PREPARED FOR:

Regional Municipality of York

Heritage Impact Assessment Addendum

Nobleton Water and Wastewater Upgrades

File no. 23265C

8, August 2025

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(ASI, 2021)

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Project Personnel

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Managing Director of Cultural Heritage Senior Review Intermediate Heritage Planner Research, Author, Fieldwork

Acknowledgement of **Indigenous Communities**

This Cultural Heritage Impact Assessment Addendum acknowledges that the Project Area is located along portions of Faris Avenue, Wellington Street, Ellis Avenue, and Highway 27, Nobleton, King Township, Ontario which is situated within traditional territory of the Mississaugas of the Credit First Nation, Petun, Anishinabewaki 🗆 かい Ap, Ho-de-no-sau-neega (Haudenosaunee), Wendake-Nionwentsio, and Mississauga. These lands are acknowledged as being associated with the following treaties (accessed from Ministry of Indigenous Affairs):

Treaty 33 (Toronto Purchase), 1805

This document takes into consideration the cultural heritage of Indigenous communities including their oral traditions and history when available and related to the scope of work.

1.0 Introduction

1.1 Background & Purpose

In 2018, The Regional Municipality of York initiated the Schedule C, Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment Study (EA Study) in order to expand water and wastewater servicing options in Nobleton, King Township. As part of the assessment, a Cultural Heritage Report was required to identify potential impacts to known and potential Built Heritage Resources (BHRs). The Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment was prepared by ASI in 2021 which identified known BHRs within a broader Study Area (see **Figure 1**, overall Study Area is noted in blue). The report also identified new potential BHRs and assessed for preliminary impacts within a smaller Project Area (noted in red).



Figure 1: Map of the Study Area and Project Area evaluated in the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment prepared by ASI in 2021. The Study Area is noted with a blue line and the Project Area is noted with a red line. (Source: ASI, 2021)

On May 30th of 2025, the Ministry of Environment, Conservation and Parks recommended additional updates and a Notice of Addendum was issued. The addendum recommended additional upgrades as follows:

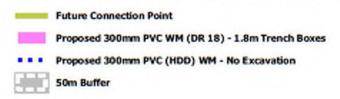
- Converting the Nobleton Well 5 facility into a centralized water treatment facility for Nobleton Wells 2, 5 and 6, and increasing the treatment capacity to 102 litres per second
- Converting the Nobleton Well 2 facility into a raw water (untreated water) pumping
- Constructing a new raw (untreated water) watermain connecting Nobleton Well 2 to the new centralized water treatment facility
- Increasing the capacity of Wells 2 and 6 from 34 litres per second to 41 litres per second

These proposed upgrades are located within the Study Area of the previous Cultural Heritage Report. However, they are located outside of the Project Area and therefore have not been screened for potential BHRs nor evaluated for potential impacts to known and potential BHRs.

The purpose of this Heritage Impact Assessment Addendum is to screen the updated Project Area for potential BHRs, to confirm the existing conditions of the known and potential BHRs within the expanded Project Area, which includes portions of Faris Avenue, Wellington Street, Ellis Avenue, and Highway 27 (see **Figure 2**), and to assess for potential impacts resulting from the proposed upgrades. Mitigation and conservation measures are recommended where applicable.



Figure 2 - Project Area: Properties within 50m from Pipe Lines



1.2 Description of Project Area and Surrounding Area

1.2.1 Project Area

The Project Area is located along portions of Faris Avenue, Wellington Street, Ellis Avenue, and Highway 27, Nobleton, King Township, Ontario (see **Figure 2**), and consists of the proposed works (indicated in blue and purple) plus a 50-metre buffer (indicated with a white dashed line). Properties located within the 50-metre buffer area are indicated in yellow.

The Project Area is situated north of Oliver Emmerson Avenue, west of Wilkie Avenue, east of Concession Road 8, and south of the King Road and totals approximately 61740 square metres.

1.2.2 Streetscapes within the Project Area

Streetscapes encompassed by the Project Area include:

- A portion of Faris Avenue adjacent to the intersection of Faris Avenue and Wellington Street
- Wellington Street between Faris Avenue and Ellis Avenue
- Ellis Avenue between Wellington Street and Highway 27
- A portion of Highway 27 south of Ellis Avenue

The streetscape of Faris Avenue, Wellington Street, and Ellis Avenue within the Project Area can be described as suburban and residential (see **Figures 3-8**). They are characterized by low-rise residential dwellings, typically 1-2 storeys in height. Most properties include grass lawns and mature and semi-mature trees. Dwellings range in size and construction method, but most appear to date to the late 20th-early 21st century.



Figures 3 & 4: Views of Faris Avenue between Kinsley Street and Wellington Street looking east (left) and west (right). (MHBC, 2025)



Figures 5 & 6: Views of Wellington Street looking north (left) and south (right) from near the intersection of Faris Avenue and Wellington Street. (MHBC, 2025)



Figures 7 & 8: Views of Ellis Avenue looking west (left) and east (right) from near the property located at 9 Ellis Avenue. (MHBC, 2025)

The streetscape of Highway 27 within the Project Area exhibits characteristics of a main street with a mix of commercial and residential uses which transitions to predominantly commercial uses to the north of the Project Area (see Figures 9 & 10). The east side of Highway 27 includes predominantly single-detached dwellings typically 1-storey in height. The west side includes natural vegetation which screens Well #5 and the dwellings along the south side of Ellis Avenue from view. The west side of Highway 27 north of Ellis Avenue includes single detached dwellings between one and two-storeys in height.



Figures 9 & 10: Views of Highway 27 looking south (left) from north of the intersection of Highway 27 and Ellis Avenue, and looking north from near the entrance to Well #5. (MHBC, 2025)

1.3 Known Built Heritage Resources

As part of the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment, ASI conducted desktop reviews and data collection on all known BHRs within the overall Study Area (see **Figure 1**). For the purpose of the previous report as well as this Addendum, known BHRs are defined as follows:

A known cultural heritage resource is a property that has recognized cultural heritage value or interest. This can include a property listed on a Municipal Heritage Register, designated under Part IV or V of the Ontario Heritage Act, or protected by a heritage agreement, covenant or easement, protected by the Heritage Railway Stations Protection Act or the Heritage Lighthouse Protection Act, identified as a Federal Heritage Building, or located within a UNESCO World Heritage Site (Ministry of Tourism, Culture and Sport 2016). (ASI, 2021)

The identification process conducted in the previous report included a review of existing heritage inventories and previous heritage reporting. This process uncovered 49 previouslyidentified BHRs and Cultural Heritage Landscapes (CHLs) within the Study Area. One of the known BHRs falls within the expanded Project Area which is the subject of this HIA Addendum: 9 Ellis Avenue. The property at 9 Ellis Avenue was described in the previous report as follows (see Figure 11 below):



Figure 11: Excerpt from a table identifying 9 Ellis Avenue as a know BHR and providing a brief description. (Source: ASI, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment, 2021)

1.4 Potential Built Heritage Resources

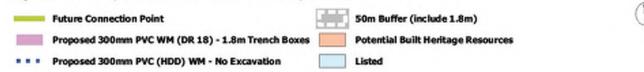
The previous report also evaluated potential BHRs through a combination of historical mapping, aerial photographs, and stakeholder consultation. Potential BHRs are defined as follows:

A potential cultural heritage resource is a property that has the potential for cultural heritage value or interest. This can include properties/project area that contain a parcel of land that is the subject of a commemorative or interpretive plaque, is adjacent to a known burial site and/or cemetery, is in a Canadian Heritage River Watershed, or contains buildings or structures that are 40 or more years old (Ministry of Tourism, Culture and Sport 2016). (ASI, 2021)

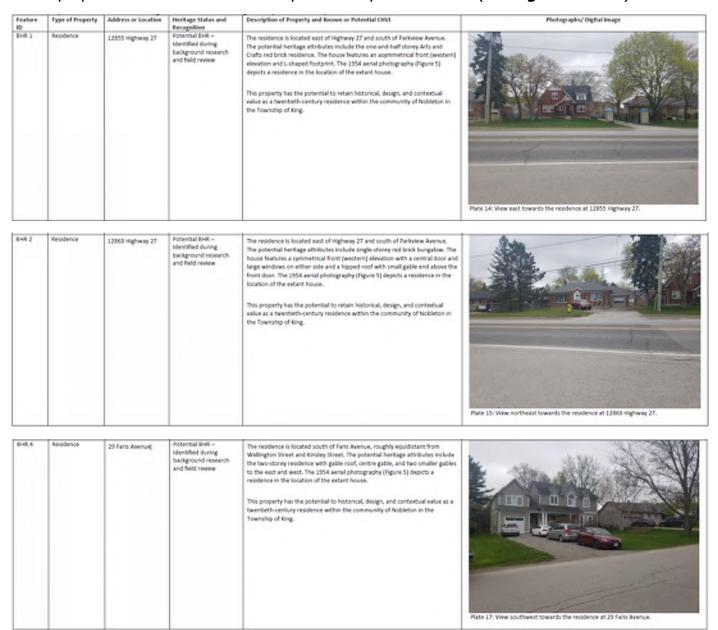
Three potential BHRs were previously identified through the above-listed criteria that fall within the Project Area which is subject to this Addendum. They include the properties located at 12855 Highway 27, 12863 Highway 27, and 29 Faris Ave (see Figure 12).



Figure 12 - Properties within 50m from Pipe Lines



These properties were described in the previous report as follows (see **Figures 13-15**):



Figures 13-15: Excerpt from a table identifying 12855 Highway 27, 12863 Highway 27, and 29 Faris Ave as potential BHRs and providing a brief description. (Source: ASI, Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment, 2021)

1.5 Potential Built Heritage Resources within the **Expanded Project Area**

Additionally, portions of the expanded Project Area which are the subject of this Addendum have not been previously screened for potential BHRs as they fall outside of the previous Project Area (see Figure 16).



Figure 16: Map of the expanded Project Area which is the subject of this Heritage Impact Assessment. Properties noted in orange are properties which have not been previously screened for potential BHRs. (MHBC, 2025)

MHBC staff conducted a screening of these properties for potential BHRs based on a combination of historic mapping and site visit observations. A review of historic aerial photographs of the area has indicated that a number of properties within the expanded Project Area have either been demolished and redeveloped or substantially rebuilt since 1985:

- 42 Wellington Street
- 43 Wellington Street
- 25 Wellington Street
- 19 Wellington Street
- 9 Ellis Avenue
- 12942 Highway 27
- 12931 Highway 27
- 12833 Highway 27

These properties did not fall within the 40-year age limit mandated by the Ministry of Tourism, Culture and Sport in the Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes (see Figures 17-19). These properties are therefore not considered potential BHRs.¹

¹ Note: a sufficiently clear airphoto from 1985 was not available, and therefore a combination of airphotos from 1978 and 1988 were analyzed to capture which buildings were present but either removed or substantially altered within the required timeframe (see Figures 17-19).

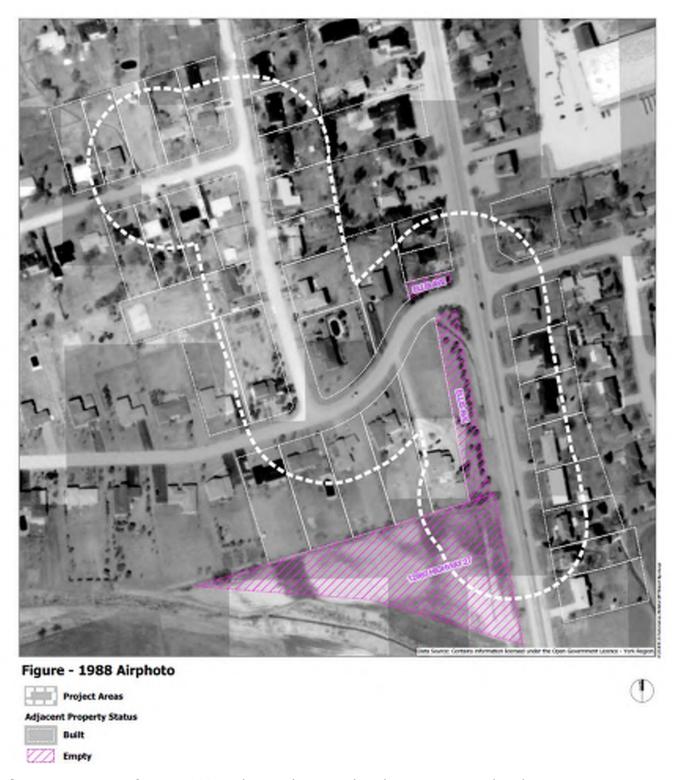
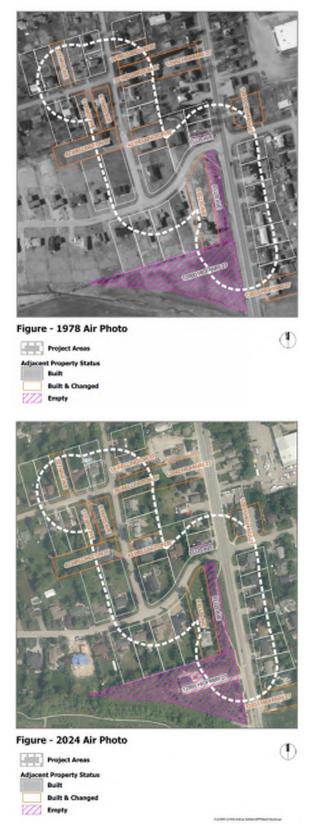


Figure 17: Excerpt from a 1988 airphoto indicating what the properties within the Project Area looked like at the time. (MHBC, 2025)



Figures 18 & 19: Excerpt from 1978 and 2024 airphotos indicating which properties have been either demolished and rebuilt or substantially altered within the timeframe. (MHBC, 2025)

A site visit was conducted by MHBC staff on August 1st, 2025 to assess the remaining 15 properties and document existing conditions of the identified known and potential BHRs and surrounding area.

Based on architectural features, materials, and methods of construction, the following properties were determined to be potential Built Heritage Resources:

- 25 Wellington Street
- 36 Ellis Avenue
- 12918 Highway 27
- 12911 Highway 27
- 12901 Highway 27
- 12891 Highway 27

2.0 Existing Conditions

A site visit was conducted by MHBC staff on August 1st, 2025 to document the built features and existing conditions. The following section documents the existing conditions of the known and potential BHRs described in **Sections 1.3-1.5** of this report.

4.1 9 Ellis Avenue



Figure 20: View of 9 Ellis Avenue from the public realm where the driveway interfaces with Ellis Avenue. (MHBC, 2025)

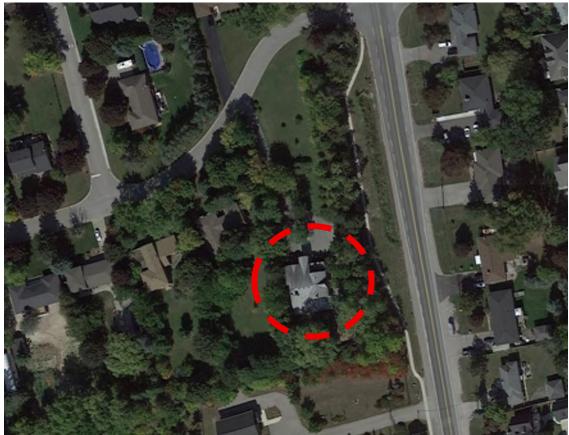


Figure 21: Satellite image of 9 Ellis Avenue indicating the footprint of the dwelling. (Google Earth, 2024)

The property located at 9 Ellis Avenue was identified in the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (ASI, 2021) as a listed property.

It is minimally visible from the public realm as a result of its deep setback and screening of mature trees on the property. The architectural features and conditions of the existing dwelling could not be observed at this time. However, as indicated in the historic aerial photographs (see **Figures 17-19**), the footprint of the existing dwelling has been substantially altered within the last 40 years and the property is no longer listed on the Township of King Heritage Register (updated July 15th, 2024). The property is therefore no longer considered to include an identified BHR.

2.2 29 Faris Ave



Figure 22: View of the principal elevation of 29 Faris Avenue. (MHBC, 2025)

This property was identified by ASI in the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (2021) as a potential Built Heritage Resource.

The property includes a 2-storey single detached dwelling with an attached garage. The dwelling includes a multi-gable roof with three front-facing gables at the principal elevation and a central gothic arched window. Other windows are rectangular, and the building includes an asymmetrical entrance located between the garage and main portion of the dwelling. The building is clad siding but includes painted shingles at each of the gable peaks. The property also includes a gravel driveway which interfaces with Faris Avenue, a grass lawn, landscape plantings, and a mature tree.

2.3 12855 Highway 27



Figure 23: View of the principal elevation of 12855 Highway 27. (MHBC, 2025)

This property was identified by ASI in the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (2021) as a potential Built Heritage Resource.

The property includes a 2.5 storey red brick dwelling with a cross-gable roof and central brick chimney at the ridgeline. The principal elevation includes a gabled entrance vestibule with a rectangular leaded glass window and a curved gable end. Openings are rectangular and the side-facing gable includes a front-facing rectangular dormer. The brick envelope includes two decorative soldier courses and one header course at the eaves of the entrance vestibule. The property also includes an iron fence with two stone gateposts flanking the driveway which interfaces with Highway 27. There is a grass lawn and two mature trees.

2.4 12863 Highway 27



Figure 24: View of the principal elevation of 12863 Highway 27. (MHBC, 2025)

The property located at 12863 Highway 27 includes a one-storey single detached dwelling with a hip roof and brick chimney at the north elevation. The building is constructed of polychrome brickwork and includes a decorative cast stone cement block foundation. Openings are rectangular and the principal entrance includes a front-facing gable. The property also includes a driveway which interfaces with Highway 27, a parking pad, grass lawn, and two mature trees.

This property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years. The site visit by MHBC staff confirmed that the property appears to include a representative example of a mid-20th century dwelling with original features such as its brick envelope, footprint, and original openings intact without significant alterations, which appears to remain representative of a mid-century period of development in the area.

2.5 25 Wellington Street



Figure 25: View of the principal elevation of 25 Wellington Street. (MHBC, 2025)

The property located at 25 Wellington Street is screened by mature trees and many of the property's architectural features and details cannot be viewed from the public realm. However, the property contains a one-storey single detached dwelling with a hip roof and attached garage. The property also includes landscaping features, mature trees, and a paved driveway which interfaces with Wellington Street.

As the dwelling cannot be clearly viewed from the public realm, and historic aerial photographs indicate it has likely been present for longer than 40 years, the dwelling is considered a potential BHR.

2.6 36 Ellis Avenue



Figure 26: View of the principal elevation of 36 Ellis Avenue. (MHBC, 2025)

The property located at 36 Ellis Avenue includes a one-storey single detached brick dwelling with an L-shaped plan and a hip-and-valley roof. While much of the dwelling was shielded from the public realm by mature trees and vegetation, some of the building's features could be observed including an arched transom above the double door principal entrance and a triangular pedimented portico at the principal elevation with a decorative motif. The grounds also include a grass lawn, mature trees, landscape plantings, and a driveway interfacing with Ellis Avenue.

The property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years, and the dwelling includes some distinguishing architectural features and design elements.

2.7 12918 Highway 27



Figure 27: View of the principal elevation of 12918 Highway 27. (MHBC, 2025)

The property at 12918 Highway 27 currently includes a one-storey symmetrical single detached red brick bungalow with a hip roof. The building includes a concrete foundation and hip roofed portico above the principal entrance. The property also includes a parking pad and paved driveway interfacing with Highway 27, a concrete walkway providing access to the rear yard, mature and semi-mature trees, and a grass lawn.

This property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years. The site visit by MHBC staff confirmed that the property appears to include a representative example of a mid-20th century dwelling with original features such as its brick envelope, square footprint, symmetrical façade, and original openings intact without significant alterations, which appears to remain representative of a mid-century period of development in the area.

2.8 12911 Highway 27



Figure 28: View of the principal elevation of 12911 Highway 27. (MHBC, 2025)

The property at 12911 Highway 27 is a corner property which includes a one-storey single detached dwelling in brick which has been painted. The building includes a hip-and-valley roof, chimney at the north elevation, and attached double garage. Original openings are rectangular and the property also includes a paved driveway interfacing with Highway 27 as well as a grass lawn and a wood fence enclosing the rear yard.

This property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years. The site visit by MHBC staff confirmed that the property appears to include a representative example of a mid-20th century dwelling with original features such as its brick envelope (although it has been painted), footprint, and original openings intact without significant alterations, which appears to remain representative of a mid-century period of development in the area. Additionally, the dwelling is substantially similar to the adjacent dwellings at 12901 Highway 27 and 12891 Highway 27, indicating that these properties were likely at the same time as part of the same phase of development, possibly by the same builder.

2.9 12901 Highway 27



Figure 29: View of the principal elevation of 12901 Highway 27. (MHBC, 2025)

The property includes a red brick one-storey single detached dwelling with a hip roof and attached double garage. The principal entrance is located on the south (side) elevation and the building includes an open port connecting the house and garage. There is an internal stone chimney visible above the roofline and the window openings include concrete sills. The property also includes several mature trees, landscape plantings, a grass lawn as well as a paved driveway which interfaces with Highway 27.

This property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years. The site visit by MHBC staff confirmed that the property appears to include a representative example of a mid-20th century dwelling with original features such as its brick envelope, footprint, and original openings intact without significant alterations, which appears to remain representative of a mid-century period of development in the area. Additionally, the dwelling is substantially similar to the adjacent dwellings at 12911 Highway 27 and 12891 Highway 27, indicating that these properties were likely at the same time as part of the same phase of development, possibly by the same builder.

2.10 12891 Highway 27



Figure 30: View of the principal elevation of 12891 Highway 27. (MHBC, 2025)

The property currently includes a one-storey red brick single detached dwelling with a hipand-valley roof and attached garage. The building includes an asymmetrical entrance and rectangular openings. Windows include concrete sills. The property also includes two mature trees, a grass lawn, and a paved driveway which interfaces with Highway 27.

This property has been identified as a potential BHR because historic aerial photographs indicate that it is older than 40 years. The site visit by MHBC staff confirmed that the property appears to include a representative example of a mid-20th century dwelling with original features such as its brick envelope, footprint, and original openings intact without significant alterations, which appears to remain representative of a mid-century period of development in the area. Additionally, the dwelling is substantially similar to the adjacent dwellings at 12911 Highway 27 and 12901 Highway 27, indicating that these properties were likely at the same time as part of the same phase of development, possibly by the same builder.

3.0 Description of **Proposed Development**

The Project Area which is the subject of this Heritage Impact Assessment Addendum is part of a broader undertaking which includes upgrades to water and wastewater servicing in Nobleton. Additional upgrades were recommended by the Ministry of Environment, Conservation and Parks on May 30th of 2025, in addition to previously-proposed works:

- Converting the Nobleton Well 5 facility into a centralized water treatment facility for Nobleton Wells 2, 5 and 6, and increasing the treatment capacity to 102 litres per second
- Converting the Nobleton Well 2 facility into a raw water (untreated water) pumping station
- Constructing a new raw (untreated water) watermain connecting Nobleton Well 2 to the new centralized water treatment facility
- Increasing the capacity of Wells 2 and 6 from 34 litres per second to 41 litres per second

As the watermain component of these additional upgrades was not previously screened, it is the subject of this Heritage Impact Assessment addendum. The watermain component includes a combination of trench box excavation and horizontal directional drilling without excavation. The portions which include excavation are proposed to take place along the east portion of Faris Avenue west of Wellington Street, at the corner of Wellington Street and Ellis Avenue, at the corner of Ellis Avenue and Highway 27, and adjacent to 12860 Highway 27. The portions which include horizontal directional drilling without excavation are proposed to take place along Wellington Street between Faris Avenue and Ellis Avenue, along Ellis Avenue between Wellington Street and Highway 27, and along Highway 27 south of Ellis Avenue. Excavation sites are indicated in purple in **Figures 31** below and horizontal drilling sections are indicated with a blue dashed line. All proposed works are proposed to remain within the road right-of-way.



Figure 2 - Project Area: Properties within 50m from Pipe Lines

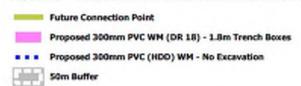


Figure 31: View of the proposed work with the trench excavation sites noted in purple and the horizontal drilling locations noted with a blue dashed line. (MHBC, 2025)

Detailed drawings of the proposed works are available in **Appendix B** of this report.

4.0 Impact Analysis

4.1 Impact Analysis Framework

This HIA addendum utilizes the framework of the York Region's Cultural Heritage Impact Assessment Terms of Reference in the analysis of potential impacts. Per the Terms of Reference, the following constitute impacts which may result from a proposed development:

- **Destruction:** of any, or part of any *significant heritage attributes* or features;
- **Construction:** on the cultural heritage resource (vibration, shoring, etc);
- **Alteration:** that is not sympathetic, or is incompatible, with the historic fabric and appearance;
- **Shadows:** created that alter the appearance of a *heritage attribute* or change the viability of a natural feature or plantings, such as a garden;
- **Isolation:** of a *heritage attribute* from its surrounding environment, context or a significant relationship;
- **Direct or Indirect Obstruction**: of significant views or vistas within, from, or of built and natural features;
- A change in land use: such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces;
- **Land disturbances:** such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.

Furthermore, this report utilizes guides published by the International Council on Monuments and Site (ICOMOS), Council of UNESCO, from the World Heritage Convention of January of 2011. The grading of impact is based on "Guide to Assessing Magnitude of Impact" as a framework for this report:

Table 3 - Grading of Impact for Built Heritage and Historic Landscapes (ICOMOS)				
Impact Grading	Description			
Major	Change to key historic building elements that contribute to the cultural heritage value or interest (CHVI) such that the resource is totally altered. Comprehensive changes to the setting.			

Moderate	Change to many key historic building elements, such that the resource is significantly modified.
	Changes to the setting of an historic building, such that it is significantly modified.
Minor	Change to key historic building elements, such that the asset is slightly different. Change to setting of an historic building, such that is it noticeably changed.
Negligible/ Potential	Slight changes to historic building elements or setting that hardly affect it.
No change	No change to fabric or setting.

The above noted impacts will be considered as they relate to the scope of this HIA Addendum.

4.2 Preliminary Impact Analysis for the Adjacent Identified and Potential Built Heritage Resources

Address	Potential Impact
29 Faris Ave.	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation. No other impacts are anticipated.
25 Wellington St.	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation. No other impacts are anticipated.
9 Ellis Ave.	None. As described in Section 4.1 of this report, this property is no longer listed on the Township of King Heritage Register and historic aerial photographs indicate it has either been demolished or substantially remodeled within the last 40 years. Therefore, this property is no longer considered a potential BHR.
36 Ellis Ave.	None. While a portion of the lot is located within 50 metres of excavation activities, the dwelling itself is located more than 50 metres from the proposed work.

	A 1 1 1 1 11 1 1 1 1 1 1 1 1 1 1 1 1 1
	As only the dwelling is considered a potential BHR and it is located at a distance greater than 50 metres from the proposed work, no
	potential adverse impacts are anticipated as a result of the proposal.
12855 Highway 27	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation.
	No other impacts are anticipated.
12863 Highway 27	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation.
	No other impacts are anticipated.
12891 Highway 27	None. This property is located adjacent to areas which are proposed for horizontal directional drilling. As the dwelling is not located within 50 metres of proposed excavation, no potential adverse impacts are anticipated to this property.
12901 Highway 27	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation. No other impacts are anticipated.
12911 Highway 27	There is the potential for adverse impacts related to construction activities during excavation, as the dwelling is located within 50 metres of trench excavation. No other impacts are anticipated.
12918 Highway 27	There is the potential for adverse impacts related to construction
12310 Highway 27	activities during excavation, as the dwelling is located within 50 metres of trench excavation.
	No other impacts are anticipated.

In conclusion, no direct impacts are anticipated to known or potential Built Heritage Resources as a result of the proposed work.

There is the potential for indirect adverse impacts related to vibration from construction activities during excavation for the potential BHRs located at the following addresses:

- 29 Faris Avenue
- 25 Wellington Street
- 12855 Highway 27
- 12863 Highway 27
- 12901 Highway 27

- 12911 Highway 27
- 12918 Highway 27

5.0 Mitigation and **Conservation Measures**

It is recommended that vibration monitoring be conducted during excavation and construction activities to ensure that adjacent potential BHRs are not adversely impacted due to vibrations for the duration of the proposed excavation and construction activities.

6.0 Conclusions and Recommendations

This report has determined that the following known and potential Built Heritage Resources identified in the previous Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment document are located within the expanded Project Area which is the subject of this addendum:

- 9 Ellis Avenue²
- 12855 Highway 27
- 12863 Highway 27
- 29 Faris Ave

Additionally, this report has identified the following properties which have not been previously screened as potential Built Heritage Resources:

- 25 Wellington Street
- 36 Ellis Avenue
- 12918 Highway 27
- 12911 Highway 27
- 12901 Highway 27
- 12891 Highway 27

A preliminary impact assessment was conducted to determine the potential for adverse impacts to all known and potential BHRs within the updated Project Area. The potential for adverse impacts related to construction activities during excavation has been identified for the following properties which include potential BHRs:

- 29 Faris Avenue
- 25 Wellington Street •
- 12855 Highway 27
- 12863 Highway 27
- 12901 Highway 27
- 12911 Highway 27

² Note: As described in **Section 4.1** of this report, 9 Ellis Avenue is no longer considered a known BHR as it has been removed from the municipal register and historic aerial images indicate that the dwelling's footprint has been significantly altered within the last 40 years.

12918 Highway 27

Therefore, the following measure is recommended:

That vibration monitoring be conducted during excavation and construction activities to ensure that adjacent potential BHRs are not adversely impacted due to vibrations for the duration of the proposed excavation and construction activities.



Appendix A: MHBC Maps



Figure 2 - Project Area: Properties within 50m from Pipe Lines

Future Connection Point

Proposed 300mm PVC WM (DR 18) - 1.8m Trench Boxes

Proposed 300mm PVC (HDD) WM - No Excavation

50m Buffer



Figure - Unscreened Properties

Future Connection Point

Previous Studey Area

Proposed 300mm PVC WM (DR 18) - 1.8m Trench Boxes

Previous Project Component

Proposed 300mm PVC (HDD) WM - No Excavation

Forcemain

Well #2

Potential Built Heritage Resources / Listed

Unscreened Properties





Figure 12 - Properties within 50m from Pipe Lines

Future Connection Point

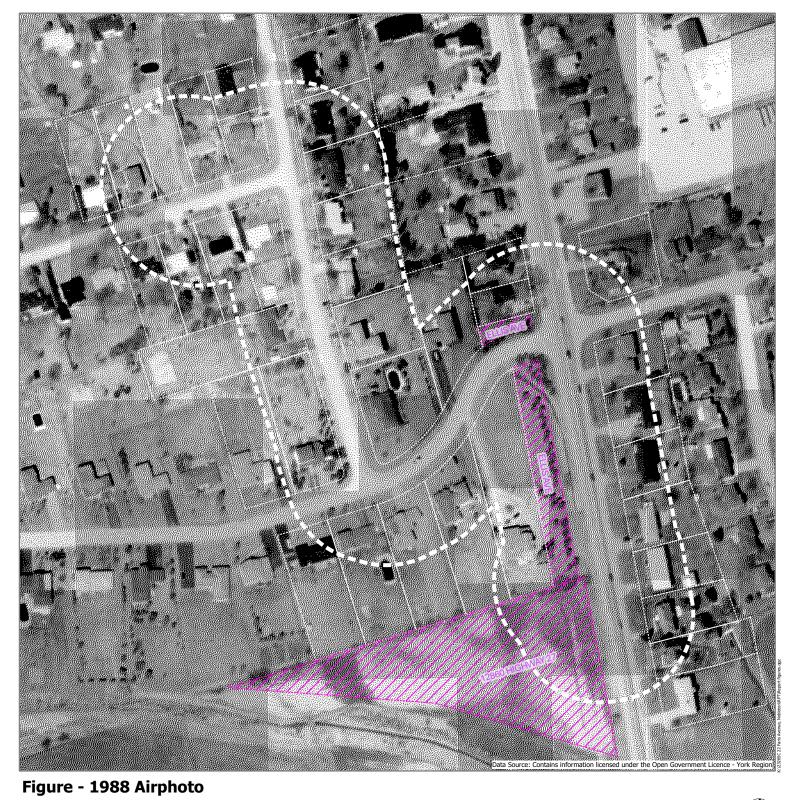
Proposed 300mm PVC WM (DR 18) - 1.8m Trench Boxes

Proposed 300mm PVC (HDD) WM - No Excavation

50m Buffer (include 1.8m)

Potential Built Heritage Resources

Listed





Project Areas

Adjacent Property Status



Built



Empty



Figure - 1978 Air Photo

P

Project Areas

Adjacent Property Status

Built

Built & Changed

Empty





Figure - 2024 Air Photo



Project Areas

Adjacent Property Status



Built



Built & Changed

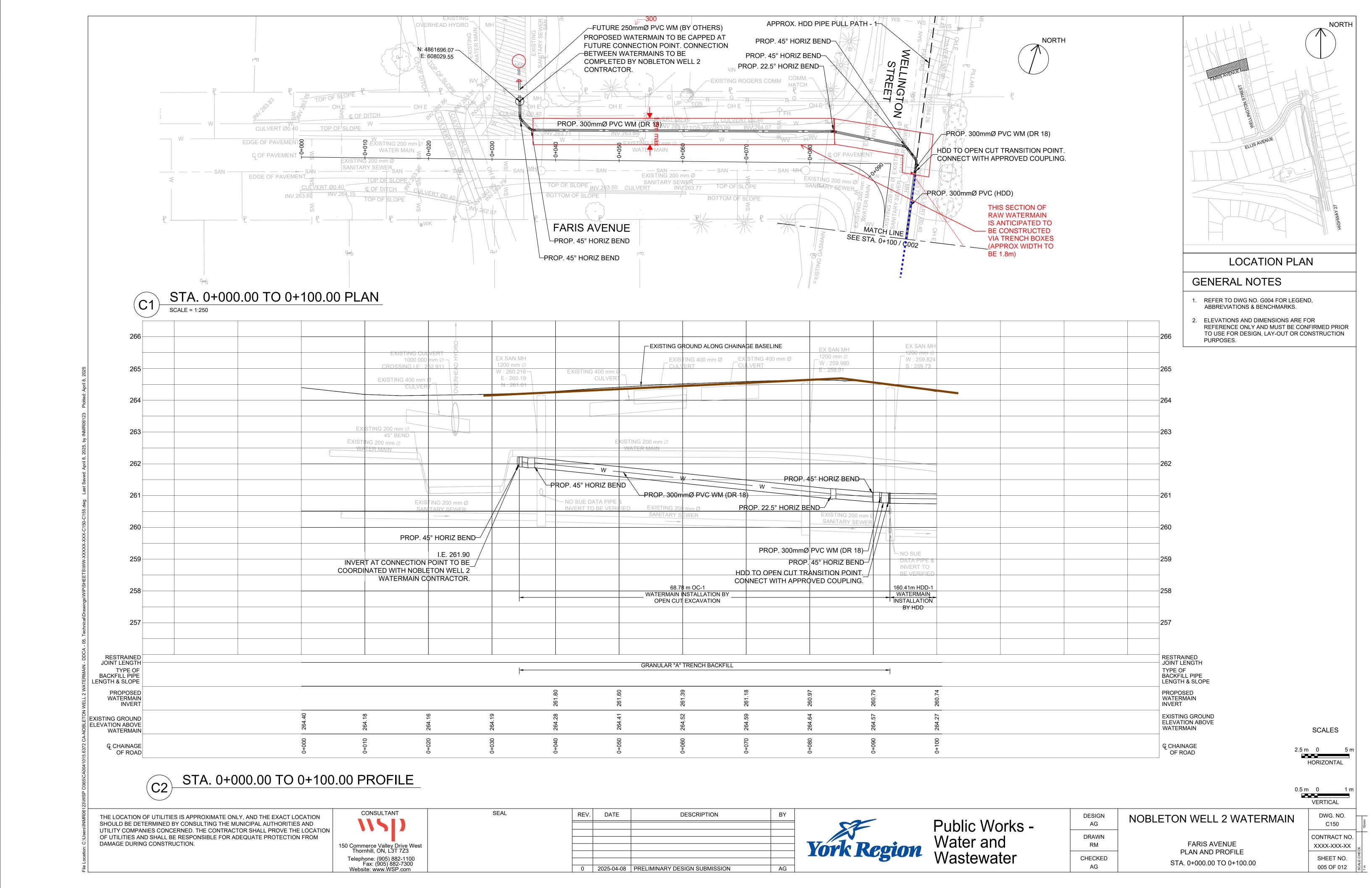


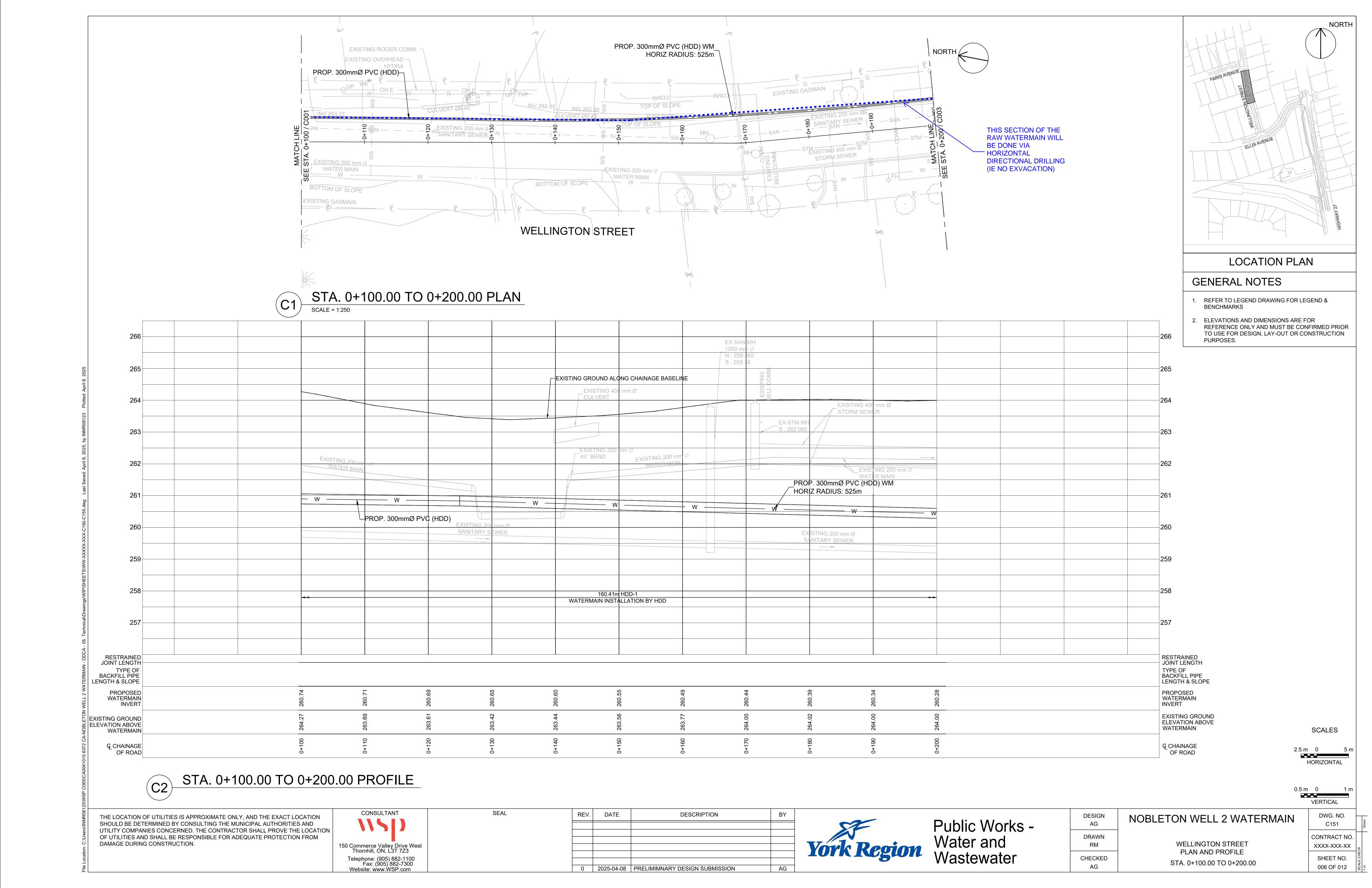
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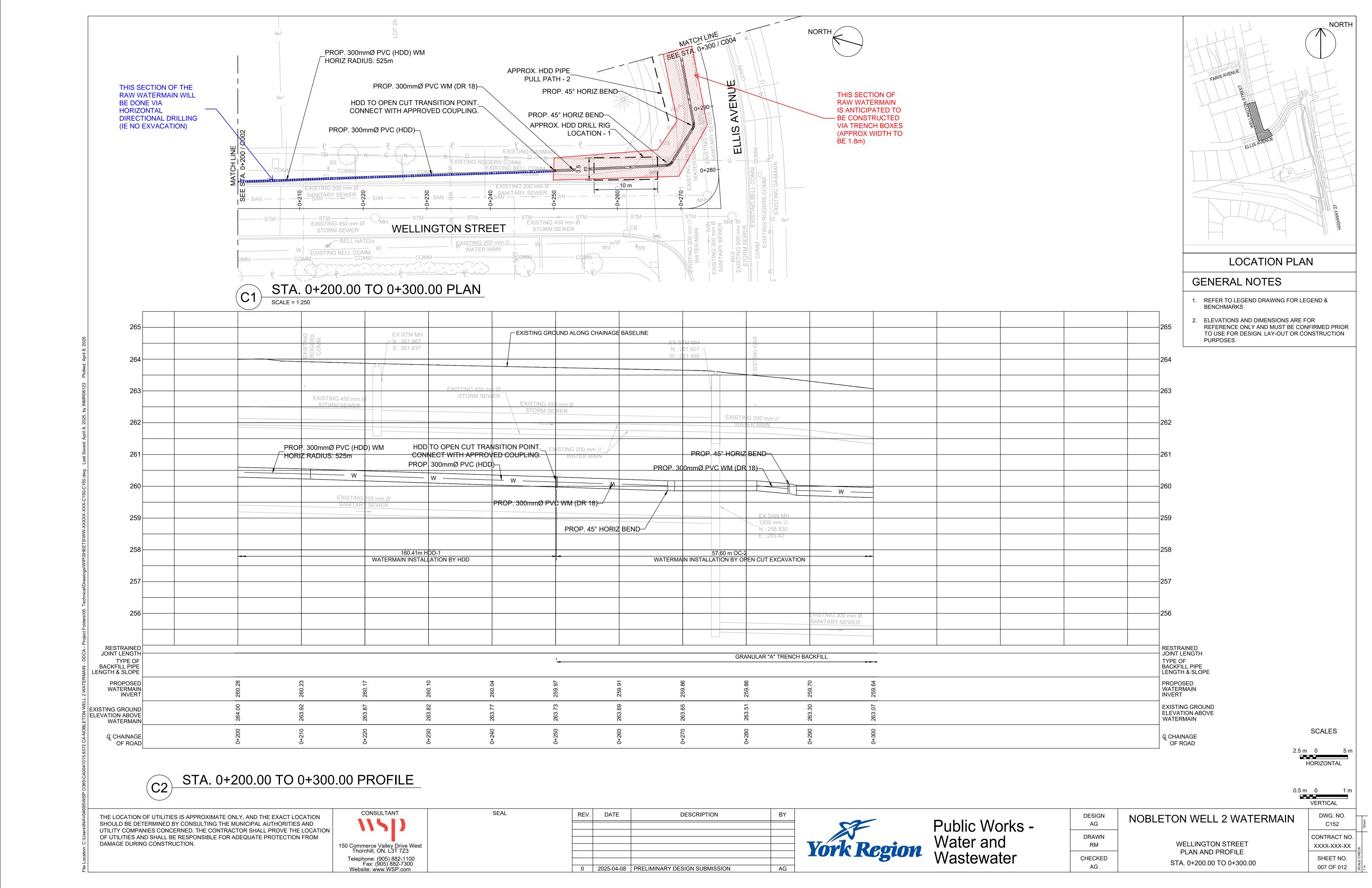
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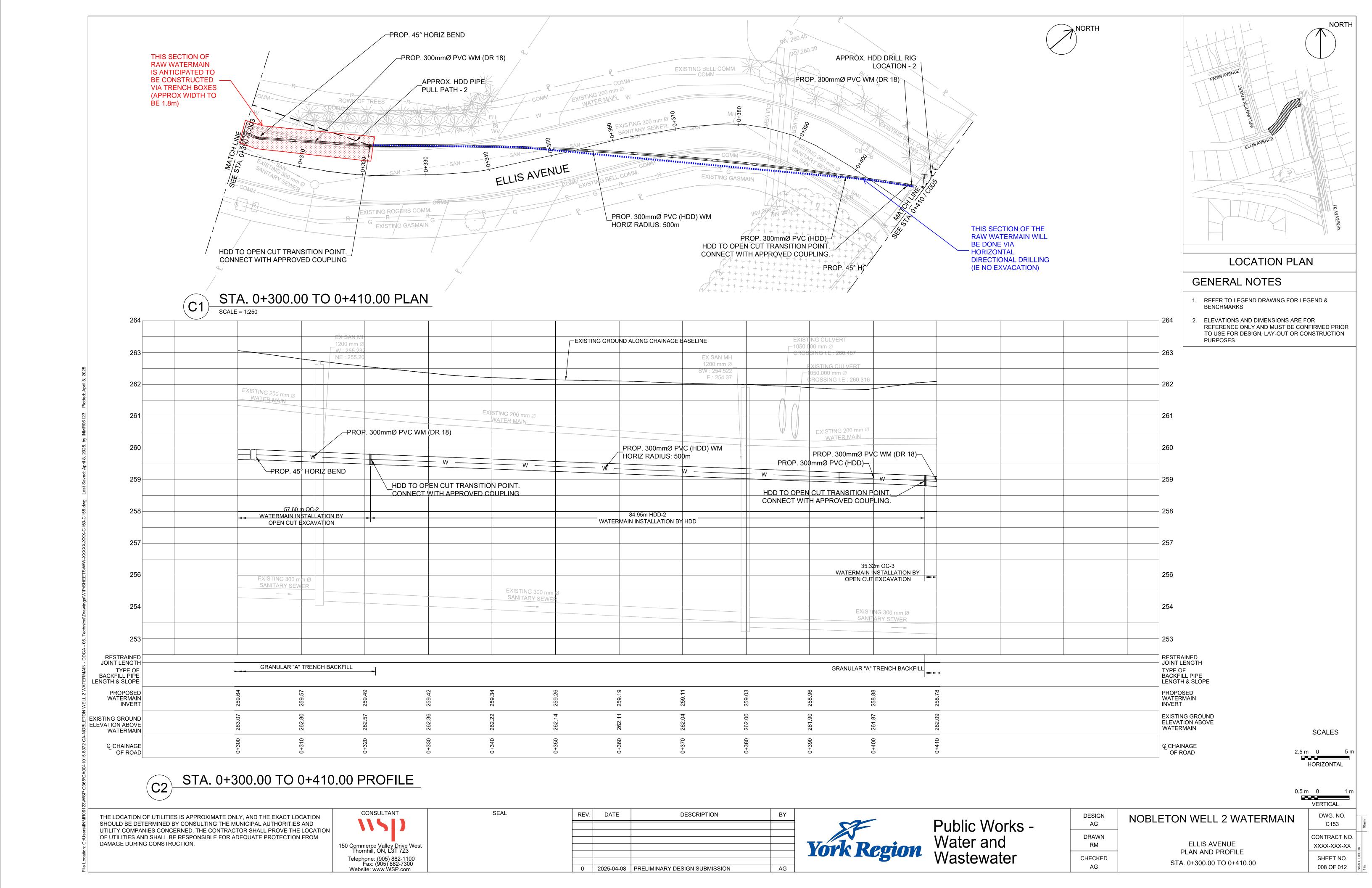


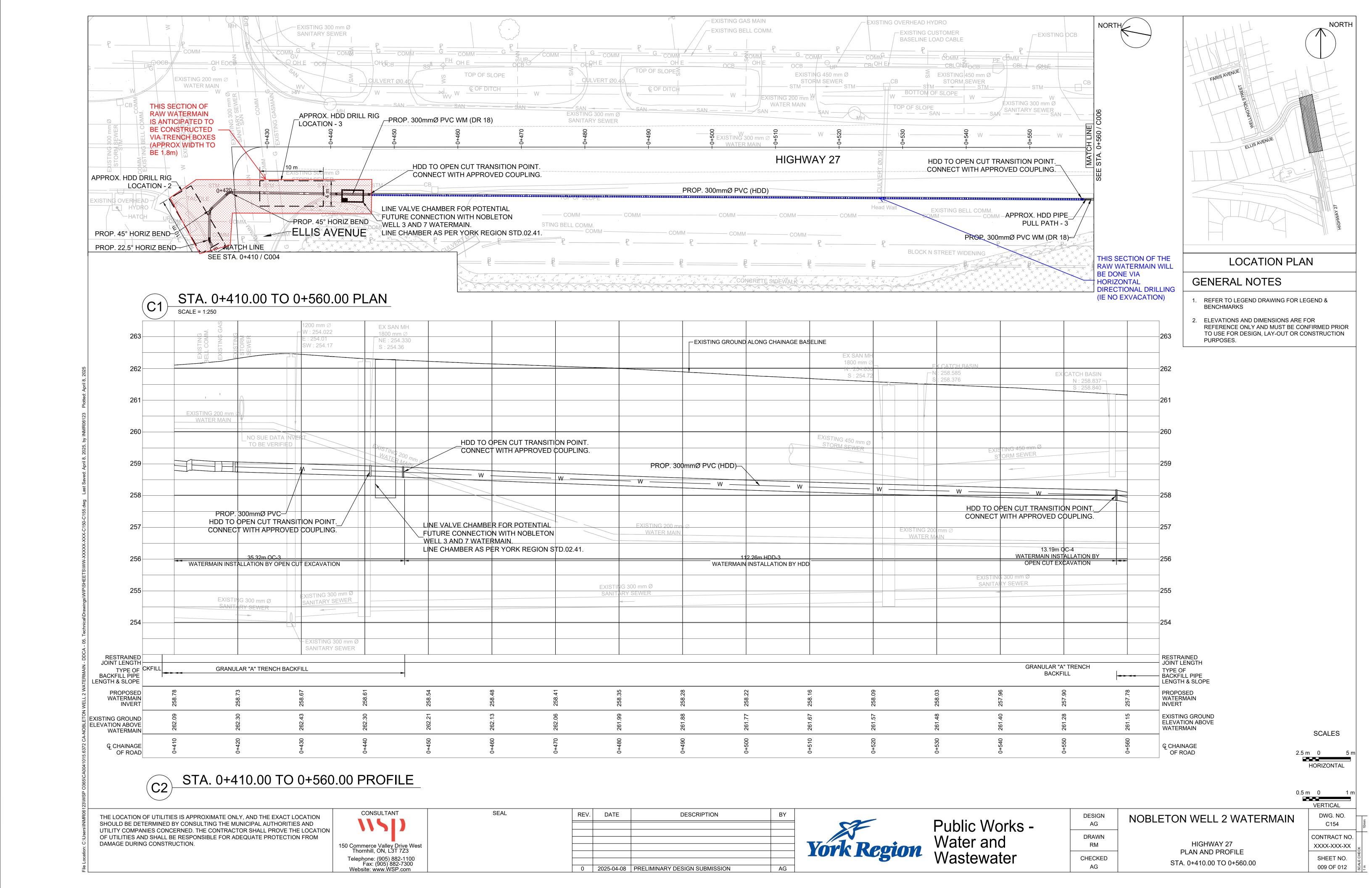
Appendix B: Proposed Works

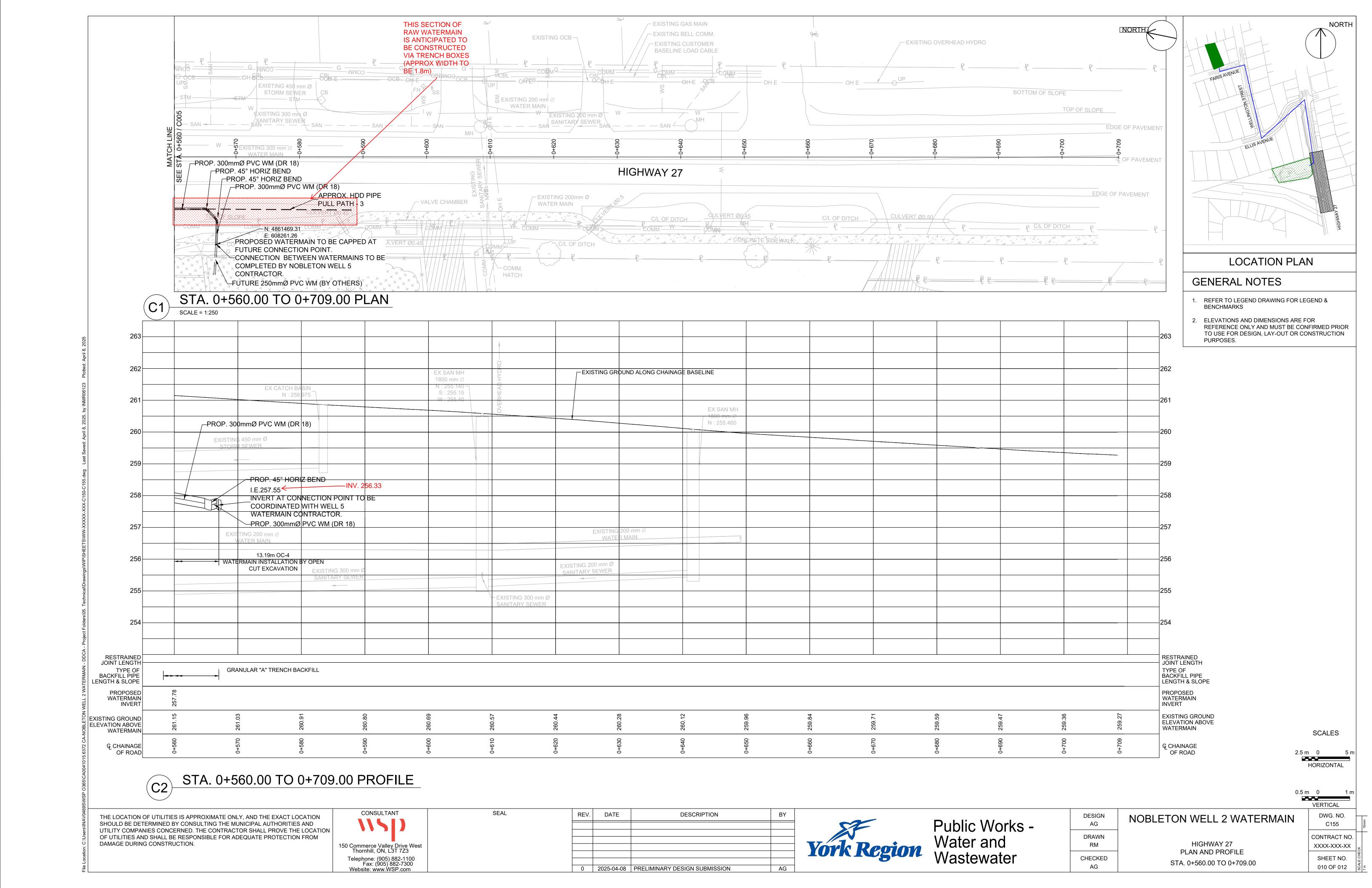












Appendix C: Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (ASI, 2021)

CULTURAL HERITAGE REPORT: EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT

NOBLETON WATER AND WASTEWATER SERVICING MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

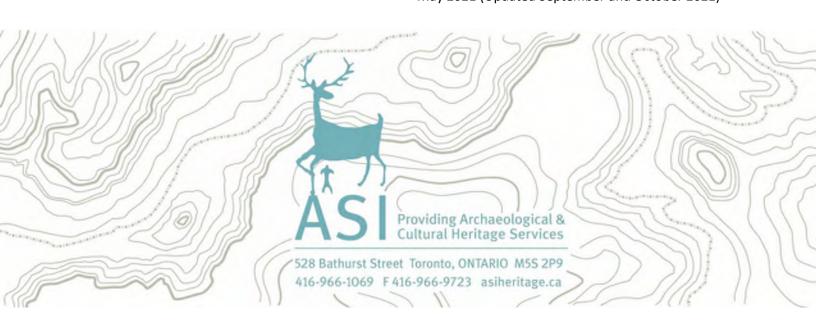
TOWNSHIP OF KING REGION OF YORK, ONTARIO

Prepared for:

Black & Veatch 50 Minthorn Boulevard, Suite 501 Markham, ON L3T 7X8

ASI File: 21CH-040

May 2021 (Updated September and October 2021)



CULTURAL HERITAGE REPORT: EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT

NOBLETON WATER AND WASTEWATER SERVICING MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

TOWNSHIP OF KING REGION OF YORK, ONTARIO

EXECUTIVE SUMMARY

ASI was contracted by Black & Veatch, on behalf of the Region of York, to conduct a Cultural Heritage Report as part of the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment (EA). The EA involves the identification of long-term water and wastewater servicing options for the Nobleton community. The project study area is generally bounded by a mixture of residential, commercial, and recreational properties within the community of Nobleton and agricultural properties surrounding the community of Nobleton.

The purpose of this Cultural Heritage Report is present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), identify existing conditions of the project study area, provide a preliminary impact assessment, and propose appropriate mitigation measures.

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with an urban land use history within the community of Nobleton and rural agricultural properties surrounding Nobleton dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are 22 previously identified features of cultural heritage value within the Nobleton Water and Wastewater Servicing study area. An additional eight potential BHRs and CHLs which were identified during background research and field review. Based on the type of resources, their physical location, architectural style and/or function, some of these individual resources were combined into a larger cultural heritage landscape, resulting in four BHRs and nine CHLs identified within the study area.

Based on the results of the assessment, the following recommendations have been developed:

- 1. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified BHRs and CHLs. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified cultural heritage resources, etc.
- 2. Indirect impacts to BHRs 1-3, and CHLs 1, 7, and 8 may occur as a result of vibrations related to construction activity taking place within 50 m of the properties. To ensure that the structures on the properties at 12855 Highway 27 (BHR 1), 12863 Highway 27 (BHR 2), 9 Ellis



Avenue (BHR 3), 12805 Highway 27 (CHL 1), 7305 King Road (CHL 7), and 12705 Concession Road 11 (CHL 8) are not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this vibration assessment determine that the structures or landscape features within the BHRs will be subject to adverse impacts due to vibration, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.

- 3. Should future work require an expansion of the study area then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential heritage resources.
- 4. The existing conditions and preliminary impact assessment report should be submitted to the Township of King and the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) for review and comment, and any other local heritage stakeholders that may have an interest in this project. The final report should be submitted to the Township of King for their records.



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Senior Cultural Heritage Specialist | Assistant Manager - Cultural Heritage

Division

Project Coordinator: Katrina Thach, Hon. BA

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Johanna Kelly



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The Senior Project Manager for this Cultural Heritage Report is Lindsay Graves (MA, Heritage Conservation), Senior Cultural Heritage Specialist and the Environmental Assessment Coordinator for the Cultural Heritage Division at ASI. She was responsible for: overall project scoping and approach; development and confirmation of technical findings and study recommendations; application of relevant standards, guidelines and regulations; and implementation of quality control procedures. Lindsay is academically trained in the fields of heritage conservation, cultural anthropology, archaeology, and collections management and has over 15 years of experience in the field of cultural heritage resource management. This work has focused on the assessment, evaluation, and protection of above ground cultural heritage resources. Lindsay has extensive experience undertaking archival research, heritage survey work, heritage evaluation and heritage impact assessment. She has also contributed to cultural heritage landscape studies and heritage conservation plans, led heritage commemoration and interpretive programs, and worked collaboratively with multidisciplinary teams to sensitively plan interventions at historic sites/places. In addition, she is a leader in the completion of heritage studies required to fulfil Class EA processes and has served as Project Manager for over 100 heritage assessments during her time at ASI. Lindsay is a member of the Canadian Association of Heritage Professionals.

Johanna Kelly, MSc Cultural Heritage Analyst | Project Manager - Cultural Heritage Division

The Project Manager for this Cultural Heritage Report is **Johanna Kelly** (MSc), who is a Cultural Heritage Analyst and Project Manager within the Cultural Heritage Division with ASI. She was responsible for the day-to-day management activities, including scoping of research activities and drafting of study findings and recommendations. With over ten years of experience in the field, Johanna has focused on the identification and evaluation of cultural heritage resources both above and below ground. With a background in archaeology, her current focus is the assessment, evaluation, and protection of above ground cultural heritage resources. Johanna has been involved in numerous large scale and high profile projects in various capacities, including built heritage and cultural heritage landscape assessments under the *Ontario Environmental Assessment Act* for Class Environmental Assessments and Individual Environmental Assessments, and as required for various planning studies throughout the Province of Ontario.

Kirstyn Allam, BA (Hon), Advanced Diploma in Applied Museum Studies Cultural Heritage Technician | Technical Writer and Researcher - Cultural Heritage Division

The Cultural Heritage Technician for this project is **Kirstyn Allam** (BA [Hon]), Advanced Diploma in Applied Museum Studies), who is a Cultural Heritage Technician and Technical Writer and Researcher within the Cultural Heritage Division with ASI. She was responsible for preparing and contributing to research and technical reporting. Kirstyn Allam's education and experience in cultural heritage, historical research, archaeology, and collections management has provided her with a deep knowledge and strong



understanding of the issues facing the cultural heritage industry and best practices in the field. Kirstyn has experience in heritage conservation principles and practices in cultural resource management including three years experience as a member of the Heritage Whitby Advisory Committee. Kirstyn also has experience being involved with Stage 1-4 archaeological excavations in the Province of Ontario.



GLOSSARY

Term	Definition
Adjacent	"contiguous properties as well as properties that are separated from a heritage property by narrow strip of land used as a public or private road, highway, street, lane, trail, right-of-way, walkway, green space, park, and/or easement or as otherwise defined in the municipal official plan" (Ministry of Tourism, Culture and Sport 2010).
Built Heritage Resource (BHR)	"a building, structure, monument, installation or any manufactured remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community. Built heritage resources are located on property that may be designated under Parts IV or V of the <i>Ontario Heritage Act</i> , or that may be included on local, provincial, federal and/or international registers" (Government of Ontario 2020a:41).
Cultural Heritage Landscape (CHL)	"a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the <i>Ontario Heritage Act</i> , or have been included on federal and/or international registers, and/or protected through official plan, zoning bylaw, or other land use planning mechanisms" (Government of Ontario 2020a:42).
Cultural Heritage Resource	Includes above-ground resources such as built heritage resources and cultural heritage landscapes, and built or natural features below-ground including archaeological resources (Government of Ontario 2020a).
Known Cultural Heritage Resource	A known cultural heritage resource is a property that has recognized cultural heritage value or interest. This can include a property listed on a Municipal Heritage Register, designated under Part IV or V of the Ontario Heritage Act, or protected by a heritage agreement, covenant or easement, protected by the Heritage Railway Stations Protection Act or the Heritage Lighthouse Protection Act, identified as a Federal Heritage Building, or located within a UNESCO World Heritage Site (Ministry of Tourism, Culture and Sport 2016).
Impact	Includes negative and positive, direct and indirect effects to an identified cultural heritage resource. Direct impacts include destruction of any, or part of any, significant heritage attributes or features and/or unsympathetic or incompatible alterations to an identified resource. Indirect impacts include, but are not limited to, creation of shadows, isolation of heritage attributes, direct or indirect obstruction of significant views, change in land use, land disturbances (Ministry of Tourism and Culture 2006). Indirect impacts also include potential vibration impacts



	(See Section 2.5 for complete definition and discussion of potential
	impacts).
Mitigation	Mitigation is the process of lessening or negating anticipated adverse
	impacts to cultural heritage resources and may include, but are not limited
	to, such actions as avoidance, monitoring, protection, relocation, remedial
	landscaping, and documentation of the cultural heritage landscape and/or
	built heritage resource if to be demolished or relocated.
Potential Cultural	A potential cultural heritage resource is a property that has the potential
Heritage Resource	for cultural heritage value or interest. This can include properties/project
	area that contain a parcel of land that is the subject of a commemorative
	or interpretive plaque, is adjacent to a known burial site and/or cemetery,
	is in a Canadian Heritage River Watershed, or contains buildings or
	structures that are 40 or more years old (Ministry of Tourism, Culture and
	Sport 2016).
Significant	With regard to cultural heritage and archaeology resources, significant
	means "resources that have been determined to have cultural heritage
	value or interest. Processes and criteria for determining cultural heritage
	value or interest are established by the Province under the authority of the
	Ontario Heritage Act. While some significant resources may already be
	identified and inventoried by official sources, the significance of others can
	only be determined after evaluation" (Government of Ontario 2020a:51).
Vibration Zone of	Area within a 50 m buffer of construction-related activities in which there
Influence	is potential to affect an identified cultural heritage resource. A 50 m buffer
	is applied in the absence of a project-specific defined vibration zone of
	influence based on existing secondary source literature and direction
	provided from the MHSTCI (Wiss 1981; Rainer 1982; Ellis 1987; Crispino
	and D'Apuzzo 2001; Carman et al. 2012). This buffer accommodates the
	additional threat from collisions with heavy machinery or subsidence
	(Randl 2001).



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1.0 INTRODUCTION

1.1 Report Purpose

ASI was contracted by Black & Veatch, on behalf of the Region of York, to conduct a Cultural Heritage Report as part of the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment (EA). The purpose of this report is to present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), identify existing conditions of the project study area, provide a preliminary impact assessment, and propose appropriate mitigation measures.

1.2 Project Overview

The Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment involves the identification of long-term water and wastewater capacity servicing options for the Nobleton community. The project study area for the EA is bounded by 15th Sideroad to the north, 8th Concession to the east, 300 m north of King Vaughan Road to the south, and 10th Concession and 11th Concession to the west (Figure 1).

The project will involve the following water servicing upgrades:

- Well 2 Upgrading/upsizing existing well and well facility within existing site/parcel
- Well 5/Site H Adding new well and upgrading existing well facility within existing site/parcel

The project will involve the following wastewater servicing upgrades/expansions:

- Upgrade/expand Janet Avenue Sewage Pumping Station SPS
- Upgrade/expand existing Water Recourse Recovery Facility (WRRF) within existing parcel
- Twin/Upsize Forcemain within existing right-of-way/easement along King Road
- Upgrade outfall to MH113, located westward from Nobleton WRRF to 11th Concession and then south to the Humber River

1.3 Description of Study Area

Desktop data collection was conducted for the overall project study area and is documented in this Cultural Heritage Report. However, the Cultural Heritage Report study area (hereafter 'CH study area') is described as the project components identified in Section 1.2 with a 50 m buffer around these components (Figure 1). Section 3.0 includes the results of background historical research conducted for the overall project study area and the results of the desktop data collection are included in Appendix A. The CH study area was subject to field review, description of existing conditions (Section 4.0), and preliminary impact assessment (Section 5.0), and is defined as inclusive of those lands that may contain BHRs or CHLs that may be subject to direct or indirect impacts as a result of the proposed undertaking. Properties within the study area are located in the Township of King.



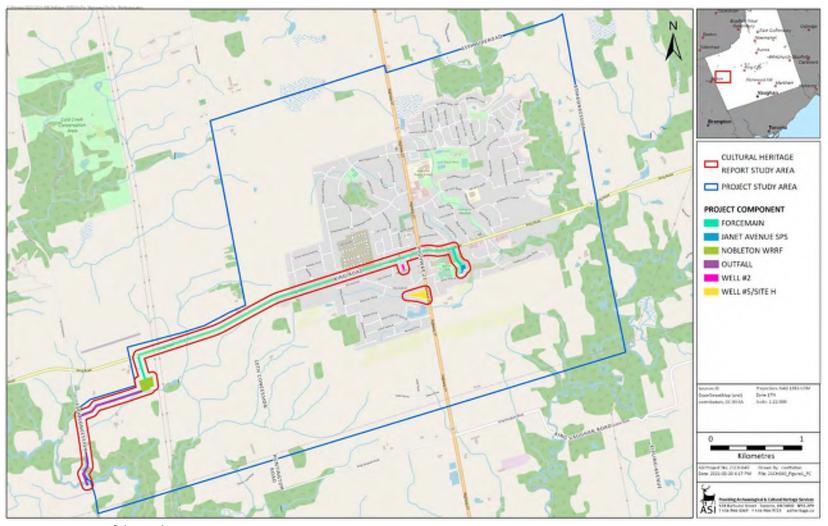


Figure 1: Location of the study area

Base Map: ©OpenStreetMap and contributors, Creative Commons-Share Alike License (CC-BY-SA)



2.0 METHODOLOGY

2.1 Regulatory Requirements

The *Ontario Heritage Act* (OHA) (Ministry of Culture 1990) is the primary piece of legislation that determines policies, priorities and programs for the conservation of Ontario's heritage. There are many other provincial acts, regulations and policies governing land use planning and resource development support heritage conservation including:

- The Planning Act (Ministry of Municipal Affairs and Housing 1990), which states that
 "conservation of features of significant architectural, cultural, historical, archaeological or
 scientific interest" (cultural heritage resources) is a "matter of provincial interest". The
 Provincial Policy Statement (Government of Ontario 2020a), issued under the Planning Act, links
 heritage conservation to long-term economic prosperity and requires municipalities and the
 Crown to conserve significant cultural heritage resources.
- The Environmental Assessment Act (Ministry of the Environment 1990), which defines "environment" to include cultural conditions that influence the life of humans or a community. Cultural heritage resources, which includes archaeological resources, built heritage resources and cultural heritage landscapes, are important components of those cultural conditions.

The Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) is charged under Section 2.0 of the OHA with the responsibility to determine policies, priorities, and programs for the conservation, protection, and preservation of the heritage of Ontario. The Ministry of Tourism, Culture and Sport (now administered by MHSTCI) published *Standards and Guidelines for Conservation of Provincial Heritage Properties* (Ministry of Tourism, Culture and Sport 2010) (hereinafter "Standards and Guidelines"). These Standards and Guidelines apply to properties the Government of Ontario owns or controls that have cultural heritage value or interest (CHVI). The Standards and Guidelines provide a series of guidelines that apply to provincial heritage properties in the areas of identification and evaluation; protection; maintenance; use; and disposal. For the purpose of this report, the Standards and Guidelines provide points of reference to aid in determining potential heritage significance in identification of BHRs and CHLs. While not directly applicable for use in properties not under provincial ownership, the Standards and Guidelines are regarded as best practice for guiding heritage assessments and ensure that additional identification and mitigation measures are considered.

Similarly, the *Ontario Heritage Tool Kit* (Ministry of Culture 2006) provides a guide to evaluate heritage properties. To conserve a BHR or CHL, the *Ontario Heritage Tool Kit* states that a municipality or approval authority may require a heritage impact assessment and/or a conservation plan to guide the approval, modification, or denial of a proposed development.



2.2 Municipal/Regional Heritage Policies

The study area is located within the Township of King, in the Region of York. Policies relating to cultural heritage resources were reviewed from the following sources:

- Township of King Official Plan Our King (WSP 2019)
- The Regional Municipality of York Official Plan (York Region 2019)
- A Place to Grow: Growth Plan for the Greater Golden Horseshoe (Government of Ontario 2020b)

2.3 Identification of Built Heritage Resources and Cultural Heritage Landscapes

This Cultural Heritage Report follows guidelines presented in the *Ontario Heritage Tool Kit* (Ministry of Culture 2006) and *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (Ministry of Tourism, Culture and Sport 2016). The objective of this report is to present an inventory of known and potential BHRs and CHLs, and to provide a preliminary understanding of known and potential BHRs and CHLs located within areas anticipated to be directly or indirectly impacted by the proposed project.

In the course of the cultural heritage assessment process, all potentially affected BHRs and CHLs are subject to identification and inventory. Generally, when conducting an identification of BHRs and CHLs within a study area, three stages of research and data collection are undertaken to appropriately establish the potential for and existence of BHRs and CHLs in a geographic area: background research and desktop data collection; field review; and identification.

Background historical research, which includes consultation of primary and secondary source research and historical mapping, is undertaken to identify early settlement patterns and broad agents or themes of change in a study area. This stage in the data collection process enables the researcher to determine the presence of sensitive heritage areas that correspond to nineteenth- and twentieth-century settlement and development patterns. To augment data collected during this stage of the research process, federal, provincial, and municipal databases and/or agencies are consulted to obtain information about specific properties that have been previously identified and/or designated as having cultural heritage value. Typically, resources identified during these stages of the research process are reflective of particular architectural styles or construction methods, associated with an important person, place, or event, and contribute to the contextual facets of a particular place, neighbourhood, or intersection.

A field review is then undertaken to confirm the location and condition of previously identified BHRs and CHLs. The field review is also used to identify potential BHRs or CHLs that have not been previously identified on federal, provincial, or municipal databases or through other appropriate agency data sources.

During the cultural heritage assessment process, a property is identified as a potential BHR or CHL based on research, the MHSTCI screening tool, and professional expertise. In addition, use of a 40-year-old benchmark is a guiding principle when conducting a preliminary identification of BHRs and CHLs. While identification of a resource that is 40 years old or older does not confer outright heritage significance,



this benchmark provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than 40 years old, this does not preclude the resource from having cultural heritage value or interest.

2.4 Background Information Review

To make an identification of previously identified known or potential BHRs and CHLs within the CH study area, the following resources were consulted as part of this Cultural Heritage Report.

2.4.1 Review of Existing Heritage Inventories

A number of resources were consulted in order to identify previously identified BHRs and CHLs within the CH study area. These resources, reviewed on 16, 27, and 30 April, 2021, include:

- Township of King *Cultural Heritage Property Inventory* (Township of King Heritage Committee 2008);
- Heritage Properties (King Township 2021a);
- Places of Worship (King Township 2021b);
- Pioneer Cemeteries (King Township 2021c);
- King Cultural Heritage Property Inventory Properties shapefile (Township of King 2016);
- King Township Heritage Map (Township of King Heritage Committee 2006);
- Canada 150 Built to Last interactive map (York Region n.d.);
- Historical maps (including historical atlases, topographic maps, and aerial photography);
- The Ontario Heritage Act Register (Ontario Heritage Trust n.d.);
- The *Places of Worship Inventory* (Ontario Heritage Trust n.d.);
- The inventory of Ontario Heritage Trust easements (Ontario Heritage Trust n.d.);
- Inventory of known cemeteries/burial sites in the Ontario Genealogical Society's online databases (Ontario Genealogical Society n.d.);
- Canada's Historic Places website: available online, the searchable register provides information
 on historic places recognized for their heritage value at the local, provincial, territorial, and
 national levels (Parks Canada n.d.);
- Directory of Federal Heritage Designations: a searchable on-line database that identifies
 National Historic Sites, National Historic Events, National Historic People, Heritage Railway
 Stations, Federal Heritage Buildings, and Heritage Lighthouses (Parks Canada n.d.);
- Canadian Heritage River System: a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage (Canadian Heritage Rivers Board and Technical Planning Committee n.d.); and,
- United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites (UNESCO World Heritage Centre n.d.).



2.4.2 Review of Previous Heritage Reporting

Additional cultural heritage studies undertaken within parts of the CH study area were also reviewed. These include:

Cultural Heritage Assessment Report: Built Heritage Resources and Cultural Heritage Landscapes
 Existing Conditions – Assessment of Impacts – King Road Class Environmental Assessment
 Highway 27 to Highway 400 Regional Municipality of York, Ontario (ASI 2013)

2.4.3 Stakeholder Data Collection

The following individuals, groups, and/or organizations were contacted to gather information on known and potential BHRs and CHLs, active and inactive cemeteries, and areas of identified Indigenous interest within the study area:

- Colin Pang, Planner II, Heritage Coordinator, Acting Secretary to the Committee of Adjustment, King Township (email communication 4 and 6 May 2021). Email sent to confirm the previously identified BHRs and CHLs along with research and/or listing reports for properties listed on the Cultural Heritage Property Inventory (Township of King Heritage Committee 2008).
- The MHSTCI (email communication 4 May 2021). Email correspondence confirmed that there are no additional previously identified heritage resources or concerns regarding the study area.
- The Ontario Heritage Trust (email communications 4 and 6 May 2021). A response indicated that there are no conservation easements or Trust-owned properties within the study area.

2.5 Preliminary Impact Assessment Methodology

To assess the potential impacts of the undertaking, identified BHRs and CHLs are considered against a range of possible negative impacts, based on the *Ontario Heritage Tool Kit InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (Ministry of Tourism and Culture 2006). These include:

- Direct impacts:
 - Destruction of any, or part of any, significant heritage attributes or features; and
 - Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance.
- Indirect impacts
 - Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden;
 - Isolation of a heritage attribute from its surrounding environment, context or a significant relationship;
 - Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features;
 - A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces; and



 Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.

Indirect impacts from construction-related vibration have the potential to negatively affect BHRs or CHLs depending on the type of construction methods and machinery selected for the project and proximity and composition of the identified resources. Potential vibration impacts are defined as having potential to affect an identified BHRs and CHLs where work is taking place within 50 m of features on the property. A 50 m buffer is applied in the absence of a project-specific defined vibration zone of influence based on existing secondary source literature and direction provided from the MHSTCI (Wiss 1981; Rainer 1982; Ellis 1987; Crispino and D'Apuzzo 2001; Carman et al. 2012). This buffer accommodates any additional or potential threat from collisions with heavy machinery or subsidence (Randl 2001).

Several additional factors are also considered when evaluating potential impacts on identified BHRs and CHLs. These are outlined in a document set out by the Ministry of Culture and Communications (now MHSTCI) and the Ministry of the Environment entitled *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992) and include:

- Magnitude: the amount of physical alteration or destruction which can be expected;
- Severity: the irreversibility or reversibility of an impact;
- Duration: the length of time an adverse impact persists;
- Frequency: the number of times an impact can be expected;
- Range: the spatial distribution, widespread or site specific, of an adverse impact; and
- Diversity: the number of different kinds of activities to affect a heritage resource.

The proposed undertaking should endeavor to avoid adversely affecting known and potential BHRs and CHLs and interventions should be managed in such a way that identified significant cultural heritage resources are conserved. When the nature of the undertaking is such that adverse impacts are unavoidable, it may be necessary to implement alternative approaches or mitigation strategies that alleviate the negative effects on identified BHRs and CHLs. Mitigation is the process of lessening or negating anticipated adverse impacts to cultural heritage resources and may include, but are not limited to, such actions as avoidance, monitoring, protection, relocation, remedial landscaping, and documentation of the BHR or CHL if to be demolished or relocated.

Various works associated with infrastructure improvements have the potential to affect BHRs and CHLs in a variety of ways, and as such, appropriate mitigation measures for the undertaking need to be considered.

3.0 SUMMARY OF HISTORICAL DEVELOPMENT WITHIN THE STUDY AREA

This section provides a brief summary of historical research. A review of available primary and secondary source material was undertaken to produce a contextual overview of the study area, including a general description of physiography, Indigenous land use, and Euro-Canadian settlement.



3.1 Physiography

The study area is situated within the South Slope physiographic region of southern Ontario. This region is the southern slope of the Oak Ridges Moraine. The South Slope meets the Moraine at heights of approximately 300 metres above sea level, and descends southward toward Lake Ontario, ending, in some areas, at elevations below 150 metres above sea level. Numerous streams descend the South Slope, having cut deep valleys in the till. In the vicinity of the study area, the South Slope is ground moraine of limited relief (Chapman and Putnam 1984).

Euro-Canadian settlement began in the South Slope in the late eighteenth-century with the second wave of largely British immigrants. The area contains a variety of soils, some of which have proved to be excellent through more than a century of agricultural use. A mixed, subsistence agriculture was used in the early settlements. As grain growing and exporting increased, so too did the prosperity of the area. Ports and the roads to them were improved and with the arrival of the railways in the mid-1850s development was encouraged further. Wheat growing did decline to be replaced with commercial mixed farming within the South Slope region (Chapman and Putnam 1984).

In the twentieth-century, the farming population of areas of the South Slope declined in number, however, the total population continued to rise. Continuous urban development in the later twentieth-century continued to influence settlement in the areas to the west, north, and east of Toronto, including the study area (Chapman and Putnam 1984).

3.1.1 Humber River

The study area is located along the Humber River watershed. The Humber River watershed drains an area of approximately 911 km² from its headwaters on the Niagara Escarpment and the Oak Ridges Moraine, flowing down to the Humber River and then into Lake Ontario (TRCA 2019).

3.2 Summary of Early Indigenous History in Southern Ontario

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years ago, or 11,000 Before the Common Era (B.C.E.) (Ferris 2013).¹ During the Paleo period (c. 11,000 B.C.E. to 9,000 B.C.E.), groups tended to be small, nomadic, and non-stratified. The population relied on hunting, fishing, and gathering for sustenance, though their lives went far beyond subsistence strategies to include cultural practices including but not limited to art and astronomy. Fluted points, beaked scrapers, and gravers are among the most important artifacts to have been found at various sites throughout southern Ontario, and particularly along the shorelines of former glacial lakes. Given the low regional population levels at this time, evidence concerning Paleo-Indian period groups is very limited (Ellis and Deller 1990).

¹ While many types of information can inform the precontact settlement of Ontario, such as oral traditions and histories, this summary provides information drawn from archaeological research conducted in southern Ontario over the last century.



Moving into the Archaic period (c. 9,000 B.C.E. to 1,000 B.C.E.), many of the same roles and responsibilities continued as they had for millennia, with groups generally remaining small, nomadic, and non-hierarchical. The seasons dictated the size of groups (with a general tendency to congregate in the spring/summer and disperse in the fall/winter), as well as their various sustenance activities, including fishing, foraging, trapping, and food storage and preparation. There were extensive trade networks which involved the exchange of both raw materials and finished objects such as polished or ground stone tools, beads, and notched or stemmed projectile points. Furthermore, mortuary ceremonialism was evident, meaning that there were burial practices and traditions associated with a group member's death (Ellis and Deller 1990; Ellis et al. 2009).

The Woodland period (c. 1,000 B.C.E. to 1650 C.E.) saw several trends and aspects of life remain consistent with previous generations. Among the more notable changes, however, was the introduction of pottery, the establishment of larger occupations and territorial settlements, incipient horticulture, more stratified societies, and more elaborate burials. Later in this period, settlement patterns, foods, and the socio-political system continued to change. A major shift to agriculture occurred in some regions, and the ability to grow vegetables and legumes such as corn, beans, and squash ensured long-term settlement occupation and less dependence upon hunting and fishing. This development contributed to population growth as well as the emergence of permanent villages and special purpose sites supporting those villages. Furthermore, the socio-political system shifted from one which was strongly kinship based to one that involved tribal differentiation as well as political alliances across and between regions (Ellis and Deller 1990; Williamson 1990; Dodd et al. 1990; Birch and Williamson 2013).

The arrival of European trade goods in the sixteenth century, Europeans themselves in the seventeenth century, and increasing settlement efforts in the eighteenth century all significantly impacted traditional ways of life in Southern Ontario. Over time, war and disease contributed to death, dispersion, and displacement of many Indigenous peoples across the region. The Euro-Canadian population grew in both numbers and power through the eighteenth and nineteenth centuries and treaties between colonial administrators and First Nations representatives began to be negotiated.

The study area is within Treaty 13. In 1787, representatives of the Crown met with members of the Mississaugas at the Bay of Quinte to negotiate the sale of lands along the shore of Lake Ontario near the settlement of York, the seat of the colonial government. Due to disputes over the boundaries, a new agreement was signed and the Toronto Purchase Treaty 13 was signed on August 1, 1805, in which the Mississaugas ceded to the Crown 250,830 acres of land. Both the 1787 Purchase and its 1805 Indenture are known as Treaty 13. The Mississaugas claimed that the Toronto Islands and other lands were not part of the purchase, and a land claim settlement was reached for these areas in 2010 (Mississaugas of the Credit First Nation 2017; Mississauga of the New Credit First Nation 2001).

3.3 Historical Euro-Canadian Township Survey and Settlement

Historically, the overall project study area is located in the Former Township of King, County of York in part of: Lots 1-10, Concession VIII; Lots 1-10, Concession IX; Lots 1-6, Concession X; and Lots 2-3, Concession XI. The CH study area is located in the Former Township of King, County of York in part of: Lots 4-6, Concession VIII; Lots 4-6, Concession IX; Lots 2-6, Concession X; and Lots 2-4, Concession XI.



3.3.1 King Township

The land within King Township was acquired by the British from the Mississaugas in 1784. The first township survey was undertaken in 1800, by John Stegman and the first legal settlers, a group of Quakers from the United States, occupied their land holdings in the same year, though patents had been granted as early as 1797. Additional surveys of the township were undertaken in 1836-8, 1852 and 1859. The township is separated into the Townships of North and South King, with Highway 9 serving as the dividing line. The early Quakers founded the settlement of Armitage, the first in the township. A number of settlements were established during the nineteenth century, including: Aurora, Schomberg, Lloydtown, Glenville, Kettleby, Pottageville, Linton, and Nobleton (ASI 2012; Mika and Mika 1981).

The township was likely named in honour of John King, who was British under-secretary of state for the Colonies during the 1790s and early 1800s. In 1805, Boulton noted that the township was inhabited by Quakers, who were "industrious and very desirable neighbours." This was "a circumstance strongly recommending the settlement." In addition to the Quakers, early settlers of the township included Loyalists and their children, and immigrants from the United States, England, Ireland and Scotland. By 1809 the population of the township was 190 but growth was halted temporarily during The War of 1812. With improvements to Yonge Street in the 1820's and the establishment of the Yonge stage in 1825 population began to rise again. In 1823 the population was 394, in 1842 it was 2,625, and by 1850 this number had doubled. Population rose steadily until 1871 when the census records 7,482 people living in the township. The population declined at this point, as with most other rural townships, until after World War II, when Toronto's suburbs began to expand (Armstrong 1985; Boulton 1805; Mika and Mika 1981; Smith 1846; Rayburn 1997a).

The first school was set up by the Quakers in 1806 and once population began to rise again in the 1820s many more were established. The first place of worship in the township was a Quaker meetinghouse. In 1844 a Wesleyan Methodist Church was erected and soon after in 1846 the Anglican Street Mary Magdalene parish church was opened in Lloydtown. The Eversley Presbyterian Church was established in 1848. Early industry was primarily driven by deforestation of the township. By the 1840s, the township was noted for its good land and fine farms, and in 1851 there were twenty-one sawmills operating. Deforestation has since taken its toll on the area, resulting in erosion and flooding. The railway arrived in the township 1853, stopping in Aurora. This resulted in rapid growth of the village in the second half of the nineteenth century. King Township remained largely rural into the twentieth century. In the 1960s growth and the expansion of Toronto saw more commuters settling in King, resulting in an increase of the development of subdivisions (Mika and Mika 1981).

The Township of King was first surveyed in 1800 by John Stegman; however, additional surveys of the township were undertaken in 1836-8, 1852 and 1859. The township is separated into the Townships of North and South King, with Highway 9 serving as the dividing line. A number of settlements were established during the nineteenth century, including: Aurora, Schomberg, Lloydtown, Glenville, Kettleby, Pottageville, Linton, and Nobleton (ASI 2012).

The land within King Township was acquired by the British from the Mississaugas in 1784. The first township survey was undertaken in 1800, and the first legal settlers occupied their land holdings in the same year. The township was probably named in honour of John King, who was British under-secretary of state for the Colonies during the 1790s and early 1800s. King Township was initially settled by the



United Empire Loyalists, Quakers, and by immigrants from the United States, England, Ireland and Scotland. By the 1840s, the township was noted for its good land and fine farms (Armstrong 1985; Boulton 1805; Rayburn 1997b; Smith 1846).

3.3.2 Nobleton

The Village of Nobleton developed at the crossroads of the 9th Concession (now Highway 27) and the 14th Sideroad (now King Road). It was named after Joseph Noble, the first tavern keeper in this halfway point between King City and Bolton. First settled around 1812, early family names included Noble, Snider, Pringle, Kaske, Hambly, Robb, and Robinson. The community quickly grew to feature general stores, taverns and hotels, a post office, two churches, a Masonic Lodge, and an Orange Hall. The Nobleton post office was opened in 1851 and the first postmaster was Thomas Noble, brother of Joseph. The first school was constructed in 1820 on Lot 2, Concession IX and featured a one-room log structure, and a two-room frame building was constructed in 1870 on Lot 5, Concession VIII (Gillham 1975). In 1885, a community hall was constructed on land donated by Martin Snider and was known as the Music Hall because it was home to the Nobleton Band. A new community hall was constructed in 1936 and in 1948 an arena was built nearby. In 1971, the former police village became part of King Township (Mika and Mika 1983).

3.4 Review of Historical Mapping

The 1860 Map of the County of York (Tremaine 1860), and the 1878 Illustrated Historical Atlas of the County of York (Miles & Co. 1878), were examined to determine the presence of historical features within the study area during the nineteenth century (Figure 2 and Figure 3). Historically, the overall project study area is located in part of: Lots 1-10, Concession VIII; Lots 1-10, Concession IX; Lots 1-10, Conces

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases. For instance, they were often financed by subscription limiting the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. The use of historical map sources to reconstruct or predict the location of former features within the modern landscape generally begins by using common reference points between the various sources. The historical maps are geo-referenced to provide the most accurate determination of the location of any property on a modern map. The results of this exercise can often be imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including differences of scale and resolution, and distortions introduced by reproduction of the sources.

Nineteenth-century mapping shows that King Road, Highway 27, Concession Road 10, and Concession Road 11 are all historically surveyed roadways (Figure 2 and Figure 3). The roads are illustrated roughly in their present alignment as early as 1860. The east-west roads do not feature the present-curve to meet at the intersections of the north-south roads. The Humber River is depicted as intersecting Lot 2, Concession X and Lots 2-3, Concession XI. The watercourse is illustrated as flowing in a northwest-



southeast orientation. The community of Nobleton is depicted at the present-day intersection of King Road and Highway 27. Nobleton in 1860 features a store and other buildings as indicated by the shading around the intersection. A residence is illustrated north of King Road in the eastern part of Lot VI, Concession IX on property owned by Rev. James Adams and near the middle of the same lot, a Wesleyan Methodist Church is depicted north of King Road on the property owned by Samuel Sheardown. The property of John Brooks, the eastern half of Lot 6, Concession X, is labeled as "West View". By 1878, a post office is labelled in Nobleton, along with a shop. The previously illustrated residence and church are still present. A residence is depicted southeast of the King Road and Concession Road 10 intersection. Several residences and orchards are illustrated along King Road, suggesting that the route along King Road was primarily agricultural in nature into the late-nineteenth-century. The nineteenth-century mapping also depicts the overall project study area in an agricultural context.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. This report presents maps and aerial photographs from 1914, 1954, 1965, and 1994 (Figure 4 to Figure 7).

The twentieth-century maps suggest that much of the overall project study area retained a rural agricultural context throughout the twentieth century. The community of Nobleton is the notable exception to this, expanding to include residential developments east and west of Highway 27 and north and south of King Road. The 1914 topographic map (Figure 4) demonstrates little development within the study area at the turn of the century. All of the roadways within the study area are illustrated as unmetalled roadways. Several brick or stone and wooden structures are depicted around the community of Nobleton. Brick or stone and wooden structures are also illustrated along King Road within the study area. The previous Wesleyan Methodist Church is no longer depicted; however, a cemetery is labelled in its place. Three bridges of unknown construction material are illustrated along King Road and two bridges, also of unknown material are illustrated along Concession Road 11. One of the bridges is depicted as carrying King Road over a tributary of the Humber River which previously was not illustrated, west of Concession Road 10. King Creek is depicted intersecting with the eastern portion of the study area.

Aerial photography from 1954 shows the agricultural context of the overall project study area, a patchwork of agricultural fields and tree lines are clearly visible (Figure 5). The Humber River is present at the southern end of the western portion of the study area. The river has visible vegetation alongside the watercourse. Wellington Street to Faris Avenue, Faris Avenue, and Kinsley Street are all now present in their present alignments. King Road at Concession Road 10 is aligned in a northeast and southwest orientation to the east and west of Concession Road 10. The 1965 topographic mapping illustrates little development in the study area west of Concession Road 10 (Figure 6). Residential development within Nobleton has expanded as well as a series of residential properties, south of King Road to the east of Concession Road 10. King Road and Highway 27 are depicted as two lane hard surface, all weather roads. Concession Road 10 is illustrated as a loose surface, all weather road of less than two lanes. Concession Road 11 is also depicted as a loose surface, all weather road of less than two lanes directly south of King Road, further south it changes to a loose surface, dry weather roadway. The 1994 topographic map (Figure 7) depicts Nobleton expanding westwards almost to Concession Road 10. The roads within the study area are now all depicted in their present alignments. A community centre and arena are illustrated southeast of the King Road and Highway 27 intersection. An auto wrecker is north



of King Road roughly equidistant from Highway 27 and Concession Road 10. The overall project study area remained agricultural in nature into the late-twentieth century.



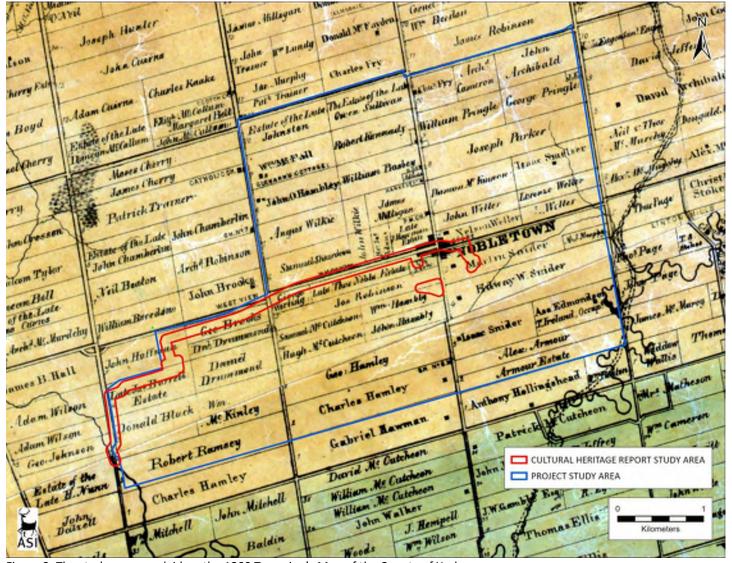


Figure 2: The study area overlaid on the 1860 Tremaine's Map of the County of York

Base Map: (Tremaine 1860)



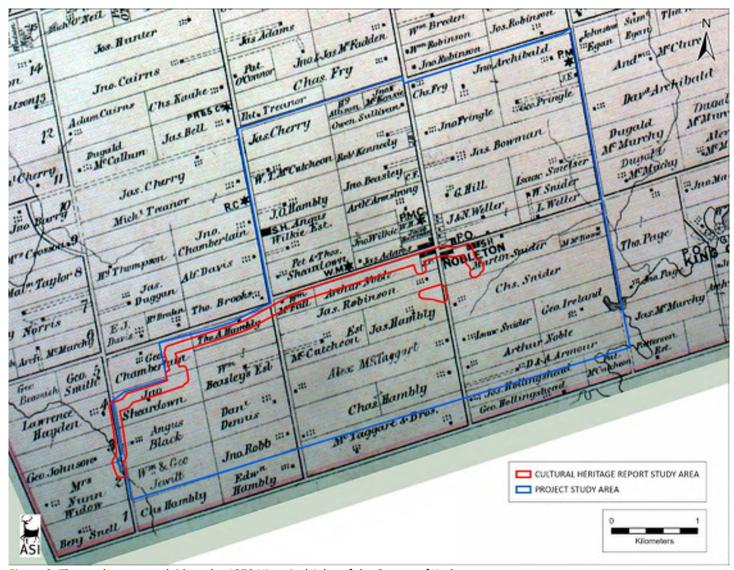


Figure 3: The study area overlaid on the 1878 Historical Atlas of the County of York

Base Map: (Miles & Co. 1878)



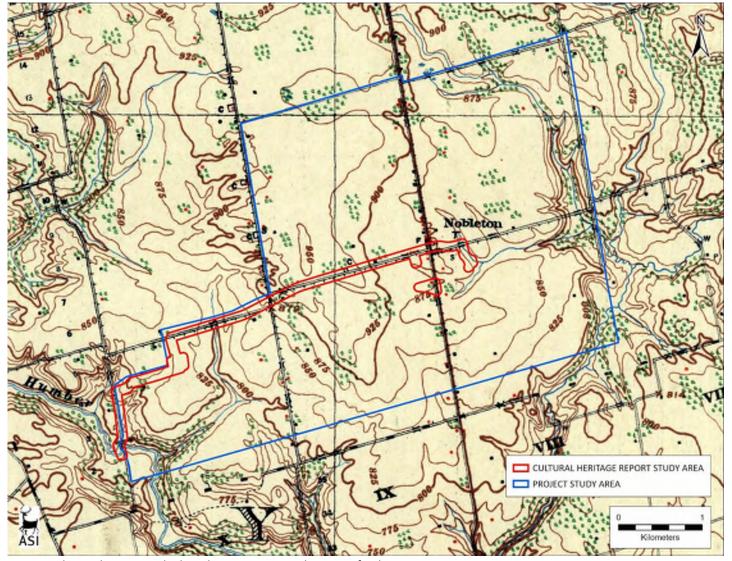


Figure 4: The study area overlaid on the 1914 topographic map of Bolton

Base Map: Bolton Sheet No. 59 (Department of Militia and Defence 1914)



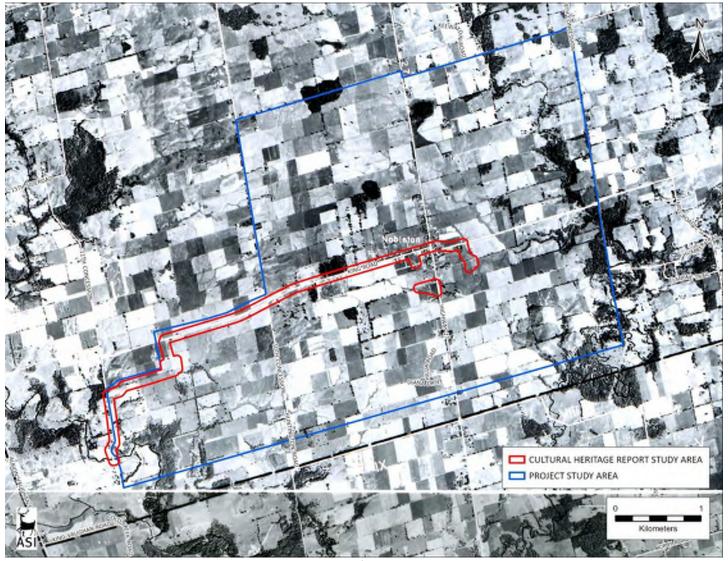


Figure 5: The study area overlaid on the 1954 aerial photograph of Nobleton

Base Map: Plate 438.793 (Hunting Survey Corporation Limited 1954)



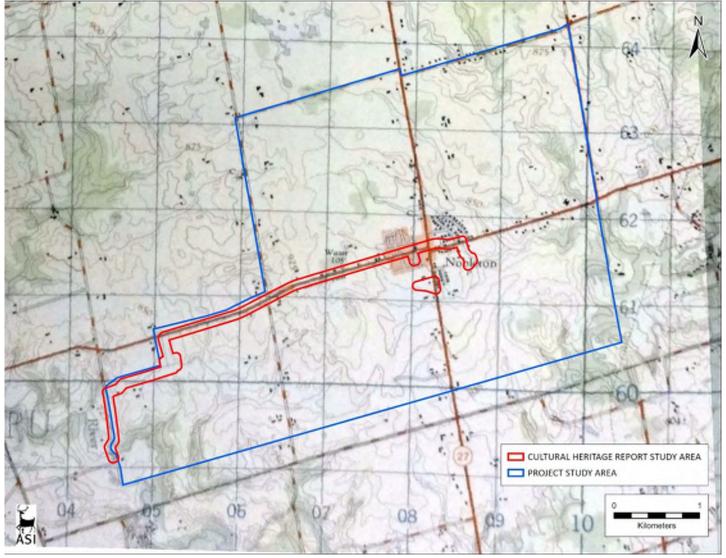


Figure 6: The study area overlaid on the 1965 topographic map of Bolton East

Base Map: Bolton East Sheet 30M/13E (Department of Mines and Technical Surveys 1965)



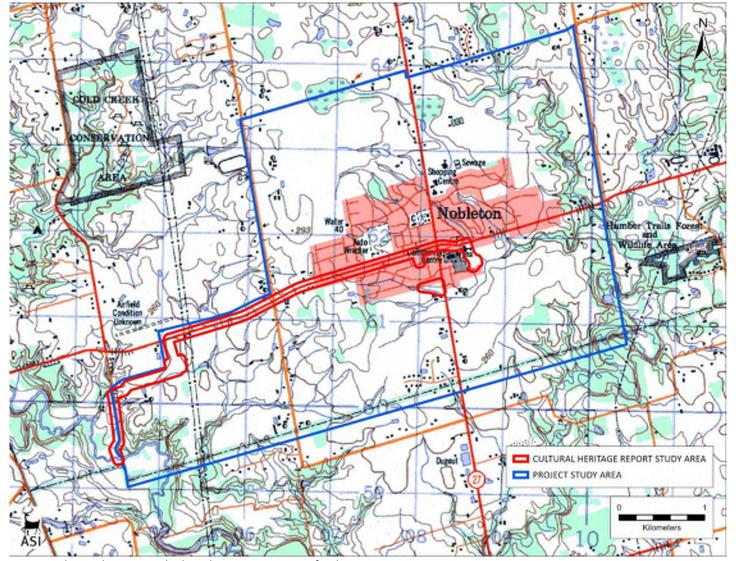


Figure 7: The study area overlaid on the 1994 NTS map of Bolton

Base Map: Bolton Sheet 30M/13 (Department of Energy, Mines and Resources 1994)



4.0 EXISTING CONDITIONS

4.1 Description of Field Review

A field review of the CH study area was undertaken by Kirstyn Allam of ASI, on 5 May 2021 to document the existing conditions of the study area from the existing rights-of-way. The existing conditions of the CH study area are described below and captured in Plate 1 to Plate 13.

The CH study area is in the community of Nobleton and is comprised of two areas. The first is the location of Well Site H, which is located at 12860 Highway 27. The second and larger study area consists of the remaining project components described in Section 1.2, and extends generally from the Janet Avenue SPS, located at 66 Janet Avenue, along King Road, to the Nobleton WRRF and Concession 11. The study area travels northwards from the Janet Avenue SPS to connect to King Road, travels west from Elizabeth Drive to approximately 709 m east of Concession Road 11, it then travels southwards before travelling westwards to Concession Road 11. At Concession Road 11, the study area then travels southwards to meet with the Humber River.

The Well Site H property at 12860 Highway 27 includes the pumphouse and treatment building (Plate 1 and Plate 2). The property is surrounded by residential properties and a farm to the southeast along with a naturalized area along a tributary of King Creek. The tributary of King Creek flows from the northwest to southeast through the study area.

The eastern portion of the study area begins at the Janet Avenue SPS, located at 66 Janet Avenue (Plate 3). The Janet Avenue SPS includes the pumping station building. The surrounding area is the residential neighbourhood along Janet Avenue and the Nobleton Community Centre recreational fields. The study area travels northwards to King Road. A tributary of King Creek flows in a north-northwest to south-southeast orientation through the eastern portion of the study area.

The study area along King Road begins at Elizabeth Drive and continues along King Road for approximately 3.76 km to approximately 709 m east of Concession Road 11. King Road is an arterial roadway oriented in a general northeast-southwest alignment. King Road is paved and features two lanes of eastbound and westbound vehicular traffic. King Road is lined with mainly residential properties on both the north and south sides from Elizabeth Drive to Nobleview Drive. West of Nobleview Drive, King Road is lined with agricultural properties. Some commercial and civic properties line King Road within the Nobleton urban centre. In this area, King Road features sidewalks and boulevards on both the north and south sides, and concrete curbs. The study area also includes a portion of Old King Road, Wellington Street, and Faris Avenue. These streets are also mainly residential properties with Old King Road featuring some commercial and recreational properties.

Other arterial road intersecting the study area include Highway 27 and Concession Road 10, which are similarly paved and oriented in a general north-south alignment. Smaller residential roads intersect the study area and are also paved.

The western portion of the study area includes the Nobleton WRRF property. This property features an administration building, a process building, and aeration tanks and clarifiers. From the south end of the Nobleton WRRF property, the study area extends westwards to Concession Road 11. From Concession



Road 11 the study area travels for approximately 811 m southwards to the Humber River. Concession Road 11 is a hard surface dirt road within the study area with narrow gravel shoulders. A gate is located at the terminus of Concession Road 11. The study area extends down a trail to the Humber River.



Plate 1: View northwest towards the pumphouse and treatment building and the naturalized area around the property.





Plate 2: View west-northwest towards the pumphouse and treatment building.



Plate 3: View northeast to the Janet Avenue SPS.





Plate 4: Looking west along King Road at the eastern end of the study area.



Plate 5: Looking west-southwest along Old King Road.





Plate 6: View of the King Road and Highway 27 intersection, looking south-southwest.



Plate 7: Faris Avenue, looking west.





Plate 8: Looking northeast along King Road.



Plate 9: View west-southwest along King Road at Nobleview Drive.





Plate 10: View of the agricultural properties along King Road, looking southwest.



Plate 11: View of the Nobleton WRRF, looking south.





Plate 12: Looking south along Concession Road 11.



Plate 13: View of the trail south of the terminus of Concession Road 11, looking south.



4.2 Identification of Known and Potential Built Heritage Resources and Cultural Heritage Landscapes

Based on the review of available municipal, provincial, and federal data, and the results of public consultation, there are 22 previously identified BHRs and CHLs within the CH study area. These resources include: three properties designated under Part IV of the OHA, 18 properties listed on the *Cultural Heritage Property Inventory* (Township of King Heritage Committee 2008), and one Canadian Heritage River System. There are eight potential BHRs and CHLs identified during background research and field review. Based on the type of resources, their physical location, architectural style and/or function, some of these individual resources were combined into a larger CHL, resulting in four BHRs and nine CHLs identified within the CH study area. A detailed inventory of known and potential BHRs and CHLs within the study area is presented in Table 1. See Figure 8 - Figure 11 for mapping showing the location of identified BHRs and CHLs within the study area. See Appendix A for the results of the desktop assessment conducted for the overall project study area.

The properties at 12800 Highway 27, 13046 Highway 27, 5885 King Road, 6260 King Road, and 6610 King Road are listed on the *Cultural Heritage Property Inventory* (Township of King Heritage Committee 2008), however, field survey confirmed that these structures are no longer extant and therefore the properties are not included in this assessment. The *Cultural Heritage Property Inventory* indicates that Wesleyan Methodist Cemetery is located at 6260 King Road, background research and fieldwork revealed that this to be an error and in fact is the cemetery identified at 6400 King Road. Municipal staff were contacted regarding these properties; however, a response was outstanding at the time of report production.



Table 1: Inventory of Known and Potential Built Heritage Resources and Cultural Heritage Landscapes within the Study Area

Feature	Type of Property	Address or Location	Heritage Status and	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
BHR 1	Residence	12855 Highway 27	Recognition Potential BHR — Identified during background research and field review	The residence is located east of Highway 27 and south of Parkview Avenue. The potential heritage attributes include the one-and-half storey Arts and Crafts red brick residence. The house features an asymmetrical front (western) elevation and L-shaped footprint. The 1954 aerial photography (Figure 5) depicts a residence in the location of the extant house. This property has the potential to retain historical, design, and contextual value as a twentieth-century residence within the community of Nobleton in the Township of King.	Plate 14: View east towards the residence at 12855 Highway 27.
BHR 2	Residence	12863 Highway 27	Potential BHR — Identified during background research and field review	The residence is located east of Highway 27 and south of Parkview Avenue. The potential heritage attributes include single-storey red brick bungalow. The house features a symmetrical front (western) elevation with a central door and large windows on either side and a hipped roof with small gable end above the front door. The 1954 aerial photography (Figure 5) depicts a residence in the location of the extant house. This property has the potential to retain historical, design, and contextual value as a twentieth-century residence within the community of Nobleton in the Township of King.	Plate 15: View northeast towards the residence at 12863 Highway 27.



Feature ID	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
BHR 3	Residence	9 Ellis Avenue	Known BHR – Listed on the Cultural Heritage Property Inventory	The residence is located southwest of the Ellis Avenue and Highway 27 intersection. The known heritage attributes include the one-and-a-half storey residence with a gable roof and centre gable along the eastern elevation. The residence also features a western addition. The residence was obscured from the right-of-way by fencing and vegetation. The 1914 topographic map (Figure 4) depicts a brick or stone residence in the vicinity of the extant house. This property is listed on the <i>Cultural Heritage Property Inventory</i> for its potential to retain cultural heritage value but has not been formally evaluated against the criteria outlined in <i>Ontario Regulation 9/06</i> . The property has potential to meet design and historical value as a late-nineteenth century residence within the community of Nobleton in the Township of King.	Plate 16:. View west towards the residence at 9 Ellis Avenue.
BHR 4	Residence	29 Faris Avenue	Potential BHR – Identified during background research and field review	The residence is located south of Faris Avenue, roughly equidistant from Wellington Street and Kinsley Street. The potential heritage attributes include the two-storey residence with gable roof, centre gable, and two smaller gables to the east and west. The 1954 aerial photography (Figure 5) depicts a residence in the location of the extant house. This property has the potential to historical, design, and contextual value as a twentieth-century residence within the community of Nobleton in the Township of King.	Plate 17: View southwest towards the residence at 29 Faris Avenue.



Feature ID	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
CHL 1	Farmscape	12805 Highway 27	Known CHL – Listed on the Cultural Heritage Property Inventory	The farmscape is located east of the Highway 27 and Oliver Emerson Avenue intersection. The known heritage attributes include the one-and-a-half storey red brick residence with a gable roof, and T-shaped footprint. The property also features barns, outbuildings, long tree-line driveway, a pond, and agricultural fields. The 1860 map (Figure 2) depicts a residence in the location of the extant house. This farmscape is listed on the <i>Cultural Heritage Property Inventory</i> for its potential to retain cultural heritage value but has not been formally evaluated against the criteria outlined in <i>Ontario Regulation 9/06</i> . The property has potential to meet historical and contextual value as a late-nineteenth century farmscape in the Township of King.	Plate 18: View southeast towards the farmscape at 12805 Highway 27
CHL 2	Settlement Centre	Nobleton Settlement Centre	Potential CHL — Identified during background research and field review	This landscape is located in the historic downtown Nobleton and is generally focused around the King Road and Highway 27 intersection. The landscape extends westward to the west of Wellington Street, and includes many of the properties along Old King Road. The potential heritage attributes include the variety of nineteenth-century architectural styles, the mixture of residential and commercial, and the early- to mid-twentieth century recreational properties. The 1860 map (Figure 2) depicts the historic core of Nobleton. This settlement centre has the potential to retain historical and contextual value as a nineteenth-century settlement centre in the Township of King and the community of Nobleton. Within this CHL are the following properties, protected under the OHA: 7 Old King Road, listed on the Cultural Heritage Property Inventory 12 Old King Road, listed on the Cultural Heritage Property Inventory 15-19 Old King Road, designated under Part IV of the OHA (By-law # 2007-60). This property is directly adjacent to the Janet Avenue SPS and contains	

a recreational complex. The Nobleton Community Hall is a Depression era institutional building and is located at 19 Old King Road, approximately

350 northwest of the Janet Avenue SPS parcel. For additional information,

please see the by-law available at:



Plate 19: View southeast towards properties located along Old King Road and Highway

27 in the Nobleton Settlement centre.

		Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
			https://www.heritagetrust.on.ca/en/oha/details?id=3954&backlinkslug=search-results&fields%5Blocation%5D=51%2C196	
			- 24 Old King Road, listed on the Cultural Heritage Property Inventory	
			- 31 Old King Road, listed on the Cultural Heritage Property Inventory	
			- 37 Old King Road, listed on the Cultural Heritage Property Inventory	
			- 12972 Highway 27, listed on the Cultural Heritage Property Inventory	
			- 12978 Highway 27, listed on the Cultural Heritage Property Inventory	
			- 13046 Highway 27, listed on the Cultural Heritage Property Inventory	
			- 13053 Highway 27, listed on the Cultural Heritage Property Inventory	
			- 6012 King Road, designated under Part IV of the OHA (By-law # 82-144). For additional information, please see the by-law available at: https://www.beritagetrust.on.ca/en/oba/details2id=39378.backlinkslug=se	
			-	
Cemetery	6400 King Road	Known CHL – Designated Part IV (By-law # 2009-109)	The cemetery is located north of King Road and east of Nobleview Drive. The known heritage attributes include the variety of styles of the original grave markers and monuments, the placement of the markers and monuments, the grassy landscape, and the mature trees (Township of King 2009). The 1914 map (Figure 4) depicts a cemetery in the location of the extant cemetery. The property has historical and contextual value as a mid- to late-nineteenth-century cemetery through its connection to many early families of the village of Nobleton, and its influence on the continued rural character of the immediate landscape. For additional information, please see the by-law available at: https://www.heritagetrust.on.ca/en/oha/details?id=3991&backlinkslug=search-results&fields%5Blocation%5D=51%2C196	Plate 20: View north towards the cemetery at 6400 King Road.
	Cemetery	Cemetery 6400 King Road	Designated Part IV (By-	- 31 Old King Road, listed on the Cultural Heritage Property Inventory - 37 Old King Road, listed on the Cultural Heritage Property Inventory - 12978 Highway 27, listed on the Cultural Heritage Property Inventory - 12978 Highway 27, listed on the Cultural Heritage Property Inventory - 13046 Highway 27, listed on the Cultural Heritage Property Inventory - 13053 Highway 27, listed on the Cultural Heritage Property Inventory - 6012 King Road, designated under Part IV of the OHA (By-law # 82-144) For additional information, please see the by-law available at: - https://www.heritagetrust.on.ca/en/oha/details?id=3997&backlinkslug=search-results&fields%58blocation%50=51%2C196 - 6029 King Road, listed on the Cultural Heritage Property Inventory - 6050 King Road, listed on the Cultural Heritage Property Inventory - 6064 King Road, listed on the Cultural Heritage Property Inventory - 6064 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road, listed on the Cultural Heritage Property Inventory - 6076 King Road I



Feature ID	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
CHL 4	Farmscape	6770 King Road	Known CHL – Listed on the Cultural Heritage Property Inventory	The farmscape is located at the northwest corner of King Road and Concession Road 10. The known heritage attributes include the residence which was obscured from the public right-of-way by vegetation, the barns and outbuildings, and agricultural fields. The 1914 map (Figure 4) depicts a brick or stone structure in the vicinity of the extant house. This farmscape is listed on the Cultural Heritage Property Inventory for its potential to retain cultural heritage value but has not been formally evaluated against the criteria outlined in Ontario Regulation 9/06. The property has potential to meet historical and contextual value as a late-nineteenth century farmscape in the Township of King.	Plate 21: Aerial view of the farmscape at 6770 King Road (Google Earth 2018).
CHL 5	Former Farmscape	6845 King Road	Potential CHL — Identified during background research and field review	The former farmscape is located south of King Road west of Concession Road 10. The potential heritage attributes include the one-and-a-half storey residence with a gable roof and dormer window on the western elevation, the driveway, and mature trees. The agricultural fields surrounding the property may have been formerly associated with the property. The 1914 map (Figure 4) depicts a wooden structure in the location of the extant house. This property has the potential to retain historical and contextual value as a twentieth-century farmscape in the Township of King.	Plate 22: View southeast towards the residence at 6845 King Road.



Feature ID	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
CHL 6	Farmscape	7300 King Road	Known CHL – Listed on the Cultural Heritage Property Inventory	The farmscape is located at the northeast corner of the intersection of King Road and Concession Road 11. The known heritage attributes include the one-and-a-half storey red brick house with a gable roof and centre gable, and T-shaped footprint. The property also features barns, long driveway, and agricultural fields. The 1878 map (Figure 3) depicts a structure in the vicinity of the extant house. This farmscape is listed on the <i>Cultural Heritage Property Inventory</i> for its potential to retain cultural heritage value but has not been formally evaluated against the criteria outlined in <i>Ontario Regulation 9/06</i> . The property has potential to meet historical, design, and contextual value as a late-nineteenth century farmscape in the Township of King.	Plate 23: View northwest towards the farmscape at 7300 King Road.
CHL 7	Farmscape	7305 King Road	Known CHL – Listed on the Cultural Heritage Property Inventory	The farmscape is located south of King Road and east of Concession Road 11. The known heritage attributes include the one-and-a-half storey frame residence, barns, outbuildings, mature trees, and agricultural fields. The 1878 map (Figure 3) depicts a structure in the vicinity of the extant house. This farmscape is listed on the Cultural Heritage Property Inventory for its potential to retain cultural heritage value but has not been formally evaluated against the criteria outlined in Ontario Regulation 9/06. The property has potential to meet historical, design, and contextual value as a late-nineteenth century farmscape in the Township of King.	Plate 24: View west-southwest towards the farmscape at 7305 King Road.



Feature ID	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
CHL 8	Farmscape	12705 Concession Road 11	Potential CHL — Identified during background research and field review	The farmscape is located east of Concession Road 11 south of King Road. The potential heritage attributes include the one-and-a-half storey frame residence, barns, outbuildings, mature trees, agricultural fields, and the Humber River and its environs. The 1954 aerial photography (Figure 5) depicts a residence in the location of the extant house. This property has the potential to retain historical and contextual value as a twentieth-century farmscape in the Township of King.	Plate 25: View southeast towards the farmscape at 12705 Concession Road 11.
CHL 9	Waterway	Humber River	Known CHL – Canadian Heritage River System	The Humber River is located south of Concession Road 11 in a general eastwest orientation. The known heritage attributes include its historical and contextual value as a significant waterway. Information on the designation of the Humber River as a Canadian Heritage River System, including its cultural and recreational values, is outlined on the Canadian Heritage Rivers System Website. The 1860 map (Figure 2) depicts the Humber River in a more north-south orientation. By the 1914 map (Figure 4) the orientation is more closely aligned with its present orientation. The Humber River is a Canadian Heritage River System with known cultural heritage value due to its historical and contextual value as a significant waterway, but the river has not been formally evaluated against the criteria outlined in Ontario Regulation 9/06. The Humber River has potential to meet historical and contextual value as a significant waterway in Ontario.	Plate 26: Aerial view of the Humber River (Google Earth 2018).



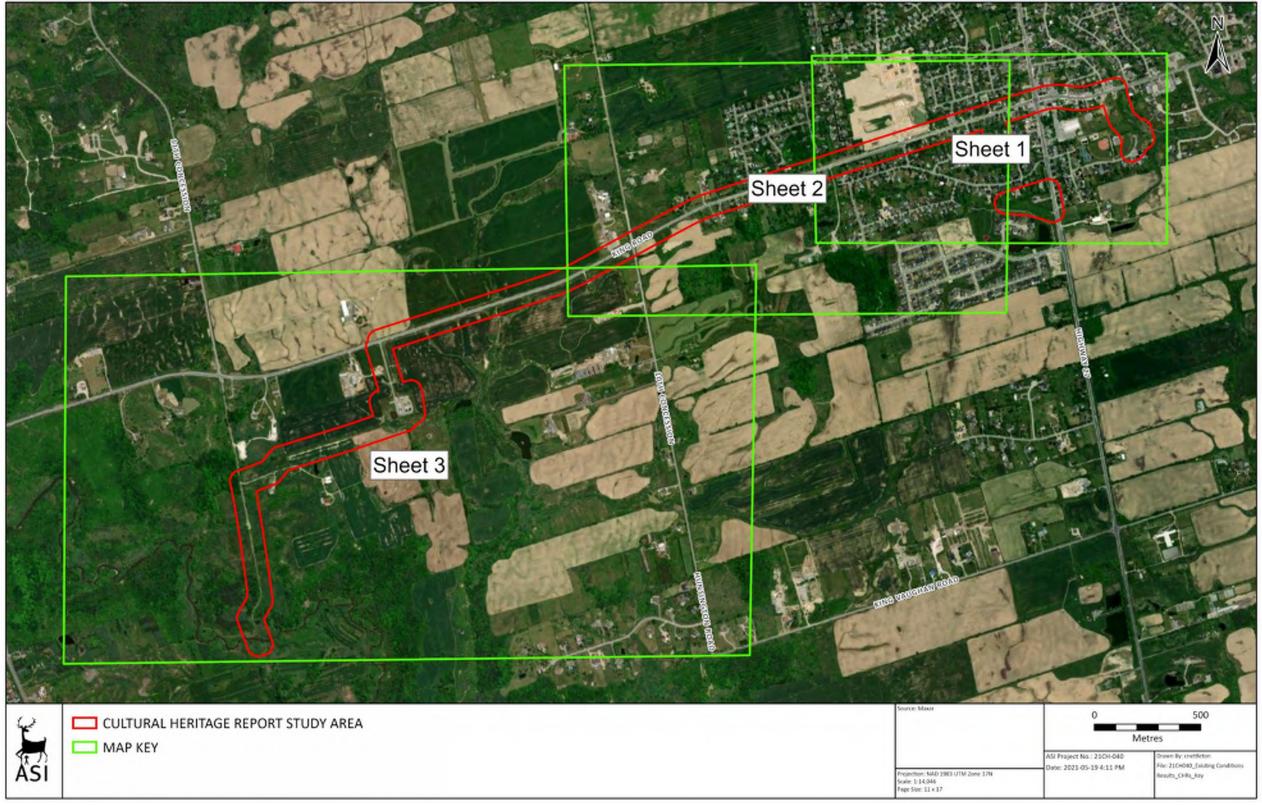


Figure 8: Location of Identified Built Heritage Resources and Cultural Heritage Landscapes in the Study Area (Key Plan)



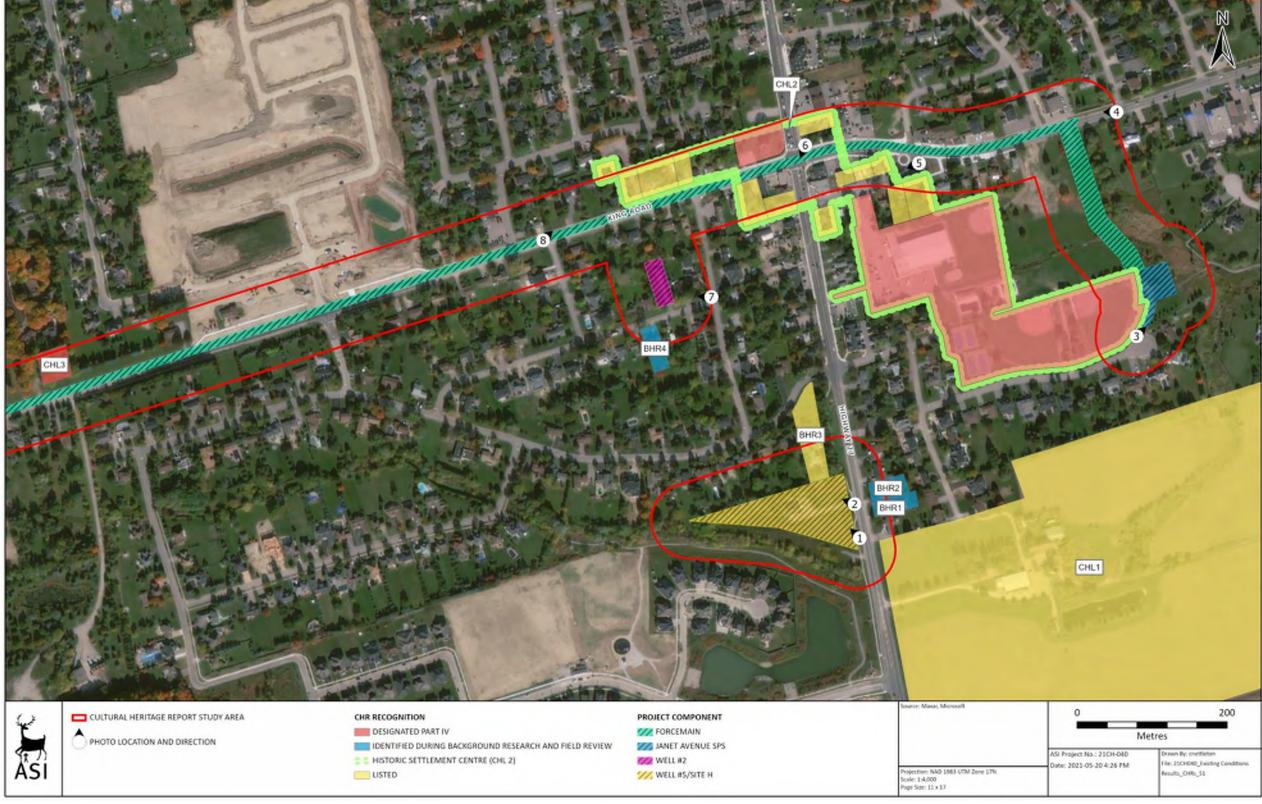


Figure 9: Location of Identified Built Heritage Resources and Cultural Heritage Landscapes in the Study Area (Sheet 1)



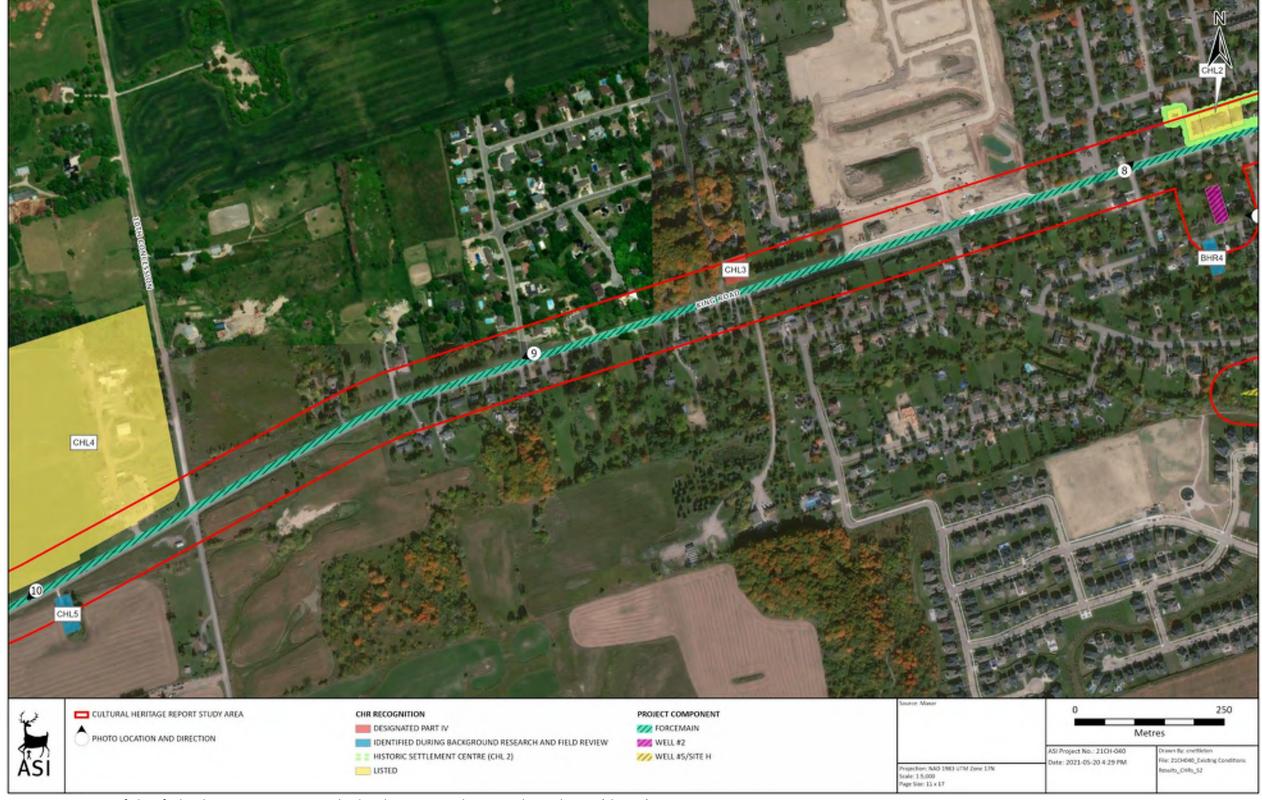


Figure 10: Location of Identified Built Heritage Resources and Cultural Heritage Landscapes in the Study Area (Sheet 2)



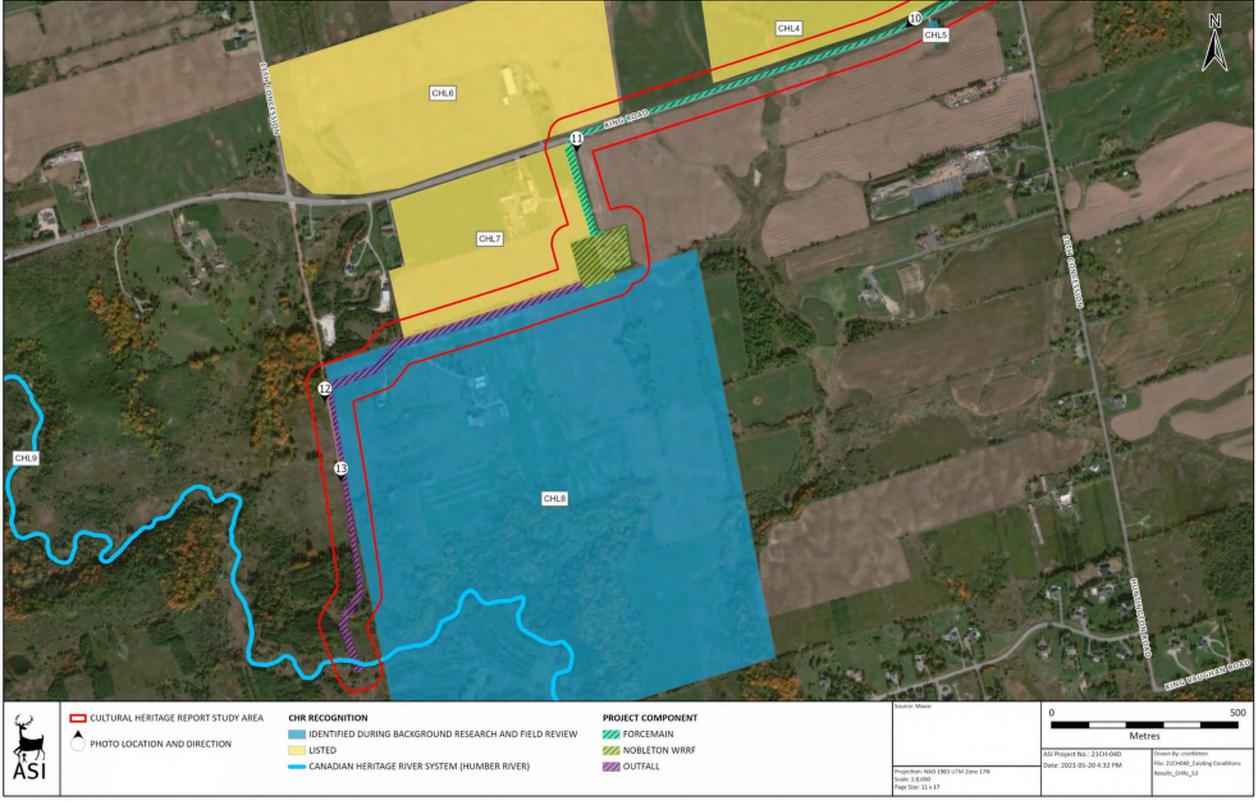


Figure 11: Location of Identified Built Heritage Resources and Cultural Heritage Landscapes in the Study Area (Sheet 3)



5.0 PRELIMINARY IMPACT ASSESSMENT

5.1 Description of Proposed Undertaking

The proposed undertaking for the Nobleton Water and Wastewater Servicing Municipal Class EA study area consists of increasing the capacity of current water and wastewater system to meet the requirements to support growth in the community of Nobleton. According to the Phase 3 Alternative Design Concepts Technical Memo No. 3, the proposed upgrades will serve to "supplement increased water supply to offset storage deficit, and increase capacity of existing Well No. 2 in combination with new production well at Site H; and expand and upgrade the existing Janet Avenue Pumping Station and Nobleton Water Resource Recovery Facility" (Black & Veatch 2021:1–1).

The following preferred solutions for water and wastewater servicing were identified and documented (Black & Veatch 2021).

Water service upgrades:

- Well 2: The recommended solution is to do nothing because the existing infrastructure is suitable for the needed capacity issues.
- Well 5/Site H: the addition of a new well and second treatment drain within the existing site/parcel.²

Wastewater servicing upgrades/expansions (Figure 12 and Figure 13):

- Construction of an offline storage tank, requiring excavation of a footprint measuring approximately 15.5 m x 12 m x11 m deep, at the Janet Avenue SPS, within the existing site/parcel;
- Expansion of the process building at the Nobleton WRRF to allow for additional sludge thickening, tertiary filters, and upgrades to the existing UV system at the existing WRRF within the existing parcel. Expansion of the road around the Nobleton WRRF process building will be required but will be confined to the existing parcel.
- Twinning of the existing forcemain and effluent outfall is not required.

² Drawing showing the location of the proposed work within the Well 5/Site H parcel were requested but not available at the time of report writing. The as-built drawings for Well 5/Site H are included in Appendix B.



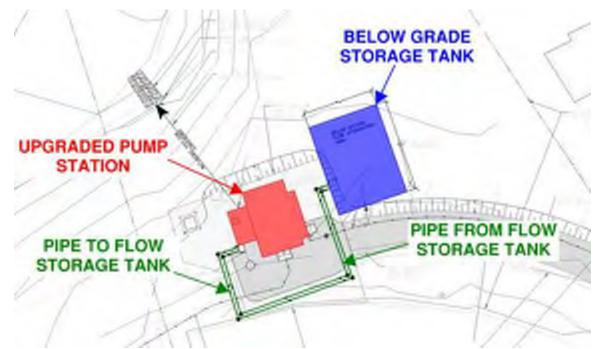


Figure 12: Proposed upgrades at the Janet Avenue SPS

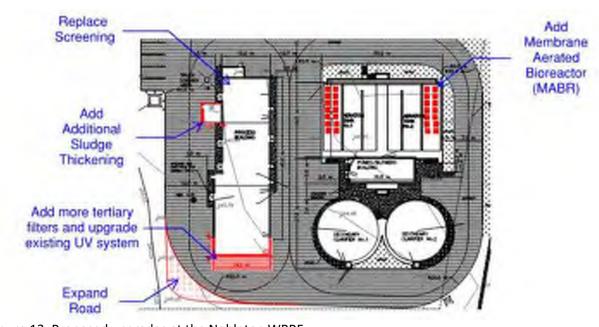


Figure 13: Proposed upgrades at the Nobleton WRRF

5.2 Analysis of Potential Impacts

Table 2 outlines the potential direct and indirect impacts on all identified BHRs and CHLs within the CH study area.



Feature ID	Location/Name	Project Component	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
BHR 1	12855 Highway 27	Well 5/Site H	No direct impacts are anticipated as the proposed work will not be taking place on the property at 12855 Highway 27. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.
BHR 2	12863 Highway 27	Well 5/Site H	No direct impacts are anticipated as the proposed work will not be taking place on the property at 12863 Highway 27. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.



Feature ID	Location/Name	Project Component	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
BHR 3	9 Ellis Avenue	Well 5/Site H	No direct impacts are anticipated as the proposed work will not be taking place on the property at 9 Ellis Avenue. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.
BHR 4	29 Faris Avenue	Well 2	As the recommended solution is to do nothing, no direct or indirect impacts are anticipated to the property at 29 Faris Avenue.	No further work required.
CHL 1	12805 Highway 27	Well 5/Site H	No direct impacts are anticipated as the proposed work will not be taking place on the property at 12805 Highway 27. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.



Feature ID	Location/Name	Project Component	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
CHL 2	Nobleton Settlement Centre	Janet Ave SPS Forcemain	No direct impacts are anticipated as the proposed work will not be taking place on the properties within this CHL.	No further work required.
			Within this CHL, the property at 19 Old King Road (Designated under Part IV of the <i>Ontario Heritage Act</i>) is the only property adjacent to work taking place within the Janet Ave SPS property. The property at 19 Old King Road is a large parcel containing a community centre and associated park/recreational land. The heritage structure on this property is located at the opposite end to the Janet Ave SPS, approximately 350 m to the northwest. Therefore, no indirect adverse impacts are anticipated as the heritage structures and attributes associated with the properties within this CHL are located at a distance greater than 50 m from the proposed work. The work will not result in any indirect visual impacts to the setting as an SPS facility already exists on the property.	
CHL 3	6400 King Road	Forcemain	As the recommended solution does not require twinning of the forcemain and outfall, no direct or indirect impacts are anticipated to the property at 6400 King Road.	No further work required.
CHL 4	6770 King Road	Forcemain	As the recommended solution does not require twinning of the forcemain and outfall, no direct or indirect impacts are anticipated to the property at 6770 King Road.	No further work required.



Feature ID	Location/Name	Project Component	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
CHL 5	6845 King Road	Forcemain	As the recommended solution does not require twinning of the forcemain and outfall, no direct or indirect impacts are anticipated to the property at 6845 King Road.	No further work required.
CHL 6	7300 King Road	Forcemain	As the recommended solution does not require twinning of the forcemain and outfall, no direct or indirect impacts are anticipated to the property at 7300 King Road.	No further work required.
CHL 7	7305 King Road	Nobleton WRRF	No direct impacts are anticipated as the proposed work will not be taking place on the properties within the property at 7305 King Road. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.
CHL 8	12705 Concession Road 11	Nobleton WRRF	No direct impacts are anticipated as the proposed work will not be taking place on the properties within the property at 12705 Concession Road 11. Indirect adverse impacts due to construction related vibration are possible as the structure sits within 50 m from the proposed work. These impacts are expected to be limited and temporary. No other indirect impacts are anticipated.	To ensure this property is not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this advance monitoring assessment conclude that any structures or landscape features on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.



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Feature	Location/Name	Project	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
ID		Component		
CHL 9	Humber River	Outfall	As the recommended solution does not require twinning of the forcemain and outfall, no direct or indirect impacts are anticipated to Humber River.	No further work required.



No direct impacts to identified cultural heritage resources are anticipated as a result of the proposed water and wastewater servicing upgrades/expansions.

Indirect impacts to BHRs 1-3, and CHLs 1, 7, and 8 may occur as a result of vibrations related to construction activity taking place within 50 m of the properties. To ensure that the structures on the properties at 12855 Highway 27 (BHR 1), 12863 Highway 27 (BHR 2), 9 Ellis Avenue (BHR 3), 12805 Highway 27 (CHL 1), 7305 King Road (CHL 7), and 12705 Concession Road 11 (CHL 8) are not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this monitoring assessment determine that the structures or landscape features within the BHRs and CHLs will be subject to adverse impacts due to vibration, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.

6.0 RESULTS AND MITIGATION RECOMMENDATIONS

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with an urban land use history within the community of Nobleton and a rural land use history west of the community dating back to the early nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are 22 previously identified features of cultural heritage value within the Nobleton Water and Wastewater Servicing study area. An additional eight potential BHRs and CHLs which were identified during background research and field review. Based on the type of resources, their physical location, architectural style and/or function, some of these individual resources were combined into a larger cultural heritage landscape, resulting in four BHRs and nine CHLs identified within the study area.

6.1 Key Findings

- A total of 49 previously identified BHRs and CHLs were identified within the overall study area (see Appendix A).
- A total of one known BHR and six CHLs were identified within the CH study area. An additional three potential BHRs and three potential CHLs were identified within the CH study area.
- Of the BHRs and CHLs identified within the CH study area there are: one property designated under Part IV of the OHA (CHL 3), five properties listed on the *Cultural Heritage Property Inventory* (BHR 3, CHL 1, CHL 4, CHL 6 -7), and one river is identified as a Canadian Heritage River System (CHL 9). Six resources were identified during background research and field review (BHR 1-2, BHR 4, CHL 2, CHL 5, CHL 8).
- Identified cultural heritage resources are historically, architecturally, and contextually associated
 with land use patterns in the community of Nobleton and surround areas and more specifically
 representative of the early settlement of small communities along King Road, a nineteenthcentury rural roadway.



Results of Preliminary Impact Assessment

- No direct impacts to any known or potential BHRs or CHLs are anticipated as a result of the proposed design concept.
- The proposed design concept is anticipated to result in indirect impacts to three built heritage resources and three cultural heritage landscapes: 12855 Highway 27 (BHR 1), 12863 Highway 27 (BHR 2), 9 Ellis Avenue (BHR 3), 12805 Highway 27 (CHL 1), 7305 King Road (CHL 7), and 12705 Concession Road 11 (CHL 8). No impacts to one built heritage resource and six cultural heritage landscapes: 29 Faris Avenue (BHR 4), Nobleton Settlement Centre (CHL 2), 6400 King Road (CHL 3), 6770 King Road (CHL 4), 6845 King Road (CHL 5), 7300 King Road (CHL 6), and Humber River (CHL 9).

6.2 Recommendations

Based on the results of the assessment, the following recommendations have been developed:

- 1. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to identified BHRs and CHLs. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified cultural heritage resources, etc.
- Indirect impacts to BHRs 1-3, and CHLs 1, 7, and 8 may occur as a result of vibrations related to construction activity taking place within 50 m of the properties. To ensure that the structures on the properties at 12855 Highway 27 (BHR 1), 12863 Highway 27 (BHR 2), 9 Ellis Avenue (BHR 3), 12805 Highway 27 (CHL 1), 7305 King Road (CHL 7), and 12705 Concession Road 11 (CHL 8) are not adversely impacted during construction, baseline vibration monitoring should be undertaken during detailed design. Should this vibration assessment determine that the structures or landscape features within the BHRs will be subject to adverse impacts due to vibration, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.
- 3. Should future work require an expansion of the study area then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential heritage resources.
- 4. The existing conditions and preliminary impact assessment report should be submitted to the Township of King and the MHSTCI for review and comment, and any other local heritage stakeholders that may have an interest in this project. The final report should be submitted to the Township of King for their records.



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Wiss, J.F.

1981 Construction Vibrations; State-of-the-Art. *Journal of Geotechnical Engineering* 107:167–181.

WSP

Township of King Official Plan Our King. https://www.king.ca/development-growth/planning-land-use/official-plan.

York Region

2019 York Region Official Plan, Office Consolidation, April 2019.

http://www.york.ca/wps/portal/yorkhome/yorkregion/yr/regionalofficialplan/theregionalofficialplan/!ut/p/a1/tVFbT8lwFP4tPvC49KzdpTzWqWwjDBNM3PZC6thYcTdmJeKvt4AvJuCCqX1oc05PvvNdUlpilDZ8J9Zcirbh1aFOnWXAJoHvTyGcW9QDBnMWYpcCnbroGaUozRrZyRII-36ZtY3MGzmCfdu quJNCvl-

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n.d. Built to Last. https://ww4.yorkmaps.ca/canada150/.



Appendix A: Desktop Collection Results for Project Study Area

Based on the review of available municipal, provincial, and federal data, and the results of public consultation, there are 49 previously identified BHRs and CHLs within the overall project study area. These resources include properties designated under Part IV of the OHA (Designated Part IV), listed on the *Cultural Heritage Property Inventory* (Listed) (Township of King Heritage Committee 2008), rivers identified as a Canadian Heritage River System, and properties identified by the Ontario Heritage Trust (OHT) as Places of Worship. These properties are listed below and their locations are mapped in Figure 14 to Figure 21:



There are also properties listed on the *Cultural Heritage Property Inventory* (Township of King Heritage Committee 2008) that are noted as being demolished. Field survey was not conducted for most of these properties. A review of recent aerial imagery and Google Streetview allowed for confirmation of this information. For this reason, these properties are not included in this assessment. These properties are listed below:

- 13535 Highway 27;
- 13425 Highway 27;
- 13104 Highway 27;
- 13085 Highway 27;
- 13066 Highway 27;
- 13062 Highway 27;
- 13056 Highway 27;
- 13046 Highway 27;
- 12800 Highway 27;
- 6770 King Road³;
- 6610 King Road;
- 6260 King Road; and,
- 5885 King Road.

³ This property was noted as demolished, however, as the residence on the property is obscured by vegetation, it could not be confirmed if the historic house is extant or not. The farmscape does remain.



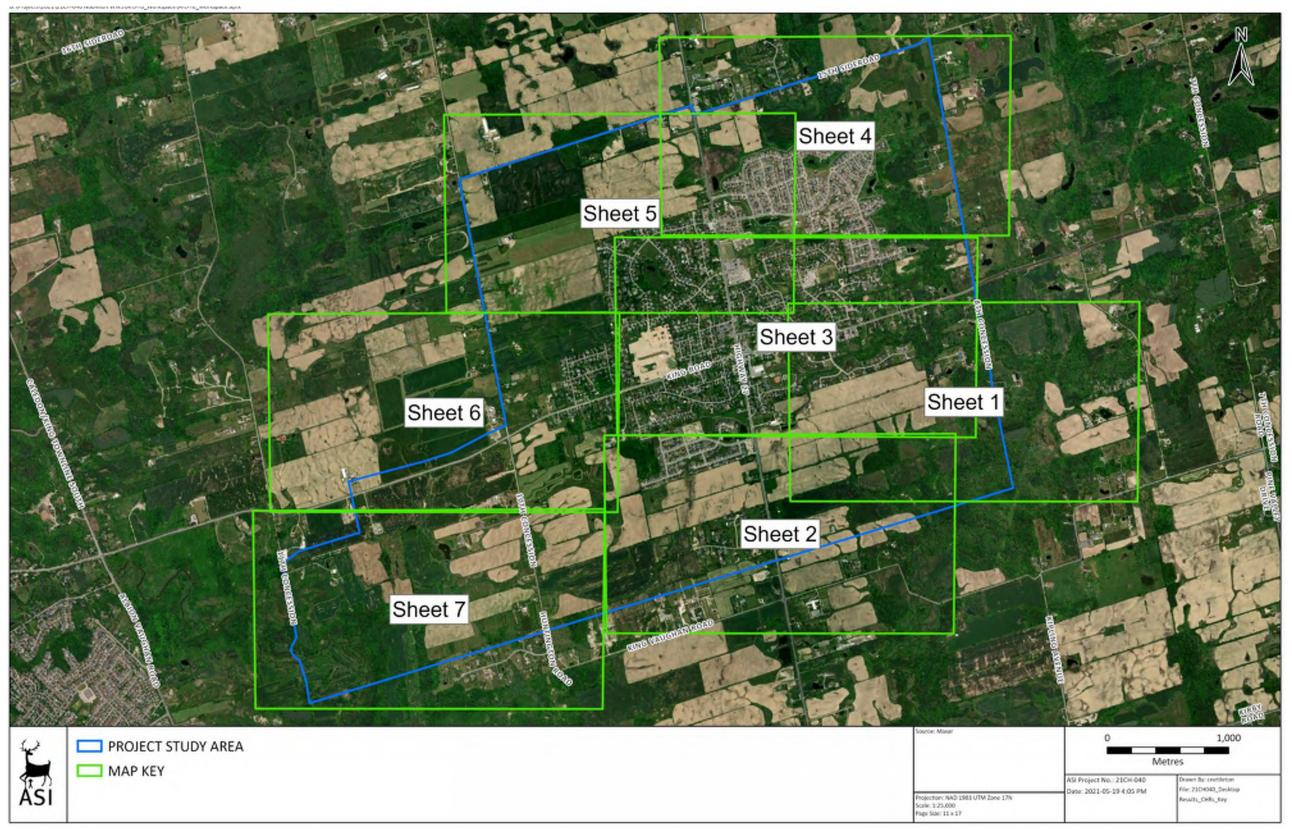


Figure 14: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Key Plan)



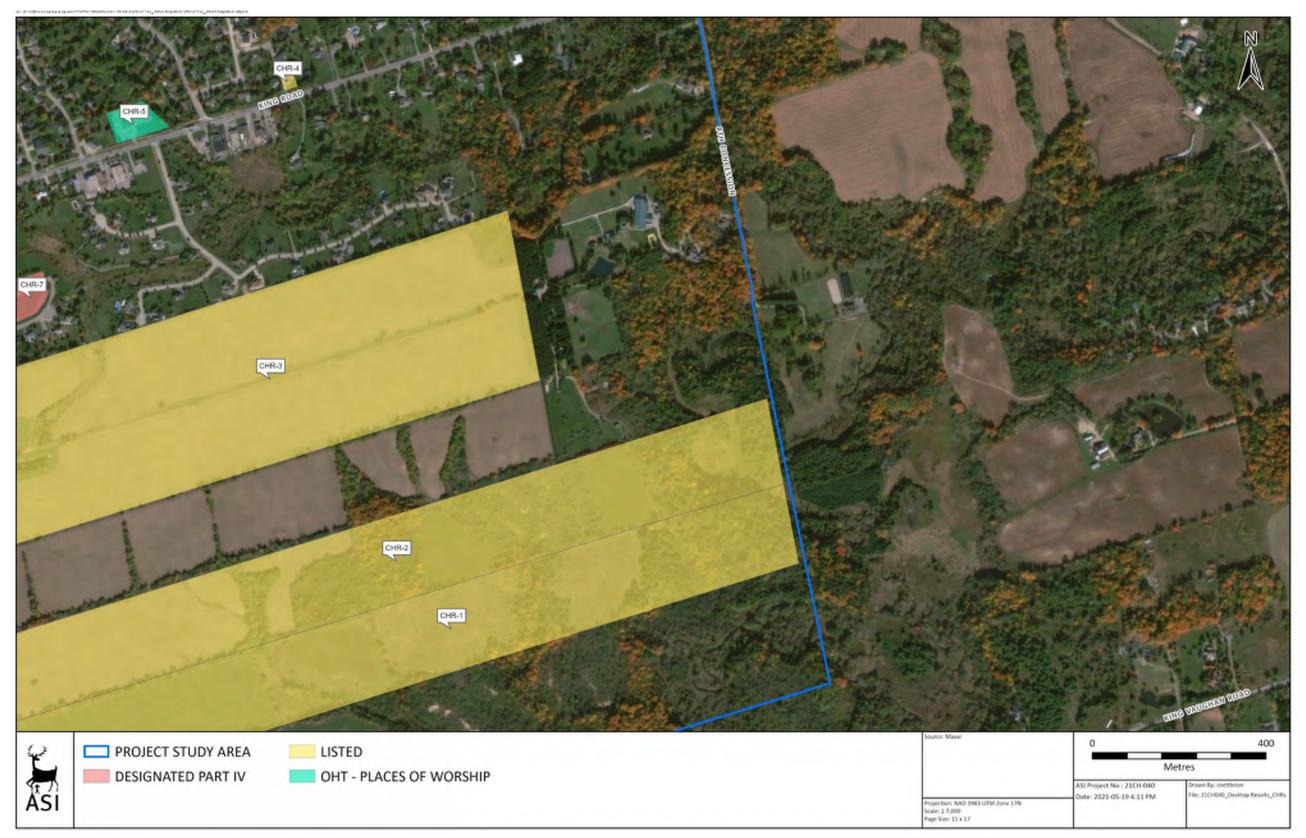


Figure 15: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 1)





Figure 16: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 2)



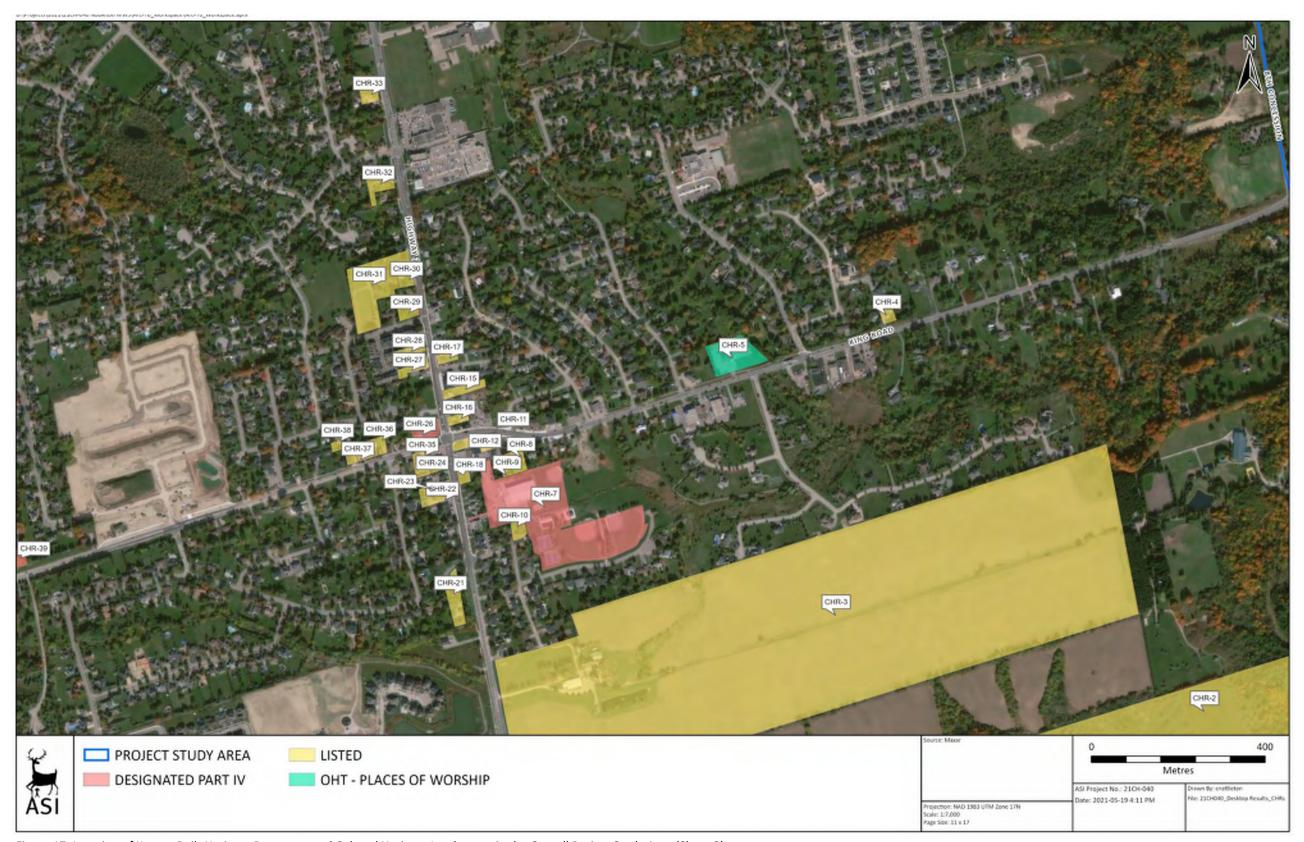


Figure 17: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 3)





Figure 18: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 4)





Figure 19: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 5)



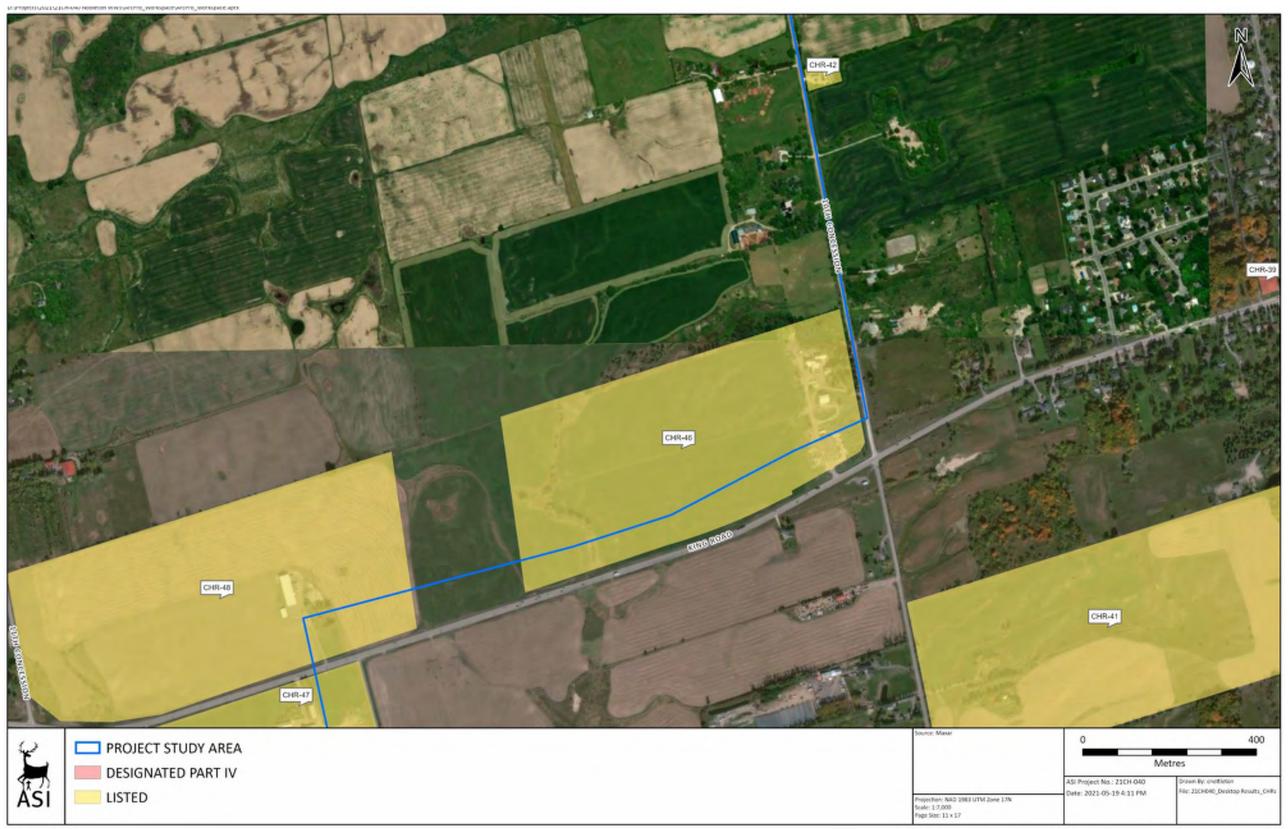


Figure 20: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 6)



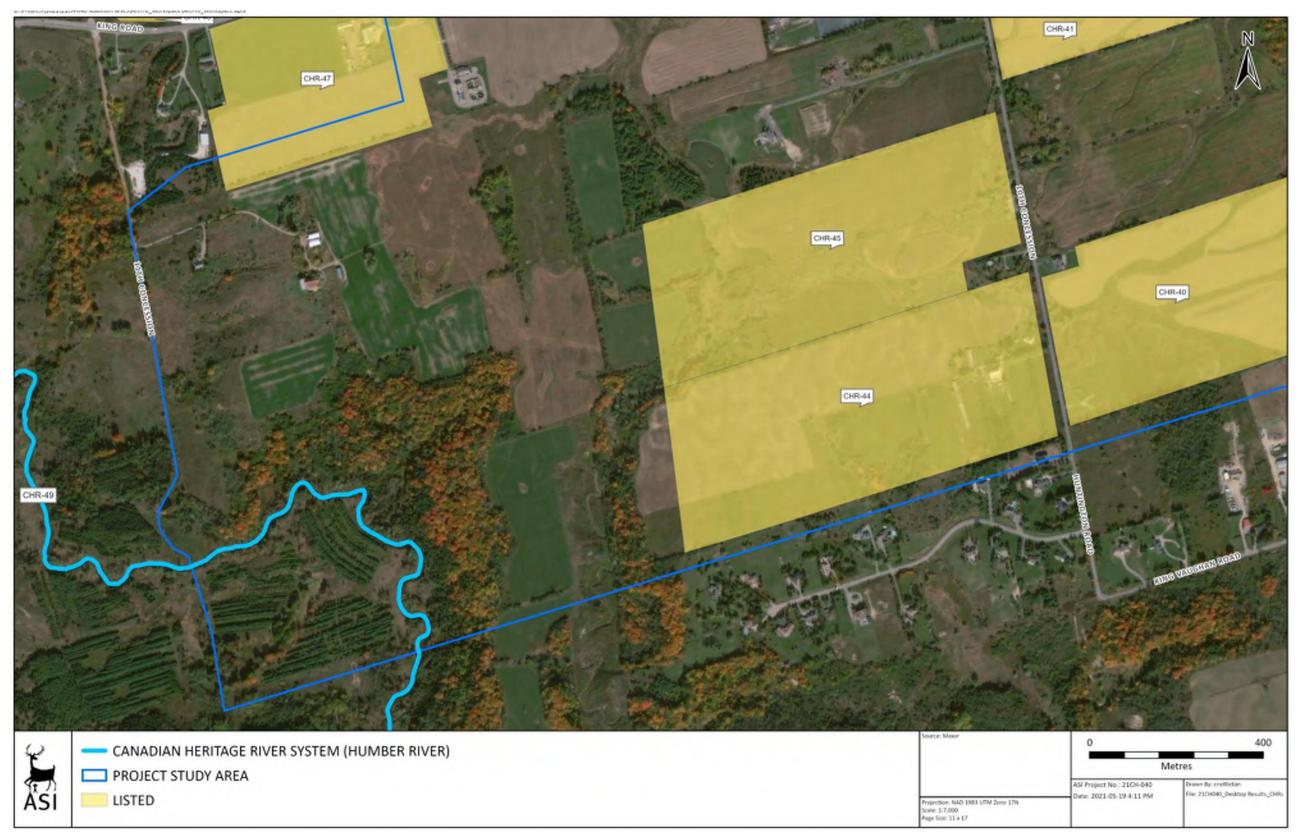


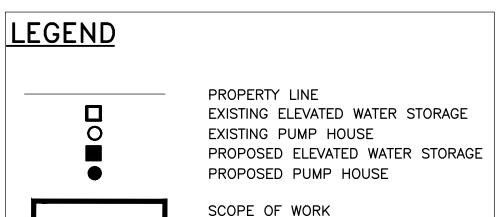
Figure 21: Location of Known Built Heritage Resources and Cultural Heritage Landscapes in the Overall Project Study Area (Sheet 7)

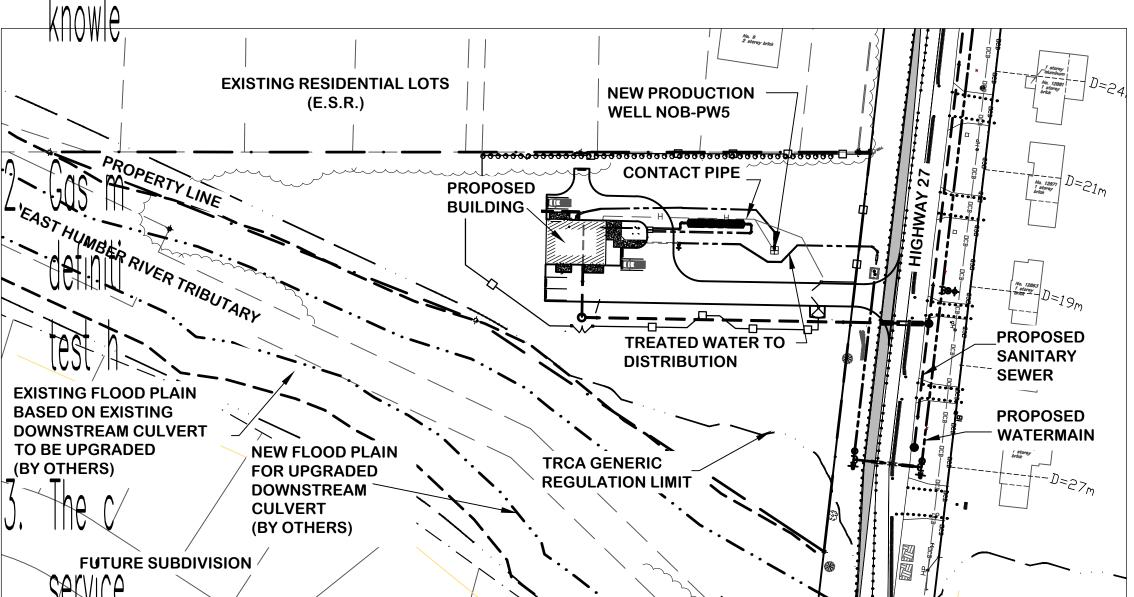


Appendix B: As Built Drawings









1 SITE / 1:1000

General Notes!

1. The doctions or positions of poles, lines, conduits, watermains, sewers and other underground utilities and structures are not necessarily shown on these drawings. When shown, the accuracy of the location of such utilities and structures are not guaranteed. Before starting any work, the contractor shall become fully dgeable of the locations of all such utilities and structures and shall assume all liability for damage to them.

ains are to be field located. Contact Ontario One call at 1—800—400—2255 at least 5 working days in advance. See "Third Party requirements" booklets for ons, requirements & contact information. Test holes are required to determine actual depth where infrastructure crosses gas plant. Depth of gas plant in ole is not indicative of gas plant depth at all locations. 0.300m vert. & 0.600 horz. clearance required at all crossings

A ontractor shall notify the project engineer as soon as possible if there are any discrepancies between the plan location and the actual location of existing for the project engineer as soon as possible if there are any discrepancies between the plan location and the actual location of existing for the project engineer as soon as possible if there are any discrepancies between the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location of existing for the plan location and the actual location and the actual location and plan location and the actual location and plan location and the actual location and plan location and plan

a√ from the engineer and the municipality. The contractor must notify all the affected property owners.

iveways, sidewalks, boulevards, culverts, hydro—poles, roadways, utilities, services, drains, trees, fences, guardrails, mailboxes, etc. and any iron bars, legal survey monument, areas disturbed or damaged by construction of this project shall be restored to equal or better condition by the contractor at their expense.

6. All cleared material is to be placed in an area set out by the region. No on site stock piling.

7. Geotechnical investigations performed by AMEC Earth & Environmental Ltd., 104 Crockford Blvd., Scarborough, Ontario, M1R 3C3. Nobleton Water Supply Project, Water System Upgrades, Nobleton, Ontario, Canada. project reference no. TT83016, Dated 11 June, 2008. And by Peto MacCallum Ltd. 165 Cartwright Avenue, Toronto, Ontario, M6A 1V5. Geotechnical Investigation Nobleton Pumphouse 5 Nobleton, Ontario. Ref No. 12TF017, Dated June 13, 2012.

8. All dimensions are in metres unless otherwise noted.

9. All connections on fittings requiring restraints and thrust blocks must be mechanically restrained to the approval of the engineer.

10. All buried, ferrous or metal appurtenances, fittings, mechanical joints, etc. installed under this project shall have epoxy coating with denso system (spec 02555) and have adequate corrosion protection, to the satisfaction of the engineer. Approved anodizing is required. Anodes and protecto caps required.

11. All buried PVC joints shall be mechanically restrained and include Denso System/Cathodic Protection.

12. Copperhead tracer wire must be installed with all watermain and services. Warning mesh must be installed above all watermain and sanitary pipe as per York Region Standards. Install Plyage Hz (blue) for open cut watermain installations, green for sanitary sewer. For trenchless installation supply 2 tracers wires complete with cathodic protection for tracer wire.

13. Minimum soil cover on proposed watermains and water services is to be 2.0m. Any water main or service not designated to be pre—insulated with less than minimum cover shall, upon approval of engineer, be adequately insulated with blue sm board insulation. Special attention is required to ensure adequate cover or insulation is maintained where watermains or services are located under ditches and culverts.

14. The watermain is only to have high points at the air release locations indicated on these drawings. If there are any other high points in the water main the contractor must supply and install a manual air release valve and valve chambers at the high point at their cost.

15. No tree shall be removed, pruned or damaged in any way without the written permission of the municipality.

16. All disturbed boulevards are to be restored with a minimum of 100mm of topsoil & terraseeded on West side of Hwy 27 and sodded on the East side of Hwy 27. Restoration of ditches & slopes requires a minimum of 100mm of topsoil and Coirmat 90 erosion control matting. See project notes on Planting Plan for seed mix.

17. All disturbed areas within resident's yards are to be restored with a minimum of 100mm of topsoil and sod.

18. Locate existing buried valves and adjust frame and cover to the finished surface.

19. A minimum of 7 days notice and prior approval must be given before any construction can begin where the water main crosses a road. Traffic must be maintained throughout the crossings. The backfill material is to be natural, non organic excavated material, as per the geotechnical report. The roadway must be restored to equal or better condition to the approval of the engineer.

20. All sediment and erosion control measures shall be installed prior to the commencement of construction and shall remain in place until all disturbed areas have been stabilized. Sediment and Erosion Control measures that are designed to control runoff from specific areas must be installed prior to any disturbance on that part of the site.

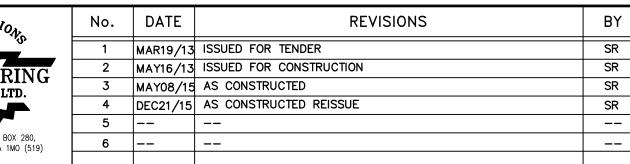
21. The contractor and their employees shall follow all provincial and federal workers safety policies on this project. (ie: Ontario Occupational Health and Safety Act, The Safety Act and The Ministry of Labour Canada Guidelines)

22. Machinery is not permitted to enter the 30m Buffer area for the East Humber River Tributary.











DESIGN SR	NOBLETON WELL NO. 5 AND TOWNSHIP OF KING SANITARY	SCALE N/A
DRAWN JIM	SEWER AND WATERMAIN	CONT. NO. T-12-58
HECKED	OVERVIEW & KEY PLAN	SHEET NO.

PROPOSED BELL TELEPHONE PROPOSED HYDRO LINE ____ PROPOSED FENCE PROPOSED CLEARING LIMIT BORE HOLE PROPOSED BOLLARD PROPOSED FINISHED GRADE PROPOSED SLOPE PROPOSED SUB DRAIN -----PROPOSED CULVERT PROPOSED DITCH CENTERLINE PROPOSED FLOW DIRECTION DOUBLE SILT FENCE DOUBLE DITCH CHEXX PROPOSED ROCK FLOW CHECK DAM GENERIC REGULATION LIMIT (TRCA) FLOODPLAIN BUFFER REGIONAL STORM FLOODLINE EXISTING WATERMAIN EXISTING SANITARY SEWER — — н — — н — EXISTING HYDRO EXISTING HYDRO POLE EXISTING BURIED BELL TELEPHONE EXISTING BELL BOX EXISTING OVERHEAD CABLE — G — G — EXISTING GAS LINE EXISTING EDGE OF PAVEMENT EXISTING TREE LINE $- \times - - \times - - \times - -$ EXISTING FENCE EXISTING CULVERT _____ EXISTING DITCH CENTERLINE **—** 77.866 EXISTING GRADE EXISTING CONTOUR & ELEVATION STANDARD IRON BAR (FOUND) IRON BAR (FOUND) MTO MONUMENT PROPERTY LINE

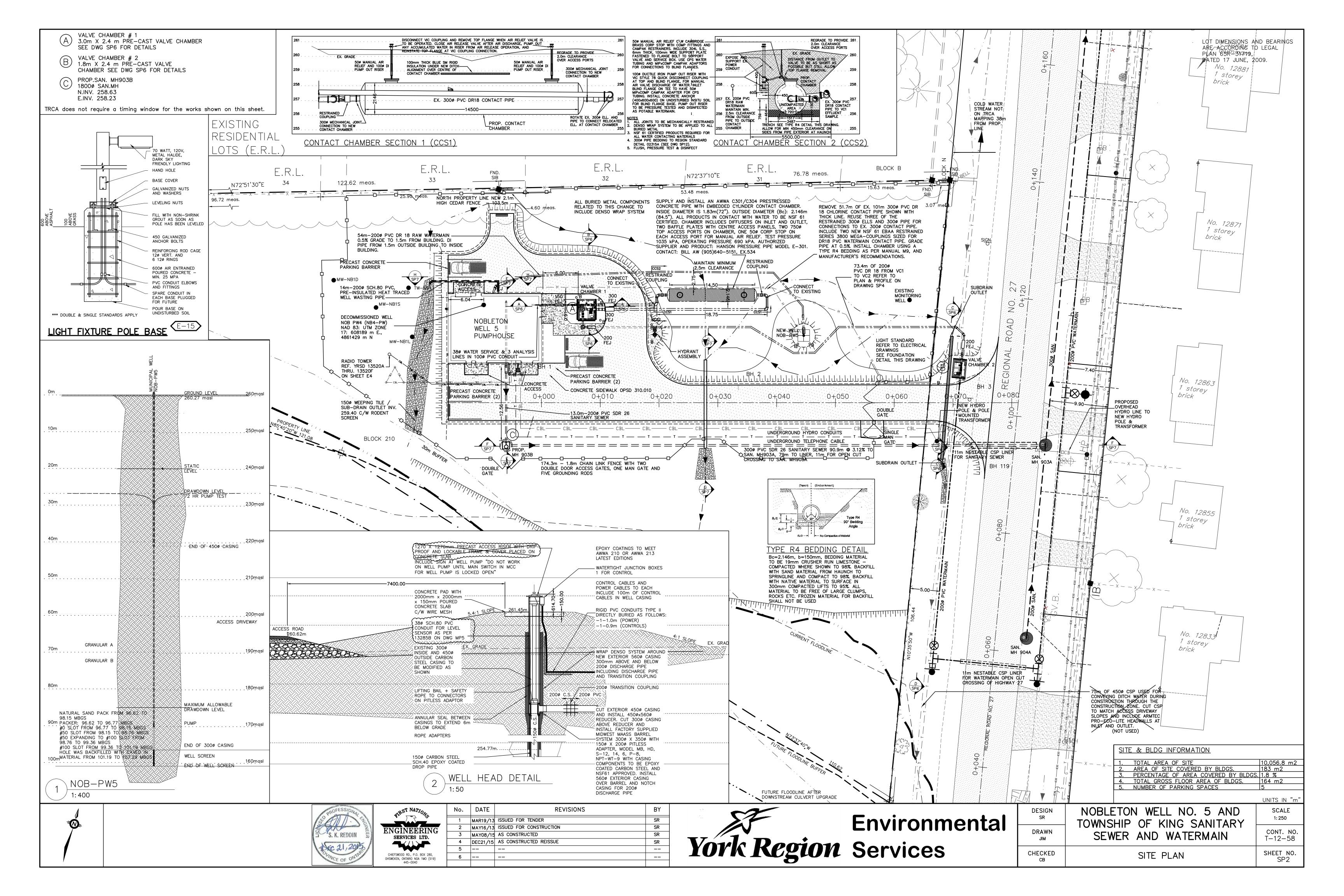
SP DRAWINGS - LEGEND

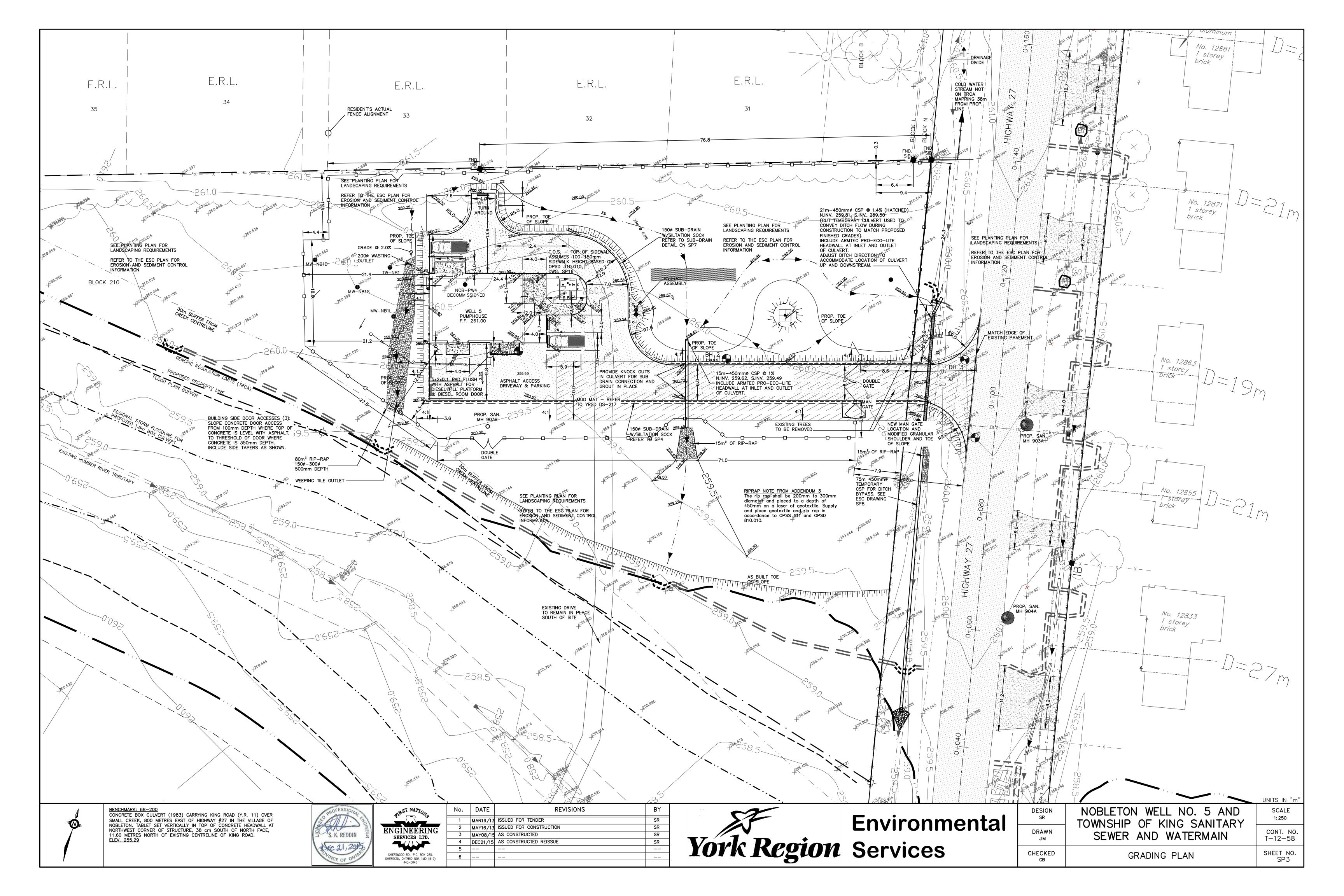
PROPOSED WATERMAIN

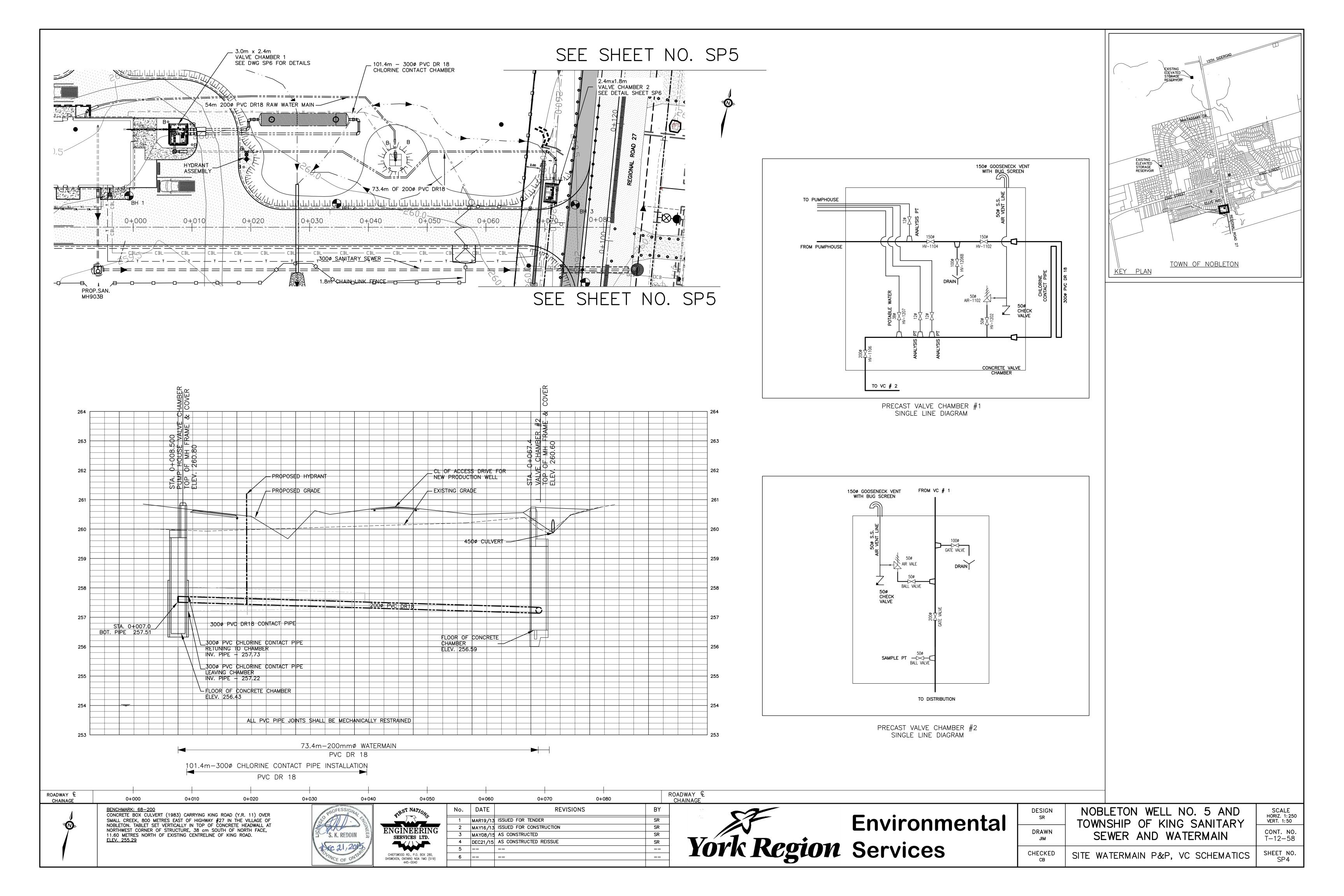
PROPOSED WATER SERVICE

PROPOSED FIRE HYDRANT
PROPOSED VALVE & BOX
PROPOSED SANITARY SEWER
PROPOSED SANITARY SERVICE

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Appendix D: CVs

Education

University of Waterloo Masters of Arts (Planning)

University of WaterlooBachelor of Environmental Studies

University of SaskatchewanBachelor of Arts (Art History)

Professional Associations

Registered Professional Planner

Full Member, Canadian Institute of Planners (CIP)

Full Member, Ontario Professional Planners Institute (OPPI)

Professional Member, Canadian Association of Heritage Professionals

Contact

200-540 Bingemans Centre Drive Kitchener, ON N2B 3X9

T: 519 576 3650 x744 C: 519 404 6894 dcurrie@mhbcplan.com www.mhbcplan.com



Dan Currie

BA, BES, MA, MCIP, RPP, CAHP

Dan Currie, a Partner and Managing Director of MHBC's Cultural Heritage Division, joined MHBC Planning in 2009, after having worked in various positions in the public sector since 1997. Dan provides a variety of planning services for public and private sector clients including a wide range of cultural heritage policy and planning work including strategic planning, heritage policy, heritage conservation district studies and plans, heritage master plans, cultural heritage evaluations, heritage impact assessments and cultural heritage landscape studies.

Selected Project Experience

Heritage Conservation District Studies and Plans

- Streetsville Heritage Conservation District Plan (underway)
- Amherstburg Heritage Conservation District Plan (underway)
- Melville Street Heritage Conservation District Plan (underway)
- Stouffville Heritage Conservation District Plan (2022)
- Alton Heritage Conservation District Study, Caledon (2021)
- Port Stanley Heritage Conservation District Plan (2021)
- Port Credit Heritage Conservation District Plan, Mississauga (2018)
- Town of Cobourg Heritage Conservation District Plan updates (2016)
- Rondeau Heritage Conservation District Plan, Chatham Kent (2016)
- Barriefield Heritage Conservation District Plan Update, Kingston (2015)
- Victoria Square Heritage Conservation District Study, Markham (2015)
- Bala Heritage Conservation District Study and Plan, Township of Muskoka Lakes (2015)
- Brooklyn and College Hill Heritage Conservation District Plan, Guelph (2014)
- Garden District Heritage Conservation District Study and Plan, Toronto (2014)
- Downtown Meaford Heritage Conservation District Study and Plan (2013)

Heritage Master Plans and Management Plans

- City of Guelph Cultural Heritage Action Plan (2020)
- Town of Cobourg Heritage Master Plan (2016)
- Burlington Heights Heritage Lands Management Plan (2016)
- City of London Western Counties Cultural Heritage Plan (2014)

Cultural Heritage Evaluations

- Township of Tiny Heritage Register Review (on going)
- City of Barrie Heritage Register Review (2024)
- Aurora Heritage Register Review (2022)
- MacDonald Mowatt House, University of Toronto (2020)
- Designation of Main Street Presbyterian Church, Town of Erin (2019)
- Designation of St. Johns Anglican Church, Norwich (2019)
- Cultural Heritage Landscape evaluation, former Burlingham Farmstead, Prince Edward County (2018)
- City of Kitchener Heritage Property Inventory Update (2016)
- Niagara Parks Commission Queen Victoria Park Cultural Heritage Evaluation (2016)

Heritage Impact Assessments

- Redevelopment of former amusement park, Boblo Island (2022)
- Mount Pleasant Islamic Centre, Brampton (2020)
- Demolition of former farmhouse at 10536 McCowan Road, Markham (2020)
- Redevelopment of former Goldie and McCullough factory, Cambridge (2019)
- Redevelopment of historic Waterloo Post Office (2019)
- Redevelopment of former industrial facility, 57 Lakeport Road, Port Dalhousie (2018)
- Redevelopment of former Brick Brewery, Waterloo (2016)
- Homer Watson House Heritage Impact Assessment, Kitchener (2016)
- Expansion of Schneider Haus National Historic Site, Kitchener (2016)
- Heritage Impact Assessment for Pier 8, Hamilton (2015)
- Redevelopment of former American Standard factory, Cambridge (2014)

Heritage Assessments for Infrastructure Projects and Environmental Assessments

- Edgerton Bridge Assessment, Scugog (2024)
- Heritage and Cultural Heritage Landscape Assessment of Twenty Mile Creek Arch Bridge, Town of Lincoln (2021)
- Heritage Evaluation of Deer River, Burnt Dam and MacIntosh Bridges, Peterborough County (2021)
- Heritage Assessment of 10 Bridges within Rockcliffe Special Policy Area, Toronto (2019)
- Blenheim Road Realignment Collector Road EA, Cambridge (2014)
- Badley Bridge EA, Elora (2014)
- Black Bridge Road EA, Cambridge (2013)

Conservation Plans

- Conservation Plan for Log house, Burgetz Ave., Kitchener (2020)
- Conservation and Construction Protection Plan 54 Margaret Avenue, Kitchener (2019)
- Black Bridge Strategic Conservation Plan, Cambridge (2013)

Tribunal Hearings:

- Redevelopment 18 Portland Street, Toronto (OLT) (2023)
- Redevelopment 292 Main Street, Grimbsy (OLT) (2023)
- Redevelopment 1919 to 1949 Devonshire Court, Windsor (OLT) (2023)
- Redevelopment 9 Dee Road, Queenston (OLT) (2023)
- Redevelopment 18314 Hurontario Street, Caledon Village (OLT) (2023)
- Redevelopment 217 King Street S, Waterloo (OLT) (2022)
- Redevelopment 147 Main Street, Grimsby (OLT) (2022)
- Redevelopment of 12 Pearl Street, Burlington (OLT) (2021)



- Designation of 30 Ontario Street, St. Catharines (CRB) (2021)
- Designation of 27 Prideaux Street, Niagara on the Lake (CRB) (2021)
- Redevelopment of Langmaids Island, Lake of Bays (LPAT) (2021)
- Redevelopment of property at 64 Grand Ave., Cambridge (LPAT) (2019)
- Youngblood subdivision, Elora (LPAT) (2019)
- Demolition 174 St. Paul Street (Collingwood Heritage District) (LPAT) (2019)
- Port Credit Heritage Conservation District (LPAT) (2018)
- Brooklyn and College Hill HCD Plan (OMB) (2015)
- Rondeau HCD Plan (OMB) (2015)
- Designation of 108 Moore Street, Bradford (CRB) (2015)
- Downtown Meaford HCD Plan (OMB) (2014)

Master Plans, Growth Management Strategies and Policy Studies

- Township of West Lincoln East Smithville Secondary Plan (2022)
- Town of Frontenac Islands Maryville Secondary Plan (2021)
- Niagara-on-the-Lake Corridor Design Guidelines (2016)
- Cambridge West Master Environmental Servicing Plan (2013)
- Meadowlands Conservation Area Management Plan (2013)
- Township of Tiny Residential Land Use Study (2012)
- Port Severn Settlement Area Boundary Review (2012)
- Ministry of the Environment Review of the D-Series Land Use Guidelines (2012)
- Ministry of Infrastructure Review of Performance Indicators for the Growth Plan (2011)
- Township of West Lincoln Intensification Study and Employment Land Strategy (2011)
- City of Kawartha Lakes Growth Management Strategy (2010)

Development Planning

Provide consulting services for municipal and private sector clients for:

- Secondary Plans
- Draft plans of subdivision
- Consent
- Official Plan Amendment
- Zoning By-law Amendment
- Minor Variance
- Site Plan



Education

Willowbank School of Restoration Arts

Diploma in Heritage Conservation 2024

Messors Field School

Art Conservation and Cultural Heritage Landscapes Workshop Completed 2023

University of California: Santa

Bachelor of Arts in History 2010

Professional Associations

Intern Member,
Canadian Association of
Heritage Professionals (CAHP)

Provincial Board Director at Large and Education Committee Member, Architectural Conservancy of Ontario (ACO)

Emerging Professional Member,
International Council on
Monuments and Sites (ICOMOS)

Member,
Canadian Association for
Conservation of Cultural
Property (CAC)

Contact

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Christy Kirwan

BA, Dipl., CAHP-Intern

Christy is a Heritage Planner with MHBC who joined the firm in 2023. She holds a Diploma in Heritage Conservation from the Willowbank School of Restoration Arts and a Bachelor's Degree in History from the University of California: Santa Cruz where she graduated *cum laude* with Department Honours and College Honours. Christy has experience in research and report writing for both public and private sector clients. She has completed historical research, inventory work, and evaluation on a variety of projects, including cultural heritage landscapes, cultural heritage evaluation reports, and heritage impact assessments. She currently serves on the Provincial Board of Directors of the Architectural Conservancy of Ontario.

Prior to joining MHBC, Christy gained experience as a Heritage Intern for the Town of Grimsby. She has also received hands-on training from the Messors Field School in art and monument restoration and previously worked in the skilled trades restoring heritage buildings and fine furniture.

Professional History

Heritage Planner, MacNaughton Hermsen Britton Clarkson Planning Limited (2023 – Present)

Heritage Carpentry Apprentice, Bruce Chambers Period Furniture Ltd. (2023)

Heritage Intern, Town of Grimsby (2023)

Heritage Contractor, DJ McRae Heritage Restoration (2022)

Project Experience

Cultural Heritage Landscapes

Doctor's Lane, King City and Old King Road, Nobleton, Township of King

Heritage Conservation Districts

Melville Street Heritage Conservation District Plan, Hamilton

Municipal Heritage Inventories

- Township of Tiny, 31 properties
- City of Barrie, 13 properties

Cultural Heritage Impact Assessments

- 43 Mill Street West, Elora
- 7631 Creditview Road, Brampton
- 473 Ontario Street, Cobourg
- 230 North Centre Road, London
- 3563 Bostwick Road, London
- 1930-1934 Sideroad 5, Bradford West Gwillimbury
- 260 Main Street West, Grimsby
- 185 Third Street, Collingwood
- 228 McNeilly Road, Hamilton
- 1069 Highway 8, Hamilton
- 119 Sideroad 19, Fergus
- Mount Zion United Church, 473 Ridgewood Crescent, London
- 66 Banfield Street, Paris
- 1940 Fischer-Hallman Road, Kitchener
- 141 Laurel Street, Cambridge
- 5480 Major Mackenzie Drive, Markham
- 193, 195, 197 & 199 College Avenue, London
- 63 Courtland Avenue East, Kitchener
- 300-306 King Street West, Hamilton
- 35 Elgin Street, Collingwood
- 743 Richmond Street, London
- 11 Roy Street & 68 Queen Street North, Kitchener
- 145-152 Central Avenue, London
- 96 Main Street East, Hamilton
- 273 Main Street North, Brampton
- The London Children's Museum, 21 Wharncliffe Road South, London
- 531 Talbot Street, 535-537 Talbot Street/105 Kent Street, 101 Kent Street, London
- 1880 Assumption Street, Windsor

Cultural Heritage Evaluation Reports

- 8 St Andrews Avenue, Grimsby
- 12 St Andrews Avenue, Grimsby
- 934322 Airport Road, Mono



- 986 Powerline Road, Brant
- 53 St. Laurent Drive, Richmond Hill
- 4267 Manning Drive, London
- 677-681 4th Concession Road West, Flamborough, Hamilton

Conservation Plans

- 18 Portland Street, Toronto
- 19 East Mill Street, Elora

Documentation & Salvage Plans

- 3078 Regional Road 56, Binbrook, Hamilton
- 5515 Garrard Road, Whitby

Heritage Assessments for Infrastructure Projects and Environmental Assessments

- Edgerton Road Municipal Bridge No. 11, Blackstock, Township of Scugog
- Warminster Sideroad, Township of Oro-Medonte
- Shoreline Drive, Township of Oro-Medonte

Heritage Permit Applications

- 43 Mill Street West, Elora
- 7631 Creditview Road, Brampton
- 2051 Davis Drive, Whitchurch-Stouffville

Heritage By-law Peer Reviews

- St. Mary's Ukrainian Catholic Church, 3625 Cawthra Road, Mississauga
- Trinity Anglican Church, 26 Stavebank Road, Mississauga
- New Apostolic Church, 160 Margaret Avenue, Kitchener
- 2 Guelph Street, Georgetown, Halton Hills

Hands-On Conservation Projects

- St. Paul's Anglican Church, Coulson's Hill, Bradford West Gwillimbury, Ontario
 - Restoration and painting of 1887 Gothic doors
- Byzantine Rupestrian Cave Frescoes, Alta Murgia, Italy
 - Mechanical frescoe cleaning
 - Cellulose poultice frescoe cleaning
 - Plaster infilling and consolidation
- Burwash Hall, University of Toronto, Toronto, Ontario
 - Stone masonry conservation
 - Window installation
- Cathedral of St. Alban the Martyr, Toronto, Ontario
 - Cathedral window woodwork restoration
- 16 Elm Avenue, Branksome Hall, Toronto, Ontario
 - o Brick masonry restoration
- Bishop Strachan School, Toronto, Ontario
 - Window restoration and reglazing
- St. Mark's Cemetery, Niagara-on-the-Lake, Ontario
 - Headstone monument conservation
- Willowbank National Historic Site, Queenston, Ontario



- Decorative plaster repair
- Wood window restoration
- o Historic flooring restoration
- Stonework crack repair
- Historic painting



Education

Fanshawe College GIS and Urban Planning 2020

University of Seoul, South KoreaBachelor of Urban Planning
2005

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Paul Jae Woong Lee

BE

Paul Jae Woong Lee, a Technician with MHBC, joined the firm in 2022 and provides a variety of technical design and drafting services for public and private sector clients.

Prior to working for MHBC, Paul received his GIS & Urban Planning Diploma from Fanshawe College in 2020 and worked as a draft technician at a consulting firm.

Before Paul came to Canada, he also received a bachelor's degree in urban planning from the University of Seoul and worked as an urban planner in Korea. He is in the process of becoming a member of the Canadian Association of Certified Planning Technicians.

Professional History

Planning & Design Technician, MacNaughton Hermsen Britton Clarkson Planning Limited (2022 – Present)

Drafting Technician, GeoPro Consulting Limited (2020 – 2021)

GIS Technician (Co-Op Student), Aamjiwnaang First Nation (2019)

Planner, Dongbu Engineering Co., Ltd. (South Korea) (2016-2017)

Planner, JU Engineering Co., Ltd. (South Korea) (2014-2016)

Planner, DOHWA Engineering Co., Ltd. (South Korea) (2005-2014)



