase 1 of the Class EA, and Stage 1 of Phase 2 of the Class EA is described. Phase 1 involves confirming the problem/opportunity statement, and Stage 1 of Phase 2 involves defining and assessing options for the Springbank Dam. Once a preferred option for the Springbank Dam is determined, alternative strategies for River Management in the study area will be identified and evaluated in detail so that a preferred overall strategy can be selected.

## 2.0 Background

### 2.1 Purpose of the One River Master Plan

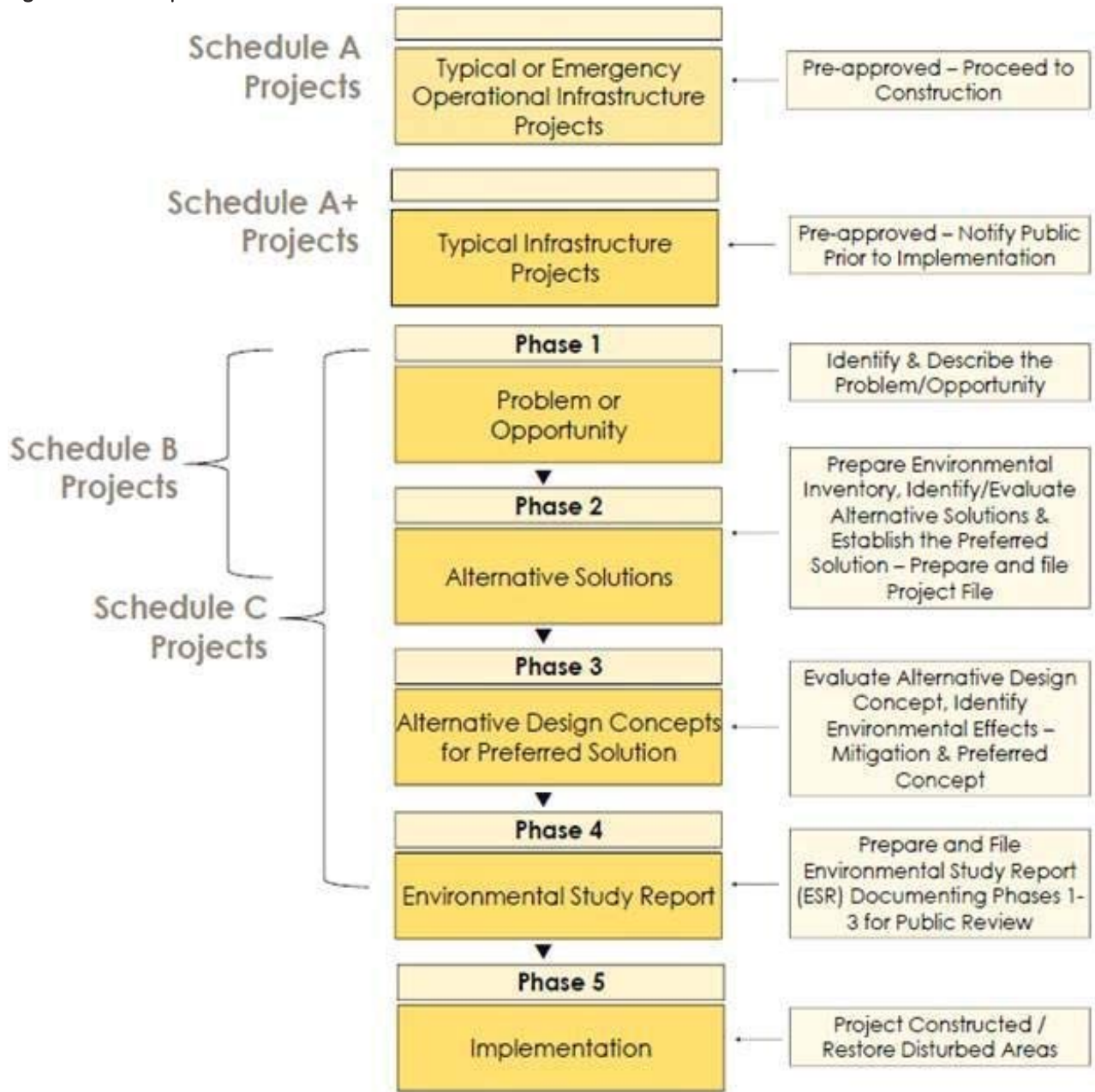
The overall purpose of the One River Master Plan EA is to develop a comprehensive plan, through engagement with First Nations and Métis, and in consultation with the public, and agency stakeholders, for implementing various projects within the One River study area that are being considered. These projects will represent both infrastructure needs and the community's recreational and ecological vision for the Thames River in the City. As part of the EA process, findings from other studies, plans, and projects will be taken into consideration in order to select preferred options on the basis of their net social/cultural, environmental, technical, and economic impacts. Key amongst these other studies, plans, and projects to be incorporated into the evaluation process are The London Plan which has identified the vision for the Thames Valley Corridor and the Thames Valley Corridor Plan (TVCP) recommendations that relate to the riverfront environment, accessibility and use improvement, and the "Back to the River" design. The EA will be part of the implementation of the objectives and vision put forward in these plans and designs. The Master Plan will recommend various projects to form a basis for future infrastructure improvements and river management that also incorporates the vision and objectives of The London Plan and the Thames Valley Corridor Plan. For all projects identified in the Master Plan that trigger the criteria of a Schedule B or C project, further assessment, consultation and documentation will be required to meet the requirements of the Municipal Engineers Association (MEA) Class EA.

## 2.2 Municipal Class Environmental Assessment

The Ontario Environmental Assessment Act allows municipalities to meet the requirements of the Act either through “Individual” EAs or approved categories of “Class” EAs. Projects implemented to protect and enhance the Thames River will meet the EA Act requirements by following the requirements outlined in the MEA’s Municipal Class EA document (as amended in 2007 and 2011, and 2015). The MEA process is illustrated in Figure 2.1, and identifies project Schedules (i.e. A, A+, B and C) based on their potential impacts.

The Municipal Class EA is not only applicable for individual projects, but also for Master Plans that involve considering infrastructure systems or groups of related projects, as is the case with One River. The One River Master Plan EA will follow the Approach #1 Master Plan process outlined in the MEA’s Municipal Class EA document and meet Phases 1 and 2 of the process. The objective of this Master Plan-level EA is to develop a comprehensive plan for integration and implementation of various projects and plans already defined to varying degrees for the One River study area, as well as new projects and plans developed as part of this EA.

Figure 2.1: Municipal Class Environmental Assessment



### 3.0 One River Master Plan EA Process

#### 3.1 Overview of EA Process

In Phase 1 of the Master Plan EA process background information will be reviewed and the problem opportunity /problem definition will be confirmed, while in Phase 2 alternatives will be developed and assessed and the preferred strategy selected. It is recognized that in Phase 2 there are numerous alternatives to be evaluated in order to select and develop the overall strategy for the One River study area. The approach for evaluating these alternatives involves the following two stages:

- Stage 1: The ultimate selection of an option for Springbank Dam will be a determining factor in the identification and evaluation of river management strategies going forward. These strategies include various infrastructure projects as defined in the EA’s Terms of Reference and the design of the Back

to the River elements. It is therefore necessary to determine the preferred option for the dam first so that the option selected can inform the decision-making process on the river management strategies.

- Stage 2: Once the option for the Springbank dam is selected, alternative strategies for river management, which consist of different types of projects related to infrastructure and river improvements, will be developed and assessed. A preferred strategy will be selected based on environmental, social/cultural, technical and cost criteria.

Following the two-stage assessment process, the preferred strategy will be developed in detail, including for each individual project estimated costs, schedule for implementation, and additional approval and assessment requirements.

Figure 3.1 illustrates the One River Master Plan EA approach and how it fits within the required Phase 1 and Phase 2 of the MEA process as illustrated in Figure 2.1. An important aspect of the EA is the communication with City Council at key milestones in the project. At key milestones, project details will be provided to Council for their guidance or approval. Details of the process are described in detail in the following sections.

### 3.2 Establishing Environment Conditions

To assess the alternatives, the existing conditions in the study area must be identified and the impacts of alternatives on existing conditions must be determined. The Ontario Environmental Assessment Act, which is the basis for the Municipal Class Environmental Assessment process, defines the environment very broadly as:

- Air, land, or water
- Plant and animal life, including humans
- Social, economic, and cultural conditions that influence the life of humans or a community
- Any building, structure, machine, or other device or thing made by humans
- Any solid, liquid, gas, odour, heat, sound, vibration, or radiation resulting directly or indirectly from human activities
- Any part or combination of the foregoing, and the interrelationships between any two or more of them, in or of Ontario

Consequently, in order to assess Springbank Dam options and resulting River Management strategies, the impacts on the natural, social and cultural environment as well as the technical implications and costs of the options and strategies must be evaluated. The level of information being collected becomes more detailed as the Phase 2 evaluation proceeds. For example, when assessing Springbank Dam options existing background information will be reviewed, along with input from approval agencies and consultation with First Nations, stakeholders and the public to assist in the evaluation. To assess the River Management strategies, more detailed inventories and evaluations will be undertaken to better understand the impacts on the social and cultural and natural environment in the area of Springbank Dam and the Forks of the Thames River. Detailed site-specific field inventories will be undertaken on individual projects as identified in this Master Plan.



Figure 3.1: One River Master Plan EA Process

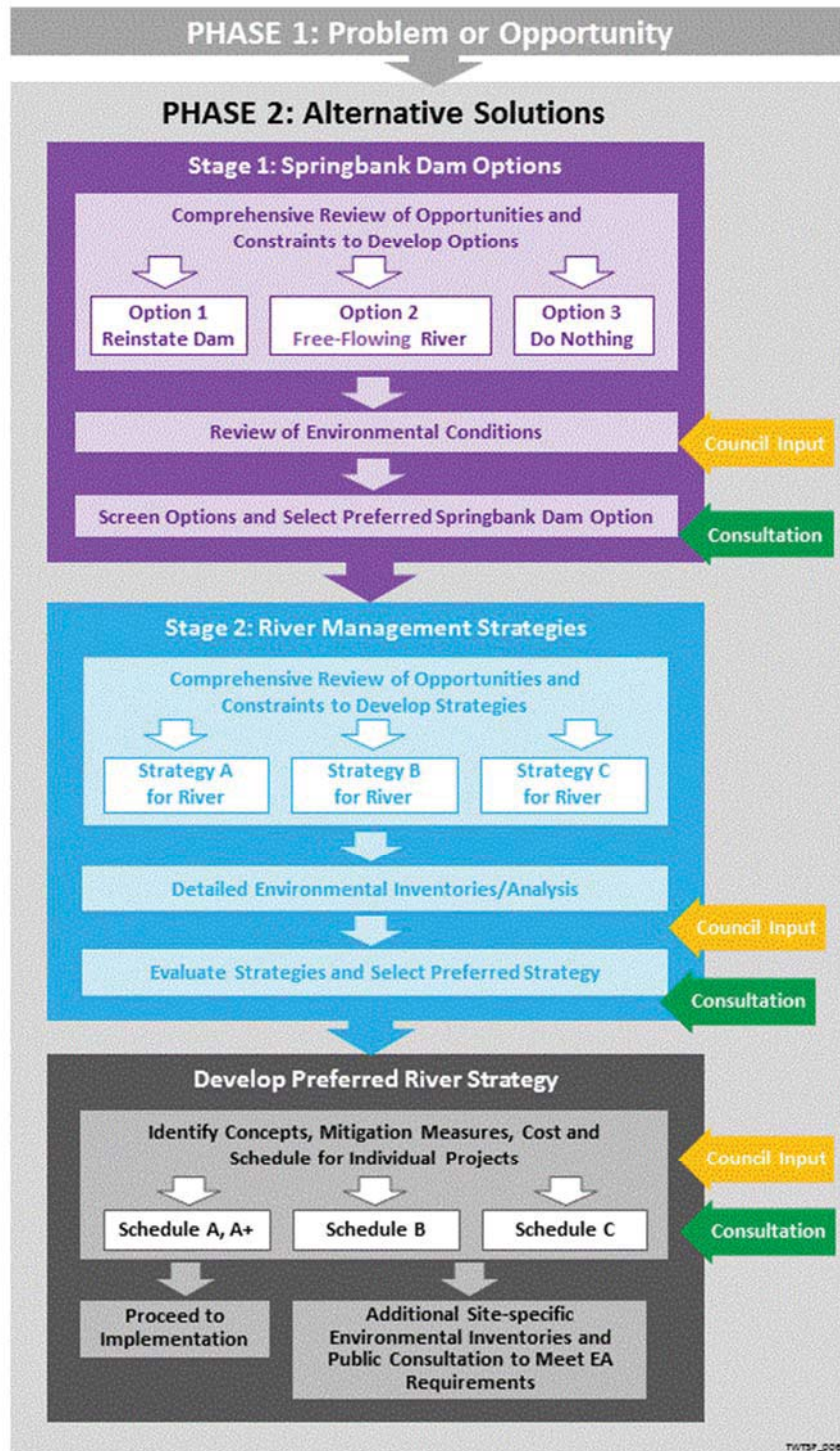
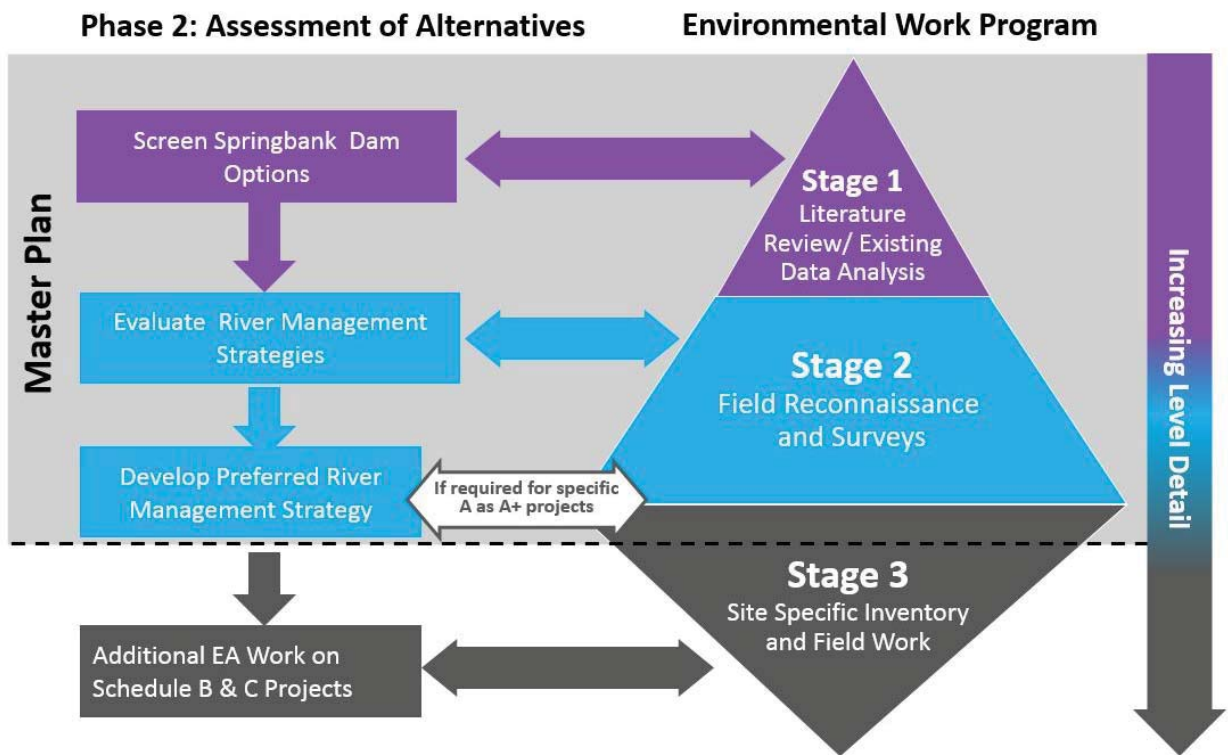


Figure 3.2 illustrates the increasing level of detail for the natural environment studies and inventories that will be undertaken during the Master Plan, as well as the subsequent work on individual projects. It should be noted that the level of detail for the environmental program, while sufficient to meet the requirements of the Master Plan process, does not meet the City’s requirements for an Environmental

Impact Study (EIS) or Subject Lands Status Report (SLSR); however the data collected would be considered under future EIS and SLSR work at the appropriate time for the individual projects that may be identified in the Master Plan.

Figure 3.2: Level of Detail for Evaluating Options and Strategies



### 3.3 Stakeholder Consultation

Stakeholder consultation is an integral part of the Master Plan process, and various methods will be used to solicit input from stakeholders. These are described below.

#### 3.3.1 Public Consultation

Public consultation will include individual public stakeholder meetings with the City, Public Information Centres (PICs) and Pop-Up Events. Pop-Up Events will be informal information sessions held in the summer months at festivals, events and other public engagement opportunities. They will provide a chance to receive feedback from members of the public through the use of short, electronic surveys.

#### 3.3.2 First Nation and Métis Engagement

First Nations and Métis input is key to Master Plan success. As part of the scope of work for stage one of the EA, the goal is to have early and continuous input from the First Nations on the problem definition, alternatives, evaluation criteria and the overall preferred strategy. The City has already begun consultations with the Chippewas of the Thames First Nations (COTTFN) and recognizes the importance of continuing engagement throughout the process, and being proactive in seeking their input.

#### 3.3.3 Steering Committee Meetings

The Internal Steering Committee is comprised of City staff and is responsible for the business issues associated with the project and for providing guidance and support to the sponsor, project manager and project team. The steering committee consists of staff who are representative of the business area(s) and have a direct, vested interest in realizing the project's deliverables and objectives. Participation is determined by the project sponsor.

### 3.3.4 Agency Advisory Committee Meetings

An Agency Advisory Committee has been formed to provide guidance on regulatory processes and issues that may arise as the project progresses. These agencies include the MNRF, MOECC, UTRCA, LTRCA and DFO. The intent of the Agency meetings is to determine the issues and challenges around permitting and approvals for the dam alternatives in Stage 1 and for infrastructure and river management options in Stage 2.

### 3.3.5 Back to the River Design Integration

The Back to the River “Ribbon of the Thames” award-winning design incorporates a number of elements that support a River vision that has been called bold and exciting. It focuses on bringing people back to the River to enjoy a significant cultural and heritage resource and engage in activities that reflect the River’s beauty and cultural significance. Coordination will be done with the Ribbon of the Thames Civitas/Stantec team on how the design elements of Back to the River can be integrated into the EA evaluation and be adapted to potentially changing water levels.

### 3.3.6 TVCP Integration

The City has developed a corridor based plan for the Thames River that looks at the multifunctional role of the river corridor. Recommendations from that plan will be considered and integrated into the EA process.

### 3.3.7 Official Plan Integration

As required by the planning Act, all municipal works shall comply with the City’s Official Plan (OP). Proposed projects under this EA will be reviewed against all OP policies.

## 4.0 Phase 1: Problem/Opportunity Statement

The Problem/Opportunity Statement is a clear, concise description of the issue(s) that need to be considered as part of an EA process. The ultimate goal of the EA is to deliver an outcome that addresses and resolves the problem/opportunity statement. Based on early stakeholder engagement and background information, a draft One River Master Plan EA Problem/Opportunity Statement has been prepared, which recognizes the collective responsibility of all stakeholders in maintaining and enhancing these “*shared natural, cultural, recreational and aesthetic resources*”. One of our first goals will be to finalize and confirm this EA Problem/Opportunity Statement (Phase 1 of the Class EA process). Our approach will be to consult with the Steering Committee, Agency Advisory Committee, and First Nations early in the process to re-present the Problem/Opportunity Statement, and receive endorsement.

The detailed problem/opportunity statement that has been defined is as follows:

***“The river that flows through London’s downtown has many names:***

- ***Deshkan Ziiibiing (known to the Anishnaabeg and Lenape of the Great Lakes);***
- ***Kahwy^hatati (ONYOTA:KA); and,***
- ***The Thames (John Graves Simcoe)***

***This river is both our inheritance and our living legacy. It is our collective responsibility to maintain and enhance this shared natural, cultural recreational and aesthetic resource. The One River Master Plan Environmental Assessment will consider the area historically influenced by the Springbank Dam and will provide a plan that coordinates critical infrastructure projects in ways that improve the overall health of the river, identifies and creates an understanding of potential impacts these projects may have on downstream communities, species at risk and/or endangered species and where possible avoids them and respects the vision of Back to the River’s “The Ribbon of the Thames” concept plan. This study, in the context of many other ongoing initiatives, will preserve for future generations this valuable resource and allow people of all abilities to enjoy and access this designated Canadian Heritage River.”***



The above statement was developed based on a review of the information provided during the various stakeholder engagement sessions held in 2016, as well as the background information available, the study objectives, and the input from the March 8th, 2016 public meeting. This statement has been endorsed by City Council.

## 5.0 Phase 2- Stage 1: Assessment of Springbank Dam Options

As discussed above, Stage 1 of the process will see the determination of a preferred option for the Springbank Dam through the identification and description of the options, review of existing environmental conditions, assessment of impacts, and selection of a preferred option. Throughout the process of evaluation of options in Stage 1 and Stage 2 of the EA, The London Plan and the TVCP will provide a key basis for the definition of criteria.

### 5.1 Springbank Dam Options

The Springbank Dam options include:

- **Do Nothing** so that the dam is left in its current condition with no upgrades, repairs or repurposing.
- **Free-Flowing River** so that the dam is decommissioned and no longer provides a water retention function. Dam decommissioning as part of the recommendations may include options for repurposing the dam structure and various river enhancements, ecological enhancements and recreational enhancements upstream that work within the hydrologic and hydraulic limitations associated with lower water levels during the summer months when, otherwise, the dam may have been operated to increase water depths upstream.
- **Reinstating the Dam** so it provides a water retention function. Dam repair allows for dam operation during months when higher water levels upstream would promote additional recreational opportunities associated with higher water levels. Reinstating the dam does not preclude adding options similar to repurposing the dam.

As a first step, we will develop conceptual designs for each option, outlining the works required for construction.

### 5.2 Review of Environmental Conditions

The next step will be to determine, analyze and document the existing conditions in the study area that may be impacted by the different Springbank Dam options. Natural, social/cultural and technical/cost conditions will be established.

#### 5.2.1 Natural Environment

Since the non-operation of the Springbank Dam in 2005, water levels, sediment transport and vegetation has modified the upstream aquatic environment allowing for certain riverine adapted species to move freely and occupy areas of the river that were previous uninhabitable for those species. The new riverine adapted species include several federally regulated Species at Risk (SAR) that now occupy the upstream sections for not just basking and foraging activities but also for breeding and nursery habitat.

To assess the impacts of the dam options on the natural environment, baseline ecological and physical environmental conditions will be established through environmental analysis and field programs. The focus of the assessment is on aquatic species including SAR and their habitat that is directly affected by predicted changes in the environment associated with future dam operation options. The study area falls within the Carolinian zone, and terrestrial SAR that will be directly affected will have habitat immediately adjacent to the River and will also be identified through field programs. Based on this understanding and linkages, the following levels of data collection have been determined:

1. **Priority Items:** This includes information needed to be able to define and assess the criteria for the One River project and evaluate potential effects. Items include: geomorphology, aquatic habitat assessment and mapping, mussel surveys, fisheries survey and riparian vegetation characterization.
2. **Stakeholder Items:** This includes information that has been identified by additional stakeholders that may not be critical to the technical approach, but may be critical in gathering support and recognition of the current condition and function of the various parts of the Thames within the study area. Items include additional fisheries surveys, reptile coverboard surveys, additional vegetation characterization and bird surveys.
3. **Protocol Items:** These are items that need to be collected based on standard local, provincial or federal protocols if specific approaches are to be used (e.g. evaluating significant wildlife habitat has standard terms and templates for evaluation). Some of these items may include amphibian surveys, breeding bird surveys and three season ecological land classification (ELC).
4. In addition to establishing the baseline ecological and physical environmental conditions, the Stage 1 analysis of water quality will include a review and summary of available background water quality data and a statistical analysis of the water quality comparing key indicators with the dam in place and with the river unobstructed by the dam. Water quality data upstream and downstream of the dam will be included in the analysis.

### 5.2.2 Social and Cultural Environment

Whether the Springbank dam is decommissioned, re-instated or left in its current condition will have varying implications on the social and cultural environment. The baseline social and cultural environment conditions will be established in the following ways:

- Reviewing, and documenting land use and users in the area. Background information will be reviewed to establish baseline land use conditions. In addition, input from public stakeholders (i.e. recreational, downstream communities) First Nations and Métis, will be considered in determining potential concerns and impacts.
- Completing an Archaeological and Heritage Assessment: The Thames River is a Canadian Heritage River that has been an important cultural region for as long as 11,000 years. It is an area of aboriginal/First Nations and European cultural heritages, and as such has the potential for unknown archaeological resources. A Stage 1 Archaeological Assessment will be completed which will involve a desktop investigation to review relevant background material information, evaluate the study area's archaeological potential, and provide information to make recommendations regarding the need for additional archaeological work where impacts are anticipated in undisturbed areas, if any. All work will meet requirements of the Ontario Ministry of Tourism, Culture and Sport's (MTCS) 2011 Standards and Guidelines for Consultant Archaeologists in accordance with the Ontario Heritage Act. The information will be used to aid in the alternatives assessment.
- Using the baseline hydrological and geomorphology data to establish potential risks to public safety as a result of increased flooding or shoreline erosion.
- Integration of the London Plan and the TVCP vision and objectives will provide guidance to the EA in regard to the preservation and enhancement of the Thames River health, vistas, beauty and cultural heritage while accommodating compatible infrastructure, accessibility and recreation.
- Integration of the Back to the River design elements that support the ecological, accessibility and recreation objectives of the EA.

### 5.2.3 Technical and Economic Environment

Technical implications of a project relate to such factors as constructability (i.e. the ease of implementation, including the ability to receive required permits and approvals), long-term operations and maintenance requirements, and the compatibility with other planned infrastructure projects (e.g. Ribbon of the Thames). Evaluating these technical implications requires that the construction works for each option be clearly identified, the upstream/downstream impacts on the natural and social environments be determined, and the appropriate approvals agencies be consulted with. The City of London has established the Agency Advisory Committee, and has held three meetings with them to start identifying approval requirements for Springbank Dam options.

The construction works for each option and the operating/maintenance requirements will be used to determine the general costs of each option. Costs established at this stage will be high level, and be estimates for comparison purposes only.

### 5.3 Approach to Evaluate Springbank Dam Options

For Stage 1, our approach involves describing the impacts of the options on the various components of the environment. A draft set of criteria for evaluating options is presented in Table 5.1, which will be finalized based on Stakeholder input. For each option, the potential impacts for each criterion will be estimated. The goal is to determine the basic feasibility of each option based on the potential impacts, and if there are significant impacts that would serve to “screen-out” the option from further evaluation. Where possible we will quantify impacts (e.g. capital costs, mapping techniques to establish extent of impacts on natural environment, potential length of time to receive approaches). When impacts cannot be quantified we will describe the impacts based on stakeholder input and expert judgement.

### 5.4 Recommended Springbank Dam Option

Based on the assessment of impacts, a determination of the feasibility of each option will be established and a preferred option will be recommended and presented to City Council, and agency and public stakeholders for input and comments. The preferred option for the Springbank Dam will be finalized following Council and stakeholder input. Any concerns raised will be addressed and comments/responses will be documented.

## 6.0 Schedule for Stage 1

The schedule for major deliverables and consultation activities that are part of Stage 1 are illustrated in Figure 6.1. As illustrated, public engagement is an important component of this project and as such, numerous public engagement events are planned throughout the summer to provide input into this important stage of the project.

## 7.0 Next Steps

Currently we are proceeding with fully defining the Springbank Dam options and undertaking necessary background reviews, inventories, field work and analysis to establish existing conditions, and the impacts on the environment of the options. The Stage 1 options and evaluation process will be presented to stakeholders’ numerous times, as illustrated in the schedule in Figure 6.1. The preferred Springbank Dam option will be determined based on the outcome of the evaluation.

Once the option for the Springbank Dam is confirmed, the Stage 2 assessment of River Management strategies will begin. This will be a more detailed evaluation of specific works, including integration of River maintenance and enhancements identified in plans such as the Thames Valley Corridor Plan, Restoration and Flood Protection Plans, plans for infrastructure renewal including the PPCP and, in particular, the Back to the River’s “Ribbon of the Thames” Concept Plan. Using similar, but more detailed criteria as identified in Table 5.1, an analysis that considers environmental, technical,

social/cultural (community), and economic (cost) criteria will be undertaken. At Stage 2, criteria importance ratings (weights) will also be established based on consultation with the City, and in consideration of community, First Nation, Métis, and agency inputs during the Class EA consultation process, to best reflect the priorities of all stakeholders. River management strategies will be scored and ranked to establish the preferred overall River Management Strategy that best addresses the problem/opportunity statement and **“will preserve for future generations this valuable resource and allow people of all abilities to enjoy and access this designated Canadian Heritage River”**.

**Table 5.1: Draft Evaluation Criteria for Assessing Springbank Dam Options**

<b>Category &amp; Criterion</b>	<b>Description</b>
<b>Natural Environmental</b>	
Water Quality	The potential of the option to maintain or improve water quality to Provincial Water Quality Objectives (PWQOs) or better.
Geomorphology	The potential of the option to result in a stable streambank condition with respect to slope stability and erosion (upstream and downstream).
Sedimentation	The potential for the option to optimize sediment transport to a stable sediment load condition.
Species at Risk	The potential of the option to protect sensitive species and species at risk (both aquatic and terrestrial).
Terrestrial Habitat	The potential for the option to maintain or enhance terrestrial habitat by protecting sensitive areas.
Aquatic Habitat	The potential for the option to maintain or enhance aquatic habitat that supports benthic and fish communities.
Groundwater	The ability of the option to protect groundwater resources from a quality and quantity perspective.
<b>Social/Cultural Environment</b>	
Cultural Heritage	The potential of the option to protect cultural/heritage resources.
Public Health & Safety	The potential of the option to minimize risk or liability to community health and safety resulting from flooding.
Recreation Opportunity	The potential of the option to provide or enhance recreational activities.
Downtown Integration	The potential of the option to impact the integration of the River with the downtown area.
River Destinations	The potential for the option to permit city-wide destinations that include both built (mixed-use developments) and natural places.
Urban Waterfronts	The potential for the solution to permit an “urban” waterfront in certain locations.
Aesthetics	The ability of the option to maintain or enhance the visual character of the study area.
Stakeholder Acceptance	The potential of the option to be accepted by stakeholders including landowners, First Nations, Métis, and the public based on comments and feedback received through public consultation during the study.
The London Plan Integration	The ability of option to incorporate recommendations from The London Plan.

TVCP Integration	The ability of option to incorporate recommendations from the TVCP.
<b>Technical and Economic</b>	
Flood Control	The ability of the alternative to allow for the required flooding control.
Erosion Control	The ability of the alternative to mitigate streambank erosion upstream and downstream of Springbank Dam.
Constructability, Implementation, and Work Scope	The ability of the option to be constructed and implemented on a technical, regulatory, and practical basis; within a reasonable scope of work. In particular, the ability of the option to meet required approvals from the City of London and regulating agencies (UTRCA, MNRF, MOECC, DFO).
Operations & Maintenance	The ability of the option to be operated and maintained within regular operating parameters at the City. (Operational and Maintenance requirements of the options will be described).
Compatibility with existing and planned infrastructure projects	The ability of the option to be compatible with existing and planned projects upstream/downstream of the Springbank Dam (e.g. Back to the River components and TVCP recommendations).
Relative Capital Cost	Estimated capital cost relative to other options. (Will a cost range for each option for comparison purposes only in Stage 1).



Figure 6.1: Schedule for Completing the Phase 1 and Phase 2 Stage 1 Evaluation

