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SITE EVALUATION REPORT

AT

**ELEPHANT LAKE COTTAGES
HARCOURT, DYSART ET AL.**

NORTH AND SOUTH PHASES

PREPARED FOR:

2463756 Ontario Inc.

Dec 18th, 2024

Background

King EPCM was retained by the Client (2463756 Ontario Inc.) to conduct engineering investigations and services for the property located along the shoreline of Elephant Lake and Benoir Lake in the County of Haliburton, Municipality of Dysart et al. (the Site), as part of cottage permit submissions. Abovementioned property is approximately 2000 Acres in size, divided to two different Blocks, one of them located east of the Benoir lake, behind the Benoir lake Rd. (North phase, Lot #1 – 25) and the other, located north of the Elephant lake (South phase, Lot #26 - 63), near the shoreline. The following is a review of the proposed development as part of a Site Evaluation Report (SER), to satisfy Municipality of Dysart et al Official Plan, Section 17.5.3.

Dysart et al Official Plan Requirements

Based on the Municipality of Dysart et al Official Plan, various segments describes the requirement for a Site Evaluation Report. The requirements for a Site Evaluation Report (SER) are described in detail as part of Section 17.5.3, but referenced from other Sections of the Official Plan, and can be categorized as:

- Lot Size and Shape (Official Plan Section 4.6)
- Soil and Drainage (Official Plan Section 4.9)
- Shoreline Development Capability (Official Plan Section 5.2.4)
- Areas of Use Limitation (Official Plan Section 9.1.2)
- Recreational Commercial Uses / Ski Hills and Golf Course (Official Plan Section 14.7.2)
- Water Supply and Sewage Disposal
- Other Considerations (Overland / Stormwater Drainage, fish and wildlife habitat, SAR, natural and cultural heritage protection)

Lot Size and Shape (Official Plan Section 4.6)

North Phase

For the North phase, Lot #1 – 25, each proposed individual Lot is averaging 60.0m in public road frontage (along Benoir Lake Rd), with an average of 1.67 Hectares.

The proposed residential dwelling currently contemplated are:

- Approx between 50 ~ 100m² footprint, and as either one or two story building
- Septic bed size ranging from 170m² ~ 340m² (depending on size of building).
 - This is based on a conventional septic bed system
 - Smaller septic beds are possible using OBC Part 8 Class IV-B tertiary treatment units
- Septic bed must be on grade no steeper than 25%, and obey all other OBC Part 8 requirements
- Block A as a private laneway at 8m width

For all of these Lots, a general preliminary site review has confirmed that there are sufficient flat clear lands for a dwelling, a septic bed, and a private services potable water well, while avoiding 30m of watercourses. From a Natural Heritage perspective, a standard 30m offset is reviewed, with almost all Lots complies, with exception and buffer encroachment at Lot 6, Block A private laneway, and Lot 17.

Certain number of these Lots are slightly smaller, specifically Lot #8 and #9, in order to have a secondary road access (private condominium road) in order to access the buildable locations without crossing any wetlands or watercourses, with exception to a single watercourse crossing is required at Lot 17.

It can be clearly demonstrated that the proponent has taken into consideration the lot size, buildable lot area within each lot, accessibility, and how 30m offset from watercourses and 30m offset from wetlands can interact with proposed building locations.

Zoning by-law was also reviewed for these Lots, and a single Zoning relief will be required, specifically for Lot 24, where during future detailed site design, the proposed dwelling will be closer to the front property boundary than the bare minimum (current Zoning frontage setback is 7.5m).

South Phase

For the South phase, Lot #27 – 63, these lots are generally considered as seasonal dwellings along the waterfront of Elephant Lake. The legal frontage of these Lots are defined by the width of lakeshore, and all conform to the minimum requirement of 60.0m.

The proposed residential dwelling currently contemplated are:

- Approx between 50 ~ 100m² footprint, and as either one or two story building
- Septic bed size ranging from 170m² ~ 340m² (depending on size of building)
- Septic bed must be on grade no steeper than 25%, and obey all other OBC Part 8 requirements
- Lot #26 and Lot 52 are proposed community Open Spaces with no proposed dwellings. There are some interests in the following activities, but details are not yet confirmed:
 - Golf and mini-putt practice range
 - Petting zoo
 - Community garden
 - Outdoor museum exhibits
 - Children's playgrounds
 - Other parkland / low-impervious surface area uses
- Block A is a private laneway at 12m width
- Block B is a shared club house:
 - Proposed club house building outside of the floodplain (to be designed in future)
 - Proposed shared boat launch (to be designed in the future), in order to reduce near-shore Significant Wetland disturbance within Elephant Lake

For all of these Lots, a general preliminary site review has confirmed that there are sufficient flat clear lands for a dwelling, a septic bed, and a private services potable water well, while avoiding 30m of

watercourses. From a Natural Heritage perspective, all of these proposed Lots are offset at least 30m away from wetland features, and buildings are outside of floodplain areas. One minor Natural Heritage 30m buffer encroachment will be required at the end of Lot 54, where a propose driveway will be pass through the buffer zone.

It can be clearly demonstrated that the proponent has taken into consideration the lot size, buildable lot area within each lot, accessibility, and how 30m offset from watercourses / wetlands can interact with proposed building locations.

Zoning frontage and sideyard offsets have also been evaluated to confirm that there are generally sufficient surface areas for the proposed dwelling and septic systems.

Soil and Drainage (Official Plan Section 4.9)

A separate geotechnical report has been created to discuss the soil quality for the entire North and South phases. In summary, soil conditions are primarily sand soils, with an average septic T-time of 7min/cm. Groundwater elevations was checked with respect to potential building foundations / septic beds, and most locations did not find groundwater within 1.5m. A select few may have soils near bedrock / near shallow groundwater would require alternative septic designs (such as raised beds) and alternative foundation designs (such as rebar dowels on bedrock), but initial review has not found any obstacles due to soil and groundwater conditions at site.

Proposed dwellings, driveways, septic and wells can all be adequately placed with minimal impact on drainage, and all completely away from sensitive drainage areas (such as floodplains or steep valley lands).

Shoreline Development Capability (Official Plan Section 5.2.4)

This Section of the Official Plan requires the creation of a Site Evaluation Report (this document) as a condition for development of shorelands. This Section has been fulfilled through the course of having this SER document.

Areas of Use Limitation (Official Plan Section 9.1.2)

Areas of use limitations consist of shorelands in Waterfront Residential Areas (South phase and Lot #27 – 63), and are subjected to at least one of the following conditions:

- Slopes of 25% or more, measured over a horizontal distance inland of 45 metres (148 feet) from the high water mark, along a continuous shoreline frontage of 25 metres (82 feet).
- Eroding or unstable slopes.
- Water tables within 1.5 metres (4.9 feet) of the surface, including areas of organic soils and all wetlands.

As per the dedicated geotechnical report, Section 3.2 Survey Slope Evaluation, several of the proposed Lots indeed has a slope greater than 25% as described above. However, these steep slopes are generally further away than 45m away from the nominal high water mark of 352.00m.

Additionally, the geotechnical engineer has reviewed the entire site and confirm that the proposed location for each dwelling are not located on eroding or unstable slopes. Septic systems leaching beds, as per OBC 8.7.2.1 (4), shall not be sloped steeper than 25% grade. This has been confirmed based on topographic survey and initial site plan review.

Finally, the geotechnical report also confirms that the majority of the shallow boreholes found no groundwater within the top 1.5m of the surface, and this generally means that the soil bearing capacity of the soil for structures, as well as traditional conventional trench septic systems may be adequately used. Based on boreholes and exposed bedrock outcrops, it is inferred that steep slopes found on the property are due to shallow bedrock, and that global stability concerns are generally not a problem, since most soil / bedrock slopes are shallower than 3H:1V slopes.

Where buildings are in close proximity to crest of slope, it is recommended that deeper foundations shall be constructed / foundations are anchored into bedrock.

Finally, no organic soils (peat) was found in any geotechnical boreholes, and that all proposed dwellings and structures within the South phase, Lot #26 – 63 are fully 30m away from wetlands (and therefore not within wetlands).

Recreational Commercial Uses / Ski Hills and Golf Course (Official Plan Section 14.7.2)

There are no proposed commercial uses within the North (Lot #1 – 25) or South phases (Lot #26 – 63). Instead, for the South phase, low intensity private community shared parks are proposed, such as a shared club-house and boat launch in Block B and Lot #26 parkland amenities.

Water Supply

Private water wells (water supply) studies was conducted as part of Section 8 of the geotechnical report. MOE Procedure D-5-5 was conducted, specifically:

- Groundwater quantity
 - Potable groundwater of sufficient quantity was found in both the North phase and the South phase. Depending on the exact drilling depth, peak-load management with a balancing tank cistern, and the potable water demands of each Lot, it can be generally assumed that sufficient groundwater can be found with a conventionally drilled water well as per O.Reg 903
- Groundwater quality
 - Groundwater samples were taken from two (2) drilled water wells, one from the North phase and another from the South phase.

- Both groundwater samples were considered to have met the Ontario Drinking Water Quality Standards (ODWS) – Microbiological / Chemical Standards
- Zone of Influence
 - Zone of influence of potable groundwater wells was checked, and generally confirm that any potable water well would have an influence less than 5m; that existing and future neighbours would not be influenced from proposed water wells

On-site Sewage Disposal / Septic Systems

A conventional absorption trench septic system, under OBC Part 8.7.3, T-time = 7min/cm, and combined with two scenarios of Q = 3000 / 6000 scenario, would require 170m² / 340m³ surface area for the septic bed. Smaller septic bed footprints may use other types of septic bed, such as filter bed, shallow buried trench, or Type A bed when combined with Class IV-B tertiary treatment units.

On-site Sanitary Sewage (septic systems) was evaluated within Section 7 of the geotechnical report, using the MOE Procedure D-5-4. In general, the purpose of MOE Procedure D-5-4 is to confirm that where proposed development is smaller than 1.0 Hectares in size, that on-site sewage treatment systems would not influence potable groundwater for consumption.

As per the Procedure, any property greater than 1.0 Hectare is automatically assumed to be “low risk” and no further evaluation is required. Detailed investigation was reviewed for each lot which are smaller than 1.0 Hectare in size, and found that there are two major categories: upland dwellings and waterfront dwellings.

Where upland dwellings are situated on top of a regional slope (such as Lot 27, 28, 32, 33, 62, 63), proposed septic systems would follow the surface elevation and flow towards the lower elevation, generally into a local wetland or Elephant Lake. Groundwater for these Lots are all quite deep, and would have minimal impact from septic systems.

Where waterfront dwellings are proposed, shallow groundwater is estimated at 350m elevation (due to the controlled lakewater elevation of Elephant Lake by downstream dam). This means that septic fluids would vertically infiltrate into the shallow groundwater, and then diluted by a large shallow groundwater system as part of the lake. Deep aquifers and groundwater is an isolated system and not influenced by the dispersal of septic fluids into shallow groundwater.

In summary, both water supply and sewage systems have been evaluated, and found that there are no concerns for the proposed sub-division, and that there would be no adverse affects on existing or future neighbours.

Other Considerations

Other considerations within Section 17.5.3 includes: Overland / Stormwater Drainage, fish and wildlife habitat, SAR, natural and cultural heritage protection.

A dedicated stormwater management plan and flood analysis report has been prepared, and each Lot has been carefully designed such that the proposed driveways, dwelling locations, septic locations, water wells, or any other structures are not influenced by stormwater or floods. The original road network has been in existence since the 80's, based on the area's aerial photograph and logging records.

Nine (9) culverts are proposed to be constructed, as replacement of existing culvert system on the original road network. Culvert #2, #3, and #6 are constructed within Major Storm / floodwater conveyance valley lands, and these culverts have always existed and is now proposed to be upgraded. A separate flood analysis report has confirmed the proper sizing of these culverts to convey 1:100 year storms, and does not cause any constrictions or adverse flooding above the culverts.

A dedicated Environmental Impact Study (EIS) report has been prepared by Cambium Inc, which confirms that:

- Lot creation does not intersect or sever any Significant Wetlands
- Proposed dwelling / structure locations are all located at a minimum of 30m away from Significant Wetlands and 30m away from all watercourses
- A small amount of disturbance will occur near non-significant wetlands, specifically, encroachment of the wetland 30m buffer (but no disturbance of the wetland themselves) at:
 - North Phase
 - Lot 6
 - Block A 8m private laneway (near Lot 9)
 - Lot 17
 - South Phase
 - Block A 12m private laneway (near Lot 56 / Lot 53)
- All watercourse crossings for the main South Phase Block A - Private Laneway are historic
- One new watercourse crossing is proposed for North Phase, Lot 17
- The proposed development will not result in any direct or indirect impact to fish habitat. All development is confirmed to be 30m offset from watercourses and edge of lakes, with exception to future individual driveways / paths at 2-3m widths.
- Only a single communal shared boat launch is proposed at Block B, with access to deep water channel at immediately lakeshore (boat launch does not enter within shallow Significant Wetlands). There is no proposal for individual docks for each waterfront property due to Significant Wetlands extending from shoreline into Elephant Lake.
- The 30m offset from wetlands, waterbody, and watercourses will ensure protection from most SWHs. Stratum 1 and 2 deer wintering habitat was identified, but no evidence of core deer yarding activities was found within the North and South phases. Passive recreational uses are compatible with deer wintering areas.
- Endangered and Threatened Species was reviewed as part of the EIS, and suitable buffers of 30m from Significant Wetlands and non-significant wetlands are generally sufficient.

- Rare vegetation community of a small bog inclusion was found and a strict 30m offset is imposed to protect this feature

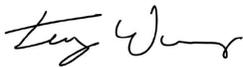
Cultural and heritage was reviewed as part of the Stage 1 and Stage 2 Archaeological Investigation. Stage 1 was entered into the Ontario Public Register of Archaeological Reports, and the Stage 2 investigation found no artefacts of significance.

Summary

It is in the Engineer's opinion that the proposed residential sub-division for the Elephant Lakes North and South phases are fully compliant with the Municipality of Dysart et al Official Plan Section 17.5.3., and that developments are fully compliant with the requirements as set out within all Sections of the Official Plan.

This report is the intellectual property of King EPCM, and has been prepared for the sole use of 2463756 Ontario Inc. (the Client). King EPCM accepts no liability for claims arising from the use of this report, or from actions taken or decisions made as a result of this report, by parties other than the Client. The Client may submit this report to the County of Haliburton, and Municipality of Dysart et al. in regards to the Client's residential development project at Elephant Lake, Harcourt, Dysart et al.

Respectfully,



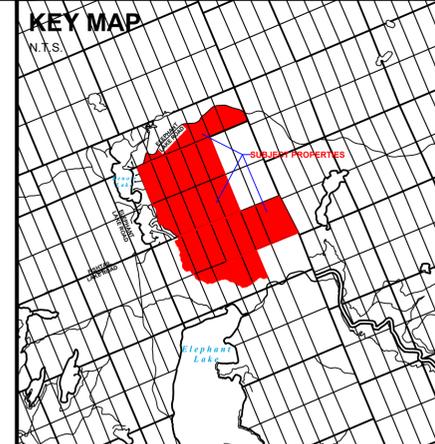
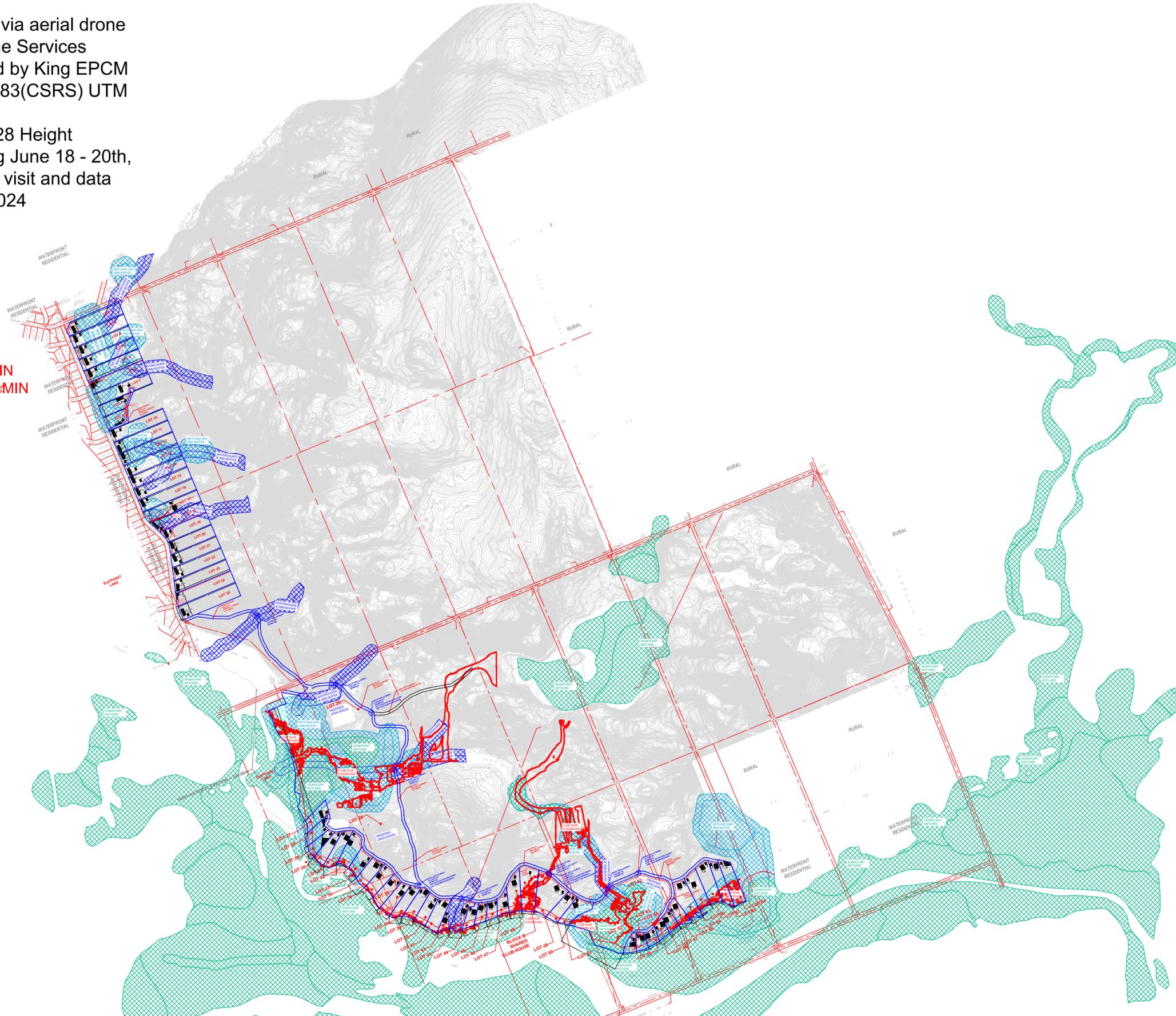
Yu Tao (Tony) Wang, P. Eng
Principal Engineer
King EPCM



GENERAL NOTES:

- Topographic LiDAR survey via aerial drone was sub-contracted to Drone Services Canada Inc. and supervised by King EPCM
- Horizontal Projection - NAD83(CSRs) UTM Zone 17N
- Vertical Projection - CGVD28 Height
- Field work completed during June 18 - 20th, 2024, with King EPCM field visit and data verification on June 19th, 2024

PROPOSED ZONING
WATERFRONT RESIDENTIAL 4
FRONT YARD SETBACK = 7.5M MIN.
REAR YARD SETBACK = 7.5M MIN.
SIDEYARD SETBACK, DWELLING = 4.5 MIN
SIDEYARD SETBACK, ACCESSORY = 1.0 MIN



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95 DEVELOPMENT

PROJECT NAME

ELEPHANT LAKE - NORTH AND SOUTH PHASE

PROJECT LOCATION

ELEPHANT LAKE, HARCOURT, DYSART ET AL

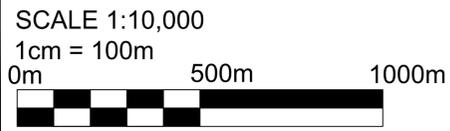
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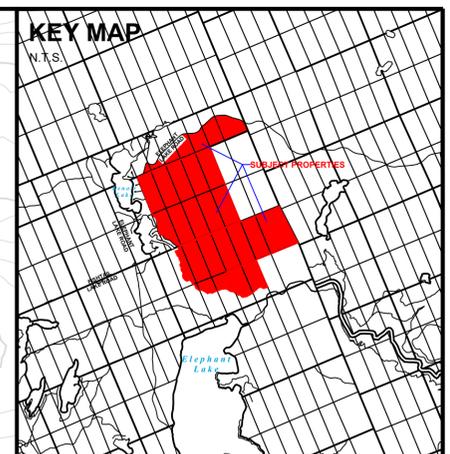
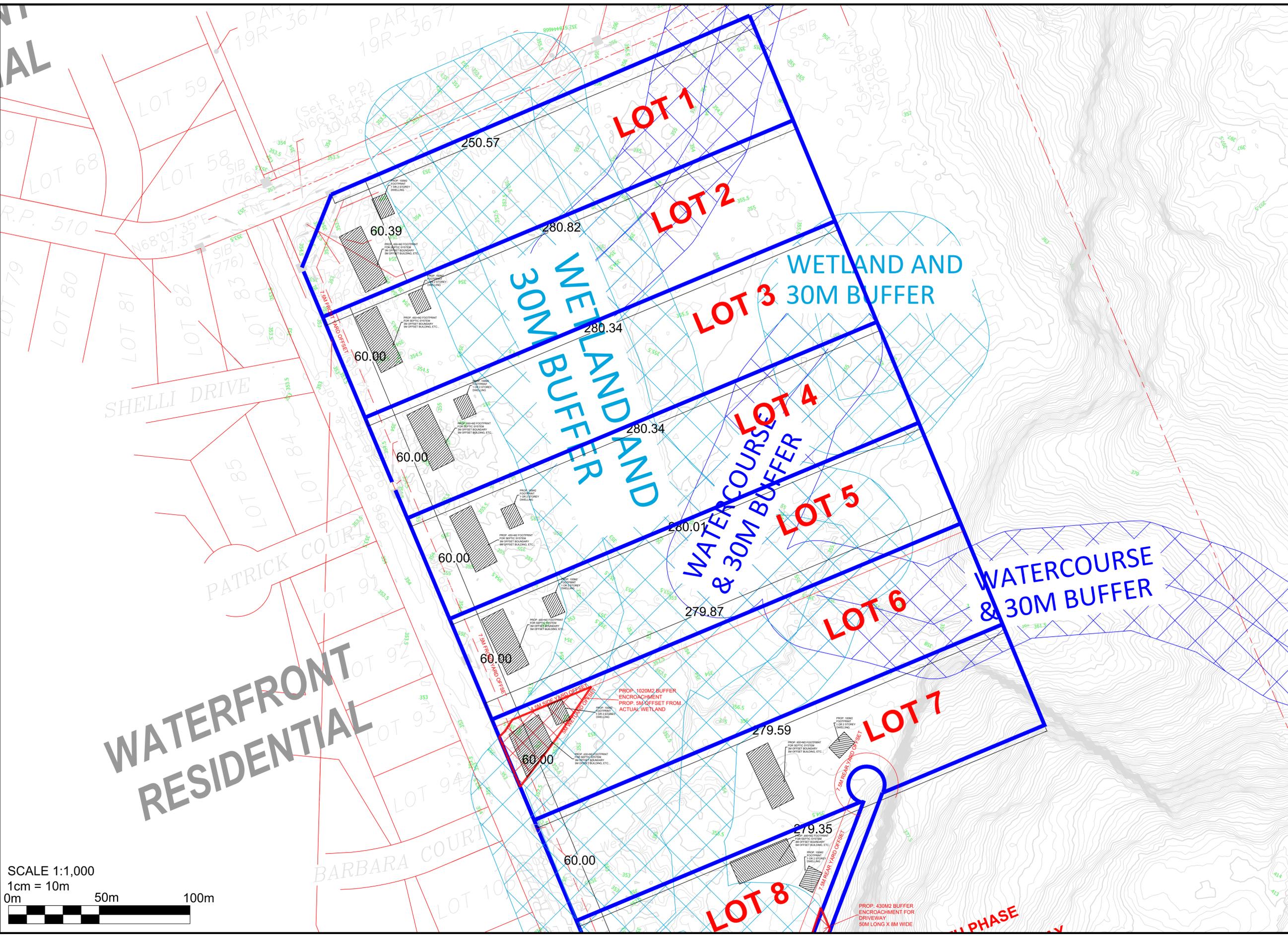
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EGR-1.1

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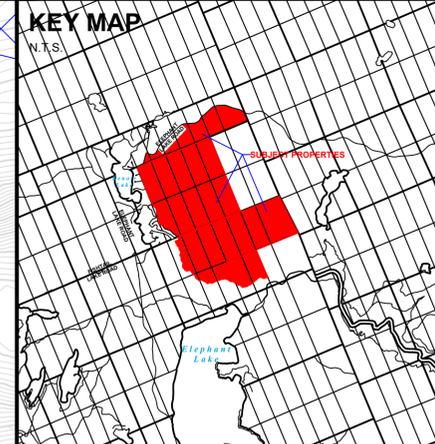
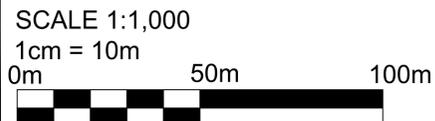
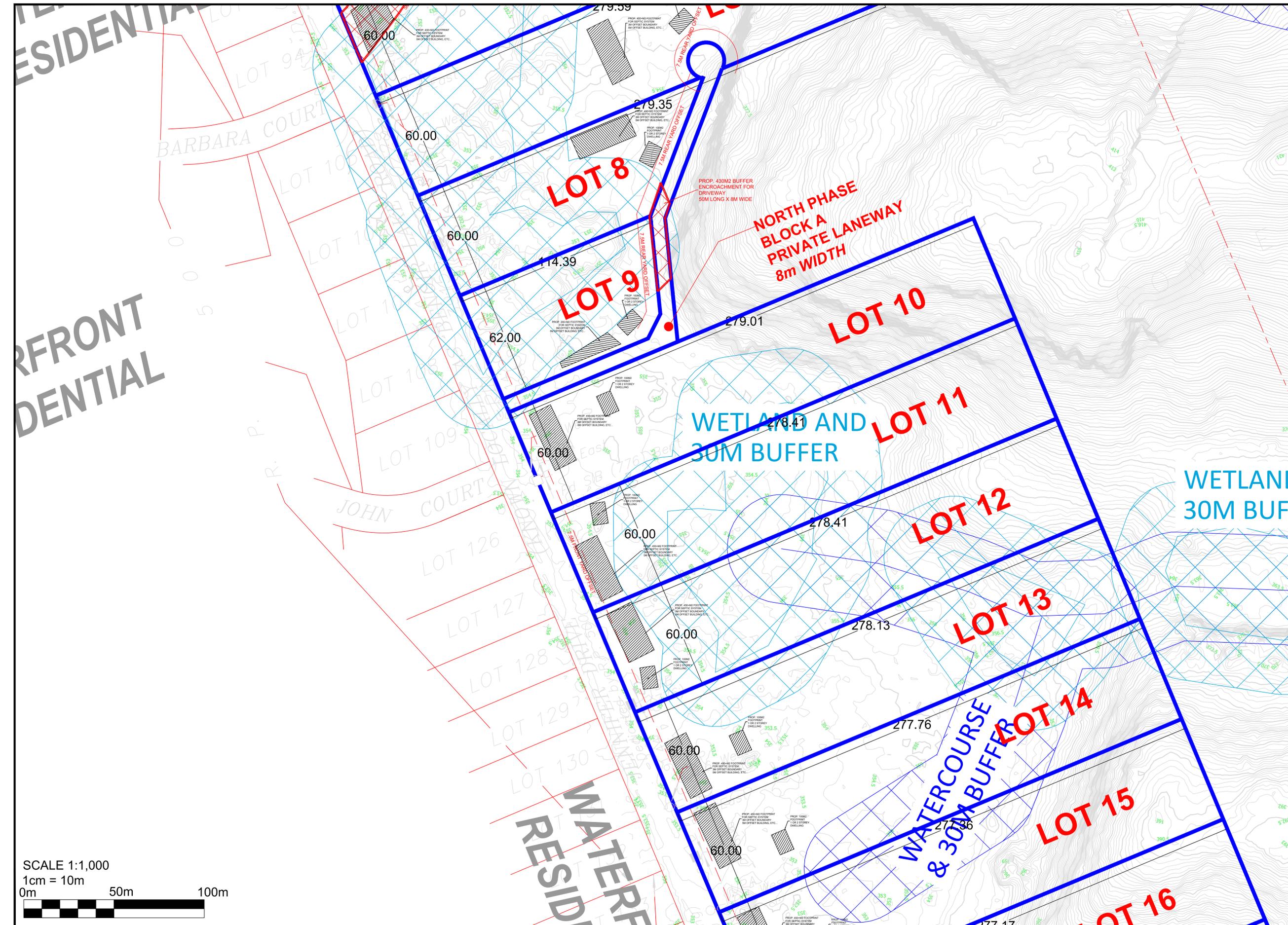
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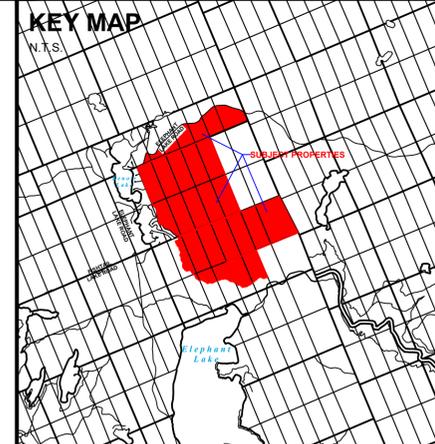
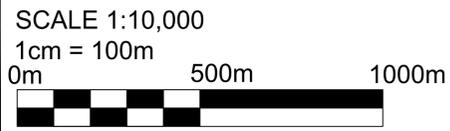
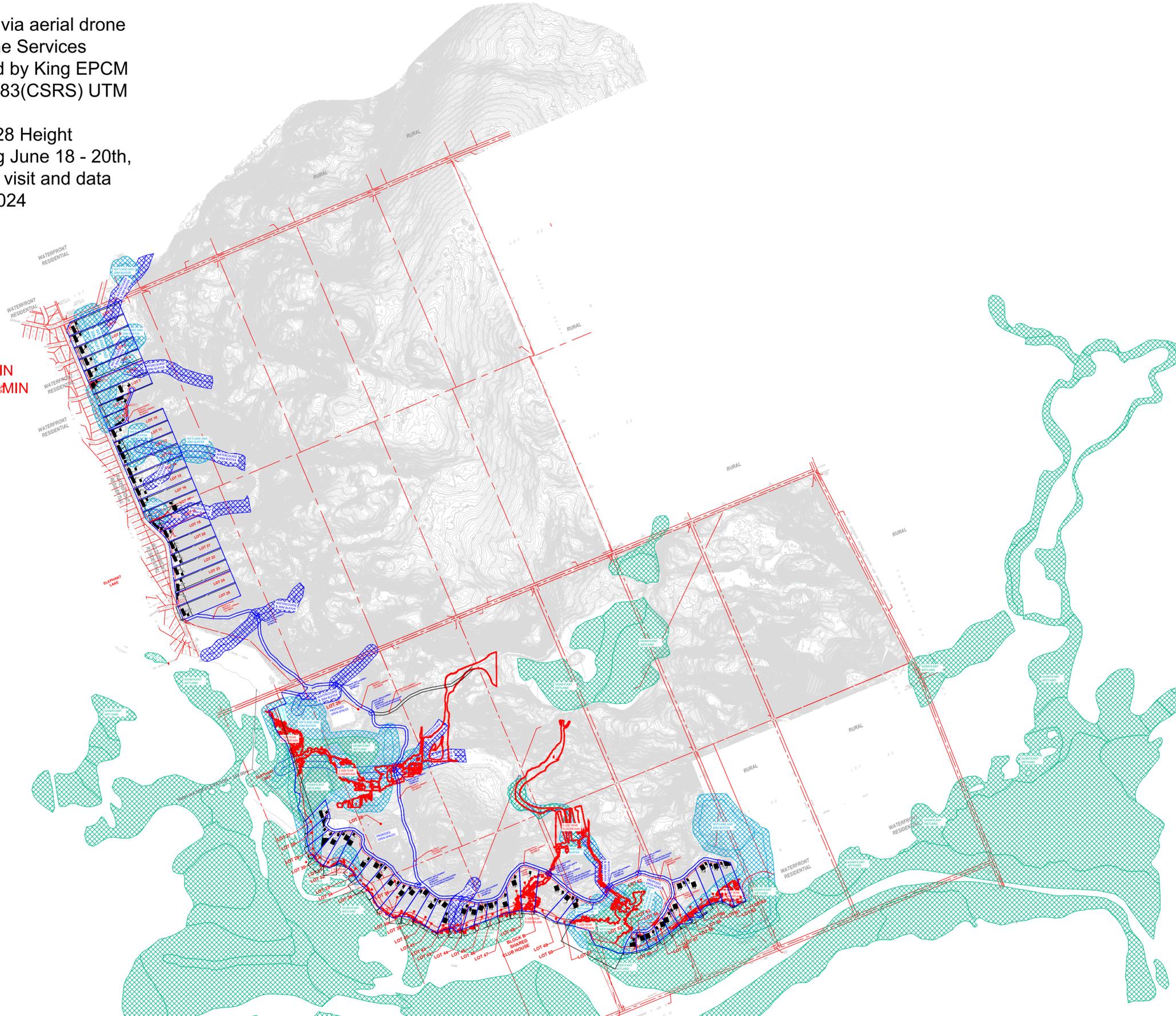
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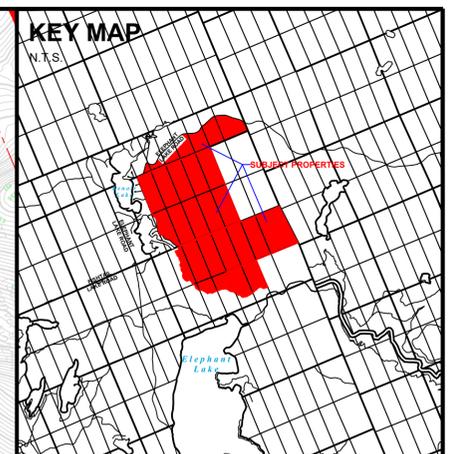
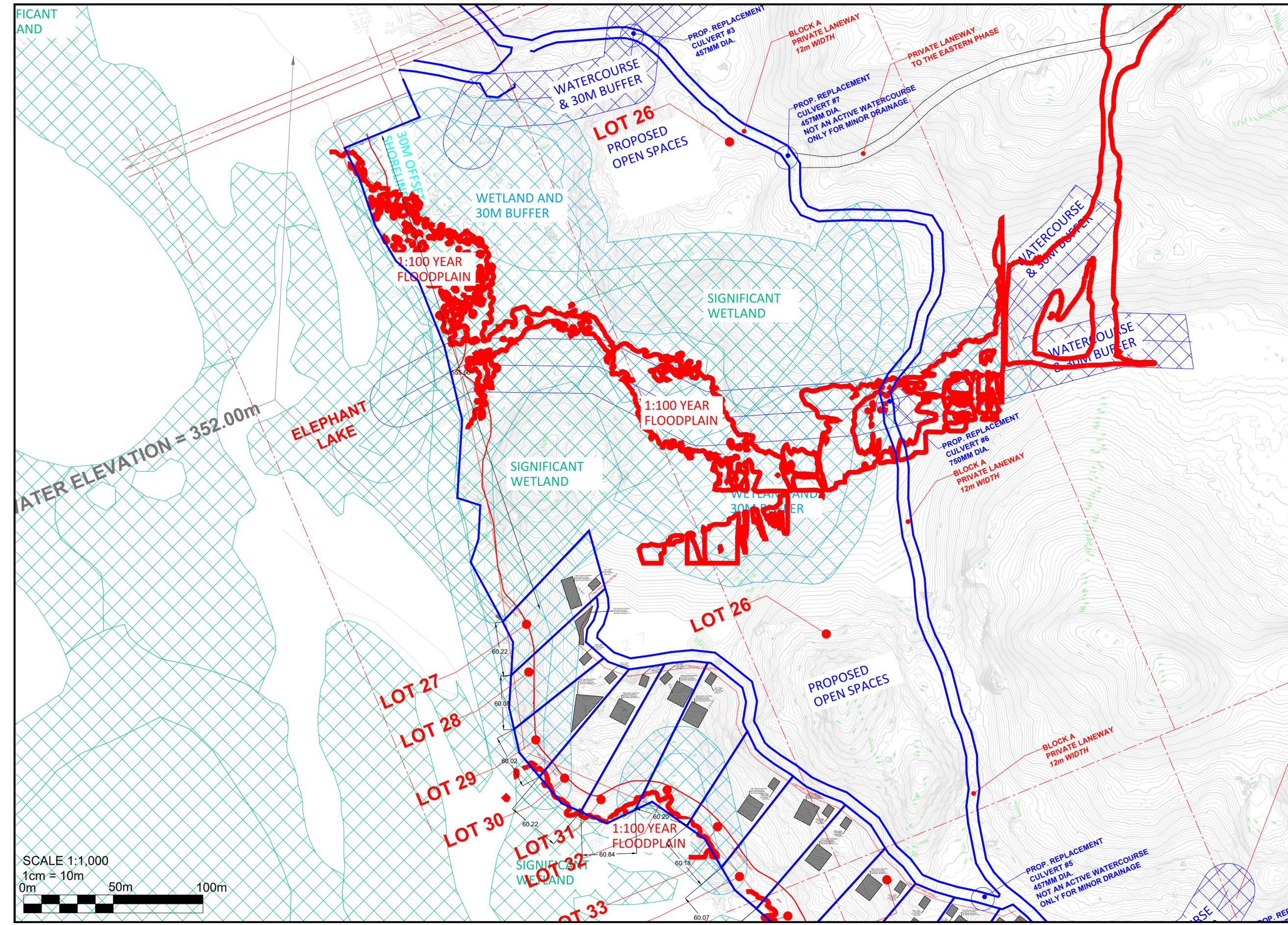
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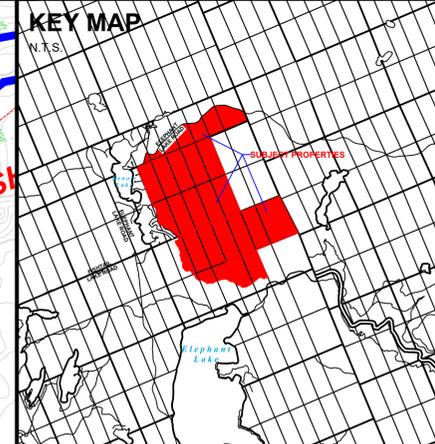
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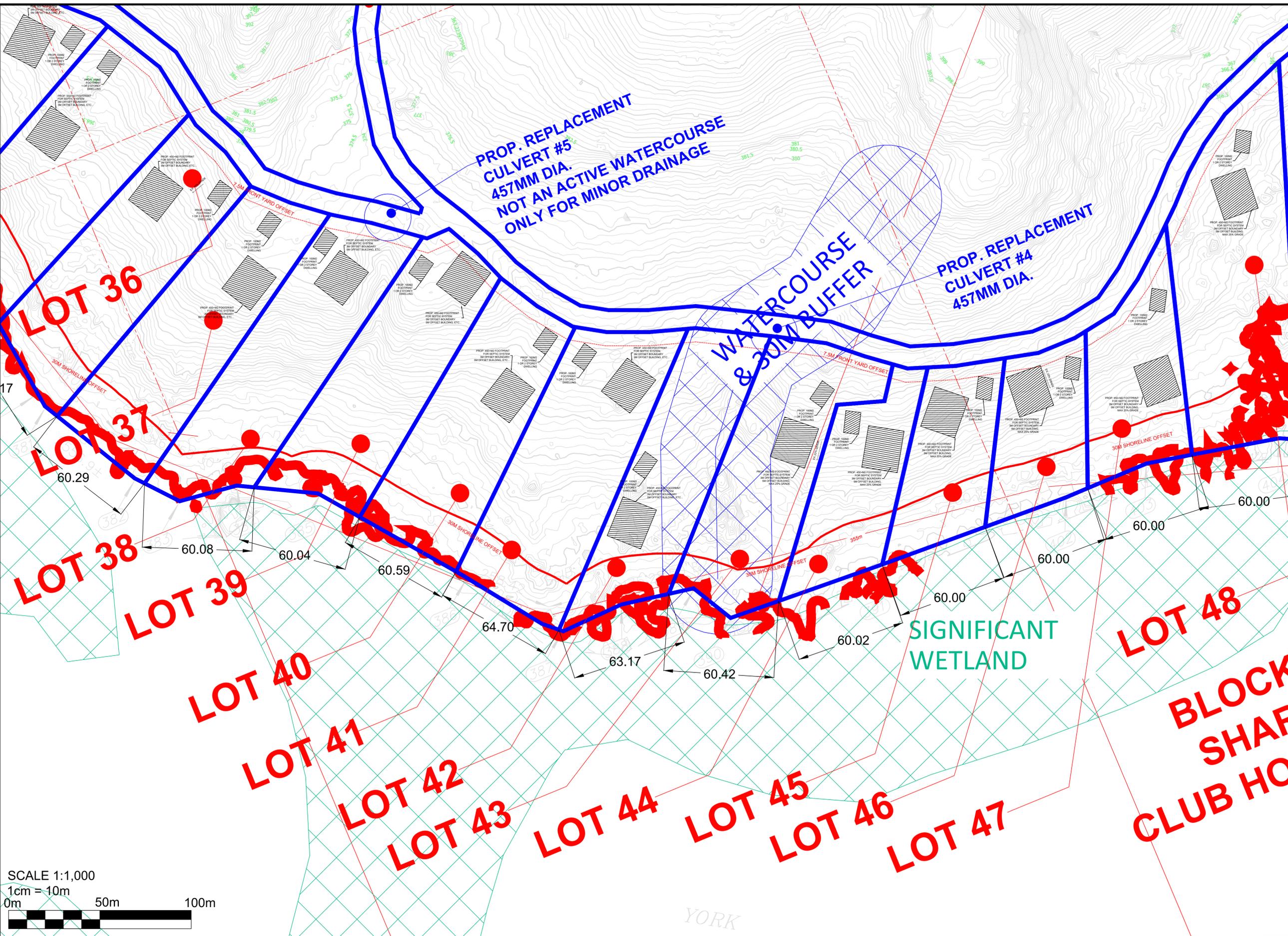
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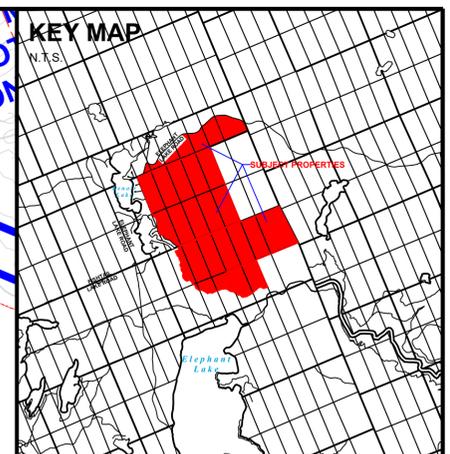
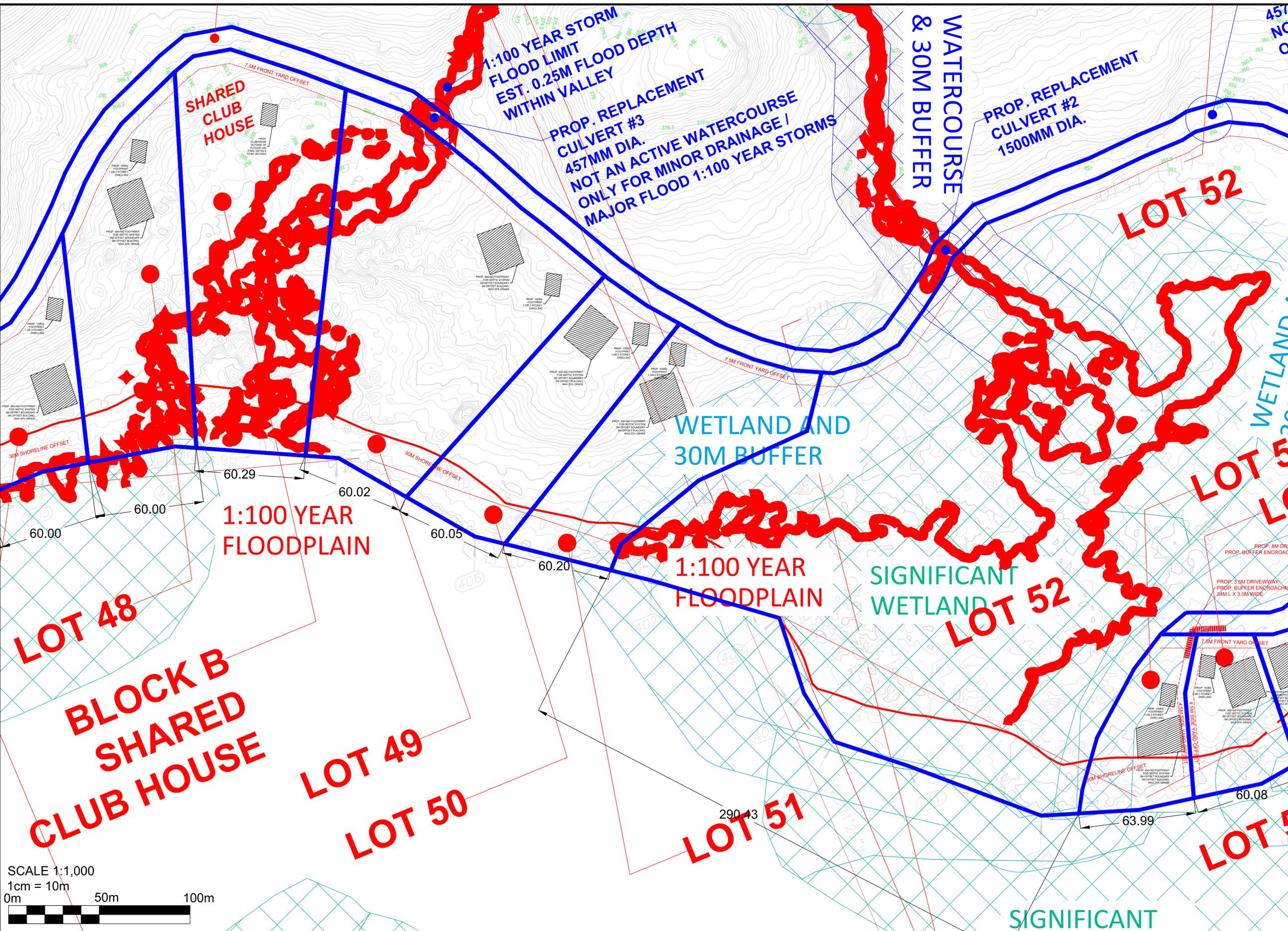
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 LICENSED PROFESSIONAL ENGINEER: Y. T. WANG, 180224-476, PROVINCE OF ONTARIO

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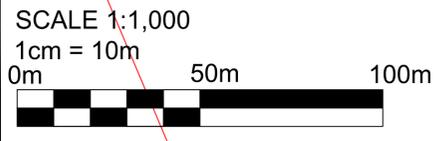
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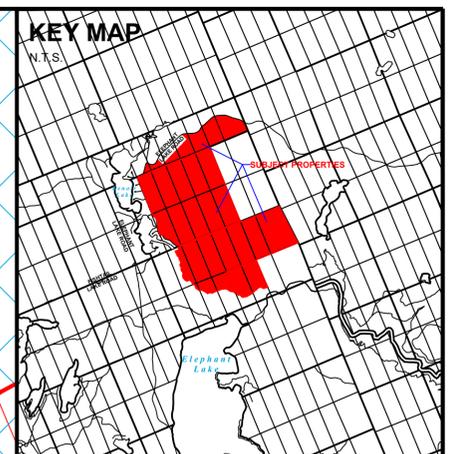
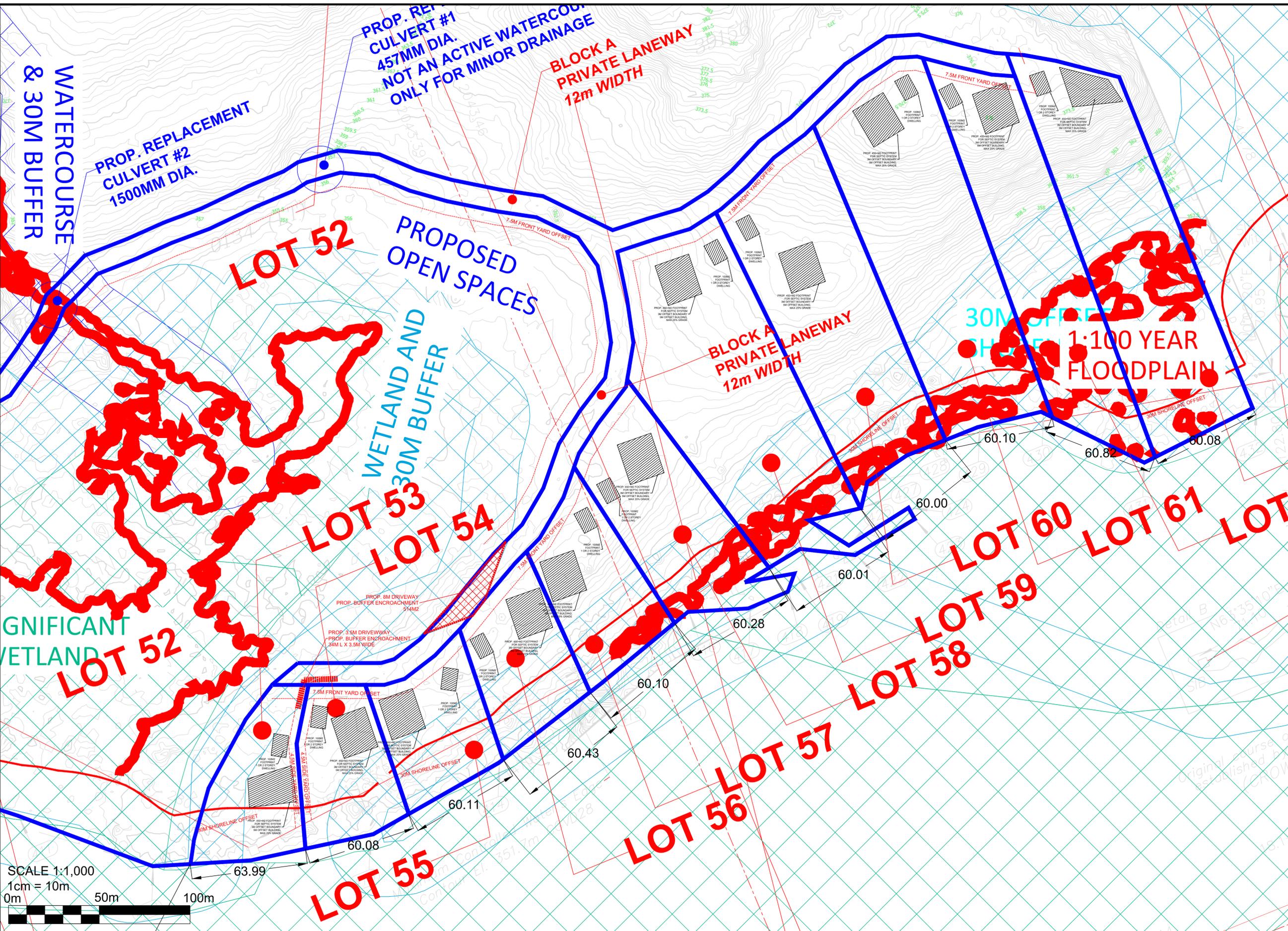
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