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Days Road Sewage Pump Station

Municipal Class Environmental Assessment Phase 2 (Preliminary Findings) Report



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1.0 Introduction

1.1 Background

The Days Road Sewage Pumping Station (SPS) is located on the west side of Kingston approximately 0.6 km south of Bath Road and 1.5 km north of Front Road at 419 Days Road (refer to Figure 1-1). Approximately 90% of west Kingston is serviced by the Days Road SPS, making it a significant sewage works facility for the City of Kingston (refer to Figure 1-2 for an overview of the upstream sewershed for the Days Road SPS). The station conveys sewage directly to the Cataraqui Bay Wastewater Treatment Plant (WWTP) via forcemain(s).

The station site is located on the west side of Days Road within a residential area and immediately adjacent to LaSalle Park. The west branch of Little Cataraqui Creek is located immediately to the north with residential properties located immediately south and LaSalle Park to the west (refer to Figure 1-3 for an overview of the existing site).

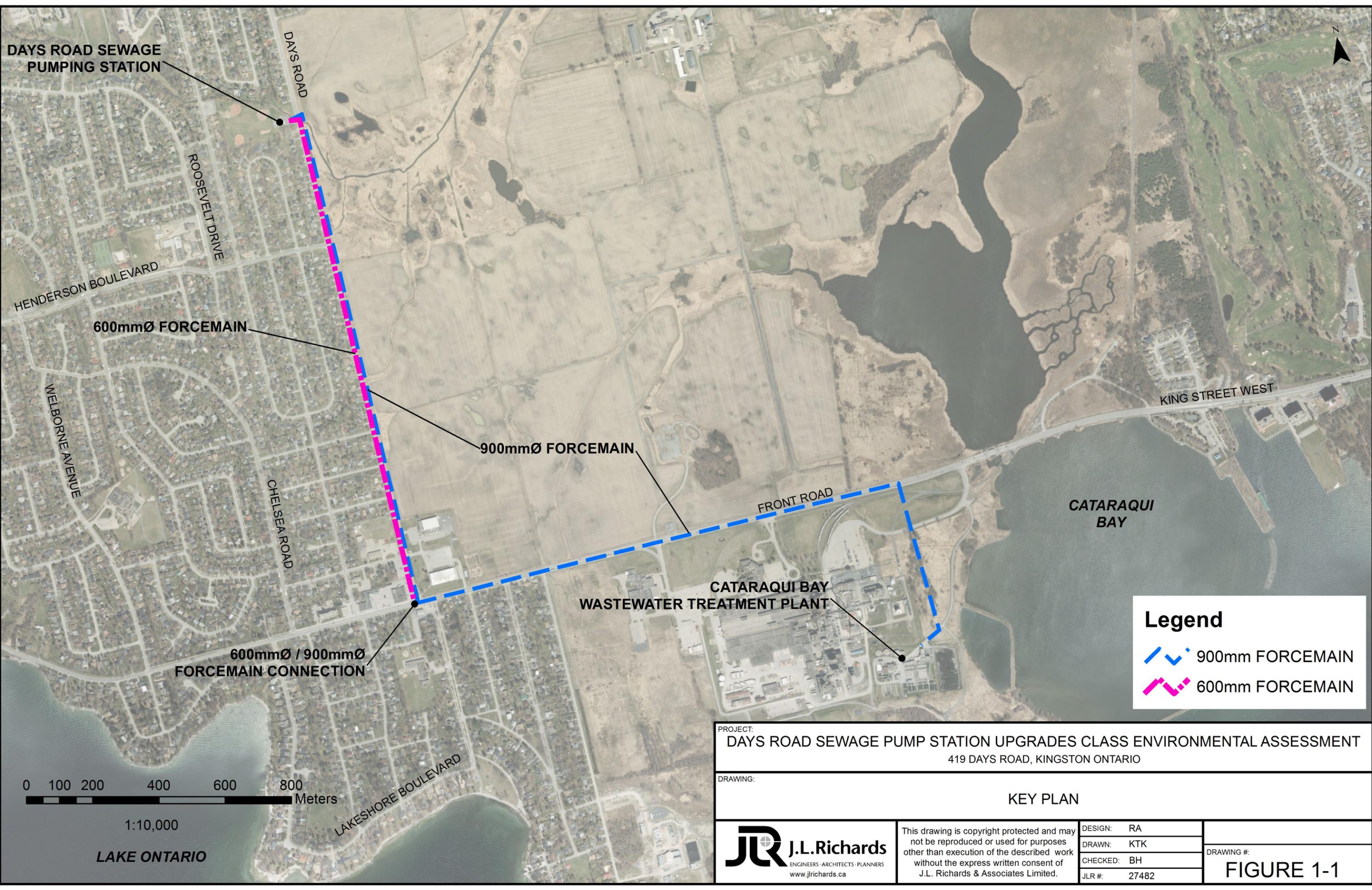
The existing facility was constructed in 1978 and upgraded in 1995. Several below grade components (i.e., civil piping, etc.) date back to the 1960s when an older, smaller station was located on this site. In general, the station currently consists of a wet/dry well configuration in a below grade concrete superstructure, and an above grade cast-in-place concrete building envelope that houses the station's various process and HVAC mechanical and electrical, instrumentation and controls equipment/components.

Flows from the upstream sewage collection system are conveyed to the station site via several below grade gravity sewers, which combine into an inlet chamber, and a manhole located on the north side of the SPS building. Flows are conveyed from there by gravity into the station on the north side (refer to Figure 1-3) and are conveyed through a screening system before entering two wet wells. There are four extended shaft, end suction centrifugal pumps that lift sewage from the wet wells into two separate forcemains (a 600 mm dia. forcemain and a 900 mm dia. forcemain) that exit the station (one from the east side of the building and one from the west side) and continue south on Days Road until they eventually combine near the Front Road and Days Road intersection into a single 900 mm dia. forcemain which conveys the sewage directly to the headworks of the Cataraqui Bay WWTP.

Utilities Kingston (UK) initiated a Class Environmental Assessment (Class EA) of the Days Road SPS in April 2017 to ensure that this station can continue to reliably accommodate existing sewage flow generated from the current community, as well as future flow resulting from new upstream development. This undertaking is proceeding as a Schedule 'B' Class EA.

A comprehensive Phase 1 Report was prepared in September 2017 that generally summarizes existing conditions and constraints associated with the station and develops a problem statement.

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DAYS ROAD SEWAGE PUMPING STATION

ROOSEVELT DRIVE
HENDERSON BOULEVARD

600mmØ FORCEMAIN

WELBORNE AVENUE

CHELSEA ROAD

900mmØ FORCEMAIN

FRONT ROAD

KING STREET WEST

CATARAQUI BAY

CATARAQUI BAY WASTEWATER TREATMENT PLANT

600mmØ / 900mmØ FORCEMAIN CONNECTION

LAKESHORE BOULEVARD

0 100 200 400 600 800 Meters

1:10,000

LAKE ONTARIO

Legend

- 900mm FORCEMAIN
- 600mm FORCEMAIN

PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

DRAWING:
KEY PLAN

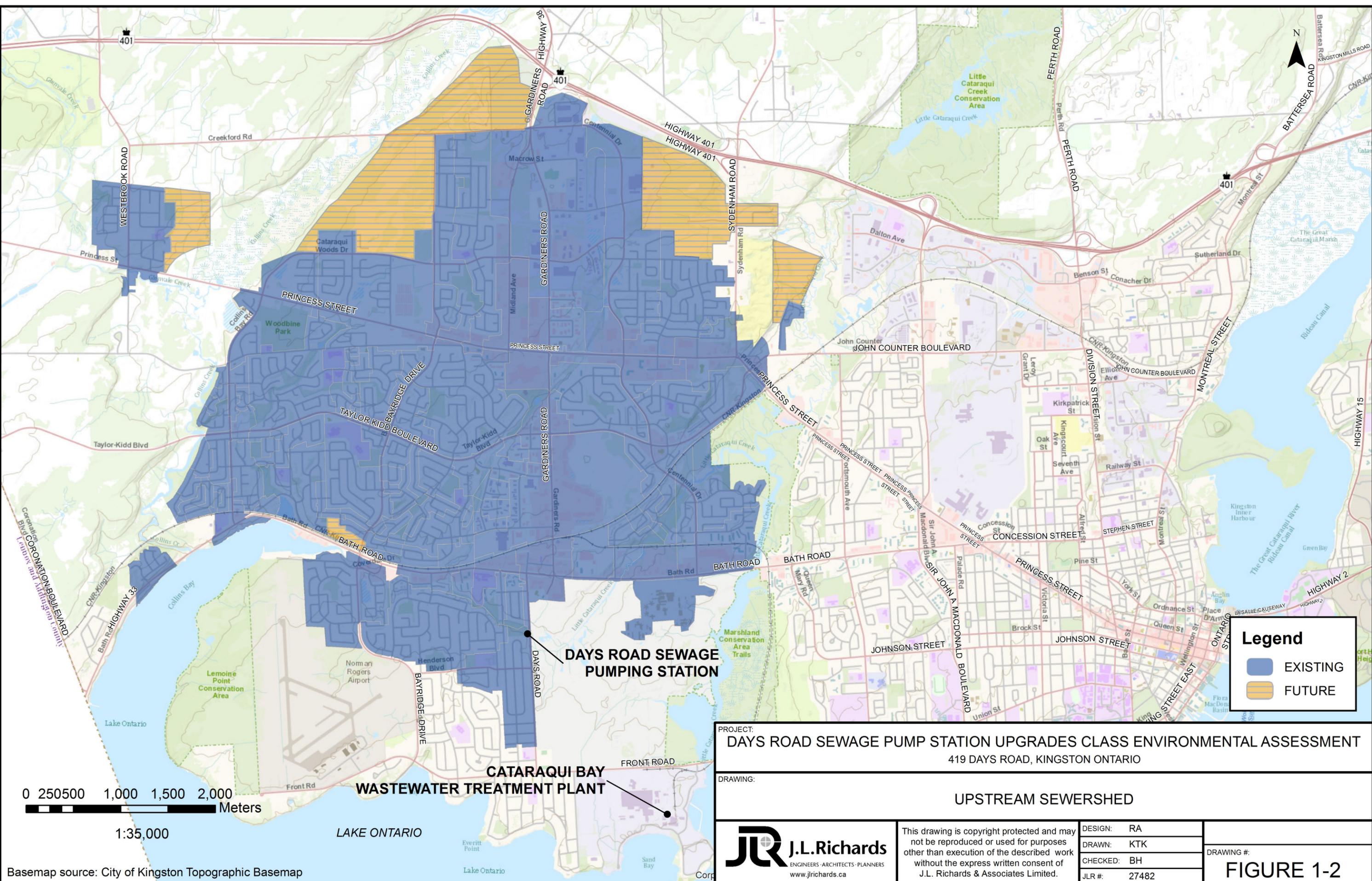
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FIGURE 1-1

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Legend

- EXISTING
- FUTURE

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DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

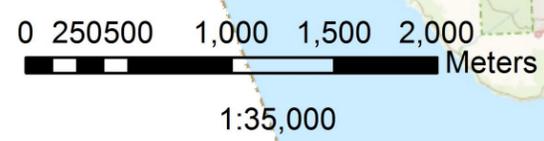
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UPSTREAM SEWERSHED

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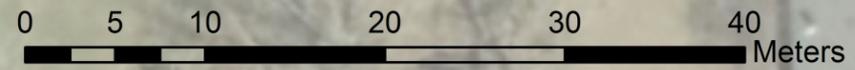
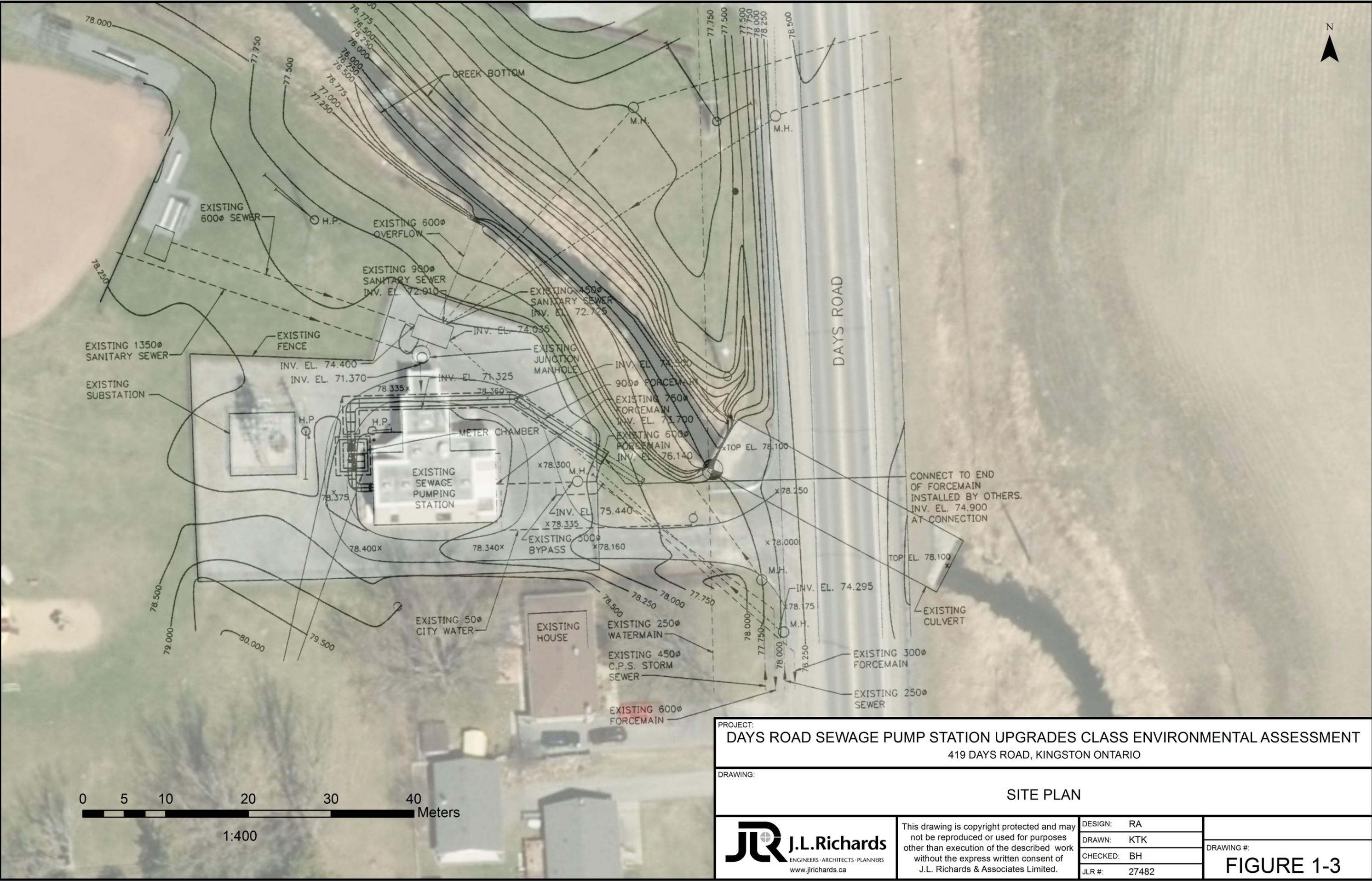
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FIGURE 1-2



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1:400

PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

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SITE PLAN



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FIGURE 1-3

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Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

The problem statement contained in the Phase 1 Report is presented below:

The Days Road Sewage Pump Station is recognized as an important and significant facility for the collection and conveyance of communal sewage generated within the western portion of the City of Kingston. Many of the station's internal components are reaching the end of their intended service lives and are in need of refurbishment or replacement within the next few years to ensure that the station remains reliable for its intended purpose. The station also does not currently have the capacity to accommodate some of the historical incoming flows and, as a result, there is a risk to upstream flooding and/or station damage under extreme wet weather events. Planned development within the upstream sewershed will further increase flows received by the station in the future, compounding this risk. An opportunity also exists to improve a number of process related elements within the station in order to optimize operations and maintenance.

Phase 2 of this Class EA generally involves establishing an appropriate design basis; evaluating potential alternative solutions to the problem statement (i.e. in this case infrastructure upgrade/renewal/replacement options; continuing the public/agency consultation process previously initiated; and ultimately establishing a preferred solution.

1.2 Objectives

The primary objective of this Class EA is to undertake a comprehensive review of the Days Road SPS including assessing its current condition and capacity, identifying short and long term needs, identifying and selecting a preferred alternative for the ongoing management and conveyance of current and future sewage flows received at the station over a 20-year planning period. The objectives of this Phase 2 (Preliminary Findings Report) are as follows:

- To summarize Class EA Phase 2 work completed to date.
- To confirm existing problems associated with the existing pumping system infrastructure.
- To summarize future system requirements, including hydraulic capacity requirements.
- To identify and evaluate possible alternatives to address identified problems associated with the pumping system infrastructure.
- To provide the Preliminary Findings for the above noted evaluations and recommendations for consideration by UK, the public, agencies and other stakeholders.
- To update the public and agency/stakeholder consultation work completed during Phase 2.

2.0 Public And Agency Consultation

Public and agency consultation is an integral and mandatory part of a Schedule 'B' Class EA process. Figure 2-1 illustrates the Class EA process and consultation requirements for this project. As established in Phase 1, the review for this Schedule 'B' Class EA is being accomplished by 1) Correspondence with mandatory contacts and identified project stakeholders; and 2) A mandatory Public Information Centre.

2.1 Mandatory Contacts

It is a requirement of the Class EA planning process to solicit input from review agencies and project stakeholders. A list of contacts has been developed for this Class EA based on responses received in Phases 1 and 2 of the project. The list of contacts for this Class EA is presented in Appendix 'A'.

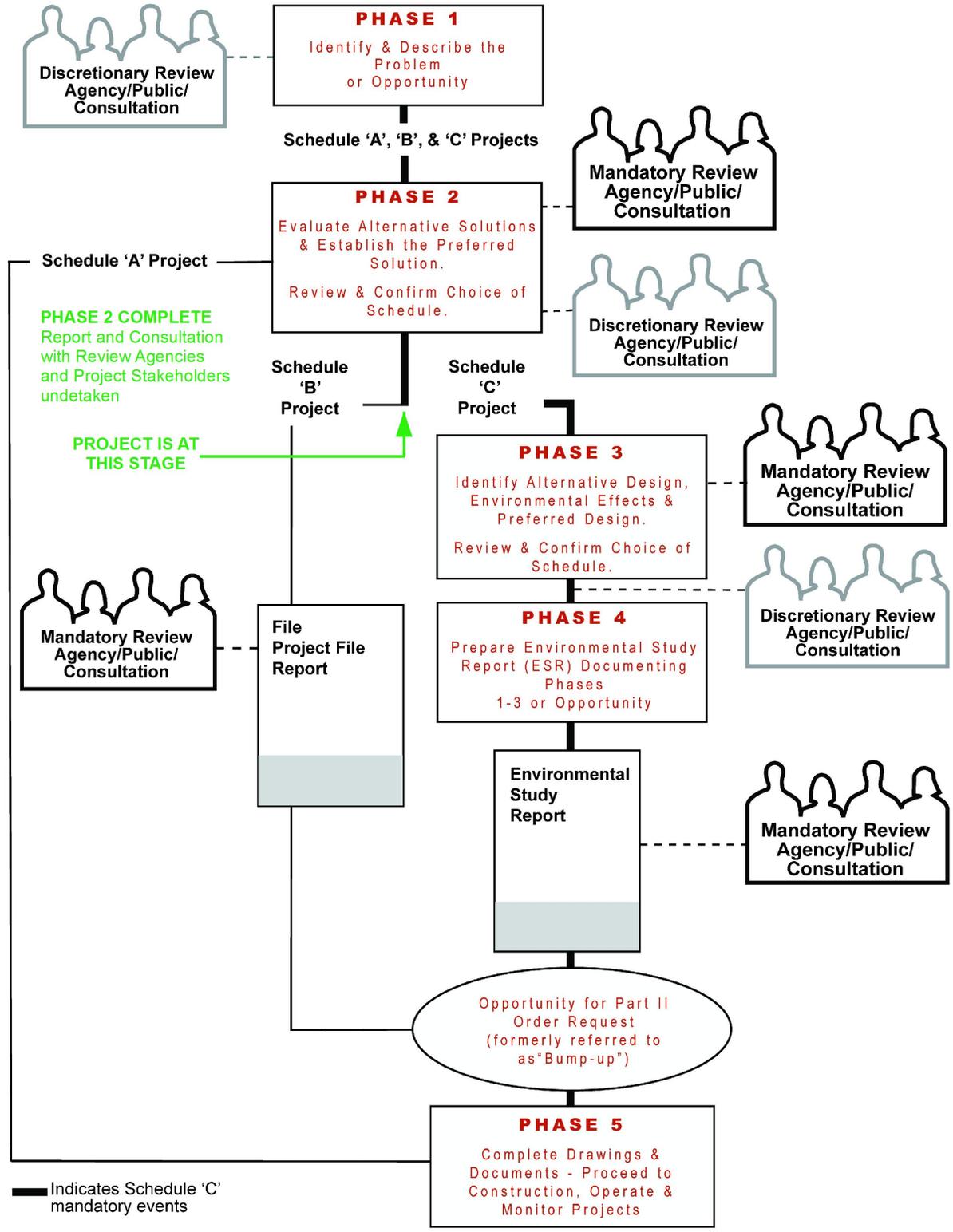
2.2 Public Consultation

The Class EA process requires consultation with parties that may potentially be affected by the project. During Phase 1, a consultation plan was prepared and implemented to facilitate communication with the public and other potentially interested stakeholders. Key components of the public consultation plan are as follows:

- Establishment of a project specific web page on the Utilities Kingston website;
- Official notice of study commencement (via local papers, mailings and web page);
- Issuance of letters advising of project commencement and soliciting comments at an early stage. Letters were issued to the local community surrounding LaSalle Park and residents within a 200 m radius of the site.
- Receipt of comments/correspondence from the public and regulatory agencies.

The following is summary of agency correspondence received following receipt of the official notice of study commencement and any resulting actions that were taken.

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PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

DRAWING:
CLASS EA PROCESS



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FIGURE 1-4

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**Days Road Sewage Pump Station
Phase 2 (Preliminary Findings) Report**

Table 2-1: Summary of Agency Correspondence

Agency	Correspondence Received	Identified Issues or Requirements	Actions Taken
Transport Canada	June 20, 2017	<ul style="list-style-type: none"> Self-assessment of study area impacts on the Navigation Protection Act, Railway Safety Act, Transportation of Dangerous Goods Act and Aeronautics Act was requested. 	<ul style="list-style-type: none"> The study area includes Little Cataraqui Creek, but it is not considered a navigable water body. No railways or aviation facilities are within the study area. No transportation of dangerous goods is required as part of the study scope.
Ministry of Tourism, Culture and Sport (MTCS)	June 21, 2017 August 1, 2017	<ul style="list-style-type: none"> The EA project may impact archaeological resources within the study area. An Archaeological Assessment (AA) should be undertaken and submitted for MTCS review. MTCS reviewed the study area and confirmed no historic sites were reported to exist. 	<ul style="list-style-type: none"> An Archaeological Assessment of the study area was undertaken and was entered into the MTCS Ontario Public Register (refer to Section 3.1).
Canadian Environmental Assessment Agency (CEAA)	June 30, 2017	<ul style="list-style-type: none"> Potential project impacts on federal lands require a federal environmental assessment to be completed. 	<ul style="list-style-type: none"> Option(s) that impact the neighbouring federal jurisdiction (i.e. Corrections Service Canada lands) would identify this requirement.
Cataraqui Region Conservation Authority (CRCA)	June 28, 2017	<ul style="list-style-type: none"> The study area was identified to include the 1:100 year flood plain for the West Branch of Little Cataraqui Creek. CRCA guidelines for building design, floodproofing, bank stabilization measures are to be applied. Stormwater management is recommended, in keeping with the City of Kingston policy on redevelopment. 	<ul style="list-style-type: none"> Floodplain mapping was obtained from the CRCA. New SPS infrastructure is to be located outside the erosion control limit. No further action within the Class EA study context is required.
Ministry Northern Development and Mines (MNDM)	July 11, 2017	<ul style="list-style-type: none"> MNDM reviewed the study area and determined no concerns with respect to geology or mineral resource potential. 	<ul style="list-style-type: none"> No action was required.

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One public meeting during Phase 2 is required for a Schedule 'B' Class EA undertaking. A 30-day review period is also mandatory after the preparation and filing of the Phase 2 project file and a Notice of Completion via local newspapers, mailings and the web page.

3.0 Specialized Studies

Phase 2 of this Class EA included undertaking several specific tasks with the goal of further defining the site specific conditions and potential constraints that would be key issues in the assessment of options and the ultimate selection of a proposed preferred solution(s) to the problem(s) identified in Phase 1. In order to ensure a thorough assessment, two specialized studies were undertaken to better define some environmental constraints that are present at the Days Road SPS site. These studies included a Stage 1 Archaeological Assessment and a Geotechnical Desktop Study. A summary of the key results of these studies is presented in the following sections (refer to Appendix 'B' for full copies of the detailed reports).

3.1 Stage 1 Archaeological Assessment

A Stage 1 Archaeological Assessment was undertaken by Golder Associates Limited. The objectives of this assessment were to identify known archaeological sites within the vicinity of the study area, assess the archaeological potential of adjacent vacant land and provide recommendations as to whether any additional archaeological investigations are required. The following are the key findings of the Stage 1 Archaeological Assessment:

- Cartographic and census records for Kingston Township provide evidence of the settlement history for this area dating back to at least the mid-nineteenth century. Additional evidence for historically significant occupation in the general vicinity of the study area is documented by four known archaeological sites located within 1 kilometre of the subject property, as well as Aboriginal material recovered from the LaSalle Park area.
- The parkland area is identified by the City of Kingston Archaeological Master Plan as having archaeological potential, since the properties are within 1 km of known archaeological resources, proximity to water, proximity of historic transportation routes, as well as Aboriginal material recovered from the LaSalle Park area. The existing SPS property has no archaeological potential, due to disturbances that occurred during construction of the facility.
- Based on the high archaeological potential for significant Aboriginal material cultural resources identified within the study area, it is recommended that 1) all remaining undisturbed land outside the SPS site be archaeologically investigated with hand excavated test pits in 5 metre intervals to the depth of at least 5 centimeters into natural in situ subsoil.

3.2 Geotechnical Desktop Study

A geotechnical desktop study of the existing SPS site was undertaken by Golder Associates Limited. Published geological mapping and selected well records in close vicinity to the site (i.e. within 600 m) were reviewed to determine general subgrade conditions. The following are the key findings of the Geotechnical Desktop Study:

- The overburden consists of 1.5 m to 3 m of clayey soils overlying limestone bedrock.
- Groundwater levels are likely consistent with the creek water level, approximately 1.5 m below grade.
- The existing SPS is likely founded on bedrock. Trenches and the below grade structure were excavated into the bedrock, possibly by blasting. Edges of the existing rock excavations are assumed to have some blast damage.
- New excavations advanced by hoe ramming or blasting for any proposed new below-grade infrastructure must be controlled to mitigate vibration damage on the adjacent existing below grade structures. It is recommended that a blasting specialist be retained to prepare blast designs and a monitoring program for existing infrastructure.
- Blasting may be feasible for new structures located at least 25 m from existing below-grade infrastructure that is not slated for demolition or abandonment.
- Underpinning (i.e. dowels or rock bolts) will likely be required to support any proposed below-grade structure expansions (i.e. wet well expansion).
- Stable excavations into the overburden will likely be provided by sloping at 1H:1V. Localized shoring may be required to reduce the potential for undermining existing buried services. Shoring requirements would be relatively minor, based on the shallow depth of the overburden.
- Dewatering requirements for new deep excavations are expected to be significant, given the relatively shallow groundwater table and the potential for inflow from existing buried service rock trenches.
- All proposed below-grade structures will be supported on bedrock. Settlement is expected to be negligible. Foundation walls for water-retaining structures (i.e. wet wells) shall be designed to withstand hydrostatic water pressure from 1 m below existing grades. A 1.5 m design frost penetration depth shall apply for all new foundations design.

4.0 Design Basis (Phase 2)

During Phase 1, the design flows rationale for the Days Road SPS upgrades was investigated based on the 2016 Sewage Master Plan recommendations and a new major industry contribution in the upstream sewershed. The proposed design flow for the future Days Road SPS was initially assessed to range between 164 L/s (minimum day) to 1,256 L/s (peak hour) based on previous studies, historical data and future development projections.

Following completion of the Phase 1 Report, additional flow data corresponding to a major wet weather event that occurred on July 24 and 25, 2017 was received and analyzed. This wet weather event generated a peak hourly flow of 1,270 L/s, which exceeded the previously proposed 1,256 L/s peak hourly flow. Another extreme event also occurred in May 2017.

Considering that two extreme wet weather events occurred only months apart (May and July, 2017), the proposed design flows rationale was revisited to account for the increased frequency of these wet weather events and their associated peak hour flows. An approach was used that calculates design firm capacity based on the recent wet weather peak hourly flow, while accounting for the future available Cataraqui Bay WWTP treatment capacity after expansion.

The previously completed Sewage Master Plan recommended a 20 year upgraded firm capacity for the Days Road SPS of 1,200 L/s, corresponding to a 2016 maximum flow of 1,077 L/s and an average day flow of 250 L/s.

The 20 year average day design flow was subsequently updated to 354 L/s, which includes the 2016 Sewage Master Plan future average day flow (297 L/s), the potential future connection of existing residences on Eunice Drive, Arnold and Brass Streets (1 L/s), and the phased expansion of the Feihe dairy plant (Phase 1 Average Day Flow of 26 L/s, Phases 1 plus Phase 2 Average Day Flow of 56 L/s, per Section 5.2 of the Phase 1 Report). New linear sewage collection infrastructure associated with new development would likely not result in additional infiltration/inflow contributions during wet weather events. Also, the future Feihe dairy plant will likely include on-site storage and treatment of process wastewater, limiting peak flows to 56 L/s. Therefore, the future peak hour flow is calculated as 1,373 L/s, representing the summation of the 2017 wet weather peak hourly flow (1,270 L/s), the 2016 Sewage Master Plan future average day flow increase (47 L/s) and the Feihe dairy plant ultimate design flow (56 L/s).

In addition to the above, the Cataraqui Bay WWTP design capacity also needs consideration when assessing the Days Road SPS capacity expansion potential. The Preliminary Design Report and various Technical Memorandums prepared during the Cataraqui Bay WWTP Expansion Preliminary Design Phase were reviewed and additional updated information was obtained on other upstream contributors to the WWTP. The maximum allowable Days Road SPS capacity was then calculated by subtracting the Portsmouth PS, Crerar PS, Lakeshore PS and Invista gravity sewer flow

**Days Road Sewage Pump Station
Phase 2 (Preliminary Findings) Report**

from the Cataraqui Bay WWTP rated peak instantaneous flow of 182,300 m³/d (2,110 L/s), as illustrated in Table 4-1 below:

Table 4-1: Summary of Cataraqui Bay WWTP Upstream Sewershed Flows

	Peak Instantaneous Flow/ Firm Capacity
Cataraqui Bay WWTP	2,110 L/s
Portsmouth SPS	450 L/s
Crerar SPS	57 L/s
Lakeshore SPS	142 L/s
Invista Gravity Sewer	28 L/s
Remaining Cataraqui Bay WWTP Design Capacity Available for the Days Road SPS	1,430 L/s

Since the Cataraqui Bay WWTP is able to accommodate a maximum of 1,430 L/s and taking into consideration climate change impacts, it would be prudent to design any new SPS upgrades for a firm pumping capacity of 1,430 L/s. The design basis was subsequently updated as follows:

Table 4-2: Updated Sewage Design Flows Basis

Design Flow Parameters	Phase 1 Proposed Design Flows	Phase 2 Updated Design Flows
Existing Minimum Day	164 L/s	164 L/s
Existing Average Day	250 L/s	250 L/s
Existing Peak Hour	1,200 L/s	1,270 L/s
Future Average Day	276 L/s to 306 L/s	298 L/s to 354 L/s
Future Peak Hour	1,226 L/s to 1,256 L/s	1,373 L/s
Design Firm Capacity	1,256 L/s	1,430 L/s

5.0 Evaluation of Pumping System Alternatives

5.1 Summary of Existing Conditions and Challenges

The Days Road SPS is a critical component in the sewage collection/conveyance system for the west end of the City of Kingston. The SPS needs to be appropriately maintained and expanded as is necessary to ensure continued and reliable service.

As previously noted, the Days Road SPS conveys approximately 90% of the sewage generated in the City's west end to the Cataraqui Bay WWTP. The existing facility was constructed in 1978 and upgraded in 1995 to include a fourth vertical centrifugal pump, electrical, instrumentation and controls upgrades. Several below grade components (i.e., civil piping, etc.) date back to the 1960s when an older, smaller station was located on this site.

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

Several of the station components are therefore at least 20+ years in age and many others are nearly 40 years in age with a few that are even older. The Ministry of the Environment and Climate Change (MOECC) Certificate of Approval (C of A) for the Days Road SPS indicates a current firm rated capacity (i.e. capacity of the station with the largest pump out of service) of 77,760 m³/day (900 L/s) while recent flows have shown to exceed this firm capacity.

5.1.1 Sewage Pumping Station

In general, the SPS configuration consists of a wet/dry well configuration within a below grade concrete superstructure, and an above grade cast-in-place concrete building envelope that houses the station's various process and HVAC mechanical and electrical, instrumentation and controls equipment and components.

The SPS site is located within a 1,350 m² fenced area on a parcel of land owned by the City of Kingston, which also includes the LaSalle Park. The SPS building and electrical substation footprints are 190 m² and 75 m², respectively, within the fenced site.

Four (4) gravity sewers discharge to a rectangular junction chamber and manhole located north of the SPS building. A 600 mm dia. sewer outlets to the east wall and 450 mm dia. and 900 mm dia. sewers outlet from the north wall of the junction chamber. The junction chamber is equipped with a 600 mm dia. gravity overflow sewer, which discharges to the creek north of the SPS site. The junction chamber outlets to an adjacent junction manhole via a 900 mm dia. sewer. A 1,350 mm gravity sewer passes through the junction manhole from the northwest, entering the SPS north of the building.

The SPS building is approximately 190 m² in area, consisting of a ground floor screening room, which also provides an access stairwell down to the wet well basement levels (classified as a confined space); a ground floor pump motor room, which also houses the MCC and control panels; a separate washroom and small storage room; basement levels that house the pumps and the discharge header. The pump drive shafts extend from the below grade pump level up to the main floor where they connect to the pump motors.

Sewage enters the SPS via a 1,060 mm wide inlet channel equipped with a travelling rake type mechanical bar screen. Two (2) 1,060 mm wide overflow channels located on either side of the mechanical bar screen allow sewage to bypass the mechanical bar screen if it is blocked, or isolated for maintenance, using upstream and downstream slide gates. Sewage flow from the inlet channel is split into two (2) wet wells through 760 mm wide slide gate openings. The west and east wet well dimensions above the benching are 2,660 mm x 4,950 mm and 2,660 mm x 4,800 mm, respectively. The estimated current working volume of the wet well is approximately 27 m³, although this is increased somewhat under very high flow conditions by utilizing the floor area above the wet well.

Sewage from the wet wells is drawn into four (4) extended shaft, vertical end suction centrifugal pumps, via 600 mm x 900 mm tapered flumes cast into the floor slab of the third basement level.

**Days Road Sewage Pump Station
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Pumps No. 1 and No. 2 are connected to the west wet well cell and Pumps No. 3 and No. 4 are connected to the east well wet cell. Pump suction flumes are equipped with sluice gates and extended shaft handwheel operators located on the first basement level, above the wet wells. Pump specifications and characteristics are summarized in Table 5-1:

Table 5-1: Existing Pump Characteristics

Pump No.	Pump Manufacturer / Model	Rated Duty Points	Motor / Drive Specifications
1	Worthington Corp. / 14MNZ01	336 L/s at 23 m TDH	112 kW electric inverter duty motor, VFD
2	Ingersoll Dresser / 4MNZ16-FR7L	336 L/s at 23 m TDH	112 kW electric motor, soft starter
3	Worthington Corp. / 20MNHZ01	748 L/s at 23 m TDH	260 kW dual drive electric motor / diesel engine
4	Worthington Corp. / 14MNZ01	336 L/s at 23 m TDH	112 kW electric inverter duty motor, VFD

All discharge piping connects to a 750 mm diameter concrete pressure pipe (CPP) header, located on the second basement level. The east end of the header is equipped with a 450 mm dia. magnetic flow meter, which transitions to a 600 mm dia. forcemain. The west end of the header transitions to a 900 mm dia. forcemain. The header is equipped with a 600 mm isolation valve, which allows discharge flow from Pumps No. 1 and No. 2 to be directed to the 900 mm dia. forcemain, and Pumps No. 3 and No. 4 to be directed to the 600 mm dia. forcemain. Each header section is equipped with a dedicated 150 mm dia. cushioned surge relief valve assembly, which discharges to the wet wells.

The SPS is electrically fed from the original 44 kV/600V on-site substation and 750 kVA transformer. The electrical distribution system consists of a Motor Control Centre (MCC), which includes two Variable Frequency Drives (VFDs) and panelboards. The total connected “pump motor” load for the station is 600 kW (800 HP). The Pump No. 1 VFD was recently replaced.

The SPS is connected to the UK SCADA Wide Area Network (WAN) via an overhead fibre optic line that runs along Days Road. SCADA is remote from the Cataraqui Bay WWTP (a single SCADA screen provides monitoring and remote control options). This includes East and West Wet Well level monitoring, flow monitoring of both discharge forcemains (using magnetic flow meters); pump status; pump speed for the VFD driven pumps; and other systems, including security.

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

Various current problems and future challenges associated with the Days Road SPS were documented in the Phase 1 Report. The following are some of the key issues:

- The existing overflow line is not functional due to a seized flap gate. During wet weather events, water levels in the Little Cataraqui Creek typically exceed the overflow outlet obvert, which also renders the overflow as ineffective.
- The firm pumping capacity of the existing SPS is not sufficient for accommodating the incoming sewage flows during major wet weather events.
- The two main duty pumps (Pumps No. 1 and No. 4) are operating at significantly less capacity as compared to their rated capacity (approximately 30% less), likely due to worn components. These duty pumps are rebuilt on a relatively frequent basis.
- Pump cycle times during minimum day flow conditions could be increased by reducing VFD speed and/or increasing the pump start level set points in wet wells.
- The mechanical bar screen system is at the end of its intended service life and is in need of a complete replacement.
- Significant corrosion was observed on piping and miscellaneous metals throughout the SPS. Various process piping and valves require replacement. Concrete supports, pumps and other equipment bases have significant cracks.
- UK operations staff typically utilize the basement levels above the wet wells to provide emergency storage during extreme wet weather events. The normal wet well operating volume provides only 1.5 to 3.3 minutes (based on high water level setpoints of 71.323 m and 72.771 m) of storage during peak hourly flow rates. The SPS could benefit from additional wet well storage.
- UK operations staff have occasionally operated all four pumps at the same time, which is not the intention of the SPS design.
- The majority of the existing electrical system is operating beyond its intended service life. The electrical substation and service entrance is ungrounded and should be replaced. The MCC and panelboards need to be upgraded with a higher circuit capacity.
- The Programmable Logic Controller (PLC) is considered obsolete and should be replaced. The original wet well level floats operation is unreliable. The lack of redundancy on wet well level monitoring is also considered a risk.

5.1.2 Forcemains

A 900 mm dia. HDPE DR26 forcemain installed in 1995 exits the station on the west side through a flow metering chamber and runs around the north side of the building and then extends out to Days Road where it continues south and ultimately to the Cataraqui Bay WWTP. A 600 mm dia. concrete lined cylinder (C-310) forcemain installed in 1978 exits the building from the east side and runs south along the west side of Days Road until it combines with the 900 mm dia. forcemain at the Front Street and Days Road intersection.

The existing forcemain capacity is typically constrained by the minimum flow velocity (0.6 m/s) required to minimize solids deposition and residence time in the forcemain, so as to minimize the production of hazardous and corrosive hydrogen sulphide and methane gases. Conversely, maximum flow velocity is constrained by the maximum hydraulic capacity of the existing forcemains, defined by their maximum allowable working pressures.

In this case, a total pumping flow of 637 L/s is required to provide minimum scouring velocity (0.6 m/s) in the combined existing 600 mm dia. and 900 mm dia. forcemains (AECOM, 2016). The maximum hydraulic capacity of the existing forcemains are defined by their maximum allowable working pressures, which represents the maximum allowable surge pressure plus normal operating pressure exerted on a forcemain.

The frequency of hydraulic transient events and corresponding surge conditions, and the maximum allowable working pressure that should be applied in each case, is dependent on the starters and drive technologies for the pumps. Constant speed pumps and full voltage, non-reversing starters typically produce frequent and sudden flow changes that are more susceptible to surge conditions

. Pumps equipped with soft starters or VFDs produce more gradual flow changes which mitigate surge conditions and can subsequently allow for higher pipe flows. It is reasonable to assume in this case that any potential replacement pumps would be equipped with either soft starters or VFDs.

Working pressure and the corresponding maximum flow for infrequent surge conditions are estimated in the following table, based on an assumed DR26 rating for the 900 mm diameter HDPE forcemain and C-310 pre-stressed steel cylinder type concrete pressure pipe construction for the 600 mm diameter forcemain.

Table 5-2: Assumed Maximum Existing Forcemains Capacity

Forcemain Diameter, Material	Forcemain Surge Parameters			
	Maximum Flow ¹	Forcemain Pressure Head ¹	Working Pressure	150% Pressure Class/Rating ²
600 mm dia. C-310 Concrete Lined Pipe	520 L/s	22 m	211.23 m	211.23 m
900 mm dia. DR 26 HDPE	1,430 L/s	42 m	95.45 m	132.02 m

¹ Based on 600 mm dia. and 900 mm dia. forcemain system curve data obtained from the 2016 AECOM Condition and Capacity Assessment Report.

² Pressure Class/Rating for C-310 Concrete Lined Pipe = 140.82 m (200 psi), HDPE DR 26 = 88.01 m (84 psi).

Based on the foregoing, the working pressure (95.45m) corresponding to the design firm pumping capacity (1,430 L/s) is less than the 150% Pressure Class/Rating for the 900 mm dia. forcemain, indicating additional forcemain capacity may be available for future flows.

The 600 mm dia. pipe provides some additional capacity, but cannot accommodate the full future flow of the station (i.e. there is not full redundancy in the forcemain from the SPS to the intersection of Days Road and Front Street). Existing surge relief valves installed on the discharge header will still provide surge pressure mitigation.

5.1.3 Electrical Service Entrance

The existing ungrounded 44 kV system likely presents significant Ground Potential Rise (GPR) risks to the general public. This is primarily due to the moderately high short circuit levels with respect to the highly resistive nature of the native soils in Kingston (i.e. bed rock).

Supplementing the existing grounding system to the 44 kV substation will likely not address this concern, due to poor soil conditions on the site and adjacent park. Line reactors are also not a viable solution to mitigate GPR risks, primarily due to voltage regulation concerns and reliability requirements of the pumping system. A significantly oversized 44 kV step down transformer would be required to ensure VFDs do not inadvertently trip on brown-out conditions from the line reactance in the supply circuit.

Due to the aforementioned safety risks, the existing service entrance and 44 kV substation are to be replaced with a new 750 kVA transformer connected to the grounded 8.32 kV system. By providing a conductive return path for a potential fault on medium voltage service supply, the resulting GPR risks would then be easily managed within the fenced in area limits of the pump station site and the adjacent park. Nearby residential areas would be unaffected by a fault event. The transformer is expected to less than 50% loaded (approximately 350 kW) for the vast majority of its design life. A redundant emergency generator is also proposed to supplement the power supplied during peak power demands that are associated with extreme wet weather events.

5.2 Summary of Future Sewage Pumping Station Requirements

The future requirement of the Days Road SPS is to ensure a reliable means of conveying reasonably expected flows to the Cataraqui Bay WWTP. The system needs to have sufficient capacity and redundancy to minimize risks of failure that could result in basement flooding and/or raw sewage bypasses. This is accomplished by first understanding the condition and capacity of the existing system and then planning for periodic renewal within allowable budget and other constraints.

Based on the problems and challenges identified in Phase 1 of this Class EA and presented in Section 5.1 of this Phase 2 Report, upgrades to the SPS are being driven by the deteriorating condition of critical pumping system components (e.g. pumps, mechanical bar screen, etc.) and the need to increase pumping capacity to accommodate peak flows associated with extreme wet weather events, that appear to be occurring with increasing frequency.

The following sections present possible options that can be implemented to address the problems associated with the Days Road SPS.

5.3 Evaluation Methodology

One of the objectives of Phase 2 of a Class EA is to develop and evaluate feasible solutions to the problem(s) identified in Phase 1. All reasonable potential solutions to the problem(s), including the 'Do Nothing' option, are considered. Class EAs for sewage pumping stations typically result in the identification of a broad range of solutions. In order to facilitate the evaluation and selection of the preferred alternative, a transparent and logical assessment process was established.

The first evaluation stage considers the overall feasibility of potential solutions that addressed the problem statement. Alternatives that are considered impractical to implement are not carried forward to a more detailed evaluation stage.

The second stage of the evaluation process consists of a more detailed evaluation of feasible alternatives based on a number of natural, social, cultural, technical and economic environment criteria, including: groundwater, soils and geology, topography, aquatic life and vegetation, terrestrial vegetation and wildlife, residential, recreational, public health, aesthetics, vibration and noise, air quality and odour propagation, archaeological and heritage resources, expandability, constructability, design and construction schedule, operations flexibility, climate change resiliency, capital and operational costs.

Each criterion has been assigned a "weighted" score, to reflect its relative importance in evaluating alternatives. Criteria scores for each option are then calculated by applying the following multipliers to the weighted score of each criterion, based on assessment of the relative impact of each option on the criteria. For the capital and operational costs criteria, weighted scores were calculated by standard deviation for the feasible alternative with the lowest opinion of probable costs, which score 100%.

Table 5-3: Detailed Evaluation Impact Level and Scoring System

Impact Level	Score Multiplier
High Positive Impact	100%
Moderate Positive Impact	80%
Low Positive Impact	65%
No Impact	50%
Low Negative Impact	30%
Moderate Negative Impact	15%
High Negative Impact	0%

5.4 Identification and Screening of Possible Alternatives

Five (5) feasible alternatives were identified to add address the aforementioned problems and challenges, as follows:

- Option 1: Do Nothing
- Option 2: Add Equalization Storage, Maintain Existing Sewage Pumping Station Firm
- Rated Capacity
- Option 3: Upgrade / Expand Existing Sewage Pumping Station Footprint and Capacity
- Option 4: Replace Existing Sewage Pumping Station on the Existing Site
- Option 5: Replace Existing Sewage Pumping Station on a New Site

It should be noted that the preliminary list of options presented in the Phase 1 Report included equalization storage sub-options for Options 3, 4 and 5. These sub-options have since been removed from consideration, since the Cataraqui Bay WWTP expansion was confirmed to have sufficient treatment capacity to accommodate the design peak hour flow for the Days Road SPS. Therefore, it is not necessary to consider equalization storage concurrently with pumping capacity upgrades. In other words, the only perceived advantage of equalization storage would be if it could be used to eliminate the need for a pumping station expansion.

5.4.1 Do Nothing

The “Do Nothing” option is the baseline Class EA option by which other options can be compared. “Doing nothing” would not address the issues identified as concerns during Phase 1 including the deteriorating condition of the mechanical bar screen, pumps, process valves and piping, the 44kV substation, MCC and other components.

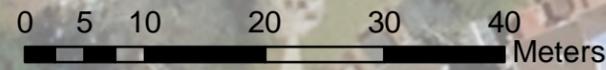
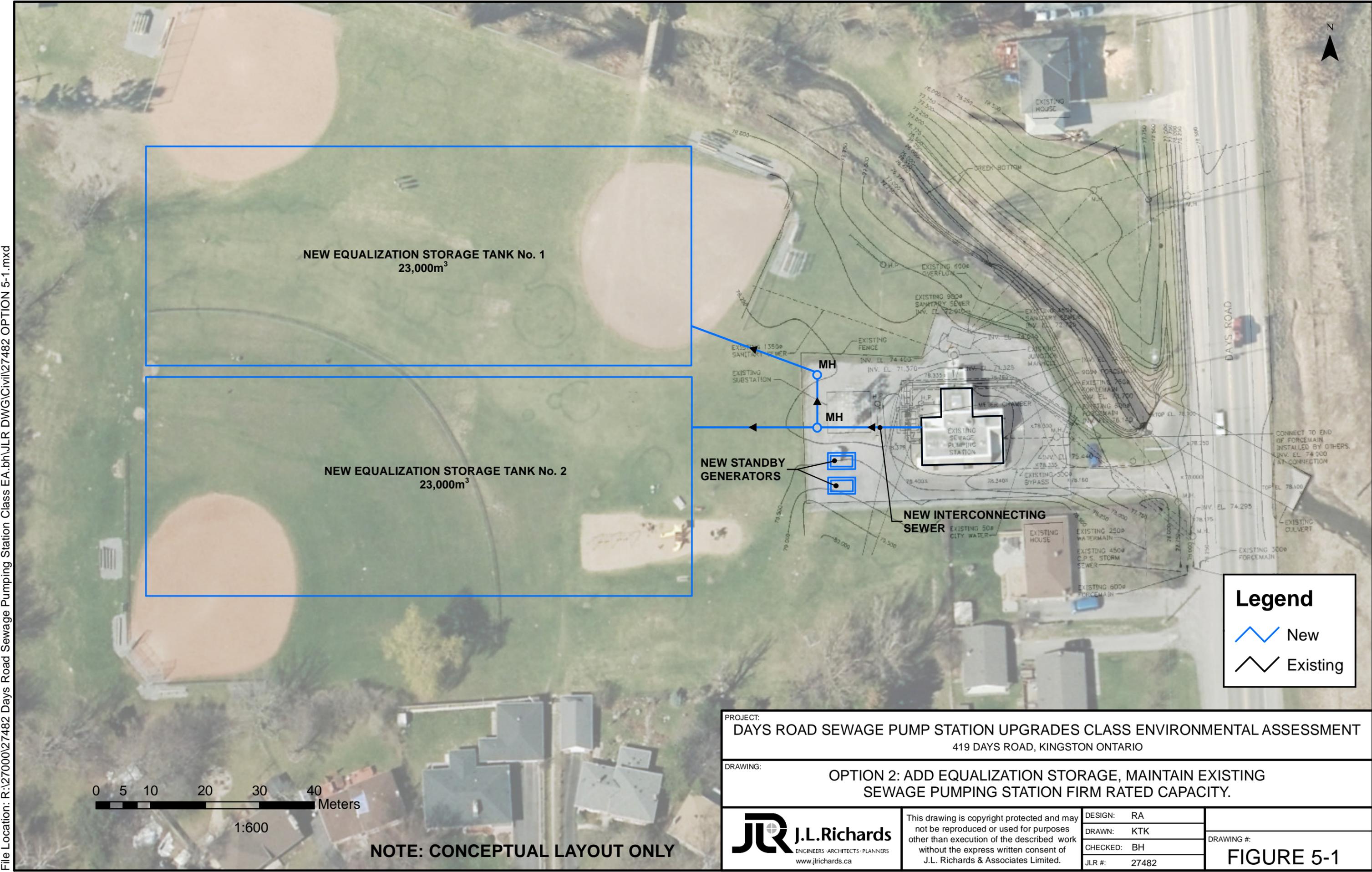
Other concerns included the continued risk of basement flooding due to insufficient pumping capacity to accommodate peak flows associated with extreme wet weather events; and various other issues identified in Phase 1 (e.g. a non-functional gravity overflow sewer, odour control, standby power system capacity, relatively small wet well volume, building envelope condition, etc.). The option of “doing nothing” is not preferred as it will not ensure the long term performance and reliability of a critical piece of UK infrastructure. Therefore, this option should not receive any further consideration.

5.4.2 Option 2: Add Equalization Storage, Maintain Existing Capacity

This option consists of constructing equalization storage tanks adjacent to the existing SPS building. To maintain the existing SPS firm rated capacity, sufficient equalization storage would need to be provided to accommodate the difference between the design firm capacity (1,430 L/s) and the existing firm rated capacity (900 L/s) for the expected duration of an extreme wet weather event. Approximately 46,000 m³ of equalization storage would be required to store the 530 L/s flow differential over an assumed 24 hour wet weather event period. Various conditions upgrades (e.g. replacement of the mechanical bar screen, HVAC equipment, 44 kV electrical substation, etc.) are included as part of the scope of work for this option. Refer to the attached Figure 5-1 for a conceptual site plan layout of this option.

Some of the constraints and design considerations for this option are provided below:

- The existing upstream sewage collection system was analysed to determine the potential volume contribution to equalization storage, if these sewers were allowed to surcharge. These sewers provide only an additional 2,000 m³ of surcharging storage, representing only approximately 5% of the total required equalization storage. While there is a marginal reduction in equalization storage required, it perhaps does not justify the increased risk of basement flooding. It would also rely on the need for some sophisticated controls within the collection system, which would be subject to failure. Therefore, upstream sewage collection system storage is not considered a preferred method in the case of the Days Road SPS.
- Due to the increasingly limited commercial availability of extended shaft type pumps and their associated components, these pumps are typically being replaced with dry pit submersible pumps, which offer similar flooding protection. However, the dimensions of four (4) replacement dry pit submersible pumps cannot be accommodated within the existing Pump Room, due to low available headroom. For the purpose of Option 2 evaluation, it is assumed that the current practice of rebuilding the extended shaft pumping units and impellers would continue (i.e. this option would not afford the benefits of an increased wet well footprint).



1:600

NOTE: CONCEPTUAL LAYOUT ONLY

Legend

- New
- Existing

PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

DRAWING:
OPTION 2: ADD EQUALIZATION STORAGE, MAINTAIN EXISTING SEWAGE PUMPING STATION FIRM RATED CAPACITY.

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Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

- There is insufficient space within the existing SPS footprint to accommodate a new bypass pumping system. Therefore, equalization storage tanks must be below grade, to facilitate gravity diversion from the upstream SPS inlet structure or the wet wells. Given the current operational approach to surcharging the wet well to provide additional storage during wet weather events, the wet well basement levels would be structurally modified to maintain this surcharging approach and fill the equalization tanks via an overflow weir and gravity sewer at a higher elevation. Once normal wet well operations resume, a sluice gate on a return drain line(s) would be opened to allow draining of the equalization tanks back into the wet well, mitigating the requirement for drainage pumping.
- Two (2) 23,000 m³ capacity equalization storage tanks are proposed to provide operational redundancy when one tank is removed from service for maintenance and/or cleaning.
- Due to the assumed tank geometry (6 m deep x 40 m wide x 100 m long) the equalization storage tanks cannot be located within the existing SPS fenced site. The tanks would need to be located within the parkland area to the west of the existing SPS site, due to interferences with the existing below-grade gravity sewer infrastructure and the Little Cataraqui Creek floodplain area to the north of the SPS site.
- Replacement of existing SPS systems and equipment will be driven by condition and remaining design life and not on a capacity increase since the equalization tank would serve that purpose (e.g. replacement of the mechanical bar screen, HVAC and electrical systems, PLC and control panels, MCC, etc.). There are a number of designated substances identified within the existing building envelope that require special consideration as part of any planned system replacement or retrofit construction scope of work.
- The existing ungrounded 44 kV substation would need to be replaced with a new electrical service, consisting of a proposed 750 kVA transformer connected to the 8.32 kV circuit. A redundant emergency power generator set is proposed to supplement peak electrical demands. The transformer and generator sets are to be located within the fenced in area.
- Dewatering requirements for the equalization storage tank excavations are expected to be significant, given the relatively shallow groundwater table and the potential for inflow from existing buried service rock trenches. Significant rock removal would be required, which would likely necessitate blasting.

It should be noted that variations to the option outlined above are possible. However, existing site constraints dictate an overall similar outcome, which is why only one equalization storage option is noted within the context of this Class EA.

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

The proposed general arrangement presented for this option is intended to 1) minimize interference with existing buried services and utilities; 2) minimize operating risk; and 3) reduce the risk of failure associated with new bypass and drainage systems and controls.

5.4.3 Option 3: Upgrade / Expand Existing Sewage Pumping Station Footprint and Capacity

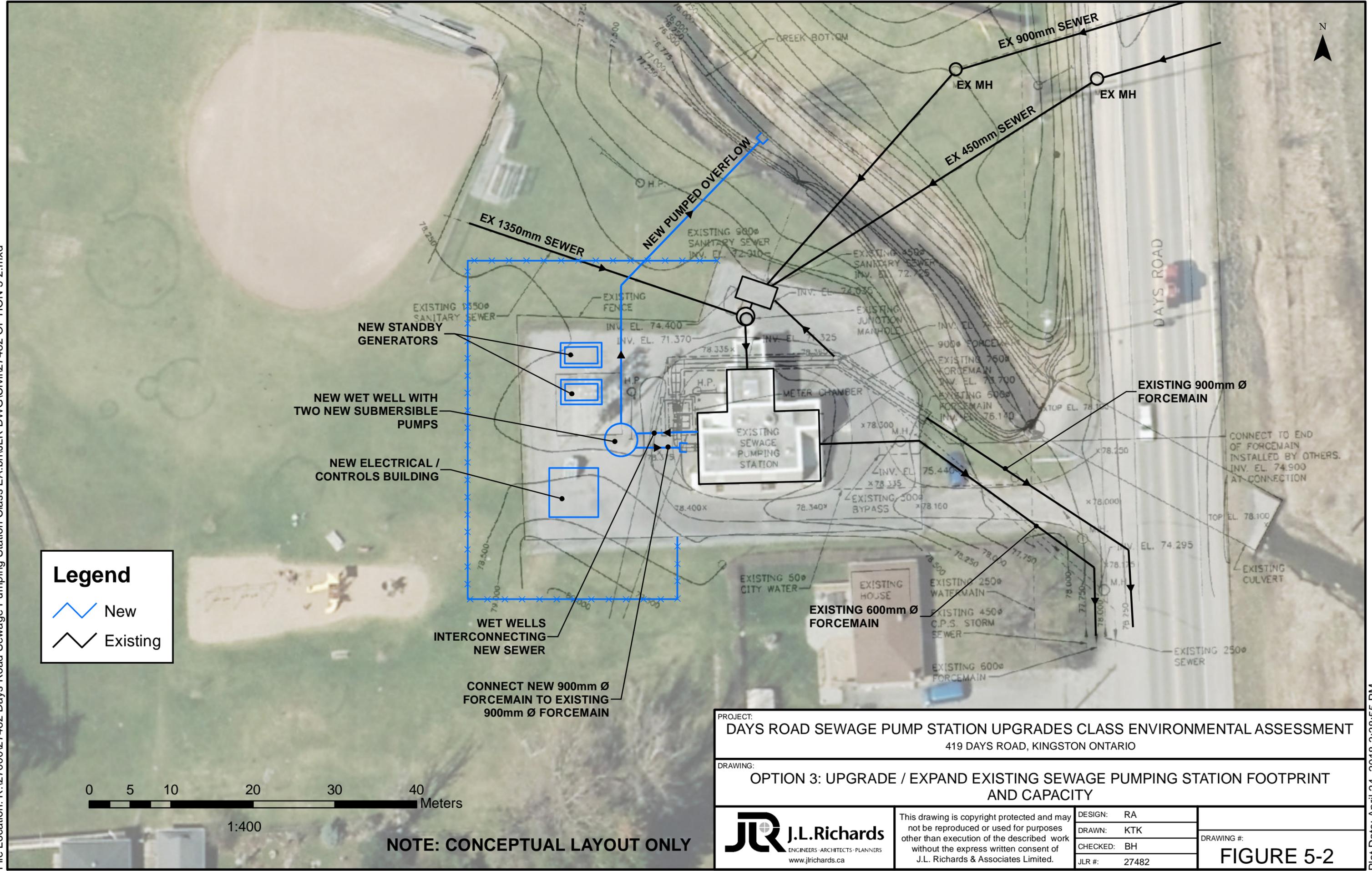
This option would consist of expanding the existing SPS footprint to accommodate additional and larger capacity pumps to increase the firm capacity to 1,430 L/s. Conceptually, the expanded SPS would consist of a total of six pumps; four (4) 350 L/s capacity jockey pumps and two (2) 1,100 L/s capacity peak pumps, to deliver a parallel pumping capacity of 1,430 L/s, with the one of each of the jockey and peak pumps out of service.

A six pump configuration offers increased operational flexibility to efficiently accommodate existing minimum to average day flows up to the future design peak hour flow. Similar to Option 2, various condition upgrades (e.g. replacement of the mechanical bar screen, HVAC equipment, 44 kV electrical substation) are included as part of the scope of work for this option. Refer to the attached Figure 5-2 for a conceptual site plan layout of this option.

Some of the constraints and design considerations for this option are outlined below:

- The existing extended shaft type pumps typically require increased maintenance to maintain alignment and reduce drive train wear. Commercial availability of these pumps and their associated components is becoming increasingly limited. In recent years, extended shaft type pumps are typically being replaced with dry pit submersible pumps, which offer similar flooding protection without the misalignment and wear concerns.
- The proposed six pump configuration cannot be accommodated within the existing pump room, thereby requiring a footprint expansion. Dry-pit submersible pumps must be installed in the horizontal position, due to height restrictions.
- Expansion of the dry/wet well footprint to accommodate six new pumps presents significant constructability issues at a relatively high capital cost, due to the existing cast-in-place concrete construction. Additions to the existing SPS structure and building envelope would require seismic upgrades to the entire structure, to ensure compliance with the 2012 Ontario Building Code (OBC) post-disaster requirements. A stand-alone prefabricated wet well structure is proposed instead to house three submersible jockey pumps, due to its low capital cost. The existing Pump Room would continue to be utilized and existing SPS operations can be easily maintained during construction.

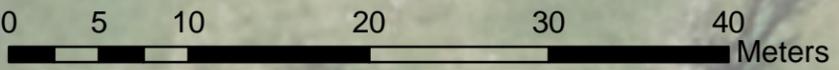
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Legend

New

Existing



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NOTE: CONCEPTUAL LAYOUT ONLY

PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

DRAWING:
OPTION 3: UPGRADE / EXPAND EXISTING SEWAGE PUMPING STATION FOOTPRINT AND CAPACITY

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Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

- Replacement of existing SPS systems and equipment will be driven by capacity, existing condition and remaining design life (e.g. replacement of the mechanical bar screen, HVAC and electrical systems, PLC and control panels, MCC, etc.). There are a number of designated substances identified within the existing building envelope that require special consideration as part of any planned system replacement or retrofit construction scope of work.
- Although not reported to be a significant complaints issue, there is no odour control system available for the SPS. An odour control system should be provided as part of the mechanical bar screen replacement scope of work to mitigate neighbouring property impacts and improve working conditions for operations and maintenance staff.
- New wet well dimensions and the corresponding volume will dictate the spatial requirements of the new submersible pumps, and the existing wet well operational levels. Assuming the existing wet well operational bandwidth is maintained, the additional volume provided by the new wet well will sufficiently address shortfall concerns for the expanded pumping system operating at design firm pumping capacity.
- A new, stand-alone control building to house the expanded MCC, electrical, instrumentation and controls systems, as well as an odour control system for the screening area has been assumed as part of the Option 3 upgrades scope. New Electrical Code Requirements (i.e. arc flash) require an expanded footprint for the MCC. The design of the new control building will be required to comply with OBC post-disaster requirements.
- There is limited land available for construction staging and laydown of materials unless a portion of the park can be utilized on a temporary basis for this purpose.
- The existing emergency gravity overflow outlet is located in a floodplain, which is typically rendered ineffective when the surrounding surface water elevation is higher than the overflow outlet elevation. It is proposed to modify the pump discharge headers to allow for one of the jockey pumps to operate independently and discharge bypass flow directly to the creek under emergency conditions.
- Currently, standby powered pumping capacity is limited to the 748 L/s capacity, dual-driven Pump No. 3. It is proposed to replace the existing diesel drive with an exterior, pad-mounted emergency power generator within a sound-attenuated enclosure that is sized to operate four of the five pumps to provide a firm pumping capacity of 1,430 L/s.
- Removing the Pump No. 3 diesel engine drive would significantly reduce ventilation requirements in the Motor Room, possibly freeing up space for other equipment upgrades (e.g. new electrical and/or HVA equipment).

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- The existing ungrounded 44 kV substation would need to be replaced with a new electrical service, consisting of a proposed 750 kVA transformer connected to the 8.32 kV circuit. A redundant emergency power generator is proposed to supplement peak electrical demands. The transformer and generator sets are to be located within the expanded fenced in area of the site.
- Dewatering requirements for the new wet well excavation are expected to be significant, given the relatively shallow groundwater table and the potential for inflow from existing buried service rock trenches. Rock removal will also be required which may require blasting.

5.4.4 Option 4: Replace Existing Sewage Pumping Station on the Existing Site

This option consists of constructing a new SPS adjacent on the existing site, followed by the decommissioning of the existing SPS. Similar to Option 3, the new SPS would house six (6) dry pit submersible pumps; four (3) 350 L/s capacity jockey pumps and two (2) 1,100 L/s capacity peak pumps in a dry/wet well configuration. Refer to the attached Figure 5-3 for a conceptual site plan layout of this option.

Some of the constraints and design considerations for this option are provided below:

- The existing dry/wet well configuration approach shall be maintained, for ease of operator accessibility. All six (6) pumps are proposed to be dry-pit submersible type, which provides flood protection while also allowing routine diagnostic and preventative maintenance work to the pumps.
- The design of the new SPS Control building would need to comply with the New Electrical Code (i.e. arc flash) and OBC post-disaster requirements. The new SPS control building would also include provisions for an odour control system.
- The existing emergency gravity overflow outlet is located in a floodplain, which is typically rendered ineffective when the surrounding surface water elevation is higher than the overflow outlet elevation. It is proposed to modify the pump discharge headers to allow for one of the jockey pumps to operate independently and discharge bypass flow directly to the creek under emergency conditions.
- Pad-mounted emergency power generators within a sound-attenuated enclosure would be provided to operate four (4) of the five (5) pumps to provide a firm pumping capacity of 1,430 L/s during normal power outages.
- The existing ungrounded 44 kV substation would need to be replaced with a new electrical service, consisting of a proposed 750 kVA transformer connected to the 8.32 kV circuit. A redundant emergency power generator is proposed to supplement peak electrical demands. The transformer and generator sets are to be located within the expanded fenced in area of the site.

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

- Dewatering requirements for the new wet well excavation are expected to be significant, given the relatively shallow groundwater table and the potential for inflow from existing buried service rock trenches. Rock removal will also be required which may require blasting.

5.4.5 Option 5: Replace Existing Sewage Pumping Station on a New Site

This option consists of constructing a new SPS on a new site opposite Days Road on the vacant land owned by Correctional Service Canada (CSC)(Collins Bay Penitentiary). The existing SPS would be decommissioned following construction of the new SPS. Similar to Options 3 and 4, the new SPS would house five (5) dry pit submersible pumps; three (3) 350 L/s capacity jockey pumps and two (2) 1,100 L/s capacity peak pumps in a dry/wet well configuration. Refer to the attached Figure 5-4 for a conceptual site plan layout of this option.

Constraints and design considerations for Option 5 are similar to Option 4, with the following exceptions/additions:

- A new gravity sewer would be required to extend from the existing SPS inlet structure east across Days Road to the new SPS site.
- A new electrical service, consisting of a proposed 750 kVA transformer connected to the 8.32 kV circuit, would be required for the new SPS site. A redundant emergency power generator is proposed to supplement peak electrical demands. The transformer and generator sets are to be located within the expanded fenced in area of the site.

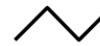
UK and JLR held a meeting with CSC in February 2018 to discuss the CSC land divesture process. A Canadian Environmental Assessment Act (CEAA) evaluation would be required to be undertaken, consisting of an initial impact validation, risk assessment and full impact assessment. A lands disposal process would then follow, which would proceed as either a routine or strategic disposal. The proposed land disposal would then be circulated through various federal government departments for review and approval.

It is anticipated that the foregoing environmental screening and land disposal process would have significant schedule implications, in addition to the risk that the proposed land divesture is rejected by the federal government.

5.5 Opinion of Probable Costs

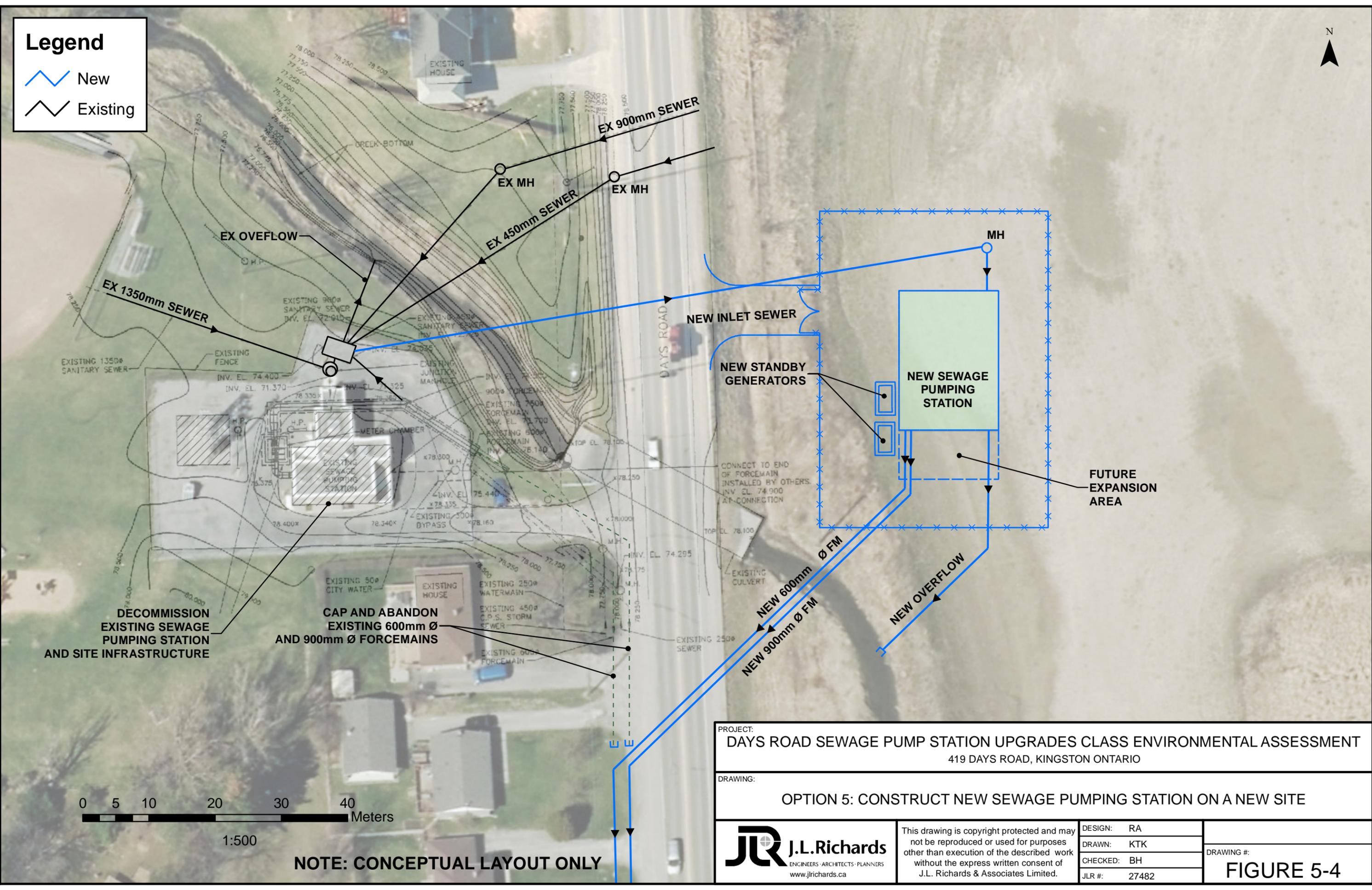
The following summary is an order-of-magnitude opinion of probable capital costs based on an assumed general scope of work for the feasible options presented in Section 5.4. Opinions of probable costs were used for relative comparison purposes only to aid in the evaluation of alternatives and are only based on conceptual design information. Opinion of probable costs will be further defined for the selected preferred alternative during the preliminary design phase.

Legend

-  New
-  Existing



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PROJECT:
DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT
 419 DAYS ROAD, KINGSTON ONTARIO

DRAWING:
OPTION 5: CONSTRUCT NEW SEWAGE PUMPING STATION ON A NEW SITE



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FIGURE 5-4

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Table 5-4: Opinion of Probable Costs

Proposed Upgrades	Option 2	Option 3	Option 4	Option 5
Excavation for New Wet Well or Equalization Storage Tanks	\$7,520,000	\$50,000	\$470,000	\$470,000
Civil Works (Gravity Sewers)	\$150,000	\$75,000	\$200,000	\$1,125,000
Dewatering	\$2,500,000	\$1,000,000	\$2,000,000	\$2,000,000
Below Grade Structures (Wet/Dry Well)	\$6,000,000	\$300,000	\$700,000	\$700,000
New SPS Control Building	NA	\$250,000	\$600,000	\$600,000
Process Mechanical Equipment (Mech. Bar Screen, Pumps, Process Piping & Valves, Odour Control)	\$600,000	\$2,600,000	\$2,600,000	\$2,600,000
HVAC Equipment	\$150,000	\$150,000	\$150,000	\$150,000
Mechanical Equipment Labour & Installation	\$570,000	\$2,070,000	\$2,070,000	\$2,070,000
New 750 kVA Transformer and Electrical Service	\$500,000	\$500,000	\$500,000	\$500,000
Electrical System Upgrades	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000
New Standby Power Generator	\$500,000	\$500,000	\$500,000	\$500,000
Instrumentation & Controls	\$650,000	\$600,000	\$600,000	\$600,000
CSC Land Purchase and Planning Approvals Process Allowance	NA	NA	NA	\$250,000
Mobilization & Demobilization (3.5%)	\$720,000	\$330,000	\$410,000	\$440,000
Bonding & Insurance (2%)	\$410,000	\$190,000	\$240,000	\$260,000
Contractor Mark-Ups (15%)	\$3,060,000	\$1,400,000	\$1,740,000	\$1,880,000
Engineering ¹	\$3,060,000	\$1,860,000	\$1,740,000	\$1,880,000
Contingency ²	\$4,070,000	\$2,790,000	\$2,320,000	\$2,510,000
TOTAL (rounded)	\$31,700,000	\$15,900,000	\$18,000,000	\$19,700,000

1 15% for new works, 20% for retrofits.

2 20% for new works, 30% for retrofits.

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

An opinion of probable operating costs was not provided, as design details must first be confirmed in order to estimate typical operating costs (i.e. pumping efficiency and energy usage). Therefore, operational costs were evaluated relative to the “do nothing” baseline option, based on expected changes in operations & maintenance (O&M) levels of effort and pump energy usage. For Option 2, O&M levels of effort are expected to increase to account for cleaning of equalization tank(s) following each extreme wet weather event. Operating costs for Options 3, 4 and 5 are expected to remain relatively similar to existing, as potential pumping efficiency increases will likely balance with increased pumping energy required to accommodate wet weather events.

5.6 Evaluation of Alternatives

Five (5) possible alternatives for SPS upgrades were identified and evaluated during Phase 2. The Evaluation Matrix presented in Appendix ‘C’ summarizes the detailed evaluation of Options, in accordance with the Evaluation Methodology (refer to Section 5.3). Option 1 was included as part of the detailed assessment to establish a baseline for review.

Based on the detailed evaluation, the first ranked alternative is Option 4: Replace Existing Sewage Pumping Station on the Existing Site, as having achieved the highest score of 67.55 points out of a maximum 100 points. Option 5: Replace Existing Station on a New Site ranked a close second with 65.65 points.

6.0 Summary of Preliminary Findings and Recommendations

6.1 Preferred Alternative

Preliminary findings indicate that construction of a new sewage pumping station on an expanded site to the southwest of the existing site is the preferred alternative.

The proposed site will consist of a new, single-storey building enclosure to house the electrical, and controls equipment and the mechanical bar screen. The below grade structure will consist of wet and dry wells housing new mechanical and electrical systems, including process piping and valves, HVAC and odour control equipment, and the six (6) pumps. A new electrical service is proposed, consisting of a proposed 750 kVA transformer connected to the 8.32 kV circuit. Two (2) emergency power generators, located within a single sound attenuated enclosure, are proposed to provide redundant standby power for peak electrical load sharing and loss of normal power. The transformer and generator sets are to be located within the expanded fenced in area of the site.

The Conceptual Design Report (refer to Appendix ‘D’) provides additional conceptual design details on the preferred alternative.

7.0 Completion of Phase 2 Activities

Public Information Centre (PIC) No. 1 was held on April 25, 2018 at the Frontenac Secondary School, located at 1789 Bath Road. The purpose of the PIC was to inform the general public, project stakeholders and review agencies of the preliminary findings and to obtain any comments.

Information collected during the public consultation/review period is being managed in accordance with the *Freedom of Information and Protection Act*. With the exception of personal information, all comments become part of the Public Record.

The following table provides a summary of comments received and responses given following the PIC:

Table 7-1: Summary of Public Comments and Responses

Type	Comment
Type	Public Comment No. 1
Comment	<ul style="list-style-type: none"> ▪ Mandatory public consultation requirements have not been followed.
Response	<ul style="list-style-type: none"> ▪ The Class EA process (refer to Section 2.0) was described, including mandatory public consultation requirements for a Schedule “B” undertaking.
Type	Public Comment No. 2
Comment	<ul style="list-style-type: none"> ▪ Concerns were identified with the impacts of the preferred alternative on noise and odour propagation.
Response	<ul style="list-style-type: none"> ▪ The new sewage pump station will include noise control provisions (i.e. pumps and motors will be located in the basement level, emergency power generators will be located within sound attenuation enclosures). A new odour control system will be provided to address odour propagation.
Type	Public Comment No. 3
Comment	<ul style="list-style-type: none"> ▪ Option 5 should be identified as the preferred alternative.
Response	<ul style="list-style-type: none"> ▪ The land purchase process associated with Option 5 presents significant scheduling risks to the project. The significant schedule impacts associated with the environmental studies required by the Canadian Environmental Assessment Act (CEAA) screening and land purchasing processes would significantly delay the design and construction of the new SPS. As a result, Option 5 scored low on the technical schedule criteria.

**Days Road Sewage Pump Station
Phase 2 (Preliminary Findings) Report**

Type	Comment
Type	Public Comment No. 4
Comment	<ul style="list-style-type: none"> Concerns were identified with the impacts of the preferred alternative on park aesthetics and obstructed views.
Response	<ul style="list-style-type: none"> Site and building aesthetics and mitigating impacts on park usage will be important design considerations.
Type	Public Comment No. 5
Comment	<ul style="list-style-type: none"> The identified preferred alternative SPS site location will negatively impact park usage.
Response	<ul style="list-style-type: none"> UK is working in cooperation with the City of Kingston to identify potential park facilities upgrades, in order to mitigate the impact of the proposed SPS site relocation.
Type	Public Comments No. 6
Comment	<ul style="list-style-type: none"> The cultural criteria weighting is too low.
Response	<ul style="list-style-type: none"> The study area is located within a suburban park setting, which has generally been previously disturbed by construction activity. As there are no heritage resources in the study area and the likelihood of discovering archaeological artifacts is remote, the assigned weight was reduced accordingly.
Type	Public Comments No. 7
Comment	<ul style="list-style-type: none"> Concerns were identified with the impacts of rock blasting operations on nearby properties and structures.
Response	<ul style="list-style-type: none"> The Contract Documents will include a rock blasting specification that will impose seismic and vibration limits and a monitoring program in order to mitigate blasting damage to adjacent structures.
Type	Public Comments No. 8
Comment	<ul style="list-style-type: none"> Additional details on the SPS design, including building aesthetics, were requested.
Response	<ul style="list-style-type: none"> Schedule "B" Class EA information is typically conceptual in nature. Preliminary and detailed design must be advanced for the selected preferred alternative, before the station building size and appearance can be determined

Days Road Sewage Pump Station Phase 2 (Preliminary Findings) Report

The majority of the public comments received identified several concerns associated with the recommended preferred alternative. In order to proactively address public concerns regarding the new SPS impacts, Utilities Kingston in collaboration with the City of Kingston Recreation and Leisure Services Department, advanced the conceptual design of the preferred alternative, including details on the propose conceptual facility and site plan layouts, and new park features.

Key aspects of the proposed SPS conceptual design are summarized as follows:

- The SPS building enclosure footprint was reduced, as most of the process equipment will be placed within the below-grade structure.
- The SPS building enclosure was shifted to the north for less obstructed views of LaSalle Park from neighbouring residents.
- The existing playground and equipment is to be relocated to the northwest corner of LaSalle Park, adjacent to the McEwen Drive.
- Several public parking stalls are to be provided in the vacant area following demolition of the existing SPS.
- A recreational pathway is to be constructed to the west of the new SPS site.
- The new SPS site is to include landscaping design (i.e. provision of new trees).

A meeting was held with local residents on August 21, 2018, to present the above-noted conceptual design details. Public concerns regarding site and building aesthetics (e.g., odour, noise, line-of-sight, etc.), parkland impacts and the opportunity for park improvements were addressed with the goal of mitigating these concerns and garnering local public support for the project through the sharing of information.

A Notice of Completion for the project is to be placed in a local paper to inform the public that the Class EA has been finalized. The final Phase 2 Report will then be made available to the public for a thirty (30) day review period in accordance with the requirements of the Municipal Class Environmental Assessment process.

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J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Reviewed by

Ryan Ashford, P.Eng.
Senior Environmental Engineer

Brian Hein, P.Eng.
Chief Environmental Engineer

Appendix A
Mandatory Contacts

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CORRECTIONAL SERVICES CANADA (CSC)**

ATTENDANCE:	Jim Miller	Utilities Kingston (UK)
	Mike Fischer	Utilities Kingston (UK)
	Ashley Maloney	Correctional Services Canada (CSC)
	Corinna Dally-Starna	Correctional Services Canada (CSC)
	Dennis Roy	Correctional Services Canada (CSC)
	Scott Graham	Correctional Services Canada (CSC)
	Ryan Ashford	J.L. Richards & Associates Limited (JLR)
	Susan Shi	J.L. Richards & Associates Limited (JLR)
REGRET:	Chris Barkley	Correctional Services Canada (CSC)

The meeting commenced at 10:30 a.m., Monday, February 12, 2018 at 85 Lappan's Lane, Kingston, ON.

The following summary of the discussions of this meeting has been prepared to record and direct the project. Please advise the undersigned of any errors or omissions.

ITEM

ACTION

1.1 INTRODUCTIONS

- Jim Miller welcomed all to the meeting and provided a brief overview of the project. He emphasized the importance of the Days Road Sewage Pump Station to the City of Kingston West End collection and conveyance system. This project was triggered by age-related condition issues and the need for additional pumping capacity to accommodate future growth within the upstream sewershed.
- Roles and Responsibilities of the meeting attendees were reviewed, as follows:

Jim Miller, UK, Director Utilities Engineering and Human Resources
Mike Fischer, UK, Project Manager
Ashley Maloney, CSC, Manager, Real Property
Scott Graham, CSC, Real Property Analyst, Technical Services
Corinna Dally-Starna, CSC, Regional Coordinator, Environmental Programs
Dennis Roy, CSC, Environmental Officer, Collins Bay Institution
Chris Barkley (not present), CSC, Regional Chief of Facilities
Ryan Ashford, JLR, Project Manager

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CORRECTIONAL SERVICES CANADA (CSC)**

ITEM

ACTION

Susan Shi, JLR, Environmental Engineer

1.2 SUMMARY OF CLASS EA WORK COMPLETED TO DATE:

- Ryan Ashford gave a presentation on the Days Road Sewage Pump Station (SPS) Schedule 'B' Class Environmental Assessment work completed to-date and proposed options that are currently being evaluated. Refer to the attached PowerPoint® presentation.
- Discussions on the presentation and corresponding action items are provided below:
 - This project falls under the prescribed Schedule 'B' of the Municipal Class Environmental Assessment process. Phase 2 – Evaluation of Alternative Solutions is nearly complete. The preferred alternative is to be selected and a Public Information Centre (PIC) is to be held to present the results of Phase 2. The Phase 2 Report will then be finalized based on feedback received during the PIC and then posted for the mandatory 30 day public review period.
 - The existing SPS site is located on UK owned property to the west of Days Road. The Little Cataraqui Creek runs to the north of the site. There is a residential area to the south, park space to the west and CSC owned vacant land to the east of Days Road. There are four trunk sewers that terminate into an inlet chamber to the Days Road SPS. Two forcemains run east from the SPS site, then south along Days Road where they converge into a single forcemain running east along Front Road, discharging to the Cataraqui Bay Wastewater Treatment Plant.
 - A number of feasible options were identified to address the capacity and conditions related issues at the SPS. Options were evaluated based on weighted criteria in the natural, social and economic environments. The top two ranking options are: Option 3 – Upgrade/Expand within Existing Site; and Option 5 – Acquire CSC Land and Construct a New SPS.
 - Option 5 consists of acquiring CSC land adjacent to the existing site. The proposed land parcel is approximately 65 m x 90 m. This new site was chosen due to its close proximity to the existing gravity sewer inlet chamber, and the forcemains.
 - Ashley Maloney noted that CSC needs a better understanding of the impacts from Option 5, especially since reinstating farming operations at Collins Bay Institution is currently under review.

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CORRECTIONAL SERVICES CANADA (CSC)**

ITEM

ACTION

- UK and JLR obtained floodplain mapping from the Cataraqui Region Conservation Authority (CRCA), and confirm that both the existing and proposed new sites are located within the flood plain. Ryan Ashford noted that a 2 m grade raise may be incorporated into the site plan design for the new proposed SPS site, as well as erosion control measures and stormwater management provisions.
- Jim Miller enquired if CSC has any particular concerns with the proposed site location. Dennis Roy indicated that Ducks Unlimited (DU) plans to rehabilitate the duck ponds to the east of the proposed site. The rehabilitation project is currently under review by CSC. He also noted that a provincially significant wetland located upstream of the duck ponds north of Bath Road, and ongoing erosion issues at Gardiners Road plaza area. CSC also noted the potential loss of agricultural yield.
- CSC will provide mapping and contact information for Ducks Unlimited land and the rehabilitation project area. CSC
- CSC enquired about the environmental impacts from the pumping station bypass line. Ryan Ashford noted that the net impact from the overflow bypass is zero as the existing SPS has a bypass line to the Little Cataraqui Creek. Ryan Ashford explained that emergency sewage bypasses typically coincide with a storm event, during which the sewage is diluted by the increased stormwater inflow and infiltration. Jim Miller noted that emergency bypasses are allowed by the Ontario Ministry of the Environment and Climate Change. However, all spills are required to be reported to the Ministry.
- Scott Graham enquired about the floodplain mapping data currently available from CRCA and if it includes impacts from a more severe storm (i.e. 1:500 years). Mike Fischer noted that the mapping provided by CRCA includes only the 1:100 year floodplain limit. Jim Miller indicated that pumping capacity deficit is driving this project. Through the Class EA process, UK is seeking to balance infrastructure costs, project timeline and pumping capacity accommodation for severe weather events. Ryan Ashford noted that when developing future design flows, climate change impacts have been taken into consideration (i.e., increased peak pumping capacity per the Sewer Master Plan).
- Jim Miller requested an overview of the CSC land divesture process. Ashley Maloney noted that, firstly, the CEAA evaluation process would be undertaken to include initial environmental impact validation, risk assessment, and full impact assessment. Then the land proceeds to the disposal process during which CSC declares routine disposal vs. strategic disposal. CSC will initiate market value assessment and circulate the land parcel information within different levels of government to gather interest.

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CORRECTIONAL SERVICES CANADA (CSC)**

ITEM

ACTION

- UK/JLR expressed interest in reviewing the EA impact/analysis scoping document. CSC to provide the list. CSC

- Corinna Dally-Starna noted that CSC would be interested in participating in any future meetings with the CRCA, Ducks Unlimited to discuss the proposed new SPS site (Option 5). UK/JLR will follow up with Ducks Unlimited and CRCA. Ashley Maloney would like to be kept in the loop when UK/JLR is in contact with Ducks Unlimited and CRCA. JLR/UK

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Susan Jingmiao Shi, P.Eng., M.Eng.

SJS/RCA

Distribution: All Listed

Reviewed by:



Ryan Ashford, P.Eng.



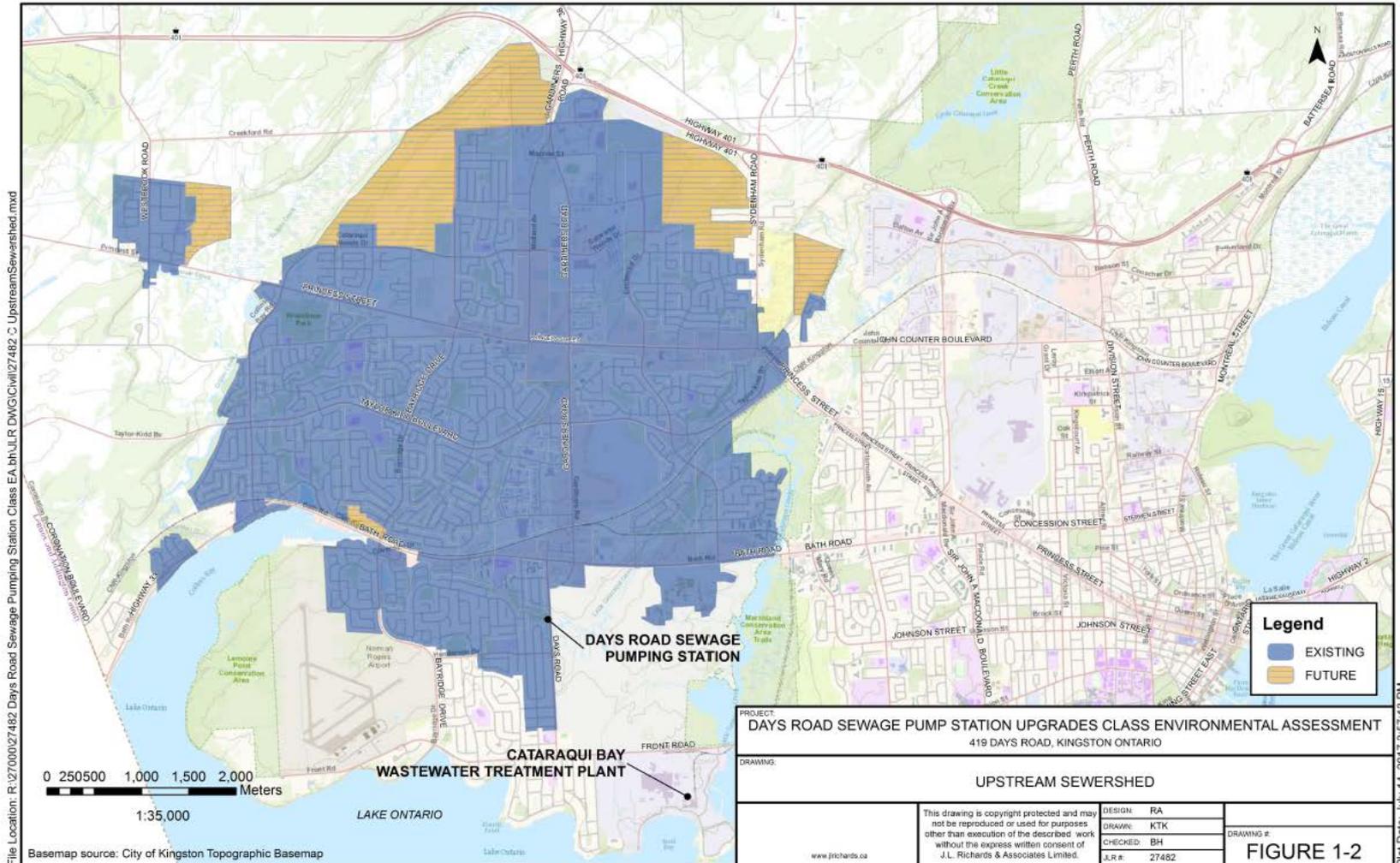
Days Road Sewage Pump Station Schedule 'B' Class EA

J.L. Richards & Associates Limited
Date: February 12, 2018
JLR No.: 27482

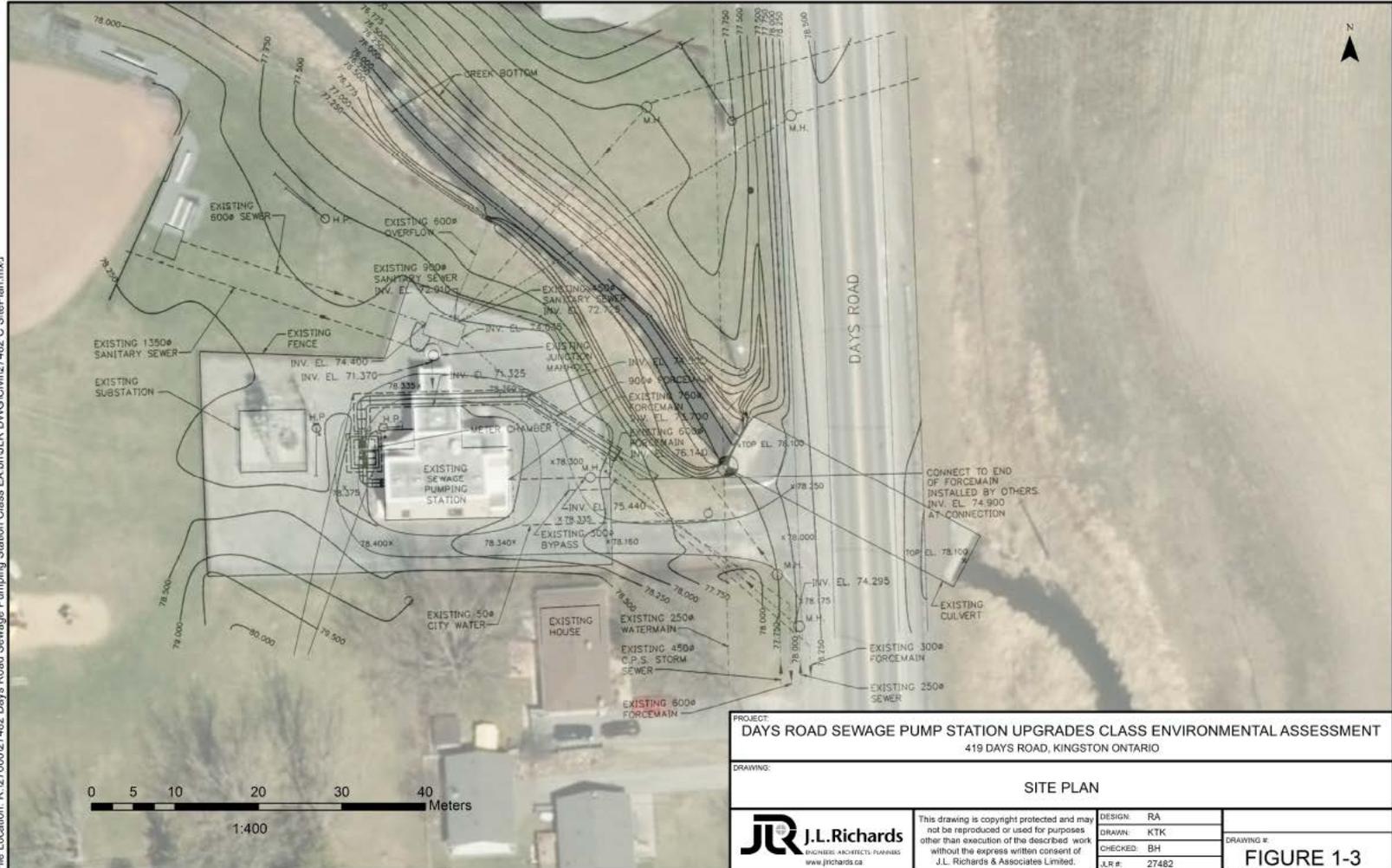
Meeting Agenda

- Opening Remarks
- Meeting Objectives
- Summary Of Class EA Work
- Detailed Discussion on Option 3 vs. Option 5
- Public Consultation Activities
- Schedule
- Next Steps

Existing Conditions Upstream Sewershed



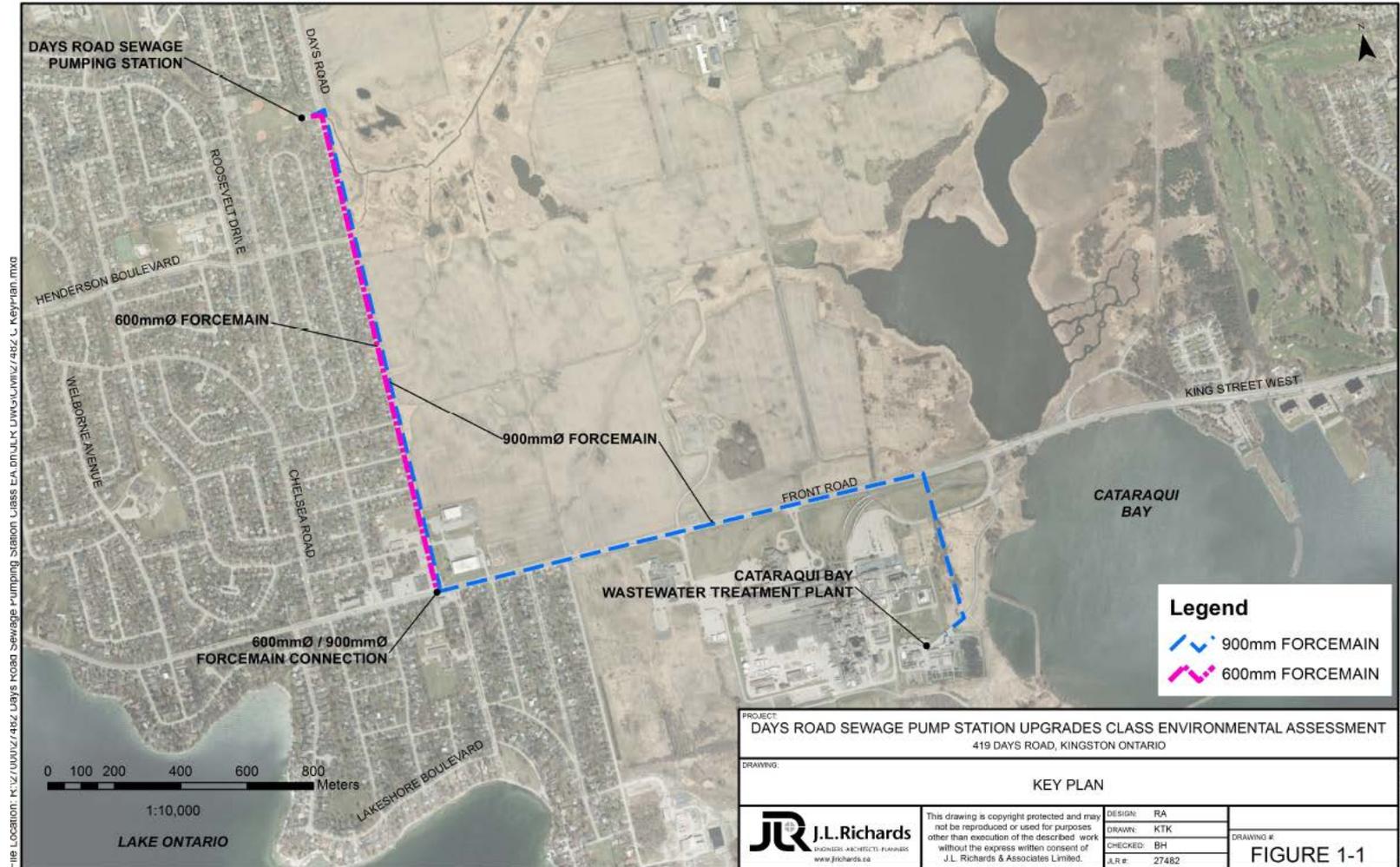
Existing Conditions Site Plan



PROJECT: DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT 419 DAYS ROAD, KINGSTON ONTARIO						
DRAWING: SITE PLAN						
<p>J.L.Richards ENGINEERS - ARCHITECTS - PLANNERS www.jrichards.ca</p>	<p>This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.</p>					
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DESIGN: RA	DRAWING #: FIGURE 1-3					
DRAWN: KTK						
CHECKED: BH						
DATE: 27482						

Plot Date: July 10, 2017 10:06:27 AM

Existing Conditions Key Plan



Legend

- 900mm FORCEMAIN
- 600mm FORCEMAIN

PROJECT: DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT 419 DAYS ROAD, KINGSTON ONTARIO			
DRAWING: KEY PLAN			
J.L.Richards <small>ENGINEERS - ARCHITECTS - PLANNERS</small> <small>www.jlrichards.ca</small>	This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.		DESIGN: RA DRAWN: KTK CHECKED: BH J.L.R #: 27482
	DRAWING # FIGURE 1-1		

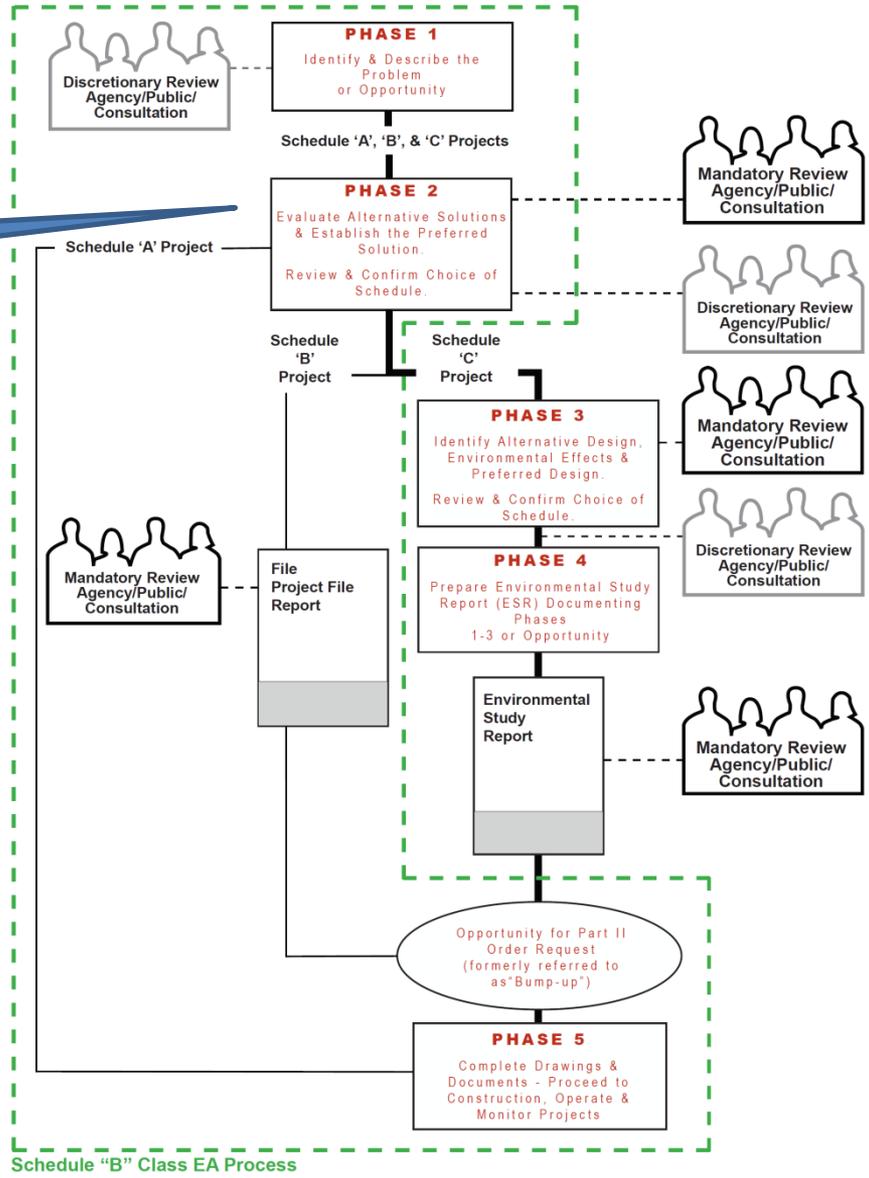
File Location: K:\17\00012\482_Days Road Sewage Pumping Station Class EA ENVIRONMENTAL ASSESSMENT\482_C_KeysPlan.mxd

Plot Date: July 14, 2017 3:51:57 PM

Class EA Objectives

- The primary objective of this Class EA is to undertake a comprehensive review of the Days Road SPS, including assessing its current condition and capacity, identifying short and long-term needs, and determining a preferred alternative for the ongoing management and conveyance of current and future sewage flows received over a 20-year planning horizon.

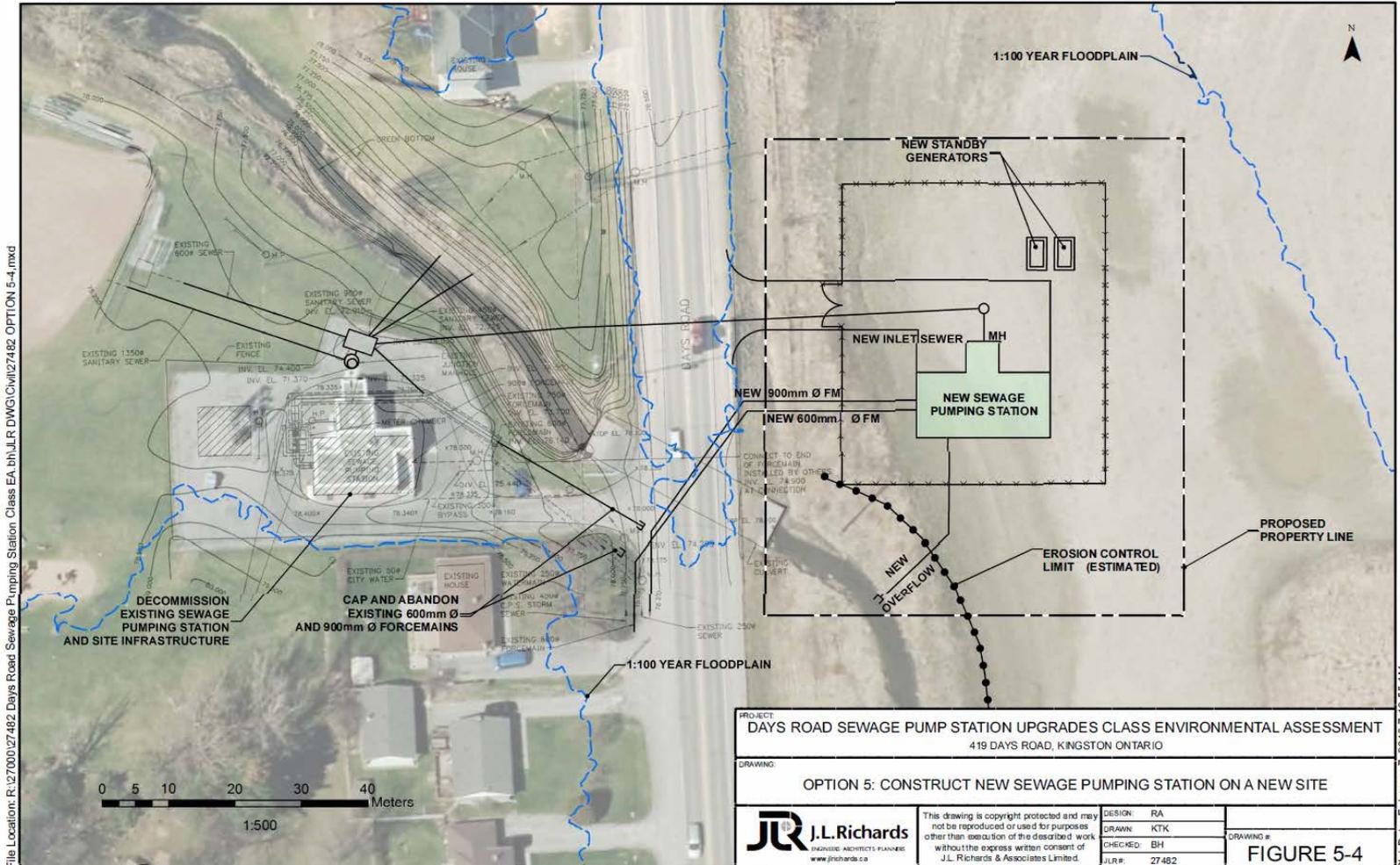
We are here



Identification of Possible Alternatives

Option	Description
1	Do Nothing
2	Add Equalization Storage, Maintain Existing Sewage Pumping Station Firm Rated Capacity
3	Upgrade / Expand Existing Sewage Pumping Station Footprint and Capacity
4	Replace Existing Sewage Pumping Station on the Existing Site
5	Replace Existing Sewage Pumping Station on a New Site

Option 5 – New PS on a New Site



Evaluation Results

	Option 1 : Do Nothing	Option 2: Add EQ Storage	Option 3: Upgrade/ Expand PS	Option 4: Replace Existing PS	Option 5: New PS on New Site
Total Score	22.35	52.7	64.4	57.6	61.3
Rank	Baseline - Not ranked.	4	1	3	2

Comparison Between Option 3 and Option 5

	Option 3 – Upgrade/Expand Existing PS	Score	Option 5 – New SPS on New Site	Score
Natural Environment	<ul style="list-style-type: none"> Limited potential for groundwater impact. Reduced raw sewage bypass. Bypass only provided on an emergency basis. Close proximity to the creek. Environmental impact and mitigations must be identified. No settlement or stability issues anticipated. 	7.45 / 16	<ul style="list-style-type: none"> Limited potential for groundwater impact. Reduced raw sewage bypass. Bypass only provided for on an emergency basis. New PS constructed close to the creek. Environmental impact and mitigations must be identified. No settlement or stability issues anticipated. 	7.45 / 16
Social Environment	<ul style="list-style-type: none"> Increased pumping allows for future development. New 44 kV substation grounding grid will impact use of park. Positive impact on public health from reduced bypass and sewer backup. A new control building in close proximity to the park – reduced aesthetics from existing. New standby generator to be enclosed within a sound attenuated enclosure. New odour control system needed. 	27.65 / 43	<ul style="list-style-type: none"> Increased pumping allows for future development. New 44 kV substation grounding grid to be located on vacant CSC land. Positive impact on public health from reduced bypass and sewer backup. New PS constructed on the east side of Days Road, furthest distance from the park and residents. New standby generator to be enclosed within a sound attenuated enclosure. New odour control system needed. 	29.7 / 43
Cultural Environment	<ul style="list-style-type: none"> Limited potential for archaeological impacts. 	1.8 / 6	<ul style="list-style-type: none"> There is potential for archaeological impacts. 	0.9 / 6
Economic Environment	<ul style="list-style-type: none"> Lowest OPC (\$13.7M) Same O&M cost 	27.5 / 35	<ul style="list-style-type: none"> Second highest OPC (\$17.5M) Same O&M cost 	23.2 / 35
	Total Score	64.4 / 100		61.3 / 100

Option 3 – Upgrade/Expand on Existing Site

- Various condition upgrades – bar screen replacement, HVAC upgrades, 44 kV substation upgrades, PLC upgrades;
- Expansion of dry/wet well footprint to accommodate five (5) new pumps; significant constructability issues due to existing concrete construction;
- Expanded PS consisting of three (3) 350 L/s jockey pumps and two (2) 1,100 L/s peak pumps; dry-pit submersible pumps installed in horizontal position;
- A stand-alone prefabricated wet well structure proposed to house two jockey pumps;
- Seismic upgrades to the entire structure;
- New odour control system;
- New pumped bypass discharge;
- New stand-alone control building to house MCC, electrical, instrumentation and control systems;
- New grounding grid for electrical service; further geotechnical investigation required;
- Identified designated substances within the existing building envelope;
- Limited land available for construction staging and laydown onsite;
- Significant dewatering during construction;

Option 5 – New PS on a New Site

- Construction of a new PS on a new site on the Collins Bay Penitentiary lands;
- Decommission existing PS;
- A new gravity sewer extending from existing PS inlet structure to the new PS;
- New PS to house five (5) dry-pit submersible pumps; three (3) 350 L/s jockey pumps and two (2) 1,100 L/s peak pumps;
- New substation, grounding grid, 44 kV service entrance required;
- Ongoing discussion with Correctional Services Canada (CSC); CSC has not confirmed if a land purchase agreement is possible;

Next Steps

	Timeline
Ongoing Discussion with CSC to Explore Option 5	February – March, 2018
Update Class EA Based on Discussion with CSC	March, 2018
Host a Public Information Centre (PIC)	April, 2018
Obtain and Evaluate Comments Received from PIC	April, 2018
Issue Schedule 'B' Class EA Project Notice of Completion	May, 2018
Finalize Class EA Documents	June, 2018
Proceed to Preliminary and Detailed Design	TBD (Design Phase – 6 to 8 months; Construction Phase – 12 to 18 months)

Susan Jingmiao Shi

From: Maloney Ashley (NHQ-AC) <Ashley.Maloney@csc-scc.gc.ca>
Sent: April 13, 2018 8:28 AM
To: Susan Jingmiao Shi; Dally-Starna Corinna (ONT); Barkley Chris (ONT); Roy Dennis (ONT); Graham Scott (NHQ-AC); 'Miller,James'; Ryan Ashford; Fischer, Mike
Subject: RE: Days Road Sewage Pump Station Class EA CSC Meeting Minutes

Hi all – thank you to everyone who weighed-in on our discussions and best of luck to UK moving forward with Option 4.

Please do not hesitate to get in touch in the future.

Regards,

Ashley Maloney

Manager, Real Property, Technical Services and Facilities Branch
Correctional Service Canada / Government of Canada
ashley.maloney@csc-scc.gc.ca / Tel: 613-996-7935

Gestionnaire, Biens immobiliers, Direction des services techniques et des installations
Service correctionnel Canada / Gouvernement du Canada
ashley.maloney@csc-scc.gc.ca / Tél: 613-996-7935

From: Susan Jingmiao Shi [mailto:sshi@jrichards.ca]
Sent: Tuesday, April 10, 2018 9:00 AM
To: Maloney Ashley (NHQ-AC) <Ashley.Maloney@csc-scc.gc.ca>
Cc: Dally-Starna Corinna (ONT) <Corinna.Dally-Starna@CSC-SCC.GC.CA>; Barkley Chris (ONT) <Chris.Barkley@CSC-SCC.GC.CA>; Roy Dennis (ONT) <Dennis.Roy@CSC-SCC.GC.CA>; Graham Scott (NHQ-AC) <scott.graham@csc-scc.gc.ca>; 'Miller,James' <jmiller@utilitieskingston.com>; Ryan Ashford <rashford@jrichards.ca>; Fischer, Mike <mfischer@utilitieskingston.com>
Subject: RE: Days Road Sewage Pump Station Class EA CSC Meeting Minutes

Hello Ashley,

Thank you for the copy of CSC's Internal Services Directive (ISD) 318-11 and the Ducks Unlimited (DU) contact information.

After consulting with Utilities Kingston following our meeting, concerns were identified with the anticipated time line required to proceed with the environmental screening and land purchasing processes. The evaluation matrix was subsequently amended to include new criteria, including anticipated delivery schedule. The five identified feasible alternatives were then re-evaluated, and Option 4 – Replace Existing SPS on Existing Site was selected as the preferred alternative for presentation at the upcoming Public Information Centre on April 25, 2018. Therefore, Utilities Kingston has decided not to arrange a meeting with DU or proceed with the environmental screening process at this time.

Please contact Mike Fischer, Ryan Ashford or myself should you have any questions regarding the foregoing.

Susan Jingmiao Shi, P.Eng., M.Eng.
Environmental Engineer

J.L. Richards & Associates Limited
203 - 863 Princess Street, Kingston, ON K7L 5N4

From: Maloney Ashley (NHQ-AC) [<mailto:Ashley.Maloney@csc-scc.gc.ca>]

Sent: March 1, 2018 2:44 PM

To: Susan Jingmiao Shi <sshi@jlrichards.ca>; 'Miller,James' <jmiller@utilitieskingston.com>; Ryan Ashford <rashford@jlrichards.ca>; Fischer, Mike <mfischer@utilitieskingston.com>

Cc: Dally-Starna Corinna (ONT) <Corinna.Dally-Starna@CSC-SCC.GC.CA>; Barkley Chris (ONT) <Chris.Barkley@CSC-SCC.GC.CA>; Roy Dennis (ONT) <Dennis.Roy@CSC-SCC.GC.CA>; Graham Scott (NHQ-AC) <scott.graham@csc-scc.gc.ca>

Subject: RE: Days Road Sewage Pump Station Class EA CSC Meeting Minutes

Good afternoon everyone,

Susan, thank you kindly for drafting up the minutes of our February meeting concerning the Days Rd Sewage Pumping Station.

The main environmental concerns identified by CSC at this point relate to the potential impacts to the surrounding land given the proximity of the creek to the proposed site; ongoing discussions with Ducks Unlimited (DU) on the protected wetland habitats; provincially significant wetland located upstream of the duck ponds north of Bath Road; ongoing erosion issues at Gardiners Road plaza area; and the current review of farming operations at CBI.

As promised, please find attached the following documents for your review:

1. Contact information for Chris Delage, Conservation Programs Specialist at DU.
 - a. Included is a schematic of DU ponds (including the proposed rehabilitation project currently under review by CSC).
2. A copy of CSC's Internal Services Directive (ISD) 318-11 entitled "Federal Environmental Assessment of Projects".

Moving forward, CSC would certainly be interested in participating in future discussions that you may have with either the Cataraqui Region Conservation Authority (CRCA) or DU.

Thank you,

Ashley Maloney

A/Manager, Real Property, Technical Services and Facilities Branch
Correctional Service Canada / Government of Canada
ashley.maloney@csc-scc.gc.ca / Tel: 613-996-7935

Gestionnaire/int., Biens immobiliers, Direction des services techniques et des installations
Service correctionnel Canada / Gouvernement du Canada
ashley.maloney@csc-scc.gc.ca / Tél: 613-996-7935

From: Susan Jingmiao Shi [<mailto:sshi@jlrichards.ca>]

Sent: Wednesday, February 28, 2018 8:17 AM

To: 'Miller,James' <jmiller@utilitieskingston.com>; Maloney Ashley (NHQ-AC) <Ashley.Maloney@csc-scc.gc.ca>; Ryan Ashford <rashford@jlrichards.ca>; Fischer, Mike <mfischer@utilitieskingston.com>; Dally-Starna Corinna (ONT) <Corinna.Dally-Starna@CSC-SCC.GC.CA>; Barkley Chris (ONT) <Chris.Barkley@CSC-SCC.GC.CA>; Roy Dennis (ONT) <Dennis.Roy@CSC-SCC.GC.CA>; Graham Scott (NHQ-AC) <scott.graham@csc-scc.gc.ca>

Subject: Days Road Sewage Pump Station Class EA CSC Meeting Minutes

Good morning,

In the attached, you can find the meeting minutes from our February 12th meeting on the Days Road Sewage Pump Station.

Let me know if you have any questions.

Susan Jingmiao Shi, P.Eng., M.Eng.
Environmental Engineer

J.L. Richards & Associates Limited
203 - 863 Princess Street, Kingston, ON K7L 5N4
Tel: 613-544-1424 Fax: 613-544-5679



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& Associates Limited**
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**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

PROJECT MEETING NO. 4 (REV.1)

ATTENDANCE:	Jim Miller	Utilities Kingston (UK)
	Mike Fischer	Utilities Kingston (UK)
	Ryan Ashford	J.L. Richards & Associates Limited (JLR)
	Susan Shi	J.L. Richards & Associates Limited (JLR)

The meeting commenced at 11:00 a.m., Friday, March 2, 2018 at 85 Lappan's Lane, Kingston, ON.

The following summary of the discussions of this meeting has been prepared to record and direct the project. Please advise the undersigned of any errors or omissions.

ITEM

ACTION

4.1 General Discussion:

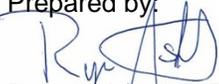
- Ashley Maloney from Correctional Services Canada (CSC) provided UK/JLR the federal environmental assessment checklist, as well as contact information for Kingston Ducks Unlimited in a March 1, 2018 e-mail.
- Jim Miller indicated that, based on a cursory review of the checklist, the anticipated delivery schedule for Option 5 - Replace Existing SPS on a New Site would likely need to be extended to accommodate required environmental studies and stakeholder consultation as part of the CSC environmental screening process.
- JLR is to update the evaluation matrix to include schedule, project complexity, climate change resiliency and operations flexibility and submit to UK for review and comment. Options 1 to 5 will then be re-evaluated to generate a new preferred alternative ranking.
- Mike Fischer noted that approximately five weeks are required to arrange a Public Information Centre (PIC) venue. JLR and UK are to coordinate a date, time and location for the PIC. JLR is to provide UK with an updated schedule for updating the evaluation matrix, revising the draft Phase 2 Report and preparing presentation boards for the PIC.

JLR

JLR/
UK

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Ryan Ashford, P.Eng.

Distribution: All Listed

Susan Jingmiao Shi

From: Fischer, Mike <mfischer@utilitieskingston.com>
Sent: April 10, 2018 7:59 AM
To: 'Jon Swaine'
Cc: ; Ryan Ashford; Susan Jingmiao Shi
Subject: RE: Utilities Kingston Project & Impacts to LaSalle Park

Thank you for your quick response Jon.

You will be added to our mail-out list for the Environmental Assessment part of this project.

Utilities Kingston, along with our consultants J.L. Richards & Associates, are working closely with City Parks on this project. There is recognition it will impact the park and there will be further discussions about the planned pathway and other features around that part of the park. Restoration is always a part of a bigger construction project, so there are likely some opportunities, however as you say, those decisions will not be ours to make. At least we are aware of it and can mention it to the City in these discussions.

There will be some concept mapping provided at the Public Information Centre, and later uploaded to the project webpage, which may be of interest to you.

Sincerely,



Mike Fischer, PEng
Utilities Engineer
P.O. Box 790, Kingston, ON K7L 4X7
P: 613-546-1181 x.2356
mfischer@utilitieskingston.com



From: Jon Swaine [mailto:j]
Sent: 04-9-2018 10:43 PM
To: Fischer, Mike
Cc: ; Ryan Ashford (rashford@jlrichards.ca); Susan Shi (SShi@jlrichards.ca)
Subject: Re: Utilities Kingston Project & Impacts to LaSalle Park

Hi Mike,

Thanks for the email.

Yes, we use the diamonds very heavily in the summer so we would like to be kept in the loop. Personally, I would like to receive the notices you spoke of.

Just a side thought, awhile back we identified some upgrades that are needed on the diamond closest to the sewage pumping station. The biggest

being that the backstop needs to be replaced. If the diamond needs to be off-limits for any period of time, maybe it would be a good time to upgrade the diamond itself? I know this isn't your call, but I thought I'd put the idea out there.

We look forward to hearing more about the plans for the site.

Jon Swaine

VP - GKSA

On Mon, Apr 9, 2018 at 10:57 AM, Fischer, Mike <mfischer@utilitieskingston.com> wrote:

Dear Jon and Kyra,

I reached out to the City's Rec & Leisure staff to get contact information for frequent users of the La Salle Park ball diamonds and your contact information was provided.

As you may or may not be aware, within the east side of La Salle Park is situated a sewage pumping station that is owned by the City of Kingston and operated and maintained by Utilities Kingston. Utilities Kingston is currently in the midst of an environmental assessment with its consultant, J.L.Richards & Associates, to determine the best solution for improvements to that facility. It is a critical piece of infrastructure for West Kingston and services about 90% of the area, most of it north of LaSalle Park, all the way up to the 401. There is considerable growth in Northwest Kingston as well as industrial growth.

At this point in the study, the preferred alternative is to rebuild a new facility immediately to the south west of its current position. While in the long run, this will not impact the presence or availability of ball diamonds in La Salle Park, the construction is liable to have short term impacts on diamond availability.

There is a Public Information Centre currently planned for April 25th at the Frontenac Secondary School from 6-8pm, should you wish to attend and learn more about this project.

There is also a project webpage located at the following URL which contains a bit of additional information: https://utilitieskingston.com/Projects/Detail/DaysRd_SPS. After the Public Information Centre, the display information made available at that time will be uploaded to the project webpage. Stakeholders and public are encouraged to comment.

If you wish to be added, or have the Greater Kingston Softball Association added to the mailing list for project notices, please provide a suitable physical address. Should you think anyone else should be notified of this project and the upcoming Public Information Centre, please let me know.

Thank you,

Mike



Mike Fischer, PEng
Utilities Engineer

P.O. Box 790, Kingston, ON K7L 4X7

P: 613-546-1181 x.2356

mfischer@utilitieskingston.com



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Notice of Public Open House



Utilities Kingston Days Road Sewage Pump Station Upgrades Schedule B Class Environmental Assessment

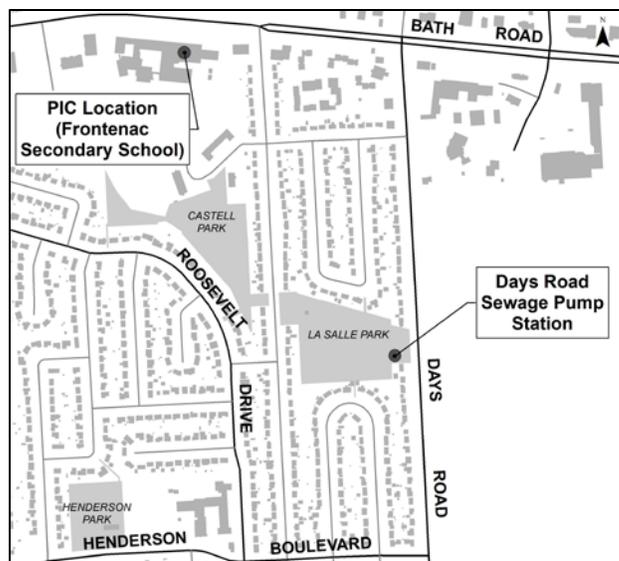
Utilities Kingston has initiated a Schedule B Class Environmental Assessment (Class EA) to determine the most suitable option to renew the Days Road Sewage Pump Station.

How Will This Affect Me?

The Class EA study is evaluating various alternatives to renew the Days Road Sewage Pump Station to ensure it can be relied on to accommodate future growth within the upstream sewershed for the next 20 years.

We Want To Hear From You!

Public consultation is a key component to this study. The proposed consultation plan provides for a single Public Open House to review a number of alternatives that are being considered. This Public Information Centre will identify existing system constraints and potential alternative solutions. The preferred alternative currently being considered envisions replacing the existing pump station with a new pump station on an expanded site in La Salle Park.



The Open House (or Public Information Centre) is scheduled as follows:

Date: Wednesday, April 25, 2018
Time: Open House from 6:00 – 8:00 p.m.
Location: Frontenac Secondary School, Main Gymnasium
1789 Bath Road, Kingston, ON K7M 4Y3

All those interested in the project are urged to attend. Project information will also be available to the public on the Utilities Kingston's website, <https://utilitieskingston.com/>. If you have any questions regarding the study please contact one of the people listed below. We welcome your feedback.



TO FIND OUT MORE VISIT
<https://utilitieskingston.com/>

Ryan Ashford, P.Eng.
Project Manager
J.L. Richards & Associates Limited
864 Lady Ellen Place
Ottawa, ON K1Z 5M2
rashford@jlrichards.ca
Phone: 613-728-3571

Mike Fischer, P.Eng.
Utilities Engineer
Utilities Kingston
85 Lappan's Lane
Kingston, ON K7L 4X7
mfischer@utilitieskingston.com
Phone: 613-546-1181, Ext. 2356

This study is being conducted according to the requirements of a Schedule B project under the Municipal Class Environmental Assessment process (October 2000, as amended in 2015).

This Notice issued on April 17, 2018

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ATTENDANCE:	Jim Miller	Utilities Kingston (UK)
	Mike Fischer	Utilities Kingston (UK)
	Luke Follwell	City of Kingston, Recreation and Leisure Services (City)
	Ryan Ashford	J.L. Richards & Associates Limited (JLR)
	Susan Shi	J.L. Richards & Associates Limited (JLR)

The meeting commenced at 10:00 a.m., Friday, March 2, 2018 at 85 Lappan's Lane, Kingston, ON.

The following summary of the discussions of this meeting has been prepared to record and direct the project. Please advise the undersigned of any errors or omissions.

ITEM

ACTION

1.1 INTRODUCTIONS

- Roles and Responsibilities of the meeting attendees were reviewed, as follows:

Jim Miller, UK, Director Utilities Engineering and Human Resources
Mike Fischer, UK, Project Manager
Luke Follwell, City, Director of Recreation and Leisure Services
Ryan Ashford, JLR, Project Manager
Susan Shi, JLR, Environmental Engineer

1.2 SUMMARY OF CLASS EA WORK COMPLETED TO DATE:

- Ryan Ashford gave a brief presentation on the Days Road Sewage Pump Station (SPS) Schedule 'B' Class Environmental Assessment work completed to-date and proposed options that are currently being evaluated. Refer to the attached PowerPoint® presentation.
- Discussions on the presentation and corresponding action items are provided below:
 - This project falls under the prescribed Schedule 'B' of the Municipal Class Environmental Assessment process. Phase 2 – Evaluation of Alternative Solutions is nearly complete. The preferred alternative is to be selected and a Public Information Centre (PIC) is to be held to present the results of Phase 2. The Phase 2 Report will then be finalized based on feedback received during the PIC and then posted for the mandatory 30 day public review period.

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ITEM

ACTION

- The existing Days Road SPS site is located on UK owned property to the west of Days Road. The Little Cataraqui Creek runs to the north of the site. There is a residential area to the south, park space to the west and CSC owned vacant land to the east of Days Road. There are four trunk sewers that terminate into an inlet chamber to the Days Road SPS. Two forcemains run east from the SPS site, then south along Days Road where they converge into a single forcemain running east along Front Road, discharging to the Cataraqui Bay Wastewater Treatment Plant.
- A number of feasible options were identified to address the capacity and conditions related issues at the SPS.
 - Option 1 – Do Nothing
 - Option 2 – Add Equalization Storage, Maintain Existing SPS Firm Rated Capacity
 - Option 3 – Upgrade/Expand Existing SPS Within Existing Site Footprint
 - Option 4 – Replace Existing SPS on Existing Site With Expanded Site Footprint
 - Option 5 – Replace Existing SPS on a New Site
- Ryan Ashford noted that a meeting with Correctional Services Canada (CSC) was held on February 12, 2018 to explore the feasibility of Option 5. UK has concerns with the CSC approval timeline and study costs associated with the CSC land purchase process.
- Ryan Ashford noted that Option 4 would likely encroach upon the northwest baseball diamond and/or the play structure. Luke Follwell noted that the three baseball diamonds and play structure are heavily used from May to September in the evenings. Luke is to determine the extent of use of the northeast baseball diamond, and the condition of the existing play structure located southwest of the existing SPS site.
- Luke noted that, with the proposed Option 4 encroaching into the park, the City is open to relocating the play structure. However, the City's preference is to keep the expansion area as small as possible. Luke noted that there is currently no budget in 2018 to relocate the play structure or baseball diamond.
- Luke Follwell presented the proposed pathway along the Cataraqui Creek, and the sections of the proposed pathway that runs directly to the west and north of the existing SPS (refer to the attached sketch). Luke is to send the AutoCAD® drawing of the proposed pathway to JLR. Luke noted that if Option 4 becomes the preferred option, the pathway design will likely need to be modified.

City

City

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ITEM

ACTION

- Jim Miller noted that UK operators have had difficulty in the past (evening hours in the summer) accessing the Days Road SPS due to parked cars in the SPS driveway. Luke Follwell also noted that there are public parking issues along Days Road during baseball games.
- Luke Follwell indicated that the capital funding is available in 2019 to construct the pathway section that runs to the west of the site. Should the construction schedules align, the City wishes to coordinate with UK on landscaping work in the vicinity of the SPS site.
- Luke Follwell enquired if it is feasible to build a public washroom as a part of the PS building. Jim Miller noted security issues and the premium cost for the washroom structure to meet post-disaster design requirements associated with the SPS structure. Jim Miller will follow up with UK operations staff to get their input. UK
- Luke Follwell enquired if it is feasible for UK to provide water/sewer service laterals for a future washroom building in the park. UK is to review and provide comments. UK
- The possibility of adding public parking space in the decommissioned PS area was discussed. Luke noted that the public would appreciate any additional parking spaces and improved access to the park from Days Road.
- Ryan Ashford noted that JLR will modify the sketches to include a general area for parking for Option 4, as well as a relocated play structure in the park. JLR
- Luke indicated that the City is willing to participate in the Public Information Centre (PIC), and help to guide discussions with the concerned public members regarding encroached park space and the potential play structure relocation. UK and JLR will inform the City the date/time for the PIC. UK/JLR

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Reviewed by:



Susan Jingmiao Shi, P.Eng., M.Eng.

Ryan Ashford, P.Eng.

SJS/RCA

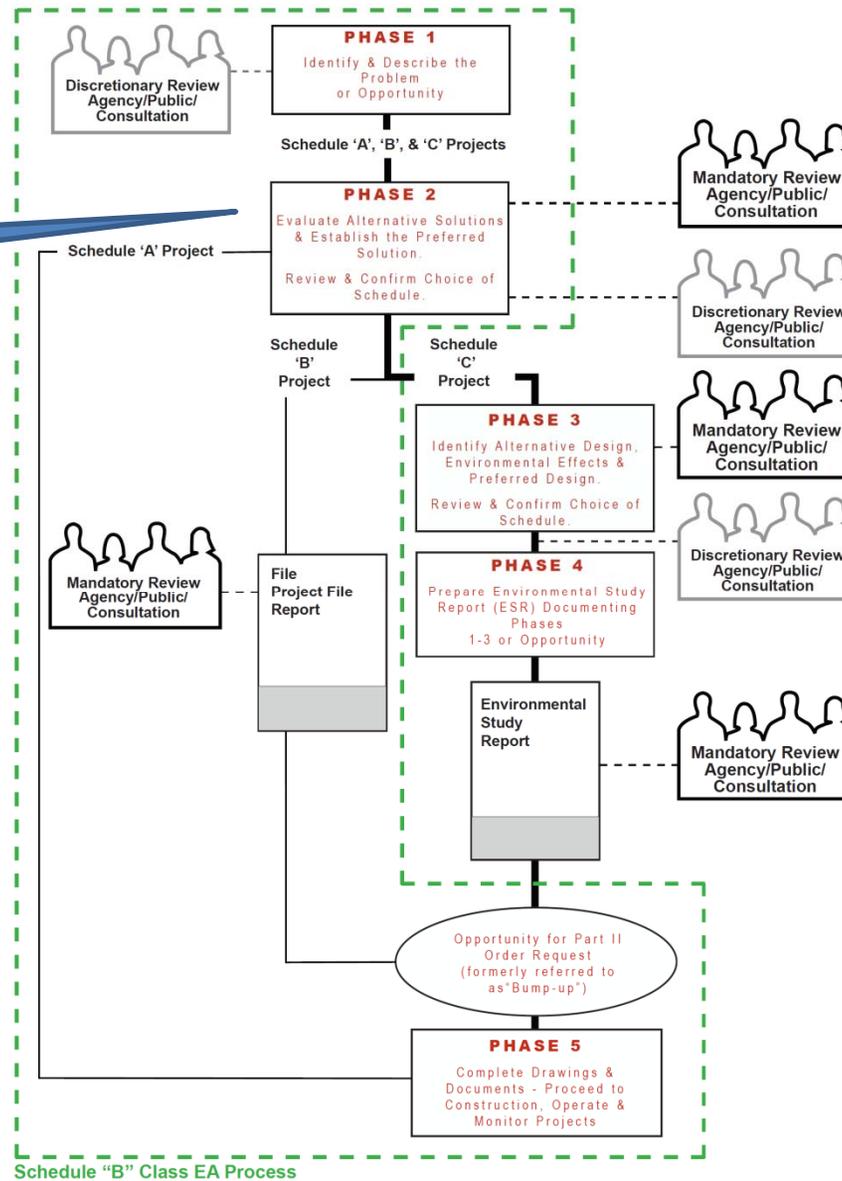
Distribution: All Listed



Days Road Sewage Pump Station Schedule 'B' Class EA

J.L. Richards & Associates Limited
JLR No.: 27482

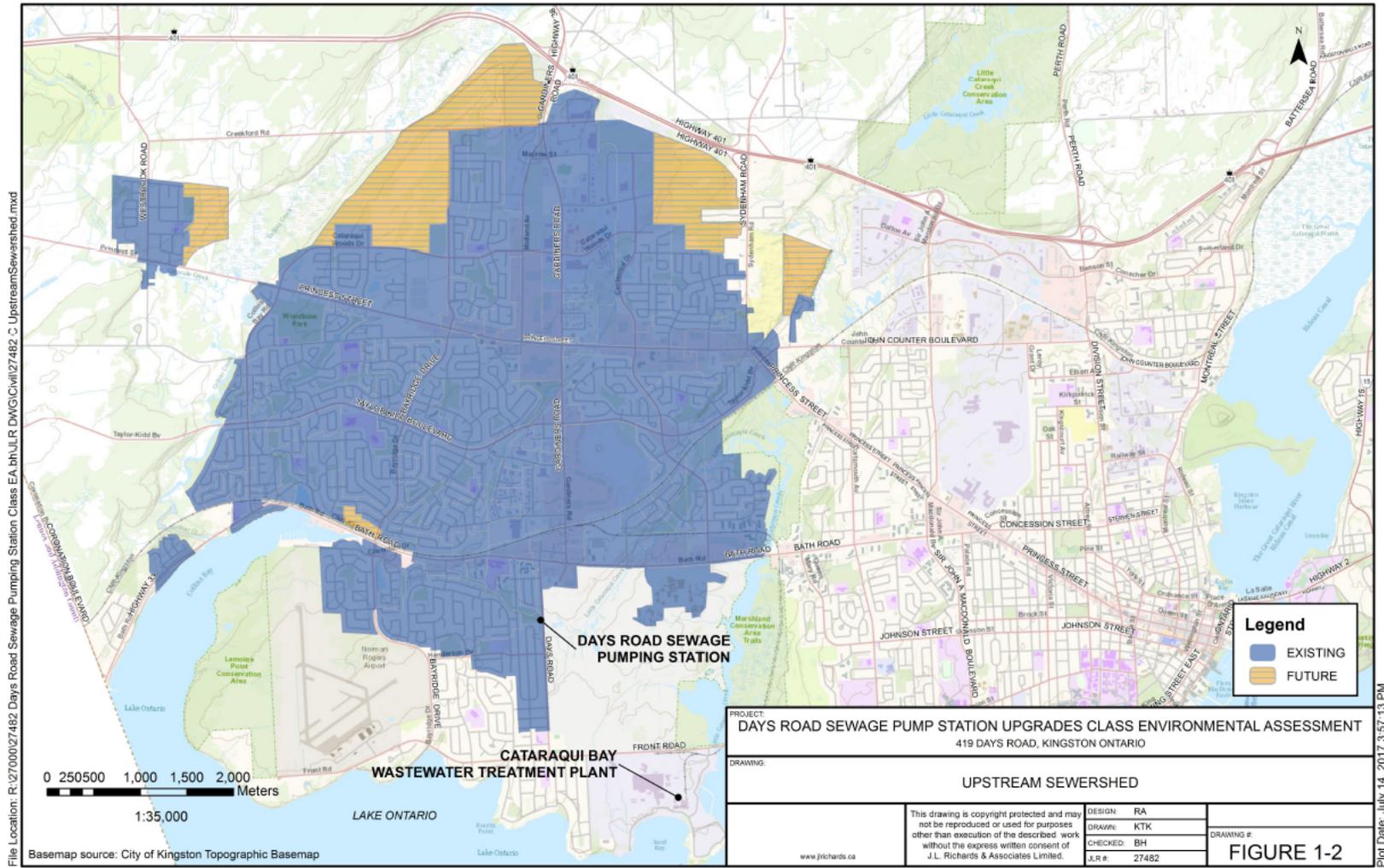
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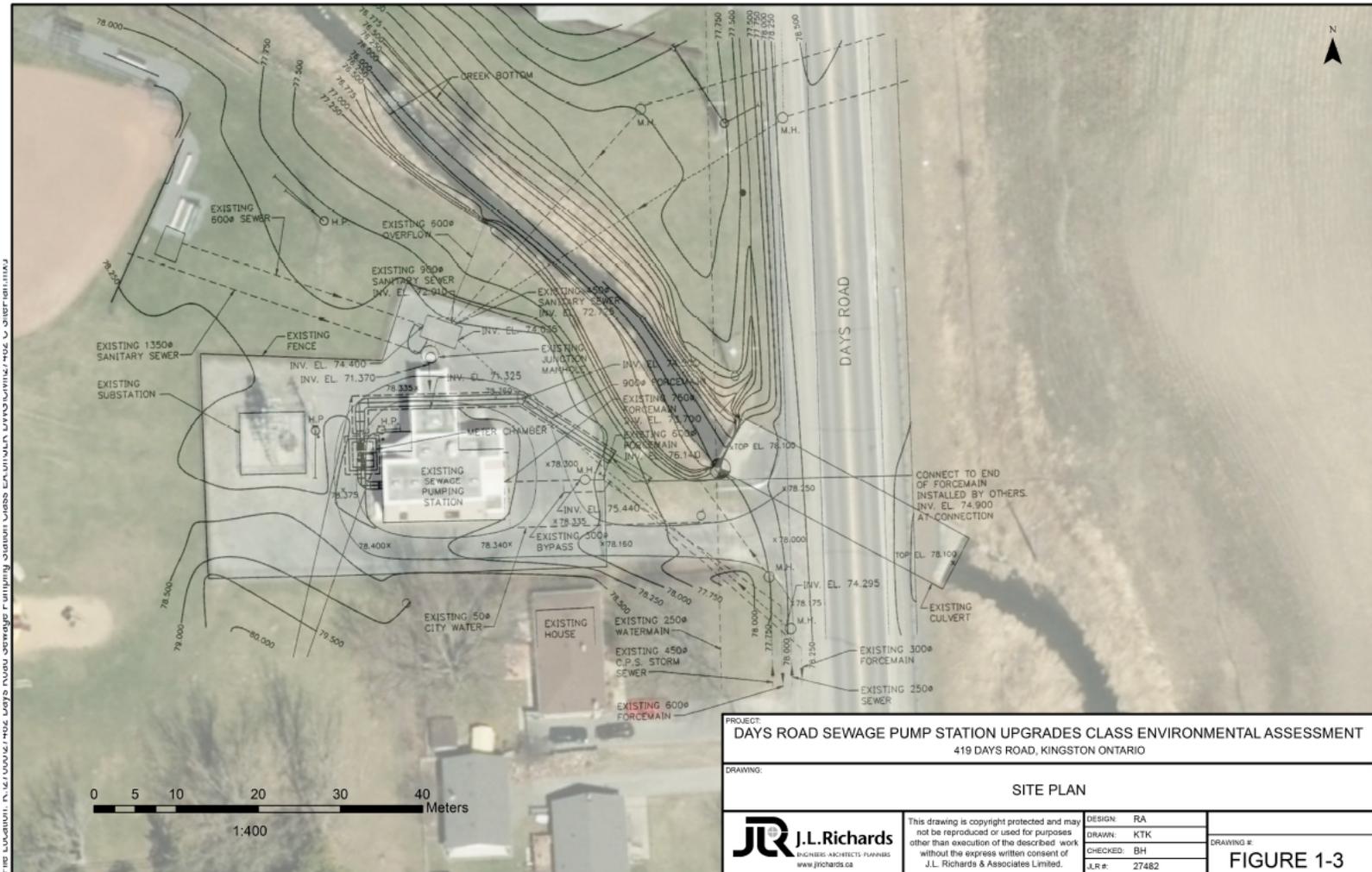
Objectives

- The primary objective of this Class EA is to undertake a comprehensive review of the Days Road SPS, including assessing its current condition and capacity, identifying short and long-term needs, and determining a preferred alternative for the ongoing management and conveyance of current and future sewage flows received over a 20-year planning horizon.
- Phase 2 objectives include:
 - To confirm existing problems associated with existing SPS
 - To summarize future system requirements
 - To identify and evaluate possible alternatives to address identified problems
 - To evaluate and recommend preferred alternative
 - To update the public and stakeholder agencies

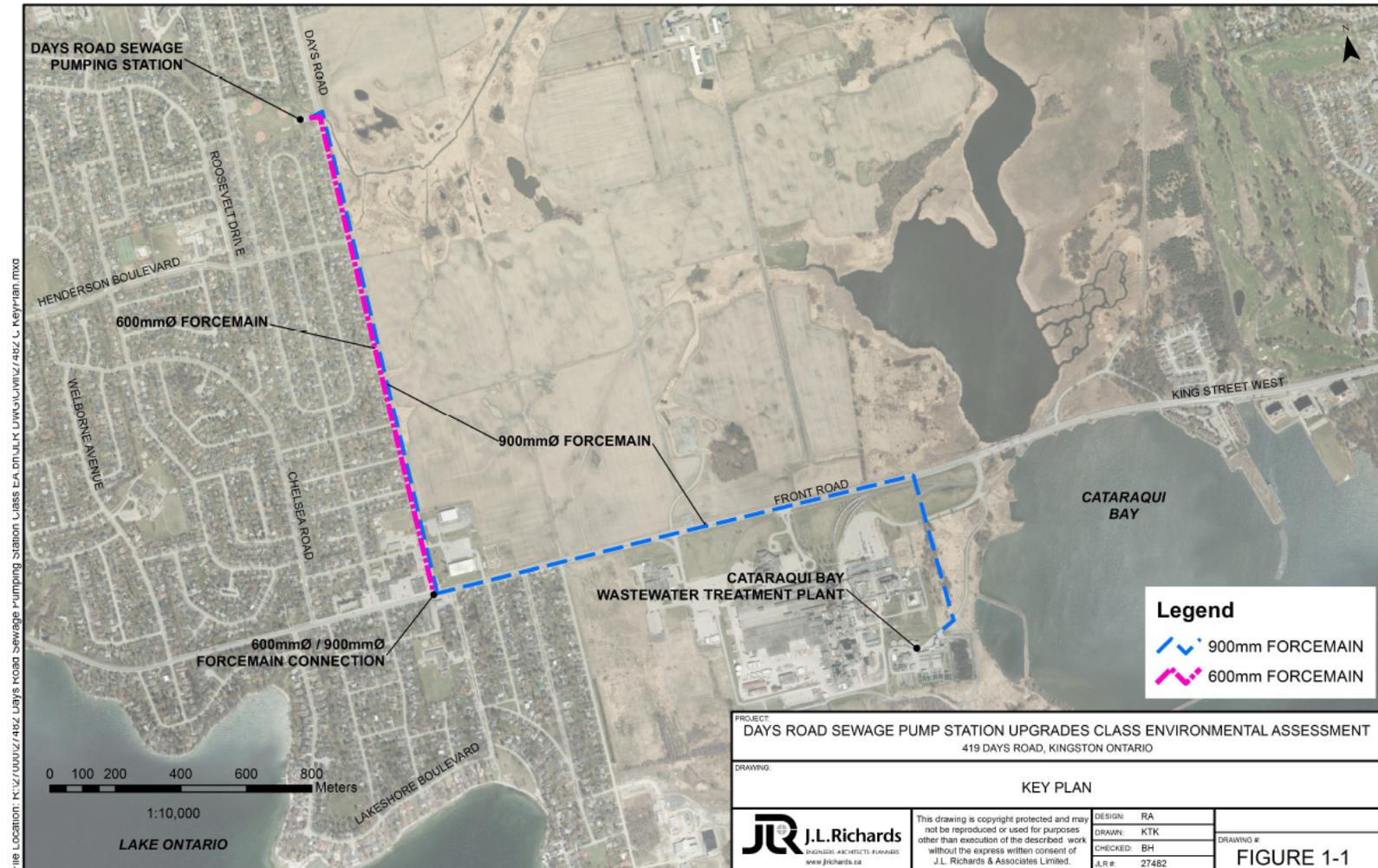
Existing Conditions (Phase 1) Upstream Sewershed



Existing Conditions (Phase 1) Site Plan



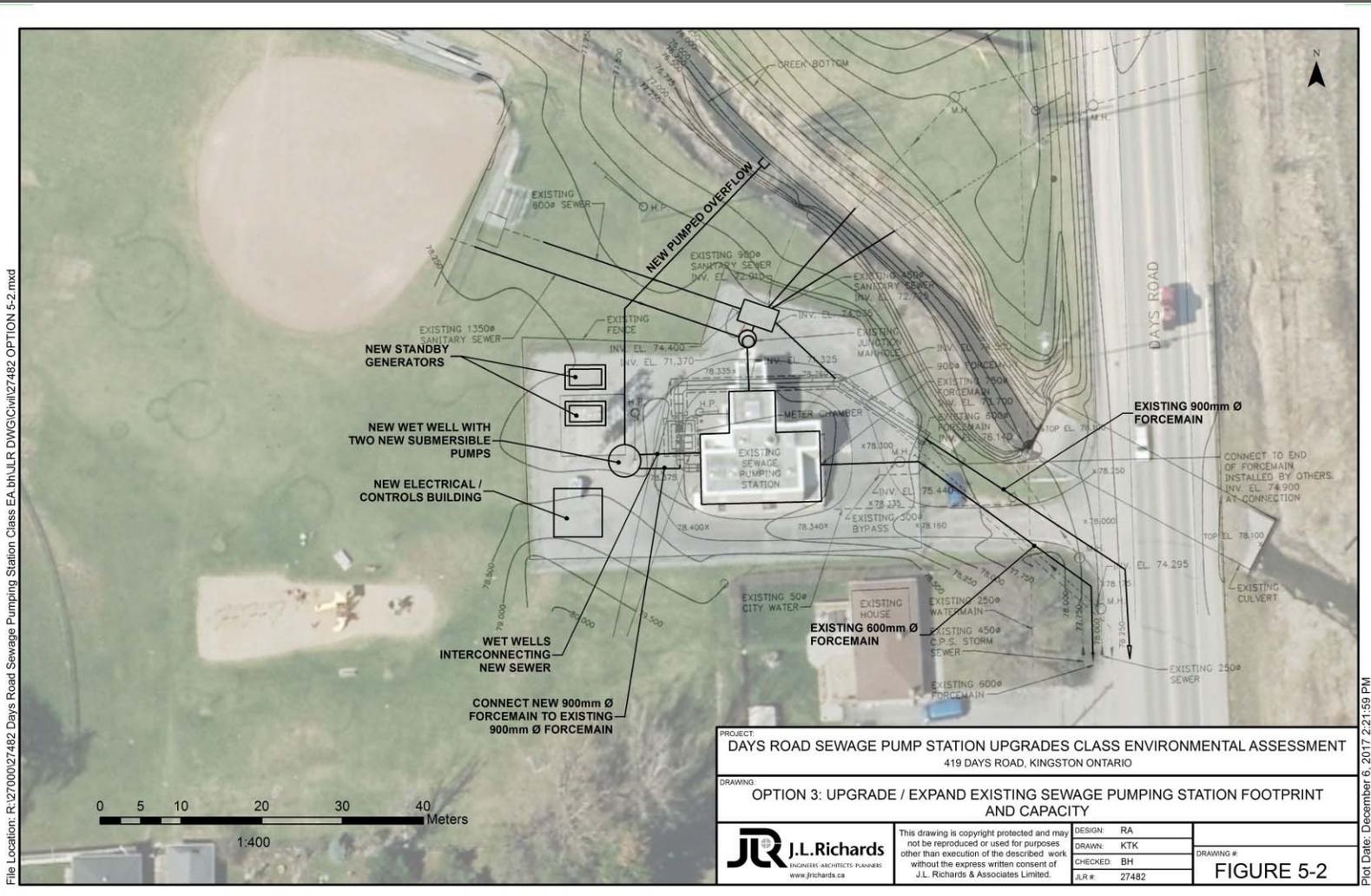
Existing Conditions (Phase 1) Key Plan



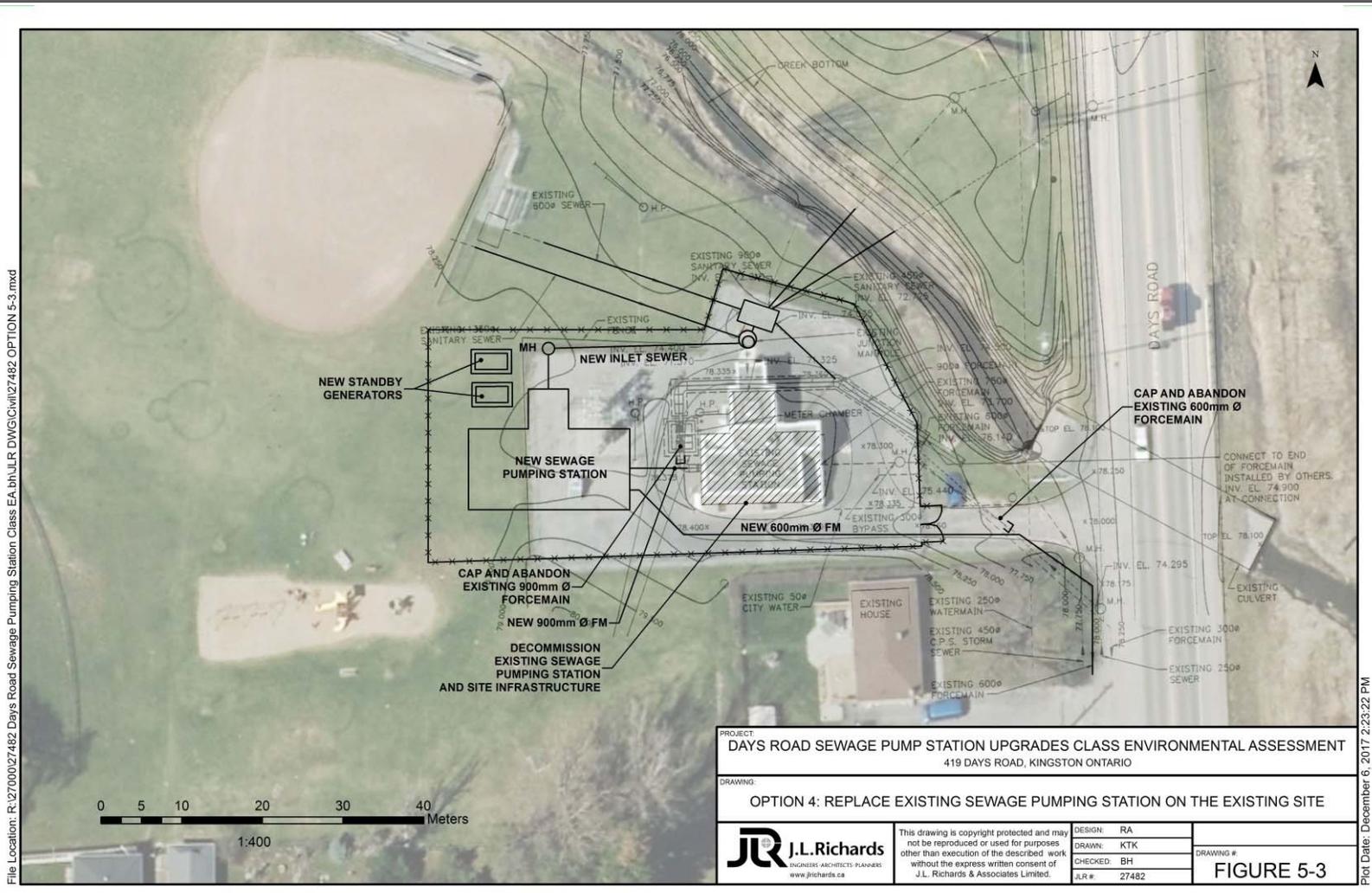
Identification of Possible Alternatives (Phase 2)

Option	Description	Screening Results
1	Do Nothing	Does not address problem statement. Not carried forward.
2	Add Equalization Storage, Maintain Existing Sewage Pumping Station Firm Rated Capacity	Carried Forward.
3	Upgrade / Expand Existing Sewage Pumping Station Footprint and Capacity	Carried Forward.
4	Replace Existing Sewage Pumping Station on the Existing Site	Carried Forward.
5	Replace Existing Sewage Pumping Station on a New Site	Carried Forward.

Option 3 – Upgrade/Expand Existing PS



Option 4 – Replace PS on Existing Site

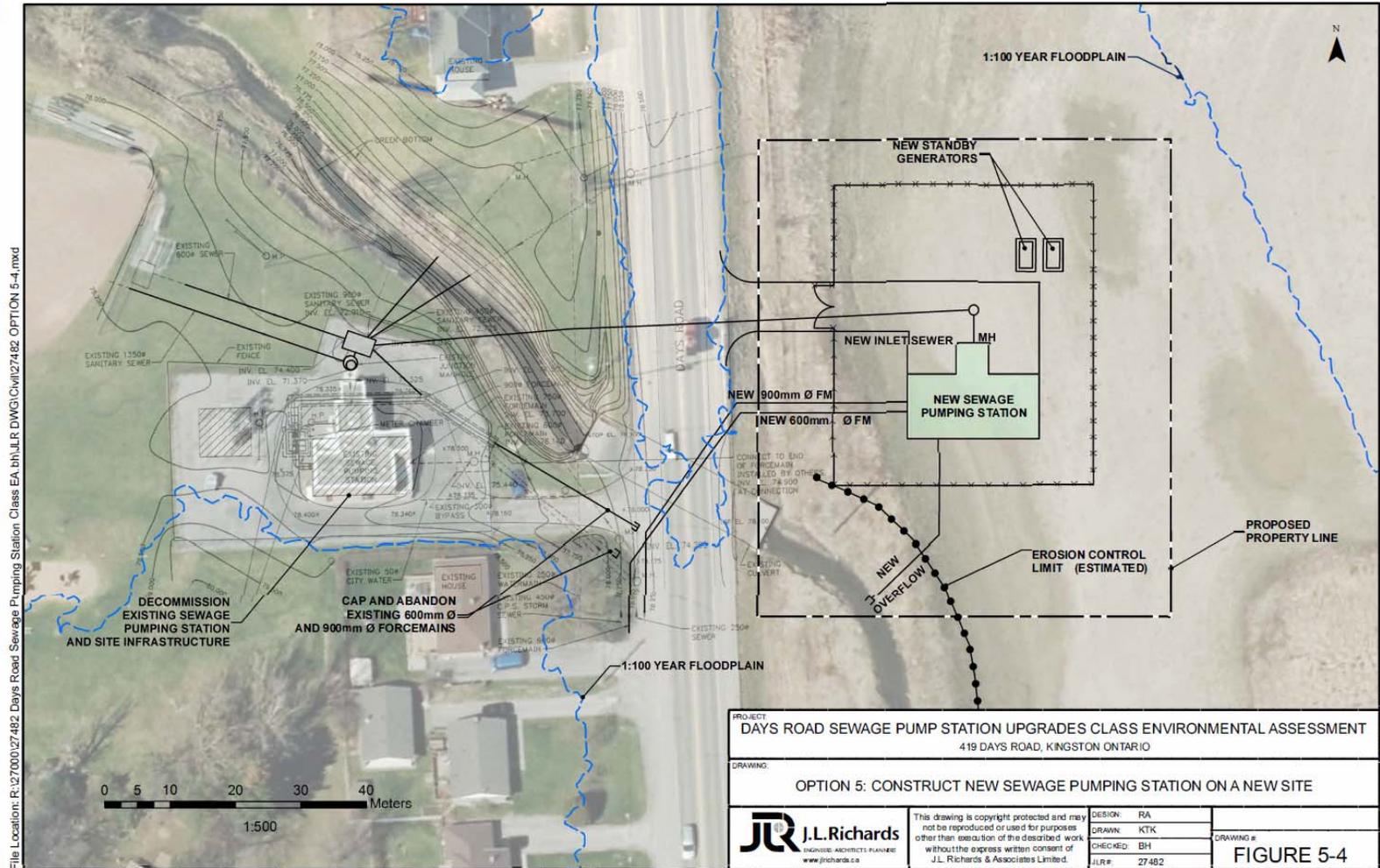


File Location: R:\27000\27482 Days Road Sewage Pumping Station Class EA.bh\JLR DWG\Civil\27482 OPTION 5-3.mxd

Plot Date: December 6, 2017 2:23:22 PM

PROJECT: DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT 419 DAYS ROAD, KINGSTON ONTARIO		
DRAWING: OPTION 4: REPLACE EXISTING SEWAGE PUMPING STATION ON THE EXISTING SITE		
<p>J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS www.jlrichards.ca</p>	DESIGN: RA DRAWN: KTK CHECKED: BH JLR #: 27482	DRAWING #: FIGURE 5-3
	This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.	

Option 5 – New PS on a New Site



Next Steps

	Timeline
Ongoing Discussions with Stakeholder Agencies	February – March, 2018
Update Class EA Based on Discussions	March, 2018
Host a Public Information Centre (PIC)	April, 2018
Obtain and Evaluate Comments Received from PIC	April, 2018
Issue Schedule 'B' Class EA Project Notice of Completion	May, 2018
Finalize Class EA Documents	June, 2018
Proceed to Preliminary and Detailed Design	TBD (Design Phase – 6 to 8 months; Construction Phase – 12 to 18 months)

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING NO. 2
WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ATTENDANCE:	Jim Miller	Utilities Kingston (UK)
	Mike Fischer	Utilities Kingston (UK)
	Chris Phippen	Utilities Kingston (UK)
	Luke Follwell	City of Kingston, Recreation and Leisure Services (City)
	Damon Wells	City of Kingston, Public Works Services
	Ryan Ashford	J.L. Richards & Associates Limited (JLR)
	Susan Shi	J.L. Richards & Associates Limited (JLR)

The meeting commenced at 11:00 a.m., Monday, July 23, 2018 at 85 Lappan's Lane, Kingston, ON.

The following summary of the discussions of this meeting has been prepared to record and direct the project. Please advise the undersigned of any errors or omissions.

ITEM

ACTION

2.1 CONCEPTUAL DESIGN REVIEW

- Ryan Ashford noted that during the April 25, 2018 Public Information Centre, the identified preferred alternative (i.e., replacement of the existing SPS with a new SPS on an expanded site into LaSalle Park) met with resistance from several residents, primarily those located adjacent to the proposed site. JLR/UK are proceeding with preparing a conceptual design and an architectural rendering in support of the preferred alternative, in order to proactively address public stakeholder comments. The objective is to mitigate the risk of a Part II Order request being submitted by the public to the MOECC and the corresponding delay impacts.
- The objective of this meeting are to (1) review the conceptual design with the City, (2) identify parks facility upgrades requirements, and (3) obtain City's feedback on the proposed upgrades and impacts on La Salle Park and future recreational pathway. Ryan noted that the required future SPS site area and layout should be confirmed at this meeting.
- Ryan Ashford provided an overview of the proposed upgrades via a PowerPoint® presentation. Refer to the attached.

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING NO. 2
WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ITEM

ACTION

- Ryan Ashford noted that the PS Building consists of an above-grade structure (approx. 10 x 12 m building), and a below-grade structure (approx. 12 m x 23 m). The expanded site footprint is bound by the recreational pathway to the west and north.
- The location of the playground was discussed. Luke Follwell noted that the proposed playground location interferes with the outfield of the north baseball diamond. The City agreed to permanently relocate the playground site and equipment adjacent to the existing parking lot on McEwen Drive. Jim Miller suggested that a conceptual design of the relocated playground be developed by the City so that it can be included in the public consultation documents. The City agreed to prepare a playground conceptual layout by end of July. The City is to pay for the playground relocation and UK will include the scope of this work in the SPS contract. City
- Luke Follwell cautioned that the baseball diamonds cannot be taken offline during SPS construction. The construction laydown areas can potentially be located where the existing playground is. The City to confirm the limits of the baseball outfield distance. City
- Luke Follwell noted that the proposed new public washroom is not required.
- Luke Follwell noted that the pathway alignment from the south does not need to be as sharp a curve as it is currently shown. JLR to straighten out the pathway. JLR
- Ryan Ashford noted that the proposed new public parking area will be a gravel parking lot with a paved section at the entrance to prevent gravel carry over. Ryan also noted that the number of parking stalls on the conceptual site plan is only an estimate. Jim Miller noted that emergency access to PS is required via the gravel parking lot and expressed concerns over public parking blocking the SPS gate. Luke Follwell suggested putting up bollards along the edge (with no parking signs attached) of the lot. Luke noted this approach was successfully implemented at Woodbine Park. Jim Miller noted that this parking lot will be for seasonal use, with no maintenance completed over the winter months.
- Landscaping around the site was discussed. Ryan Ashford noted that the trees are being considered to provide visual screening. The agreed approach for landscaping along the west side of the site is to grow vines on the west facing fence. In particular, the trees at the southeast corner are intended to address neighbor's concerns. JLR to consider re-arranging the generator layout to provide additional space for landscaping along the north side of the site. JLR
- Luke Follwell noted that, when planning construction laydown area limits, the existing park access between 2 houses on Lakeview/Meadowcrest must be maintained.

**UTILITIES KINGSTON
DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

**PROJECT MEETING NO. 2
WITH
CITY RECREATION AND LEISURE SERVICES DEPARTMENT**

ITEM

ACTION

- Luke Follwell confirmed that the City will be responsible for the construction costs for the new recreational pathway. The City/UK are discuss including pathway construction as a provisional item in the SPS tender.
- Jim Miller noted CRCA permit issues with respect to erosion mitigation measures required for the recreational pathway along the creek, and potential schedule impacts if the pathway is included in SPS tender. JLR will continue to show the pathway in Class EA documents. The City is to contact CRCA to determine the approvals process for this section of the pathway construction. City
- Ryan Ashford noted that after this meeting, JLR/UK will update the site plan and present the conceptual design to local residents. Pending their response, the Class EA 30 day public review period is to begin in September. JLR/UK

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Susan Shi

Susan Jingmiao Shi, P.Eng., M.Eng.

Reviewed by:

Ryan Ashford

Ryan Ashford, P.Eng.

SJS/RCA

Distribution: All Listed

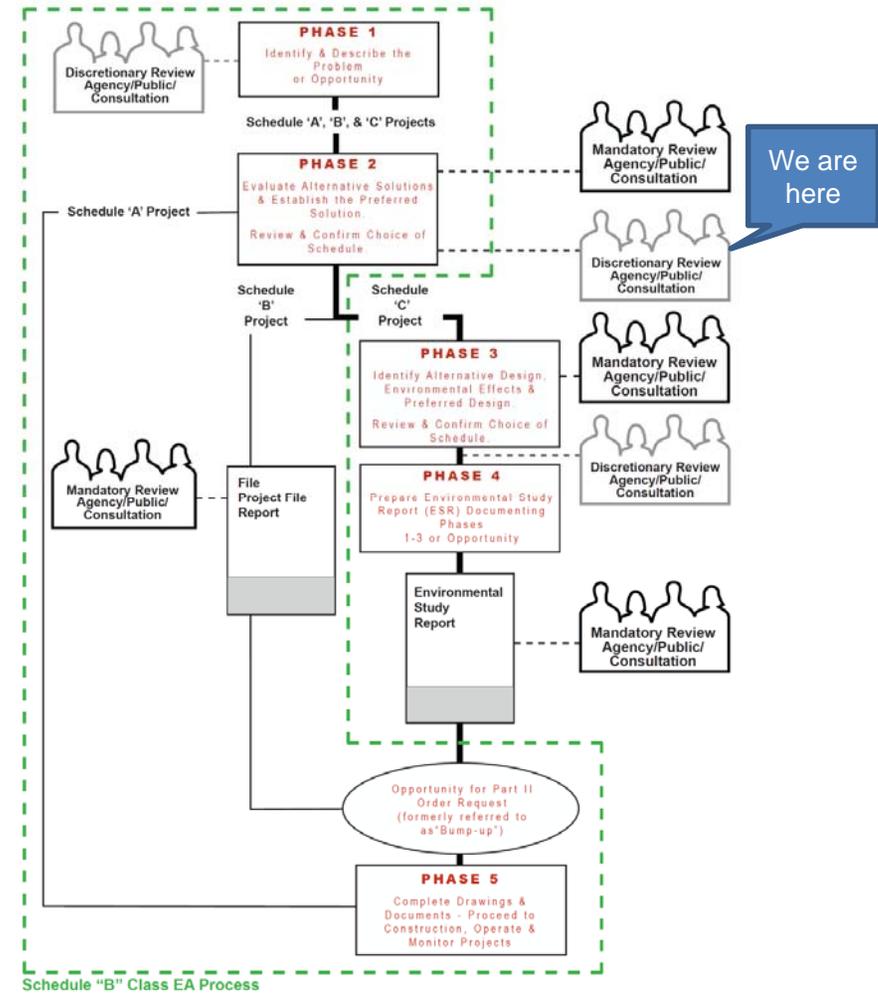


Days Road Sewage Pump Station Schedule 'B' Class Environmental Assessment Park Facilities Upgrades

J.L. Richards & Associates Limited
JLR No.: 27482

Background

- A Public Information Centre (PIC) was held on April 25, 2018, to inform the general public, project stakeholders and review agencies of the preliminary findings of Phase 2 of the Class EA.
- Replacement of the existing Sewage Pump Station (SPS) with a new SPS on an expanded site within LaSalle Park was presented as the recommended preferred alternative.
- The preferred alternative met with resistance from several residents, primarily those located adjacent to the proposed new and existing SPS sites.
- Public concerns are to be proactively addressed by preparing and presenting conceptual design details and an architectural rendering.
- Meetings being held with the City of Kingston Leisure and Recreation Services Dept. (the City) and Utilities Kingston Engineering and Operations Staff (UK) to determine the scope of potential park upgrades and operational requirements for the new Days Road SPS.



Meeting Objectives

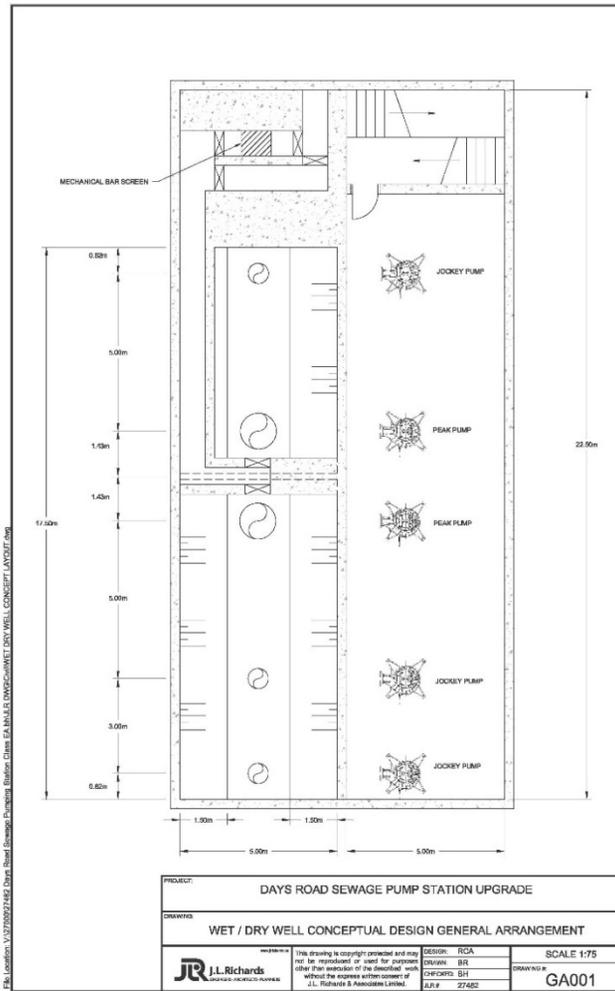
- Present the proposed conceptual facility and site plan layouts of the new Days Road SPS
- Obtain City and UK staff input on proposed new SPS impacts and potential park facilities upgrades:
 - Site location and dimensions
 - Control building dimensions
 - Public Parking
 - Recreational pathway layout
 - Playground modifications
 - Public washroom facility
 - Landscaping
 - Other design considerations
- Pump station architectural design examples
- Next steps

Conceptual Design Basis

- Pumping Station Rated Capacity: 1,430 L/s
- Wet/Dry Well Configuration
- Six (6) Pump system:
 - Four (4) Jockey Pumps (350 L/s capacity each)
 - Two (2) Peak Pumps (1,100 L/s capacity each)
- Rated pumping station capacity is met by three (3) jockey pumps and one (1) peak pump operating in parallel

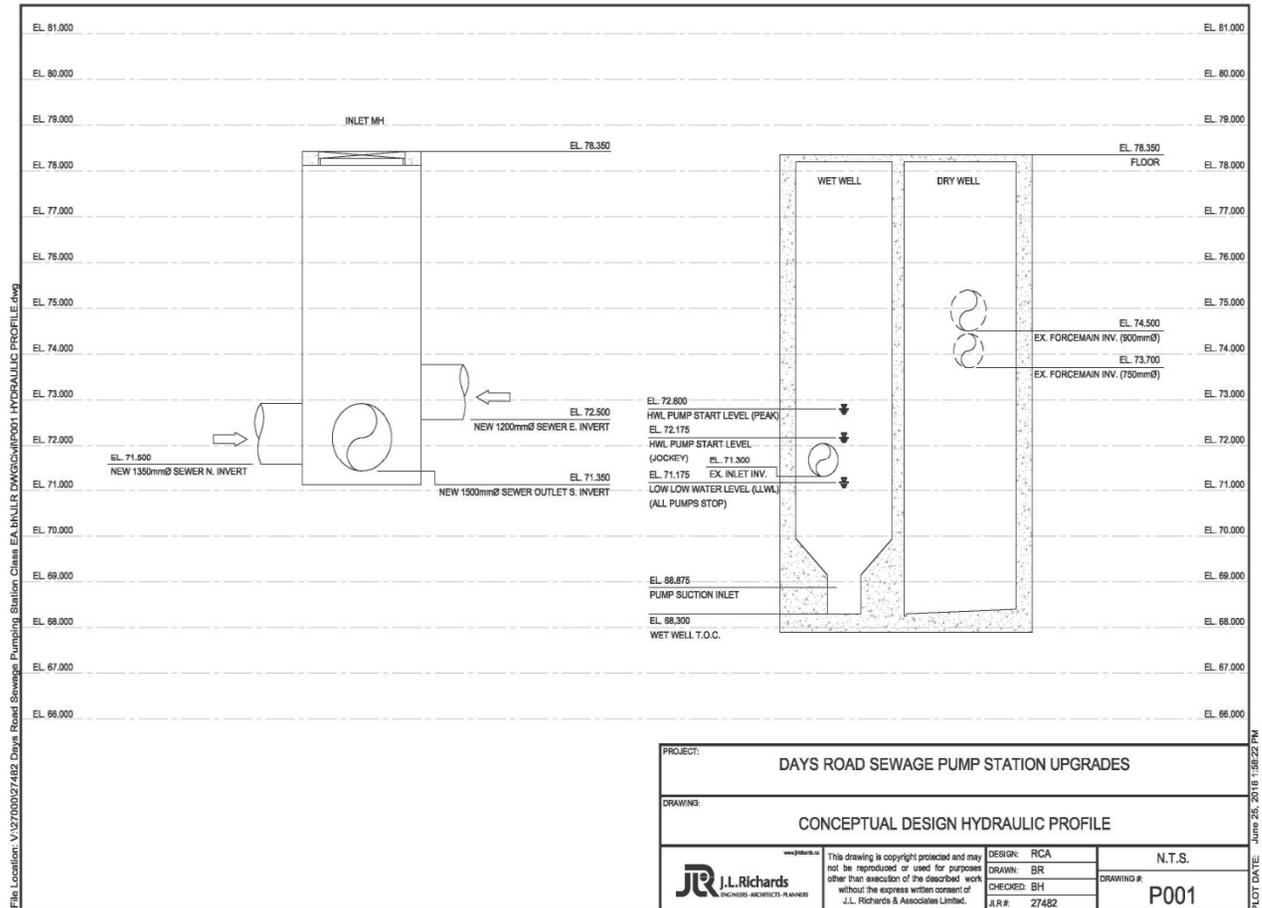
Wet and Dry Wells General Arrangement

- Two (2) wet wells for operations & maintenance flexibility
- Pumps mounted on the horizontal axis for easier removal by crane truck
- Wet wells footprint: 5 m x 18 m
- SPS below-grade footprint: 12 m x 23 m



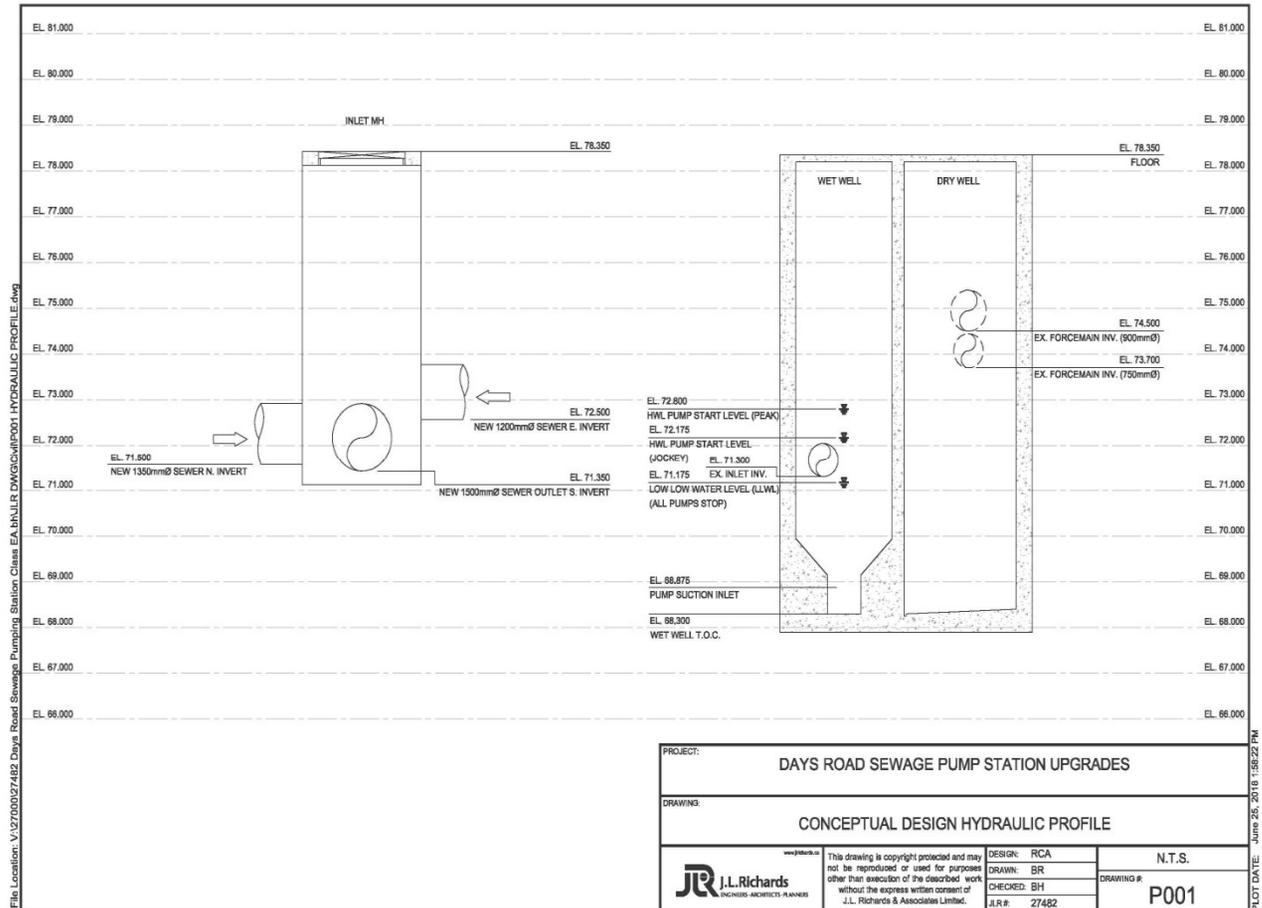
Control Building General Arrangement

- SPS Control Building to house Screening Room, Electrical & Controls Room
- One (1) storey, 4 m height required to accommodate mechanical bar screen
- SPS Control Building Footprint: 10 m x 12 m



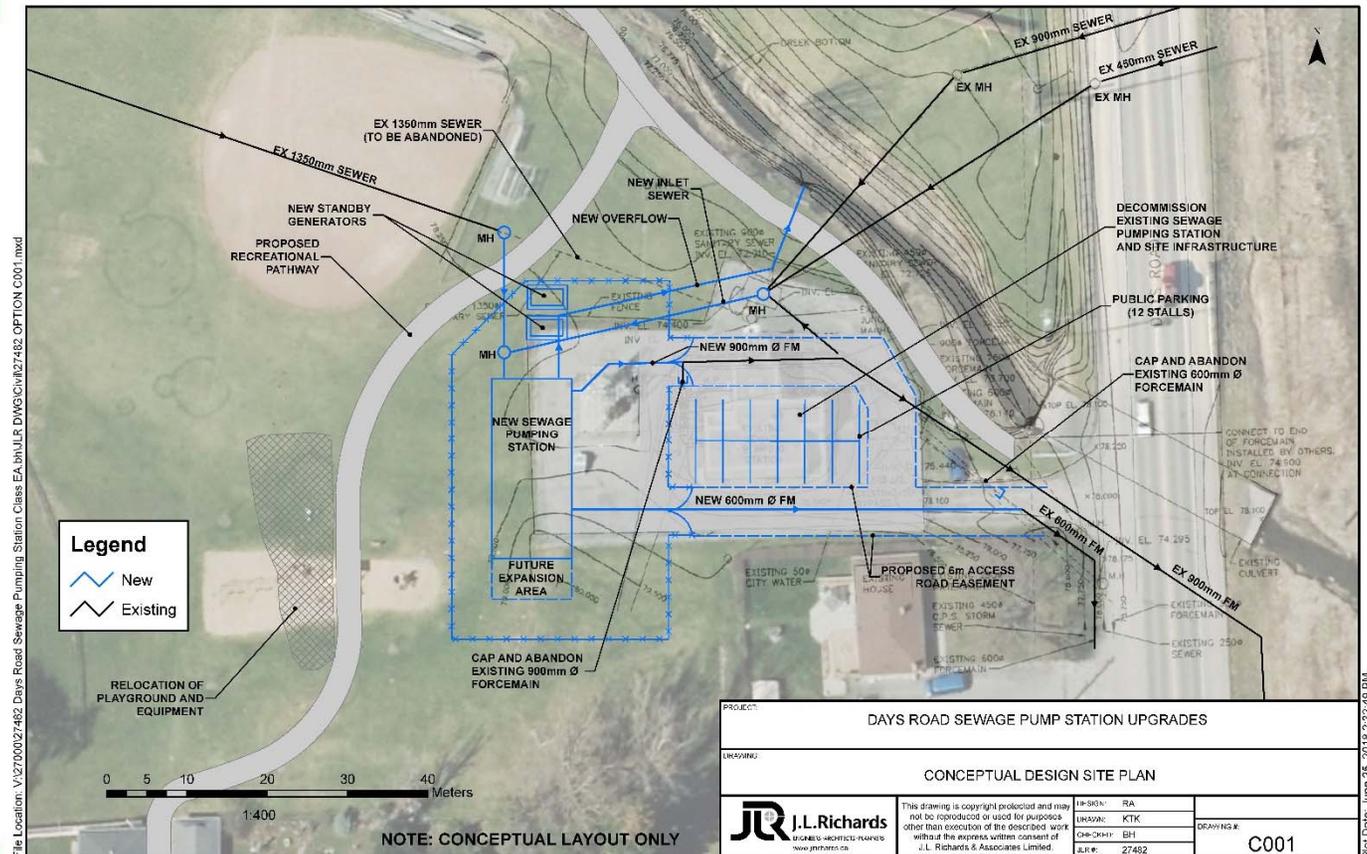
General Arrangement Elevation

- Two (2) basement levels in dry well to house process piping/valves and pumps
- Below-grade facility depth: Approx. 10 m



Conceptual Design Site Plan

- SPS shifted to the north for less obstructed views of the park from neighbouring residents
- Ten (10) to twelve (12) public parking stalls for LaSalle Park usage
- Recreational pathway route
- Playground modifications scope
- Servicing of potential stand-alone public washroom facility
- Landscaping considerations



Mahogany Sewage Pump Station Manotick, ON



Campeau Drive Pumping Station Kanata, ON



Whitney-Tisdale Pumping Station No. 4 Timmins, ON



Principale St. Sewage Pump Station Casselman, ON



Next Steps

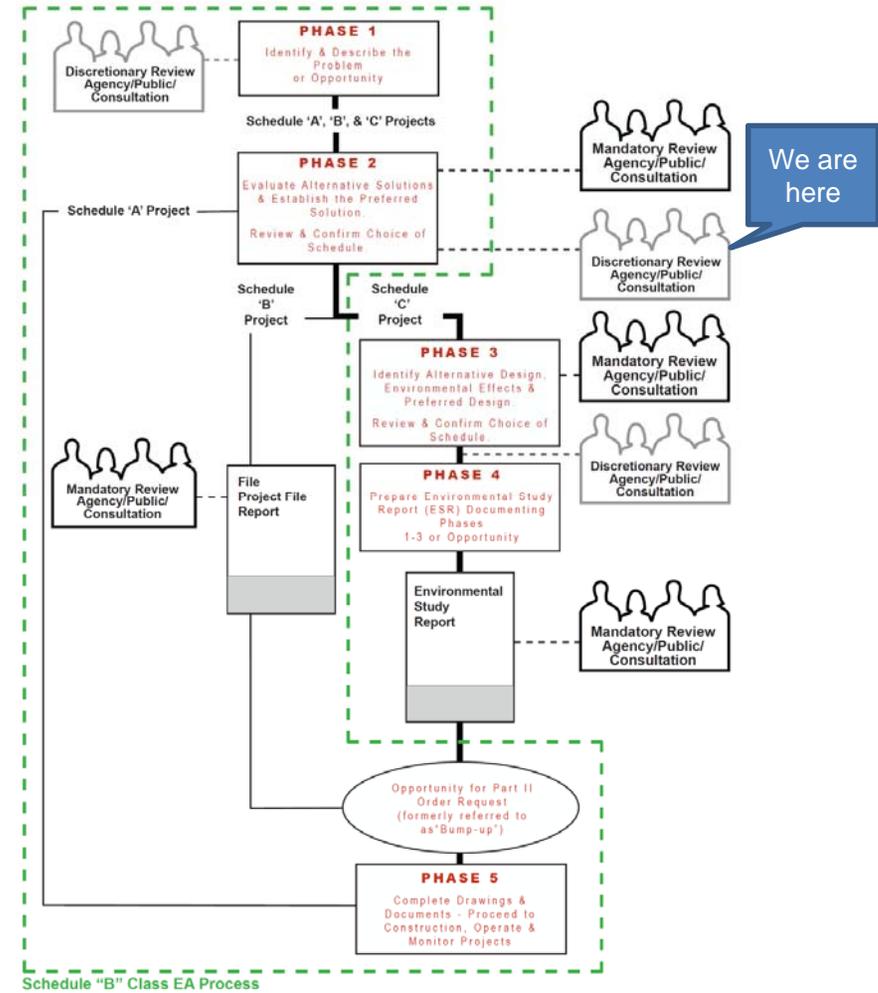
Event	Timeline
Meeting with Utilities Kingston to Present Days Road SPS Conceptual Design	June 26, 2018
Meeting with Utilities Kingston and City of Kingston to Obtain Input on Park Facilities Upgrades	July 23, 2018
Meeting with Local Public Stakeholders Group to Present Days Road SPS Conceptual Design & Architectural Rendering	August, 2018
Issue Schedule 'B' Class EA Project Notice of Completion	August, 2018
Finalize Class EA Documents	September, 2018
Proceed to Preliminary and Detailed Design	TBD (Design Phase – 6 to 8 months; Construction Phase – 12 to 18 months)

Days Road Sewage
Pump Station
Schedule 'B' Class
Environmental Assessment
Conceptual Design Review



Background

- A Public Information Centre (PIC) was held on April 25, 2018, to inform the general public, project stakeholders and review agencies of the preliminary findings of Phase 2 of the Class Environmental Assessment (Class EA).
- Replacement of the existing Sewage Pump Station (SPS) with a new SPS on an expanded site within LaSalle Park was presented as the recommended preferred alternative.
- To address public concerns regarding SPS impacts, Utilities Kingston advanced the conceptual design of the preferred alternative.



Meeting Objectives

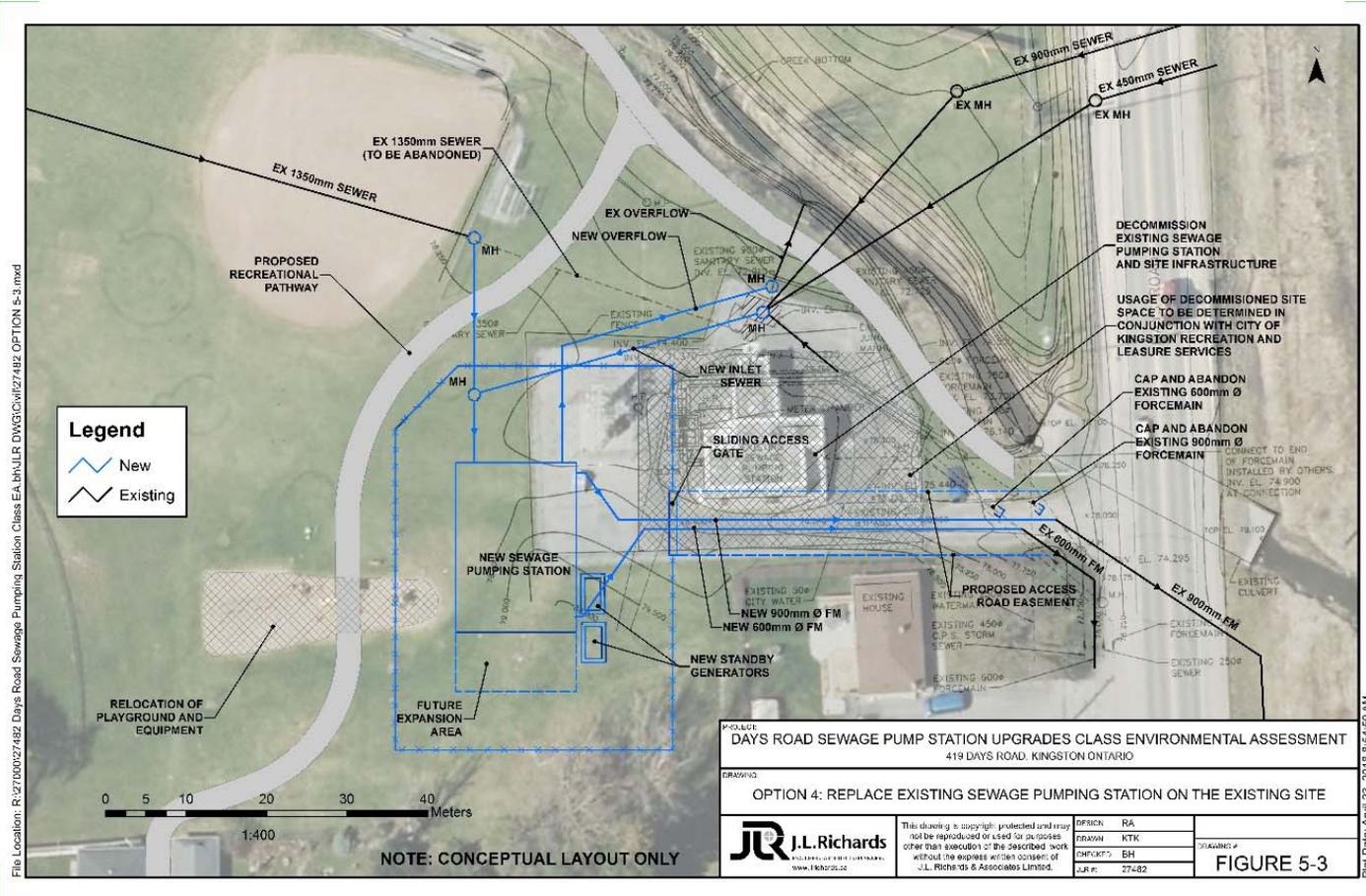
- Review the preferred alternative information provided at the Public Information Centre
- Present the proposed conceptual facility and site plan layouts of the new Days Road SPS
- Present new park features:
 - Recreational pathway layout
 - Playground relocation
 - Landscaping
 - Parking
- Review pump station operations and construction concerns
- Present pump station architectural rendering
- Discuss next steps

Option 4 – Replace Station on Existing Site, Expand into the Park

- Construct a new pump station southwest of the existing site
- Construct new sewers, forcemain connections and a new pumped overflow to Little Cataraqui Creek
- Decommission the existing pump station and site infrastructure
- Relocate the play structure and construct future recreational pathway
- Opinion of Probable Construction Cost: \$14,400,000

Advantages: Low construction cost, minimal impact on operations, potential for new park amenities and/or public parking spaces

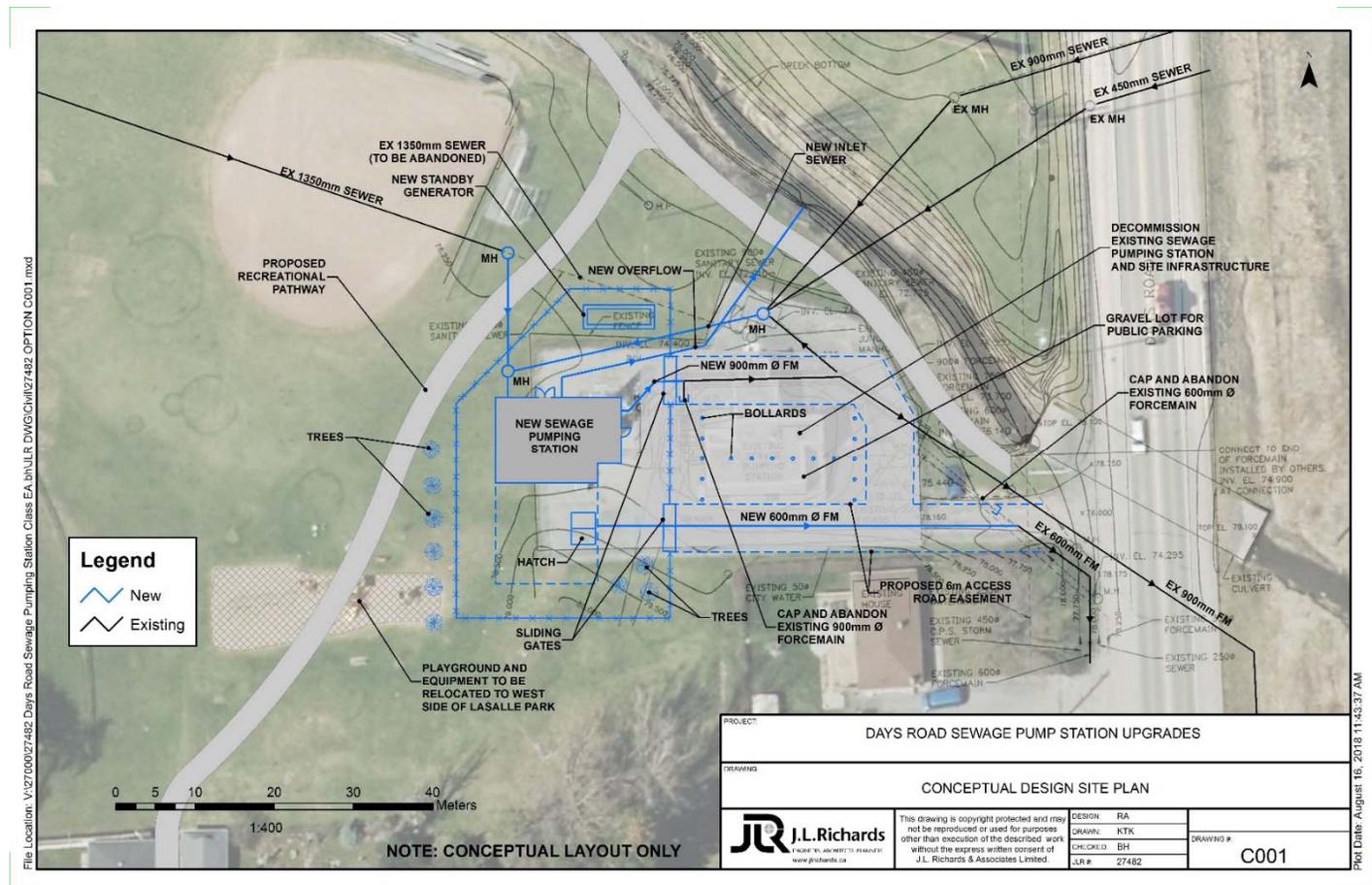
Disadvantages: Relocation of playground, park use will be restricted during construction



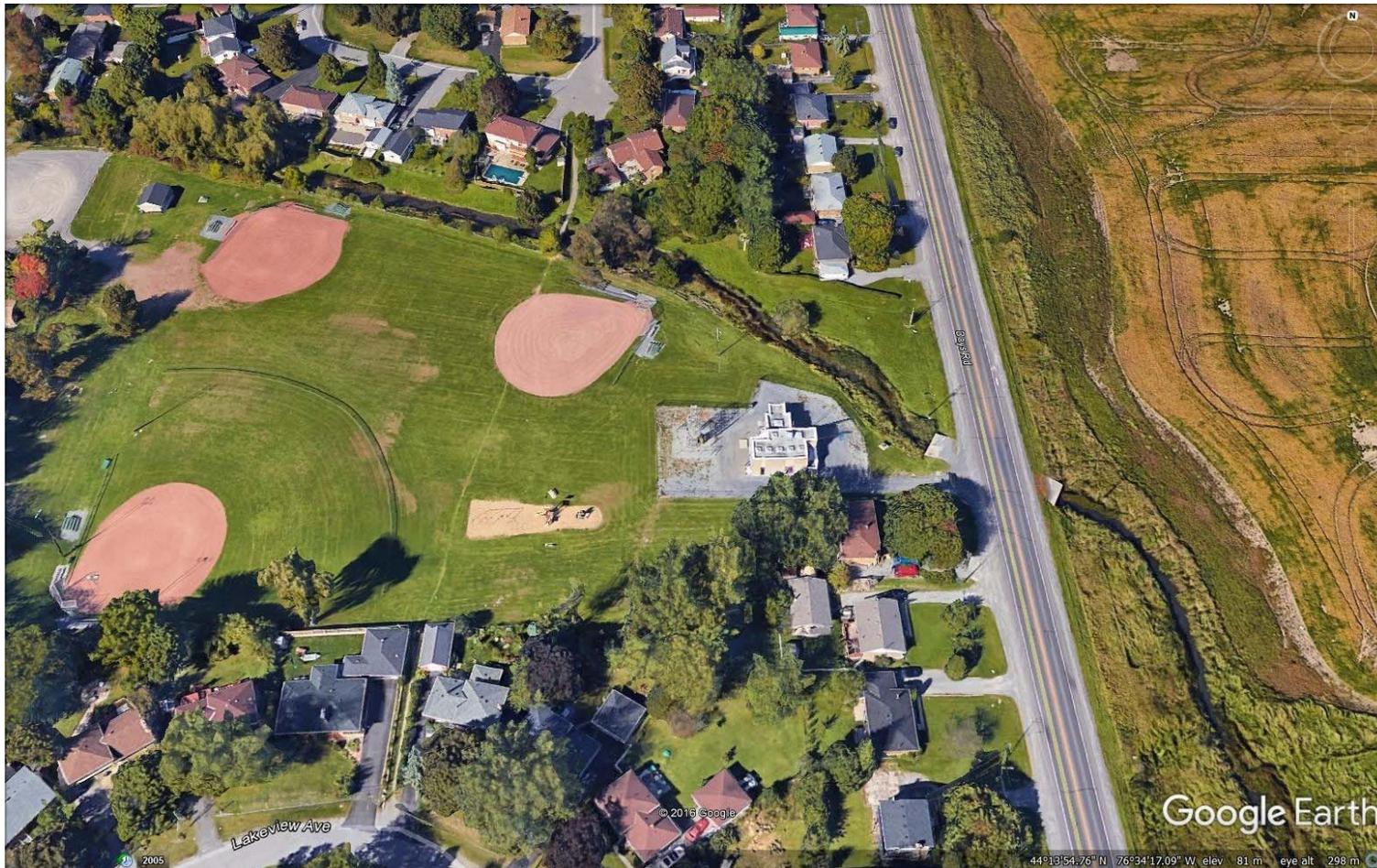
PROJECT: DAYS ROAD SEWAGE PUMP STATION UPGRADES CLASS ENVIRONMENTAL ASSESSMENT 419 DAYS ROAD, KINGSTON ONTARIO	
DRAWING: OPTION 4: REPLACE EXISTING SEWAGE PUMPING STATION ON THE EXISTING SITE	
	This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.
	REVISION: RA DRAWN: KTK CHECKED: EH DATE: 27-8-22
DRAWING # FIGURE 5-3	

Conceptual Design Site Plan

- SPS shifted to the north for less obstructed views of the park from neighbouring residents
- Reduced Control Building footprint by placing equipment in underground structure
- Several public parking stalls for LaSalle Park usage
- Recreational pathway route
- Playground relocation
- Landscaping



Current LaSalle Park Aerial Photo



Future LaSalle Park Aerial Photo



Pump Station Construction and Operations

Q1: What will be done to mitigate blasting damage to my property as a result of construction?

A1: Contractor will be required to implement monitoring and controls on all blasting operations. Contract documents will include provisions for compensating homeowners for damage resulting from blasting operations.

Q2: Will odours still be a problem with the new pump station?

A2: An odour control system (e.g. activated carbon air filtration) will be provided to capture odours from the wet well.

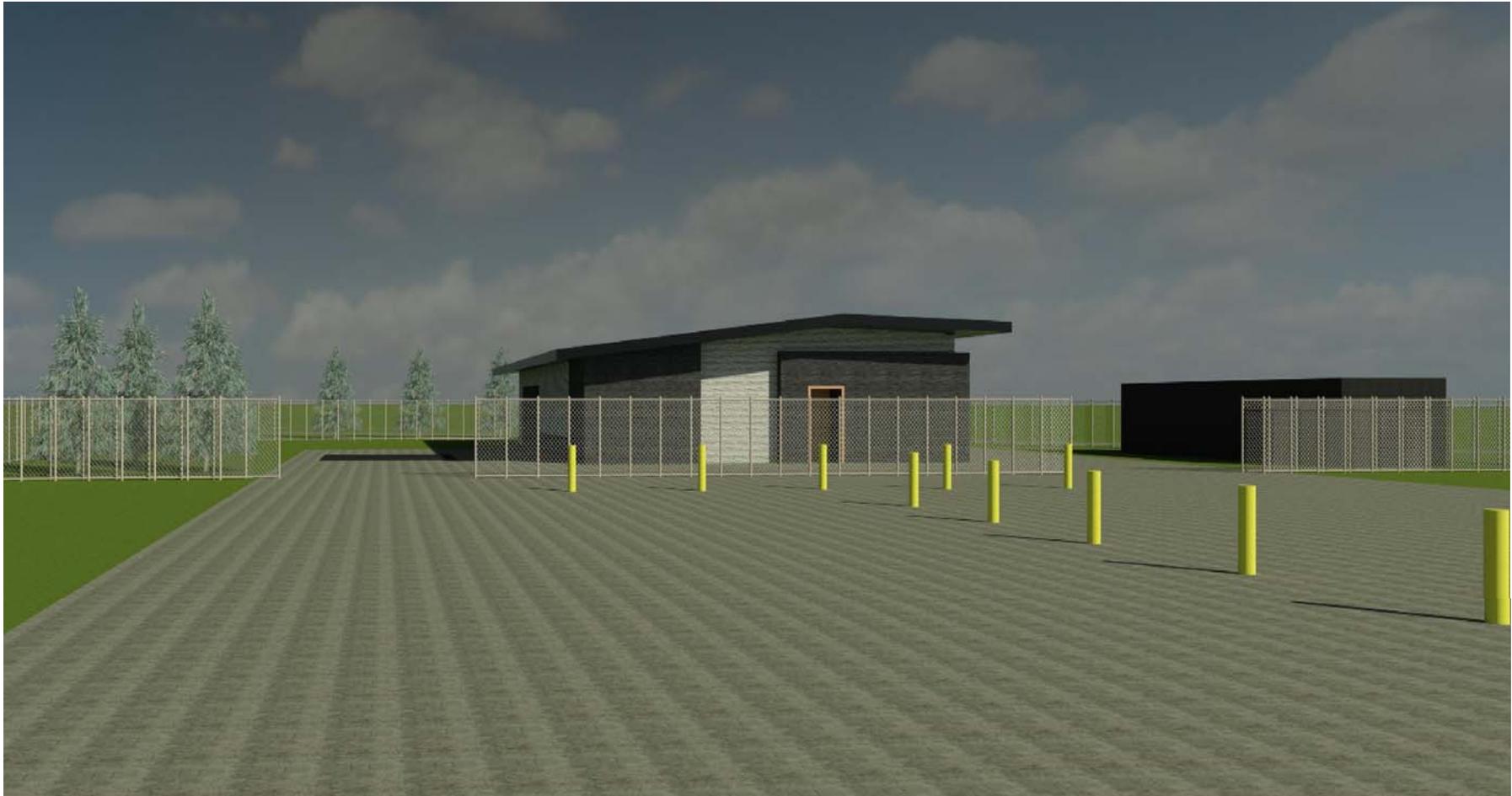
Q3: Will the new generator be noisy when it operates?

A3: The new standby generator will be housed in a sound attenuation enclosure, that limits noise at the property line to no more than 60 dBa.

Q4: Will the Pump Station HVAC system make any noise?

A4: New HVAC equipment shall not produce any noise louder than 60 dBa.

Days Road Sewage Pump Station Architectural Rendering



Next Steps

Event	Timeline
Meeting with Local Residents Stakeholders Group to Present Days Road SPS Conceptual Design & Architectural Rendering	August 21, 2018
Issue Schedule 'B' Class EA Project Notice of Completion	Early September, 2018
Finalize Class EA Documents	Early October, 2018
Proceed to Preliminary and Detailed Design	TBD (Design Phase – 6 to 8 months; Construction Phase – 12 to 18 months)

NOTICE OF COMPLETION

DAYS ROAD SEWAGE PUMP STATION

SCHEDULE 'B' CLASS ENVIRONMENTAL ASSESSMENT

Utilities Kingston has completed a Schedule 'B' Municipal Class Environmental Assessment (Class EA) to determine the most suitable option to upgrade the Days Road Sewage Pump Station. The facility is located in La Salle Park, at 419 Days Road, Kingston, Ontario.

This Class EA study evaluated various alternatives to upgrade the pump station to ensure that it can reliably accommodate future growth within the upstream sewershed for the next 20 years. The recommended preferred alternative envisions replacement of the existing pump station with a new pump station on an expanded site in La Salle Park. The proposed site will consist of a new, single-storey building enclosure to house process and electrical equipment. The below grade structure will consist of wet and dry wells, six (6) sewage pumps, process piping and valves, HVAC and odour control equipment. A new transformer and two new generator sets will be located within an expanded fenced in area of the site.

The project is being planned under Schedule 'B' of the Municipal Class EA process. Subject to comments received as a result of this Notice and the receipt of necessary approvals, Utilities Kingston intends to proceed with the design and construction of this project. The Schedule 'B' Project Report, which contains a summary of pertinent information compiled during the Class EA, is available online or in person at:

Utilities Kingston
85 Lappan's Lane, Kingston, ON K7L 4X7
Monday – Friday: 8:30 a.m. – 4:30 p.m.
613-546-1181 ext. 2522
https://utilitieskingston.com/Projects/Detail/DaysRd_SPS



Comments should be provided in writing to Utilities Kingston and J.L. Richards & Associates within 30 calendar days from the date of this Notice.

Consultant:
Ryan Ashford, P.Eng.
Senior Environmental Engineer
J.L. Richards & Associates Limited
700-1565 Carling Avenue
Ottawa, ON K1Z 8R1
rashford@jlrichards.ca
Phone: 613-728-3571 Ext.1253

Proponent:
Natasha Prepas-Strobeck, P.Eng.
Utilities Engineer
Utilities Kingston
85 Lappan's Lane, P.O. Box 790
Kingston, ON K7L 4X7
nprepas-strobeck@utilitieskingston.com
Phone: 613-546-1181 Ext. 2522

If concerns arise regarding this project, which cannot be resolved through discussion with Utilities Kingston, a person or party may request that the Minister of the Environment, Conservation and Parks make an order for the project to comply with Part II of the Environmental Assessment Act (referred to as a Part II Order) which addresses individual environmental assessments. Requests must be received by the Minister at the address below within 30 calendar days of this Notice. A copy of the request must also be sent to Utilities Kingston. If no request is received within 30 calendar days of this Notice, Utilities Kingston will be permitted to proceed to design and construction as outlined in the Schedule 'B' Preliminary Findings Report.

Part II Order Request Forms should be directed to the Minister of the Environment, Conservation and Parks, with a copy sent to the Director of Environmental Assessment and Permissions Branch, and the Proponent.

Minister
Ministry of the Environment,
Conservation and Parks
Floor 11, 77 Wellesley Street
West
Toronto, ON M7A 2T5
Minister.mecp@ontario.ca

Director, Environmental
Assessment and Permissions
Branch
Ministry of the Environment,
Conservation and Parks
135 St. Clair Avenue West, 1st
Floor
Toronto, ON M4V 1P5
enviropemissions@ontario.ca

Natasha Prepas-Strobeck, P.Eng.
Utilities Engineer
Utilities Kingston
85 Lappan's Lane
Kingston, ON K7L 4X7
nprepas-strobeck@utilitieskingston.com

This notice issued on November 15, 2018



**DAYS ROAD SEWAGE PUMP STATION UPGRADES
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT**

STAKEHOLDER CONSULTATION PLAN

FINAL: June 13, 2017

Prepared by:



**J.L. Richards
& Associates Limited**
203-863 Princess Street
Kingston, ON Canada
K7L 5N4
Tel: 613 544 1424
Fax: 613 544 5679

JLR 27482

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LIST OF APPENDICES

- APPENDIX A: Agency and Stakeholder Contact List
- APPENDIX B: Draft Notice of Study Commencement
and Draft Agency Notice Letter
- APPENDIX C: Draft PIC Notice

1.0 INTRODUCTION

Utilities Kingston (UK) is undertaking a Class Environmental Assessment (Class EA) to evaluate alternatives to renew the Days Road Sewage Pump Station (SPS) in the City of Kingston (City). The SPS is located on the west side of Days Road, between Castell Road to the north and Henderson Boulevard to the south.

The SPS is a critical piece of infrastructure for servicing the Kingston West sewershed and is nearing 40 years of service. While some critical components were renewed and upgraded in the mid-1990s, even these components are nearing their intended service life. As such, a major renewal of the SPS is required to ensure it can be relied on to accommodate current flows and the increase to flows that are anticipated from future growth within the upstream sewershed.

The Class EA is proceeding as a Schedule 'B' Class EA in accordance with the requirements of the Ontario Municipal Class EA, October 2000, as amended in 2015. Stakeholder consultation is a key element of the Class EA process. As a result, this stakeholder consultation plan has been developed to ensure that the public and other stakeholders have opportunities to be involved in, and to provide comments throughout, the Class EA process.

2.0 PROJECT TEAM

J.L. Richards & Associates Limited (JLR), in association with Golder Associates Limited (GAL) and CSW Landscape Architects Limited (CSW), are working with UK staff on this Class EA. Contractually, JLR will be the Prime Consultant, with GAL and CSW acting as sub-consultants (referred to as the JLR Team).

3.0 KEY CONSIDERATIONS

In meeting with UK staff and reviewing background material, a number of considerations likely to impact the implementation of the stakeholder have emerged. As summarized below, these considerations represent both opportunities and constraints for engagement and influence how this stakeholder consultation plan is structured.

1. The available property associated with the SPS appears to be constrained, and this aspect will need to be identified early on, such that appropriate options can be evaluated.
2. The SPS is bounded by a park to the west and a number of residences to the north and south. In addition to general public consultation, this stakeholder consultation plan will seek to meaningfully engage neighbouring residents.
3. In order for this project to be truly successful, clear communications will be required with UK staff, both:
 - a) generally, regarding the operational nuances of the SPS, and the overarching long term goals for wastewater management within the community; and
 - b) specifically, at key milestones to obtain approval prior to advancing to proceeding phases.

4.0 CONSULTATION OBJECTIVES

The research and analysis conducted during the development of this stakeholder consultation plan have led to the identification of the following objectives for the consultation process for the Class EA:

1. Improve understanding and involvement through effective communications and consultation with UK staff and other stakeholders regarding the Class EA.
2. Ensure the feedback provided by UK staff and other stakeholders is reviewed and understood by the JLR Team.
3. Enable stakeholders to easily obtain information about the Class EA process through the use of the UK website, and project contact numbers for information.
4. Encourage stakeholder participation throughout the Class EA so the JLR Team understands local concerns and issues.

5.0 TARGET GROUPS FOR CONSULTATION

To satisfy the objectives of this stakeholder consultation plan, target groups should be identified. The following list encompasses the audiences considered critical for the success of the stakeholder consultation plan. A more detailed list is included in Appendix A. As the Class EA unfolds, additional target groups may be identified and included.

1. The general public, including:
 - a) adjacent property owners;
 - b) other Kingston residents and business owners; and
 - c) affected Indigenous communities.
2. Government organizations and agencies, including:
 - a) City Council;
 - b) UK and City staff;
 - c) Kingston, Frontenac and Lennox and Addington Public Health;
 - d) Cataraqui Region Conservation Authority;
 - e) County of Frontenac;
 - f) United Counties of Leeds & Grenville;
 - g) Lennox and Addington County;
 - h) Ontario Ministry of Environment and Climate Change;
 - i) Ontario Ministry of Natural Resources and Forestry; and
 - j) Ontario Ministry of Indigenous Relations and Reconciliation.

6.0 ACCESSIBILITY STANDARDS FOR CUSTOMER SERVICE

It will be critical throughout the Class EA that services are provided in accordance with the Accessibility for Ontarians with Disabilities Act. This includes having respect for persons with disabilities and using all reasonable efforts to ensure they have an equal opportunity to obtain and provide input.

Throughout the Class EA, the JLR Team will:

1. Ensure the Public Information Centre is held in a building with barrier-free access.
2. Work with UK staff to provide accessible reporting formats and communications supports, upon request.

7.0 KEY MESSAGES

Consistent messages with the appropriate tone and content will improve understanding among target audiences. The message statements listed below are built on an understanding of the existing audiences, constraints and opportunities. These messages should be communicated throughout the Class EA and refined, as required, as it unfolds.

1. The 'firm capacity' and of the SPS is currently insufficient to accommodate the historical peak hour flow, although the SPS is able to accommodate that flow with all its pumps.
2. While the superstructure and building itself appear to be in fair condition, certain SPS components are nearing their intended service life.
3. Given the critical nature of the SPS, the ultimate planned solution and associated infrastructure needs to ensure the SPS is reliable and robust to ensure it can be relied on to accommodate current flows and the increase to flows that are anticipated from future growth within the upstream sewershed.
4. UK and the JLR Team are committed to the Class EA, and are placing an emphasis on a seamless, open, transparent and traceable study process.

8.0 RECOMMENDED STAKEHOLDER CONSULTATION ACTIVITIES

A variety of consultation activities are recommended to achieve the objectives of this stakeholder plan. Care has been taken in selecting activities that recognize the needs of various stakeholders and their specific information requirements.

1. Public Information Centre

Public Information Centres (PICs) provide a good mechanism for stakeholders to be informed about, and provide feedback on, the Class EA process.

The JLR Team will work with UK staff in support of the Phase 2 Report, which will assess alternatives and identify a recommended preferred alternative. Once it has been prepared by the JLR Team and reviewed with UK staff, a PIC will be held, which is a mandatory requirement for Phase 2 of the Class EA process.

The PIC will be designed to be welcoming, providing opportunities for attendees to speak directly with the JLR Team and UK staff. The PIC can take a variety and combination of forms (e.g. formal presentation with a question-and-answer session and/or display boards with informal one-on-one discussions). PIC attendees will be encouraged to fill out a comment sheet to provide feedback to the JLR Team on the Phase 2 Report and overall Class EA process.

2. Class EA Notices

In order to engage stakeholders, Class EA and PIC notices will be placed in the local information pages of community and daily newspapers, and direct mailed to affected stakeholders, agencies and adjacent property owners. For reference:

1. A draft Notice of Study Commencement and draft agency notice letter (complete with an attached comment form) are included in Appendix B.
2. A draft PIC notice is included in Appendix C.

3. Website

To assist stakeholders in obtaining information about the Class EA and to provide an on-going mechanism for feedback to the JLR Team, UK should continue to provide space on its website for the Class EA. Information for the website should include: notices for the PIC, reports, technical memos, and contact information.

4. Opportunities to Comment

As part of the PIC for this Class EA, attendees will be encouraged to fill out a comment sheet to provide feedback to the JLR Team on the Phase 2 Report and overall Class EA process. Following the PIC, a feedback report will be prepared by the JLR Team that summarizes and records the comments received as well as actions taken by the JLR Team in response.

In addition, at the beginning of the Class EA, email and voice mail feedback tools should also be established to provide stakeholders with numerous avenues to provide input and ask questions. These feedback tools should be promoted on all communications materials.

5. Timing of Public Consultation

The following schedule lists anticipated dates for key stakeholder consultation activities. These dates are subject to change as the Class EA moves forward.

Activity	Anticipated Date
Notice of Commencement	Early June, 2017
PIC	Late November, 2017
Notice of Completion	Early December, 2017

9.0 EVALUATION MECHANISMS

The following activities should be undertaken to evaluate the effectiveness of this stakeholder consultation plan.

1. Review attendance numbers at the PIC.
2. Request formal and informal feedback on the Class EA consultation process at the PIC, and on the study website.
3. Track the number of visits to the study website and evaluate changes in traffic that occur in response to particular consultation activities.
4. Examine the number and content of emails received from stakeholders.

10.0 CONCLUSION

UK is undertaking an important Class EA with the Days Road SPS Class EA. The activities contained in this stakeholder consultation plan reflect the need to engage stakeholders throughout the Class EA process. The consultation plan has been developed to ensure that all stakeholders are important and significant participants in the Class EA process.

Maintaining a clear, transparent, and inclusive consultation process will ensure meaningful dialogue which, in turn, will enable the reasation of innovative and achievable solutions for the Class EA.

APPENDIX A

AGENCY AND STAKEHOLDER CONTACT LIST

Utilities Kingston
Days Road Sewage Pump Station Class EA
Appendix A: Agency and Stakeholder Contact List

Consultation Plan

Agency	Name	Title	Address1	Address2	Postal Code	Telephone
Algonquin and Lakeshore Catholic District School Board	Doug Campbell	Controller, Plant and Planning Services	151 Dairy Ave.	Napanee, ON	K7R 4B2	613-354-2255 X 403
Bell Canada (Bell Aliant)	Bonnie Cattanach	Implementation Manager	434 Pitt St.	Cornwall, ON	K6J 3R2	613-930-2564
Bell Canada	Christopher Lockyer	Implementation Manager Access Network Facilities	450 Princess St. P.O. Box 460	Kingston, ON	K7L 4W5	613-542-4636
Cataraqui Region Conservation Authority	Rob McRae	Manager, Watershed Planning & Engineering	1641 Perth Rd., P.O. Box 160	Glenburnie, ON	K0H 1S0	613-546-4228
Cataraqui Region Conservation Authority	Andrew Schmidt	Supervisor, Development Review	1641 Perth Rd., P.O. Box 160	Glenburnie, ON	K0H 1S0	613-546-4228
Cataraqui Region Conservation Authority	Michael Dakin	Resource Planner	1641 Perth Rd., P.O. Box 160	Glenburnie, ON	K0H 1S0	613-546-4228
Cataraqui Region Conservation Authority	Christine Woods	Resource Planner	1641 Perth Rd., P.O. Box 160	Glenburnie, ON	K0H 1S0	613-546-4228
CN Rail	Stefan Linder	Manager Public Works	4 Welding Way off Administration Road	Vaughan, ON	L4K 1B9	905-669-3264
CN Rail	Derek Basso	Engineering Technician	4 Welding Way off Administration Road	Vaughan, ON	L4K 1B9	905-669-3184
CP Rail	Joe Van Humbeck	System Manager, Environmental Assessment	7550 Ogden Dale Rd. SE	Calgary, AB	T2C 4X9	403-319-6530
City of Kingston	Paige Agnew	Director, Planning, Building and Licensing	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 X 3252
City of Kingston	Laurie Paquin	Project Manager, Parks Development	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 x2128
City of Kingston	Luke Follwell	Director, Recreation and Leisure Services	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 x1815
City of Kingston	Neal Unsworth	Manager, Parks Development	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 Ext.1811
City of Kingston	Mark Van Buren	Director, Engineering/Administratio n	216 Ontario St.	Kingston, ON	K7L 2Z3	
City of Kingston	Greg Newman	Manager, Policy Planning	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 x3289
City of Kingston	Marnie Venditti	Manager, Development Approvals, Planning, Building & Licensing Services	216 Ontario St.	Kingston, ON	K7L 2Z3	

Utilities Kingston
Days Road Sewage Pump Station Class EA
Appendix A: Agency and Stakeholder Contact List

Consultation Plan

Agency	Name	Title	Address1	Address2	Postal Code	Telephone
City of Kingston	Tyler Lasko	Supervising Engineer, Infrastructure & Development Engineering Services Department	216 Ontario St.	Kingston, ON	K7L 2Z3	(613) 546- 4291, ext. 2307
City of Kingston	Kimberly Brown	Manager, Infrastructure and Development, Engineering	216 Ontario St.	Kingston, ON	K7L 2Z3	613-546-4291 ext.3132
Cogeco Cable Canada Limited	Steve Bertrand	Outside Plant Coordinator	170 Colborne St.	Kingston, ON	K7L 5M7	613-544-6311 ext. 8224
Cogeco Cable Canada Limited	Geoff Capes	Manager, Facilities	P.O. Box 5076, 950 Syscon Rd. Str. LCD 1	Burlington, ON	L7R 4S6	905-333-4990
Conseil des écoles catholiques du Centre-Est de l'Ontario	Dominic Franche	Building Supervisor	4000 rue Labelle	Gloucester, ON	K1J 1A1	613-744-2555
Conseil des écoles catholiques du Centre-Est de l'Ontario	Luc Poulin	Director of Facilities Services	4000 rue Labelle	Gloucester, ON	K1J 1A1	
Conseil des écoles catholiques du Centre-Est de l'Ontario	Karolyn Bois	Planificatrice en immobilisations	4000 rue Labelle	Gloucester, ON	K1J 1A1	
Conseil des écoles publiques de l'Est de l'Ontario	Roch Landriault	Director, Technical Services	2445 Blvd. St-Laurent	Ottawa, ON	K1G 6C3	613-747-3802
County of Frontenac	Joe Gallivan	Director, Planning and Economic Development	2069 Battersea Rd.	Glenburnie, ON	K0H 1S0	613-548-9400 X 350
Correctional Service Canada	Mike Ryan	Regional Deputy Commissioner	443 Union St.	Kingston, ON	K7L 4Y8	
Correctional Service Canada	Theresa Westfall	Assistant Deputy Commissioner	443 Union St.	Kingston, ON	K7L 4Y8	
Correctional Service Canada	Corinna Dally-Starna	Regional Coordinator, Environmental Programs	443 Union St.	Kingston, ON	K7L 4Y8	613-536-4744
Correctional Service Canada	Ashley Maloney	A/Manager, Real Property, Technical Services and Facilities Branch	340 Laurier Avenue West	Ottawa, ON	K1A 0P9	613-996-7935
Correctional Service Canada	Dennis Roy	Environmental Officer	1455 Bath Road	Kingston, ON	K7L 4V9	
Correctional Service Canada	Scott Graham	Real Property Analyst, Technical Services	340 Laurier Avenue West	Ottawa, ON	K1A 0P9	
Correctional Service Canada	Chris Barkley	Regional Chief of	443 Union St.	Kingston, ON	K7L 4Y8	

Utilities Kingston
 Days Road Sewage Pump Station Class EA
 Appendix A: Agency and Stakeholder Contact List

Consultation Plan

Agency	Name	Title	Address1	Address2	Postal Code	Telephone
		Facilities				
Ducks Unlimited	Owen Steele		740 Unit 1 Huronia Rd.	Barrie, ON	L4N 6C6	705-721-4444
Ducks Unlimited	Earling Armson	Biologist	740 Unit 1 Huronia Rd.	Barrie, ON	L4N 6C6	
Ducks Unlimited	Chris Delage	Conservation Programs Specialist	614 Norris Court, Unit 1	Kingston, ON	K7P 2R9	613-389-0418 ext. 151
Enbridge Pipeline Inc.	Ann Newman	Team Leader, Damage Prevention	1086 Modeland Road, Building 1050	Sarnia, ON	N7S 6L2	519-339-0503
Enbridge Consumer Gas	Mike Johnson		400 Coventry Rd.	Ottawa, ON	K1K 2C7	
Environment Canada	Rob Dobos	Manager, EA Section	867 Lakeshore Rd., P.O. Box 5050	Burlington, ON	L7R 4A6	905-336-4953
Fisheries and Oceans Canada	Debbie Miller	Referrals Coordinators	401 King St. W., P.O. Box 1000	Prescott, ON	K0E 1T0	613-925-2865
Greater Kingston Softball Association	Jon Swaine	Vice President		Kingston, ON		
Health Canada	Diane McClymont-Peace	Director Environmental Health Assessment	70 Colombine Dr. Way	Ottawa, ON	K1A 0K9	613-946-9663
Health Canada	Kitty Ma	Environmental Assessment Coordinator	180 Queen St. W, 10 th Floor	Toronto, ON	M5V 3L7	416-954-2206
Hydro One	Gary Panter Bill Lowry	Technician, Area Distribution Engineering	913 Crawford Dr.	Peterborough, ON	K9J 3X1	888-871-3513 X 2275
Indigenous and Northern Affairs Canada	Ralph Santer	Administrative Officer	8th Floor, 25 St. Clair Ave. E.	Toronto, ON	M4T 1M2	416-973-4122
Indigenous and Northern Affairs Canada	Shawn Green	Environmental Officer	8th Floor, 25 St. Clair Ave E.	Toronto, ON	M4T 1M2	416-973-6234
Infrastructure Ontario	Lisa Myslicki	Environmental Specialist	Suite 2000, 1 Dundas St.	Toronto, ON	M5G 2L5	416-212-3768
Kingston Construction Association	Harry Sullivan	Executive Director	1575 John Counter Blvd.	Kingston, ON	K7M 3L5	613-542-9431
Kingston Economic Development Corporation	Jeff Garrah	Chief Executive Officer	945 Princess Street	Kingston, ON	K7L 3N6	866-665-3326
Kingston Environmental Advisory Committee	James Thompson	Committee Clerk	216 Ontario St.	Kingston ON	K7L 2Z3	613-546-4291
Kingston Field Naturalists	Janet Grant	President	P.O. Box 831	Kingston, ON	K7L 4X6	613-548-3668
Kingston Fire & Rescue	Paul Patry	Assistant Chief	500 O'Connor Dr.	Kingston, Ontario	K7P 1N3	613-548-4001 X 5127
Kingston, Frontenac and Lennox & Addington Health Unit	Dr. Ian Gemmill (until July 1, 2017)	Medical Officer of Health	221 Portsmouth Ave.	Kingston, ON	K7M 1V5	613-549-1232

Utilities Kingston
Days Road Sewage Pump Station Class EA
Appendix A: Agency and Stakeholder Contact List

Consultation Plan

Agency	Name	Title	Address1	Address2	Postal Code	Telephone
Kingston, Frontenac and Lennox & Addington Health Unit	Dr. Kieran Moore (starting July 1, 2017)	Medical Officer of Health	221 Portsmouth Ave.	Kingston, ON	K7M 1V5	613-549-1232
Kingston, Frontenac and Lennox & Addington Health Unit	Sarah Ryding	Manager of Environmental Health	221 Portsmouth Ave.	Kingston, ON	K7M 1V5	613-549-1232
Kingston Home Builders Association	Nicholas Harrington	Executive Officer	1575 John Counter Blvd.	Kingston, ON	K7M 3L5	613-547-0986
Lennox & Addington County		Acting CAO	97 Thomas St. E.	Napanee, ON	K7R 4B9	613-354-4883
Limestone District School Board	Wayne Toms	Manager, Information Technology & Planning	220 Portsmouth Ave., Postal Bag 610	Kingston, ON	K7L 4X4	613-544-6920
Limestone District School Board	David Fowler	Manager, Facility Services	220 Portsmouth Ave., Postal Bag 610	Kingston, ON	K7L 4X4	613-544-6920
Little Cataraqui Creek Environment Association	Christine J. Cannon	Chair	930 Old Front Rd.	Kingston, ON	K7M 4M1	
ON Ministry of Agriculture, Food & Rural Affairs	Jocelyn Beatty	Rural Planner	1 Stone Rd. W. 3 rd Floor	Guelph, ON	N1G 4Y2	519-846-3405
ON Ministry of Citizenship and Immigration, Tourism, Culture and Sport		Manager	4 th Floor, 347 Preston St.	Ottawa, ON	K1S 3J4	613-742-3366
ON Ministry of Community Safety and Correctional Services	Peter Kaftarian	Manager of Strategic Planning & Capital Projects	13 th Floor, 25 Grosvenor St.	Toronto, ON	M7A 1Y6	416-326-3432
ON Ministry of Community Safety and Correctional Services	Ted Johnston	Coordinator, Facilities Management	13 th Floor, 25 Grosvenor St.	Toronto, ON	M7A 1Y6	416-327-1096
ON Ministry of Culture	Katherine Kirzati	Heritage Planner	Suite 1700, 401 Bay Street	Toronto, ON	M7A 0A7	416-326-3432
ON Ministry of Energy	Alan Jenkins	Senior Policy Advisor	3 rd Floor, 880 Bay St.	Toronto, ON	M7A 2C1	416-325-6926
ON Ministry of Energy	Kevil Pal	Manager, Transmission Policy	3 rd Floor, 880 Bay St.	Toronto, ON	M7A 2C1	416-327-7204
ON Ministry of Environment and Climate Change	Vicki Mitchell	EA Coordinator	1259 Gardiners Rd., P.O. 22032	Kingston, ON	K7M 8S5	613-549-4000
ON Ministry of Health and Long Term Care	Tony Amalfa	Manager, Environmental Health Programs	11 th Floor, 1075 Bay St.	Toronto, ON	M5S 2B1	416-327-7624
ON Ministry of Indigenous Relations and Reconciliation	Emma Jarvis	Special Policy Advisor	4 th Floor, 160 Bloor St. E.	Toronto, ON	M7A 2E6	416-326-4742
ON Ministry of Infrastructure Renewal	Tija Dirks	Director Growth Policy	16 th Floor 777 Bay St.	Toronto, ON	M5G 2E5	416-325-1546
ON Ministry of Municipal Affairs & Housing	Michael Elms	Municipal Planning Advisor	8 Estate Lane Rockwood House	Kingston, ON	K7M 9A8	613-545-2132
ON Ministry of Natural Resources	Liz Spang	District Planner	1 st Floor South, 300 Water	Peterborough, ON	K9J 8M5	705-755-3360

Utilities Kingston
 Days Road Sewage Pump Station Class EA
 Appendix A: Agency and Stakeholder Contact List

Consultation Plan

Agency	Name	Title	Address1	Address2	Postal Code	Telephone
			Street			
ON Ministry of Natural Resources	Monique Charet	MNR Biologist	51 Heakes Ln.	Kingston, ON	K7M 9B1	613-531-5700 x5715
ON Ministry of Northern Development and Mines	Priya Tandon	Director, Corporate Policy Secretariat	Rm. 5630, Whitney Block 99 Wellesley St. W.	Toronto, ON	M7A 1W3	416-327-0625
ON Ministry of Northern Development and Mines	Stephanie Rocca	Initiatives Coordinator	933 Ramsey Lake Rd.	Sudbury, ON	P3E 6B5	705-670-5734
ON Ministry of Tourism and Recreation	Chris Schiller	Manager	Suite 1700, 401 Bay St.	Toronto, ON	M7A 0A7	416-314-7144
ON Ministry of Tourism, Culture and Sport	Jeff Elkow	Heritage Planner	Suite 1700, 401 Bay St.	Toronto, ON	M7A 0A7	416-314-7182
ON Ministry of Transportation	Gillian Dagg-Foster	Head of Environment, Eastern Region	2 nd Floor 1355 John Counter Blvd.	Kingston, ON	K7L 5A3	613-540-5149
Public Works and Government Services Canada	Karen Durnford-McIntosh	Regional Manager	294 King St. E.	Kingston, ON	K7L 3B2	613-453-3246
Trans-Northern Pipelines	Gary Robinson	Manager	Suite 310, 45 Vogell Rd.	Richmond Hill, ON	L4B 3P6	905-770-3353
Triboard Student Transportation Services	Gord Taylor	Chief Executive Officer	81 Dairy Ave.	Napanee, ON	K7R 1M5	613-354-1981 X 324
Union Gas – Kingston District	Claire Walker	District Engineer	1653 Fortune Cr.	Kingston, ON	K7P 0E9	613-389-4000
United Counties of Leeds & Grenville	Cherie Mills	Manager, Planning Services	Suite 100, 25 Central Ave. W.	Brockville, ON	K6V 4N6	613-342-3840 X 2419
Local Residents	Local residents who are located within 200 m radius from the site.					

APPENDIX B

**DRAFT NOTICE OF STUDY COMMENCEMENT
AND DRAFT AGENCY NOTICE LETTER**

Notice of Study Commencement



Utilities Kingston Days Road Sewage Pump Station Upgrades Schedule B Class Environmental Assessment

Utilities Kingston (UK) has initiated a Schedule B Class Environmental Assessment (Class EA) to determine the most suitable option to renew the Days Road Sewage Pump Station.

How Will This Affect Me?

The Class EA study is assessing various options to renew the Days Road Sewage Pump Station to ensure it can be relied on to accommodate current flows and the increase to flows that are anticipated from future growth within the upstream sewershed.

Public and agency consultation is a key part of the Class EA process. Based on your input, the Class EA study will identify a preferred option that will benefit the community over the long-term.

KEY PLAN HERE

How Do I Get More Information?

A Public Information Centre will be held in late 2017 prior to confirming the preferred option. In the meantime, the study team will be reviewing background information and determining alternative options. You can contact a member of the study team listed below with any questions or to provide input on the Class EA study. Updates will also be provided throughout the Class EA study on the UK website: utilitieskingston.com.



TO FIND OUT MORE VISIT:
www.utilitieskingston.com

Brian Hein, P.Eng.
Project Manager
J.L. Richards & Associates Limited
864 Lady Ellen Place
Ottawa, ON K1Z 5M2
bhein@jlrichards.ca
Phone: 613-728-3571

Mike Fischer, P.Eng.
Utilities Engineer
Utilities Kingston
85 Lappan's Lane
Kingston ON K7L 4X7
mfischer@utilitieskingston.com
Phone: 613-546-1181

This study is being conducted according to the requirements of a Schedule B project under the Ontario Municipal Class Environmental Assessment process (October 2000, as amended in 2015).

This Notice issued on May ____, 2017

Date

Our File: 27482

VIA Mail

Agency

Name, Title

Address Line 1

Address Line 2

Salutation:

**RE: Notice of Commencement
Utilities Kingston Schedule B Class Environmental Assessment
Days Road Sewage Pump Station Upgrades**

Utilities Kingston has initiated a Class Environmental Assessment (Class EA) to determine the most suitable option to renew the Days Road Sewage Pump Station (SPS). The Days Road SPS is located on the west side of Days Road, between Castell Road to the north and Henderson Boulevard to the south in the west end of the City of Kingston (Kingston West).

The Days Road SPS is a critical piece of infrastructure for servicing the Kingston West sewershed and is nearing 40 years of service. A major renewal of the SPS is required to ensure it can be relied on to accommodate current flows and the increase to flows that are anticipated from future growth within the upstream sewershed.

The Class EA is proceeding as a Schedule B Class EA in accordance with the Ontario Municipal Class EA process. Stakeholder consultation is a key element of this process. A Notice of Commencement is being mailed to residents in the study area and to review agencies and organizations that may have an interest in the study. A copy of the Notice of Commencement is attached to this letter for your information.

You are invited to join our mailing list and/or provide comments as the Class EA progresses. Comments can be provided on the attached comment sheet and either mailed or emailed to the study team. You are also invited to attend our Public Information Centre (PIC), which will be held in late 2017. A Notice will be sent to you closer to the date of the PIC.

If you have any questions, please contact the undersigned.

Yours truly,

J.L. RICHARDS & ASSOCIATES LIMITED

Brian Hein, P.Eng.
Project Manager

cc: Mike Fischer, P.Eng., Utilities Kingston

Enclosures

**Utilities Kingston
Days Road Sewage Pump Station Upgrades
Schedule B Municipal Class Environmental Assessment**

COMMENT FORM

Name (please print): Date:

I represent a(n):
(please select the most applicable) Resident Agency Public Interest Group Other Stakeholder

Do you wish to receive updates in regards to this project? YES NO
(please specify)

Contact Name

Agency (if applicable)

Address (number, street, and apt. no.)

(City, Province, Postal Code)

Phone E-mail

Please indicate any issue(s) that need to be explored/investigated as part of this Class EA:

Please provide any additional comments about this Class EA:

Brian Hein, P.Eng.
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85 Lappan's Lane
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Phone: 613-564-1181

[Click here to submit form by E-mail](#)

Note: Comments and information regarding this Study are being collected to assist the Ministry in meeting the requirements of the EA Act. This material will be maintained on file for use during the Study and may be included in project documentation. With the exception of personal information, all comments will become part of the public record.

APPENDIX C
DRAFT PIC NOTICE

Notice of Public Information Centre



Utilities Kingston Days Road Sewage Pump Station Upgrades Schedule B Class Environmental Assessment

Utilities Kingston (UK) has initiated a Schedule B Class Environmental Assessment (Class EA) to determine the most suitable option to renew the Days Road Sewage Pump Station.

How Will This Affect Me?

The Class EA study is assessing various options to renew the Days Road Sewage Pump Station to ensure it can be relied on to accommodate current flows and the increase to flows that are anticipated from future growth within the upstream sewershed.

We Want To Hear From You!

Public consultation is a key part of the Class EA process. You are invited to review background information about the Class EA process, including the options that were assessed and the proposed preferred option, at the following Public Information Centre:



Date: November ____, 2017

Time: _____

Location: _____

Study information will be available the UK website: utilitieskingston.com. You can also contact a member of the study team listed below with any questions.



TO FIND OUT MORE VISIT:
www.utilitieskingston.com

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This study is being conducted according to the requirements of a Schedule B project under the Ontario Municipal Class Environmental Assessment process (October 2000, as amended in 2015).

This Notice issued on November ____, 2017

Appendix B
Specialized Studies



October 27, 2017

ORIGINAL REPORT

Stage 1 Archaeological Assessment, Days Road Sewage Pump Station Upgrade, 419 Days Road Kingston, Lot 8, Concession 1, Kingston Township, Frontenac County, Ontario

PIF Number: P328-0017-2017

Licensee: Lindsay Dales (P328)

Submitted to:

Susan Jingmiao Shi, P.Eng., M.Eng.
Environmental Engineer
J.L. Richards & Associates Limited
203 - 863 Princess Street
Kingston, ON K7L 5N4

REPORT



Report Number: 1775535

Distribution:

1 copy - J.L. Richards & Associates Limited
1 e-copy - Ontario Ministry of Tourism, Culture and Sport
1 copy - Golder Associates Ltd.





Executive Summary

The Executive Summary highlights key points from the report only; for complete information and findings, as well as the limitations, the reader should examine the complete report.

J.L. Richards & Associates Limited retained Golder Associates Limited (“Golder”) to complete a Stage 1 Archaeological Assessment for the Days Road Sewage Pump Station Upgrade project. The subject property is located adjacent to the LaSalle Park, at 419 Days Road, Kingston, Ontario, with the study area situated in Lot 8, Concession 1, Kingston Township, Frontenac County, Ontario.

The Days Road Sewage Pump Station is the largest lift station in West Kingston and services 80-90% of the sanitary sewers in the area. The Sewage Pump Station was originally constructed in the late 1950s and received significant upgrades in 1978. The current facility is reaching the end of its life cycle and requires upgrades to address the anticipated growth in the current service area. This Stage 1 archaeological assessment was initiated by the City of Kingston as part of a Screening Level Environmental Review as a due diligence exercise.

The objectives of this assessment were to identify known archaeological sites and resources on and within the vicinity of the study area, to assess the archaeological potential of the property under investigation, to determine the impact of the proposed development on any potential archaeological resources within the landscape and to provide recommendations as to whether any additional archaeological investigations are required.

Cartographic and census records for Kingston Township provide evidence of the settlement history for this area dating back to at least the mid-nineteenth century. Additional evidence for historically significant occupation in the general vicinity of the study area is documented by four known archaeological sites located within 1 kilometre of the subject property, as well as Aboriginal material recovered from the LaSalle Park area by Guy Blomeley, a local avocational archaeologist who worked in the region from 1930s to 1980s.

An inspection of the study area was completed on October 9, 2017, in clear conditions of sun and cloud with a temperature of 18°C. This visual inspection identified areas of previous disturbance within the existing building footprint, as well as property which appears to have been relatively unaffected by previous environmental, construction or landscaping activities.

Attributes identifying archaeological potential within the study area include those depicted on the City of Kingston Archaeological Master Plan, the property is within 1 kilometer of known archaeological resources, proximity to water, proximity of historic transportation routes, as well as Aboriginal material recovered from the LaSalle Park area by Guy Blomeley. The grassed portion of the subject property is deemed to possess archaeological potential while the current footprint of the Days Road Sewage Pump Station contains no archaeological potential based on the identified disturbances prior to and with the construction of the current facility.

Based on the high archaeological potential for significant Aboriginal material cultural resources identified within the study area, this investigation has provided the basis for the following recommendations (Map 7, p.29):

- 1) All remaining undisturbed land within study property should be archaeologically investigated with hand excavated test pits in five metre intervals to the depth of at least 5 centimeters into natural *in situ* subsoil.



STAGE 1 ARCHAEOLOGICAL ASSESSMENT DAYS ROAD SEWAGE PUMP STATION UPGRADE

- 2) No further archaeological investigation is required within the existing Days Road Sewage Pump Station footprint as depicted on (Map 8, p.30) and as a consequence that the Ministry of Tourism, Culture, and Sport issue a letter concurring that no additional archaeological investigations are required for this area.

This report is submitted to the Ministry of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c. 0.18. The report is reviewed to ensure that the licensed consultant archaeologist has met the terms and conditions of their archaeological license, and that the archaeological field work and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario.

- 1) The MTCS is requested to review, and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.



STAGE 1 ARCHAEOLOGICAL ASSESSMENT DAYS ROAD SEWAGE PUMP STATION UPGRADE

Project Personnel

Client Contact:	Susan Jingmiao Shi, P.Eng, M.Eng. (J.L. Richards & Associates Limited)
Project Director:	Hugh J. Daechsel, M.A. (P051)
Project Manager:	Bradley Drouin, M.A. (P311)
Licensed Archaeologist:	Lindsay Dales, M.A. (P328)
Report Preparation:	Lindsay Dales, M.A. (P328)
Geographic Imaging:	Bojan Radojevic, B.A.
Administrative Support:	Courtney Adey



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STAGE 1 ARCHAEOLOGICAL ASSESSMENT DAYS ROAD SEWAGE PUMP STATION UPGRADE

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1.0 PROJECT CONTEXT

1.1 Objectives

This Stage 1 Archaeological Assessment was completed to identify known archaeological resources on or in the vicinity of the study area, as well as to assess the archaeological potential of the study area. The objectives of a Stage 1 investigation are based on principles outlined in the *Ontario Heritage Act* (consolidated 2007) and the Ontario Ministry of Tourism, Culture and Sport's (MTCS) *Standards and Guidelines for Consulting Archaeologists* (2011). More specifically, this Stage 1 Archaeological Assessment was completed with the following objectives:

- To provide information about the study area's geography, environment, cultural history, previous archaeological fieldwork and current land condition.
- To evaluate in detail the property's archaeological potential, which will support recommendations for Stage 2 surveys for all or parts of the property.
- To recommend appropriate strategies for Stage 2 field surveys.

1.2 Development Context

J.L. Richards & Associates Limited retained Golder Associates Limited ("Golder") to complete a Stage 1 Archaeological Assessment for the Days Road Sewage Pump Station Upgrade project. The subject property is located at 419 Days Road, Kingston, with the study area situated in Lot 8, Concession 1, Kingston Township, Frontenac County, Ontario (Map 1, p.23).

The Days Road Sewage Pump Station is the largest lift station in West Kingston and services 80-90% of the sanitary sewers in the area. The Days Road Sewage Pump Station was originally constructed in the late 1950s and received significant upgrades in 1978. The current facility has reached the end of its life cycle and requires upgrades to address the anticipated growth in the current service area. The Waste Water Master Plan has identified the need to increase the facility's capacity to meet the anticipated growth as well as the potential need to increase storage on-site to efficiently manage we-weather flows (Map 2, p.24).

This Stage 1 Archaeological Assessment was initiated by the City of Kingston as part of a Screening Level Environmental Review as a due diligence exercise. The subject property was accessed through LaSalle Park, with no limitations or restrictions.



2.0 HISTORIC CONTEXT

2.1 Regional Pre-European Aboriginal Contact History

The earliest evidence of human activity in the Great Lakes area dates to about 12,000 Before Present (BP) and is identified as the Paleo-Indian Period (12,000–10,000 BP). Paleo-Indians moved into Ontario as the last of the glaciers retreated northward, and their sites have been located along the former shores of vast glacial lakes such as Lake Algonquin in the area that is now southern Georgian Bay, and along the north shore of present day Lake Ontario.

While there is considerable archaeological evidence for this period in south-western and south-central Ontario, few finds have been reported in eastern Ontario. Examples of Paleo-Indian find spots in this region include fragments of a Plano (Late Paleo-Indian) point from the Thousand Islands area, two fluted points from the Rideau Lakes, two lanceolate points from Lanark County, and two sites with Paleo-Indian components near the Yarker Training area along the Napanee River. A survey of Allen Point along the Rideau Canal system just north of Kingston Mills resulted in the identification of a late Paleo-Indian point, the first recorded find from this period in Kingston (Heritage Quest, 2000). While the artifact assemblage dating to the Paleo-Indian period in the region is relatively small, these discoveries confirm the human occupation in the vicinity of the study area during this period.

During the succeeding Archaic Period (10,000 BP–3,000 BP), the environment of eastern Ontario approached modern conditions and additional land became accessible for occupation as the glacial lakes drained. While Archaic groups continued to employ hunter-gatherer subsistence strategies, they appear to have focussed on more local food resources, abandoning the highly mobile lifestyle of their predecessors.

Evidence of occupation dating to the Archaic Period is relatively common in the Kingston region. Archaic components have been identified on Brophey's Point and around Button Bay (both on Wolfe Island), at Collins Bay within 1 km of the study area, and along the river systems of the Napanee, Rideau, Gananoque, and Upper St. Lawrence. Additional registered Archaic sites include a find spot just west of Bath (BbGe-5) (Adams, 2009), the Salisbury Site near Camden East (BcGe-5) and the York Site near Bellrock (BcGe-8) (Adams, 2004).

The Archaic Period is followed by the Woodland Period (3000 BP–400 BP) which is distinguished by the introduction of ceramics. Despite this innovation, Early Woodland people continued to live as hunters, gatherers and fishers in much the same way as Archaic groups had done. They also shared an elaborate burial ceremonialism practice which often included exotic artifacts incorporated in graves. For the first time, it is possible to identify regional cultural traditions within the province, with "Point Peninsula" being the distinctive variant found in eastern and south-central Ontario. A greater number of known sites from this period have allowed archaeologists to develop a clearer picture of the traditional seasonal routes travelled to exploit a variety of resources within a home territory.

Another significant development of the Woodland Period in southern Ontario was the appearance of domesticated plants around ca. 1400 BP. Along with this shift in subsistence, settlements located adjacent to corn fields began to take on greater permanency as sites with easily tillable farmland became more important. By the end of the Late Woodland Period, distinct regional populations occupied specific areas of Ontario.



A number of Woodland Period sites have been identified in Kingston and the surrounding area. Early Woodland material has been found along the Napanee River drainage basin and on Wolfe Island. Middle Woodland sites are located throughout the region including the Thousand Islands, the Cataraqui River (Belle Island), and the Gananoque River System (e.g., South Lake & Charleston Lake). Middle Woodland ceramics have been identified during archaeological excavations at Fort Frontenac, suggesting the potential location of a First Nations settlement prior to the arrival of the Europeans, while Middle Woodland artifacts also being recovered from the Royal Military College in the area of the New Dorm 2 as well as along Valour Drive (CARF, 2009; Heritage Quest, 2003).

Although there is considerable evidence for Late Woodland activity in the area, only one permanent occupation settlement specific to this period has been identified in the region. This was a proto-Huron or Middleport site (BbGd-10) identified by Nick Adams in his survey of the Arbor Ridge subdivision in the Little Cataraqui Creek valley (Adams, 2004). This discovery has confirmed that settlement patterns during the Late Woodland Period were not restricted to close proximity along large water bodies and that areas further inland were also occupied during this period.

The Kingston Outer Station site was a fishing camp on the Cataraqui River utilized seasonally throughout the Late Woodland Period, with a small scatter of Late Woodland material also found at Lemoine Point (Daechsel, 1999), east of the study area. A late Iroquoian site was identified east of the Cataraqui River in the Joyceville area (Golder 2017). A cluster of St. Lawrence Iroquois villages dating ca. 900–600 BP also provides evidence of considerable activity in the region during this period.

The end of the Late Woodland Period is marked by a transitional or “protohistoric” period (ca. 500–350 BP) when European influences began to infiltrate the area prior to permanent French settlement. This was a turbulent period which saw significant redistribution among the Aboriginal populations who had occupied the region in prehistoric times.

2.2 Post Contact History

By the end of the Woodland Period, there had been a significant change in the settlement of southeastern Ontario. The St. Lawrence Iroquois, who had among other regions, occupied areas at the head waters of the South Nation River Drainage Basin (Daechsel 1980), were dispersed or perhaps absorbed by neighbouring Iroquoian and Algonquin populations (Pendergast 1999). The Huron along the north shore of Lake Ontario had moved to the Lake Simcoe-Georgian Bay region leaving the area of eastern Ontario, save for some small Algonquin groups, unoccupied by the time the first French explorers, traders and missionaries arrived in the beginning of the seventeenth century.

While French fur traders, missionaries and explorers continued to travel through the area following the initial visit of Champlain in the early seventeenth century, Fort Frontenac, established in 1673, was the first permanent European settlement in the region. The fort was constructed at the mouth of the Cataraqui River and was rebuilt a number of times becoming a limestone fortification by the 1680s. While a native village was established outside the fort and some land was surveyed and settled by French civilians, the French did not encourage the development of an extensive settlement in the Kingston area.

A series of mission sites were established along the north shore of Lake Ontario, including one in the Napanee area and La Presentation near the present-day site of Ogdensburg, New York in 1700. By the early eighteenth century, the Iroquois had been driven from the north shore of Lake Ontario by the Mississauga.



Fort Frontenac remained an important part of the French occupation of the region for approximately 85 years. In 1760, following the fall of Quebec City and the surrender of French forces at Montreal, the British effectively took possession of the fort, an occupation that was formalized by the Treaty of Paris and the Royal Proclamation of 1763 in which France ceded all her rights and possessions in North America to Great Britain.

Between 1763 and 1776 some British traders traveled to Cataraqui but the British presence remained sporadic until 1783 when Fort Frontenac was officially re-occupied (Preston 1959:18-19). Originally considered as a location for the resettlement of the Mohawk people who had been loyal to the British during the American Revolutionary War, land from the Cataraqui River west to the Bay of Quinte was laid out in townships for United Empire Loyalists.

2.2.2 *The Township of Kingston*

Kingston Township was surveyed in 1783 and 1784 for settlement by the United Empire Loyalists under Captain Michael Grass (Mika & Mika 1987: 434). These settlers built King's Town, now the city of Kingston, in 1784. Kingston Mills, located just south of the study area, and the site of one of the earliest mills in Upper Canada, was built during the same year. The construction of a naval dockyard at Point Frederick in 1789 grew the economy by making Kingston an important trading centre between Montreal and the Lakehead area (Mika & Mika 1987: 437). By the early 19th century, the largest fleet on Lake Ontario was owned by Kingston Merchants. Despite this, the settlement of the interior sections of Kingston Township was generally slow through the late eighteenth and early nineteenth centuries.

The War of 1812 brought increased activity to the area as disbanded soldiers settled in the Township. The continued concern about American incursion into Upper Canada resulted in the construction of the Rideau Canal and Fort Henry by the mid 1830s. Construction of the Rideau Canal (1828 to 1832) had a dramatic impact on the study area. While generally following the course of the Cataraqui River, new channels were cut for portions of the canal north of Kingston Mills in order to straighten and shorten the route (Tatley 1977:181). Locks were built at Kingston Mill and at Washburn (Lower Brewers). Resulting increases in the water level significantly altered the shoreline and created Colonel By Lake and the River Styx. The canal also resulted in the re-drawing of township boundaries in ca. 1850. The Rideau Canal became the new boundary between Kingston and Pittsburgh Townships while Storrington Township was created from parts of Kingston, Pittsburgh and Loughborough Townships. While the opening of the Rideau Canal facilitated more intensive settlement of the area, fluctuating water levels along the canal appear to have disrupted settlement on some of the lots immediately adjacent to the waterway.

In 1841, the City of Kingston became the first capital of the Province of Canada. During this time the population increased and the city saw a building boom. Kingston's time as the capital city lasted until only 1844 when the government decided to make Montreal the new capital.

Following World War II, the Township of Kingston underwent urbanization. In 1952, the City of Kingston tripled its land area through annexing 5,500 acres of Kingston Township and increasing its population by 5,000. The 1956 population of Kingston was 48,618 (Osbourne and Swainson 1988: 305).



2.3 Property History

Cartographic, land registry and census records for Kingston Township provide evidence of the settlement history for this area. In 1798, John Everitt received the patent for 200 acres for Lot 8, Concession 1 from the Crown. By 1827, Daniel Everitt (son) owned Lot 8, Concession 1 (T.118) and willed the western part of the lot 8 to Mary Everitt and eastern part of the lot 8 to Sarah Minerva Everitt by 1837 (M.618). In 1858, John Miller and Mary (wife) receive a mortgage from Trust & Co for \$2,800 (C.413).

Historic maps (Map 4, p.26) and aerial photographs (Map 5, p.27) provided property specific information. The 1860 Walling and the 1878 Meacham maps of the Township of Kingston (Map 4, p.26) shows that the eastern part of Lot 8, Concession 1 was owned by Amos Bristol. One historic structure is marked on Lot 8, on the north side of Front Street and is over 1.4 km to the south of the study area. A historic road runs along the eastern end of the study area.

There is some discrepancy between the cartographic and land registry records regarding when A. Bristol purchased the property. The land registry records list A. Bristol receiving a mortgage (April 1873) for \$1,800 (G.56) and deed (July 1873) (G.100) to the eastern part of Lot 8, Concession 1 whereas the Walling County Atlas lists A. Bristol as the owner by 1860. The 1860 Walling County Atlas lists A. Bristol owning the eastern part of Lot 8 and a DS Wesley(?) as owning the western 40 acres of Lot 8, Concession 1. The 1861 census documents Amos Bristol was a 36-year-old physician married to his English born wife Sarah (age 32). They resided in a 1 ½ story frame house located north side of Front Street (Map 4, p.26), with their three children Catherine (age 7), George (age 6) and Sarah (age 3). DS Wesley name does not appear in land registry or census records.

The 1878 Meacham map shows A. Bristol owning the eastern 159 acres of Lot 8, Concession 1 in Kingston Township, while no name appears on the western 40 acres of the lot. The 1881 census documents Amos Bristol as a 53-year-old physician who was born in England in 1828. Dr. Bristol is now married to an Irish born wife Amelia (age 37), and four children are listed Caroline (age 21), Edmund (age 19), Emily (age 10), Thomas (age 9) and Ethel (age 7). Dr. Bristol sold his property to John Randall in 1880 (I.1618)

By the turn of the twentieth century, Lot 8, Concession 1 appears to be sold in smaller parcels with the existing subdivision being constructed in the late 1950s. The Days Road Sewage Pump Station is located at 419 Days Road and was originally constructed in the late 1950s, but received a significant upgrade to its existing size and form in 1978. The facility pumps directly to the Cataraqui Bay Wastewater Treatment Plant and is the largest lift station in West Kingston and services approximately 80-90% of sanitary sewers in the region.

Aerial photographs dating to the mid-twentieth century provide an overview of the landscape within the subject property during this period (Map 5, p.27). The 1953 aerial photograph shows disturbance in the study area but no structures while the portions of adjacent subdivision have been built by the 1957 aerial photograph. The construction of the original Sewage Pump Station post dates the 1957 aerial photograph.



3.0 ARCHAEOLOGICAL CONTEXT

3.1 Study Area Environment

The study area is located within the Napanee Clay Plain physiographic region on the Limestone Plain. The Napanee Clay Plain is characterized by flat to undulating topography with shallow clay and loam soils overlaying limestone bedrock. Much of the soil overburden has been stripped away by ancient glacial action (Chapman & Putnam 1984: 186). The soils consist of Farmington Loam, which is well drained possibly due to fractures in the underlying bedrock.

The study area lies within the Huron-Ontario sub-region of the Great Lakes-St. Lawrence Forest Region (Rowe 1977). Trees common to this sub-region include sugar maple, beech, basswood, white and red ash, yellow birch, red maple, and red, white and bur oaks. Coniferous trees include eastern hemlock, eastern white pine and balsam fir. The study area would have been cleared of its original forest cover with the establishment of farms and fields beginning by the early nineteenth century.

The study area presently consists of the current Day Road Sewage Pump Station structure with a fenced in parking lot. The study property contains a small grassed area approximately 50 metres to the north and 10 metres to the west of the current fenced parking lot. The subject property is located within 45 metres of a small creek which runs along the northern border of the property and provides the principal natural drainage for the surrounding area.

LaSalle Park is a 6.68-acre recreational park with three baseball diamonds, one full soccer field and two mini soccer fields. The study area is located within the southeast corner of LaSalle Park. A small creek runs southeast along the northern border of the park while a small ridge runs along the southern boundary. LaSalle Park is surrounded by residential structures along Days Road, Kirkwood Road, McEwan Road and Lakeview Ave.

3.2 Previous Research and Archaeological Field Work

There is a wealth of information on the Kingston area in the form of literature, including primary documents such as military records, maps, diaries and personal illustrations. A large amount of information has also been published on the history and development of Kingston and the surrounding Townships. These include *Royal Fort Frontenac* (Preston & Lamontagne 1958), *Kingston Before the War of 1812* (Preston 1959) and *To Preserve and Defend: Essays on Kingston in the Nineteenth Century* (Tulchinsky 1976)

The general history of Kingston Township includes the *History of the Township of Kingston*, (edited by Neil Patterson 1985), *Frontenac, Lennox and Addington, An Essay* (Cooper 1980) and *County of a Thousand Lakes: The History of the County of Frontenac 1673-1973* (Rollason 1982). Additional information can be found in broader studies such as the *Map of the United Counties of Frontenac, Lennox and Addington* (Walling 1860) and the *Illustrated Historical Atlas of the Counties of Frontenac, Lennox and Addington* (Meacham 1878).

Early archaeological work in the Kingston area includes David Boyle's late nineteenth century survey of Wolfe Island and the uncovering of sections of the French Fort Frontenac by Colonel Hagarty in the 1930s and by B-General Kitching in the 1950s. The Kingston Outer Station, a Late Woodland site located on the west shore of the Cataraqui River south of the study area, was identified and partially excavated by James Pendergast in 1952. William A. Ritchie excavated a glacial kame (Late Archaic) burial approximately 3 km northwest of the study area.



STAGE 1 ARCHAEOLOGICAL ASSESSMENT DAYS ROAD SEWAGE PUMP STATION UPGRADE

Beginning in the 1980s, the amount of archaeological work has increased dramatically with a large number of assessments undertaken in the Kingston area (Adams 1985, 1986, 2002, 2004, 2009; Bazely 1989, 1991a, 1991b, 1991c, 1991d, 1995; Brown & Wright 1980; Daechsel 1996, 1997, 1999, 2004; Daechsel & Bazely 1994; Finlay & Triggs 1983; Keatley 1990; Kennett 1990, 2000; Mayer, Poulton & Associates Inc. 1989; Morrison 1998; Stewart 1981, 1982, 1983, 1989; Stewart & Adams 1985; Stewart et al. 1989). It is beyond the scope of the present study to outline all of these projects; however, a number of these that are particularly relevant to the present study will be noted.

Although a number of archaeological assessments have been completed within the general vicinity of the study area, a request for information to the Ontario Ministry of Tourism, Culture and Sport did not indicate any previous archaeological assessments completed within 50 meters of the Stage 1 study area (MTCS, 2017). Several archaeological investigations have been conducted in the Kingston Township, including the Ferris Property (BbGd-9) which was a loyalist farmstead (Bazely 1990), Cataraqui Woods Development (Daechsel 1991), Trillium Ridge Property (Daechsel 1992) and the Kingston Mills, a 19th century grist and saw mill (Kennett 1992).

The Kingston Archaeological Master Plan Study (Bazely 1990b) included a survey of the Little Cataraqui Creek Conservation area to the east of the study area. Guy Blomeley, a local avocational archaeologist recovered material from Collins Bay and LaSalle Park areas.

Most recently Golder Associates Ltd., undertook a Stage 1 and 2 Assessment of the Kingston Airport Expansion less than 2 km to the southwest (Golder 2016). A Stage 1 Archaeological Assessment (CRM Lab Archaeological Services Inc, 2017) and recently completed Stage 2 field work by Golder Associates Ltd. of Lots 10 and 11, Broken Front Concession (Golder Associates Ltd. report pending) was completed less than 2 km to the southeast.

3.3 Known Archaeological Sites and Resources

The primary source of information regarding known archaeological sites within the province is the Ontario Ministry of Tourism, Culture and Sport's archaeological site database (ASDB). This database contains archaeological sites registered according to the Borden system, which divides Canada into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometers east to west and approximately 18.5 kilometers north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The study area under review is located in Borden Block BbGd.

A request for information regarding registered archaeological sites was submitted to the Ontario Ministry of Tourism, Culture and Sport which reported three registered archaeological sites within the immediate vicinity of the study area perimeter (MTCS, 2017a). According to the Ministry of Culture's archaeological sites database the closest registered archaeological sites are two sites located approximately 1 kilometre to the northeast. These sites are located along a tributary to the Little Cataraqui Creek and are Arbor Ridge (BbGd-10) and Dawson Farmstead (BbGd-11). Adams Heritage Consultants undertook the archaeological assessments in the early 1990s. The Arbor Ridge Site was a Late Woodland Iroquoian village and Dawson Farmstead was a 19th/20th century Euro-Canadian homestead.

The Ministry of Culture's archaeological sites database noted one site located approximately 1 kilometre to the northwest of the study area. The Meadow Creek/Thrudell Site was a Middle Woodland site (BbGd-64).



3.4 Study Area Site Inspection

An inspection of the study area was completed on October 5, 2017, in clear conditions of sun and cloud with a temperature of 18°C. The subject property was accessed and visually inspected through LaSalle Park, with no limitations or restrictions. Map 6 (p.28) provides the location and direction of each photograph documented in this report and a photographic catalogue is provided as Appendix A.

The Sewage Pump Station contains a small fenced in parking lot accessed by a driveway from Days Road to the east (Image 1, p.19). The portion of the study area outside of the fenced Sewage Pump Station is a maintained grassed field with a few trees.

The Sewage Pump Station is located within the southeast corner of LaSalle Park. LaSalle Park is a 6.68 acres park with three baseball diamonds, one full soccer field and two mini soccer fields. The construction of the sports field and baseballs diamonds may have resulted in some minor landscaping of the park

The study area is associated with one secondary water source located directly to the north of the Sewage Pump Station within the LaSalle Park. A small ridge runs along the southern boundary of LaSalle Park sloping north and to the west of the study area.

3.5 Archaeological Potential

A number of factors are employed when determining archaeological potential within a particular area. In addition to the proximity to known archaeological sites, factors for determining Aboriginal and historical archaeological potential include watershed area (primary and secondary watercourses, wetlands, etc.), distance from water, drainage patterns, identification of past water sources (beach ridges, river beds, relic creeks, ancient shorelines, etc.), elevated topography, identification of significant physiological and geological features (knolls, drumlins, eskers, plateaus, etc.), soil geomorphology, distinctive land formations (mounds, caverns, waterfalls, peninsulas, etc.), known burials sites and cemeteries, biological features (distribution of food and animal resources before colonization), features identifying early Euro-Canadian settlements (monuments, structures, etc.), historic transportation routes (historic roads, trails, portages, rail corridors, etc.) and properties designated and/or listed under the *Ontario Heritage Act*.

Local knowledge from Aboriginal communities and heritage organizations, as well as consultation of available historical and archaeological literature and cartographic resources, aids in the identification of features possessing archaeological potential. These criteria are based on the Ontario Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* (2011) and were used to determine archaeological potential for the study area under investigation.

The Master Plan of Archaeological Resources for the City of Kingston identifies potential for archaeological resources within the study area (ASI, 2010). The Ontario Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* (2011) additionally indicate archaeological potential due to the proximity to the creek (less than 300 metres) as well as proximity to a historic transportation route (less than 100 metres) (Map 7, p.29). The discovery of aboriginal materials by Guy Blomeley, a local avocational archaeologist recovered from LaSalle Park and Collins Bay areas as well as the proximity of three registered archaeological sites within 1 km signify archaeological potential. Based on the identified features for determining potential for archaeological material cultural resources within the subject property, the grassed portion of the study area is deemed to possess archaeological potential (Map 7, p.29).



4.0 ANALYSIS AND CONCLUSIONS

Golder Associates completed a Stage 1 Archaeological Assessment for the proposed Days Road Sewage Pump Station Upgrade project on behalf of J.L. Richards and Associates Limited. The Sewage Pump Station is located at 419 Days Road, adjacent to the LaSalle Park and situated within Lot 8, Concession 1, Kingston Township, Frontenac County, Ontario. The objectives of this assessment were to identify known archaeological sites and resources on and within the vicinity of the study area, to assess the archaeological potential of the property under investigation, to determine the impact of the proposed development on any potential archaeological resources within the landscape and to provide recommendations as to whether any additional archaeological investigations are required.

Based on the criteria determining archaeological potential detailed in the Ontario Ministry of Tourism, Culture and Sport's *Standards and Guidelines for Consultant Archaeologists* (2011), the grassed portion of the study area is deemed to possess potential for the recovery of archaeologically significant resources (Map 7, p.29).

The Days Road Sewage Pump Station was originally constructed in the late 1950s and received significant upgrades in 1978. During the site inspection the existing building footprint was identified as having no potential for archaeologically significant resources while the surrounding grassed area remains relatively undisturbed, except for the potential of minor landscaping for the baseball diamonds.

The proximity to the creek running long the northern edge of the study area as well as Aboriginal material recovered from the LaSalle Park area by Guy Blomeley, a local avocational archaeologist indicates a high potential for archaeologically significant resources. Other attributes identifying archaeological potential include the proximity of historic transportation routes, the property is within 1 kilometer of known archaeological resources, and is identified as an area of potential on the City of Kingston Archaeological Master Plan

Therefore, all remaining undisturbed land within the study area should be archaeologically investigated with hand excavated test pits at five-meter intervals at least 5 centimetres into natural *in situ* subsoil, excluding the current footprint of the Days Road Sewage Pump Station



5.0 RECOMMENDATIONS

Based on the high archaeological potential for significant Aboriginal material cultural resources identified within the study area, this investigation has provided the basis for the following recommendations (Map 8, p.30):

- 1) All remaining undisturbed land within study property should be archaeologically investigated with hand excavated test pits in five metre intervals to the depth of at least 5 centimeters into natural *in situ* subsoil.
- 2) No further archaeological investigation is required within the existing Days Road Sewage Pump Station footprint as depicted on (Map 8, p.30) and as a consequence that the Ministry of Tourism, Culture, and Sport issue a letter concurring that no additional archaeological investigations are required for this area.

This report is submitted to the Ministry of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c. 0.18. The report is reviewed to ensure that the licensed consultant archaeologist has met the terms and conditions of their archaeological license, and that the archaeological field work and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario.

- 1) The MTCS is requested to review, and provide a letter indicating their satisfaction with the results and recommendations presented herein, with regard to the 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences, and to enter this report into the Ontario Public Register of Archaeological Reports.



6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport, as a condition of licensing in accordance with *Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18*. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ontario Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of *the Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of *the Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the Ontario Heritage Act. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of *the Ontario Heritage Act*.

The Funeral, Burial and Cremation Services Act, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the Registrar of Cemeteries at the Ontario Ministry of Consumer Services is also immediately notified.

Reports recommending further archaeological fieldwork or protection for one or more archaeological sites must include the following standard statement: "Archaeological sites recommended for further archaeological fieldwork or protection remains subject to Section 48 (1) of *the Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological licence".



7.0 IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Golder Associates Ltd. (Golder) has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the archaeological profession currently practicing under similar conditions in the jurisdiction in which the services are provided, subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied is made.

This report has been prepared for the specific site, design objective, developments and purpose described to Golder by J.L. Richards and Associates Limited (the Client). The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without Golder's express written consent.

If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, Golder may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to Golder. The report, all plans, data, drawings and other documents as well as all electronic media prepared by Golder are considered its professional work product and shall remain the copyright property of Golder, who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of Golder. The Client acknowledges the electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore the Client cannot rely upon the electronic media versions of Golder's report or other work products.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the Client in the design of the specific project.

Special risks occur whenever archaeological investigations are applied to identify subsurface conditions and even a comprehensive investigation, sampling and testing program may fail to detect all or certain archaeological resources. The sampling strategies incorporated in this study comply with those identified in the Ontario Ministry of Tourism, Culture and Sports' *Standards and Guidelines for Consultant Archaeologists (2011)*.



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STAGE 1 ARCHAEOLOGICAL ASSESSMENT DAYS ROAD SEWAGE PUMP STATION UPGRADE

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9.0 IMAGES



**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
DAYS ROAD SEWAGE PUMP STATION UPGRADE**



Image 1: General View of Sewage Pump Station, looking east.



Image 2: Sewage Pump Station facing the creek, looking northeast.



**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
DAYS ROAD SEWAGE PUMP STATION UPGRADE**



Image 3: Existing landscape outside of Sewage Pump Station, looking north.



Image 4: Sewage Pump Station with small creek to the north and facing Days Road, looking east.



**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
DAYS ROAD SEWAGE PUMP STATION UPGRADE**



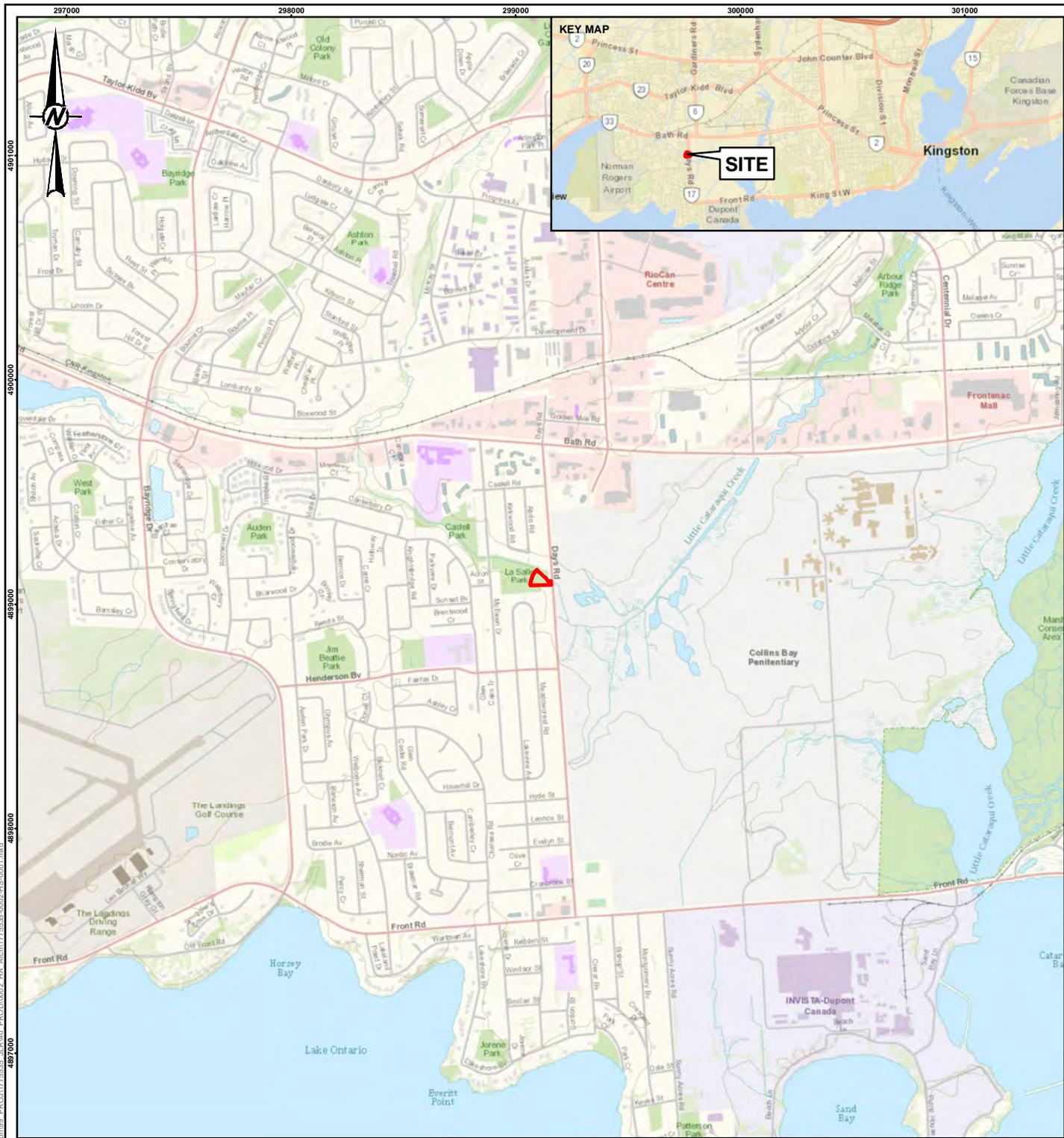
Image 5: Sewage Pump Station with fenced gravel parking lot, looking south.



Image 6: View of existing landscape to west of Sewage Pump Station, Looking southwest.



10.0 MAPS



LEGEND
 STUDY AREA



NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

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 2. PROJECTION: TRANSVERSE MERCATOR. DATUM: NAD 83
 COORDINATE SYSTEM: MTM ZONE 9 VERTICAL DATUM: CGVD28

CLIENT
J.L. RICHARDS & ASSOCIATES LIMITED

PROJECT
**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO**

TITLE
KEY PLAN

CONSULTANT	YYYY-MM-DD	2017-10-27
DESIGNED	----	
PREPARED	BR	
REVIEWED	LD	
APPROVED	HJD	



PROJECT NO.	CONTROL	REV.	MAP
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SCALE 1:25,000

- LEGEND**
- STUDY AREA
 - TOPOGRAPHIC CONTOUR, metres
 - WATERCOURSE

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
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CLIENT
J.L. RICHARDS & ASSOCIATES LIMITED

PROJECT
**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO**

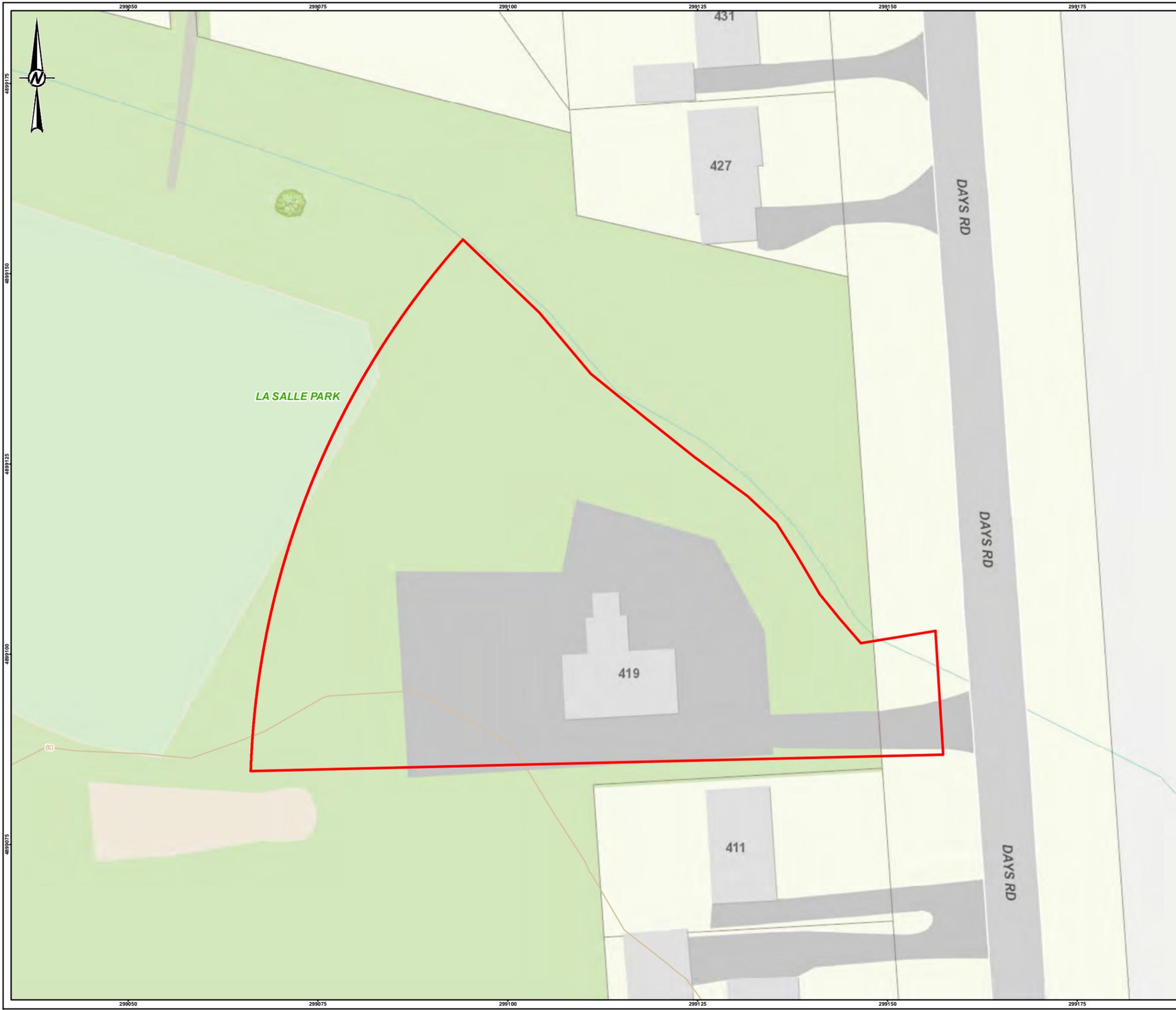
TITLE
SITE PLAN

CONSULTANT	YYYY-MM-DD	2017-10-27
Golder Associates	DESIGNED	---
	PREPARED	BR
	REVIEWED	LD
	APPROVED	HJD

PROJECT NO. 1775535	CONTROL 0002	REV. 0	MAP 2
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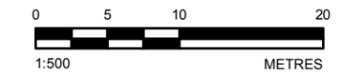


SCALE 1:25,000

- LEGEND**
- STUDY AREA
 - TOPOGRAPHIC CONTOUR, metres

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
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TITLE
TOPOGRAPHIC PLAN

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	APPROVED	HJD

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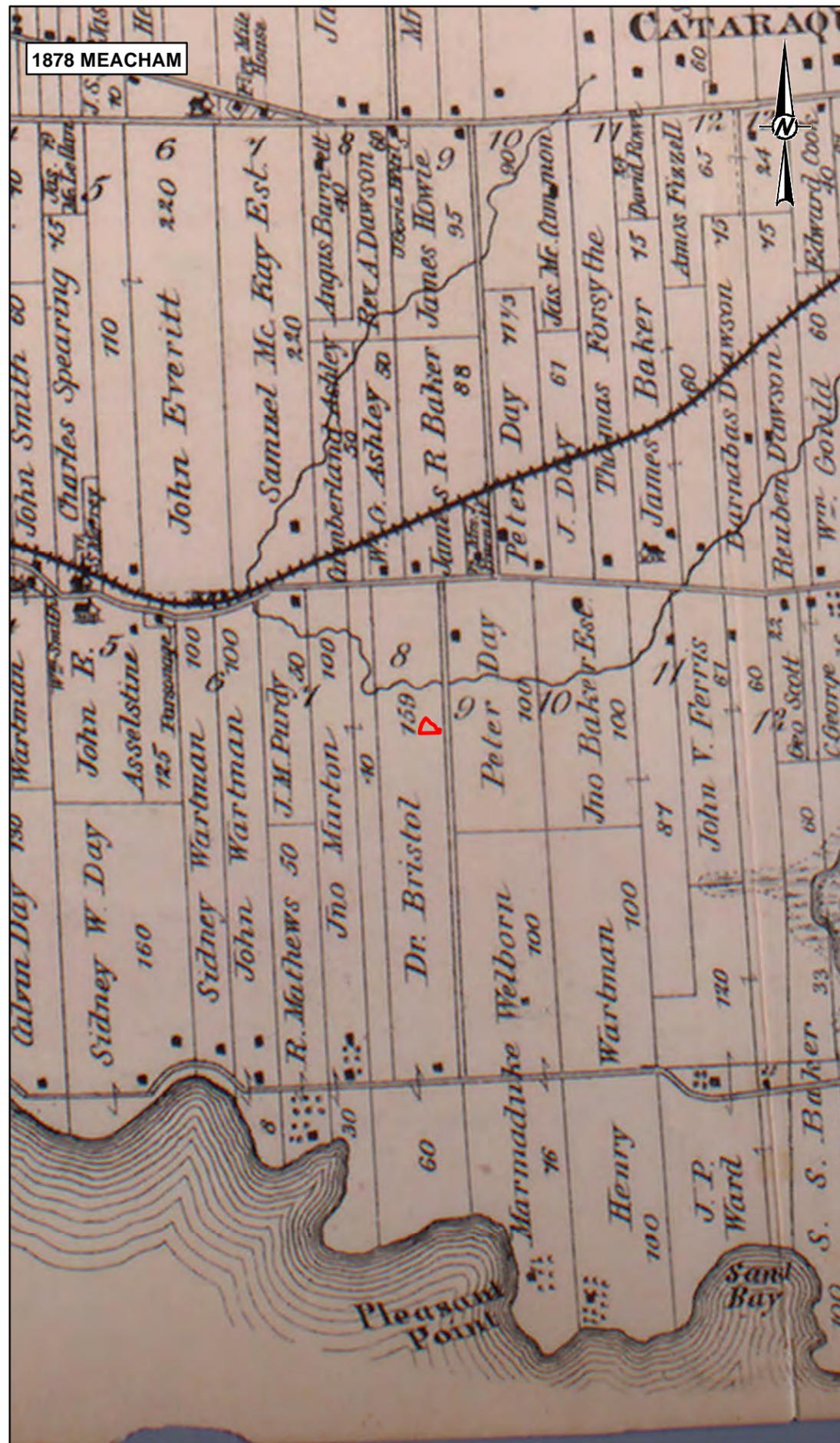
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1860 WALLING



1878 MEACHAM



KEY MAP



SCALE 1:25,000

LEGEND

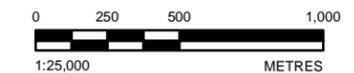
STUDY AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. MAP OF THE UNITED COUNTIES OF FRONTENAC, LENNOX AND ADDINGTON, CANADA WEST, KINGSTON, C.W.; PUTNAM & WALLING PUBLISHERS, 1860.
2. ILLUSTRATED HISTORICAL ATLAS OF THE COUNTIES OF FRONTENAC, LENNOX AND ADDINGTON, ONTARIO, ALLEN, C. R.; J.H. MEACHAM & COMPANY, 1878.
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SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO

TITLE

HISTORIC MAPS

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4

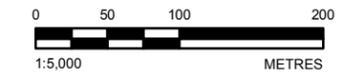


SCALE 1:25,000

LEGEND
 STUDY AREA

NOTE(S)
 1. ALL LOCATIONS ARE APPROXIMATE

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**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
 SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO**

TITLE
AIR PHOTOS

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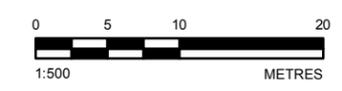


SCALE 1:25,000

- LEGEND**
- PHOTO LOCATION AND DIRECTION
 - STUDY AREA
 - TOPOGRAPHIC CONTOUR, metres
 - WATERCOURSE

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
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STAGE 1 ARCHAEOLOGICAL ASSESSMENT
SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO

IMAGE LOCATIONS AND DIRECTIONS

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PROJECT NO. 1775535 CONTROL 0002 REV. 0 MAP 6

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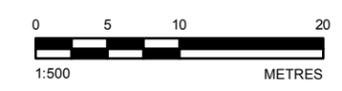


SCALE 1:25,000

- LEGEND**
- STUDY AREA
 - TOPOGRAPHIC CONTOUR, metres
 - WATERCOURSE
 - ARCHAEOLOGICAL POTENTIAL
 - NO ARCHAEOLOGICAL POTENTIAL

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
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**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO**

TITLE
ARCHAEOLOGICAL POTENTIAL

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PROJECT NO. 177535	CONTROL 0002	REV. 0	MAP 7
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SCALE 1:25,000

- LEGEND**
- STUDY
 - TOPOGRAPHIC CONTOUR, metres
 - WATERCOURSE
 - RECOMMENDED TO BE ARCHAEOLOGICALLY TESTED BY HAND EXCAVATED TEST PITS AT 5 METRE INTERVALS
 - NO ADDITIONAL INVESTIGATION

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

- REFERENCE(S)**
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**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
SEWAGE PUMP STATION, 419 DAYS ROAD, KINGSTON, ONTARIO**

TITLE
STAGE 1 RECOMMENDATIONS

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CLOSURE

We trust that this report meets your current needs. If you have any questions, or if we may be of further assistance, please contact the undersigned.

GOLDER ASSOCIATES LTD.

A handwritten signature in blue ink that reads "Lindsay Dales".

Lindsay Dales, M.A.
Archaeologist

A handwritten signature in black ink that reads "Hugh Daechsel".

Hugh Daechsel, M.A.
Principal, Senior Archaeologist

LD/HJD/ca

[https://golderassociates.sharepoint.com/sites/18796g/deliverables/archaeology/final report/p328-0017-2017_27oct2017_re.docx](https://golderassociates.sharepoint.com/sites/18796g/deliverables/archaeology/final%20report/p328-0017-2017_27oct2017_re.docx)

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APPENDIX A

Photographic Catalogue



APPENDIX A Photographic Catalogue

Project #: 1775535

Project Name: Stage 1 Archaeological Assessment, Days Road Sewage Pump Station Upgrade, 419 Days Road, Kingston, Lot 8, Concession 1, Kingston Township, Frontenac County, Ontario

Exp. #	Subject	Direction	Date	Photographer
D001	General overview of Sewage Pump Station	E	05/10/2017	L. Dales
D002	General overview of Sewage Pump Station towards creek	NE	05/10/2017	L. Dales
D003	General overview of Sewage Pump Station	E	05/10/2017	L. Dales
D004	General overview of Sewage Pump Station	N	05/10/2017	L. Dales
D005	Sewage Pump Station	NE	05/10/2017	L. Dales
D006	General overview of grassed study area	NW	05/10/2017	L. Dales
D007	General overview of grassed study area with baseball diamond	N	05/10/2017	L. Dales
D008	General overview of Sewage Pump Station proximity to creek	E	05/10/2017	L. Dales
D009	Sewage Pump Station	SE	05/10/2017	L. Dales
D010	General overview of Sewage Pump Station proximity to Days Road and creek	E	05/10/2017	L. Dales
D011	General overview of Sewage Pump Station proximity to creek	E	05/10/2017	L. Dales
D012	General overview of Sewage Pump Station	S	05/10/2017	L. Dales
D013	General overview of Sewage Pump Station	SE	05/10/2017	L. Dales
D014	General overview of grassed study area	SW	05/10/2017	L. Dales

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**Appendix C
Evaluation Matrix**

Utilities Kingston
Days Road Sewage Pumping Station Upgrades
Schedule B Municipal Class Environmental Assessment
Evaluation Matrix

Impact Level - Score Multiplier
High Positive Impact: 100%
Moderate Positive Impact: 80%
Low Positive Impact: 65%
No Impact: 50%
Low Negative Impact: 30%
Moderate Negative Impact: 15%
High Negative Impact: 0%

Criteria	Weight	Option 1 - Do Nothing		Option 2 - Add Equalization Storage, Maintain Existing Firm Rated SPS Capacity of 900 L/s		Option 3 - Upgrade/Expand Existing SPS Footprint and Capacity		Option 4 - Replace Existing Station on Existing Site		Option 5 - Replace Existing Station on a New Site	
		Score	Comment	Score	Comment	Score	Comment	Score	Comment	Score	Comment
Natural Environment		6.25		7.7		7.45		9.4		9.4	
Groundwater	5	2.5	NO IMPACT - This option does not impact groundwater.	0.75	MODERATE NEGATIVE IMPACT - There is a potential for groundwater impacts associated with dewatering the large equalization storage tanks excavation.	1.5	LOW NEGATIVE IMPACT - There is limited potential for groundwater impacts associated with dewatering the wet well excavation.	1.5	LOW NEGATIVE IMPACT - There is limited potential for groundwater impacts associated with dewatering the wet/dry well excavation.	1.5	LOW NEGATIVE IMPACT - There is limited potential for groundwater impacts associated with dewatering the wet/dry well excavation.
Fish, Aquatic Life, Vegetation	5	0.75	MODERATE NEGATIVE IMPACT - This option does not address capacity issues at the SPS and increases the risk of raw sewage bypasses.	5	HIGH POSITIVE IMPACT - Equalization storage should mitigate potential for raw sewage bypasses.	4	MODERATE POSITIVE IMPACT - Increased pumping capacity should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.	4	MODERATE POSITIVE IMPACT - Increased pumping should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.	4	MODERATE POSITIVE IMPACT - Increased pumping should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.
Terrestrial Vegetation & Wildlife	3	1.5	NO IMPACT - This option does not impact vegetation or wildlife.	0.45	MODERATE NEGATIVE IMPACT - New works would be constructed in close proximity to Little Cataraqui Creek. Environmental impacts and mitigation measures must be identified.	0.45	MODERATE NEGATIVE IMPACT - New works would be constructed in close proximity to Little Cataraqui Creek. Environmental impacts and mitigation measures must be identified.	2.4	MODERATE NEGATIVE IMPACT - New works would be constructed in close proximity to Little Cataraqui Creek. Environmental impacts and mitigation measures must be identified.	2.4	MODERATE NEGATIVE IMPACT - New works would be constructed in close proximity to Little Cataraqui Creek. Environmental impacts and mitigation measures must be identified.
Soils and Geology	3	1.5	NO IMPACT - This option does not impact soils or geology.	1.5	NO IMPACT - The majority of the subgrade is bedrock. No settlement or slope stability issues are anticipated.	1.5	NO IMPACT - The majority of the subgrade is bedrock. No settlement or slope stability issues are anticipated.	1.5	NO IMPACT - The majority of the subgrade is bedrock. No settlement or slope stability issues are anticipated.	1.5	NO IMPACT - The majority of the subgrade is bedrock. No settlement or slope stability issues are anticipated.
Social Environment		6.6		16.6		15.6		13.75		18.65	
Residential, Industrial, Institutional, Commercial	4	0	HIGH NEGATIVE IMPACT - This option limits development and has the highest risk of basement flooding.	4	HIGH POSITIVE IMPACT - Equalization storage would allow for future community development.	4	HIGH POSITIVE IMPACT - Increased pumping capacity would allow for future community development.	4	HIGH POSITIVE IMPACT - Increased pumping capacity would allow for future community development.	4	HIGH POSITIVE IMPACT - Increased pumping capacity would allow for future community development.
Recreational	4	1.2	LOW NEGATIVE IMPACT - Raw sewage bypasses would impact use of the parkland, but is anticipated to be limited.	1.2	LOW NEGATIVE IMPACT - The equalization storage tanks footprint and would significantly impact the use of the park and baseball diamonds, but only during construction.	2	NO IMPACT - The new wet well, control building and generator sets should be accommodated within the existing fenced in area of the site.	0.6	MODERATE NEGATIVE IMPACT - The new SPS location would significantly impact the use of playground equipment in the park.	4	HIGH POSITIVE IMPACT - The SPS would be relocated from the park area to vacant CSC lands.
Public Health	6	0.9	MODERATE NEGATIVE IMPACT - This option carries the highest risk of sewage bypassing and/or basement flooding.	6	HIGH POSITIVE IMPACT - Equalization storage should mitigate potential for raw sewage bypasses.	4.8	MODERATE POSITIVE IMPACT - Increased pumping should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.	4.8	MODERATE POSITIVE IMPACT - Increased pumping should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.	4.8	MODERATE POSITIVE IMPACT - Increased pumping should mitigate potential raw sewage bypasses. Sewage overflow is provided on an emergency basis.
Aesthetics	3	1.5	NO IMPACT - There is no history of complaints regarding the appearance or aesthetics of the existing SPS	1.5	NO IMPACT - Equalization storage would be below grade and not visible.	0.9	LOW NEGATIVE IMPACT - A new control building would be constructed within the SPS site closer to the park. This impact could be mitigated through architectural design and landscaping.	0.45	MODERATE NEGATIVE IMPACT - A new SPS building would be constructed closer to the park. This impact could be mitigated through architectural design and landscaping.	1.95	LOW POSITIVE IMPACT - The new SPS Building would be constructed on the east side of Days Road, the furthest distance from the park and surrounding residential areas.
Noise	3	1.5	NO IMPACT - There is no history of noise or vibration complaints at the existing SPS.	0.9	LOW NEGATIVE IMPACT - New standby generators would be located within sound attenuated enclosures.	0.9	LOW NEGATIVE IMPACT - New standby generators would be located within sound attenuated enclosures.	0.9	LOW NEGATIVE IMPACT - New standby generators would be located within sound attenuated enclosures.	0.9	LOW NEGATIVE IMPACT - New standby generators would be located within sound attenuated enclosures.
Air Quality and Odours	3	1.5	NO IMPACT - There is no history of odour complaints at the existing SPS.	3	HIGH POSITIVE IMPACT - Odour propagation would be mitigated by the new odour control system.	3	HIGH POSITIVE IMPACT - Odour propagation would be mitigated by the new odour control system.	3	HIGH POSITIVE IMPACT - Odour propagation would be mitigated by the new odour control system.	3	HIGH POSITIVE IMPACT - Odour propagation would be mitigated by the new odour control system.
Cultural Environment		3		0.9		3		0.9		0.9	
Archaeological and Heritage Resources	6	3	NO IMPACT - This option does not impact heritage resources.	0.9	MODERATE NEGATIVE IMPACT - There is potential for archaeological impacts due to the large equalization tanks and grounding grid footprints within the parkland area.	3	NO IMPACT - There is limited potential for archaeological impacts, as the new wet well would likely be located within the previously disturbed area.	0.9	MODERATE NEGATIVE IMPACT - There is potential for archaeological impacts due to the SPS footprint within the parkland area.	0.9	MODERATE NEGATIVE IMPACT - There is potential for archaeological impacts due to the SPS footprint within the parkland area.
Technical Environment		2.1		12.1		4.5		18		13.2	
Expandability	3	N/A	This is the baseline option, which does not address the Problem Statement.	0	HIGH NEGATIVE IMPACT - Spatial constraints require existing extended shaft pumps to be maintained. There is no space for additional pumps.	3	HIGH POSITIVE IMPACT - Space for additional pumps can be provided in the new wet well or retrofitted Pump Room area.	3	HIGH POSITIVE IMPACT - Space for additional pumps can be provided in the new SPS footprint.	3	HIGH POSITIVE IMPACT - Space for additional pumps can be provided in the new SPS footprint.
Constructability	4	N/A	This is the baseline option, which does not address the Problem Statement.	4	HIGH POSITIVE IMPACT - The majority of the tank construction would have minimal impact on existing SPS operations. Limited shutdowns are required for connecting new infrastructure.	0	HIGH NEGATIVE IMPACT - A complex construction sequence would be required to ensure minimum SPS service levels are maintained throughout construction.	4	HIGH POSITIVE IMPACT - The majority of SPS construction would have minimal impact on existing SPS operations. Limited shutdowns are required for connecting new infrastructure.	4	HIGH POSITIVE IMPACT - The majority of SPS construction would have minimal impact on existing SPS operations. Limited shutdowns are required for connecting new infrastructure.
Design and Construction Schedule	6	N/A	This is the baseline option, which does not address the Problem Statement.	6	HIGH POSITIVE IMPACT - Construction of equalization storage would be expected to be completed in one construction season.	0.9	MODERATE NEGATIVE IMPACT - The construction and commissioning schedule with be significantly increased to accommodate SPS operations constraints.	4.8	MODERATE POSITIVE IMPACT - Construction of the new SPS is expected to be completed in a 12 to 18 month period.	0	HIGH NEGATIVE IMPACT - The planning and approvals process for purchasing CSC land may take 1 to 2 years to complete.
Operations Flexibility	3	1.5	NO IMPACT - Operations and Maintenance requirements for the existing SPS remains unchanged.	1.5	NO IMPACT - Operations and Maintenance requirements for the existing SPS remains unchanged.	0	HIGH NEGATIVE IMPACT - Operations staff accessibility to the SPS would be restricted and significant coordination of shutdowns would be required.	3	HIGH POSITIVE IMPACT - Accessibility to the existing SPS would not be restricted during construction. Minimal coordination is required for connecting new infrastructure.	3	HIGH POSITIVE IMPACT - Accessibility to the existing SPS would not be restricted during construction. Minimal coordination is required for connecting new infrastructure.
Climate Change Resiliency	4	0.6	MODERATE NEGATIVE IMPACT - The existing site is prone to flooding due to high water levels in the Little Cataraqui Creek.	0.6	MODERATE NEGATIVE IMPACT - The existing site is prone to flooding due to high water levels in the Little Cataraqui Creek.	0.6	MODERATE NEGATIVE IMPACT - The existing site is prone to flooding due to high water levels in the Little Cataraqui Creek.	3.2	MODERATE POSITIVE IMPACT - The SPS may be re-graded to reduce flooding risk.	3.2	MODERATE POSITIVE IMPACT - The SPS may be re-graded to reduce flooding risk.
Economic Environment		0		14.5		27.5		25.5		23.5	
Capital Costs	20	N/A	This is the baseline option, which does not address the Problem Statement.	10	OPC SCORE: 50%	20	OPC SCORE: 100%	18	OPC SCORE: 88%	16	OPC SCORE: 81%
Operational Costs	15	N/A	This is the baseline option, which does not address the Problem Statement.	4.5	LOW NEGATIVE IMPACT - Slightly higher O&M costs, as Equalization Tanks would require cleaning following each extreme wet weather event.	7.5	NO IMPACT - O&M costs are the same, pumping efficiency increases likely offset by peak flow pumping energy requirements.	7.5	NO IMPACT - O&M costs are the same, pumping efficiency increases likely offset by peak flow pumping energy requirements.	7.5	NO IMPACT - O&M costs are the same, pumping efficiency increases likely offset by peak flow pumping energy requirements.
TOTAL SCORE	100	17.95	BASELINE OPTION - NOT RANKED	51.8	RANK 4	58.05	RANK 3	67.55	RANK 1	65.65	RANK 2

Appendix D
Conceptual Design Report



**DAYS ROAD SEWAGE PUMP STATION UPGRADES
CONCEPTUAL DESIGN REPORT**

October 2018

Prepared for:

UTILITIES KINGSTON
PO Box 790
Kingston, Ontario
K7L 4X7

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED
203-863 Princess Street
Kingston, ON
K7L 5N4
Tel: 613-544-1424
Fax: 613-544-5679

JLR No.: 27482

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

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DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

1.0 Introduction

1.1 Background

The Days Road Sewage Pumping Station (SPS) is located on the west side of Kingston approximately 0.6 km south of Bath Road and 1.5 km north of Front Road at 419 Days Road (refer to Figure 1-1). Approximately 90% of west Kingston is serviced by the Days Road SPS, making it a significant sewage works facility for the City of Kingston (refer to Figure 1-2 for an overview of the upstream sewershed for the Days Road SPS). The station conveys sewage directly to the Cataraqui Bay Wastewater Treatment Plant (WWTP) via forcemain(s).

The station site is located on the west side of Days Road within a residential area and immediately adjacent to LaSalle Park. The west branch of Little Cataraqui Creek is located immediately to the north with residential properties located immediately south and LaSalle Park to the west (refer to Figure 1-3 for an overview of the existing site).

The existing facility was constructed in 1978 and upgraded in 1995. Several below grade components (i.e., civil piping, etc.) date back to the 1960s when an older, smaller station was located on this site. In general, the station currently consists of a wet/dry well configuration within a below grade concrete superstructure, and an above grade cast-in-place concrete building envelope that houses the station's various process and HVAC mechanical and electrical, instrumentation and controls equipment and components.

Flows from the upstream sewage collection system are conveyed to the station site via several below grade gravity sewers which combine into an inlet chamber and a manhole located on the north side of the SPS building. Flows are conveyed from there by gravity into the station on the north side and are conveyed through a screening system before entering two wet wells. There are four extended shaft, end suction centrifugal pumps that lift sewage from the wet wells into two separate forcemains (a 600 mm dia. forcemain and a 900 mm dia. forcemain) that exit the station (one from the east side of the building and one from the west side) and continue south on Days Road until they eventually combine near the Front Road and Days Road intersection into a single 900 mm dia. forcemain which conveys the sewage directly to the headworks of the Cataraqui Bay WWTP.

Utilities Kingston (UK) initiated a Schedule 'B' Class Environmental Assessment (Class EA) of the Days Road SPS in April 2017 to ensure that this station can continue to reliably accommodate existing sewage flow generated from the current community, as well as future flow resulting from new upstream development.

At the conclusion of Phase 2 of the Class EA process, a preferred alternative was identified, consisting of replacement of the existing SPS with a new SPS on an expanded site within LaSalle Park. This Conceptual Design Report establishes key design criteria for the new SPS in support of the future Preliminary Design Phase.

DAYS ROAD SEWAGE PUMP STATION UPGRADES

CONCEPTUAL DESIGN REPORT

1.2 Objectives

The objectives of this Conceptual Design Report are as follows:

- Identify the background and scope of the project;
- Establish the design basis for the proposed sewage pump station infrastructure; and
- Provide a conceptual process design for the new sewage pump station.

1.3 Existing Conditions

The existing SPS configuration consists of a wet/dry well configuration within a below grade concrete superstructure, and an above grade cast-in-place concrete building envelope that houses the station's various process and HVAC mechanical and electrical, instrumentation and controls equipment and components.

The SPS site is located within a 1,350 m² fenced area on a parcel of land owned by the City of Kingston, which also includes the LaSalle Park. The SPS building and electrical substation footprints are 190 m² and 75 m², respectively, within the fenced site.

Four (4) gravity sewers discharge to a rectangular junction chamber and manhole located north of the SPS building. A 600 mm dia. sewer outlets to the east wall and 450 mm dia. and 900 mm dia. sewers outlet from the north wall of the junction chamber. The junction chamber is equipped with a 600 mm dia. gravity overflow sewer which discharges to the creek north of the SPS site. The junction chamber outlets to an adjacent junction manhole via a 900 mm dia. sewer. A 1,350 mm gravity sewer passes through the junction manhole from the northwest, entering the SPS north of the building.

The SPS building is approximately 190 m² in area, consisting of a ground floor screening room, which also provides an access stairwell down to the wet well basement levels (classified as a confined space); a ground floor pump motor room, which also houses the MCC and control panels; a separate washroom and small storage room; basement levels that house the pumps and the discharge header. The pump drive shafts extend from the below grade pump level up to the main floor where they connect to the pump motors.

Sewage enters the SPS via a 1,060 mm wide inlet channel equipped with a travelling rake type mechanical bar screen. Two (2) 1,060 mm wide overflow channels located on either side of the mechanical bar screen allow sewage to bypass the mechanical bar screen if it is blocked, or isolated for maintenance, using upstream and downstream slide gates. Sewage flow from the inlet channel is split into two (2) wet wells through 760 mm wide slide gate openings. The west and east wet well dimensions above the benching are 2,660 mm x 4,950 mm and 2,660 mm x 4,800 mm, respectively. The estimated current working volume of the wet well is approximately 27 m³, although this is increased somewhat under very high flow conditions by utilizing the floor area above the wet well.

Sewage from the wet wells is drawn into four (4) extended shaft, vertical end suction centrifugal pumps, via 600 mm x 900 mm tapered flumes cast into the floor slab of the third basement level. Pumps No. 1 and No. 2 are connected to the west wet well cell and Pumps No. 3 and No. 4 are connected to the east well wet cell. Pump suction flumes are equipped with sluice gates and extended shaft handwheel operators located on the first basement level, above the wet wells. Pump specifications and characteristics are summarized in Table 1-1:

**DAYS ROAD SEWAGE PUMP STATION UPGRADES
CONCEPTUAL DESIGN REPORT**

Table 1-1: Existing Pump Characteristics

Pump No.	Pump Manufacturer / Model	Rated Duty Points	Motor / Drive Specifications
1	Worthington Corp. / 14MNZ01	336 L/s at 23 m TDH	112 kW electric inverter duty motor, VFD
2	Ingersoll Dresser / 4MNZ16-FR7L	336 L/s at 23 m TDH	112 kW electric motor, soft starter
3	Worthington Corp. / 20MNHZ01	748 L/s at 23 m TDH	260 kW dual drive electric motor / diesel engine
4	Worthington Corp. / 14MNZ01	336 L/s at 23 m TDH	112 kW electric inverter duty motor, VFD

All discharge piping connects to a 750 mm diameter concrete pressure pipe (CPP) header, located on the second basement level. The east end of the header is equipped with a 450 mm dia. magnetic flow meter, which transitions to a 600 mm dia. forcemain. The west end of the header transitions to a 900 mm dia. forcemain. The header is equipped with a 600 mm isolation valve, which allows discharge flow from Pumps No. 1 and No. 2 to be directed to the 900 mm dia. forcemain, and Pumps No. 3 and No. 4 to be directed to the 600 mm dia. forcemain. Each header section is equipped with a dedicated 150 mm dia. cushioned surge relief valve assembly, which discharges to the wet wells.

A 900 mm dia. HDPE DR26 forcemain installed in 1995 exits the station on the west side through a flow metering chamber and runs around the north side of the building and then extends out to Days Road where it continues south and ultimately to the Cataraqi Bay WWTP. A 600 mm dia. concrete lined cylinder (C-310) forcemain installed in 1978 exits the building from the east side and runs south along the west side of Days Road until it combines with the 900 mm dia. forcemain at the Front Street and Days Road intersection.

The SPS is electrically fed from the original 44 kV/600V on-site substation and 750 kVA transformer. The electrical distribution system consists of a Motor Control Centre (MCC), which includes two Variable Frequency Drives (VFDs) and panelboards. The total connected “pump motor” load for the station is 600 kW (800 HP). The Pump No. 1 VFD was recently replaced.

The SPS is connected to the UK SCADA Wide Area Network (WAN) via an overhead fibre optic line that runs along Days Road. SCADA is remote from the Cataraqi Bay WWTP (a single SCADA screen provides monitoring and remote-control options). This includes East and West Wet Well level monitoring, flow monitoring of both discharge forcemains (using magnetic flow meters); pump status; pump speed for the VFD driven pumps; and other systems, including security.

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

2.0 Design Basis

The new SPS design basis was established by calculating the design firm capacity based on the recent wet weather peak hourly flow, while accounting for the future available Cataraqui Bay WWTP treatment capacity after expansion.

The previously completed Sewage Master Plan recommended a 20 year upgraded firm capacity for the Days Road SPS of 1,200 L/s, corresponding to a 2016 maximum flow of 1,077 L/s and an average day flow of 250 L/s.

The 20 year average day design flow was subsequently updated to 353 L/s based on the 2016 Sewage Master Plan future average day flow (297 L/s) and the phased expansion of the Feihe dairy plant (Phase 1 Average Day Flow of 26 L/s, Phase 1 plus Phase 2 Average Day Flow of 56 L/s, per Section 5.2 of the Phase 1 Report). The future peak hour flow is calculated as 1,373 L/s, representing the summation of the 2017 wet weather peak hourly flow (1,270 L/s), the 2016 Sewage Master Plan future average day flow increase (47 L/s) and the Feihe dairy plant ultimate design flow (56 L/s).

In addition to the above, the Cataraqui Bay WWTP design capacity also needs consideration when assessing the Days Road SPS capacity expansion potential. Since the Cataraqui Bay WWTP is able to accommodate a maximum of 1,430 L/s and taking into consideration climate change impacts, it is considered prudent to design the new SPS for a firm pumping capacity of 1,430 L/s. The design basis is summarized as follows:

Table 2-1: Sewage Design Flows Basis

Design Flow Parameters	Phase 1 Proposed Design Flows	Phase 2 Updated Design Flow
Existing Minimum Day	164 L/s	164 L/s
Existing Average Day	250 L/s	250 L/s
Existing Peak Hour	1,200 L/s	1,270 L/s
Future Average Day	276 L/s to 306 L/s	297 L/s to 353 L/s
Future Peak Hour	1,226 L/s to 1,256 L/s	1,373 L/s
Design Firm Capacity	1,256 L/s	1,430 L/s

3.0 Pumping System Conceptual Design Elements

3.1 Pumping Configuration

The new Days Road SPS is to be designed to include firm capacity (i.e., maximum flow produced with the largest capacity pump out of service). Per Table 2-1, peak flows are anticipated to range from 1,270 L/s to 1,430 L/s over the 20 year design period.

The existing dry/wet well configuration approach is proposed to be maintained, for ease of operator accessibility for preventative maintenance and diagnostics. Due to the lack of commercially available extended shaft pumps, dry pit submersible pumps equipped with variable frequency drives (VFDs) are proposed. Dry pit submersible pumps provide similar benefits insofar that pumping operation would be maintained in the event that the dry well is flooded. In addition, close-coupling of the motor to the pump units mitigates vibrational issues typically associated with extended shaft pumps, and reduces spatial requirements for the above-grade pumping station building enclosure.

The design firm capacity is to be met by three (3) jockey pumps and one (1) peak pump operating in parallel under a lead/lag control topology. Standby jockey and peak pumps are to be provided, for total of six (6) pumps.

3.2 Forcemains

Existing forcemains capacity is constrained by the minimum flow velocity (0.6 m/s) required to minimize solids deposition and residence time in the forcemain, so as to minimize the production of hazardous and corrosive hydrogen sulphide and methane gases. Conversely, maximum flow velocity is constrained by the maximum hydraulic capacity of the existing forcemains, defined by their maximum allowable working pressures.

In this case, a total pumping flow of 637 L/s is required to provide minimum scouring velocity (0.6 m/s) in the combined existing 600 mm dia. and 900 mm dia. forcemains (AECOM, 2016). The maximum hydraulic capacity of the existing forcemains are defined by their maximum allowable working pressures, which represents the maximum allowable surge pressure plus normal operating pressure exerted on a forcemain. The frequency of hydraulic transient events and corresponding surge conditions, and the maximum allowable working pressure that should be applied in each case, is dependent on the starters and drive technologies for the pumps. Constant speed pumps and full voltage, non-reversing starters typically produce frequent and sudden flow changes that are more susceptible to surge conditions. Pumps equipped with soft starters or VFDs produce more gradual flow changes which mitigate surge conditions and can subsequently allow for higher pipe flows. It is reasonable to assume in this case that any potential replacement pumps would be equipped with either soft starters or VFDs.

Working pressure and the corresponding maximum flow for infrequent surge conditions are estimated in the following table, based on an assumed DR26 rating for the 900 mm diameter HDPE forcemain and C-310 pre-stressed steel cylinder type concrete pressure pipe construction for the 600 mm diameter forcemain.

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

Table 3-1: Assumed Maximum Existing Forcemains Capacity

Forcemain Diameter, Material	Forcemain Surge Parameters			
	Maximum Flow ¹	Forcemain Pressure Head ¹	Working Pressure	150% Pressure Class/Rating ²
600 mm dia. C-310 Concrete Lined Pipe	520 L/s	22 m	211.23 m	211.23 m
900 mm dia. DR 26 HDPE	1,430 L/s	42 m	95.45 m	132.02 m

¹ Based on 600 mm dia. and 900 mm dia. forcemain system curve data obtained from the 2016 AECOM Condition and Capacity Assessment Report.

² Pressure Class/Rating for C-310 Concrete Lined Pipe = 140.82 m (200 psi), HDPE DR 26 = 88.01 m (64 psi).

Based on the foregoing, the working pressure (95.45 m) corresponding to the design firm pumping capacity (1,430 L/s) is less than the 150% Pressure Class/Rating for the 900 mm dia. forcemain, indicating additional forcemain capacity may be available for future flows.

The 600 mm dia. pipe provides some additional capacity, but cannot accommodate the full future flow of the station (i.e., there is not full redundancy in the forcemain from the SPS to the intersection of Days Road and Front Street).

3.3 Preliminary Pump Selections

A 350 L/s jockey pump capacity was selected to correspond to the average day flow range of 250 L/s to 353 L/s. Four (4) operating pumps (three (3) jockey plus one (1) peak) are required to accommodate the design firm capacity of 1,430 L/s (refer to Section 3.1). Assuming that pumps operating in parallel typically generate the summation of two-thirds of their individual pump capacities, results in estimated peak pump capacity of 1,100 L/s.

Xylem® pump performance data was evaluated for the jockey and peak pumps operating at a total dynamic head (TDH) that is similar to existing (23.0 m). Design TDH will be calculated from the static gradient and system curves generated during the future preliminary design phase. Preliminary model selections for the jockey and peak pumps are summarized as follows. Refer to Appendix 'A' for pump technical specifications.

Jockey Pumps (Pump No. 1, 2, 3 and 4)

- Xylem® Model NZ 3312/736 3 ~ 870
- 880 RPM
- Maximum Duty Point: 350 L/s at 23 m TDH
- 138 kW (185 HP) variable speed electric drive

Peak Pumps (Pump No. 5 and No. 6)

- Xylem® Model NZ 3531/905 3 ~ 1070
- 715 RPM
- Maximum Duty Point: 1,100 L/s at 23 m TDH
- 373 kW (500 HP) variable speed electric drive

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

3.4 Wet Well Design and Hydraulic Profile

The conceptual wet well design is based on Hydraulic Institute (HI) standards for trench-type wet wells, approximate inlet sewer invert, space required for six (6) pumps and maximum allowable pump cycle sewage retention times. Two (2) wet well cells are proposed to provide the operational flexibility required to isolate and clean each wet well cell without impacting minimum operational service levels.

The 18 m x 5 m cross sectional area of the wet wells is defined by the spatial requirements of the preliminary pump model selections for the six (6) pumps and the approximately 3 m to 5 m clearance distance required between pump inlets to minimize pump eddying. Refer to the Wet Well / Pump Room Conceptual Design General Arrangement Drawing GA001 included in Appendix 'B' for additional information.

A design Peak Pump Start / High Water Level (HWL) of 72.800 m was selected as it is similar to the existing SPS design HWL (72.238 m). 0.625 m and 1.000 m bandwidths were selected for the peak and jockey pump operating bandwidths, respectively. A pump suction inlet elevation of 68.875 m was selected to provide a minimum 2.0 m pump submergence. Based on the foregoing critical pumping system elevations, a wet/dry well top of base slab elevation of 68.300 m is proposed (approximately 10 m below existing grade), representing 0.8 m below the existing SPS dry well top of base slab elevation. Refer to the Conceptual Design Hydraulic Profile Drawing P001 and Mechanical Building Conceptual Design General Arrangement Drawing GA003 included in Appendix 'B' for additional information.

4.0 Proposed Works

4.1 Conceptual Site Layout

The new 12 m x 23 m below-grade dry/wet wells structure and 10 m x 12 m above-grade control building is to be located within a fenced area of LaSalle Park, bounded by a future recreational path to the west, a baseball diamond to the northwest and the existing SPS to the east.

The existing 44 kV electrical substation is to be demolished and removed. The existing playground equipment is to be relocated to an area within LaSalle Park, adjacent to McEwen Drive. Once the new SPS is constructed and commissioned, the existing SPS is to be demolished and a public parking area is to be provided generally within the existing SPS footprint.

New gravity sewers and manholes are required to re-route sewage flows to the new SPS inlet from the existing 1,350 mm dia. sewer and the inlet structure. New 600 mm and 900 mm dia. forcemains are to be routed from the new SPS, connecting to their respective existing forcemains to the north and south of the existing SPS. A new forcemain is to be provided for bypassing sewage to Little Cataraqui Creek to the north of the site.

Two (2) sliding vehicle access gates are proposed to provide drive-through access to the fenced site area. Two (2) 6 m wide access road easements to the north and south of the future public parking area are required to facilitate access to the new SPS. A new standby power generator is to be housed within an exterior sound attenuating enclosure, within the northeast corner of the fenced site. Refer to the Conceptual Design Site Plan Drawing C001 included in Appendix 'B'.

4.2 Control Building Conceptual Layout

The 10 m x 12 m control building is a single storey, above grade building envelope that is to be located over the northern portion of the below grade dry/wet wells structure. The Control Building is to house a Mechanical Bar Screen and odour control system within a dedicated Screening Room and an Electrical Room that will house all electrical and control panels and equipment. In accordance with Ontario Building Code (OBC) requirements, vestibules are required to be provided to access the stairs to the below-grade dry well and the Electrical Room.

Various current problems and future challenges associated with the Days Road SPS were documented in the Phase 1 Report. The following are some of the key issues:

4.3 Electrical Service and Standby Power Conceptual Design

The existing ungrounded 44 kV system likely presents significant Ground Potential Rise (GPR) risks to the general public. This is primarily due to the moderately high short circuit levels with respect to the highly resistive nature of the native soils in Kingston (i.e., bedrock).

Supplementing the existing grounding system to the 44 kV substation will likely not address this concern, due to poor soil conditions on the site and adjacent park. Line reactors are also not considered a viable solution to mitigate GPR risks, primarily due to voltage regulation concerns and reliability requirements of the pumping system. A significantly oversized 44 kV step down

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

transformer would be required to ensure VFDs do not inadvertently trip on brown-out conditions from the line reactance in the supply circuit.

Due to the aforementioned safety risks, the existing service entrance and 44 kV substation are to be replaced with a new 750 kVa transformer connected to the grounded 8.32 kV system. By providing a conductive return path for a potential fault on medium voltage service supply, the resulting GPR risks would then be easily managed within the fenced-in area limits of the pump station site and the adjacent park.

The transformer is expected to be less than 50% loaded (approximately 350 kW) for the vast majority of its design life. A redundant 750 kW standby power generator is also proposed to be provided to supplement the power supplied during peak power demands that are associated with extreme wet weather events.

4.4 Construction Sequence

A detailed construction sequence is required to ensure that critical system connections and shutdowns are completed while maintaining minimum service levels at all times. The following provides a brief overview of a proposed construction sequence, including system isolation and shutdown events that would be required to bring the new SPS into service. A more detailed construction sequence would be prepared during the preliminary and detailed design phases.

- Relocate the playground equipment to facilitate use of this park area as a construction laydown/staging area.
- Install the new 750 kVA transformer and electrical service entrance. Make temporary connections from the new transformer to the existing SPS.
- Decommission and demolish the existing 44 kV electrical substation.
- Construct the new SPS below and above-grade structures, mechanical and electrical systems.
- Construct the new sewage bypass forcemain. Install new gravity sewers up to the existing 1,350 mm dia. sewer and the existing inlet chamber. Install new forcemains up to the existing 600 mm and 900 mm dia. forcemains.
- Connect the new gravity sewer to the inlet chamber and the new to the existing forcemains. Test and commission the new SPS. Complete all remaining sewer, manhole and forcemain connections.
- Cap and abandon all sewer and forcemain connections to the existing SPS.
- Decommission and demolish the existing SPS.
- Construct the new public parking area, complete final grading, landscaping and fencing on the site.

DAYS ROAD SEWAGE PUMP STATION UPGRADES CONCEPTUAL DESIGN REPORT

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J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:



Ryan Ashford, P.Eng.
Senior Environmental Engineer

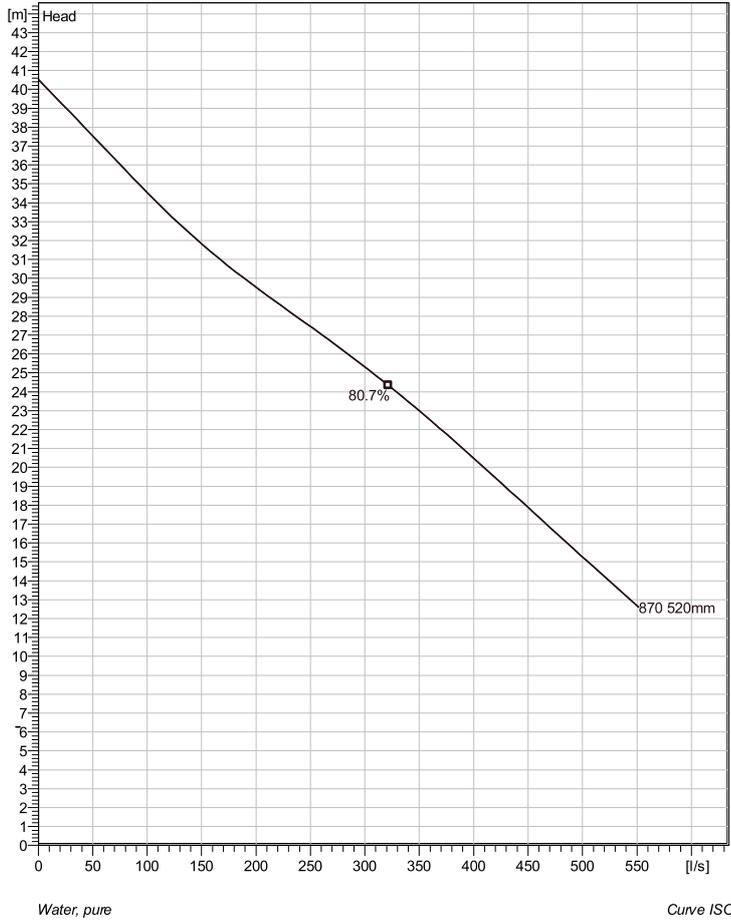
Reviewed by:



Brian Hein, P.Eng.
Chief Environmental Engineer

Appendix A
Pump Technical Specifications

NZ 3312/736 3~ 870 Technical specification



Note: Picture might not correspond to the current configuration.

General

Patented self cleaning semi-open channel impeller, ideal for pumping in waste water applications. Modular based design with high adaptation grade.

Impeller

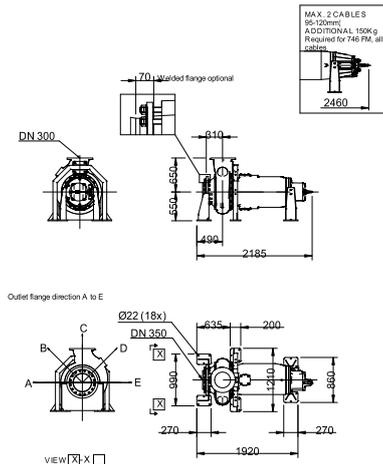
Impeller material	Grey cast iron
Discharge Flange Diameter	300 mm
Suction Flange Diameter	350 mm
Impeller diameter	520 mm
Number of blades	3

Motor

Motor #	N0736.000 43-44-81D-D 185hp Standard
Stator variant	6
Frequency	60 Hz
Rated voltage	575 V
Number of poles	8
Phases	3~
Rated power	138 kW
Rated current	179 A
Starting current	730 A
Rated speed	880 1/min
Power factor	
1/1 Load	0.82
3/4 Load	0.80
1/2 Load	0.73
Motor efficiency	
1/1 Load	93.6 %
3/4 Load	94.5 %
1/2 Load	94.6 %

Configuration

Installation: Z - Horizontal Permanent, Dry



Pump can be rotated around its center line to five positions relative to the inlet. Increments are 45°.

©Z-NZ 3312 735/745/736/746

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NZ 3312/736 3~ 870



Performance curve

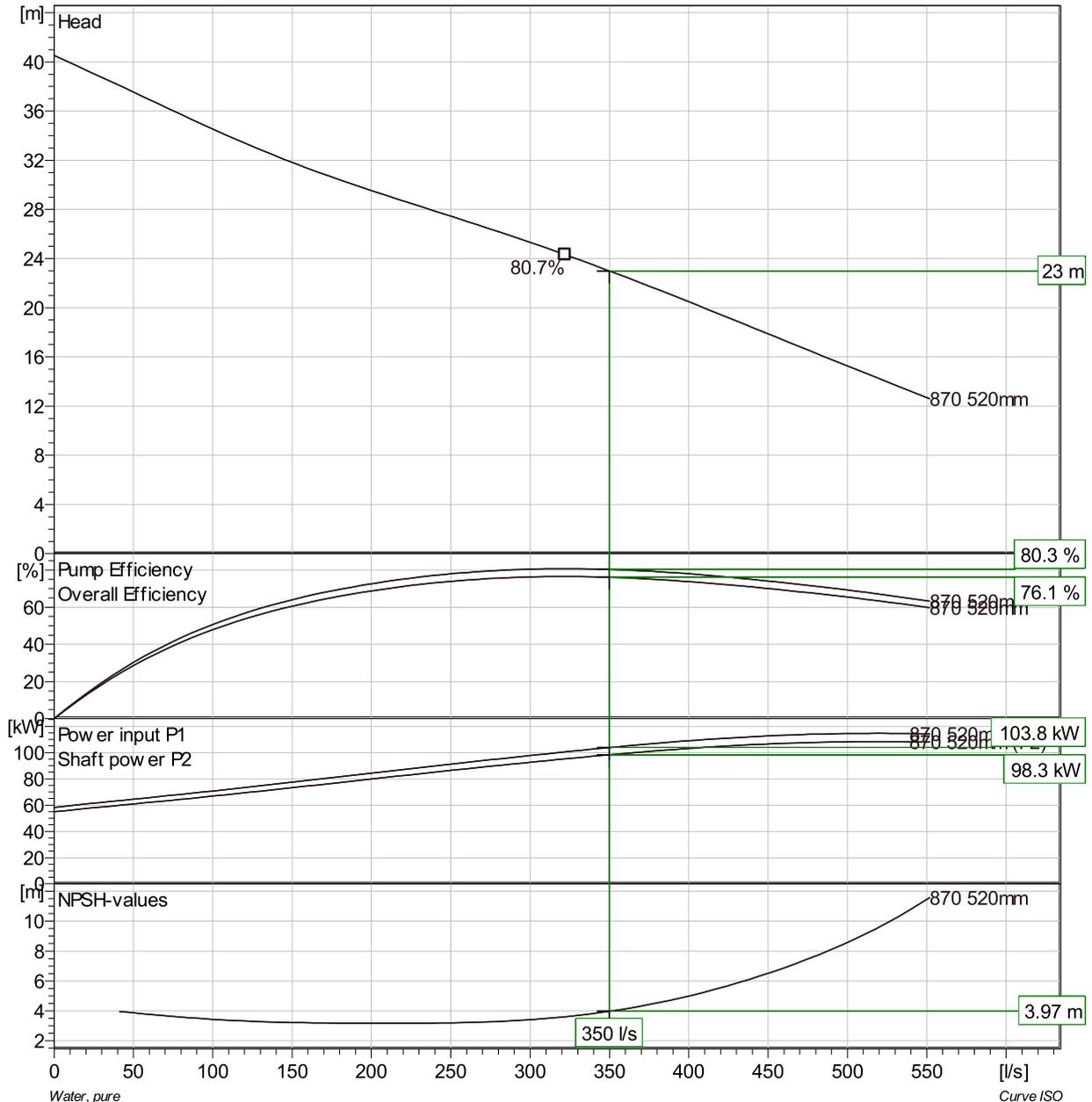
Pump

Discharge Flange Diameter 300 mm
 Suction Flange Diameter 350 mm
 Impeller diameter 520 mm
 Number of blades 3

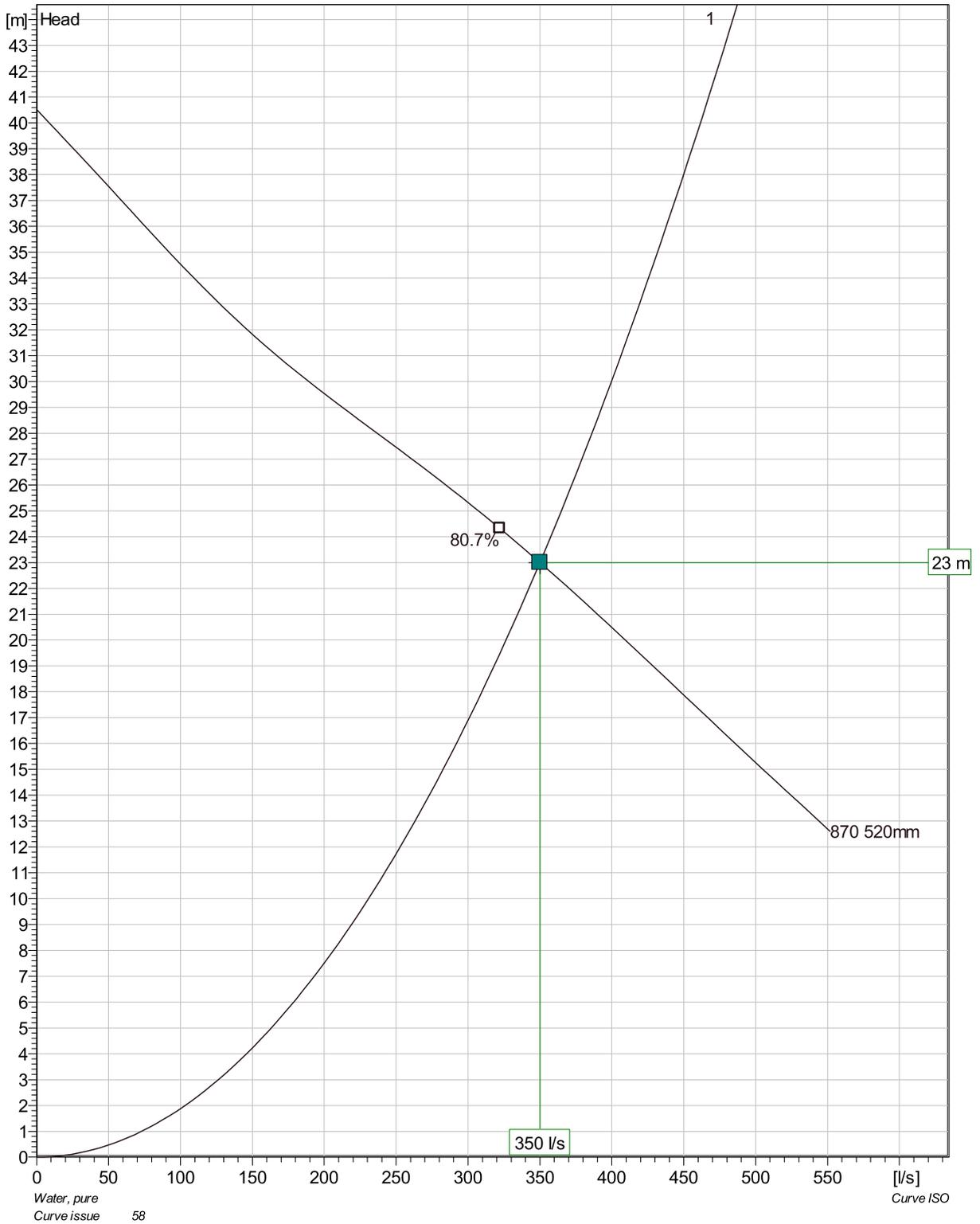
Motor

Motor # N0736.000 43-44-8ID-D 185hp
 Stator variant 6
 Frequency 60 Hz
 Rated voltage 575 V
 Number of poles 8
 Phases 3~
 Rated power 138 kW
 Rated current 179 A
 Starting current 730 A
 Rated speed 880 1/min

Power factor
 1/1 Load 0.82
 3/4 Load 0.80
 1/2 Load 0.73
 Motor efficiency
 1/1 Load 93.6 %
 3/4 Load 94.5 %
 1/2 Load 94.6 %



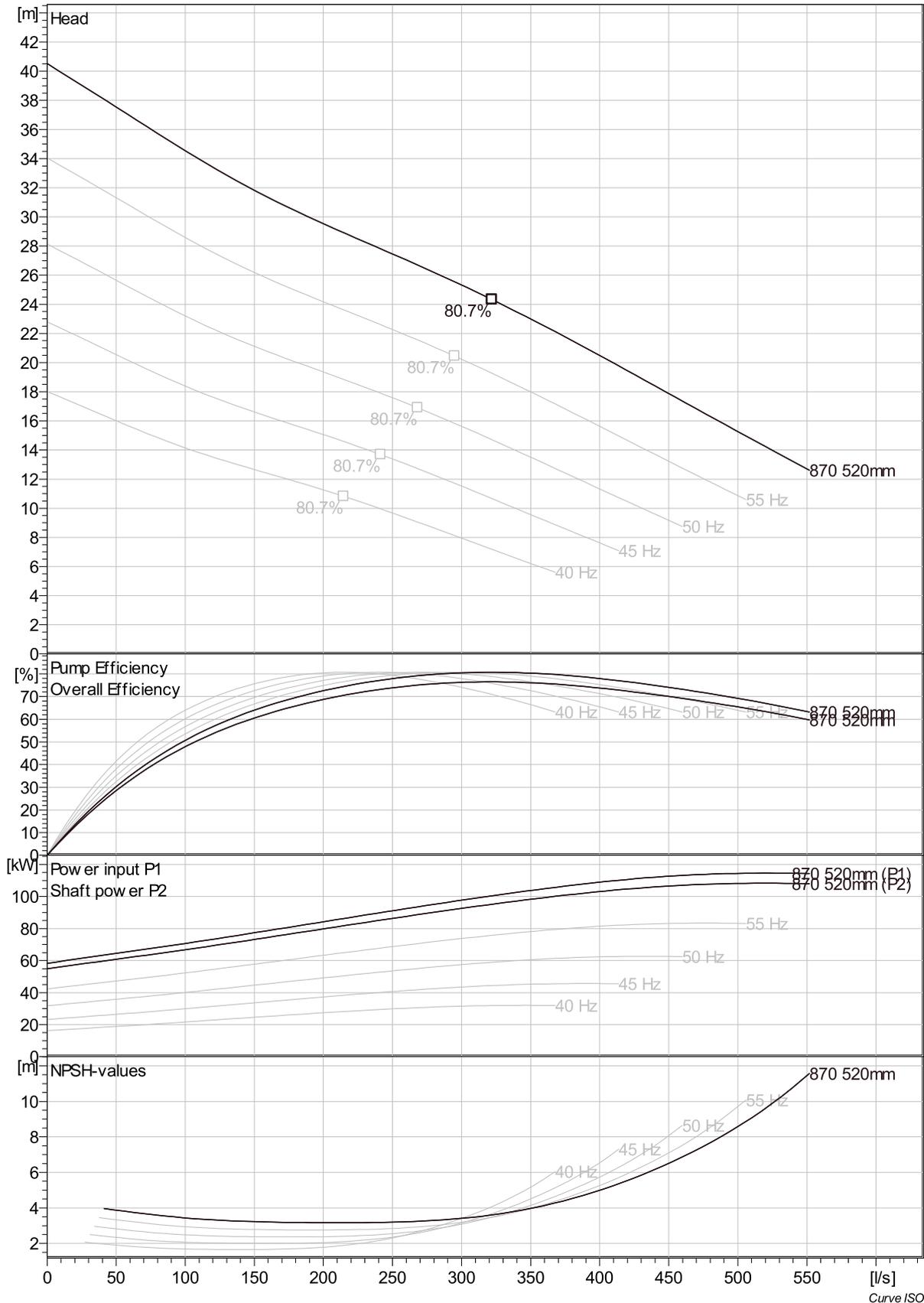
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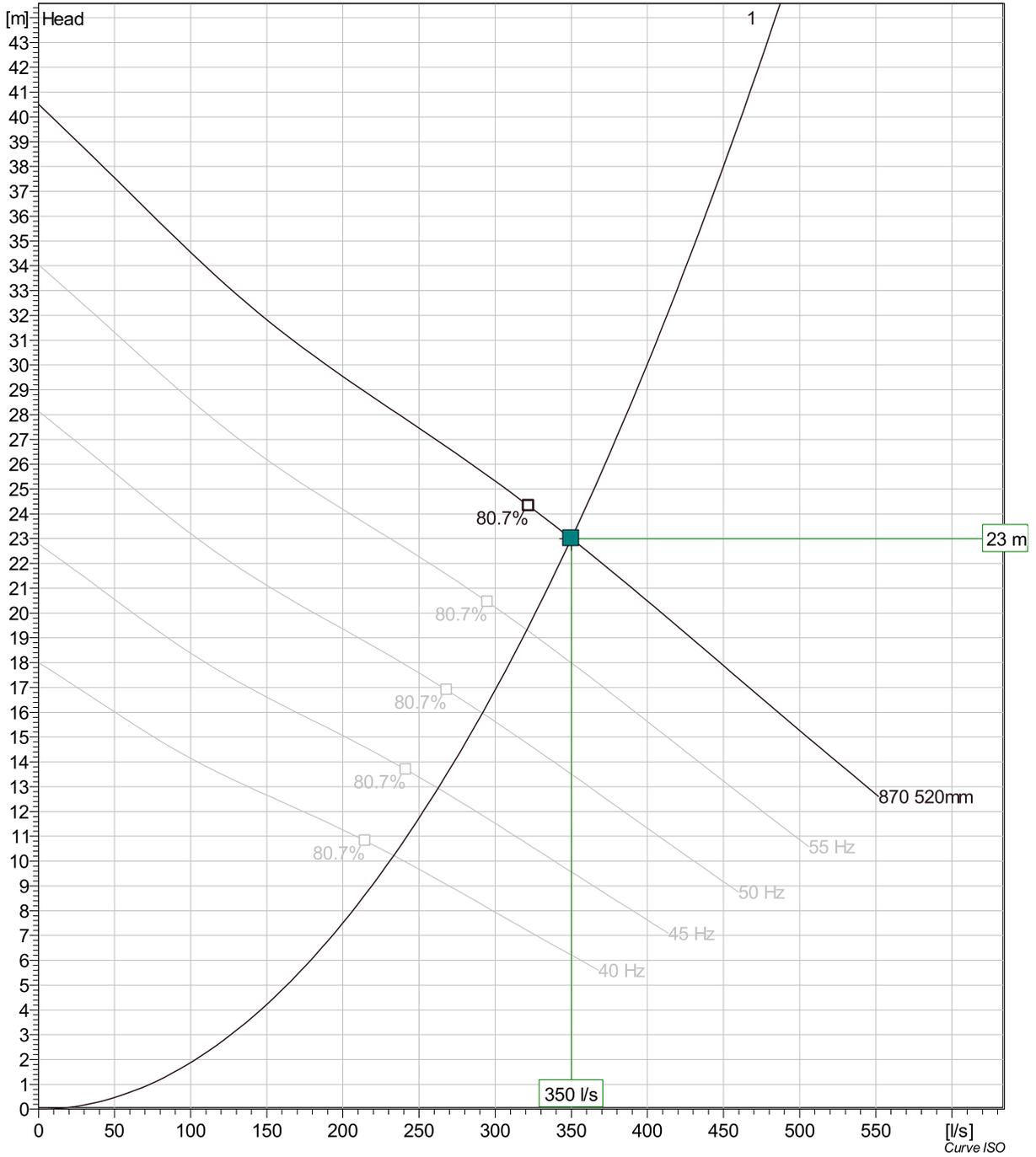
Pumps running /System	Individual pump			Total					
	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHre
1	350 l/s	23 m	98.3 kW	350 l/s	23 m	98.3 kW	80.3 %	8.24E-5 kWh/l	3.97 m

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NZ 3312/736 3~ 870 VFD Curve



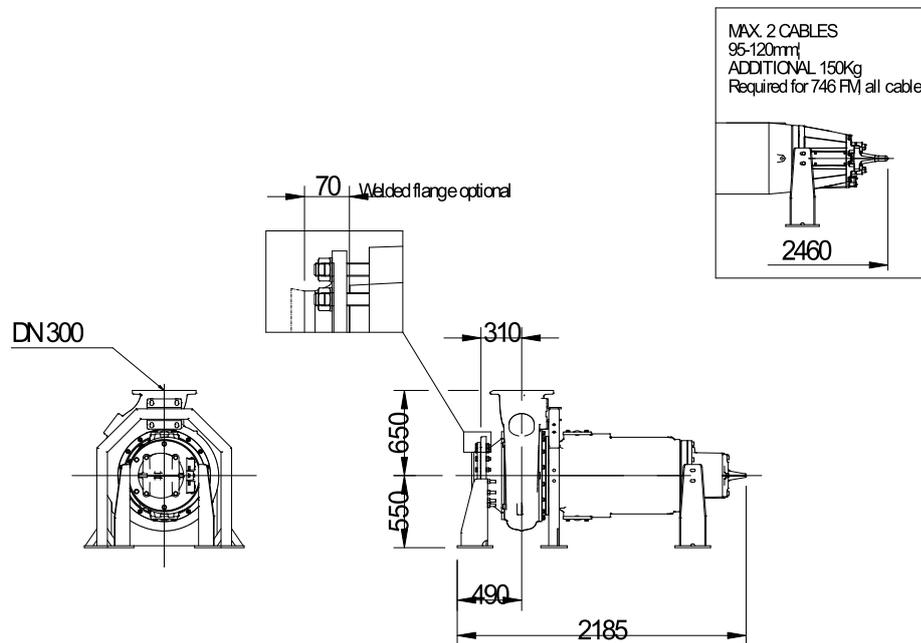
Project	Project ID	Created by	Created on	Last update
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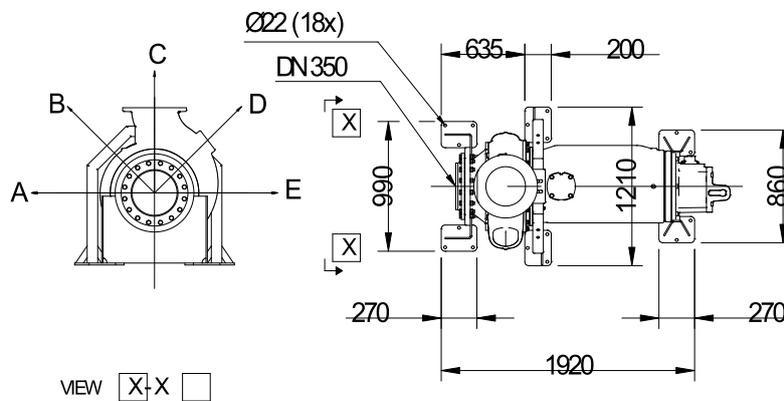
Pumps running /System	Frequency	Flow	Head	Shaft power	Flow	Head	Shaft power	Hyd eff.	Specific energy	NPSHre
1	60 Hz	350 l/s	23 m	98.3 kW	350 l/s	23 m	98.3 kW	80.3 %	8.24E-5 kWh/l	3.97 m
1	55 Hz	321 l/s	19.3 m	75.7 kW	321 l/s	19.3 m	75.7 kW	80.3 %	6.93E-5 kWh/l	3.45 m
1	50 Hz	292 l/s	16 m	56.9 kW	292 l/s	16 m	56.9 kW	80.3 %	5.75E-5 kWh/l	2.97 m
1	45 Hz	262 l/s	12.9 m	41.5 kW	262 l/s	12.9 m	41.5 kW	80.3 %	4.68E-5 kWh/l	2.51 m
1	40 Hz	233 l/s	10.2 m	29.1 kW	233 l/s	10.2 m	29.1 kW	80.3 %	3.76E-5 kWh/l	2.07 m

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NZ 3312/736 3~ 870 Dimensional drawing



Outlet flange direction A to E



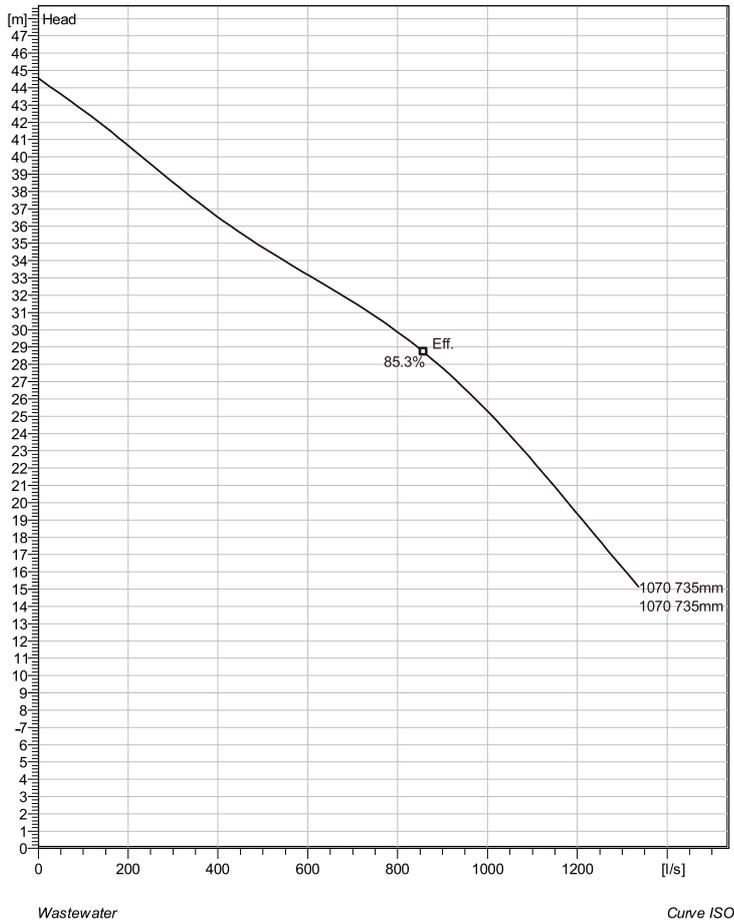
Pump can be rotated around its center line to five positions relative to the inlet. Increments are 45°.

CZ,NZ 3312 735/745/736/746

Project	Project ID	Created by	Created on	Last update
			7/17/2018	

NZ 3531/905 3~ 1070

Technical specification



Note: Picture might not correspond to the current configuration.

General

Patented self cleaning semi-open channel impeller, ideal for pumping in waste water applications. Modular based design with high adaptation grade.

Impeller

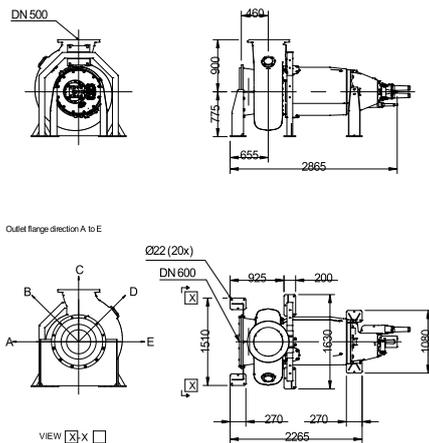
Impeller material	Grey cast iron
Discharge Flange Diameter	500 mm
Suction Flange Diameter	600 mm
Impeller diameter	735 mm
Number of blades	3

Motor

Motor #	N0905.000 66-56-10AA-D 500hp Standard
Stator variant	44
Frequency	60 Hz
Rated voltage	575 V
Number of poles	10
Phases	3~
Rated power	373 kW
Rated current	485 A
Starting current	2630 A
Rated speed	715 1/min
Power factor	
1/1 Load	0.81
3/4 Load	0.77
1/2 Load	0.67
Motor efficiency	
1/1 Load	95.5 %
3/4 Load	95.7 %
1/2 Load	95.4 %

Configuration

Installation: Z - Horizontal Permanent, Dry



Pump can be rotated around its center line to five positions relative to the inlet. Increments are 45°.

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			10/23/2017	

NZ 3531/905 3~ 1070

Performance curve

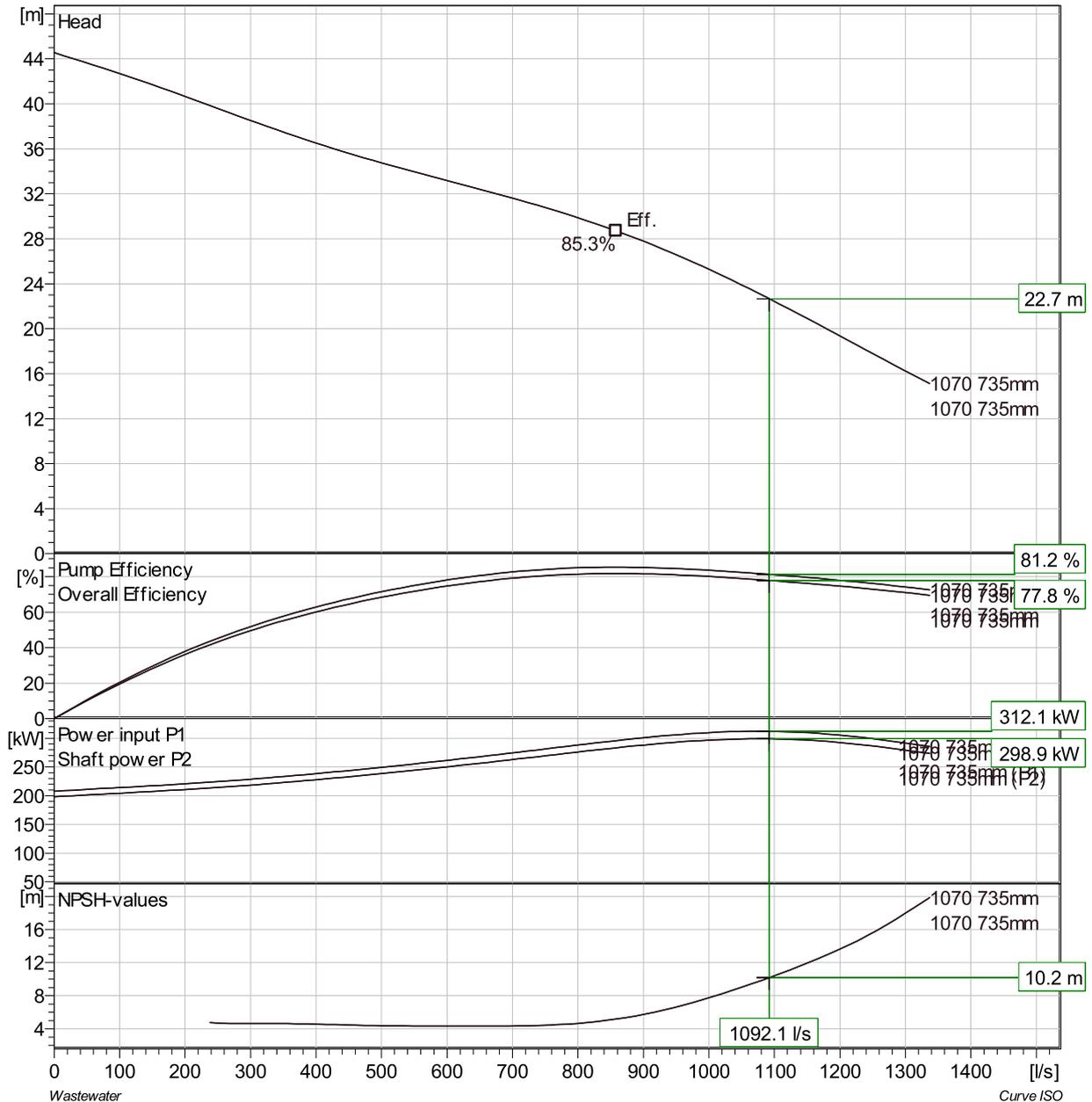
Pump

Discharge Flange Diameter 500 mm
 Suction Flange Diameter 600 mm
 Impeller diameter 735 mm
 Number of blades 3

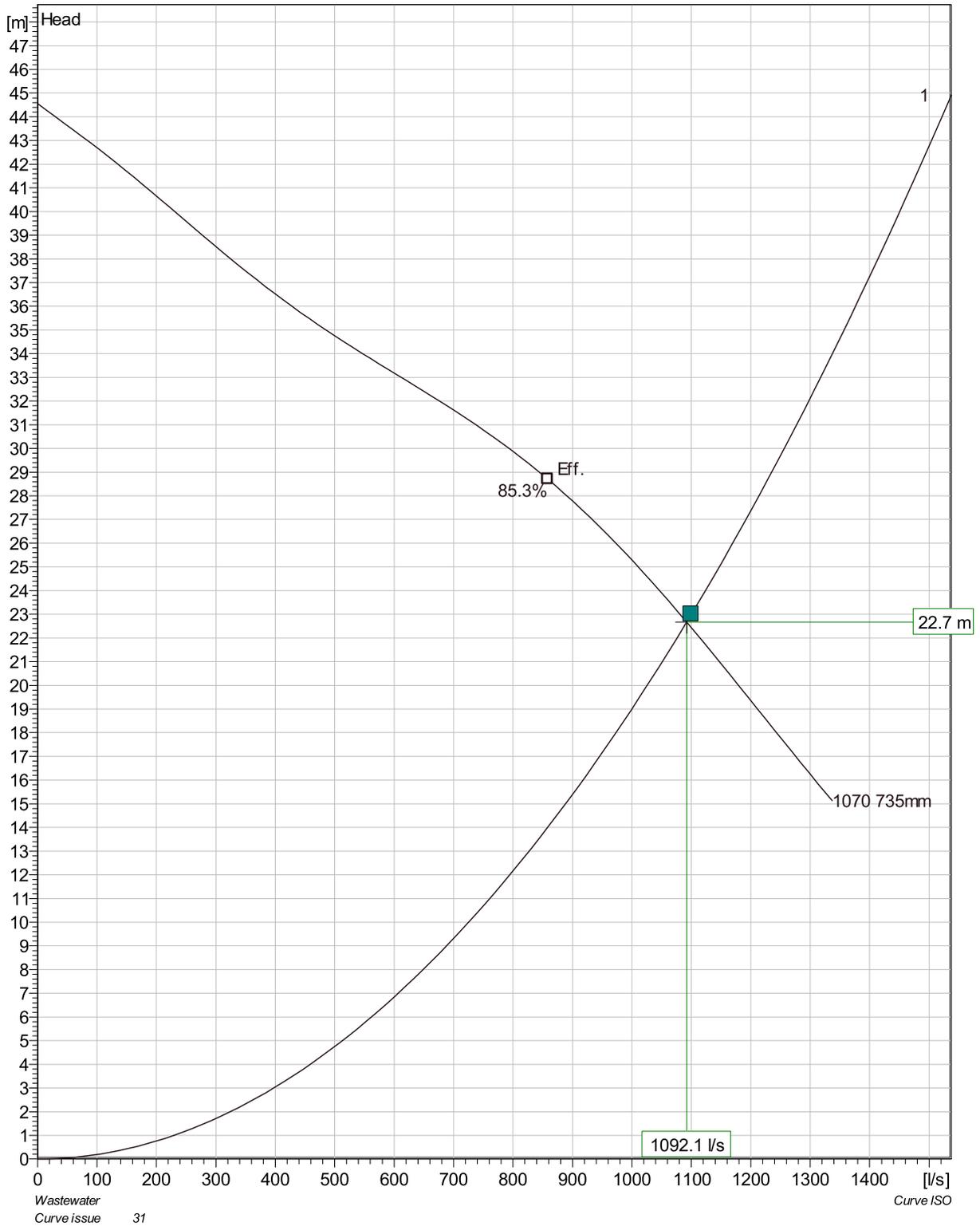
Motor

Motor # N0905.000 66-56-10AA-D 500hp
 Stator variant 44
 Frequency 60 Hz
 Rated voltage 575 V
 Number of poles 10
 Phases 3~
 Rated power 373 kW
 Rated current 485 A
 Starting current 2630 A
 Rated speed 715 1/min

Power factor
 1/1 Load 0.81
 3/4 Load 0.77
 1/2 Load 0.67
 Motor efficiency
 1/1 Load 95.5 %
 3/4 Load 95.7 %
 1/2 Load 95.4 %

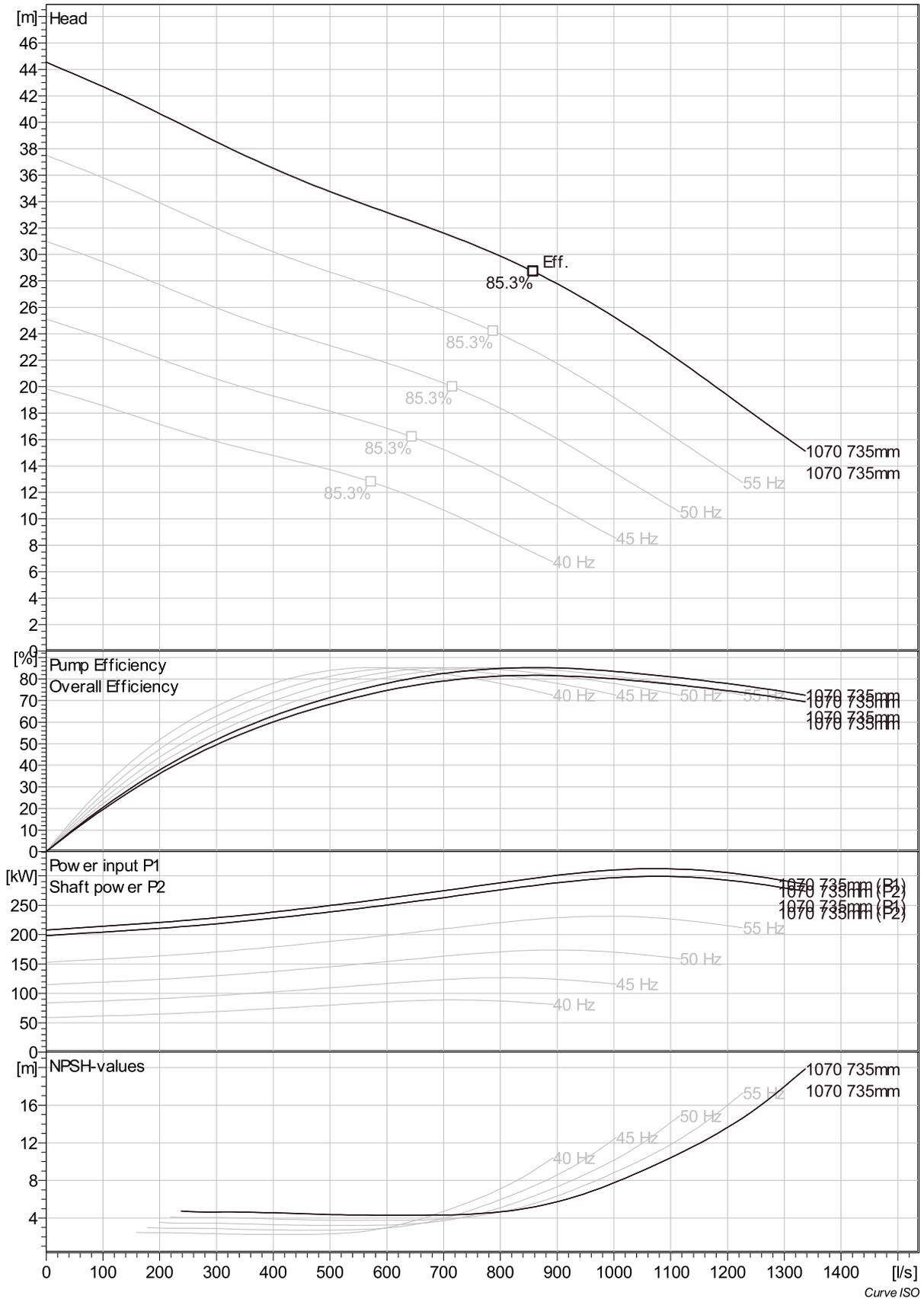


Project	Project ID	Created by	Created on 10/23/2017	Last update
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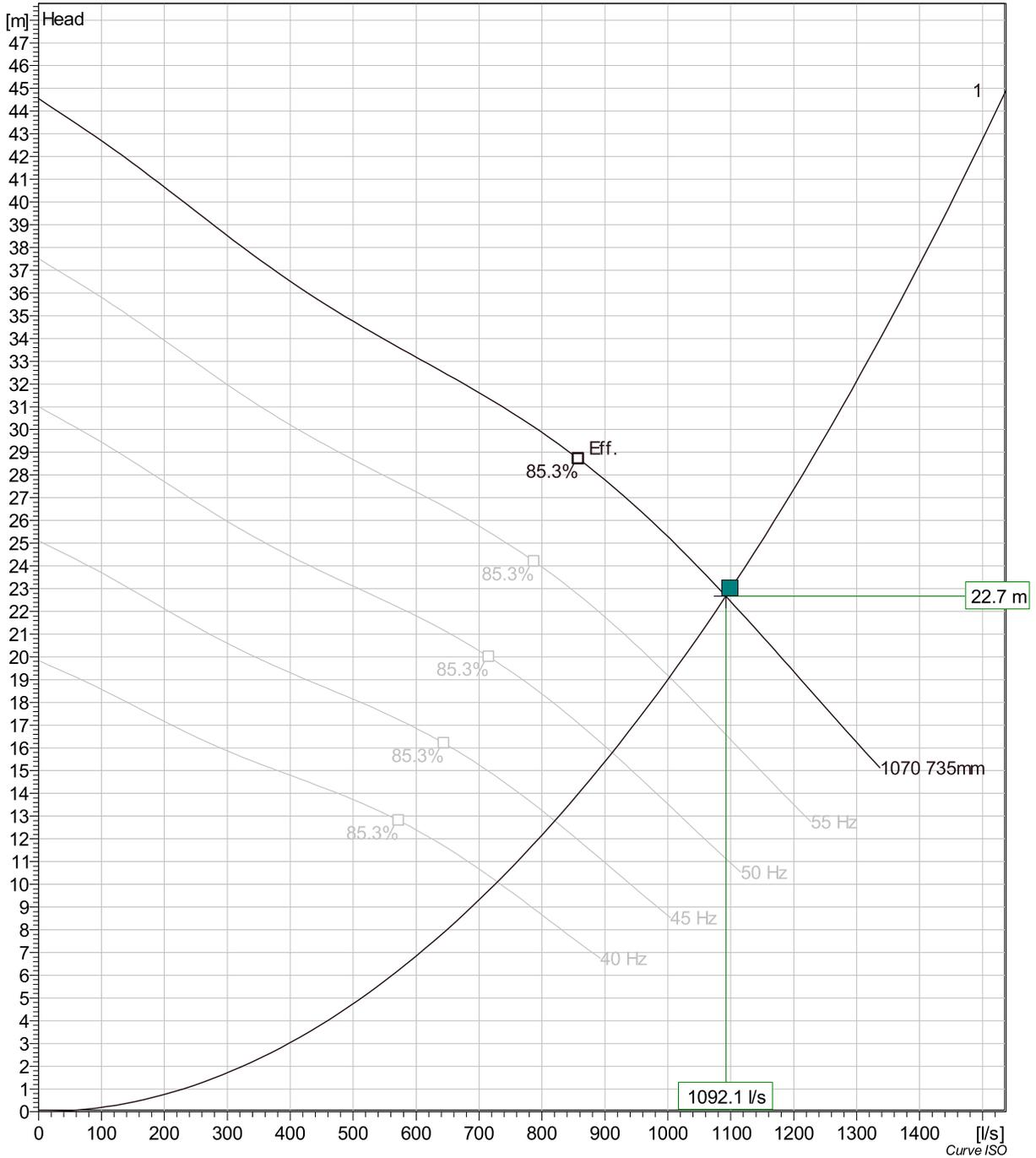


Pumps running /System	Individual pump			Total					
	Flow	Head	Shaft power	Flow	Head	Shaft power	Pump eff.	Specific energy	NPSHre
1	1090 l/s	22.7 m	299 kW	1090 l/s	22.7 m	299 kW	81.2 %	7.94E-5 kWh/l	10.2 m

Project	Project ID	Created by	Created on 10/23/2017	Last update
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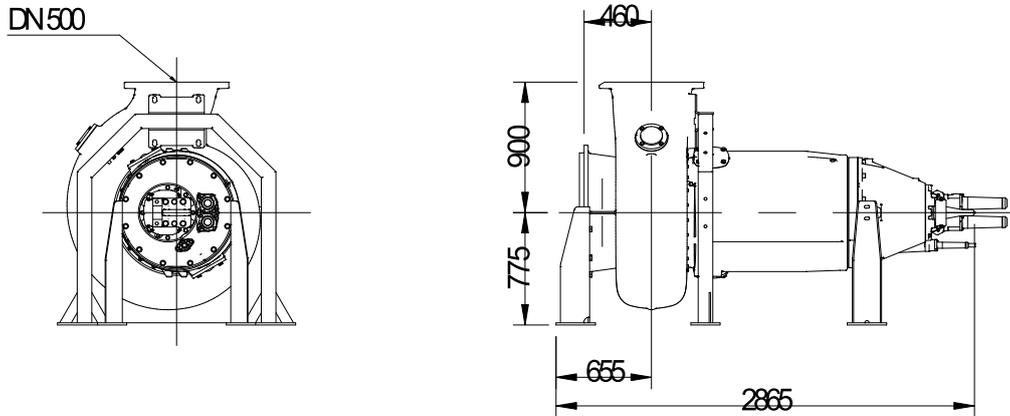
Project	Project ID	Created by	Created on	Last update
			10/23/2017	



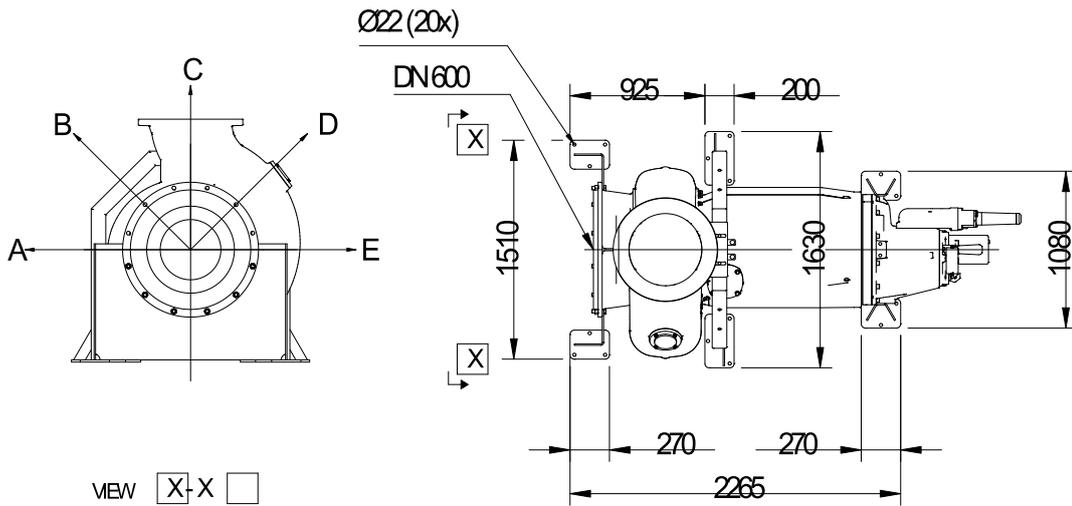
Pumps running /System	Frequency	Flow	Head	Shaft power	Flow	Head	Shaft power	Hyd eff.	Specific energy	NPSHre
1	60 Hz	1090 l/s	22.7 m	299 kW	1090 l/s	22.7 m	299 kW	81.2 %	7.94E-5 kWh/l	10.2 m
1	54.2 Hz	1000 l/s	19.1 m	231 kW	1000 l/s	19.1 m	231 kW	81.2 %	6.71E-5 kWh/l	8.89 m
1	49.2 Hz	912 l/s	15.8 m	174 kW	912 l/s	15.8 m	174 kW	81.2 %	5.57E-5 kWh/l	7.63 m
1	44.3 Hz	820 l/s	12.8 m	127 kW	820 l/s	12.8 m	127 kW	81.2 %	4.55E-5 kWh/l	6.45 m
1	39.4 Hz	729 l/s	10.1 m	89 kW	729 l/s	10.1 m	89 kW	81.2 %	3.66E-5 kWh/l	5.34 m

Project	Project ID	Created by	Created on 10/23/2017	Last update
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NZ 3531/905 3~ 1070 Dimensional drawing



Outlet flange direction A to E



VIEW X

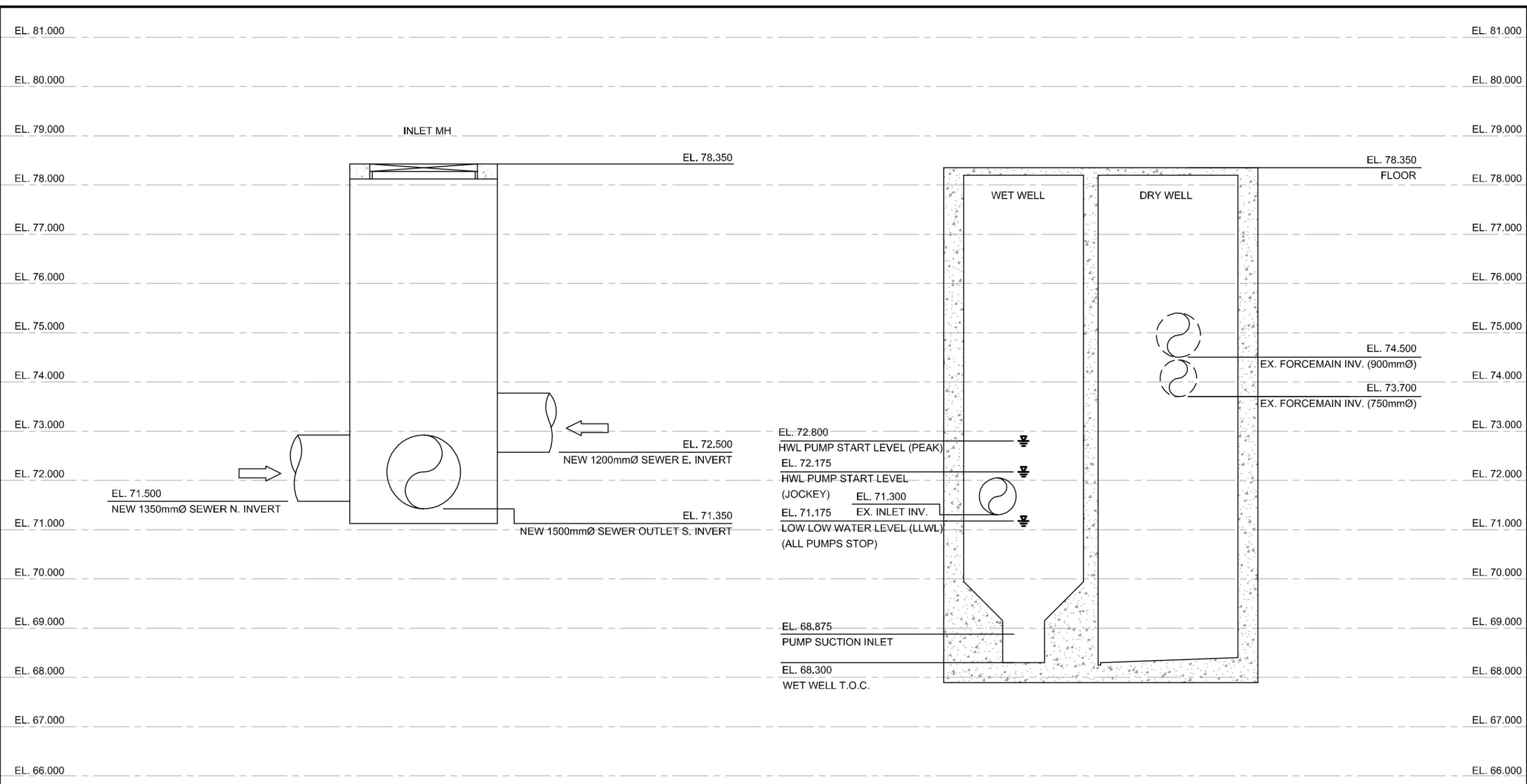
Pump can be rotated around its center line to five positions relative to the inlet. Increments are 45°.

CZ,NZ 3531 905/915

Project	Project ID	Created by	Created on	Last update
			10/23/2017	

Appendix B
Conceptual Design Drawings

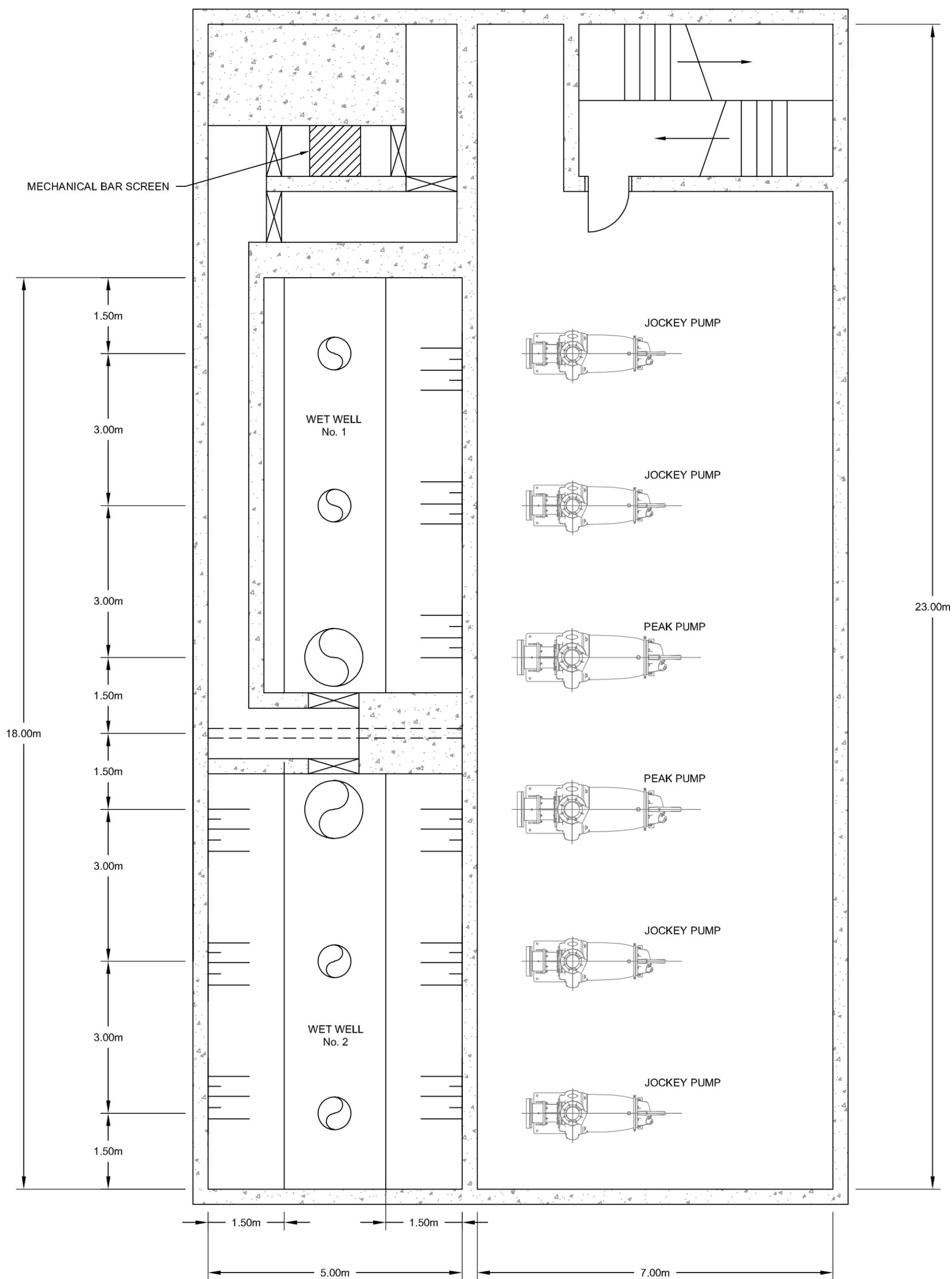
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PROJECT:		DAYS ROAD SEWAGE PUMP STATION UPGRADES	
DRAWING:		CONCEPTUAL DESIGN HYDRAULIC PROFILE	
	<small>www.jrichards.ca</small> This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.	DESIGN: RCA	N.T.S.
		DRAWN: BR	
		CHECKED: BH	DRAWING #: P001
		JLR #: 27482	

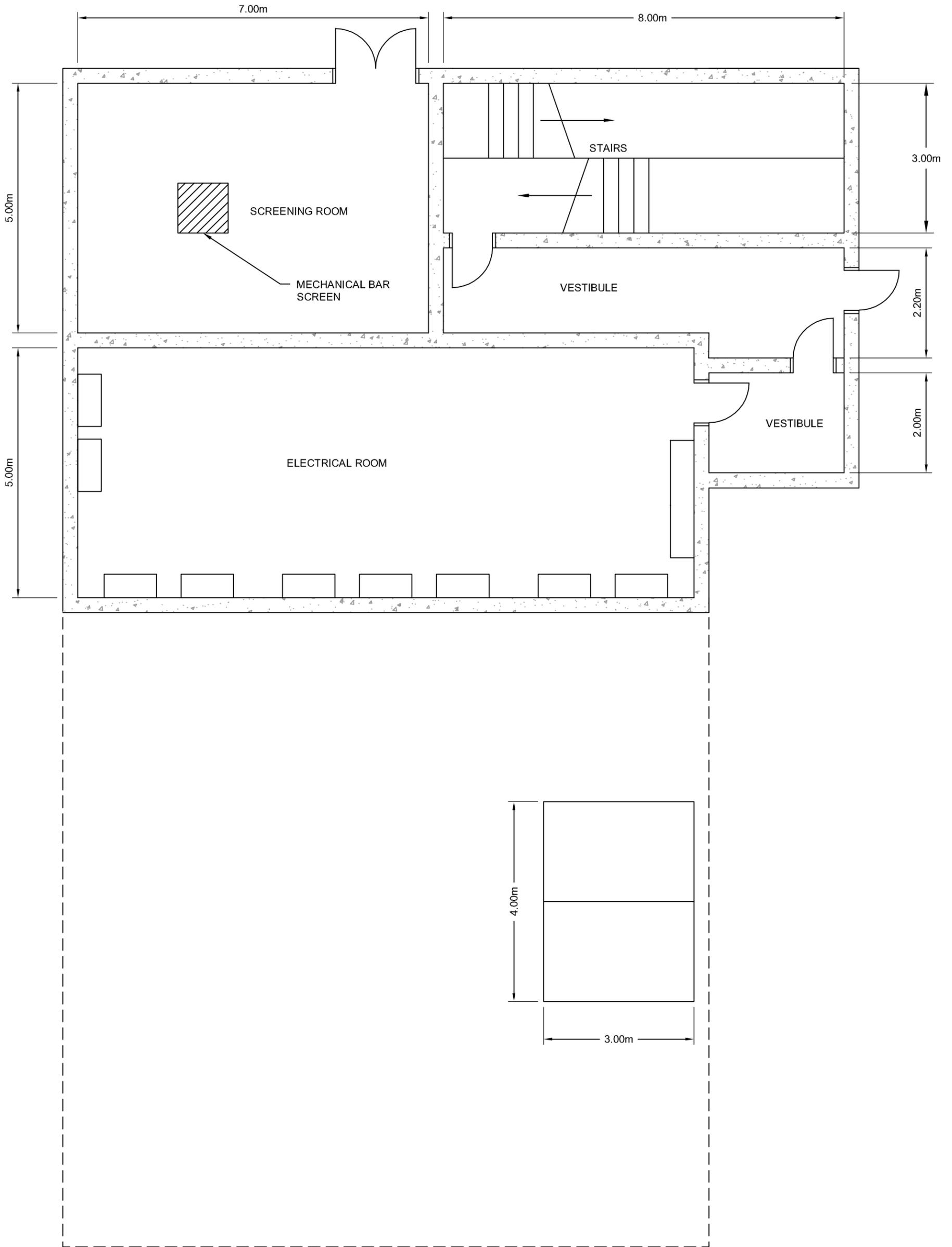
PLOT DATE: June 25, 2018 1:58:22 PM

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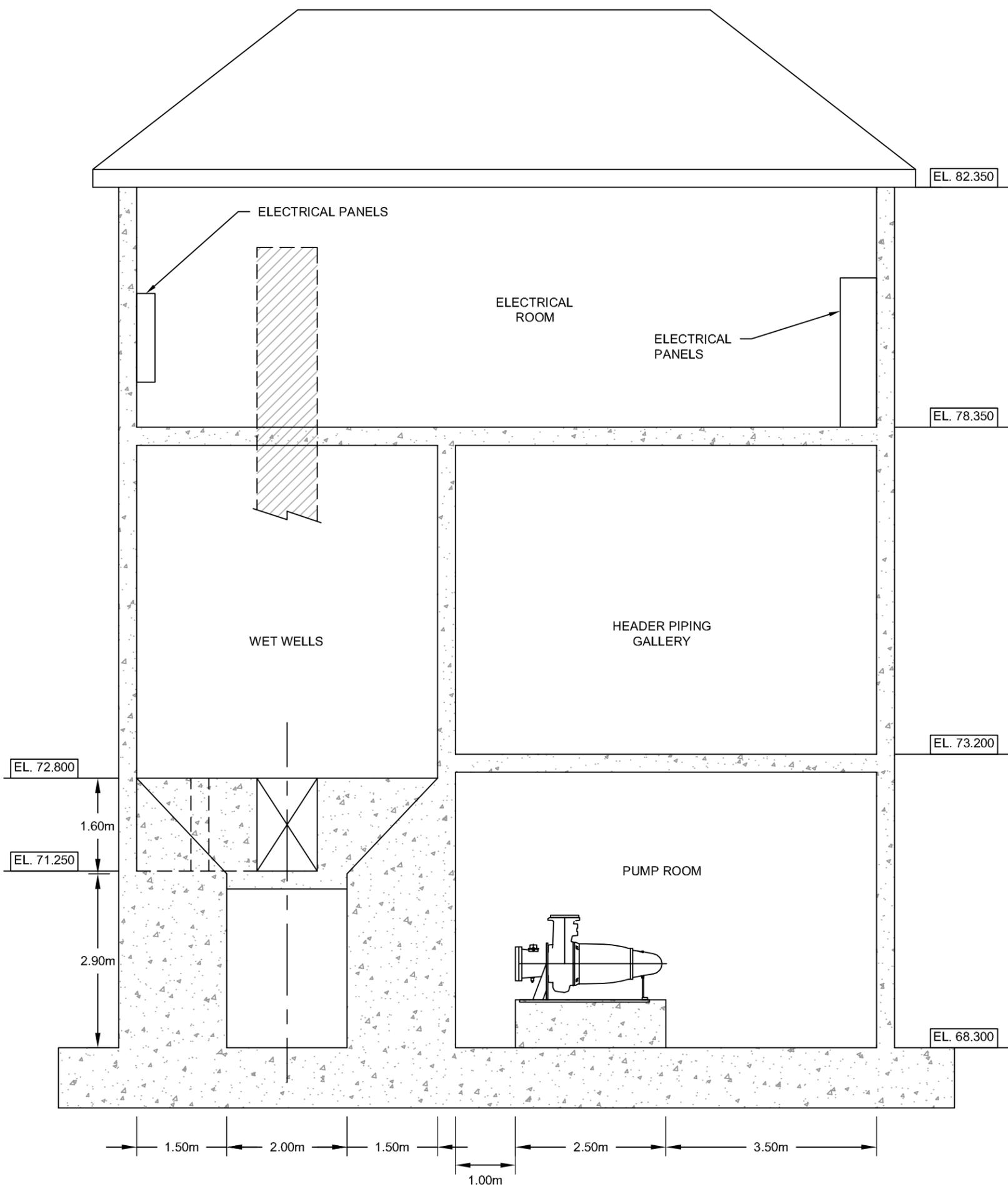


PROJECT:		DAYS ROAD SEWAGE PUMP STATION UPGRADE	
DRAWING:		WET WELL / PUMP ROOM CONCEPTUAL DESIGN GENERAL ARRANGEMENT	
 J.L. Richards <small>ENGINEERS - ARCHITECTS - PLANNERS</small>	<small>www.jrichards.ca</small>	<small>This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.</small>	DESIGN: RCA
			DRAWN: BR/KTK
			CHECKED: BH
			JLR #: 27482
		SCALE 1:75	DRAWING #:
		GA001	

PLOT DATE: July 19, 2018 11:42:46 AM

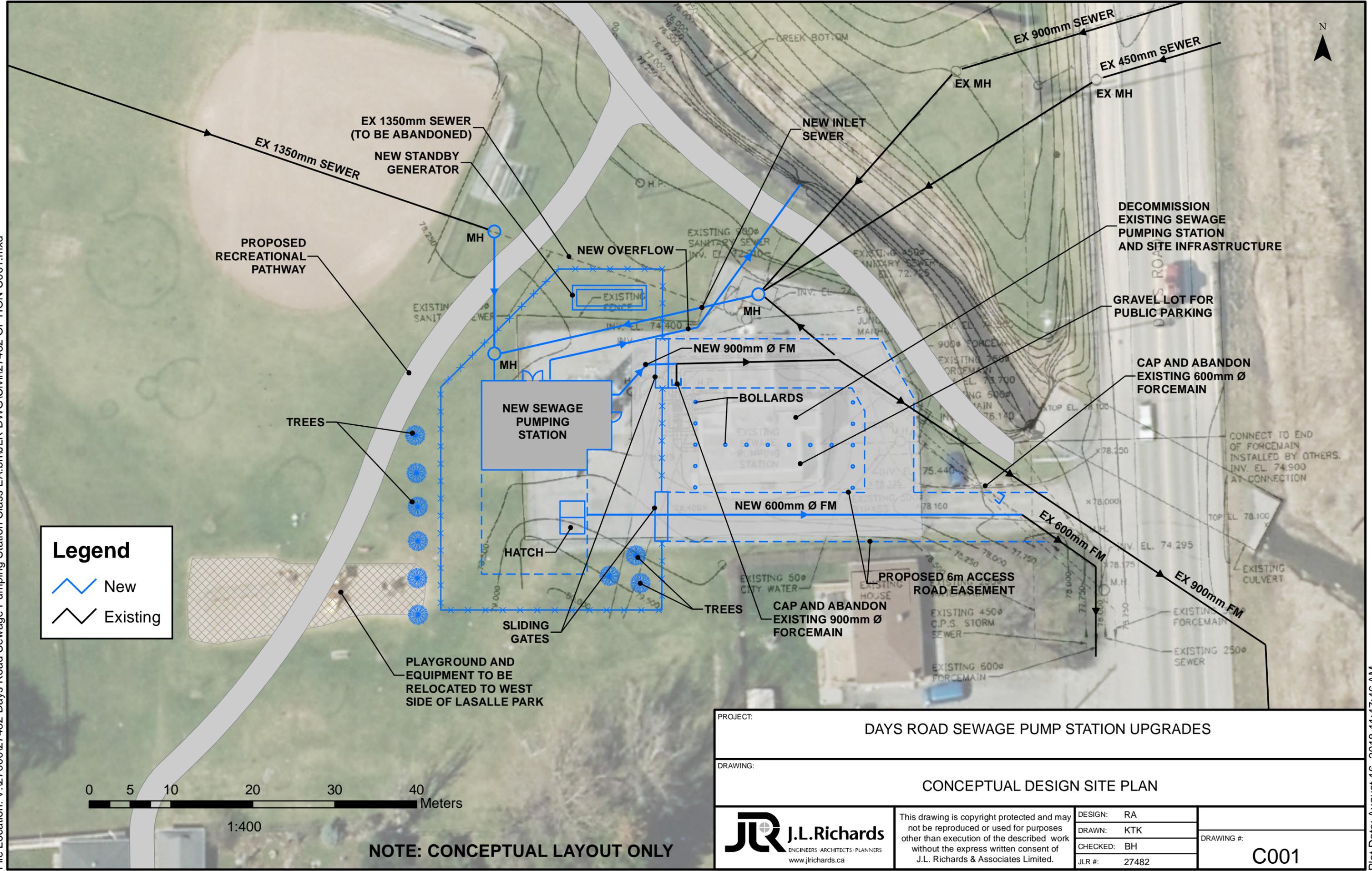


PROJECT:		DAYS ROAD SEWAGE PUMP STATION UPGRADE	
DRAWING:		CONTROL BUILDING CONCEPTUAL DESIGN GENERAL ARRANGEMENT	
 <p>J.L. Richards ENGINEERS · ARCHITECTS · PLANNERS</p>	<small>This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.</small>		DESIGN: RCA DRAWN: KTK CHECKED: BH JLR #: 27482
			SCALE 1:75
			DRAWING #:
			GA002R0



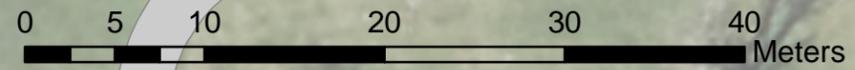
PROJECT:		DAYS ROAD SEWAGE PUMP STATION UPGRADE	
DRAWING:		MECHANICAL BUILDING CONCEPTUAL DESIGN GENERAL ARRANGEMENT	
 <p>J.L. Richards ENGINEERS - ARCHITECTS - PLANNERS</p>	This drawing is copyright protected and may not be reproduced or used for purposes other than execution of the described work without the express written consent of J.L. Richards & Associates Limited.		DESIGN: RCA DRAWN: KTK CHECKED: BH JLR #: 27482
			SCALE 1:75
			DRAWING #:
			GA003

File Location: V:\27000\27482 Days Road Sewage Pumping Station Class EA.bh\JLR DWG\Civil\27482 OPTION C001.mxd



Legend

- New
- Existing



1:400

NOTE: CONCEPTUAL LAYOUT ONLY

PROJECT:		DAYS ROAD SEWAGE PUMP STATION UPGRADES	
DRAWING:		CONCEPTUAL DESIGN SITE PLAN	
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Plot Date: August 16, 2018 11:47:46 AM



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