MEMO

TO:	Diamond Schmitt Architects and KWC Architects
FROM:	WSP Canada Inc.
SUBJECT:	Site Servicing and Stormwater Management Design Brief
DATE:	**March 31, 2020**

In the comments from the site Site Plan Application Plan (City of Ottawa File Number: D07-12-19-0205) it was requested that WSP Canada Inc. (WSP) geotechnical provide comment on the Site Servicing and Stormwater Management Design Brief (the Design Brief), from a geotechnical perspective.

As is fully described in the geotechnical report, the general site conditions encountered consists of fill overlying a layer of glacial till. Lying between these layers in about half of the boreholes a layer of silty clay which in turn was underlain by sand and gravel with cobbles/boulders also encountered. The glacial till extended to the depth of refusal between 7.6 m to 12.6 m below the existing ground surface. The bedrock depth was confirmed through coring, it was encountered at depths 10.7 to 11.8 m in depth.

This Design Brief, dated March 13, 2020, was provided to WSP on March 20th, 2020 and has been reviewed. It is understood that the proposed building will be serviced by dual 250 mm diameter water services connected to the relocated 400mm diameter watermain east of the proposed building and the invert elevations for the watermains range from 63.89 to 60.49 m. The design criteria in the report indicates that unless otherwise insulated that the minimum depth of cover will be 2.4 m. Based on the stratigraphy encountered during the borehole investigations, this would place the invert of the watermains on either the silty clay or sand and gravel deposit.

It is also understood that twenty-one Precast Concrete Maintenance (PCM) holes, as per OPSD 0701.0100 or 0701.0110, for both the storm and sanitary sewer systems are to be installed, with diameters of either 1200 or 1500 mm. It is understood that a 600-mm diameter concrete pipes will be connected the PCM storm sewer structures and 200mm diameter PVC pipes will be connected to the sanitary service PCM. The invert elevations of these structures range from 63.4 m to 58.25 m where silty clay, sand and gravel and glacial till were encountered. As with all structures, the subgrade for the PCM should be inspected prior to the installation.

Based on the water levels recorded in November 2019, the water table ranged in elevation between 59.5 m and 60.2 m. Additional water levels were taking in March 2020 and were found to be below the November 2019 water levels. The requirement of the joints for the sanitary service within the design specifications are listed as a minimum hydrostatic pressure of 345 kPa (50 psi) without leakage, list as equivalent to 35 m of hydrostatic head. Given these design requirements, WSP agrees with the Design Brief that these pipes are suitable for installation under the water table. The minimum cover of 2.4 m over the proposed watermains is also considered suitable for pipes installed within a zone which may be below the water table. The storm system, consisting of concrete pipes is also considered acceptable for installation below the groundwater table given the proposed depth of cover listed in the Design Brief.

Based on the drawings in Appendix F provided by Aco Systems Ltd., it is understood that northern and southern detention tanks are to be constructed using ACO StormBrixx for as surface water retention. The north detention tank is listed is having an invert elevation of 63.62 m and top elevation of 64.62 m. The south detention tank is listed is having an invert elevation of 60.85 m and top elevation of 62.6 m. Again, the water levels recorded in November 2019, the water table ranged in elevation between 59.5 m and 60.2 m. Based on these recorded values, there is no concern about

uplift forces for the northern tank. The invert of the southern tank is approximately 650 mm above the highest recorded water level. Given that the surface elevation at the location of the southern tank will be approximately 65.5 m at this location, approximately 2.9 m of fill will be placed above the retention structure. This amount of fill would provide sufficient weight to counter uplift forces applied on the structure. How the structure itself will respond to these forces not commented upon. It should however be noted that that based on the closest boreholes to the proposed retention tanks, the founding level of the retention structures may be sitting upon granular fill material and this surface will require inspection from a qualified geotechnical engineer/technician prior to it being approved. Over excavation may also be required.

Of note, references are made to the Geotechnical Investigation Report (NO. 191-12948-00 dated December, 2019) and this memo is to be considered an addendum to the geotechnical report. Also, the soil description within the Design Report have not mentioned of layer of silty clay which was encountered in about half the boreholes at the site.

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