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## Appendix B.3 Master Servicing Concept Exerpts

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# **Base 31 Area Concept Plan Prince Edward County**

## **Master Servicing Concept**

**November 2023**

**Submitted by:**

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**SUBMISSION HISTORY**

Submission	Date	In Support Of	Distributed To
1 <sup>st</sup>	September 2023	Area Concept Plan Approval	Prince Edward County, Quinte Conservation
2 <sup>nd</sup>	November 2023	Area Concept Plan Approval	Prince Edward County, Quinte Conservation

## 1.0 INTRODUCTION

SCS Consulting Group Ltd. has been retained by PEC Community Partners Inc. to prepare a Master Servicing Concept for the proposed Base31 mixed-use development located in Picton, Ontario, within Prince Edward County. This report is to support an Official Plan Amendment for the subject site.

### 1.1 Purpose of the Master Servicing Concept

The Master Servicing Concept (MSC) has been prepared in support of the Official Plan Amendment. The Concept Plan used as the basis of the MSC, as well as the terms of reference, is provided in **Appendix A**. The proposed Base31 development consists of the following land uses:

- low to high density residential,
- The Revitalization District,
- open space,
- SWM pond blocks, and
- Municipal roads.

The purpose of this report is to demonstrate that the proposed development can be graded and serviced in accordance with the Prince Edward County, Quinte Conservation Authority, and the Ministry of the Environment, Conservation and Parks (MECP) design criteria.

This report has been prepared together with DLW Engineering's input regarding the mechanical aspects of water and wastewater facilities. SCS Consulting will be working with DLW Engineering with regard to the sanitary and water infrastructure for this ultimate development.

Prince Edward County is currently undergoing its own Master Servicing Plan for the Community of Picton, which is scheduled to be complete at the end of 2023. This servicing plan will assess the existing servicing infrastructure and will outline the ultimate servicing upgrades anticipated to accommodate the growth projections.

## 1.2 Study Area

The site consists of approximately 260 ha (642 acres) and is generally bounded by County Road #22, Kingsley Road, Airport Lane and Clarke Road. Refer to **Figure 1.1** for site location plan.



**Figure 1.1: Base31 Area Concept Plan Boundary (Source: Sasaki.)**

The existing development has operated as a WWII air training base, where it was decommissioned and transitioned to the Loch-Sloy Business Park and was acquired by PEC Community Partners in 2021. The remainder of the site is a former private aerodrome and runway.

The majority of the lands are vacant. An approximate 70-acre portion of the site is currently occupied by former army base buildings. The majority of these buildings will be retained and converted to a multi-use residential, commercial and event spaces. This area is defined as “The Revitalization District”, and initial phases of this development are expected to be operational and serviced for Spring/Summer 2024. The ultimate buildout will include additional commercial and event space, as well as several mid-rise residential buildings.

On the south side of Kingsley Road, east of Shutter Street is an existing paintball facility and former hospital buildings that are intended to be included within the ultimate concept plan for the subject site.

As per **Figure 1.1**, the land immediately west of Clarke Road lies outside the urban boundary. As such, it is not being included as part of the OPA submission. However, this 45 ha (111 acre) area is expected to be developed in the future, and has been taken into account when designing and sizing the ultimate servicing for this site.

### 1.3 Development Concept

The lands are envisioned to be a collection of neighborhoods with a mix of uses ranging from low to high density residential units, retail, office, parks and local road frameworks. All development is envisioned to center around the Revitalization District, with “green fingers” or open space linkages, acting as mobility paths, between each cluster of neighborhoods. Existing key natural heritage areas are being retained in their existing condition. Refer to **Figure 1.2** for a conceptual overview of these lands.



**Figure 1.2: Overall Concept Plan -Source: Sasaki**

The preliminary residential unit counts as provided by PEC Community Partners and are listed below in **Table 1.1**. It is noted that these statistics are subject to change. As discussed previously, Village I, J and K are located outside the urban boundary, and are considered future villages and are not included in this OPA application.

**Table 1.1: Preliminary Site Statistics**

	Phase	Low Density Units <sup>1</sup>	Medium Density Units <sup>2</sup>	High Density Units <sup>3</sup>	Total Unit Count
Revitalization District	1a	0	0	800	800
Village A	1b	220	80	500	800
Village B	2	220	220	150	590
Village C	3	220	220	150	590
Village D	4	220	220	150	590
Village E	5	220	220	150	590
Village F	6	500	500	500	1500
Village G	7	205	200	0	405
Village H	8	220	200	0	420
Future Village I	9	205	200	0	405
Future Village J	10	205	200	0	405
Future Village K	11	205	200	0	405
<b>Total</b>					<b>6,285</b>
<b>Future Total</b>					<b>7,500</b>

Notes:

- 1- Low Density- Single detached, semi-detached, or duplexes - 25 units/hectare @ 3 ppu (person per unit)
- 2- Medium Density - Triplexes, fourplexes, townhouses - 26 to 53 units/hectare @2.5 ppu (person per unit)
- 3- High Density - Apartment Dwellings - 54 to 300 units/hectare @ 1.7 ppu (persons per unit, where bedroom count is unknown)

Based on the above unit counts, as well as population densities for each unit (as per PEC standards noted above), the total anticipated future population is 18,150 persons. **Table 1.2** outlines the population breakdown.

**Table 1.2: Population Breakdown**

	<b>Total Population (persons)</b>
Revitalization District	1360
Village A	1710
Village B	1465
Village C	1465
Village D	1465
Village E	1465
Village F	3600
Village G	1115
Village H	1160
Future Village I	1115
Future Village J	1115
Future Village K	1115
<b>Total</b>	<b>14,805 (Future 18,150)</b>

In addition to the above unit counts, the development will likely consist of 1-2 schools across all Villages (note, discussions with the County and school boards are on-going), as well as small non-residential (retail/office/park) space for each Village. The exact breakdown of each Village is unknown at this time. The main commercial space will be provided within the Revitalization District, which will consist of a venue space and will host several long-term commercial tenants.

## 1.4 Background Servicing Information

In preparation of the site servicing and stormwater management (SWM) strategies, the following design guidelines and standards were used:

- Quinte Conservation Stormwater Management Submission Guidelines, Quinte Conservation (May 2012);
- Bay of Quinte Remedial Action Plan Implementation Area Stormwater Management Design Guidelines (Revised March 2006);
- Sanitary, Storm and Water Systems Design Manual, prepared by the County of Prince Edward, March 2023 (Not Approved);
- Grading and Drainage Manual, prepared by the County of Prince Edward, March 2023 (Not Approved);
- Transportation Design Manual, prepared by the County of Prince Edward, March 2023 (Not Approved);
- Ministry of Environment (MOE) Stormwater Management Planning and Design Manual (March 2003); and
- Ministry of Environment, Conservation, and Parks (MECP) Environmental Compliance Approval for a Municipal Stormwater Management System (April 2022).

The site servicing and SWM strategies in this report are based on the following reports / technical memorandums:

- Vineridge Boutique Towns Conceptual Stormwater Management Report prepared by Greck and Associates Limited, September 1, 2020 (Not approved)
- Preliminary Geotechnical Investigation prepared by Palmer TM, July 9, 2021
- Hydrogeological Assessment Draft Memorandum to support planning for Groundwater and Septic Servicing by Palmer Environmental Consulting Group, November 24, 2021
- Base31 – Food and Beverages, Hub Arch Progress Drawings by ARCHITECT RAW
- Wellington Master Servicing Plan for Water, Wastewater and Stormwater, prepared by R.V. Anderson, dated May 6<sup>th</sup>, 2021.
- Prince Edward County 2017 Development Charges Background Study, prepared by Watson & Associates, dated December 1, 2017.

Relevant excerpts from the above listed documents are included in **Appendix B**. The appropriate input from these documents has been taken into consideration when establishing the servicing approach and design criteria for the subject lands.

## 2.0 STORMWATER MANAGEMENT

### 2.1 Stormwater Runoff Control Criteria

The following stormwater runoff control criteria have been established based on the design guidelines and standards listed in **Section 1.3**. The stormwater runoff criteria are summarized below in **Table 2.1**:

**Table 2.1 – Stormwater Runoff Control Criteria**

Criteria	Control Measure
Quantity Control	Control to existing peak flows for the 2 through 100-year storm events (BQRAP).
Quality Control	Control the 90th percentile storm event. Control is in the following hierarchical order, with each step exhausted before proceeding to the next: 1) retention (infiltration, reuse, or evapotranspiration), 2) LID filtration, and 3) conventional stormwater management (MECP). At a minimum, Enhanced Level Protection (80% TSS Removal) through conventional stormwater management (BQRAP).
Erosion Control	Detention of the 25 mm rainfall runoff for a minimum of 24 hours (MECP).

### 2.2 Existing Drainage

The existing high-level storm drainage pattern is shown on **Figure 2.1**.

#### Marsh Creek

As illustrated, runoff from the northwest portion of the study area and external flows from an existing residential development north of the study area (Catchments 102 and EXT-2, 47.0 ha and 1.3 ha) drain west via overland flow to Marsh Creek within the Picton subwatershed. Flows from Marsh Creek ultimately discharge to the Picton Harbour in Lake Ontario.

#### East Lake

Runoff from the southeast portion of the study area and external flows from an existing residential development and rural area north of the study area (Catchments 101, EXT-1, and EXT-3, 258.9 ha, 15.9 ha, and 62.5 ha) drain south via overland flow to an existing watercourse in the east portion of the study area. As illustrated on **Figure 2.1**, a portion of the existing watercourse is piped east and south of the decommission hospital. Piped flows discharge via an existing dual headwall located south of the decommissioned

hospital. The watercourse continues to convey flows south and ultimately discharges to East Lake, southwest of the study area, which outlets to Lake Ontario.

### 2.2.1 Existing Site Characterization

As discussed in **Section 1.2**, the majority of the study area is a decommissioned WWII air training base, which was transitioned to the Loch-Sloy Business Park. The existing topography is generally sloping southeast and southwest with slopes ranging from 0.28% to 0.85%.

As indicated in the Preliminary Geotechnical Investigation (Palmer, 2021), the soils within the proposed development are predominantly disturbed native fill soils consisting of organics, clayey silt, sandy silt, and gravel underlain with limestone bedrock. Bedrock was measured throughout the proposed development between 0.3 m to 2.4 m below existing ground. Groundwater levels were measured between 1.5 m to 3.1 m below existing ground surface.

### 2.3 Proposed Storm Drainage

The proposed storm drainage plan is illustrated on **Figure 2.2**. As illustrated, eight (8) SWM facilities are proposed to treat runoff from the proposed development prior to discharging to the existing outlets.

#### Marsh Creek

Runoff from 50.5 ha of the proposed development (Catchment 201), including the proposed Revitalization District, will be conveyed southwest to SWM Pond 1. SWM Pond 1 is proposed to discharge west to Marsh Creek. Marsh Creek ultimately conveys flows to Picton Harbour, within Lake Ontario.

Runoff from Catchment 202 (12.9 ha) will be conveyed northwest to SWM Pond 2. Runoff from Catchment 203 (9.1 ha) and external Catchment EXT-1 (1.3 ha) will be conveyed northwest to SWM Pond 3. SWM Pond 2 and SWM Pond 3 are proposed to discharge flows northwest, on the northwest side of County Road 22, to Marsh Creek, and ultimately to Picton Harbour.

Runoff from Catchment 209 (5.0 ha) will be conveyed to on-site SWM controls prior to discharging west to Marsh Creek and ultimately to Picton Harbour via the SWM Pond 2/3 outfall route.

#### East Lake

Runoff from Catchment 204 (23.6 ha), Catchment 205 (15.5 ha), and Catchment 206 (28.6 ha) will be conveyed southwest to SWM Pond 4, SWM Pond 5, and SWM Pond 6,

respectively. SWM Pond 4, SWM Pond 5, and SWM Pond 6 are proposed to discharge to an existing watercourse south of Village D and Village G, which discharges to East Lake.

Runoff from Catchment 207 (61.7 ha) will be conveyed southeast to SWM Pond 7. Runoff from Catchment 208 (45.5 ha) will be conveyed southwest to SWM Pond 8. SWM Pond 7 and SWM Pond 8 are proposed to discharge to an existing watercourse at the south limit of the proposed development, between Village H and future Village K, which discharges to East Lake.

External runoff from Catchment EXT-1 (15.9 ha) is proposed to be controlled via a future SWM pond within the future Vineridge development before discharging to the existing watercourse within the proposed development and ultimately to East Lake.

Catchments 210, 211, 212, 213, and EXT-3 (8.5 ha, 10.1 ha, 17.1 ha, 16.4 ha, and 62.5 ha) are proposed to remain undeveloped. Runoff from these areas is proposed to continue to be conveyed to the existing watercourse within the proposed development and ultimately discharge to East Lake.

## 2.4 Quality Control

As listed in **Table 2.1**, control of the 90th percentile storm event is required to provide quality control for the proposed development. Control is in the following hierarchical order:

- 1) Retention;
- 2) LID filtration; and
- 3) Conventional stormwater management.

Due to the shallow bedrock throughout the proposed development, retention via infiltration is not feasible. Retention via water re-use may be possible on proposed residential lots (e.g. through rain barrels). Water re-use may also be feasible within the high-density areas of the proposed development, if underground SWM facilities are proposed. Water re-use opportunities can be explored at the functional servicing and detailed design phases of the proposed development.

LID filtration is feasible within the proposed development, where there is sufficient depth to the storm sewer system. However, filtration LIDs require frequent maintenance to ensure proper operation. Considering the rural nature of the surrounding area, and the additional staffing and financial resources required for maintaining these facilities, LID filtration is not recommended as the primary quality control measure for the proposed development. LID filtration as part of a treatment train approach can be explored at the functional servicing and detailed design phases.

Therefore, it is recommended that conventional stormwater management methods be used as the primary quality control measure within the proposed development. As listed in **Table 2.1**, per the BQRAP SWM Guidelines, Enhanced Level Protection (80% TSS Removal) is required, which can be achieved via permanent pools within the proposed SWM ponds. Refer to **Section 2.5.1** for further discussion.

## 2.5 Stormwater Management Ponds

Eight (8) SWM ponds (SWM Pond 1 - SWM Pond 8) are proposed to provide quantity control, quality control, and erosion control for the proposed development. Refer to **Figure 2.2** for the preliminary proposed locations of the SWM Ponds.

Anticipated preliminary block areas for the proposed SWM ponds were calculated by considering 8% of their respective contributing drainage areas. Preliminary normal water levels were determined for each SWM pond based on their anticipated outfall location and the surrounding existing topography. **Table 2.2** provides a summary of the proposed SWM ponds, including the preliminary block areas, normal water levels, and outlets.

**Table 2.2: SWM Pond Summary**

SWM Facility ID	Contributing Drainage Area		Pond Area (ha)	Normal Water Level (masl)	Outlet
	Catchment ID	Area (ha)			
1	201	50.5	4.04	139.00	Marsh Creek
2	202	12.9	1.03	138.50	Marsh Creek
3	203	9.1	0.73	143.00	Marsh Creek
4	204	23.6	1.89	141.00	East Lake
5	205	15.5	1.24	139.00	East Lake
6	206	28.6	2.29	138.80	East Lake
7	207	61.7	4.93	135.00	East Lake
8	208	45.5	3.64	135.50	East Lake

Block sizing will be refined at the planning application stage for each phase, where a detailed Stormwater Management Report will be prepared to provide hydrologic and hydraulic analysis along with pond grading design drawings.

### 2.5.1 Permanent Pool

The function of the permanent pool is to provide sediment removal from the storm runoff conveyed to the pond.

The proposed SWM ponds will be designed to provide permanent pool storage based on MECP's Enhanced Level Protection for a wet pond (see Table 3.2, 2003 MECP Guidelines).

### 2.5.2 Extended Detention

The attenuation of the extended detention volume in the SWM ponds will provide erosion protection for the downstream watercourses, as well as promote sediment removal for water quality. The extended detention volume for the proposed SWM Ponds will be sized based on the detention of the 25 mm - 4 hour Chicago rainfall event. The volume calculated for the extended detention will be attenuated for a minimum of 24 hours.

### 2.5.3 Quantity Control

The proposed SWM ponds will control proposed peak flows from the proposed development to existing peak flow rates for the 2 through 100 year storm events. Proposed SWM Ponds 1-3 will outlet to Marsh Creek, with a combined release rate that will be less than the existing peak release rates to Marsh Creek. Proposed SWM Ponds 4-8 will outlet to East Lake, with a combined release rate from that will be less than the existing peak release rates to East Lake.

Hydrology modelling will be required at the subsequent planning application stages to determine the existing release rates, proposed release rates, and required active storage volumes for the proposed SWM ponds.

### 2.5.4 General Pond Design Criteria

The pond design will be established based on the following general criteria provided in the MOE SWM Design Guidelines (March 2003):

- A 4 m wide maintenance access road will be provided from a proposed municipal road with a maximum longitudinal slope of 10% and a crossfall of 2% (max). It will be used to facilitate machinery to access the forebay during scheduled maintenance as well as to access the outlet structure for maintenance purposes;
- A maximum slope of 3:1 from the pond bottom to 0.5 m below the normal water level will be provided;
- A maximum slope of 6:1 from 0.5 m below and above the normal water level will be provided; and
- A maximum slope of 3:1 will be provided from 0.5 m above the normal water level to the pond grading limits.

## 2.6 Storm Servicing

The storm sewer system (minor system) will be designed for the 5 year return period storm.

The major system flow drainage (up to the 100 year storm event) will generally be conveyed overland along the road rights-of-way and easements.

The storm sewer system will typically be designed with grades between 0.5% and 2%. Throughout the site, the storm sewer will be constructed at a minimum depth of 1.2 m to provide frost protection. The proposed residential units will have basements, therefore sump pumps or additional storm sewer depth to capture basement foundation drainage will be required. The preliminary layout for the proposed storm sewer within the proposed development is provided on **Figure 2.2**.

The storm drainage system will be designed in accordance with the PEC, MECP, and OBC guidelines (where applicable), including the following:

- Pipes to be sized to accommodate runoff from a 5 year storm event,
- Minimum Pipe Size: 250 mm diameter,
- Maximum Flow Velocity: 6.0 m/s,
- Minimum Flow Velocity: 0.6 m/s,
- Minimum Pipe Depth: 1.2 m to obviate.

The rainfall intensity will be calculated in accordance with the PEC design guidelines. Rainfall intensity was determined using the City of Belleville 2012 IDF curves provided by Quinte Conservation and a minimum time to concentration of 15 minutes. The rainfall intensity will be calculated as follows, where 'i' is the rainfall intensity (mm/hour) and A, B, and C are as per **Table 2.3**:

$$i = A * T_c^C$$

**Table 2.3 – Rainfall Intensity Parameters**

Return Period Storm	A	C
2 Year	20.3	0.677
5 Year	26.4	0.677
10 Year	30.4	0.678
25 Year	35.5	0.678
50 Year	39.3	0.678
100 Year	43.0	0.678

## 2.7 Overland Flow

Major system flows will be conveyed within the road right-of-ways to the proposed SWM ponds.

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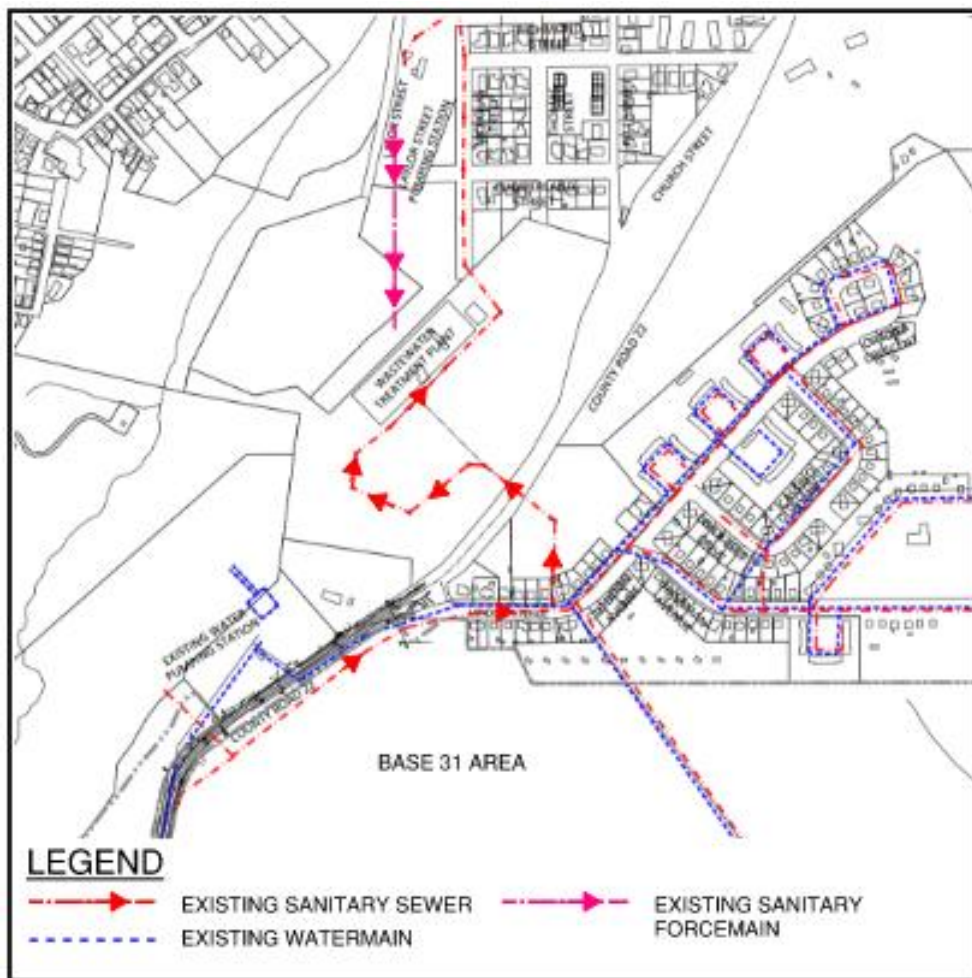
In the event that the outlet structures on the SWM Ponds become blocked, the uncontrolled 100 year flows will be conveyed via emergency spillways within the proposed SWM ponds to the adjacent watercourses.

### 3.0 SANITARY SERVICING

#### 3.1 Existing Sanitary Sewer System

All existing sanitary flows from the residential area north of the Base31 lands are conveyed by a 200 mm diameter sanitary sewer across County Road #22 to the Lalor Sanitary Pumping Station (SPS). The SPS is located just west of Nicholas Street, north-west of the Base31 subject site.

From the SPS, the sanitary flow from all of Picton is pumped to the Picton Water Pollution Control Plant (WWTP), located south of the SPS. The existing sanitary network is shown on **Figure 3.1** below:



**Figure 3.1: Existing Sanitary System**

Based on input from County staff and a review of the background information, all three components of this existing system – the 200 mm gravity sewer, the SPS and the WWTP are anticipated to be upgraded in the coming years and are approaching their remaining

capacity. The Base31 site will be phased to maximize each individual component’s capacity prior to upgrades.

The **Lalor SPS** is located on Lalor Street, and currently pumps all of Picton’s domestic discharge into the WWTP. Based on the Ministry Environmental Compliance Approval (ECA), the maximum allowable pumping rate is 510 L/s (or 44,000 m<sup>3</sup>/day). Twin 350 mm diameter forcemains connect the Lalor SPS to the **WWTP**.

The **WWTP** is located due south of the Lalor SPS, down the hill from County Road #22. Based on the wastewater treatment plant design brief, the raw sewage pumping station, tertiary filtration, ultraviolet disinfection and outfall have all been oversized and are capable of servicing an expansion of up to 10,200 m<sup>3</sup>/day. However, the bio-reactors have only been designed for Stage 1 design (6,000 m<sup>3</sup>/day). An expansion of these bioreactors and holding tanks will be required to help facilitate the Stage 2 expansions (10,200 m<sup>3</sup>/day).

**Table 3.1: Existing Capacity of WWTP (Prior to Phase 2 Upgrades)**

Existing Plant Capacity	6,000	m <sup>3</sup> /day
Existing Picton Population <sup>1</sup>	4,700	persons
Existing Community Average Flow (Assumes measured flow with high I&I)	3,003	m <sup>3</sup> /day
New Growth Allowance for Picton <sup>2</sup>	4,000	persons
New Growth Average Day Allowance for Picton	1,400	m <sup>3</sup> /day
Remaining Average Day Capacity available for Base31	1,597	m <sup>3</sup> /day

Notes:

- 1- Based on existing WWTP background reports
- 2- Based on the Prince Edward County Development Charge Background Study, dated December 2017, new development is forecasted in Picton resulting in an increase of population of 4,000 persons (this does not include Base 31, but does include VineRidge). Note this will likely change based on timing and quantity of new development applications.

The existing Base31 area is generally vacant. The Revitalization District has historically had an operational sanitary sewer, with services provided to each unit. This existing system historically also serviced the existing Heights development (north of the site), and directed flowed south to a former treatment facility. The sewer through the Revitalization District has since been abandoned and the former wastewater treatment facility was decommissioned and removed. The Height’s sanitary sewer system was redirected across Country Road 22 to the Laylor Sewage Pumping Station and new WWTP as described above. Refer to historical drawings found in **Appendix B** for reference. A subsurface utility investigation (SUE) was completed for the entire Base31 area, including County Road #22 and the outfall to the WWTP. The SUE is found in **Appendix B**.

The existing paintball facility at 204 Kingsley Road (former hospital) was historically serviced via a sanitary connection, draining north through the Base31 site. Refer to the Existing Servicing Plan (North and South) located in **Appendix B**. However, it has since been disconnected and the is not currently contributing sanitary flow.

The remaining Base31 lands do not have any active existing sanitary networks and do not generate sanitary flow.

### 3.2 Proposed Sanitary System Criteria

The sanitary sewer system will be designed in accordance with the current Prince Edward County Sanitary Systems Design Manual and MECP design criteria, including but not limited to:

- Residential Sanitary Generation Rate: 320 L/c/day (excluding extraneous flows)
- Residential Population Density:
  - Low Density - Single detached, semi-detached or duplexes- 25 units/ha or 3.0 persons per unit (PPU)
  - Medium Density – Triplexes, fourplexes, townhouses – 26-53 units/ha or 2.5 PPU.
  - High Density – apartment Dwellings – 54-300 units/ha at the following PPU:
    - Bachelor/1 Bedroom – 1.4 PPU
    - 2 Bedroom – 2.1 PPU
    - 3 Bedroom – 2.4 PPU
    - 4 Bedroom – 3.4 PPU
    - Bedroom Unknown – 1.7 PPU
- Peaking Factor: Harmon (Min 2.0)
- Infiltration Rate: 0.28 L/s/ha
- Industrial and Commercial (ICI) Flow Rates
  - Commercial Flow Rate – 28 m<sup>3</sup>/day/floor ha (excludes extraneous flows)
    - Total floor area cannot exceed total site area
    - Peaking Factor – 2, generally
  - Industrial Flow Rate – 55m<sup>3</sup>/day/floor ha
    - Total floor area cannot exceed total site area
    - Peaking Factor – 2-4
- Minimum pipe size: 200 mm diameter in residential areas
- Minimum pipe cover: 2.5 below centerline road elevation to obvert
- Maximum velocity: 3.0 m/s at full flow
- Minimum actual velocity: 0.6 m/s
- Minimum slope (first run): 1.0%

### 3.3 Proposed WWTP Upgrades

The proposed sanitary servicing will be completed in phases, maximizing the remaining capacity of each of the existing sanitary gravity sewer, the Lalor SPS and the WWTP. Upgrades to each of these three components will be completed at each required phase, however for the purpose of this report, the ultimate design is presented. Refer to **Figure 3.2** for the ultimate conceptual sanitary network.

The ultimate network will consist of local gravity sewers, a sanitary pumping station and forcemain, an upgraded sanitary outfall east of County Road 22 as well as a new, direct connection to an upgraded WWTP facility. The ultimate sanitary network is not intended to rely on the Lalor SPS.

As aforementioned, the WWTP can be upgraded to accommodate an average daily flow of up to 10,200 m<sup>3</sup>/day. Once upgraded, the plant has an available average day capacity of 5,797 m<sup>3</sup>/day (67 L/s) which can be utilized for the Base31 development. This upgrade will require a Schedule C Class EA.

**Table 3.2: Proposed Capacity of WWTP (With Plant Upgrades)**

Upgraded Plant Capacity	10,200	m <sup>3</sup> /day
Existing Community Average Flow (Assumes measured flow)	3,003	m <sup>3</sup> /day
New Growth Allowance for Picton (Assumes new pipe criteria)	1,400	m <sup>3</sup> /day
Remaining Average Day Capacity available for Base31	5,797	m <sup>3</sup> /day

The total Base 31 area generates an average day flow of (11,417.5 m<sup>3</sup>/day) **132.1 L/s** (Refer to calculations in **Appendix D**). The overall system capacity requirements to satisfy the Base 31 area along with the remaining proposed growth requirements of the County will be evaluated through the County’s Master Servicing Plan process and the future Class EA for the WWTP expansion.

In addition to the WWTP upgrades, effort can be made to reduce the current I&I contribution to the existing measured sanitary flow. With a reduction of even 50%, the WWTP is estimated to have a capacity of 6,452 m<sup>3</sup>/day, as demonstrated in **Table 3.3** below.

**Table 3.3: Proposed Capacity of WWTP (With Plant Upgrades and I&I Reduction)**

Upgraded Plant Capacity	10,200	m <sup>3</sup> /day
Existing Community Average Flow (Assumes measured flow with I&I 50% reduction)	2,348	m <sup>3</sup> /day

New Growth Allowance for Picton (Assumes new pipe criteria)	1,400	m <sup>3</sup> /day
Remaining Average Day Capacity available for Base31	6,452	m <sup>3</sup> /day

### 3.3.1 Direct Connection to WWTP

The existing sanitary system from the Heights directs flows from County Road #22, past the existing WWTP, to the Laylor Sanitary Pumping Station (SPS), where flows are then pumped back up to the WWTP. Based on discussions with County staff and review of the functional characteristics of the SPS, it is anticipated that a direct connection from the Heights will be required to the WWTP once flows exceed the capacity of the existing sanitary sewer system.

The existing sanitary sewer is a 200 to 250 mm diameter pipe. The existing sewer is at capacity along several lengths of the system. As a result, a complete replacement and upsizing of the existing sewer is anticipated to accommodate full build-out of the Base 31 and adjacent lands. The existing sanitary sewer currently follows a circuitous alignment along what was originally intended to be an industrial subdivision road alignment.

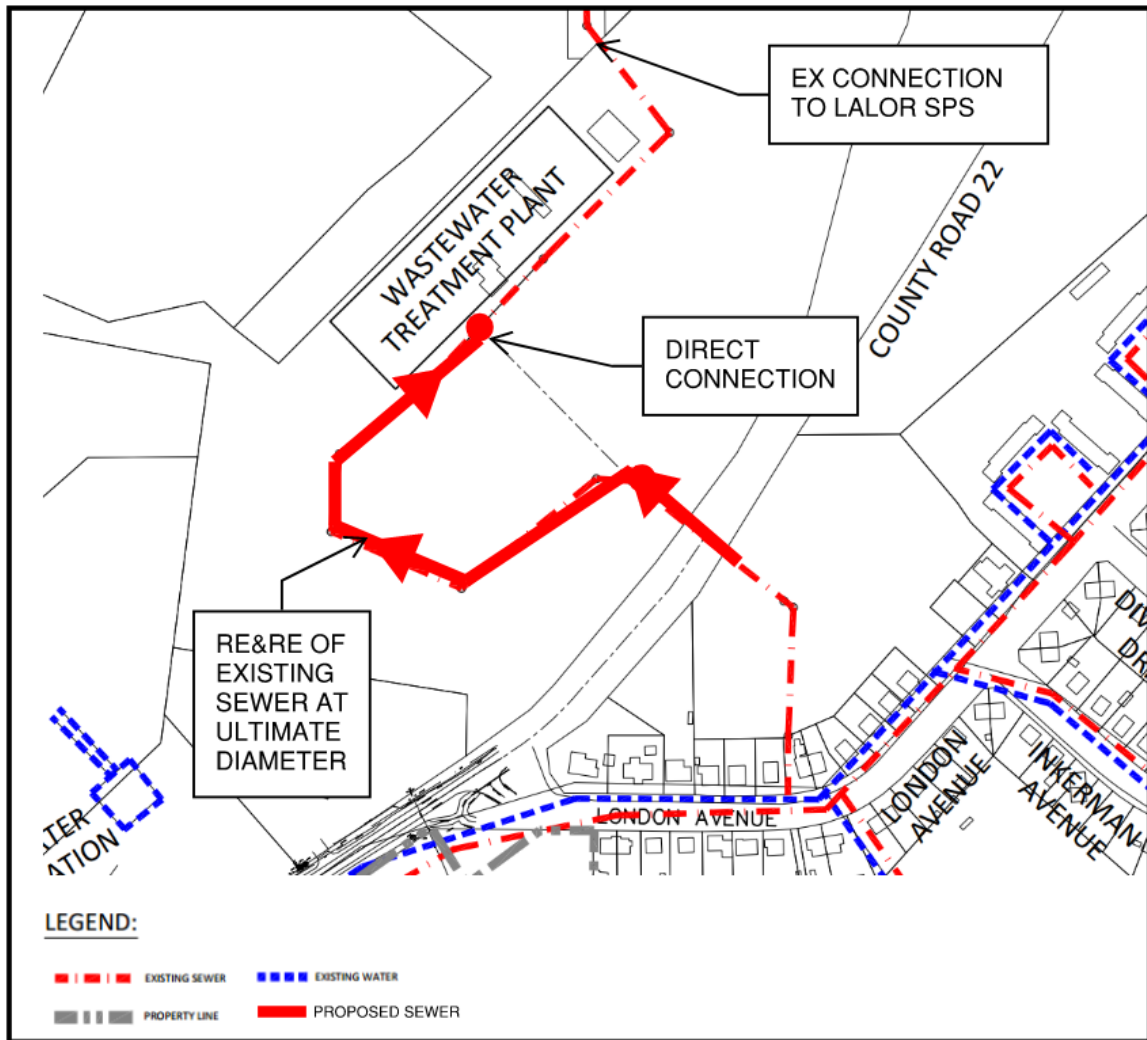
An initial review of options to re-direct flows from the heights into the WWTP has been undertaken. Based on the grade change between County Road #22 and the WWTP (nearly 26 m with slopes exceeding 20%), a direct gravity connection into the WWTP headworks area could be achieved by either an inverted syphon or a raised/elevated sewer. Alternatively, a new sanitary pumping station adjacent to the WWTP could be utilized to direct flow from the Heights directly to the WWTP. Exploration of these alternatives will be closely examined during subsequent planning stages that trigger the existing sanitary sewer replacement. However, in all cases, the design intent is to by-pass the Lalor SPS completely, and re-route the Base31 lands, the existing residential and the proposed VineRidge Development directly to the WWTP.

The direct connection is to accommodate flows from the addition of the entire Base31 area (22,657.3 m<sup>3</sup>/day) 262.2 L/s as further described in sections below) and the existing residential area north of the subject site. This external sanitary drainage is separated into two catchment areas:

- VineRidge Boutique Towns Development – 19.3 L/s  
*Original generation rate of 22.29 L/s presented in John Towle Associates Limited FSR has been updated to reflect new PEC standard of 320 L/s/cap*
- Existing MaCaulay Village Residential – 30 L/s  
*Measured flow rate in Sanitary Model output provided by PEC*

Therefore, the direct connection is proposed to accommodate a total peaked flow of (26,917.0 m<sup>3</sup>/day) **311.5 L/s**. Refer to **Appendix D** for all calculations.

Refer to **Figure 3.3** for a conceptual overview of the direct connection.



**Figure 3.3: Direct Connection to WWTP**

### 3.3.2 North of Kingsley Road

Based on existing topography, a natural ridge/high point exists through Village A, and the Kingsley Road and County Road #22 intersection. To limit depth of the sewers, as well as to minimize overall earthworks, the ultimate grading concept is proposed to generally match the existing topography. As such, a gravity sanitary sewer draining toward the existing sanitary outlet across County Road #22 is proposed for Village A, as well as for the north parts of Village F as shown on **Figure 3.2**. Sanitary drainage will combine with the existing Height’s residential development, and will outlet via the new upsized sanitary sewer east of County Road #22 to the new direct connection to the WWTP, as mentioned in **Section 3.3.1**.

Sanitary sewers will be generally 2.75-4.5 meters below ground surface (mbgs) throughout this area, and will flow at slopes ranging from 0.5-1.0%. Sizing and detailed layout of local sewers will be provided at subsequent applications for Village A and F respectively. It is approximated that 2,210 persons will be tributary to this catchment area (1710 from Village A, and 500 from Village F). To accommodate for additional commercial and institutional flows, sanitary flow rates have been approximated based on a conservative assumption, applying the commercial generation rate to 5% of the total area. Refer to **Table 3.4** for a summary of the proposed sanitary flows north of Kingsley Road.

**Table 3.4: Sanitary Flow Summary – North of Kingsley Road**

	Area (ha)	Population (persons)	Average Day Demand (L/s)	Average Day Demand (m <sup>3</sup> /day)	Peaked Day Demand (L/s)	Peaked Day Demand (m <sup>3</sup> /day)
<b>Total North of Kingsley</b>	<b>36.9</b>	<b>2,210</b>	<b>18.60</b>	<b>1,606.9</b>	<b>40.1</b>	<b>3,463.1</b>

The trunk gravity sanitary sewer within Village A will be sized to accommodate up to the total peaked flow of (3,463.1 m<sup>3</sup>/day) **40.1 L/s** from Village A and portions of F, as well as (19,194.2 m<sup>3</sup>/day) **222.2 L/s** from the sanitary forcemain, described further in **Section 3.3.3**.

### 3.3.3 South of Kingsley Road

As shown in **Figure 3.2**, the remaining development, including the Revitalization District, Village B-E, G-K and the remaining portions of Village F, is proposed to drain by gravity to a sanitary pumping station, located within Village H at the south end of the site. This is the natural low point of the site and will allow for the minimal depth of excavation for the gravity connections. Local sewers will range in depth from 3 meters below ground surface (mbgs) to approximately 10 mbgs at the proposed sanitary pumping station. Refer to **Table 3.5** for a summary of the proposed sanitary flows south of Kingsley Road.

**Table 3.5: Sanitary Flow Summary – South of Kingsley Road**

	Area (ha)	Population (persons)	Average Day Demand (L/s)	Average Day Demand (m <sup>3</sup> /day)	Peaked Day Demand (L/s)	Peaked Day Demand (m <sup>3</sup> /day)
<b>Total Tributary to Base31 SPS</b>	<b>219.2</b>	<b>15,940</b>	<b>113.5</b>	<b>9,810.6</b>	<b>222.2</b>	<b>19,194.2</b>

The sanitary pumping station is to be designed to accommodate a peaked sanitary flow of (19,194.2 m<sup>3</sup>/day) **222.2 L/s**.

As shown on **Figure 3.2**, an approximate 1.6 km length of twinned sanitary forcemains are proposed from the sanitary pumping station, north, towards the gravity sewer within Village A. Sizing and locations of all sewers will be detailed during the subsequent planning application process.

## 4.0 WATER SUPPLY AND DISTRIBUTION

### 4.1 Existing Water Distribution

The existing Picton Water Treatment Plant (WTP) is located on a small peninsula in Picton Bay; on Spencer Street. The WTP has a rated capacity of 10,400 m<sup>3</sup>/day. The County has advised that the plant will reach the end of its design life in approximately 10-15 years, in which time it will be replaced with a county-wide water treatment plant in the community of Wellington. This is included in the County Master Servicing Plan.

There is an existing 350 mm diameter feeder main from the Picton WTP to the Picton Heights Reservoir (constructed in 2019) and Booster Pumping Station (BPS). This feedermain has been sized to accommodate the full flow of 10,400 m<sup>3</sup>/day. The Heights BPS, which is located on the west side of County Road #22, north of Kingsley Road, currently feeds the existing MacCauley Village, as well as the existing paintball facility (former hospital) within the Base31 site. This BPS used to feed the Base31 site via a 200 mm water connection, but the water connection since been abandoned and the pump now only serves MacCauley Village. Refer to **Appendix B** for detailed subsurface investigation of the existing watermains.

The existing Picton Heights Reservoir has a total volume of 4,550 m<sup>3</sup>. Additional storage facilities in the Picton Water System include a 1,345 m<sup>3</sup> reservoir at the Picton WTP and a 1,200 m<sup>3</sup> elevated storage tank that services the community of Bloomfield. The BPS has four 12 L/s pumps and one 82 L/s fire pump.

The Picton water system includes two existing water zones – Picton Main/Bloomfield as well as the Picton heights/MacCauley Village. The subject lands are within the Picton Heights/MacCauley Village pressure zone.

The existing WTP capacity is described in **Table 4.1**.

**Table 4.1: Existing Capacity of WTP (No Upgrades)**

Existing Picton WTP Capacity	10,400	m <sup>3</sup> /day
Existing Population	5,300 4,700 from Picton 700 from Bloomingfield	Persons
Existing Maximum Day Water Demand – Assuming Existing Flow Rate (Peaking Factor =1.74)	4,679	m <sup>3</sup> /day
New Growth Allowance for Picton <sup>1</sup>	4,000	persons
New Growth Maximum Day Allowance for Picton – Assuming New Flow Rate (Peaking Factor =2.0)	2,560	m <sup>3</sup> /day
Residual Maximum Day Demand	3,161	m <sup>3</sup> /day

Notes:

- 1- Based on the Prince Edward County Development Charge Background Study, dated December 2017, new development is forecasted in Picton resulting in an increase of population of 4,000 persons (this does not include Base31). Note this number is changing based on new development, which will decrease the remaining capacity for Base31.

#### 4.2 Proposed Water System Criteria

In accordance with the current version of the Prince Edward County and MECP design guidelines, the water distribution system will be designed based on the following criteria:

- Average Day Demand: 320 L/c/d
- Residential Population Density:
  - Low Density - Single detached, semi-detached or duplexes- 25 units/ha or 3.0 persons per unit (PPU)
  - Medium Density – Triplexes, fourplexes, townhouses – 26-53 units/ha or 2.5 PPU.
  - High Density – apartment Dwellings – 54-300 units/ha at the following PPU:
    - Bachelor/1 Bedroom – 1.4 PPU
    - 2 Bedroom – 2.1 PPU
    - 3 Bedroom – 2.4 PPU
    - 4 Bedroom – 3.4 PPU
    - Bedroom Unknown – 1.7 PPU
- Fire Flow Demands – Fire Underwriter’s Survey Document Water Supply for Public Fire Protection (FUS)

#### 4.3 Proposed Water System

In order to accommodate the Base31 ultimate buildout, the water capacity will need to satisfy both maximum day demand, as well as provide adequate storage capacity for fire flow demands.

The maximum day demand for the ultimate Base31 buildout is presented below in **Table 4.2**. Calculations are found in **Appendix E**.

**Table 4.2 Domestic Water Demand Summary**

	Population (persons)	Maximum Day Demand (m <sup>3</sup> /day)
Total Base31 Lands	18,150	13,820

Beyond maximum day domestic demands, adequate water supply is required to satisfy fire supersession demands. Fire flows will be dictated by the Fire Underwriter's Survey (FUS), with the exception of the existing buildings within the Revitalization District. As per agreement with the County Fire Chief, an exception will be made to these existing buildings to provide adequate fire suppression to achieve Building Code requirements only. Detailed design of the FUS calculations will be provided during detailed design, however for design and planning purposes, a 150 L/s "worst case" fire flow demand has been applied. This is equivalent to one of the wooden hangars in the Revitalization District, which based on an OBC and FUS perspective, represents the least fire resistive building planned on site. It is assumed that a 1-hour fire rating would be applied to this building.

As the existing WTP has a remaining capacity of only 3,161 m<sup>3</sup>/day, upgrades will be required to achieve the required maximum day flow rate of 14,820 m<sup>3</sup>/day, plus the additional 150 L/s fire suppression demand for 1 hour. This can be achieved by one or more of the following methods:

- Upgrading the pumps at the existing WTP
- A new reservoir and booster pumping stations as shown in Figure 4.1
- An elevated storage tank within the Base31 area
- Reliance on the Wellington WTP, as further mentioned in Section 4.4.

The selected method will be dependent on phasing and the results of the County's Picton Master Servicing Plan. A new reservoir and booster pumping station will require the completion of a Schedule B Class EA.

A series of local mains are proposed throughout the Base31 lands. Refer to **Figure 4.1** for a conceptual overview of the water servicing plan.

#### 4.4 Wellington WTP and Feedermain

To satisfy the ultimate buildout, once the existing WTP has reached capacity (10,400 m<sup>3</sup>/day), the existing plant will be decommissioned and the capacity will be replaced with the new Wellington Water Treatment Plant. The Wellington WTP is currently sized for 2,500 m<sup>3</sup>/day with an intake sized for 6,000 m<sup>3</sup>/day. The Wellington Master Servicing Plan lays out three stages of development for the plant expansions at this site:

- Stage 1 Expansion to 6,000 m<sup>3</sup>/day to match existing intake capacity
- Stage 2 Expansion to 8,500 m<sup>3</sup>/day with a new intake sized for 19,000 m<sup>3</sup>/day
- Expansion to a County Wide plan providing 19,000 m<sup>3</sup>/day

With the replacement of the Picton WTP, and inclusion of the full development of the Base31 site, it is anticipated that a flow of approximately 15,400 m<sup>3</sup>/day will be delivered to Picton.

To deliver the approximate 15,400 m<sup>3</sup>/day of water from the Wellington WTOP, a 500 mm diameter feeder main, approximately 20 km in length, is anticipated to be required. This will provide the Base31 development with its ultimate water supply requirements. Refer to **Figure 4.2**:

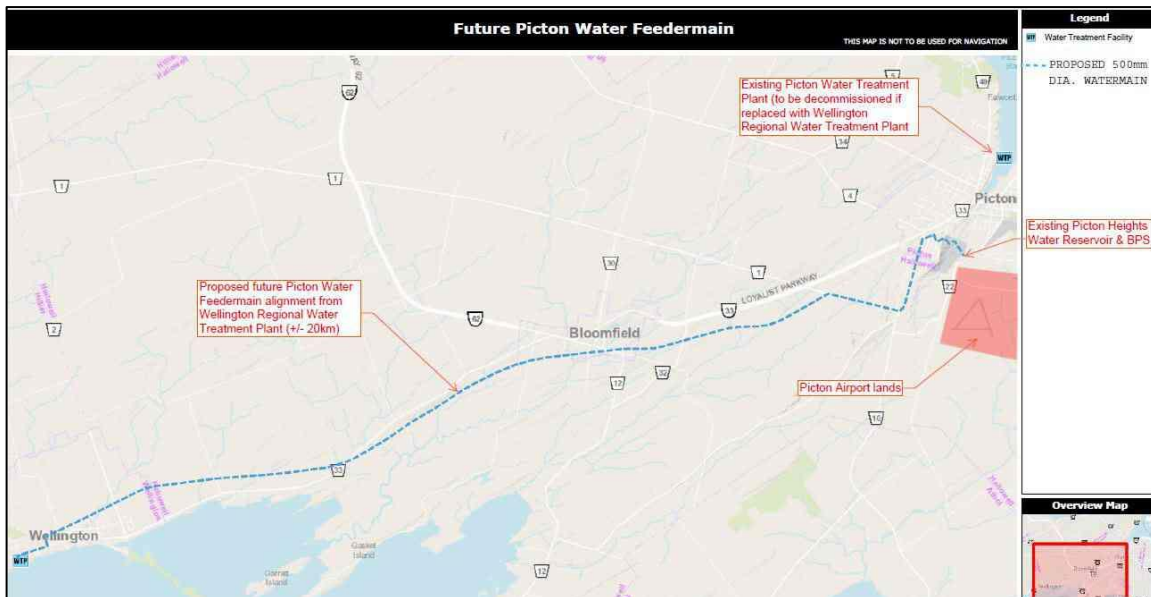


Figure 4.2: Wellington WTP and Feedermain Location

## 5.0 RIGHT-OF-WAYS AND SIDEWALKS

The road network for the proposed development will be comprised of a series of major/minor collector roads, local residential roads, as well as service ways. The road cross sections have been prepared based on the following guidelines and documents:

- Prince Edward County official Plan Review, prepared by the Planning Partnership, Dated April 11, 2016.
- Transportation Systems Design Manual, prepared by Prince Edward County, dated March 2023 (not approved)
- Prince Edward County drawings:
  - PSD-019 Local Road 18.0m Residential
  - PSD- Local Road 20.0m Industrial
  - PSD-022 – Arterial 27.0m
  - PSD-023 – Collector 26.0m
  - PSD-025 – Laneway 12.0m
  - PSD-030 – Rural 27.0m

With collaboration with TYLin, the transportation consultant on file, the following road cross sections have been prepared for the Base31 development. Generally, modifications have been made on the PEC standard drawings to include for designated bike lanes, and accommodating on-street parking, where required.

The existing roads surrounding the site – County Road #22, Kingsley Road as well as Clarke Road are proposed to be urbanized during the ultimate build out. As per the Official Plan Review, only County Road #22 is to be designated as an “Inter-Centre Collector” road, and therefore will need to be widened to 26.0m (all existing right of ways are approximately 20m). Clarke Road and Kingsley Road will be designated as urban collector roads at 20.0 m and 26.0 m respectively.

- 20.0 m – Urban Collector Road
- 26.0 m – Urban Collector Road
- 26.0 m - Inter-Centre Road

Additional cross sections have been developed for all new roads proposed in this development, as outlined below:

- 16.0 m – Local Residential Road (Single Loaded)
- 18.0 m – Local Residential Road
- 23.5 m – Urban Collector Road

All road cross sections can be found in **Appendix F**.

## 6.0 SITE GRADING

### 6.1 Existing Grading Conditions

The existing Base31 lands generally slope towards the south-east and southwest with slopes ranging from 0.28% to 0.85%. A natural ridge exists just north of Kingsley Road, draining all lands north of Kingsley northwards.

### 6.2 Proposed Grading Concept

In general, the site will be graded in a manner which will satisfy the following goals:

- Satisfy lot and road grading best practices including:
  - Minimum Road Grade: 0.5%
  - Maximum Road Grade: 5.0% (6% for Collector and 8% for local residential)
  - Minimum Lot Grade: 2%
  - Maximum Lot Grade: 5%
- Provide continuous road grades for overland flow conveyance;
- Minimize the need for retaining walls;
- Minimize the volume of earth to be moved and minimize cut/fill differential;
- Minimize the need for rear lot catchbasins;
- Achieve the stormwater management objectives required for the site; and
- Meet all applicable Accessibility for Ontarians with Disabilities Act, 'AODA' guidelines and standards.

A preliminary grading plan is shown on **Figure 6.1**. The grading will be confirmed through the ongoing approvals process and during the detailed design stage.

At the detailed design stage, the preliminary grading shown on **Figure 6.1** will be subject to a more in-depth analysis in an attempt to balance the cut and fill volumes and minimize slopes and walls.

## 7.0 UTILITY CONSIDERATIONS

Callidus Engineering, the utility Engineers on file, have prepared the following report in support of this Master Servicing Concept:

- Base31: Electrical Needs Study, prepared by Callidus Engineering, dated August 4, 2023.

The purpose of this report is to provide a high-level analysis of the electrical service required for the site. Currently, Callidus is in conversation with Hydro One and other utilities (gas, bell and cable) to determine a servicing plan for this development.

It is understood that all utilities (gas, bell and cable) shall be buried to protect against winter conditions and freezing, as shown on the cross sections provided in **Appendix F**.

## **8.0 EROSION AND SEDIMENT CONTROL DURING CONSTRUCTION**

During the detailed design stage, erosion and sediment control measures will be designed with a focus on erosion control practices (such as stabilization, track walking, staged earthworks, etc.) as well as sediment controls (such as fencing, mud mats, catchbasin sediment control devices, rock check dams and temporary sediment control ponds). These measures will be designed and constructed as per the “Erosion and Sediment Control Guideline for Urban Construction” document (December 2006). A detailed erosion and sediment control plan will be prepared for review and approval by the Municipality and Conservation Authority prior to any site grading being undertaken. This plan will address phasing, inspection and monitoring aspects of erosion and sediment control. All reasonable measures will be taken to ensure sediment loading to the adjacent properties are minimized both during and following construction.

## 9.0 SUMMARY

This Master Servicing Concept Plan has been prepared in support of the Draft Plan of Subdivision application for the proposed subdivision development in Prince Edward County. This report outlines the means by which the site can be graded and serviced in accordance with County, Quinte Conservation, and Ministry of the Environment, Conservation and Parks design criteria and policies.

### General Information

- The existing land use is an airport, commercial, and natural areas; and
- The proposed development consists of low density residential, medium density residential, a revitalization district, parks and green space, SWM pond blocks, and proposed roads.

### Stormwater Management and Storm Servicing

- Quality Control: MECP Enhanced (Level 1) water quality protection can be provided through the use of eight (8) SWM Ponds;
- Erosion Control: The runoff volume from a 25 mm rainfall event will be detained for a minimum of 24 hours by the SWM ponds;
- Quantity Control: Quantity control will be provided via the SWM ponds to control proposed peak flow rates in the 2 through 100 year storm events;
- Storm Servicing:
  - Storm runoff will be conveyed by storm sewers designed in accordance with PEC, MECP, and OBC criteria (where applicable);
  - Storm sewers will generally be designed for the 5 year storm event; and
  - Adequate 100 year overland flow routes will be provided.

### Sanitary Servicing

- Upgrades are required at the existing WWTP to extend the capacity for Base31 development
- Base31 will drain by gravity north of Kingsley Road, and south of Kingsley Road will be pumped from an ultimate sanitary pumping station preliminarily laid out at the south-mid edge of the site.
- Upgrades to the existing sewers tributary to the WWTP will be required

### Water Supply

Water supply will be provided with the existing WTP and BPS and reservoir. Upgrades will be required to the BPS.

- Additional capacity is achieved through the installation of an additional reservoir and BPS within the site.
- Wellington upgrades will provide the ultimate provided capacity.

### Site Grading

- The site grading has been developed to match to the existing surrounding grades, and provide conveyance of stormwater runoff, including external drainage; and
- The lot grading will be subject to further grading design at the detailed design stage prior to the building permit applications.

### Right-of-Ways and Sidewalks

### Erosion and Sediment Control during Construction

- An erosion and sediment control plan will be prepared at the detailed engineering stage, in accordance with the “Erosion and Sediment Control Guideline for Urban Construction” document (December 2006).

Respectfully Submitted:

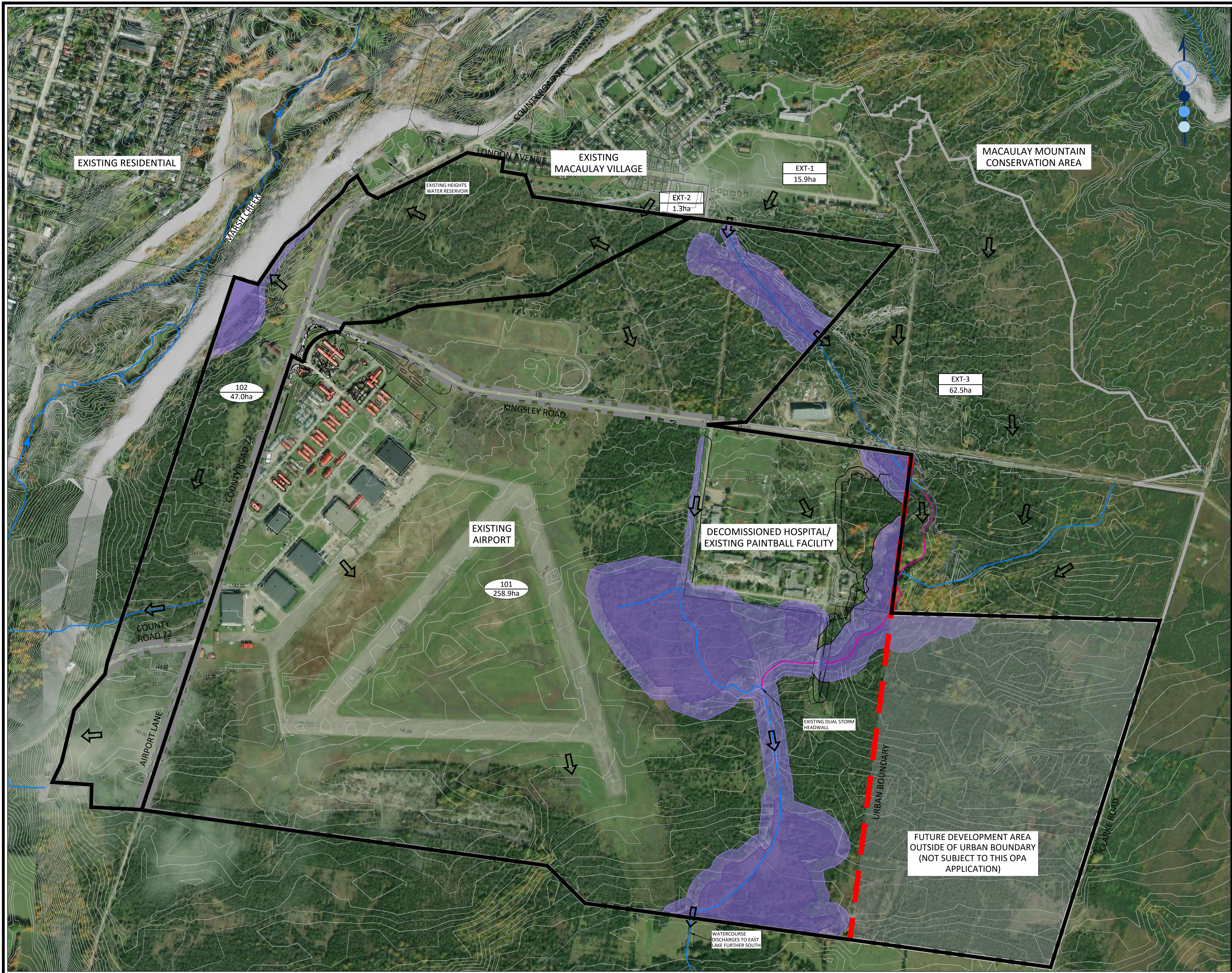
**SCS Consulting Group Ltd.**



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hedward@scsconsultinggroup.com



Emma Shepherd, P. Eng.  
eshepherd@scsconsultinggroup.com



**LEGEND:**

- LIMIT OF DEVELOPMENT
- LIMIT OF FUTURE DEVELOPMENT (NOT SUBJECT TO THIS APPLICATION)
- URBAN BOUNDARY
- STORM DRAINAGE BOUNDARY
- EXTERNAL STORM DRAINAGE BOUNDARY
- DRAINAGE FEATURE (PALMER, 2023)
- PIPED DRAINAGE FEATURE (PALMER, 2023)
- EXISTING CONTOUR AND ELEVATION
- OVERLAND FLOW DIRECTION
- 102  
47.0ha  
CATCHMENT ID  
DRAINAGE AREA (HECTARES)
- EXT-1  
15.9ha  
CATCHMENT ID  
EXTERNAL STORM DRAINAGE AREA (HECTARES)
- HIGH CONSTRAINT AREA (PALMER ENGINEERING, 2023)
- HIGH CONSTRAINT SETBACK (PALMER ENGINEERING, 2023)

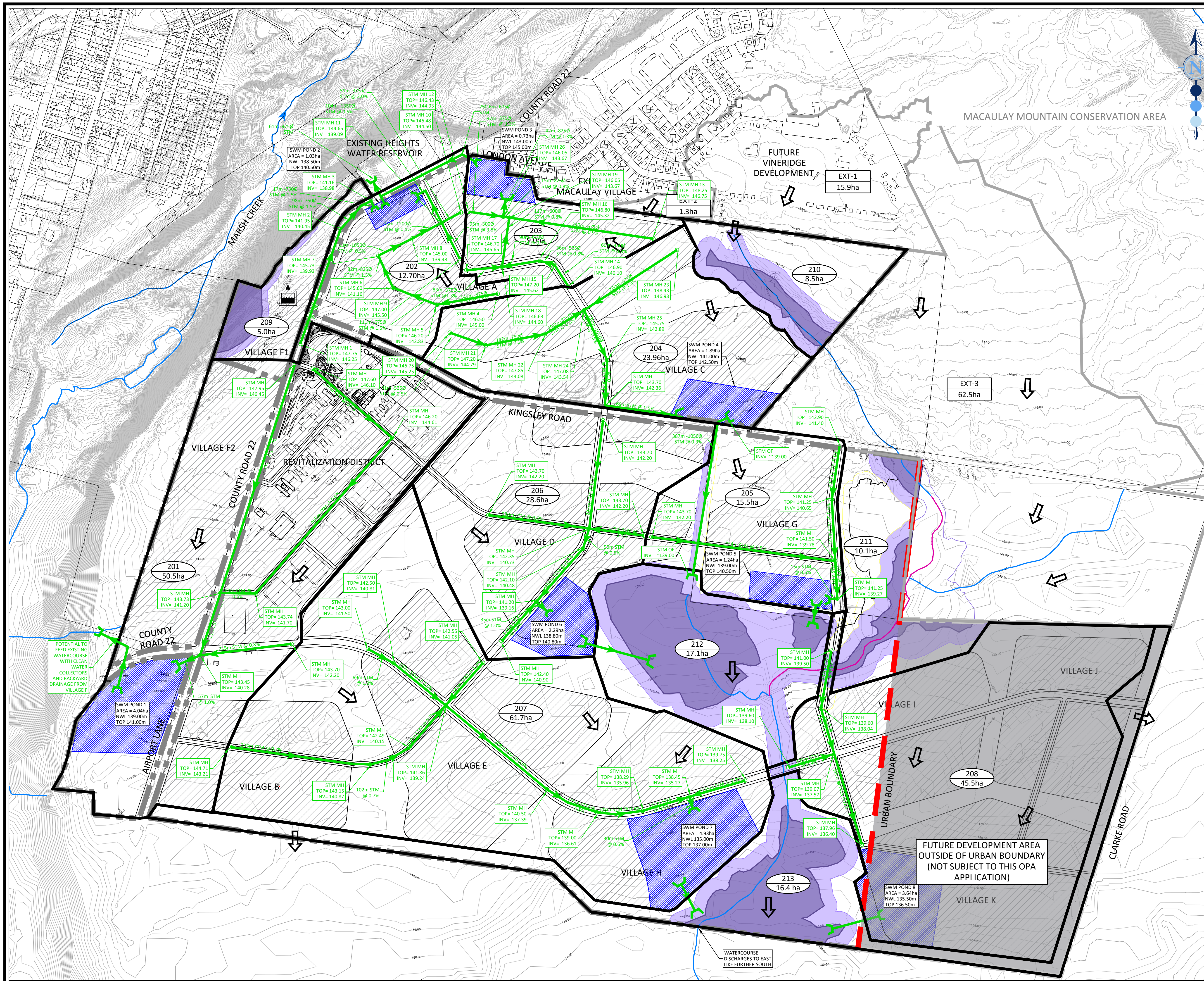
30 CENTURIAN DRIVE, SUITE 100  
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TEL: (905) 475-1900  
FAX: (905) 475-8335

PEC COMMUNITY PARTNERS INC.

BASE31 AREA CONCEPT PLAN

PRELIMINARY EXISTING  
STORM DRAINAGE PLAN

DESIGNED BY: J.L.B.	CHECKED BY: S.M.S.
SCALE: 1:4000	DATE: NOVEMBER 2023
PROJECT No: 2365	FIGURE No: 2.1



**LEGEND:**

- LIMIT OF DEVELOPMENT
- LIMIT OF FUTURE DEVELOPMENT (NOT SUBJECT TO THIS APPLICATION)
- URBAN BOUNDARY
- STORM DRAINAGE BOUNDARY
- EXTERNAL STORM DRAINAGE BOUNDARY
- DRAINAGE FEATURE (PALMER, 2023)
- PIPED DRAINAGE FEATURE (PALMER, 2023)
- HIGH CONSTRAINT AREA (PALMER ENGINEERING, 2023)
- HIGH CONSTRAINT SETBACK (PALMER ENGINEERING, 2023)
- EXISTING CONTOUR AND ELEVATION
- STORMWATER MANAGEMENT BLOCK
- MAJOR AND MINOR SYSTEM FLOW DIRECTION
- CATCHMENT ID
- DRAINAGE AREA (HECTARES)
- EXTERNAL CATCHMENT ID
- EXTERNAL STORM DRAINAGE AREA (HECTARES)
- ON-SITE STORMWATER CONTROLS
- STORM SEWER AND FLOW ARROW
- STORM MANHOLE

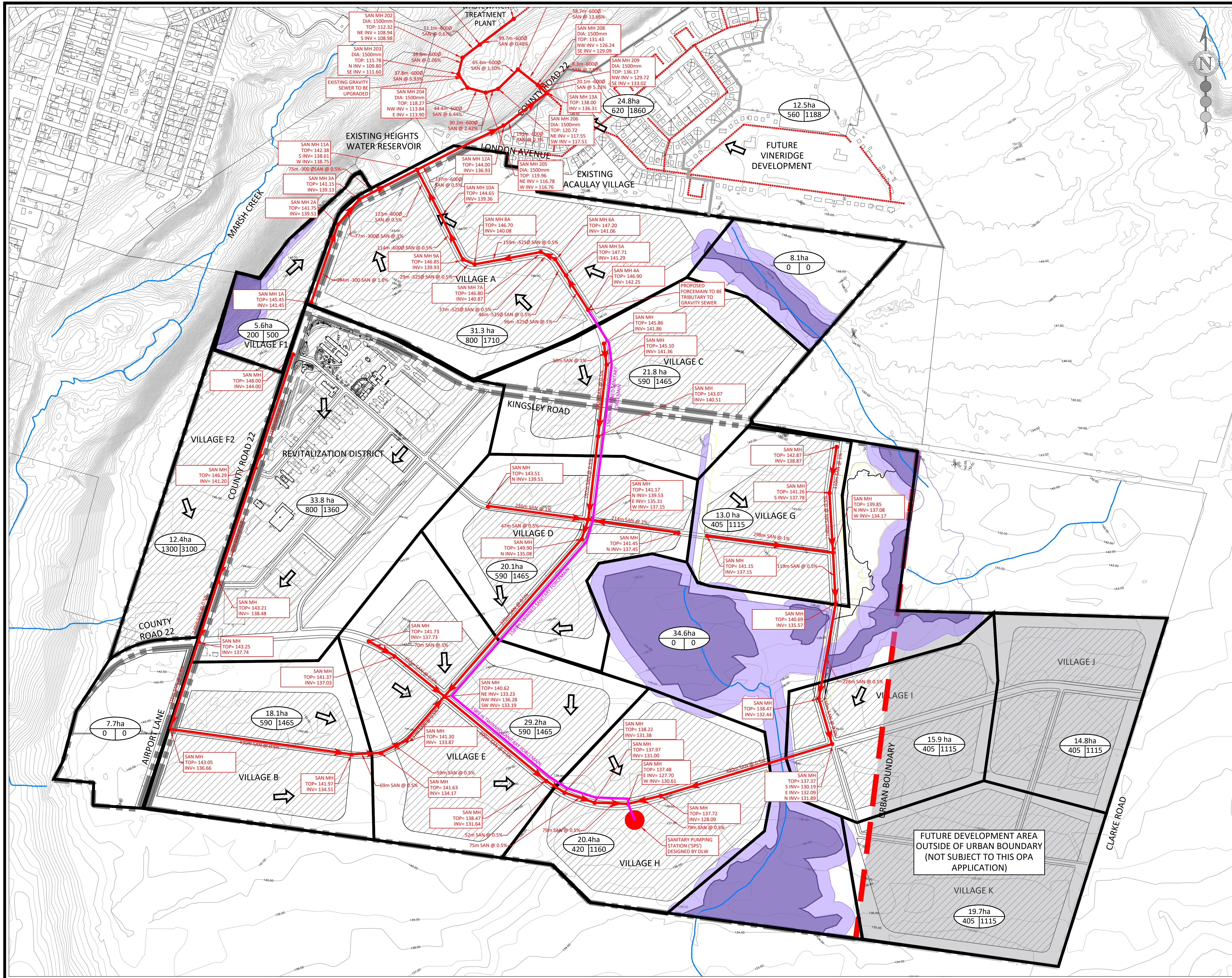
\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

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**PEC COMMUNITY PARTNERS INC.**

**BASE31 AREA CONCEPT PLAN  
 PRELIMINARY PROPOSED STORM  
 SERVICING AND STORM DRAINAGE PLAN**

DESIGNED BY: J.L.B.	CHECKED BY: S.M.S.
SCALE: 1:4000	DATE: NOVEMBER 2023
PROJECT No: 2365	FIGURE No: 2.2



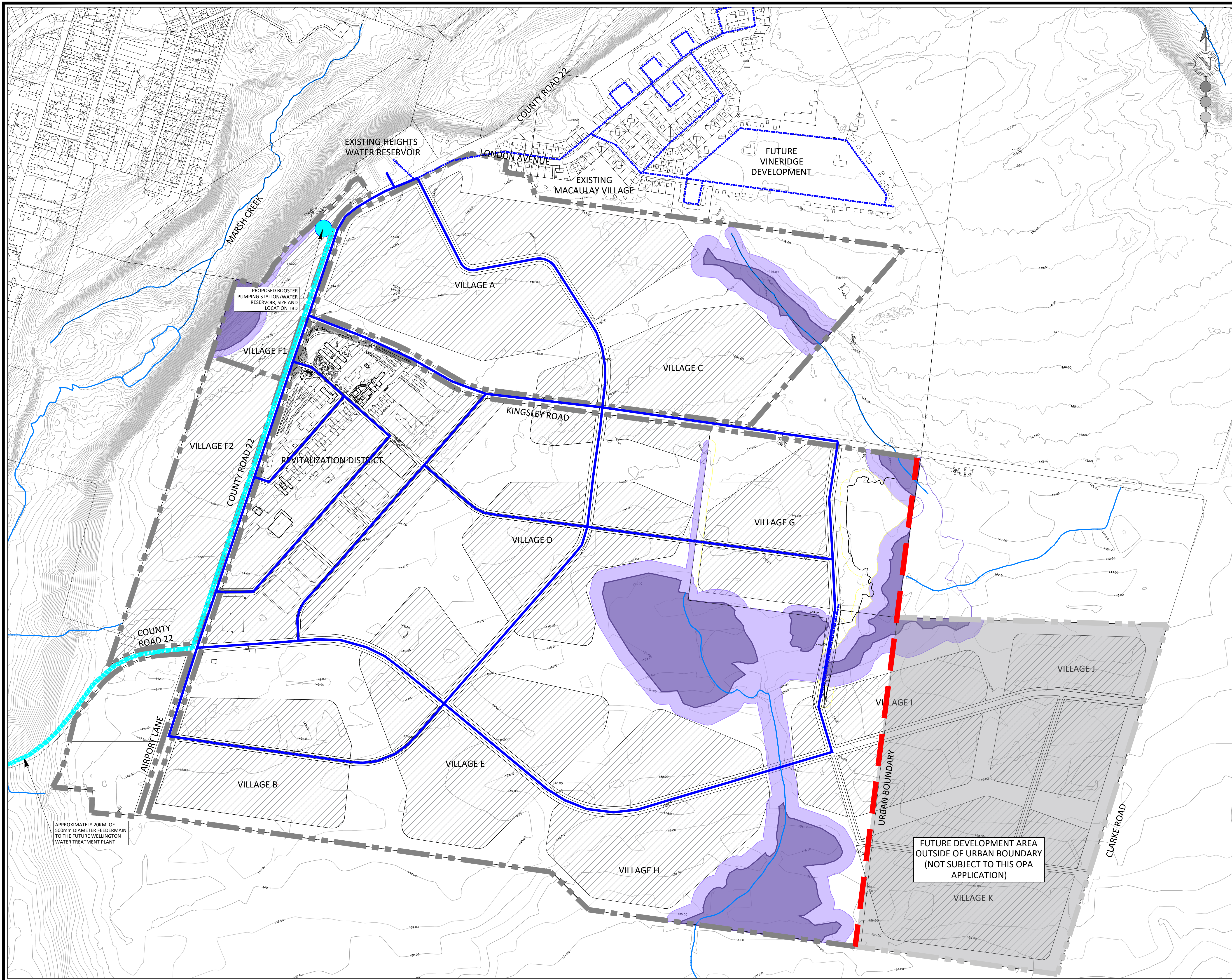
**LEGEND:**

- SANITARY SEWER AND FLOW ARROW
- SANITARY FORCEMAIN
- SANITARY MANHOLE
- HIGH CONSTRAINT AREA (PALMER ENGINEERING, 2023)
- HIGH CONSTRAINT SETBACK (PALMER ENGINEERING, 2023)
- LIMIT OF DEVELOPMENT
- LIMIT OF FUTURE DEVELOPMENT (NOT SUBJECT TO THIS APPLICATION)
- URBAN BOUNDARY
- VILLAGE BOUNDARY
- SANITARY DRAINAGE BOUNDARY
- VILLAGE AREA (HECTARES)  
POPULATION # OF UNITS
- SANITARY DRAINAGE DIRECTION
- EXISTING SANITARY SEWER
- DRAINAGE FEATURE (PALMER, 2023)

\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

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PEC COMMUNITY PARTNERS INC.	
BASE31 AREA CONCEPT PLAN	
PRELIMINARY SANITARY SERVICING	
DESIGNED BY: E.R.S.	CHECKED BY: S.M.S.
SCALE: 1:4000	DATE: NOVEMBER 2023
PROJECT No: 2365	FIGURE No: 3.2



**LEGEND:**

	LIMIT OF DEVELOPMENT
	LIMIT OF FUTURE DEVELOPMENT (NOT SUBJECT TO THIS APPLICATION)
	URBAN BOUNDARY
	LOCAL WATERMAIN
	TRUNK WATERMAIN (BY OTHERS)
	EXISTING WATERMAIN
	WATER RESERVOIR/BOOSTER PUMP (LOCATION TBD)
	VILLAGE BOUNDARY
	HIGH CONSTRAINT AREA (PALMER ENGINEERING, 2023)
	HIGH CONSTRAINT SETBACK (PALMER ENGINEERING, 2023)
	DRAINAGE FEATURE (PALMER, 2023)

APPROXIMATELY 20KM OF 500mm DIAMETER FEEDERMAIN TO THE FUTURE WELLINGTON WATER TREATMENT PLANT

PROPOSED BOOSTER PUMPING STATION/WATER RESERVOIR, SIZE AND LOCATION TBD

FUTURE DEVELOPMENT AREA OUTSIDE OF URBAN BOUNDARY (NOT SUBJECT TO THIS OPA APPLICATION)

\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

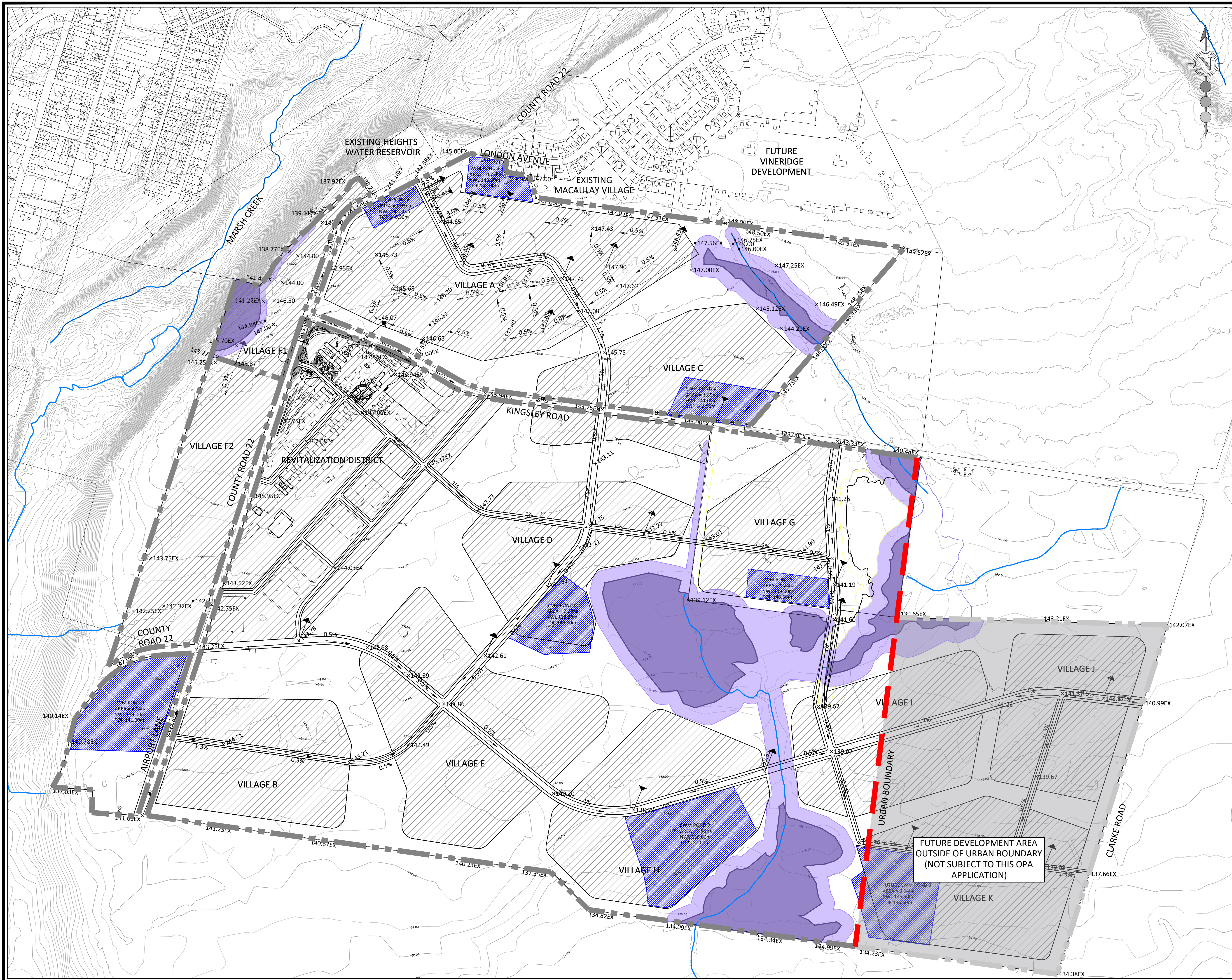
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 TEL: (905) 475-1900  
 FAX: (905) 475-8335

**PEC COMMUNITY PARTNERS INC.**

**BASE31 AREA CONCEPT PLAN**

**PRELIMINARY WATER SERVICING**

DESIGNED BY: E.R.S.	CHECKED BY: S.M.S.
SCALE: 1:4000	DATE: NOVEMBER 2023
PROJECT No: 2365	FIGURE No: 4.1



**LEGEND:**

- LIMIT OF DEVELOPMENT
- LIMIT OF FUTURE DEVELOPMENT (NOT SUBJECT TO THIS APPLICATION)
- URBAN BOUNDARY
- STORM DRAINAGE BOUNDARY
- VILLAGE BOUNDARY
- HIGH CONSTRAINT AREA (PALMER ENGINEERING, 2023)
- HIGH CONSTRAINT SETBACK (PALMER ENGINEERING, 2023)
- PROPOSED ELEVATION
- EXISTING ELEVATION
- PROPOSED HIGH POINT
- PROPOSED SLOPE
- CONTOUR
- DRAINAGE FEATURE (PALMER, 2023)
- STORMWATER MANAGEMENT BLOCK

\*NOTE: LAYOUT IS SCHEMATIC ONLY, DETAILS TO BE PROVIDED AT DETAILED DESIGN STAGE.

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**PEC COMMUNITY PARTNERS INC.**

**BASE31 AREA CONCEPT PLAN**

**PRELIMINARY GRADING PLAN**

DESIGNED BY: E.R.S.	CHECKED BY: S.M.S.
SCALE: 1:4000	DATE: NOVEMBER 2023
PROJECT No: 2365	FIGURE No: 6.1