Executive Summary: Aggregate Supply and Demand Study, Updated Remaining Reserves for Sites in the 2009 and 2016 SAROS Studies and Planning and Policy Constraints

Submitted to:

Ministry of Natural Resources

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Executive Summary

The Ontario Ministry of Natural Resources retained WSP, to update the Aggregate Supply and Demand Study for the Greater Golden Horseshoe (GGH). Previous versions of the Study were published in 2009 and 2016. The study provides an updated estimate of the volume of remaining reserves in licensed pits and quarries and provides some insight into the quality of those reserves. The report also discusses aggregate production trends and demand and examines the current policy framework for aggregates in Ontario. WSP retained Esher Planning Inc and Altus Group to complete components of the work program related to planning policy and aggregate demand.

The reserve estimates provided in this report represent the total estimated volume of remaining licensed material within the licence extraction limit of the pit or quarry. There are a number of limitations that apply to desktop exercises that intend to estimate remaining licensed supply based on ARA site plans including geological variability and variability of the quality of the reserves. The licensed resource estimates provide a volumetric calculation and may include some areas with no aggregate resources or low-quality resources; resources that may be uneconomical to extract, process or are unmarketable due to limitations in quality or quantity of materials present. These limitations would tend to exaggerate or overestimate the actual licensed reserves that are available. An estimate of the material that is within licensed extraction limits does also not reflect operational constraints or the quality of the reserves and therefore are not an estimate of a proven licensed reserve that can meet an anticipated demand for mineral aggregate products.

The total remaining reserves for the sites is 6,227,978,620 tonnes based on the 2023 work program which includes:

- 3,684,835,305 tonnes in aggregate limestone and trap rock quarries;
- 2,305,838,181 tonnes in aggregate sand and gravel pits; and,
- 129,487,665 tonnes in sites classified as both quarries and pits.

The total construction aggregate reserves is 6,120,161,151 tonnes.

The results also total remaining reserves non-limestone building material sources from sandstone quarries and shale quarries of:

- 7,484,568 tonnes specifically in sandstone quarries; and,
- 100,332,901 tonnes in shale quarries.

Consistent with the previous studies, and in order to gauge the aggregate supply close to market, the estimated remaining licensed reserves were divided into 50 km concentric rings centred around the Vaughan Metropolitan Centre (VMC) located in York Region. Reserve estimates of licensed sand and gravel and stone was calculated for the rings within: 0 - 50 km; 50 - 100 km; 100 - 150 km; and, 150 - 200 km of VMC. The results show a decline in the licensed reserves located closest to the GTA market. The shift to sourcing aggregate supply from further away is also reflected in the aggregate production statistics over the past 10 years, which show a 17 percent decline in production from GTA municipalities and an increase of 32 percent from GGH municipalities outside of the GTA.

To provide a better understanding of licensed resource quality, a survey of pit and quarry operators was undertaken to provide additional information about the quality of aggregate being producing at their facilities. The survey was distributed to OSSGA members, and 105 responses were received, with each response representing an active pit or quarry operation in the GGH.

For the study area as a whole, an average of 20 percent of the sites have sand or stone material that is suitable for making asphalt and concrete stone. The geographic distribution of high-quality licensed reserves is fundamentally based on geology. The closest high quality limestone reserves in the GGH are associated with the Amabel or Gasport formation of the Niagara escarpment. Located west of the GTA, these high-quality licensed reserves are nearly depleted. The next closest area of high-quality limestone is found in the Carden Plain on the east side of Lake Simcoe, an additional 75 – 100 kilometres from the GTA.

The results of this 2023 study continue to reflect a shortage of close to market licensed high quality sand and stone suitable for making asphalt and concrete products. The study has provided a number of recommendations to refine the methodology for assessing aggregate supply and continuing to build an understanding of aggregate quality considerations in the GGH.

The GGH's population is forecast by the Ministry of Municipal Affairs and Housing to increase by another 45% to 14.8 million by 2051. The construction associated with population and employment growth will require an adequate supply of mineral aggregate resources to support that growth and related infrastructure at a reasonable cost. This report provides an understanding of current aggregate supply and the constraints to future supply to meet demand.

Ontario’s Housing Supply Action Plan calls for 1.5 million new housing units to be built by 2031. The portion of this target specifically allocated to the 25 GGH municipalities is 1.01 million housing units. Based on the November 2023 data, there are 908,750 additional units required in the GGH to meet the 2031 provincial target. This will require nearly 235 million tonnes of aggregate including 126 million tonnes high quality aggregate suitable for concrete and asphalt products. In addition, large infrastructure projects, including expansions or new 400 series highways, will contribute to the demand for quality aggregate in the GGH in the coming years.

The aggregate demand and resulting consumption in the GGH has remained relatively consistent over the years. However, the licensing of replacement reserves has not kept pace with this consumption. The number of pit and quarry licences and the corresponding licensed area in the GGH has decreased in the past 10 years, with 28 fewer licences in 2022 compared to 2013. In addition, more than two thirds of the licensed reserves supplying the GTA are more than 35 years old with reserve bases becoming depleted rapidly.

As discussed in this report, better data is needed to understand the availability and distribution of high-quality aggregate required for concrete and asphalt manufacturing.

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There have been numerous changes to provincial policy in the past 10 years as well as changes to aggregate related legislation. The report found that there continues to be a high degree of overlap between identified aggregate deposits and overlapping constraints, with over 90% of aggregate resource impacted. The Growth Plan policies which were introduced in 2017 create a more restrictive and pre-emptive constraint where aggregate resource areas overlap areas with habitats for species at risk and some significant woodlands. The siting of new aggregate extraction operations will become increasingly difficult and contentious in the Golden Horseshoe area.