



Phase 1 of the Harriston Flood Mitigation Project



**Schedule “C” Municipal Class
Environmental Assessment**

**Public Information Centre #1
June 26, 2025**



Welcome

Thank you for your interest in this project. Your input on this project is a key element in the planning process. This presentation slide deck is also available on the Town's website here: <https://www.town.minto.on.ca/residents/fire-and-emergency-services/Harriston-flood-mitigation-plan>.

Please submit your input, questions and/or comments to the Project Team Members mike@town.minto.on.ca and/or cclark@tritoneng.on.ca. A member of the Project Team will respond to any questions raised.

Comments and information received are collected under the authority of the Environmental Assessment Act and in accordance with the Freedom of Information and Protection of Privacy Act and, with the exception of personal information, will be included in the project documentation and become part of the public record.



Project Team Contacts

Please contact the Project Team members listed below for further information, the Class EA process, to be added to the project mailing list or share information for consideration and influence in the decision-making process.

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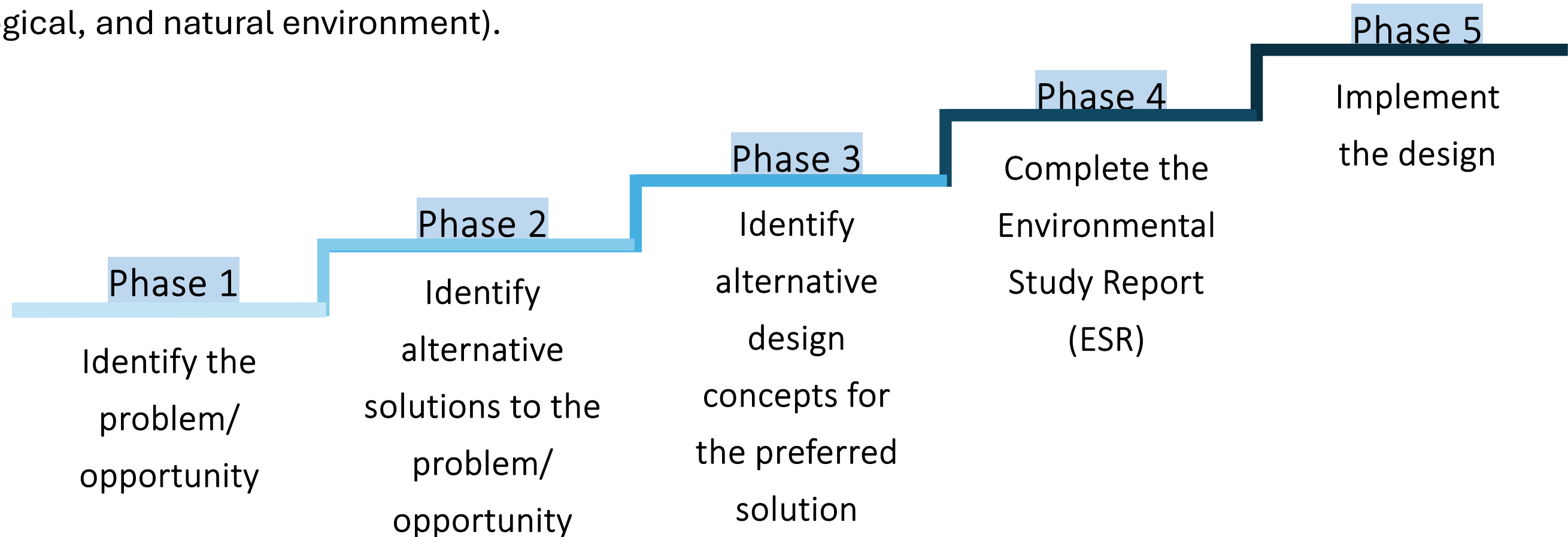
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Municipal Class EA Planning Process

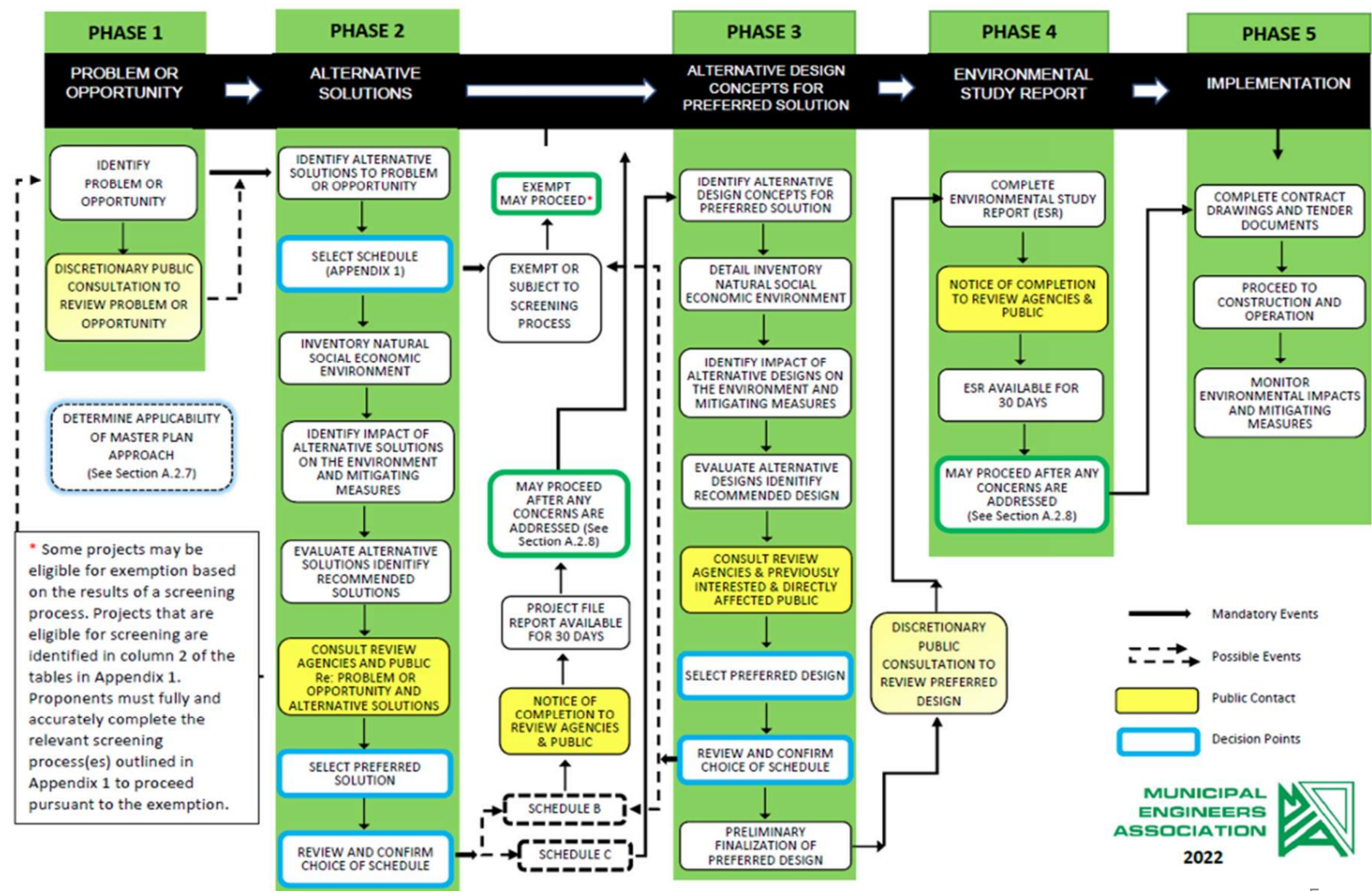
The Municipal Class EA process is an approved-self assessment process for planning and implementing municipal projects (sewage, roads, bridges, potable water) that are routinely carried out, and have a common set of alternatives with recurrent, predictable environmental effects and mitigation measures.

Projects are categorized based on the potential impact on the environment (social, economic, technical, cultural, archaeological, and natural environment).



Municipal Class EA Planning & Design Process

This project is being undertaken as a Schedule 'C' Class EA, which follows Phases 1 through 5 of the Class EA Planning Process.



Project Background

The Harriston Flood Mitigation Study (December 2020) was prepared by the Town, in partnership with MVCA, in response to historic flooding within the Harriston sub-watershed.

Purpose:

- To facilitate the implementation of practical corrective actions to address riverine flooding through a phased implementation strategy.

Harriston Flood Mitigation Study recommendations as follows:

- Initiate detailed design and approvals for Alternatives 2 and 3, which will contribute to the final objective of implementing Alternative 5
- Continue with measures to improve the North Ward Drain System
- Establish a maintenance program and operating funds to sustain infrastructure



Project Background

Alternative 2 – Includes the removal of vegetation and spoils and regrading of the (downstream) floodplain

Alternative 3 – Includes the work completed as part of Alternative 2, with (downstream) channel improvements

Alternative 5 – Includes Alternatives 2 & 3 works, and construction of a new watercourse extending from Blind Line to confluence with Dredge Creek, routing southeast around the Harriston urban area.

These downstream works are to be completed within/and or adjacent to the reach of the Maitland River (River) located between the downstream side of the Arthur Street bridge and approximately 365 m downstream of the Wellington Road 87 Bridge.

This (downstream) River reach covers part of Municipal Drain 11/Dredge Creek and Municipal Drain 12.

Project Background

Municipal Drain 11 / Dredge Creek

- Also known as Dredge Creek.
- A constructed tributary to the Maitland River.
- Drains the southern catchments of the Harriston sub-watershed.

Municipal Drain 12

- Artificial/constructed tributary to the Maitland River.
- Drains farmland, a portion of urban Harriston, and treated effluent from the Harriston sewage treatment lagoons.

North Ward Drain

- Artificial drain that drains into the Maitland River near the intersection of Margaret St and Union St.
- Drains farmland (30 ha) a portion of urban Harriston.
- Outlet can become submerged due to riverine flooding.
- The water surface elevation at the North Ward Drain outlet is used as an indicator of issues with localized flooding within the urban area of Harriston.

Problem (Opportunity) Statement

Based on outcomes of the Harriston Flood Mitigation Study, the Town has initiated this Schedule 'C' Class EA to address the following Problem/Opportunity Statement:

Implementation of Alternatives 2 and 3 is expected to significantly improve the impacts of localized flooding and sanitary backflow within the urban area of Harriston due to riverine flooding during more frequent rain events of lesser magnitude (up to the 5-year event) and facilitate implementation of subsequent alternatives (namely Alternative 5 – Maitland River Harriston Bypass). The Town needs to identify and consider options for the location and configuration of the downstream floodplain and river channel improvements.



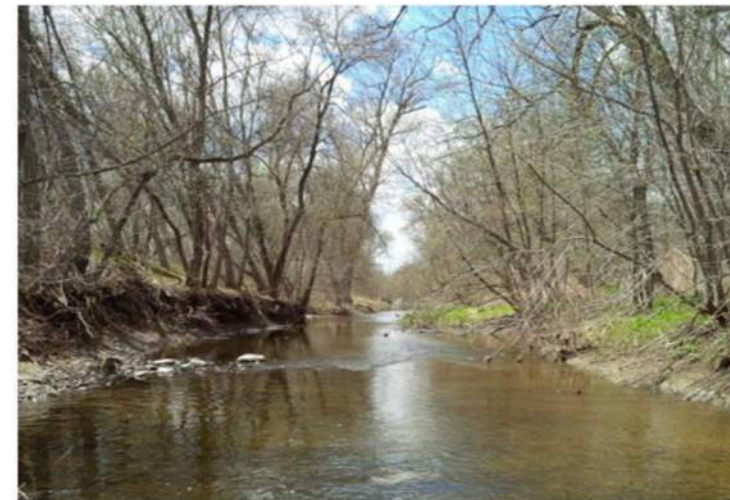
Alternative Solutions

The conceptual alignment for Alternative 3 presented in the Harriston Flood Mitigation Study (Triton, December 2020) included the following:

- Straightening, deepening, and widening of the existing River channel from the Livingstone Street right-of way to the Wellington Road 87 bridge
- Anticipated to generate an estimated 100,000 cubic metres of material to be removed from private farmlands and wooded areas.
- The resultant widened and smoothed River channel, expected to convey large volumes of water out of the Harriston urban area, would measure approximately 2.5 km in length, and would deepen and widen the existing channel by 0.9 and 0.55 m, respectively

Considerations for determination of the preferred alignment for the River channel primarily included the following:

- The location and configuration of the improved channel, considering landowner, Town and approval agency input/consultation, supplementary hydraulic efficacy, and river geomorphology
- Improved channel dimensions, considering effective flow area and specific hydraulic capacity requirements, depth limitations and natural channel design



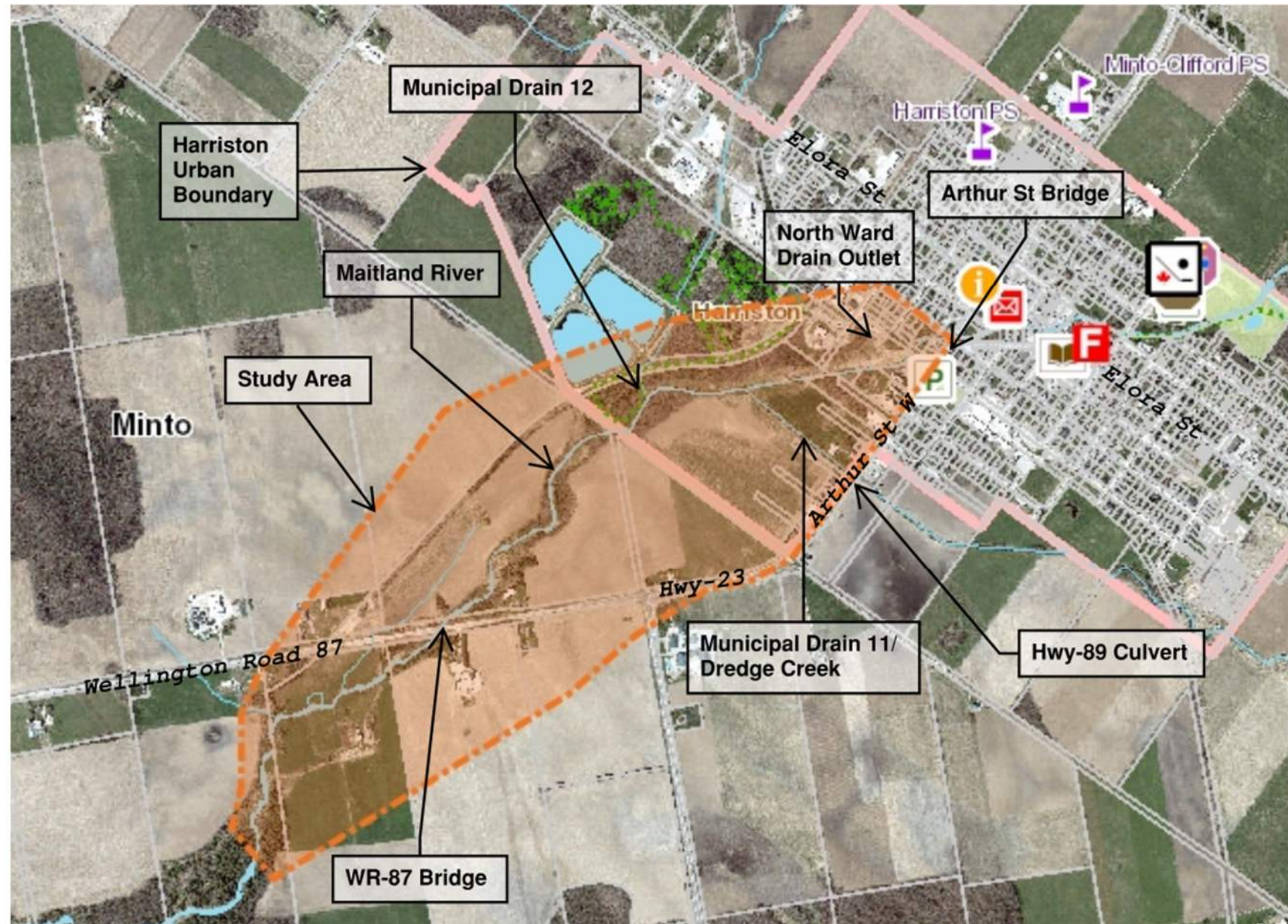
Before



After

The artistic rendering (After) provides an example of the restored river channel below the Arthur Street Bridge and through the rural area toward the County Road 87 Bridge (Harriston Flood Mitigation Study)

Project Study Area



The **Study Area** encompasses approximately 186 ha of land, including the downstream channel and floodplain.

A description of the Environment, reflecting the Study Area provides an overview of environmental factors to be considered when reviewing existing and future conditions, developing alternatives, and analyzing and evaluating them to determine the preferred alternative.

Environment factors include:






- Cultural Heritage Environment
- Natural Environment
- Socioeconomic Environment
- Technical Environment

Cultural Heritage Environment

Supporting Studies completed to date:

Cultural Heritage Screening (April 2020)

- Alternatives 2 and 3 include properties for known or potential cultural heritage value, with some of these properties requiring further heritage studies, if work is to occur within 50m of the identified properties. A few examples are shown on this slide.
- Further heritage studies include: Cultural Heritage Evaluation Report (CHER) and Heritage Impact Assessment (HIA).

Picture	Location	Heritage Recognition	Comments	Option	CHER Recommended
	5804 Wellington	Minto Plaque #M3	Built 1868 by Joshua Harrison. Property includes barn and another house. The site of the Harrison Mill/Dam. ⁶⁹	2/3/5	Yes
	176 Arthur Street West	None	Residential building over 40 years old.	2/3/4/5	Yes
	94 William Street West	None	Commercial building over 40 years old.	2	Yes
	Highway 87 Bridge over Maitland River	Listed on historicbridges.org ⁷⁰	Built 1957. A rare example of an exposed steel rigid-frame bridge.	3/5	Yes
	81 William Street West	None	Commercial building over 40 years old.	2	Yes

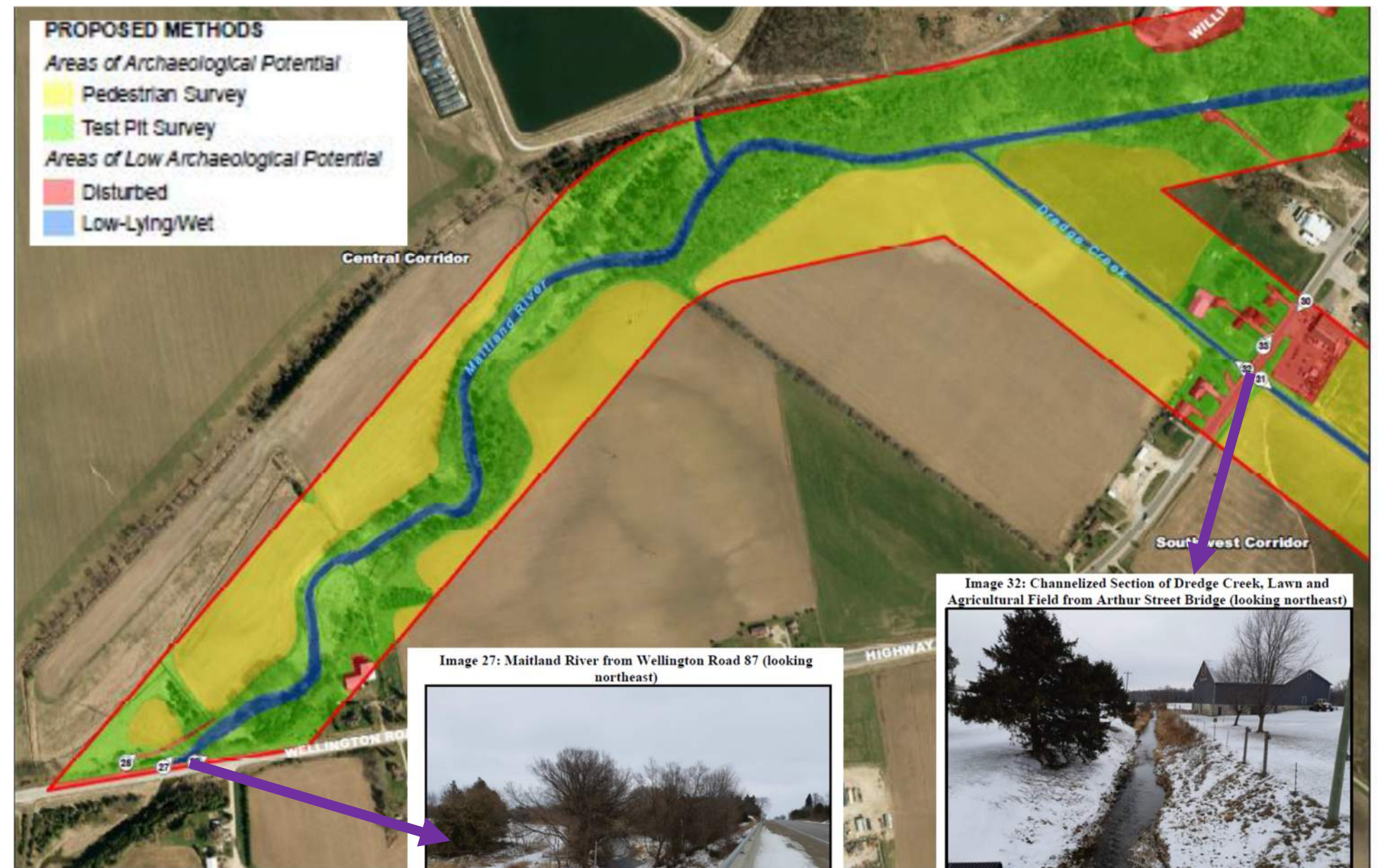


Cultural Heritage Environment

Supporting Studies completed to date:

Stage 1 Archaeological Assessment (April 2020)

- Areas of Archaeological potential have been identified and will require Stage 2 archaeological assessment for Alternatives 2 and 3.
- Other areas are considered extensively disturbed or low lying, wet and sloped and no longer contain the potential for recovering archaeological resources.



Natural Environment

Supporting Studies completed to date:

Background Natural Heritage – Existing Conditions Report (April 27, 2020)

- Provides an inventory of vegetation, wetlands, wildlife and fish species in the area, including natural heritage and species at risk considerations.
- The Maitland River and associated woodlands, meadows and swamp communities serve to connect natural features in the Study Area to the broader landscape.

Fish Community Sampling (November 2021)

- Included sampling by backpack electrofishing in the Maitland River in August 2021, at a location upstream of the Harriston sewage treatment lagoons and another location upstream of Wellington Road 87.
- Fish communities within the River and Dredge Creek are diverse and are representative of typical small warm water streams and rivers in Southwestern Ontario.
- Sensitive species were not present within the locations studies; however, the area has the potential for Salmonid migration in the early spring and fall.

Natural Environment

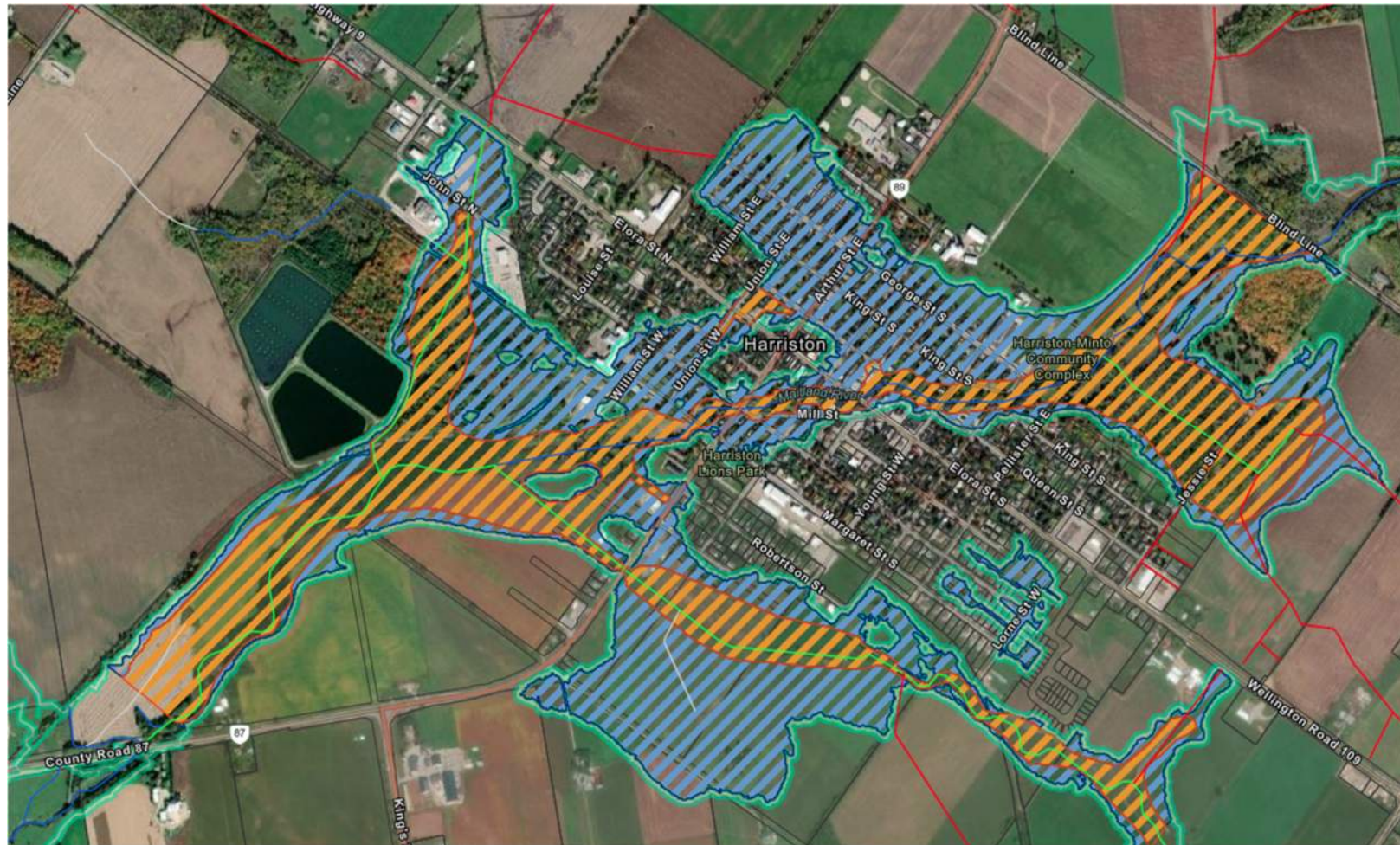
Supporting Studies completed to date:

Natural Heritage Impact Assessment (April 2023)

- Included the completion of the following field assessments to understand any potential impacts to the natural environment and mitigation measures for consideration in planning for Alternatives 2 and 3:
 - Two season botanical inventory
 - Mussel reconnaissance survey
 - Anuran survey
 - Breeding bird survey
 - Bat maternity habitat assessment
- 12 native plant species are considered to have high-sensitivity to environmental changes.
- Candidate Bat Maternity Habitat, confirmed Habitat for Special Concern and Rare Species for Eastern Wood-pewee and Candidate Habitat for Endangered bat species (Little Brown Myotis, Northern Myotis and Tri-colored Bat), as well as other wildlife habitat and species are identified in the Study Area.
- Habitat quality for mussels is considered poor, based on the shallow substrate depths and large areas of exposed bedrock, likely resulting from repeated flooding events and associated riverbed scouring.
- It is assumed that existing agricultural runoff (containing nutrients, pesticides, fertilizers, etc.) has contributed to poor habitat quality in the River.



Socioeconomic Environment



☑ Two-Zone Floodplain

legend

▨ Floodway

▨ Floodfringe

- Harriston has been burdened by various degrees of flooding from different rainfall events through its history.
- Uncontrolled flooding has damaged private residences, businesses, natural areas, roads and other Town infrastructure.
- Floodway and fringe mapping was developed to show areas of Harriston where flooding is likely to occur and “pose a threat to life and/or cause property damage” and where flooding is likely to occur but not necessarily at a depth or velocity that would be an immediate threat to life or property, respectively.
- Two-zone floodway-flood fringe special policy area for Harriston allows development in the flood fringe, contingent upon flood proofing measures or actions to reduce potential property damage.
- Development is not permitted within the floodway.
- The economic toll to repair damages caused by flooding is considerable and continuous.
- The project is required to protect human life and property.

Technical Environment

Supporting Studies completed to date:

- **LiDAR DEM mapping and Benchmark Surveying (2018)**
 - **Hydrologic Monitoring (MVCA, February 2019)**
 - **Floodplain Hydraulic Modelling**
 - **Geotechnical Study (September 2022)**
 - **Harriston Flood Mitigation Study (December 2020)**
- In general, the overall flat topography, predominate clay till soil type and lack of natural vegetation combine to accelerate the rate of runoff within the watershed.
 - Municipal Drains (North Ward, 11, and 12) in the Study Area are used as outlets and convey significant flows from various storms to the River at and downstream of the North Ward Drain Outlet.
 - Municipal drainage systems may not directly cause flooding in the urban area; however, their contributing flows to the River, combined with the inability of the River and floodplain to efficiently convey runoff from upstream sub watersheds, help raise the water levels in the River to a point where flood water breach the urban areas via overland or through surcharged storm drains (i.e., North Ward Drain).
 - The water surface elevation at the North Ward Drain outlet is used as an indicator of issues with localized flooding within the urban area.

Evaluation of Alternative Solutions

In accordance with the Harriston Flood Mitigation Study (Triton, December 2020), considerations for determination of the preferred alignment for the River channel primarily include the following:

- The location and configuration of the improved channel, considering landowner, Town and approval agency input/consultation, supplementary hydraulic efficacy, and river geomorphology
- Improved channel dimensions, considering effective flow area and specific hydraulic capacity requirements, depth limitations and natural channel design

Owners of lands expected to have significant direct impacts by the Project were engaged early in the planning process to ensure their comments and/or concerns regarding their property were considered and addressed in an agreeable manner that benefits both the private landowners and the Town.

Private lands anticipated to have significant direct impacts from the Project include:

- 5804-5806 Wellington Road 87 and 5744-5746 Highway 23, owned by Landowner 1
- and 176 Arthur St W, owned by Landowner 2 .



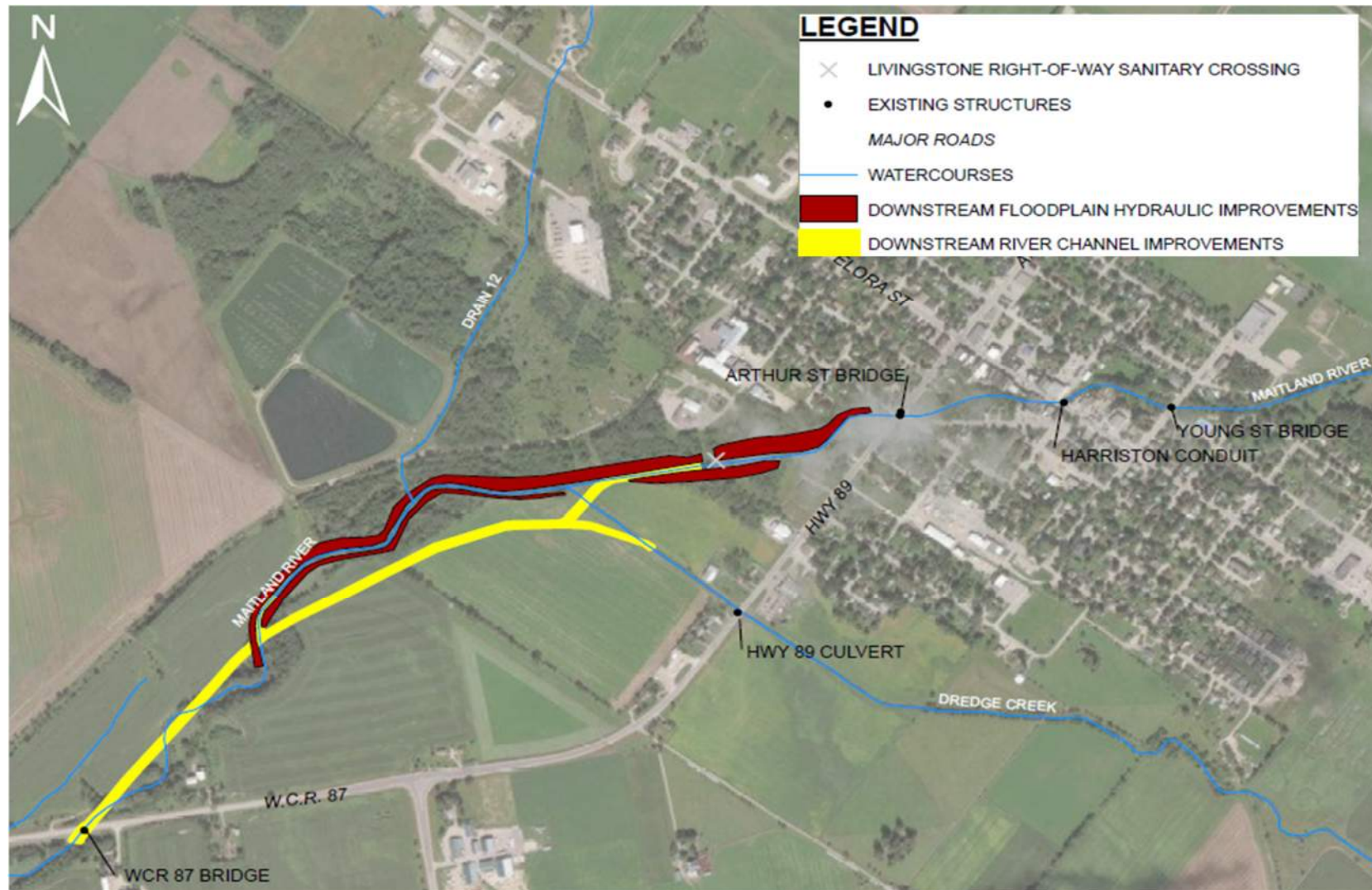
Design Concept Iterations

1. Conceptual Design from Harriston Flood Mitigation Study (baseline)
 - Landowner 1 Preferred Alignment (comments on baseline)
 - Landowner 2 Preferred Alignment (comments on baseline)
2. Revised Alignment (considers Landowner, MVCA, Town, Agencies input)
 - Subsequent to the meetings with Landowner 1, Landowner 2, MVCA and Town, the suggested design modifications were applied to the hydraulic model to determine implications on the results, if any.

Design modifications included the following:

- Re-alignment of the secondary river to the secondary bridge at on Wellington Road 87 to allow for more practical land use.
- Reduction of the extent of deepening in the existing River.
- Elimination of the secondary bypass channel through Landowner 2's property by widening the existing River.
- Expansion of floodplain improvements near the sewage treatment lagoons outlet.
- Optimization of floodplain grades to provide gradual tie-ins to the existing ground and provide improved drainage.

Design Concept 1



Harriston Flood Mitigation Strategy Conceptual Alignment (baseline)

- Included the straightening, deepening, and widening of the existing River channel from the Livingstone Street
- right-of way to the Wellington Road 87 bridge
- anticipated to generate an estimated 100,000 m³ of excess soil from private farmlands and wooded areas. widened and smoothed River channel would measure
- approximately 2.5 km in length, and would deepen and widen the existing channel by 0.9 and 0.55 m, respectively.

Design Concept 2

Summer 2022 Design (Considering Landowner Comments on Conceptual Design)

- Deepening/streambed improvements from the location where the open portion of the North Ward Drain (NWD) enters the river, downstream to approximately 450m into property.
- Approximately 500m of river with no work proposed on property.
- Floodplain improvements to the lands north of the river, including:
 - Approximately 50m width of flat floodplain
 - Activation of the flood plain at approximately a 2-Year rainfall event
- Floodplain improvements extend downstream to the secondary bridge at the County Road 87.
- Secondary river through the centre of the floodplain improvements. General details include:
 - 4m bottom width (approximately half the cross section of the river)
 - Permanent flow
- Secondary river to reconnect with existing river upstream of the primary County Road bridge.
- Equalization of river system at Dredge Creek and Lagoon Outlet confluences (i.e., connection of Dredge Creek, and Lagoon Outlet to both river and secondary river).



Design Concept 3

Iterations (based on comments on Summer 2022 Design)

Landowner 1 Property:

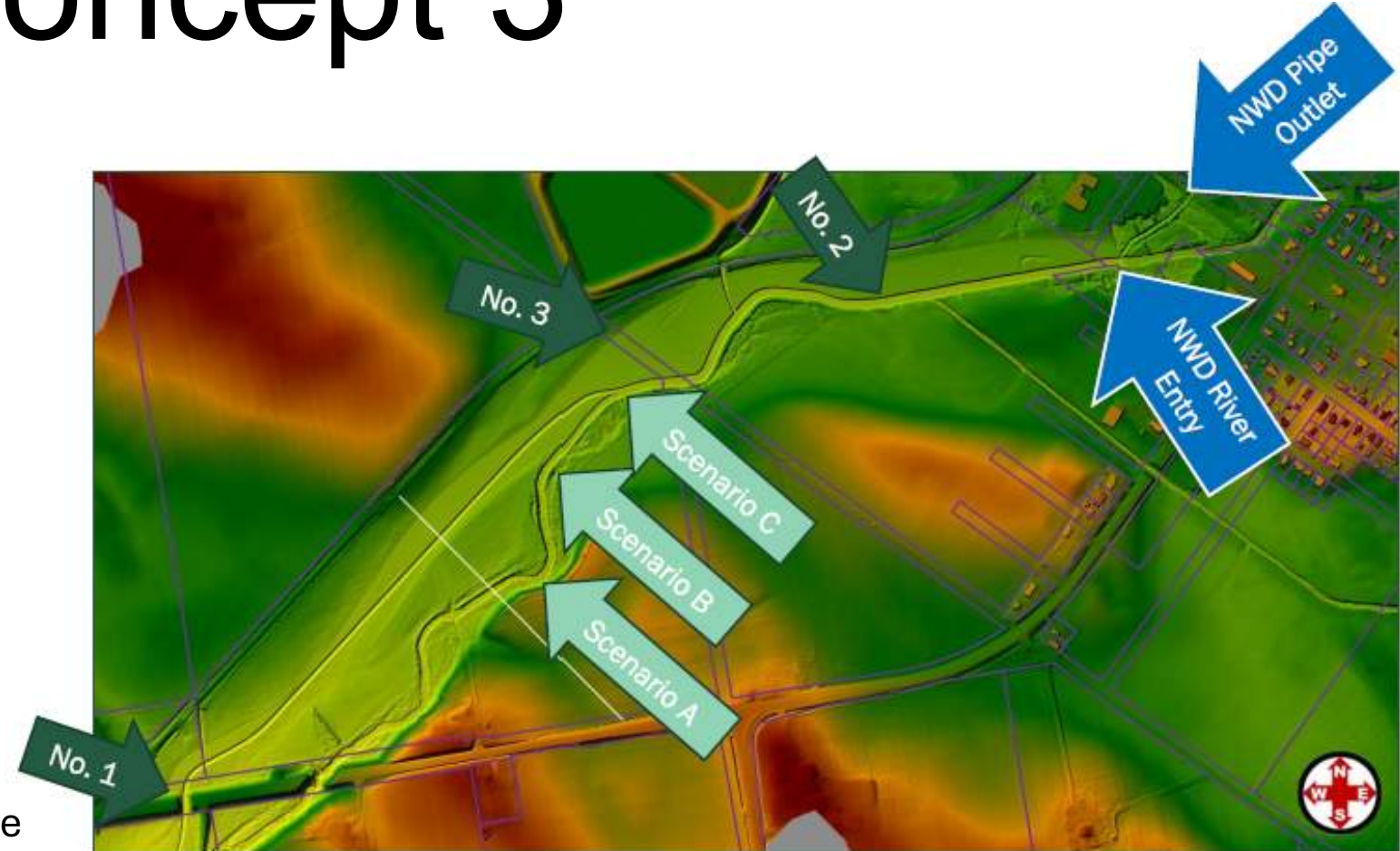
- (1) Re-align the secondary river to the secondary bridge at the County Road.
- (A,B, C) Reduce the extent of deepening the existing river to mitigate impacts to existing River.

Provide scenarios for the following:

- A. Revised alignment of secondary river (as noted above) with the current proposed improvements in the river (approx. 50% of the length of river on the property).
- B. Same as “A” above, but with reduced river improvements by half on the property (approx. 25% of the length of river on the property).
- C. Same as “A” above, but elimination of the river improvements on the property (i.e., no work in the existing river on property).

Landowner 2 Property:

- (2) Consider widening the river, as opposed to adding a secondary river. This could remove the island that would be created by a two-river system.
- (3) Consider expanding the floodplain improvements near the Lagoon Outlet, as this is the natural flow path for flood waters.



Additional Modifications:

- Optimize floodplain grades for more gradual tie-ins to existing ground.
- Provide improved drainage following rainfall events and reduce excavation within floodplain.
- Adjust secondary river alignment to provide for more practical land use following construction.

Preliminary Preferred Alternative

The primary basis of assessing the effectiveness of the design iterations (Scenarios A, B, and C) is the predicted water surface elevation (WSE) at the NWD pipe outlet, and at the NWD River entry.

Location	Maximum WSE during 5-Year Event (m)				
	Existing (for information)	Summer 2022 Scenario (Benchmark)	Scenario A	Scenario B	Scenario C
NWD Pipe Outlet	378.99	378.56	378.55 (-0.01 from Benchmark)	378.57 (+0.01 from Benchmark)	378.57 (+0.01 from Benchmark)
NWD River Entry	378.93	378.29	378.26 (-0.03 from Benchmark)	378.29 (no change)	378.29 (no change)

It was determined that the water surface elevations for each of the scenarios resulted in minimal differences when compared to the results of the Summer 2022 preliminary design.

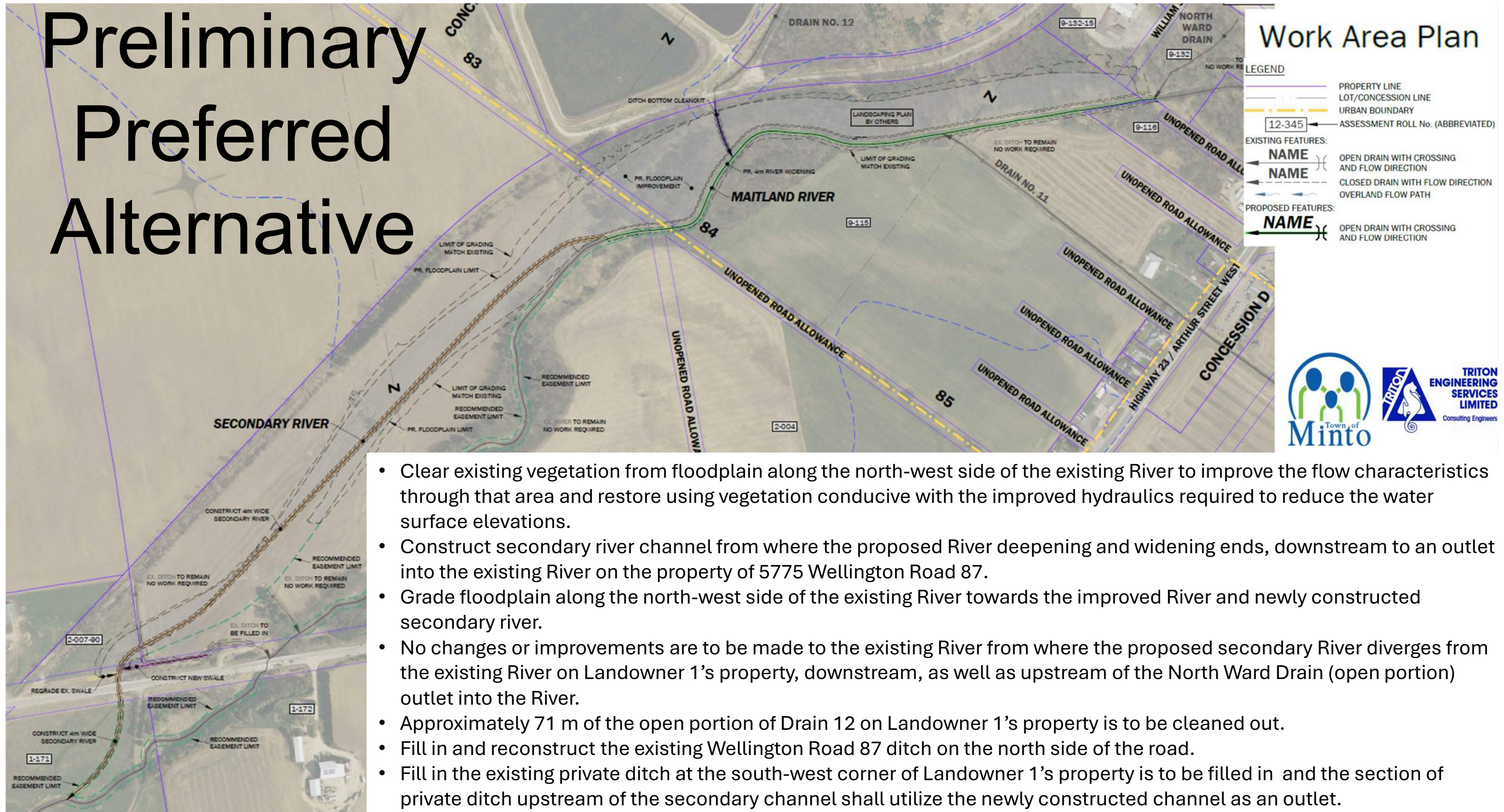
The scenarios were also analyzed for relative changes in earth excavation (and associated costs of construction), as follows:

- Scenario A = 6% reduction
- Scenarios B & C = 13% reduction, each

Scenario C is the preliminary preferred alternative, for the following reasons:

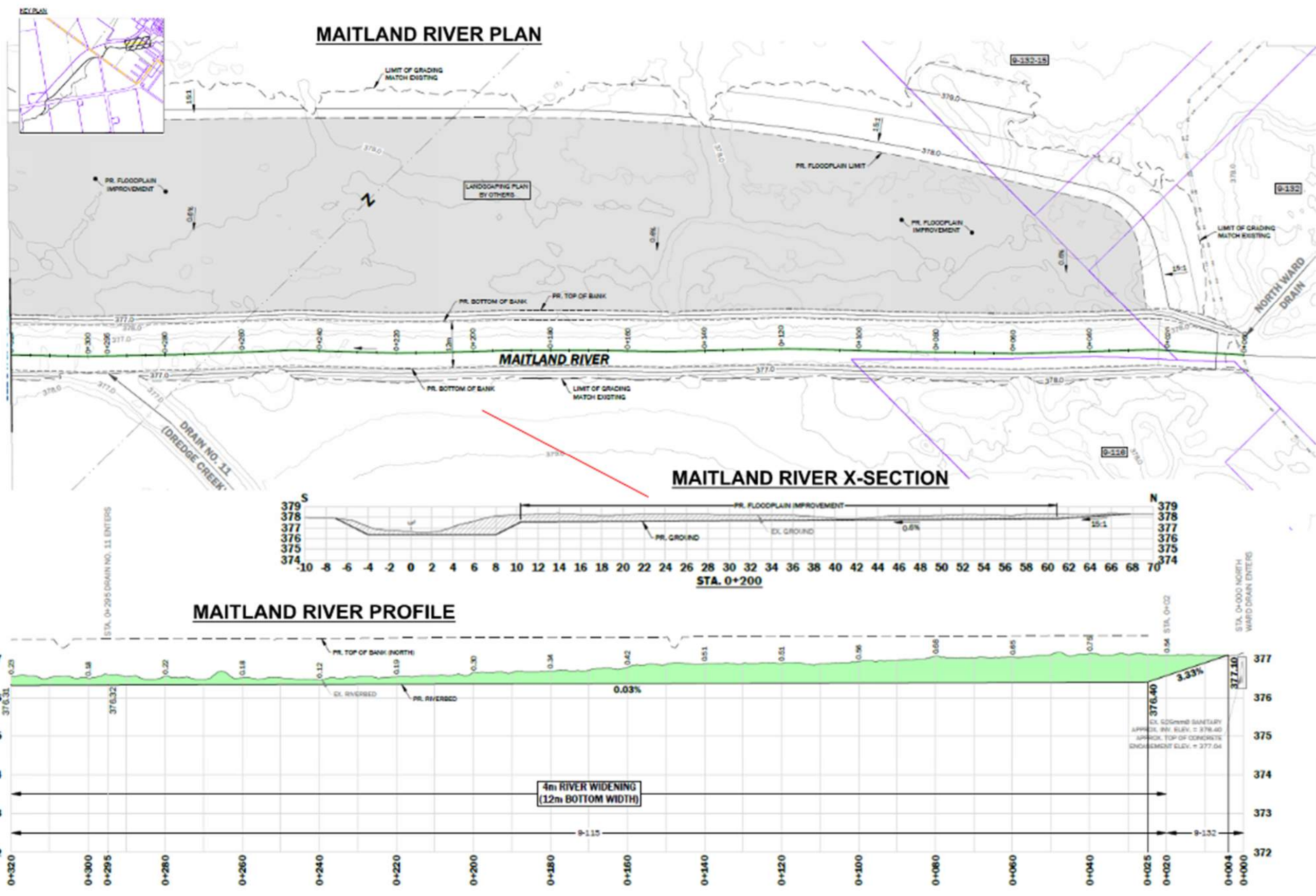
- Able to satisfy the design modification requests of both private property owners that will be significantly impacted by the project.
- The water surface elevation at the North Ward Drain outlet during the 5-year and Hurricane Hazel storm events is favourable and comparable to the Summer 2022 design results
- Reduces anticipated construction costs

Preliminary Preferred Alternative

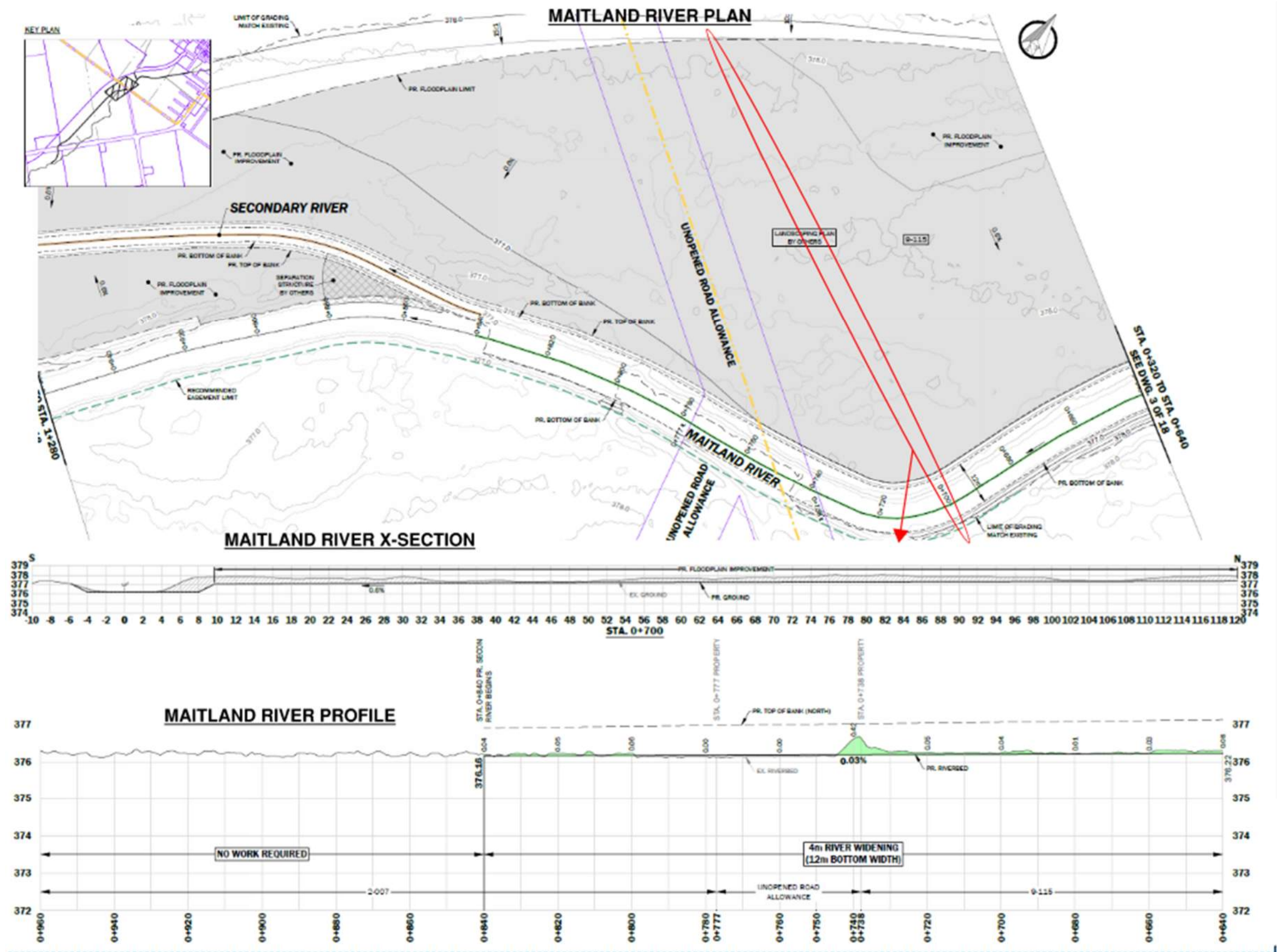


- Clear existing vegetation from floodplain along the north-west side of the existing River to improve the flow characteristics through that area and restore using vegetation conducive with the improved hydraulics required to reduce the water surface elevations.
- Construct secondary river channel from where the proposed River deepening and widening ends, downstream to an outlet into the existing River on the property of 5775 Wellington Road 87.
- Grade floodplain along the north-west side of the existing River towards the improved River and newly constructed secondary river.
- No changes or improvements are to be made to the existing River from where the proposed secondary River diverges from the existing River on Landowner 1's property, downstream, as well as upstream of the North Ward Drain (open portion) outlet into the River.
- Approximately 71 m of the open portion of Drain 12 on Landowner 1's property is to be cleaned out.
- Fill in and reconstruct the existing Wellington Road 87 ditch on the north side of the road.
- Fill in the existing private ditch at the south-west corner of Landowner 1's property is to be filled in and the section of private ditch upstream of the secondary channel shall utilize the newly constructed channel as an outlet.

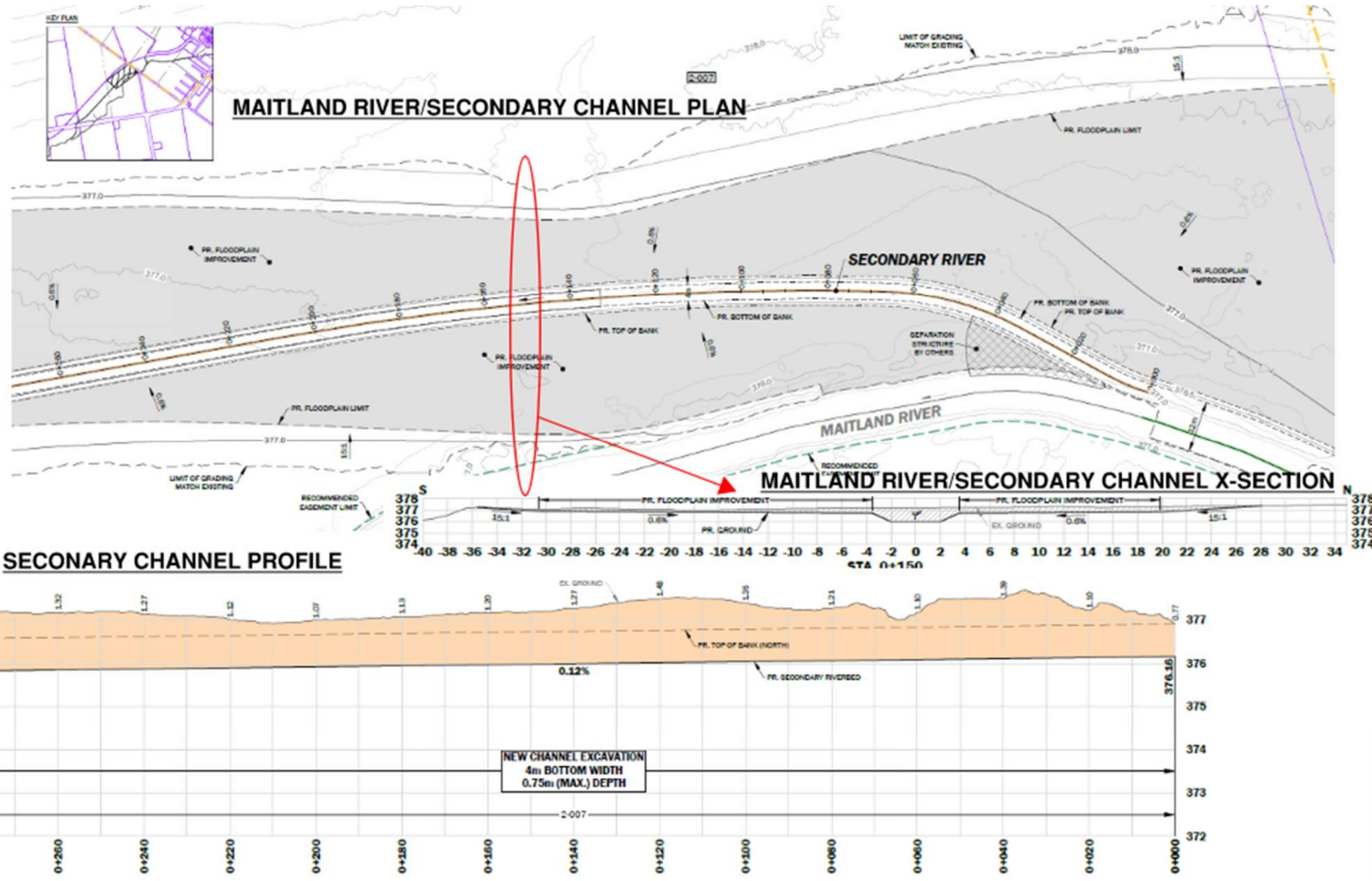
Preliminary Preferred Alternative



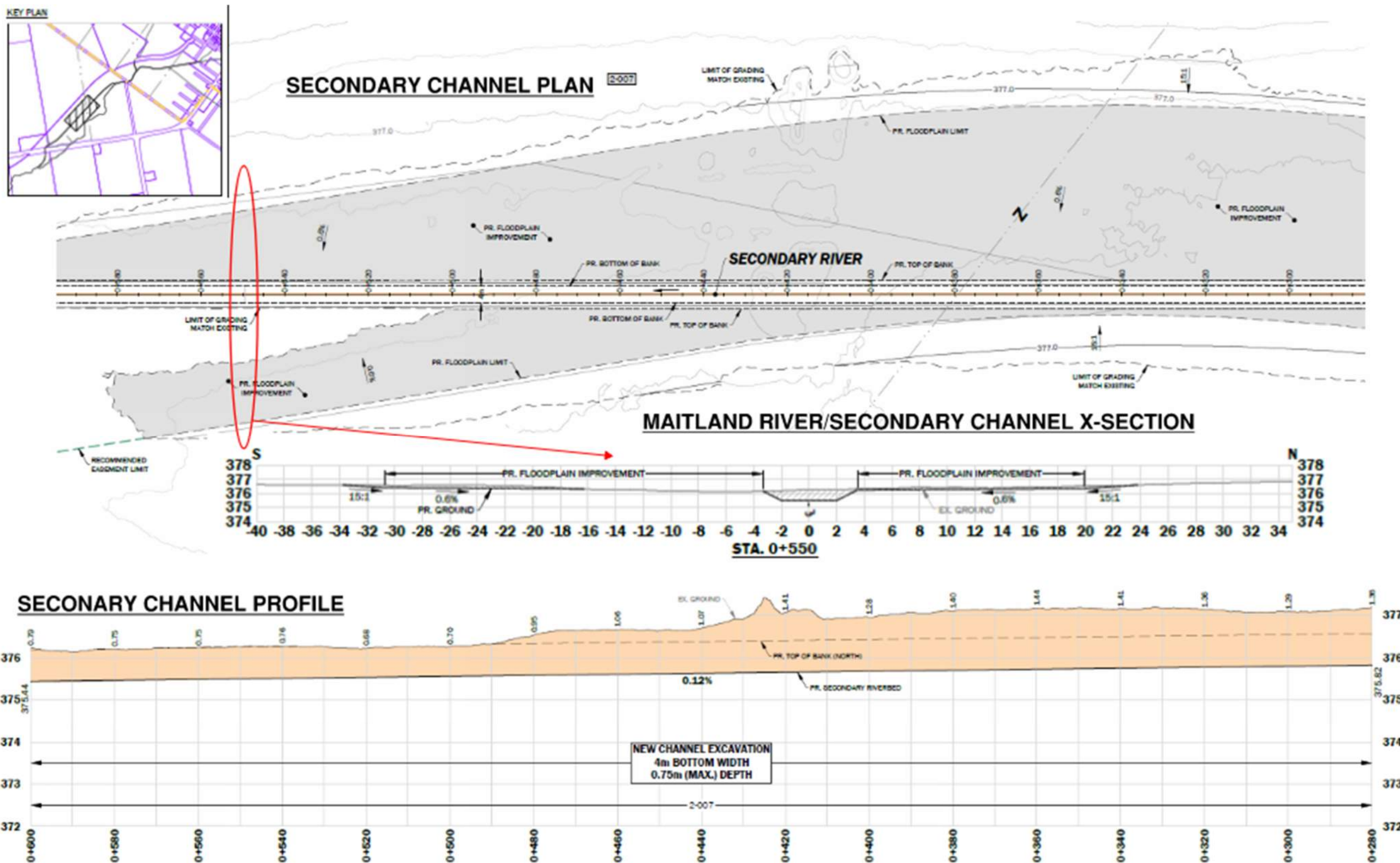
Preliminary Preferred Alternative



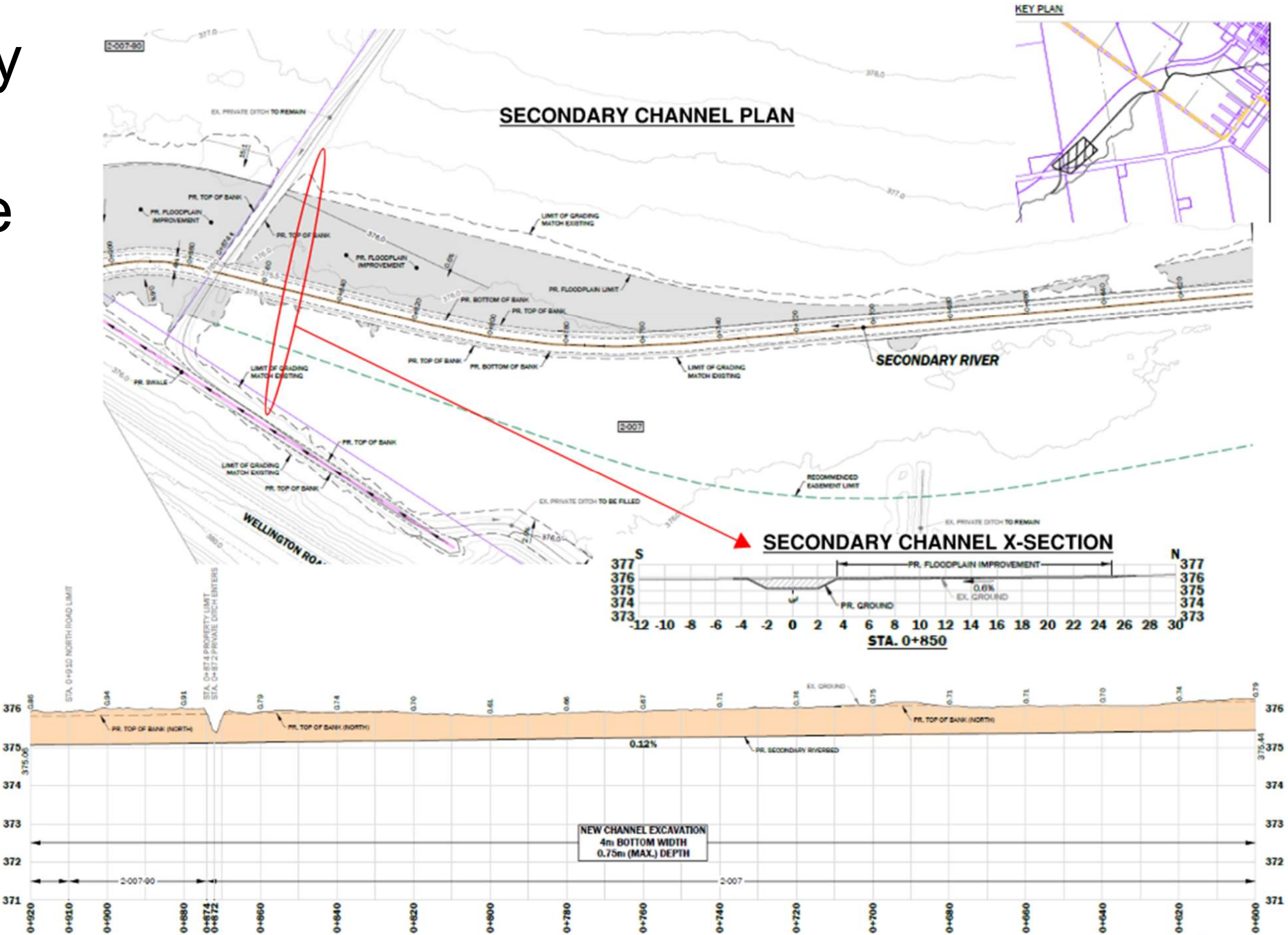
Preliminary Preferred Alternative



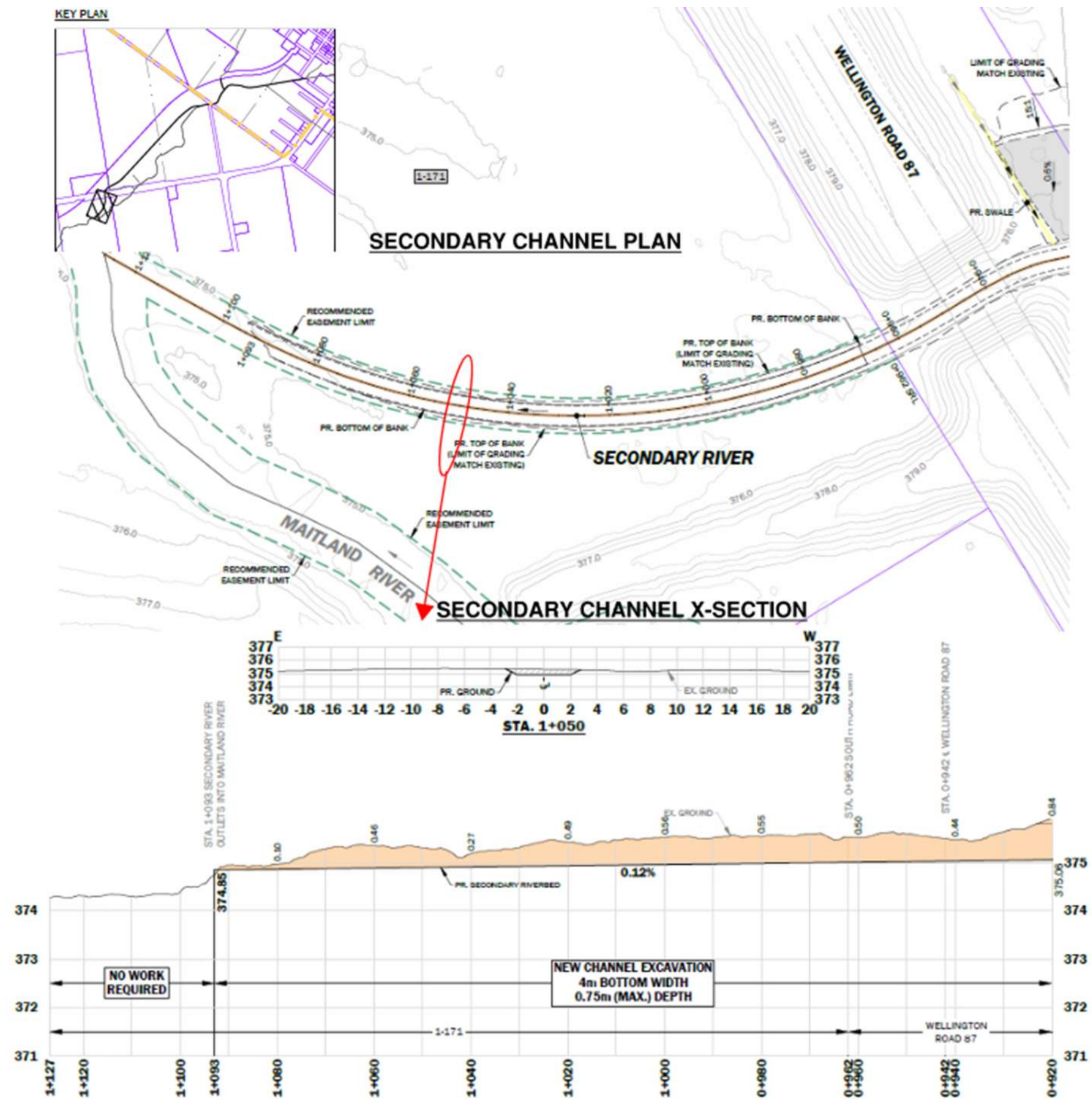
Preliminary Preferred Alternative



Preliminary Preferred Alternative



Preliminary Preferred Alternative



Potential Impacts and Mitigation Measures

Technical Environment:

Table 1: Predicted Maximum Water Surface Elevations at the North Ward Drain for Existing and Proposed Conditions

Location	Maximum Water Surface Elevation			
	5-Year Event (m)		Hurricane Hazel Event (m)	
	Existing Conditions	Proposed Conditions	Existing Conditions	Proposed Conditions
NWD Pipe Outlet (Location 1)	378.99	378.56 (0.43m reduction)	379.81	379.54 (0.27m reduction)
NWD River Entry (Location 2)	378.93	378.29 (0.64m reduction)	379.62	379.24 (0.38m reduction)



The **Preliminary Preferred Alternative** is expected to significantly improve the impacts of localized flooding and sanitary backflow within the urban area of Harriston due to riverine flooding during more frequent rain events of lesser magnitude (up to the 5-year event) and facilitate the future implementation of Alternative 5.

Potential Impacts and Mitigation Measures

Social and Economic Environments:

- The Project is required to protect human life and property.
- The proposed design of the Preliminary Preferred Alternative considers existing land uses and is expected to provide an alignment and side slopes amenable to maximize field workability within the agricultural land, as reasonably feasible.
- Access to the site for the project will require an agreement with directly affected Landowners.
- Anticipated costs are summarized in the table below. Note: The costs presented are estimates only. The final costs cannot be determined until the project is Tendered.

Description	Estimated Cost
Construction Costs	\$ 4,420,000.00
Public engagements, survey, design, etc.	\$ 250,000.00
Geotechnical Review, Reporting and Construction Support	\$ 350,000.00
Environmental Agency consultations and approvals, including permit fees	\$ 250,000.00
Tendering, Contract Administration and Inspection, and Close-Out Services	\$ 450,000.00
Contingencies	\$ 630,000.00
Interest and Net HST	\$ 150,000.00
Total Estimated Project Costs for Harriston Flood Mitigation (Alternatives 2 + 3)	\$ 6,500,000.00



Potential Impacts and Mitigation Measures

Natural Environment:

- Clearance of the lands north of the existing River for floodplain improvements will remove a large portion of identified Candidate Bat Maternity Habitat, confirmed Habitat for Special Concern and Rare Species for Eastern Wood-pewee and Candidate Habitat for Endangered bat species (Little Brown Myotis, Northern Myotis and Tri-colored Bat) as well as other wildlife habitat, and disturb various wildlife species, including nesting birds.
- Fish habitat will be negatively affected in the short-term by dredging and removal of riparian vegetation but will recover in the long-term.
- Site preparation (clearing and grubbing, grading) and construction (dredging, excavating, etc.) activities will result in short-term impacts including the potential to change the River water temperature regime for fish species, reduce or eliminate fish spawning habitat, disturb the fish community, increase erosion, sedimentation, turbidity, nutrient and contaminant inputs into the river, alter or destruct wildlife habitat and disturb wildlife, disturb benthic organisms, limit animal and plant movement.
- No long-term impacts to Rare Species are expected.
- Excess soil to be generated through excavation of the Project is expected to be suitable for reuse on-site as structural or bulk fill, assuming acceptable laboratory Proctor test results for moisture content.
- Excavated cobbles and/or boulders can be screened out of the excavated material and used as construction material for stream bed restoration or creation.

Mitigation measures are required to reduce impacts to natural heritage features:

- A compensatory tree planting plan is required to replace lost habitat.
- Construction of rocket boxes is required to provide alternative bat habitat to compensate for the lost bat maternity habitat.
- Compensation measures are required to comply with the Provincial Policy Statement (2020) and Endangered Species Act (2007).

Potential Impacts and Mitigation Measures

Cultural Heritage Environment:

- Areas of Archaeological potential have been identified and will require Stage 2 archaeological assessment by Test Pit or Pedestrian Survey.
- Properties with known or potential cultural heritage value that are within 50 m of the work area will require further heritage studies (Cultural Heritage Evaluation Report and/or Heritage Impact Assessment).

Recommendations and Next Steps

- Select/Confirm Preferred Alternative Design, Confirm Choice of Schedule, proceed to subsequent phases of Class EA process.
- Obtain approvals to support implementation (i.e., from MECP, DFO, MNRF, MVCA) and funding applications.
- Continue to institute financial strategy through ongoing engagement with Town economic consultant for implementation of Alternatives 2 and 3 works.
- Secure use of land agreements with downstream landowners that considers preserving agricultural use where possible.
- Establish maintenance program and set aside operating funds to sustain work as it is completed.

Thank You!

We welcome your comments & questions.

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