

Appendix C: Guideline for Preparing Terms of Reference for a Master Servicing Study

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Overview

A Master Servicing Study (MSS) is typically completed as part of a Community Design Plan (CDP) process, or in conjunction with a land use planning process for a Local Plan area where coordination of water, wastewater and/or stormwater servicing is required between multiple developments and/or landowners that would proceed through separate, subsequent development approvals processes under the *Planning Act*. The purpose of this Guideline for Preparing Terms of Reference for Master Servicing Studies (MSS Guidelines) is to outline the scope of the studies that are required in accordance with the MSS Policies in Section 4.3 of the Infrastructure Master Plan. The MSS Guidelines identify the general scope and expectations of technical studies required to support the master planning of infrastructure, where local plans are needed to support development in Future Neighbourhood Overlay areas (also referenced as 'expansion areas').

The terms outlined in the MSS Guidelines are intended to be a reference guide for developers and their professional consultant team (hereafter "Project Team"). The scope of investigation identified in this document is intended to address typical study requirements. Standard practice requires the Project Team to meet with City staff early in the planning process to discuss area-specific servicing issues prior to finalizing the Terms of Reference that will guide preparation of the MSS. This process is intended to ensure the studies are appropriately scoped, include documentation of servicing alternatives and their evaluation to identify a preferred servicing plan, and coordination of public consultation regarding the MSS with the CDP or Local Plan process.

The scope of study to be undertaken in an MSS will be dependent on the planning process requirements to remove the Future Neighbourhood Overlay. Where a full CDP process is required, the MSS will require greater integration / coordination with other supporting master planning studies, including the CDP, Environmental Management Plan (EMP) and Transportation Master Plan (TMP). Where the subject expansion area is small, and is largely owned by one landowner, removing the Future Neighbourhood Overlay may be satisfied through preparation of a Concept Plan. In such circumstances the scope of the MSS may be reduced where integration / coordination with other master planning documents is small in scope or not required. In all circumstances, the MSS Terms of Reference for expansion areas need to include the preparation and evaluation of servicing alternatives, as appropriate.



It is the responsibility of expansion area landowners to confirm the specific study requirements have been fulfilled by completing the checklist in Schedule A to the MSS Guideline, prior to completing their professional reports or technical studies, and to ensure the various reports are appropriately coordinated and integrated. Unless extenuating circumstances apply, all studies and reports are expected to be completed at the expense of the benefiting landowners.

Annex 5, 6, and 7 of the OP document existing Area Specific Study locations, and Urban and Rural Secondary Plan areas, respectively, where previous MSSs or other master planning of infrastructure (for example, Environmental Management Plans or Master Drainage Plans) have been completed. This MSS ToR is also to be followed when completing updates / addenda to previously approved master planning documents when:

- land use changes may be proposed in these areas;
- there has been a change in the environmental setting; and/or
- more than ten years have passed since approval of the MSS, and recommended projects have yet to proceed to implementation..

MSS Study Process

The following represent the standard steps expected during the completion of the MSS study process:

- i) Preparation and approval of an area-specific Terms of Reference;
- ii) Documentation of existing conditions;
- iii) Documentation of future development conditions;
- iv) Identification of servicing design constraints and evaluation criteria;
- v) Development of water, wastewater, and stormwater servicing alternatives and compatible grading plans;
- vi) Evaluation of alternative servicing plans and identification of preferred water, wastewater, and stormwater servicing plans;
- vii) Development of Implementation Plan including phasing and financial plans; and
- viii) Securing all required planning approvals.

A landowners group is to be established in areas requiring a CDP, and a Project Lead will be chosen for the study. In areas requiring only a CP the majority landowner will identify the Project Lead responsible for completing the MSS. Project Leads will be responsible for ensuring the MSS includes documentation of servicing alternatives for minority / non-participating landowners.

The Project Lead will be responsible for assembling a multi-disciplinary consultant team ('the Consultant Team') with the required expertise to prepare the Community Design Plan and supporting studies, i.e., MSS, Environmental Management Plan (EMP) for the Neighbourhood Overlay and/or Industrial & Logistics areas. In areas requiring a Concept Plan only, the Project Lead



is to ensure the principles of master planning are followed, including evaluation of alternatives.

While an MSS is largely a technical (engineering) document, the evaluation process required to arrive at the preferred servicing solutions involves an integrated, inter-disciplinary effort by consultants preparing the CDP/CP and EMP with expertise in water resources and municipal engineering, and supporting disciplines including hydrogeology, geotechnical engineering, geomorphology and natural sciences (aquatic and terrestrial biology).

Preparation of Area Specific Terms of Reference, Study Schedule, and Consultation Plan

Working from this document, the Project Lead will be responsible for preparing a Terms of Reference for the MSS that is tailored to address the anticipated area-specific servicing issues, while also addressing and mitigating potential environmental impacts.

The Project Lead and representatives from the Project Team and landowners will meet with City staff to discuss the content and scope of the Terms of Reference expected to address all study components of the MSS, in addition to the anticipated Study Schedule and details of the Consultation Plan.

The City will identify a Project Manager overseeing the MSS, who will be responsible for assembling a Technical Advisory Committee (TAC) with representation from various City business groups and external agencies.

The submitted servicing plans are to comply with all City and agency Design Guidelines and Policies. A Draft Terms of Reference will be circulated to TAC members for review and comment. The area specific Terms of Reference are to be completed to the satisfaction of the General Manager of the Infrastructure and Water Services Department (IWSD).

The MSS must identify the process through which legal outlets are to be established for each of the outlets identified through the EMP. It is expected that early discussions with the City's Drainage Superintendent will be held during the MSS process, ensuring compliance with the *Drainage Act* process - required to establish a "legal and sufficient outlet" for the area. Where drainage through Federal lands is required, this process must consider applicable federal approvals. MSS approval will be contingent on sufficient notification and opportunity for input from affected property owners regarding these outlets. While there is a need to coordinate the planning of stormwater servicing with *Drainage Act* projects, the approval process for works required under the *Drainage Act* is separate from the MSS study process. The development proponent and/or landowners are responsible for initiating and completing this process.



i) Documentation of Existing Conditions

Using a combination of existing reports, mapping, monitoring, and inventory data, supplemented by field investigations and surveys, an existing conditions report will be prepared to document baseline conditions including an assessment of residual system capacities and design constraints to be factored in MSS recommendations.

A partial list of existing conditions to be documented includes:

- Base mapping – topographic mapping; property ownership; surficial geology; surface water; LiDAR; Official Plan and Zoning related information; water, wastewater, and stormwater services; geotechnical and hydrogeological data; etc.
- Summary of relevant reports – previous relevant master planning documents and their findings and recommendations; servicing and geotechnical reports of nearby development applications; environmental impact studies; watershed, subwatershed and floodplain mapping studies; environmental management plans
- Supplementary field investigations per approved ToRs and/or IMP policies -: topographic survey (drainage outlets; environmental features; etc.); flow monitoring; geotechnical and hydrogeological investigation; environmental inventorying work (EMP); geomorphology study; etc.
- Adjacent rural lands – document all adjacent rural designated lands that naturally drain through the expansion area that could form part of the City's longer-term growth needs and would rely on future service connections through the expansion area.
- Preparation of existing conditions models: water distribution network; wastewater collection system; stormwater drainage; water budget; etc.
- Archaeological study

The City will make available its GIS data and archived reports to assist the Project Team, in addition to other supporting information, such as water and sanitary boundary conditions. The Project Lead and Project Manager will be responsible for establishing the required data sharing agreements.

Studies documenting existing conditions shall be prepared and integrated in accordance with any other relevant standard ToR or guidelines for those studies (for example, the EMP and Water Budget ToR). Where an EMP is not being prepared for the expansion area, the MSS is to include modelling of the existing on-site and off-site (subwatershed / reach) conditions of the receiving watercourse sufficient to establish stormwater design criteria.

Through coordination with the Final EMP, where one is being prepared, the Final MSS will formally document the stormwater management performance criteria per Appendix A of the Consolidated Linear Infrastructure-Environmental Compliance Approval process.



ii) Documentation of Future Development Conditions

This study task will be completed as an iterative process in consultation with the Project Team and TAC members, and through coordination with the CDP/CP process. Water demand, wastewater generation, and post-development drainage conditions will be documented, as appropriate, in the evaluation of alternative land use concepts within the expansion area.

Subject to OP Policy 4.7.1.15, potential future demands from the adjacent rural lands documented in task ii) above, are to be documented and factored in sensitivity analysis before recommending the preferred servicing plans.

Based on consultation with City staff, projects identified in the City's Infrastructure Master Plan that are needed to support servicing of the area are to be documented. (Depending on the expected project timing, Front Ending Agreements may be required to meet development expectations.)

Future conditions computer models will be developed for evaluating alternative on-site and off-site (downstream) water, wastewater, and stormwater servicing required for the alternative development concepts, as appropriate. Computer models are to be developed consistent with requirements in City Design Guidelines.

iii) Identification of Servicing Design Constraints and Evaluation Criteria

A comparison of future conditions demands against residual capacities of existing water, wastewater, and stormwater systems is to be completed to identify the potential scope of on-site and off-site infrastructure required to support future development applications within the Neighbourhood Overlay area, and potential future rural expansion lands.

Based on the anticipated scale, configuration, and location of anticipated on-site and off-site infrastructure requirements, a set of evaluation criteria and a scoring methodology representing a range of relevant factors for the water distribution network, wastewater collection system, and stormwater management system will be developed and finalized in consultation with the TAC to enable a fulsome evaluation of alternatives solutions. Typical evaluation criteria may include land use compatibility; compatibility with existing and planned infrastructure capacity; flood protection; grading requirements; project phasing and implementation flexibility; life cycle costs; impacts to sensitive habitat; overall resiliency of the proposed systems under current and future climate conditions; and capital cost. The evaluation of stormwater management alternatives and related drainage improvements is to show compliance with criteria established in the EMP. MSS recommendations must be consistent with all OP and IMP policies.

iv) Development of Grading Plan, and Water, Wastewater and Stormwater Servicing Alternatives

The MSS is to document water, wastewater, and stormwater servicing approaches, at a conceptual level, for the alternative CDP/CP land use concepts being evaluated. Preferred water, wastewater



and stormwater servicing alternatives and the associated grading plan for the preferred land use concept are to be prepared at a functional design level of detail. Development of Local Plan areas typically proceeds in a phased manner. Accordingly, the phasing of development should be considered when preparing the servicing alternatives and plans, this includes consideration for interim measures.

Grading Plan

The grading plan is to inform design elements to be factored in overall community and infrastructure planning. Working within boundary constraints, the grading plan is to consider various design criteria including grade raise restrictions, natural hazard setbacks, and City of Ottawa Sewer and Water Design Guidelines (SWDG) criteria regarding frost cover, minor and major system design, and enable an optimal servicing plan free of conflicts.

The grading plan is also to provide sufficient detail in areas of community amenities like parks and pathways to ensure constraints to their ultimate development are minimized, required easements are identified, and their development can proceed economically. The grading plan is also to avoid the use of retaining walls, which will only be permitted in exceptional circumstances, supported by detailed justification.

Water, Wastewater, and Stormwater Servicing and LID Plans

Servicing plans are to be prepared to a functional design level of detail. This includes all watermains 300mm diameter and larger, sanitary sewers 250mm diameter and larger; and storm sewers, generally, 900mm and larger. An LID concept plan is also to be prepared, demonstrating how LID measures will be integrated with the overall land use and servicing plans to achieve applicable runoff volume control, water budget or other related targets identified in a subwatershed study, EMP or the MSS. Where the MSS has been prepared in support of a Concept Plan, servicing plans are to be completed with additional detail typically required in a Functional Servicing Report.

The servicing alternatives are to provide a servicing solution for all lands within the study area, including land owned by non-participating landowners. Servicing solutions should also optimize the resiliency of the system to mitigate the impacts of a changing climate on the system performance. Servicing plans that deviate from City design guidelines will only be permitted in exceptional circumstances, supported by detailed justification.

Area specific Terms of Reference are to detail the proposed modelling scenarios that will be factored in the formulation and evaluation of the servicing plan alternatives, based on all City and other applicable design guidelines and the existing and future area-specific water pressure zone configurations, and wastewater and stormwater outlets.



v) **Evaluation of Alternative Servicing Plans and Identification of Preferred Water, Wastewater, and Stormwater Servicing Plans**

The alternative servicing plans are to be evaluated based on the criteria and scoring methodology approved by the TAC in Task 'iv'. The results of the evaluation will be considered preliminary until the Project Team has satisfactorily addressed comments by TAC members, based on their review of documentation supporting the servicing plans. The Terms of Reference are to describe the evaluation and consultation processes with TAC members and the public.

vi) **Development of Implementation Plan Including Phasing and Financial Plans**

An Implementation Plan is to be prepared to guide decision making concerning the timing of infrastructure needs required to support development within the urban expansion area. If appropriate, the Implementation Plan should include a Phasing Plan when the scope of work, or location of development is dependent on the completion and commissioning of certain on-site or off-site infrastructure.

The Implementation Plan must also identify all anticipated Regulatory approval requirements.

Financing of trunk infrastructure required to support development in Local Plan areas can also influence the Implementation Plan. Consequently, a Financial Plan is to be prepared that details: the status and available funding of off-site works; and financing options such as Front Ending Agreements (FEAs) required to advance the construction of trunk services required to support development of the expansion lands. FEAs may be required for early implementation of projects identified in the City's Infrastructure Master Plan, or for Development Charge-eligible projects identified in the MSS, per Official Plan policy 4.7.1.17.

Where the potential future servicing requirements of adjacent rural lands would require a change in the preferred servicing and/or grading plans of the expansion area, the additional cost of allowing for future servicing of the longer-term development lands is also to be documented in the financial analysis.

vii) **Securing All Required Planning Approvals**

Depending on area-specific issues and the scope and location of off-site infrastructure (requiring municipal and Class EA planning approvals), the need for Provincial or Federal planning approvals could also be triggered. The Terms of Reference will identify how the CDP/CP and/or MSS planning process will be coordinated with / has been expanded to fulfill planning process requirements of applicable Provincial and Federal legislation.

To streamline future approvals through the Consolidated Linear Infrastructure Environmental Compliance Approval process, the Final MSS will formally document

- i) the stormwater management performance criteria per Appendix A of the CLI-ECA;



- ii) provide a listing of anticipated / proposed stormwater management infrastructure per Schedule B of the CLI-ECA; and
- iii) identify any anticipated / proposed stormwater management infrastructure that exceeds the CLI-ECA approval authority and will require direct submission to the MECP at the project implementation stage.