THE BIGLIERI GROUP LTD.

ENVIRONMENTAL AND ENGINEERING SUMMARY REPORT

0 Mt. Pleasant Road
Caledon, Ontario

Prepared for: Tropical Land Developments Ltd.

TBG File No: 17445

July 2018
Revised November 2019

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TBG Project No.: 17445

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1.0 INTRODUCTION

The Biglieri Group Ltd. has been retained by Tropical Land Developments Ltd. to submit Draft Plan of Subdivision and Zoning By-law Amendment applications for a proposed 8-lot estate residential development located at 0 Mt. Pleasant Road in the Town of Caledon, Regional Municipality of Peel. This Environmental and Engineering Summary Report (ESSR) is supporting documentation for the respective Draft Plan of Subdivision and Zoning By-law Amendment applications. It has been prepared to meet the requirements outlined in Section 7.1.18.11 of the Town of Caledon Official Plan (office consolidation April 2018).

The proposed development is located on the west side of Mt. Pleasant Road, approximately 1.1 km south of Highway 9 ("Subject Site"). The Subject Site is legally described as Part of Lot 27, Concession 8, Geographic Township of Albion, Town of Caledon, Regional Municipality of Peel. The Subject Site is located in the Palgrave Estate Residential Community and is surrounded by existing estate residential lots to the north, a proposed 42-lot estate residential development to the east (known as Beaverhall Estates), and forested lands to the south and west.

The Subject Site is 12.27 ha in size, has a frontage of 181 metres onto Mt. Pleasant Road, and is approximately 650 metres deep (Figure 1). The proposed development is for eight (8) estate residential lots ranging in size between 0.62 ha to 3.97 ha. Lot frontages range from 54.5 metres to 184.3 metres with lot depths ranging from 67.7 metres to 182.6 metres. The proposed development provides 4.0 hectares of environmentally protected lands that will be reforested. A 22.0-metre wide public road ("Street A") is proposed to provide access to the residential lots. Bio-retention swales are proposed within the Street A right-of-way on both sides of the 7.9-metre wide pavement surface. There is an additional road block with a right-of-way of 22.0 metres provided as a potential future connection north to McGuire Trail. The proposed Draft Plan of Subdivision prepared by The Biglieri Group Ltd. dated June 12th, 2019 is attached as Appendix A.

The objective of the ESSR is to integrate and summarize the environmental site investigations, mapping, and analysis with the findings and recommendations of the preliminary engineering, stormwater management, and other technical reports.

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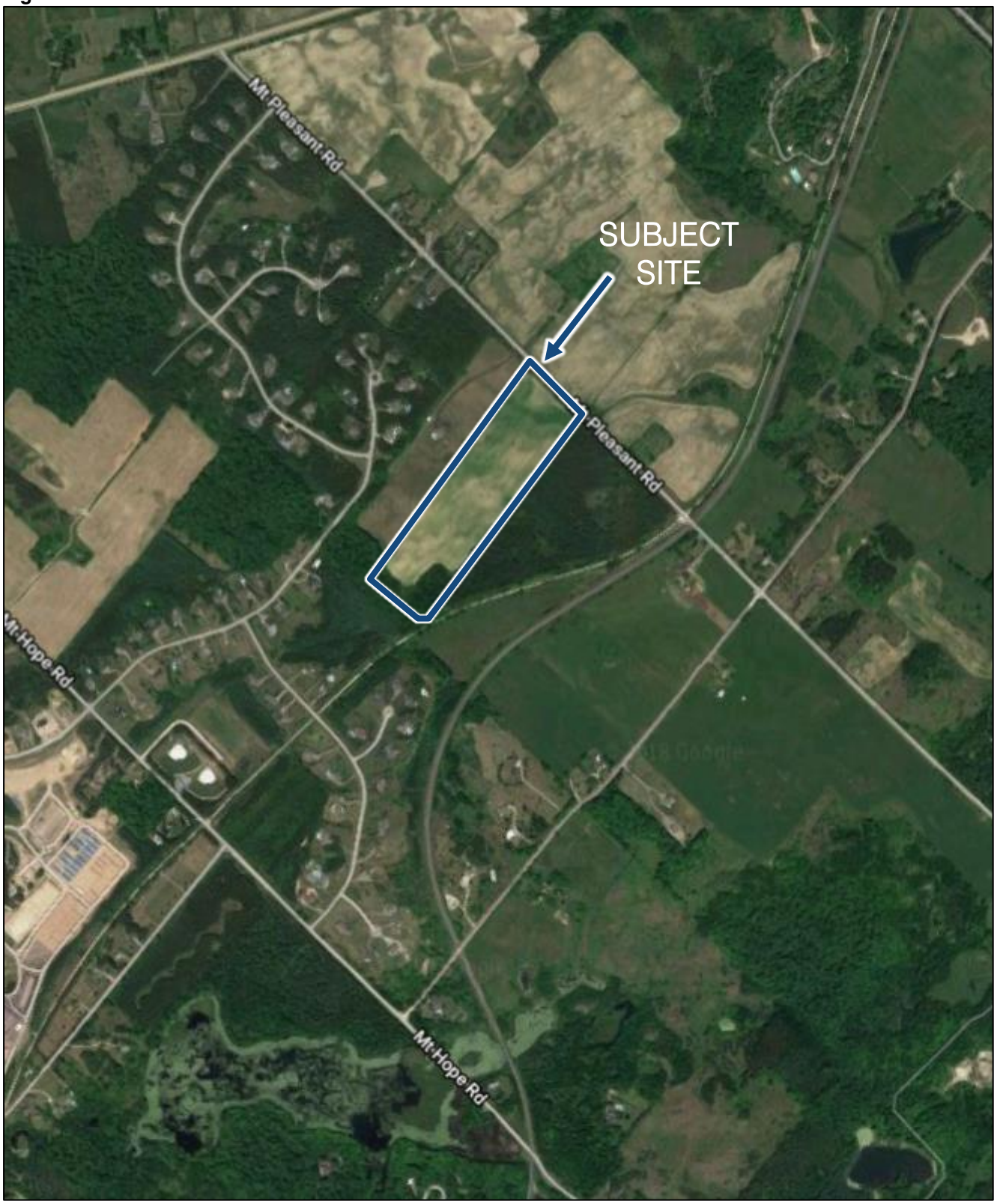
Figure 1 – Site Aerial



Source: Google Maps (2018)

2.0 SUBJECT SITE AND SURROUNDING AREA

2.1 Subject Site

The Subject Site is located on the west side of Mt. Pleasant Road, approximately 1.1 km south of Highway 9, in the Town of Caledon. The site is legally described as Part of Lot 27, Concession 8, Geographic Township of Albion, Town of Caledon, Regional Municipality of Peel. The rectangular parcel is approximately 12.27 ha. (30.3 acres) in size, with 181 metres of frontage on Mt. Pleasant Road and a depth of ~650 metres.

The Subject Site is currently vacant and has been used for agricultural purposes. The majority of the Site is generally flat with gentle slopes. There is an ephemeral swale running north-south, within the eastern portion of the site. A woodlot feature occupies the western end of the property. The property is located within the Oak Ridges Moraine Physiographic Region.

2.2 Surrounding Area

The Subject Site is generally surrounded by agricultural lands, rural residential lots, rural estate subdivisions and environmentally-protected areas.

North: The site immediately to the north is used for agricultural purposes, and is occupied by a detached dwelling. Beyond is a rural estate subdivision. The proposed development, as discussed in this report, allows for a potential future connection north to McGuire Trail.

West: A woodlot is located immediately west of the site. Beyond the woodlot are rural estate lots, Palgrave Park and the Caledon Equestrian Park. The Palgrave Forest and Wildlife Area is located further west.

South: A plantation abuts the site to the south. The Caledon Trailway Path extends east-westerly south of the plantation. An active rail line is located about 0.5 km to the south of the Subject Site. The lands further along Mt. Pleasant Road are primarily used for agriculture.

East: The lands on the east side of Mt. Pleasant Road are currently agricultural. A 42-lot estate residential subdivision is draft-plan approved (Beaverhall Subdivision). Beeton Creek runs south-east through this property.

The physiography, landform, and topography of the Subject Site has been evaluated by Sirati & Partners Consultants Ltd. as part of the Hydrogeological Impact Study (2018) prepared in support of the proposed development.

2.3 PHYSIOGRAPHY AND LANDFORM

The Subject Site is located within the Nottawasaga Valley Watershed. This watershed is located within five (5) main regional-scale physiographic regions. These regions include the Horseshoe Moraines, Oak Ridges Moraine (ORM), Peterborough Drumlin Field, Schomberg Clay Plains and Simcoe Lowlands.

The Subject Site lies within the physiographic region termed as the ORM. The ORM is an extensive interlobate moraine in south-central Ontario, forming an east-west trending ridge that is approximately 160 kilometres in length and 2 to 11 kilometres wide. The ORM extends from the Niagara Escarpment to the Trent Talbot River and consists of several distinct sectios. The ORM is comprised of rolling sandy hills, hummocky topography and closed depressions that form the source of the headwaters to major stream that drain off the moraine. The moraine within the subwatershed consists primarily of surficial sand and gravel deposits.

2.4 TOPOGRAPHY

The Subject Site is located within the Beeton Creek system as part of the Nottawasaga Valley Watershed; one of the four watersheds within South Georgian Bay-Lake Simcoe Source Protection Region. Beeton Creek arises on the Oak Ridges Moraine south of Tottenham. Flowing north, the creek enters a reservoir at the Tottenham Conservation Area and then continues downstream. An east branch, originating east of Tottenham, flows westward through agricultural lands and enters Beeton Creek north of Tottenham. Beeton Creek continues to flow northward through an agricultural landscape, skirting the west side of Beeeton before joining Bailey Creek and then enterin Innisfil Creek. Tthe highest elevation at the mid-portion of the property is approximately 298m ASL and it slopes both east and west with an elevation of about 290m ASL, with a relief of the area of about 8m.

2.5 OVERBURDEN

The thickness of the Quaternary sediments has been determined from borehole and water well information within the subwatershed. The overburden thickness within the Oak Rdiges Moraine (ORM) ranges from approximately 56 metres to 240 metres. The Paleozoic bedrok topography appears to strongly influence the overlying Quaternary sediment thickness and distribution. The thicker Quaternary sediments occur in bedrock topographical lows, while the thinnest areas of Quaternary depsoits occur at the north end of the subwatershed, south of Cook's Bay.

2.6 BEDROCK

The bedrock consists of shale, interbedded dolomitic siltstone, and minor limestone, which were deposited in shallow seas about 450 million years ago. These beds, named the Georgian Bay Formation, are approximately 250 metres thick and dip to the southeast at about 5 metres/kilometre. Following long periods of additional sedimentation and erosion, the ancient Laurentian River and its tributaries cut several deep, poorly-defined bedrock valleys trending northwest-southeast across the area. The Study area is underlain by the Georgian Bay Formation and have an important influence on drift thickness and groundwater distribution in the study area.

3.0 ENVIRONMENTAL NOISE FEASIBILITY

An Environmental Noise Feasibility Study was prepared by Valcoustics Canada Ltd. dated June 26, 2018, and an Addendum Letter prepared The study is supporting documentation for the proposed development and was prepared to meet requirements of Sections 7.11.18.7 and 7.1.18.8 of the Town of Caledon Official Plan.

The most significant noise source in the vicinity of the Subject Site is rail traffic on the Canadian Pacific railway (CPR) MacTier Subdivision. There are no stationary noise sources in the vicinity with potential to impact the site.

The sound levels on site have been determined and compared with the applicable Ministry of the environment and Climate Change (MOE), Region of Peel and the Town of Caledon noise guideline limits to determine the need for noise mitigation.

To meet the applicable transportation noise source guideline limits:

- All residential suites in the development require the provision for adding air conditiong;
- Exterior wall construction meeting a a Sound Transmission Class (STC) rating of 37 and exterior windows meeting STC 28 will be sufficient to meet the indoor noise criteria. It is expected that these STC requirements can be achieve using exterior wall and window construction meeting the minimum non-acoustical requirements of the Ontario Building Code (OBC); and
- Final wall and window requirements should be checked when detailed building plans are available.

The unmitigated daytime OLA sounds level at all dwellings are predicted to be lower than 55dBA. Thus, sound barriers are not required for noise control purposes.

With the incorporation of the recommended noise mitigation measures, the applicable MOE, Region of Peel and Town of Caledon noise guideline limits can be met and a suitable acoustical environment provided for the occupants.

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4.0 PHASE I/II ENVIRONMENTAL SITE ASSESSMENT

A Phase I Environmental Site Assessment (ESA) was prepared by Sirati & Partners Consultants Ltd. (SPCL) dated September 8, 2017. Based on the findings of the Phase I ESA, significant potential or actual source(s) of contamination to be associated with the Subject Site were identified. These include:

- Historical and current use of the Property for farming purposes (use of herbicides and pesticides); and
- Unknown quality of fill material observed on the Property during the SPCL's geotechnical investigation.

Based on the above noted potential contaminating activities, a Phase II ESA was recommended. A Phase II ESA was prepared by Sirati & Partners Consultant Ltd. dated October 12, 2017. Soil sampling was conducted in conjunction with a geotechnical investigation.

The results of the chemical analysis indicated that all soil samples met the MOECC Table 8 Standards. The laboratory Certificates of Analysis are presented in Appendix B of the Phase II ESA, as are the details of the chemical analyses.

A review of the analytical test results of the collected soil samples indicates that the concentration of the tested parameters at the sampling locations meets the MOECC Table 8 Standards. Consequently, there are no potential contaminants identified at the Subject Site at a concentration above the applicable site conditions standards (Table 8 Standards) during the Phase II ESA.

Based on the findings of the Phase II ESA, it was SPCL's opinion that the Subject Site is suitable for the proposed development. No further environmental investigation is recommended at this time.

5.0 FUNCTIONAL SERVICING REPORT

A Functional Servicing Report (FSR) was prepared by Valdor Engineering Inc. dated May 2018. A revised FSR was prepared by Valdor Engineerin Inc., dated October 2019, in support of the proposed development. The FSR was prepared to meet the requirements of Sections 7.1.18.7 and 7.1.18.8 of the Town of Caledon Official Plan with the primary intent to demonstrate the viability of water and wastewater servicing, storm drainage and stormwater management, and grading. The FSR also includes a floodplain analysis and looks at vehicular and pedestrian access to the proposed development and erosion and sediment control during construction.

The FSR has been prepared based on a review of the topographic survey and background studies, discussions with engineering staff at the Town of Caledon, Region of Peel, and the Nottawasaga River Conservation Authority, as well as visits to the site. Identified in the report is: water servicing, waste water servicing, storm conveyance system, floodplain analysis, stormwater management, vehicular and pedestrian access, grading, erosion and sediment control during construction, and utilities.

5.1 WATER SERVICING

The community of Palgrave is serviced by the Palgrave Drinking Water System, which is owned and operated by the Region of Peel. This system consists of two water treatment plants, three municipal well, one water storage reservoir, and approximately 75 kilometres of watermain and 134 fire hydrants. The Subject Site will be serviced by a connection to the recently constructed 200mm diameter Mt. Pleasant Road watermain. The local water distribution system within the subdivision will consist of watermains ranging in diameter from 150mm to 200mm. The proposed development will have a fire flow plus maximum day demand of 100.2 L/s.

5.2 WASTE WATER SERVICING

There are no municipal sanitary sewers in the community of Palgrave and therefore each lot within the proposed development will be serviced by a private on-site sewage system. Based on the sand soil conditions, the proposed dwellings can each be serviced with a private septic system consisting of a septic tank, pump tank and in-ground septic tile bed.

5.3 STORM CONVEYANCE SYSTEM

The Subject Site has a tributary to the Beeton Creek located in the Innisfil Creek sub-watershed which is located in the Nottawasaga River watershed. A tributary to the Beeton Creek traverses the east part of the site. In accordance with Town criteria, the proposed development will be serviced with a major/minor storm sewer system that is designed to convey runoff from the 5-year storm event. The minor storm sewer system is designed to convey runoff from the 5-year storm event. The major system will be comprised of an overland flow route along the municipal road network that will direct drainage to a safe outlet. Flows in excess of the capacity of the minor storm sewer system will convey flows to the watercourse traversing the site.

5.4 FLOODPLAIN ANALYSIS

A floodplain analysis (Valdor Engineering Inc., 2018) has been undertaken to delineate the regional floodplain for the watercourse traversing the site. Based on the analysis, it was determined that the extent of the floodplain throughout the site is due to an undersized culvert under Mount Pleasant Road. The proposed channel through the site and the proposed culvert improvements under Mt. Pleasant Road (two 1200 mm diameter CSP culverts) will decrease the extent of the floodplain such that it will be contained entirely within the propsoed open space blocks. The residential development will therefore be outside the Regulatory floodplain. In order to accommodate the proposed road connection to Mount Pleasant Road, a crossing of the watercourse is required. This road crossing will be constructed using two 1200 mm diameter CSP culverts to convey the regional flow.

5.5 STORMWATER MANAGEMENT

In order to address the stormwater management criteria, given the very low density of development and the favourable sandy soil conditions, Low Impact Development (LID) measures will be implemented in the form of bioswales as follows:

- Enhance (Level 1) quality control is being achieve for the site, with a TSS removal of 80% for the drainage area to the proposed bioswales;
- A minimum drawdown time of 24-hours for erosion control cannot be achieved for the drainage area to the proposed bioswales due to the small drainage area and the minimum orifice size requirements. However, based on the hydrologic modelling completed, the peak runoff for the 25 mm event under post-development conditions does not exceed the pre-development rate. The 5 mm runoff volume will be infiltrated;
- Quantity control is provided for the 2- through 100-year storm events to meet predevelopment flow targets. Runoff storage is provided beneath each bioswale in the form of a stone-filled trench. Discharge from each bioswale is controlled by an orifice plate discharging to the storm sewer;
- The site water balance included in the Hydrogeological Impact Study determined that the development would result in a reduction in infiltration in the amount of 658m^3/year. In order to address this deficit, each bioswale trench has been designedwith an additional 0.40 m depth of storage beneath the outlet orifice invert, for a total infiltration storage volume of 95 m3. Through the implementation of the proposed infiltration trench storage, an additional annual infiltration capacity of 2,745 m3 is being provided to meet and exceed the pre-development annual infiltration rate; and
- Phosphorus mitigation measures in the form of the bioswales (water quality swales) will be provided to reduce loading rates from the drainage area to thebioswales. There will be a net increase of 18% compared to the pre-development condition, but this represents a “best-efforts” attempt to reduce phosphorus loading, as required by the NVCA.

5.6 VEHICULAR ACCESS

Vehicular access to the subject site will be provided by a road connection to Mt. Pleasant Road which is under the jurisdiction of the Town of Caledon. Based on the implementation of road side bioswales, a special road cross section has been developed with which provides wider 7.05m boulevards and narrower 7.9 metre road surface contained in a 22.0 metre wide road allowance.

5.7 GRADING

As is typical with subivision development, earthmoving will be requried to achieve the proposed subdivision grading necessary to meet the criteria of the Town. A detailed analysis of the earthworks will be conducted at the detailed design stage to optimize the cut and fill volumes. Based on the preliminary design, no significant

difficulties are anticipated in achieving the municipal grading design standards. Since the subject site is located in an area which regulated by the NVCA, a permit will be required from their office prior to commencing earthworks.

5.8 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION

Erosion and sediment control (ESC) measures are to be implemented during construction to prevent silt laden runoff downstream in accordance with the Erosion & Sediment Control Guidelines for Urban Construction prepared by the Greater Golden Horseshoe Area Conservation Authorities (December 2006). The ESC plans will be prepared at the detailed engineering design stage and are to reflect the various construction stages.

5.9 SUBDIVISION ENGINEERING DESIGN

Detailed design for the proposed development is to be prepared at the subidvision engineering stage. This detailed design is to include servicing and grading plans as well as a stormwater management report based on the criteria established in the Functional Servicing Report.

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6.0 HYDROGEOLOGY AND GROUNDWATER

A Hydrogeological Impact Study was prepared by Sirati & Partners Consultants Ltd. dated May 17, 2018. A Revised Hydrogeological Impact Study was prepared by Sirati & Partners Consultants Ltd. and dated October 17th, 2019 in support of the propsoed development. The Study was required to identify potential impacts to base flow of local streams or significant natural features within the study area and was conducted to asssess the subsurface soil conditions, soil stratigraphy, groundwater table condition, and its flow direction.

The hydrogeologic assessment (Sirati & Parnters Consultants Ltd., 2019) presented the following conclusions:

- Topographically, the Subject Site appears to be situated on a watershed divide with ground surface sloping forom the highgest elevation at monitoring well #6 ("MW6") sloping northeasterly and southwesterly. The average highest ground elevation is 296.38 mASL, located at the mid-portion of the property;
- The Subject Site falls within the Beeton Creek secondary watershed of Innisfil Creek subwatershed of Nottawasaga Valley Conservation Authority (NVCA), part of Lake Simcoe Region Conservation Authority (LSRCA);
- Monthly groundwater level monitoring was completed between October 2017 and March 2018, as well as during the June 2017 and July 2017 monitoring on the existing monitoring wells at the Subject Site. Groundwater monitoring indicated that the measured groundwater levels ranged from 4.41 mbgs to 10.30 mbgs, while the elevations ranged between 282.3 mASL and 288.2 mASL;
- The biggest variation in water level was found to be 1.06m measured at groundwater monitoring well #4 ("MW4"), while the smallest variation was 0.18 m measured at groundwater monitoring well #8 ("MW8"). The highest groundwater level was measured at groundwater monitoring well #6 ("MW6");
- In-situ hydraulic conductivity tests resulted in 5.23 x 10-6 m/s at groundwater monitoring well #2 ("MW2") and 7.70 x 10-6 m/s at groundwater monitoring well #4 ("MW4") with an average hydraulic conductivity of about 6.47 x 10-6 m/s;
- Groundwater sampling and testing indicated that unfiltered groundwater samples may not meet the guidelines for Ontario Drinking Water Quality Standards due to the parameters including aluminum, iron, manganese, total hardness, turbidity or nitrate;
- Based on the observed deep groundwater levels relative to the anticipated excavation depths, short- and long-term construction dewatering is not anticipated;
- Given that no dewatering is required, no impact will be anticipated on the surrounding environments if LID measures are to be considered and implemented to compensate for the anticipated infiltration deficit;
- Based on the preliminary water balance study completed, it is anticipated that there is a post-development infiltration deficit of 2,290 m^3/year. Collection and diversion of the roof water for infiltration, which is totaled in an amount of 1,827m^3/year, will not fully compensate for the anticipated infiltration deficit due to the proposed development. Extra clean water sources should be considered; and
- As the Subject Site is located in a significant groundwater recharge area ("SGRA") and partly in an area with highly vulnerable aquifer ("HVA"), attention should be paid to the potential contamination to the local groundwater due to the activities, such as application of deicing salt.

7.0 GEOTECHNICAL INVESTIGATION

A Preliminary Geotechnical Investigation was prepared by Sirati & Partners Consultants Ltd. dated July 21, 2017 for the Subject Site. The Preliminary Geotechnical Investigation was prepared in support of the proposed development with the purpose to obtain information about the subsurface conditions at borehole locations and from the findings in the boreholes to make preliminary reocmmendations pertaining to the geotechnical design of underground utilities, subdivision roads, and to comment on the foundation conditions for general house construction.

Eight (8) boreholes were drilled to depths ranging from 8.2m m to 11.2 m below the existing grade. Boreholes were drilled with hollow stem continuous flight auger equipment by a drilling sub-contractor under the direction and supervision of SPCL personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer wieghing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (SPT) method. The samples were logged in the field and returned to the SSPCL laboratory for detailed examination by the project engineer and for laboratory testing.

The Preliminary Geotechnical Investigation concluded the following soil conditions:

- Topsoild/Fill Material:
  - A 150 mm to 500 mm thick surficial layer of topsoil was found at all borehole locations, except BH5. The thickness of the topsoil in each borehole was shown in the borehole log. It should be noted that the thickness of the topsoil explored at the borehole locations may not be representative for the entire site and should not be relied on to calculate the amount of topsoil at the site; and
  - Below the topsoil, fill material was encountered in boreholes BH1, BH4, BH6, BH7, and BH8, extending to depths ranging from 0.8 m to 1.6 m. The fill material mainly consisted of sand, silty sand, and sandy silt with trace to some inclusions of topsoil. The measured SPT 'N' values in the fill material ranged from 2 to 7 blows for 300mm penetration, indicating its very loose to loose state.
- Sand to Silty Sand:
  - The native soil underlying the fill material in all boreholes consisted of cohesionless soils of sand and silty sand. The layer was found to be in a loose to dense state, with measured SPT 'N' values ranging from 2 to 41 blows per 300 mm penetration. The layer was not fully penetrated in BH1 and BH3; and
  - Grain size analysis of one (1) sand sample (BH1/SS5) was conducted and the results are presented in Figure 12, with the following fractions:
    - Clay: 2%;
    - Sily: 2%; and
    - Sand: 96%

- Silt to Sandy Silt:
  - A water bearing silt to sandy silt deposit was observed underlying the abovementioned sand to silty sand deposit in BH2, BH4, BH5, and BH6, and overlain by a layer of silty clay to clayey silt deposits in BH8. This deposit was found to be in a compact to dense state, with measured SPT 'N' values ranging from 13 to 42 blows per 300 mm penetration. The layer was not fully penetrated in BH4, BH5, BH6, and BH7; and
  - Grain size analyses of two (2) silt to sandy silt samples (BH2/SS7 and BH5/SS6) were conducted and the results are presented in Figure 12, with the following fractions:
    - Clay: 12 to 24%;
    - Silt: 65 6o 66%; and
    - Sand: 10 to 23%.
- Clayey Silt to Silty Clay:
  - A cohesive layer of clayey silt to silty slay soils was observed in BH2 and BH8, underlying the sand to silty sand layer. The layer was found to be in a firm to stiff state, with measured SPT 'N' values ranging from 9 to 13 blows per 300 mm penetration. The layer was not fully penetrated in BH2.

8.0 ENVIRONMENTAL IMPACT STUDY AND REFORESTATION MANAGEMENT PLAN

A Scoped Environmental Impact Study (EIS) and Reforestation Management Plan (MP) was preparred by Natural Resource Solutions Inc. (NSRI) dated July 2018 in support of the proposed development. The EIS was triggered due to the presence of several Natural Heritage Overlays, including Environmental Zone 1 and Environmental Zone 2 [Town of Caledon Official Plan (2016), Oak Ridges Moraine Conservation Plan, (2017) and Core Greenlands (Region of Peel Official Plan (2011)]. The EIS summarizes background information on natural heritage features, as well as results of original field surveys of breeding birds, mammals, herpetofauna, Lepidoptera, Odonata, and vasculay flora for the Subject Site. This ESSR contains the detailed findings of the EIS including the characterization of existing natural features based on the results of background review and original field surveys, the identification of any natural feature constraints in association with land use policy designations, and the assessment of potential impacts and mitigation measures associated with details of the proposed development. The EIS has been developed in accordance with the Town of Caledon Official Plan (2016).

The Reforesation Management Plan was prepared as a result of the provision of 4.0 hectares of naturalized area and reforested land within the proposed development. The MP provides the preliminary details for the proposed reforestation including proposed species, overall strategy, maintenance and monitoring.

8.1 Project Scoping

In order to determine a study approach for the EIS, existing natural heritage information was first gathered and reviewed to identify key natural heritage features and species that are reported from or have potential to occur within the study area. Background information on the natural environmental features within the study area was gathered from the Natural Heritage Information Center (NSRI, 2018) and relevant taxa-specific databases, as listed below. Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the study area (10km radius) using various atlases; including the Ontario Breeding Bird Atlas, the Ontario Mammal Atlas, the Ontario Reptile and Amphibian Atlas, the Ontario Butterfly Atlas, and the Ontario Odonata Atlas (NSRI, 2018). These initial species lists were used to guide the scope and type of wildlife field surveys.

8.2 Existing Conditions

8.2.1 On-Site Use

The Subject Site is bounded by Mt. Pleasant Road to the east, coniferous plantation to the south, deciduous forest to the west, and a large residential lawn and pasture to the north. The Subject Site contains a small row of trees and shrubs adjacent to Mt. Pleasant Road along the heastern edge of the property and is predominantly agricultural annual row crop throughout the remainder, with mature deciduous forest located within its western

end. A coniferous plantation, identified as Environmental Zone 1 (Town of Caledon Official Plan 2016), is located adjacent to the Subject Site along the southwest boundary. A lower topographic, ephemeral swale is present in the row crop field running roughly north to southeast near the eastern end of the property, which is classified as Environmental Zone 2 (Town of Caledon Official Plan 2016).

8.2.2 Environmental Features

A detailed description of environmental features of the site is provided in the EIS and MP. This includes discussion and description of the following either on or adjacent to the Subject Site:

- Designated Natural Areas;
- Vegetation;
- Wildlife;
- Significant Woodlands;
- Significant Wildlife Habitat; and
- Habitat of Endangered and Threatened Species.

The Subject Site resides within the Oak Ridges Moraine, while additional surrounding areas are classified as part of the provincial Natural Heritage System (NHS). The large interlobate moraine extends from the Niagara Escarpment east to the Trent River. In addition to being part of the Oak Ridges Moraine, a portion of the Subject Site is within the Greenlands System in the Region of Peel, while the Town of Caledon Official Plan designates the property lands as Palgrave Estate Residential Community. The Town of Caledon Official Plan deisgnates the propert as Policy Area 3, and portions are considered Environmental Zone 1 and 2. The Environmental Zone 1 classification referes to the presence of sensitive biological communities; valley and stream corridors and their associated floodplains; native upland and lowland woodlands; natural waterbodies; Provincially and locally significant wetlands; and Environmentally Significant/Sensitive Areas. Environmental Zone 2 areas include areas of high groundwater table; areas of seasonal flooding; dry swale lowlands and natural derpressions which perform natural run-off, detention and groundwater recharge functions; and smaller hedgerows and strips of native vegetation. When such areas overlap, for planning purposes, the town of Caledon Official Plan states that the area will be treated as if it were classified as an Environmental Zone 1.

According to the NHIC database and later confirmed by a site visit conducted by NRSI biologists, there are no provincially or regionally significant wetlands within or directly adjacent to the Subject Site. Through discussion with agency staff on September 2, 2017, this Environmental Zone overlay is due to the ephemeral swale present on the Subject Site. This area was documented to contain extremely low seasonal water flow and will be maintained and improved as part of the proposed development.

The Natural Heritage Reference Manual was used to guide the discussion for assessing the ecological function of woodlands. The Region of Peel Official Plan provides a “Core Areas of the Greenlands System” natural overlay, which includes the adjacent plantation and deciduous forest community that extends onto the Subject Site. These forested communities are also considered Environmental zone 1 in the Town of Caledon Official Plan. Both of these Official Plans prohibit the development of these land use areas. A dripline has been established.

With respect to the vegetative communities, the majority of the Subject Site consists of sentral agricultural fields with pine plantation along the east border. As the Subject Site contains protected forest and plantation communities, a dripline exercise was completed on September 27, 2017. The dripline staking was completed by an NRSI biologist with Oak Ridges Moraine, NVCA, and Town of Caledon staff.

The Ecological Land Classification (ELC) communities identified on the Subject Site are:

- Moist Sugar Maple;
- Silver Maple Mineral Deciduous Swamp Type;
- Coniferous Plantation;
- Norway Spruce – European Larch Coniferous Plantation Type; and
- Mineral Cultural Meadow.

Habitat for three Species at Risk (SAR) have the potential to occur, and two Species of Conservation Concern (SCC) were observed within the Subject Site:

- Grasshopper Sparrow – Special Concern;
- Red-headed Woodpecker – Threatened;
- Lottle Brown Nyotis – Endangered;
- Northern Myotis – Endangered; and
- Monarch Butterfly – Special Concern.

Grasshopper Sparrow were observed using the Mineral Cultural Meadow Ecosite (CUM1) community to the north of the Subject Site. This habitat is largely being retained and partially being increased through the meadow species seed mix proposed in the Forest Management Plan throughout the reforested areas. The reforested areas are expected to provide meadow and savannah habitat while trees establish and grow. The savannah-like habitat within the CUM community will be provided permanently, which will continue to provide habitat for this species while other areas transition into forest.

Red-headed Woodpecker and both documented SAR bat species require mature forest stands. The MP supports the retention, buffering, and overall increase in the size of the existing habitat. Sugar Maple and Red Oak have been included in the MP, which provide ideal bat habitat when mature.

Monarch larva were observed on a Common Milkweed plant along the edge of the forested community. Monarch require Milkweed as a food source for larva. The planting plan has added Common Milkweed seeds into the seed mix in certain areas. It is expected that this species will endure along the edges of the planting plan, providing increased Monarch habitat.

While no confirmed seasonal concentration areas were found, suitable candidate habitat for bat maternity colonies and snake hibernaculum features could potentially be present within the Subject Site. No rare vegetation communities, specialized wildlife habitat, oranimal movement corridors were found within the Subject Site.

8.3 EIS AND MP CONCLUSIONS

The EIS and MP provides a summary of the natural features within the study area and provides an analysis of impacts based on the proposed 8-lot residential development.

The Subject Site was documented to be overlaid with the following policy areas:

- Oak Ridges Moraine (protecting the plantation community to the south);
- Region of Peel Greenlands System (Schedule A, Region of Peel Official Plan);
- Policy Area 3 (Schedule G, Town of Caledon Official Plan); and
- Environmental Zone 1 and 2 (Schedule I, Town of Caledon Official Plan). The Environmental Zone 1 (EZ1) classification refers to the presence of sensitive biological communities.

The natural areas have been considered and suitably buffered from the development, as described throughout Sections 5 and 6 of the EIS. Due to the large 30meter buffer and associated Management Plan, no impacts are anticipated to the natural features, and the natural areas are expected to be provided with a net benefit through the proposed plan.

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9.0 REFORESTATION MANAGEMENT PLAN MT. PLEASANT SCOPED EIS

A Reforestation Management Plan and Scoped EIS Addendum Letter was prepared by NRSI dated October 31st, 2019. This addendum letter concluded that the Reforestation Management Plan will provide protection for the natural features present within and adjacent to the subject property. The increased vegetated area will provide habitat for wildlife, including Monarch, Grasshopper Sparrow and Eastern Wood-Pewee. The companion seed mix will provide additional host plants and food sources for significant butterfly species, as well as other insects. The trees and meadow seed mix will mimic natural succession and will provide low ground cover and refuge for wildlife. The dense tree and shrub plantings will provide a visual barrier between the natural features and the development, as well as restrict light and noise penetration into the surrounding natural features. If the recommendations outlined in this letter are followed, it is expected that overall natural habitat for several SCC species, as well as common bird and mammal species will be enhanced, and impacts to the adjacent natural areas will be sufficiently mitigated.

10.0 TREE PRESERVATION PLAN

The Tree Preservation Plan ("TPP") was prepared by Natural Resources Solutions Inc. dated July 17, 2018. A Revised TPP was preparred by NRSI dated October 2019 in support of the proposed development. Trees on the Subject Site were identified and their species, size and health assessed. An analysis of the proposed development and supporting plans was conducted with trees identified for removal. The majority of the inventoried trees were located within the hedgerow along Mt. Pleasant Road. A total of 23 native and 65 non-native tree species were inventoried. To accommodate the proposed Street A and grading works, a total of 37 trees are anticipated to be removed, including Scots Pine, Norway Spruce, Manitoba Maple and Common Apple species. A total of thiry-seven (37) trees are expected to require removal in order to effectively service the lands. It is recommended that trees in Fair to Excellent condition be compensated at a 2:1 ratio, as is standard practice in the Town of Caledon.

10.1 TREE PROTECTION MEASURES AND RECOMMENDED MITIGATION

Temporary tree protection fencing will be situated where trees are adjacent to the limit of disturbance/grading. A combined sediment and erosion control fence (i.e. silt fence) and tree protection fence is recommended where trees are situated adjacent to the limit of disturbance. The temporary tree protection fencing will be installed and maintained by the Developer. Prior to any construction activities (rough grading, vegetation and tree removal), the tree protection fencing will be installed at the limit of the associated buffer (minimum 5m beyond the dripline) of trees to be retained in order to protect the root systems. Prior to works commencing on-site, fence installation and location is to be inspected by a Certified Arborist and/or the on-site Environmental Inspector. Signage indicating the purpose of protection fencing will be attached to the paige-wire fencing.

10.2 DURING CONSTRUCTION

During construction and prior to Assumption of the subdivision by the Town, the Consulting Arborist along with appropriate Town and NVCA staff shall inspect the entire site. Any hazardous trees must be identified and removed prior to Assumption. Temporary tree protection fencing is to be maintained by the Developer during the entire construction period to ensure that trees being retained and their root systems are protected. Any minimal damage (i.e. damage to limbs or roots) to trees to be retained during construction must be pruned using proper arboricultural techniques. Should any of the trees intended to be retained be seriously damaged or die as a result of construction activities, the owner will remove and replace the tree at their own expense at a 2:1 ratio. Replacement species are to be reviewed by Town and NVCA staff. Watering, pruning and general maintenance of newly planted trees will be carried out by the owner's contractor until Assumption is granted by the Town.

10.3 POST-CONSTRUCTION

It is recommended that the temporary tree protection fencing be removed upon completion of construction activities and adjacent areas are stabilized with a vegetative cover (i.e. sod in residential area or native vegetation along the swale and in the reforestation area) to the satisfaction of the Town and NVCA staff.

10.4 MITIGATION

The recommendations provided are aimed at protecting the proposed trees to be retained. Species used for replacement/enhancement plantings should be native to the NVCA jurisdiction and not include any species that are listed as introduced, or locally, provincially or federally significant. The use of hardy species will ensure successful early establishment and minimize the potential for invasive species proliferation.

11.0 ENVIRONMENTAL MAPPING

Environmental Mapping was prepared for the Subject Site as supporting documentation for the respective Draft Plan of Subdivision and Zoning By-law Amendment applications in accordance with the requirements of Section 7.1.18.2 of the Town of Caledon Official Plan. The Environmental Mapping has been provided in a separate stand-alone package consiting of the following:

- Map 1: Draft Plan of Subdivision overlaid onto Aerial Imagery prepared by The Biglieri Group Ltd., dated September 12, 2019;
- Map 2: Topographic Map prepared by The Biglieri Group Ltd., dated September 12, 2019;
- Map 3: Slope Map prepared by The Biglieri Group Ltd., dated September 12, 2019;
- Map 4a: Soil and Soil Drainage Classification Map prepared by Sirati & Partners Consultants Ltd., dated May 10, 2019;
- Map 4b: Soil and Soil Classification – Detail Map prepared by Sirati & Partners Consultants Ltd., dated September 2019;
- Map 4c: Soil Lithology Map prepared by Sirati & Partners Consultants Ltd., dated September 2019;
- Map 5a: Surface Hydrology Map – Local Study Area prepared by Valdor Engineering Inc., dated June 19, 2018;
- Map 5b: Surface Hydrology Map – Subject Site prepared by Valdor Engineering Inc., dated June 19, 2018;
- Map 6: Environmental Summary Map prepared by The Biglieri Group Ltd., dated October 17, 2019;
- Map 7: Wildlife and Vegetation Map prepared by The Biglieri Group Ltd., dated October 18, 2019;
- Map 8: Stormwater Management and Grading Plan prepared by Valdor Engineering Inc., dated October 17, 2019; and
- Map 9: Forest Management Plan prepared by The Biglieri Group Ltd., dated October 18, 2019.

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12.0 BIBLIOGRAPHY

The Biglieri Group Ltd. et al. (October 18th ,2019). *Environmental Mapping*.

Natural Resource Solutions Inc. (October, 2019). *Reforestation Management Plan Mt. Pleasant Scoped EIS*

Natural Resource Solutions Inc. (July, 2018). *Scoped Environmental Impact Study*.

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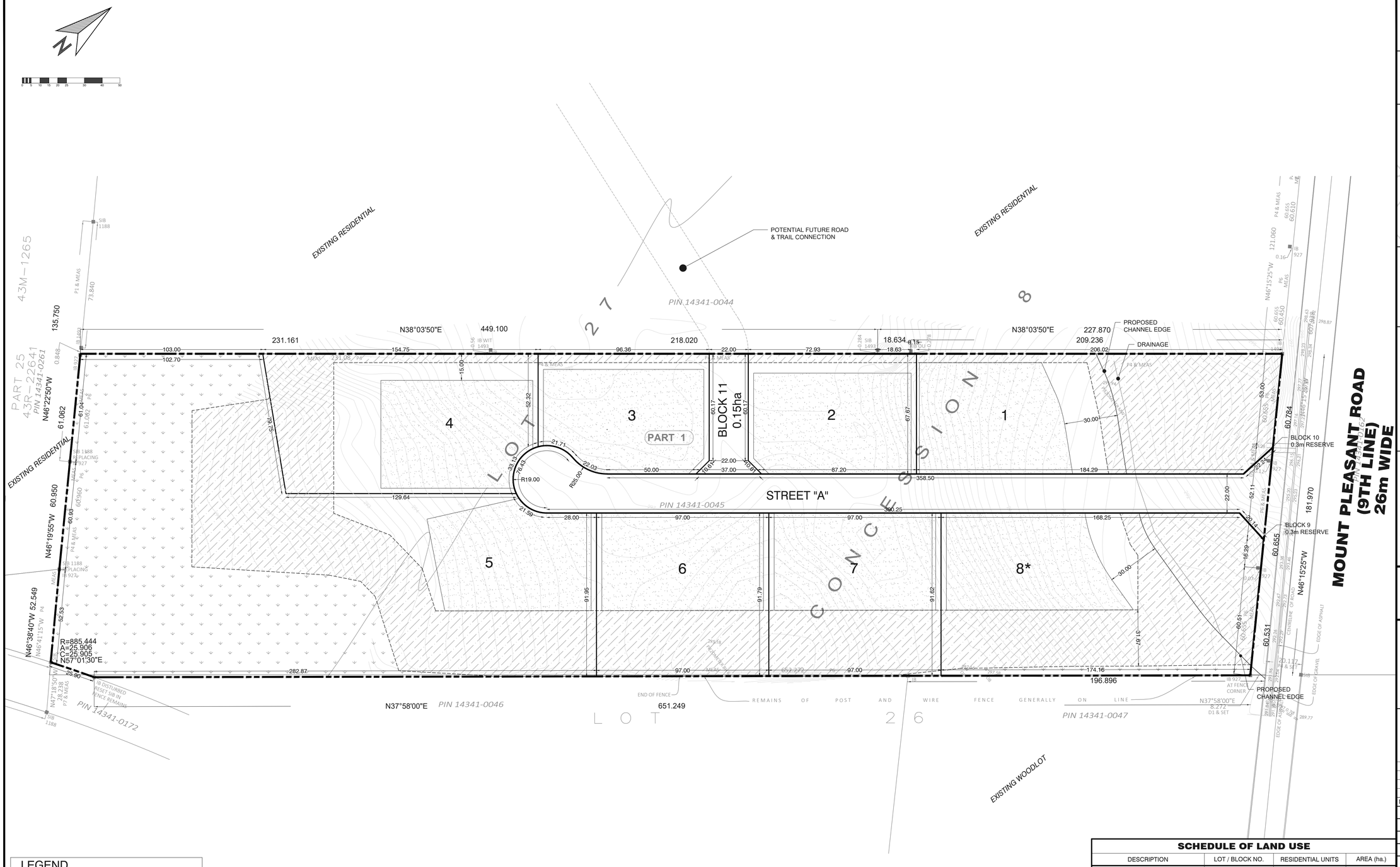
Valdor Engineering Inc. (May, 2018). *Functional Servicing Report*.

If you should have any questions or concerns, please contact the undersigned at your earliest convenience.

Sincerely,
THE BIGLIERI GROUP LTD.

Brayden Libawski, MSc.Pl.
Planner

APPENDIX A



LEGEND

- ENVIRONMENTAL PROTECTION
- REFORESTED / PROTECTION AREA AREA = 4.00ha
- STRUCTURE ENVELOPE
- * DENSITY BONUS LOT PER O.P. POLICY 7.19.12

LOT SIZE SUMMARY CHART

LOT #	LOT AREA (Ha)	STRUCTURE ENVELOPE (Ha)
1	1.358	0.500
2	0.638	0.500
3	0.616	0.499
4	1.138	0.500
5	3.965	0.500
6	0.891	0.499
7	0.890	0.498
8	1.621	0.484

SCHEDULE OF LAND USE

DESCRIPTION	LOT / BLOCK NO.	RESIDENTIAL UNITS	AREA (ha.)
SINGLE DETACHED RESIDENTIAL	1 - 8	8	11.117
TOTAL SINGLE DETACHED		8	
NET DEVELOPABLE TOTAL		8	11.117
0.3 RESERVE	09, 10		0.005
FUTURE ROAD & TRAIL CONNECTION	11		0.154
RIGHT OF WAY	STREET "A"		0.999
TOTAL SITE AREA		8	12.275

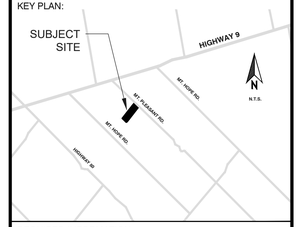
TITLE:

PROPOSED DRAFT PLAN OF SUBDIVISION

LEGAL DESCRIPTION:

PART OF LOT 27
CONCESSION 8
GEOGRAPHIC TOWNSHIP OF ALBION
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

KEY PLAN:



REQUIRED INFORMATION:

AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990.

(a) SEE PLAN
(b) SEE PLAN
(c) SEE KEY MAP
(d) SEE SCHEDULE OF LAND USE
(e) SEE PLAN
(f) SEE PLAN
(g) SEE PLAN
(h) MUNICIPAL PIPED WATER AVAILABLE AT TIME OF DEVELOPMENT
(i) TOP SOIL, SAND, SANDY SILT, CLAYEY SILT
(j) SEE PLAN
(k) GARBAGE COLLECTION & FIRE PROTECTION
(l) SEE PLAN

NOTE: CONTOURS RELATE TO CANADIAN GEODETIC DATUM

SURVEYOR'S CERTIFICATE:

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATE AND CORRECTLY SHOWN IN ACCORDANCE WITH A PLAN OF SURVEY PREPARED BY VAN HARTEN

See Original

RON MAK
VAN HARTEN
See Original
DATE

OWNER'S CERTIFICATE:

I HEREBY AUTHORIZE THE BIGLIERI GROUP LTD. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE CALEDON

See Original

DAVID GOODMAN
TROPICAL LAND DEVELOPMENT LIMITED
See Original
DATE

0 MOUNT PLEASANT ROAD

APPROVAL STAMP:

ANTHONY BIGLIERI REGISTERED PROFESSIONAL PLANNER R.P.P.

TROPICAL LAND DEVELOPMENT LTD.

REVISIONS			
3			
2			
1	REVISION	6/12/19	JS
No.	Description	Date	Int.

PROJECT No.: 17445
DATE: May 4, 2018
SCALE: 1:1000
DRAFTED BY: JS
CHECKED BY: MJ
DRAWING No.: **DP-01**

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